KITO Armaturen GmbH

QUALITY · PROTECTION · SAFETY

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The Company

The brand name KITO® has been associated with flame arresters manufactured in Braunschweig, Germany for over 90 years. KITO Armaturen GmbH were originally founded from Wilke-Werke AG many years ago, whom were responsible for developing the KITO® trademark and brand itself from an abbreviation for the old "**Ki**es**to**pf" (or common gravel pot).

Today, there are over 70 employees in our own factory, producing flame arresters, valves and other associated special fittings. Experienced agents both in Europe and world-wide are able to provide a local service for our international customers.

It is important that our equipment meets the latest standards and we continually update our customers by way of training courses and seminars, with the latest developments and ideas in safety engineering.

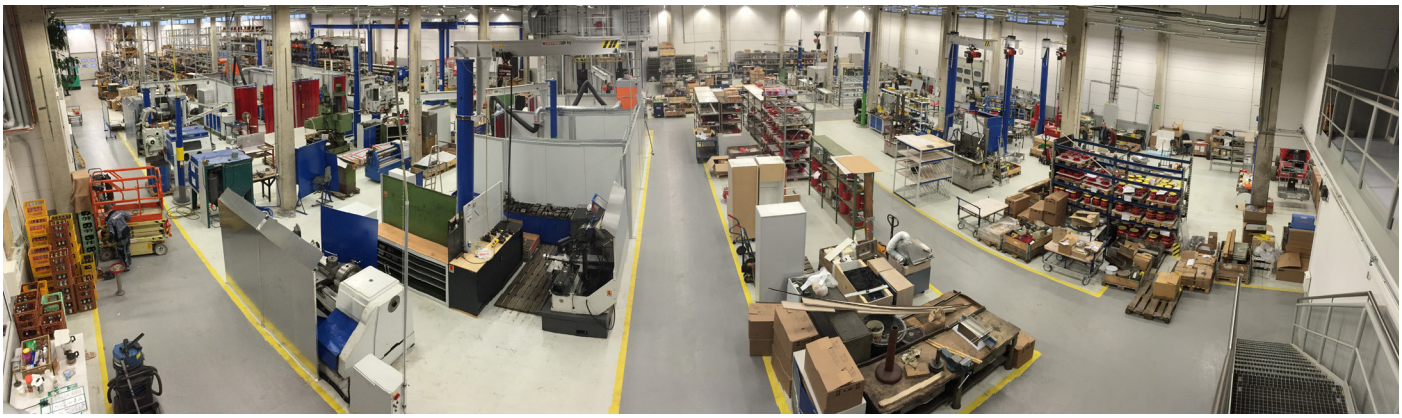
The size of our company enables us to find quick and very flexible solutions for our customer's needs: customized special designs are part of our expertise as well as short-dated approvals for special flame arresters. Our delivery times are short and reliable, adjusted to the requirements of our customers.

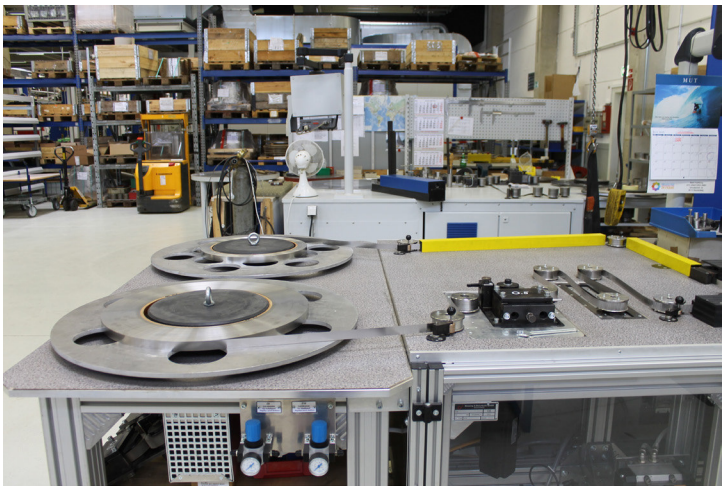
Maintenance partner trained by KITO® and coming regularly to update seminars ensure an optimal function our products.

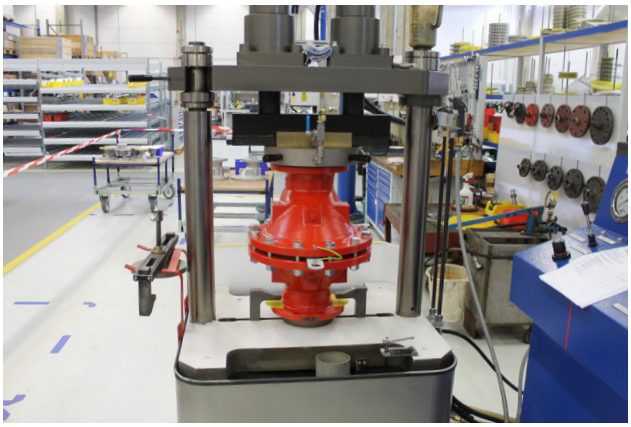
KITO Certified Service Partner KARE

We feel obliged to our reputation as a reliable and trustworthy partner!

Insight...







Member of the following standardization committees in explosion protection:

ISO/TC 21 WG3: ISO 16852
CENT/TC 305 WG6: EN 16852
ISO/IEC 31 M Project: ISO 800079-41
CEN/TC 305 WG5: EN 80079-41
DIN NA 095-02-10: DIN 80079-41
DIN NA 104-02-05: DIN 28300
CEN/TC 296 WG7: Tanks for the transport of dangerous goods

A General

General product information
Glossary
Technical examples
Questionaire
Summary of materials

KITO®-End-of-line Armatures
With and without KITO® flame arrester element

B Ventilation hood
C Pressure relief valves
D Vacuum relief valves
E Pressure and vacuum relief valves

KITO®-In-line Armatures
With and without KITO® flame arrester element

F In-line pressure and vacuum relief valves
G In-line detonation flame arresters
H In-line deflagration flame arresters

KITO®-Special Armatures

K Armatures made from plastic or coated

KITO®-Equipment for Armatures

L Heating covers, proximity switches, temperature sensors

M Armatures for small or movable tanks

Z Certificates

Spare parts and armatures for special applications, e.g. diesel engines and more on demand.

KITO Armaturen GmbH

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Flame-transmission-proof KITO® devices for storing and transporting combustible fluids, vapours and gases

Typical KITO® flame arrester elements, which prevent the propagation of flames and explosions (both deflagration and detonation) in all kinds of tank farms.

Our tested and certified tank accessory satisfies the current version of EN ISO 16852, which includes safety regulations and environmental protection.

Explosion-proof and endurance-burning-proof KITO®-end-of-line devices

Venting lines on tanks, vessels and pipelines that enable an on-going exchange of gases, must be protected with explosion-proof devices. These are called end-of-line deflagration or endurance-burning flame arresters (with the appropriate design).

They enable tanks to breathe out flammable gases and breathe in fresh air unrestricted in total safety. A weather hood made of acrylic glass and strainer prevents the penetration of rain, dirt and foreign objects.
Weather hoods made of metal are also available.

The KITO® flame arrester element prevents flashback in the vessel.

Simple versions of this are the KITO® ventilation hoods (fig. 1-3).

The KITO® endurance burning type flame arrester is able to prevent a continuously burning flame from flashback into the vessel (fig. 1 and 2). In the event of a fire, the acrylic glass cover burns immediately and completely or the metal cover swings open. This enables the high temperature created by the burning gas/air or product vapour/air mixture at the flame arrester element to escape into atmosphere.

In order to limit wasteful and polluting vapour losses, KITO® valves are used. The flame arrester works on the same principle as a ventilation hood, but has additional valve inserts integrated to regulate pressure.

There are KITO® valves for pressure, for vacuum (fig. 4) or as combined pressure/vacuum valves (fig. 5). In many cases, where incoming and outgoing gas flow rates are similar, we recommend a combined KITO® breather relief valve. However, where gas flow may strongly differ (e.g. on large tanks with differing pump flow rates for filling and discharging), the installation of separate KITO® valves is usually more economical.

We are at your disposal to calculate the number and size of valves in line with the applicable regulations required for your needs. For this purpose we require information about the tanks, the permissible pressures, the output of the pumps connected as well as the specific features of the product and relevant standards.

Fig. 1: KITO® Deflagration and endurance burning proof ventilation hood

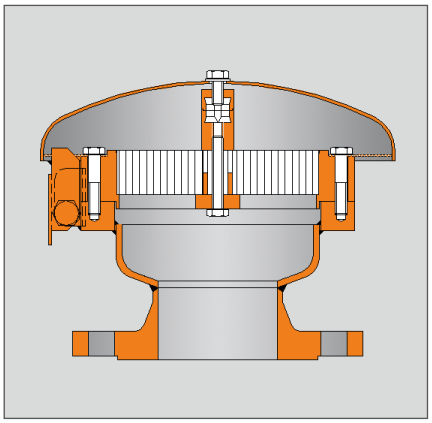


Fig. 2: KITO® Deflagration and endurance burning proof ventilation hood

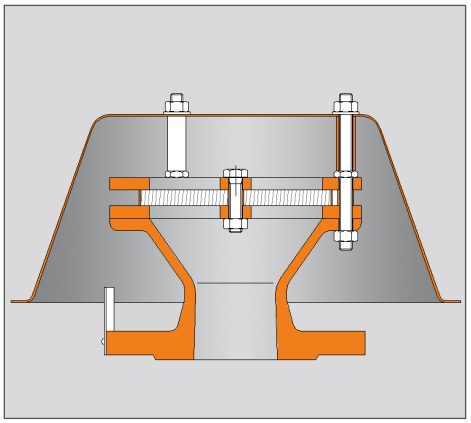


Fig. 3: KITO® Deflagration proof ventilation hood

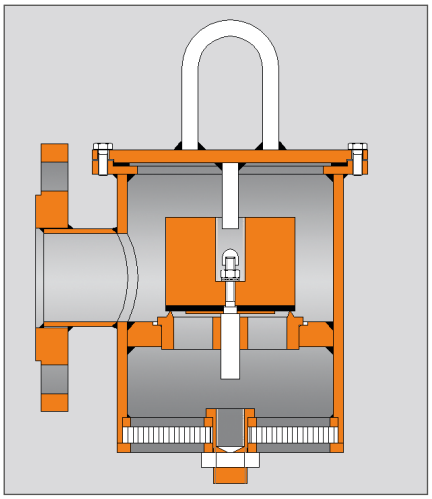


Fig. 4: KITO® Deflagration proof vacuum relief valve

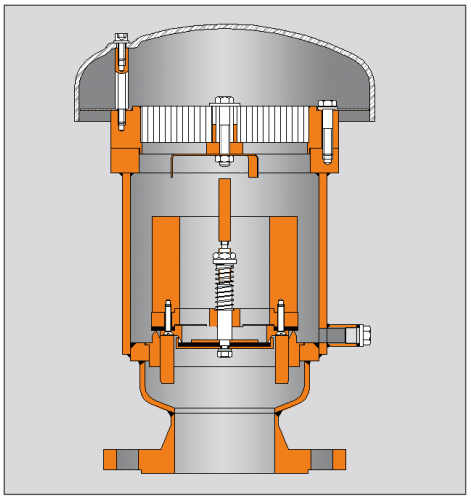


Fig. 5: KITO® Deflagration and endurance burning proof pressure and vacuum relief valve

Detonation proof KITO® flame arresters

In the event of explosive gas-air mixtures igniting in a pipeline, a (stable) detonation can develop from a deflagration under certain instances.

The impact of such a detonation is considerable with greatly increased pressure and flame speed; our KITO® detonation flame arresters are specifically designed for such scenarios.

The fitted KITO® flame arrester element remains functional and arrests the flame front following the pressure wave.

We can also develop certified devices for an unstable detonation (although these are not considered according to German regulations).

The selection of suitable in-line detonation flame arrester is based on the classification of the required medium in explosion group classes. Our range encompasses KITO® devices for all explosion groups in various designs (fig. 6 onwards).

Usage is limited to pressures < 1.2 bar; designs for higher pressures are also available (fig. 11).

The devices can be installed anywhere and for any direction; almost all KITO® in-line detonation flame arresters are also bi-directional, i.e. they provide protection from both sides. The KITO® flame arresters have been optimised to reduce pressure drop with a cost-effective modular design. Liquid product detonation flame arresters are designed for the protection of liquid filled pipelines (fig. 8).

Non-return valves are solely used in suction lines filled with liquids (fig. 9).

Dry types of detonation flame arresters can also act as endurance burning flame arresters. For this purpose a pipe of a pre-determined length, based on the nominal diameter of the pipe, has to be connected to the outlet flange of the arrester. This installation replaces the ventilation hood (fig. 2).

In some special system designs, e.g. installation in torch lines or thermal incineration plants, the incorporation of one or more thermal sensors on the KITO® flame arrester element is mandatory for identifying an outbreak of fire. An appropriate circuit must be connected that triggers emergency measures against a potential 'stabilised burning' caused by any incoming mixture.

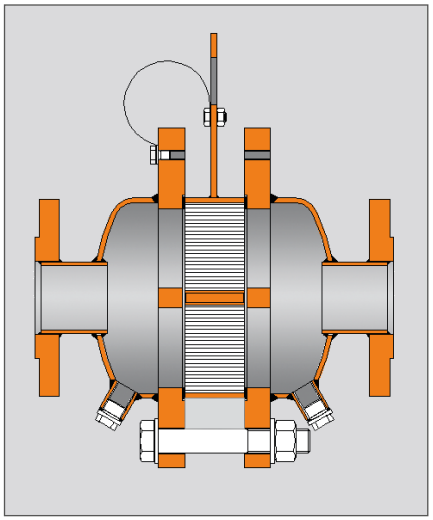


Fig. 6: KITO® Bi-directional in-line detonation flame arrester, short-time burning proof

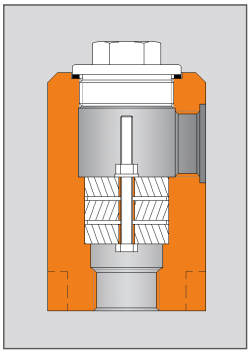


Fig. 7: KITO® Uni-directional in-line detonation flame arrester

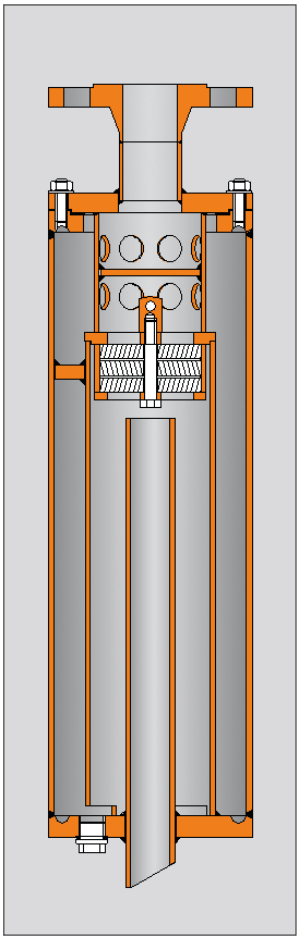


Fig. 8: KITO® Uni-directional end-of-line liquid detonation flame arrester

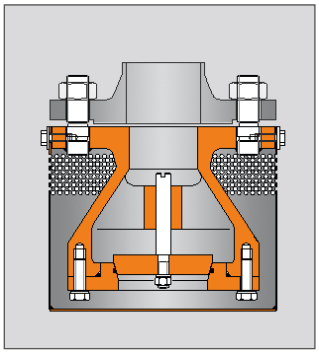


Fig. 9: KITO® Detonation proof foot valve

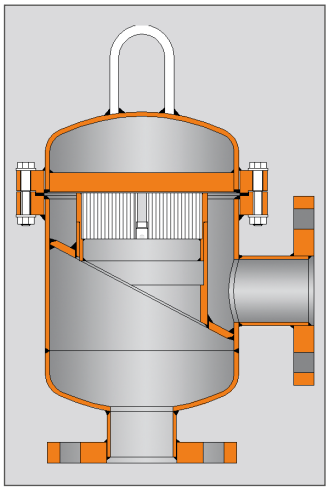


Fig. 10: KITO® Uni-directional in-line detonation flame arrester, short-time burning proof, angled design

Fig. 11: KITO® Bi-directional in-line detonation flame arrester, short-time burning proof, even at increased pressures

Fig. 12: KITO® Bi-directional in-line detonation flame arrester, short-time burning proof

Deflagration-proof KITO® flame arresters

If explosive gases ignite in a pipe then the explosion initially starts as deflagration characterised by relatively low pressures and flame speeds.

KITO® in-line deflagration flame arresters (fig. 13 to fig. 16) are installed to prevent a flame spreading to other parts of the system. In contrast to detonation arresters, there are limits for the length of pipe between any possible source of ignition and the flame arrester.

Where there are special conditions, e.g. installation in torch lines or thermal incineration plants, the incorporation of one or more thermal sensors on the KITO® flame arrester element is mandatory for identifying an outbreak of fire (fig. 14). An appropriate circuit that triggers emergency measures to prevent a potential stabilized burning must be connected.

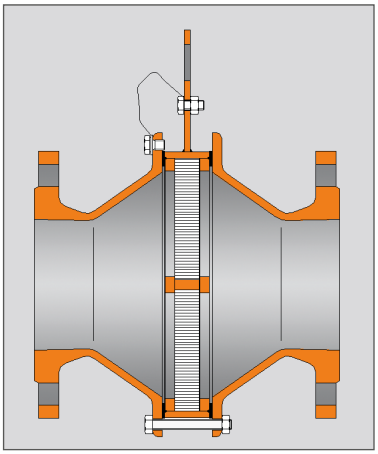
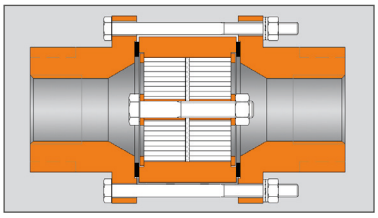


Fig. 13: KITO® Bi-directional in-line deflagration flame arrester, short-time burning proof



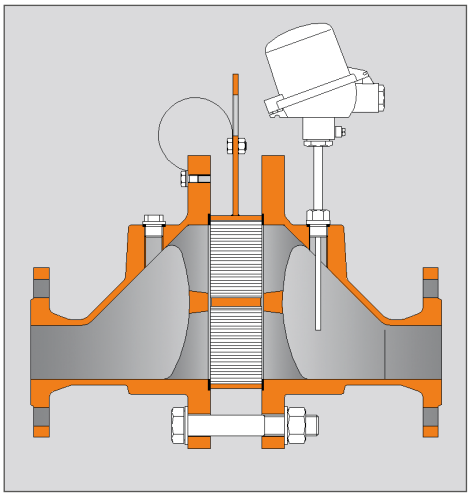


Fig. 14: KITO® Bi-directional in-line deflagration flame arrester, short-time burning proof

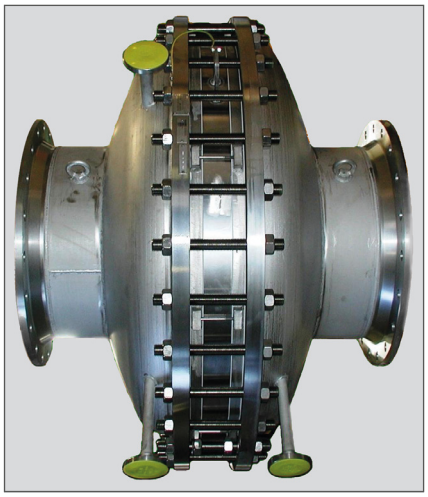


Fig. 15: KITO® Bi-directional in-line deflagration flame arrester, short-time burning proof

Fig. 16: KITO® Bi-directional in-line deflagration flame arrester, short-time burning proof

Special areas of application for KITO® devices

We have specifically developed KITO® valves for rail tank cars with a particularly low profile. There are versions for pressure, pressure/vacuum and combinations with a gas compensation coupling (fig. 17) as well as with KITO® flame arrester elements.

In addition, devices without flame arrester elements and special designs for corrosive media are included in our range (fig. 18).

We also manufacture special flame arresting devices for installation in tanks and road tankers (fig. 19). As well as detonation flame arresters, pressure, vacuum and combined valves are also available. These devices comply with the requirements for tanks according to ADR and RID.

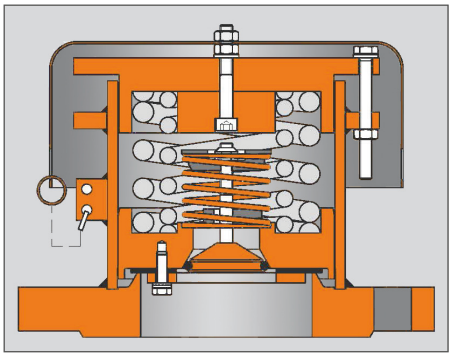


Fig. 17: KITO® rail tank car valve

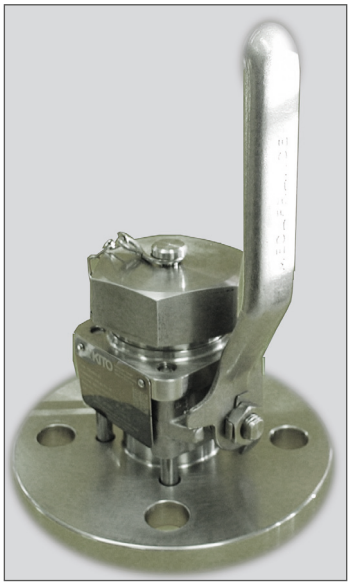


Fig. 18: KITO® container device

Fig. 19: KITO® container device

Design of the KITO® flame arrester element

KITO® deflagration, detonation and endurance burning flame arresters comply with the international standard EN ISO 16852. They have all been systematically typeapproved and are supplied with a CE declaration of conformity. They therefore fully comply with the European directive 2014/34/EU (ATEX 100).

The German Code of Practice 967 issued by VdTUEV and the German Ordinance on Industrial Safety and Health are the German implementations of the European Directive 99/92/EG. They clearly stipulate the necessity for various tank flame arrester.

We have developed the KITO® grid – the centrepiece of our flame arrester elements – based on the principle of the Davy screen and its derivation, the 'gravel pot'.

Although the Davy screen and gravel pot no longer conform to the latest requirements, the KITO® grid complies with all regulations and specifications.

A KITO® grid consists of two stainless steel strips, the height of which varies depending on the design.

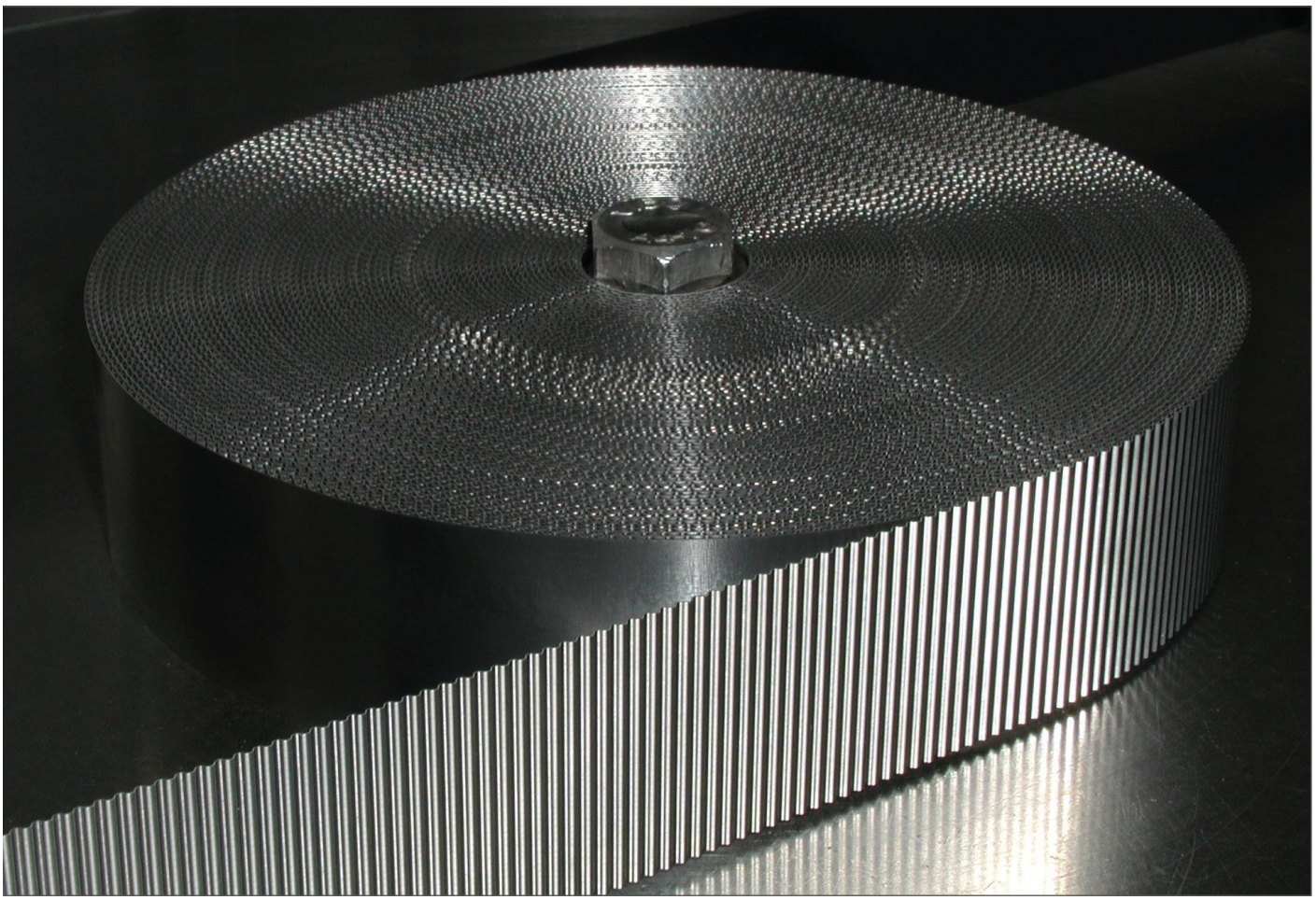
One flat and one corrugated stripe are wound tightly together, producing a gap of triangular section between the flat and the corrugated strip. This forms a circular element of variable diameter subject to the number of windings.

The KITO® flame arrester elements usually consist of one or more KITO® grids as well as a surrounding KITO®-casing.

The gap of the KITO® flame arrester element depends on the maximum experimental safe gap (MESG) of the material being protected (a material property) but should not be used as an equivalent. There are extensive tables and documentation available about this.

Gaps for gas/air or vapour/air mixtures with unknown or deviating flashback characteristics can be determined in cooperation with test houses such as PTB, BAM or IBExU and manufactured by us. Also in such cases, the device can be CE marked through an individual verification procedure.

Supplying special designs as OEM parts or components in line with ATEX is one of our specialities.



KITO® grid during the production process

Additional KITO® devices

In addition to our flame arresters according to international standard, we manufacture a variety of versions from in-line valves to end-of-line valves with particularly low set pressures (fig. 20).

Special features and special versions such as e.g. heating with electricity (fig. 21), water or steam, inductive proximity switches etc. can be manufactured according to the client‘s specification.

Our devices are of course also available in special materials e.g. plastics (fig. 22) or highly corrosion resistant materials as well as special designs.

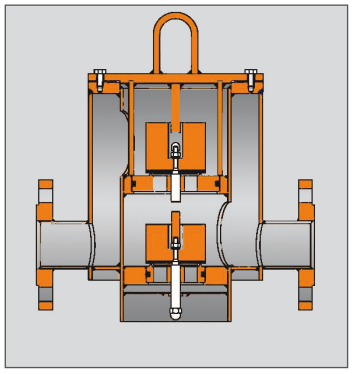


Fig. 20: KITO® In-line pressure and vacuum relief valve

Fig. 21: KITO® Deflagration and endurance burning proof pressure and vacuum relief valve with electrical heating

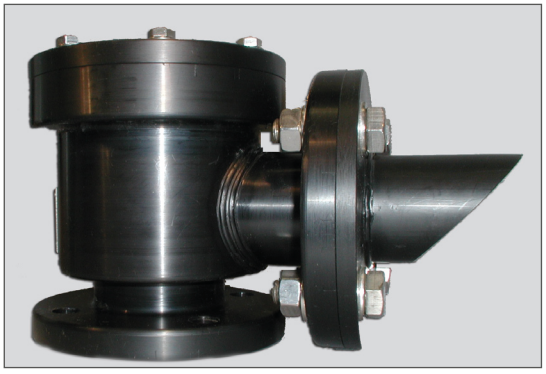


Fig. 22: KITO® In-line pressure or vacuum relief valve made of plastic

Maintenance of KITO® devices

One of the special features of all KITO® devices is the minimal maintenance requirement. However, the type approval requires the devices to be checked regularly depending on the operating conditions. Being an approved manufacturer and registered maintenance company we will be pleased to give our advice about control checks as well as other maintenance and adjustment work and how to do this safely.
We also offer training for your staff on how to maintain our devices, at our premises or on-site, whichever is more convenient for you. You can order spare parts for our KITO® devices at short notice by specifying the type and factory number. This and other information is to be taken from the nameplate which identifies each device.

Older devices without CE marking are not allowed to be replaced completely with spare parts. Please do not hesitate to contact us for advice in such cases.

KITO Certified Service Partner KARE

The KITO®-KARE program (**K**ITO® **A**uthorized **R**epair **E**ngineers) includes certified service partners in the areas of maintenance and repair of KITO® devices.
Our service partners offer qualified and direct support on site.

This guarantees the highest quality and safety of our products. For further information about a service partner near you, please contact us or visit our website www.kito.de

Terms and definitions

atmospheric conditions	conditions with pressures ranging from 80 kPa to 110 kPa and temperatures ranging from -20 °C to +60 °C
bi-directional flame arrester	flame arrester that prevents flame transmission from both sides
deflagration	explosion propagating at subsonic velocity
deflagration flame arrester	DEF flame arrester designed to prevent the transmission of a deflagration it can be an end-of-line flame arrester or an in-line flame arrester
detonation	explosion propagating at supersonic velocity and characterized by a shock wave
detonation flame arrester	DET flame arrester designed to prevent the transmission of a detonation it can be an end-of-line flame arrester or an in-line flame arrester, and can be used for both stable detonations and unstable detonations
dynamic flame arrester	high velocity vent valve pressure relief valve designed to have nominal flow velocities that exceed the flame velocity of the explosive mixture, thus preventing flame transmission
end-of-line flame arrester	flame arrester that is fitted with one pipe connection only
endurance burning	stabilized burning for an unlimited time
endurance burning flame arrester	flame arrester that prevents flame transmission during and after endurance burning
explosion	abrupt oxidation or decomposition reaction producing an increase in temperature, pressure, or in both simultaneously
explosion group	Ex.G ranking of flammable gas-air mixtures with respect to the MESG
flame arrester	device fitted to the opening of an enclosure, or to the connecting pipe work of a system of enclosures, and whose intended function is to allow flow but prevent the transmission of flame
flame arrester element	portion of a flame arrester whose principal function is to prevent flame transmission
foot valve flame arrester	flame arrester designed to use the liquid product combined with a non-return valve to form a barrier to flame transmission
housing for flame arrester	portion of a flame arrester whose principal function is to provide a suitable enclosure for the flame arrester element and allow mechanical connections to other systems
in-line flame arrester	flame arrester that is fitted with two pipe connections, one on each side of the flame arrester
integrated temperature sensor	temperature sensor integrated into the flame arrester, as specified by the manufacturer of the flame arrester, in order to provide a signal suitable to activate counter measures

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Date: 05-2018
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Design subject to change

Terms and definitions

liquid product detonation flame arrester	flame arrester in which the liquid product is used to form a liquid seal as a flame arrester medium, in order to prevent flame transmission of a detonation there are two types of liquid product detonation flame arrester for use in liquid product lines: liquid seals and foot valves
liquid seal flame arrester	flame arrester designed to use the liquid product to form a barrier to flame transmission
maximum experimental safe gap	MESG safe gap measured in accordance with ISO/IEC 80079-20-1 : 2017
short time burning	stabilized burning for an unlimited time
stabilized burning	steady burning of a flame stabilized at, or close to, the flame arrester element
stable detonation	detonation progressing through a confined system without significant variation of velocity and pressure characteristics
static flame arrester	flame arrester designed to prevent flame transmission by quenching gaps
unstable detonation	detonation during the transition of a combustion process from a deflagration into a stable detonation

Qelle EN ISO 16852:2016

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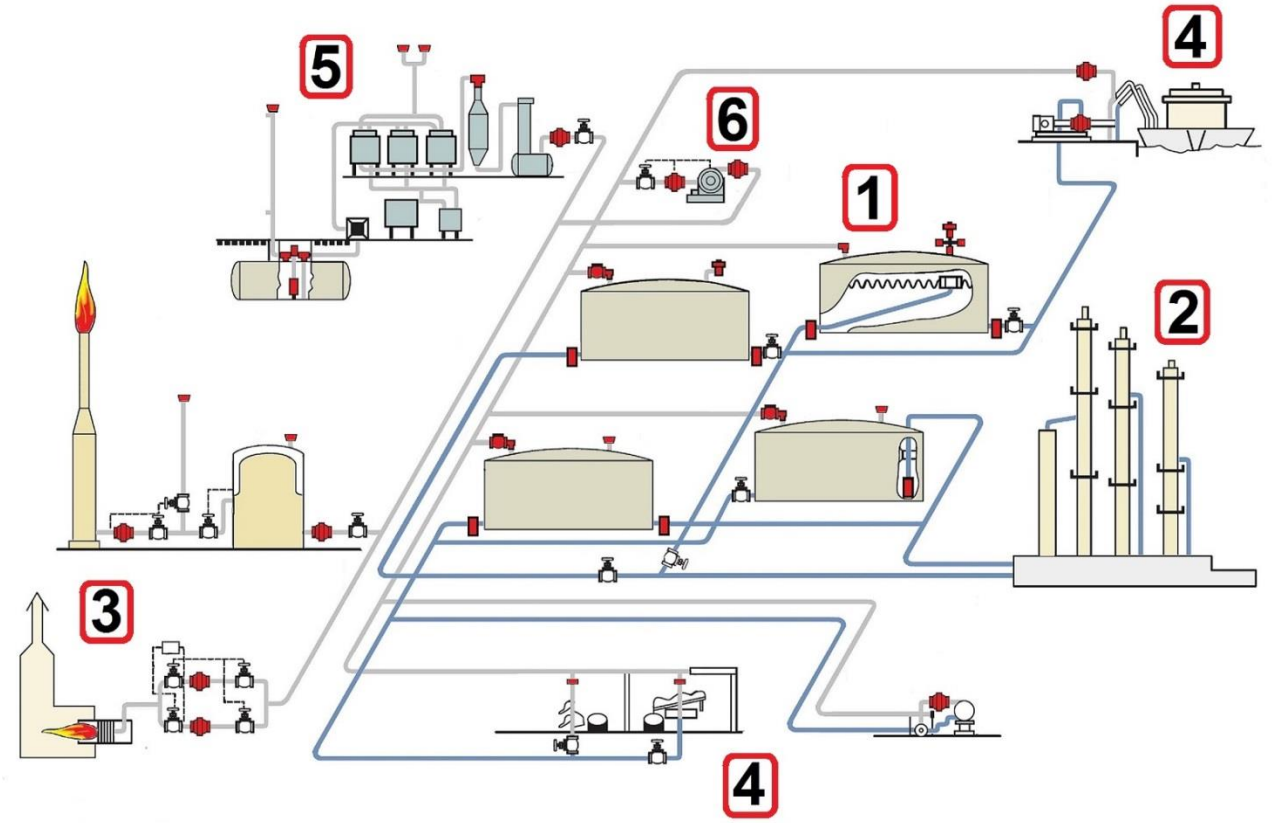
Examples of protection



Source : NFPA 69

1. Tank farms (see page A 01.1 N – A 01.5 N)
2. Process plants
3. Thermal treatment plants (see page A 03.1 N)
4. Loading and unloading process as part of logistics (see page A 04.1 N – A 04.3 N)
5. Vapor recovery units (VRU's)
6. Components as safety part of devices
7. Protection of other plants - not illustrated- (see page A 07.1 N – A 07.2 N)

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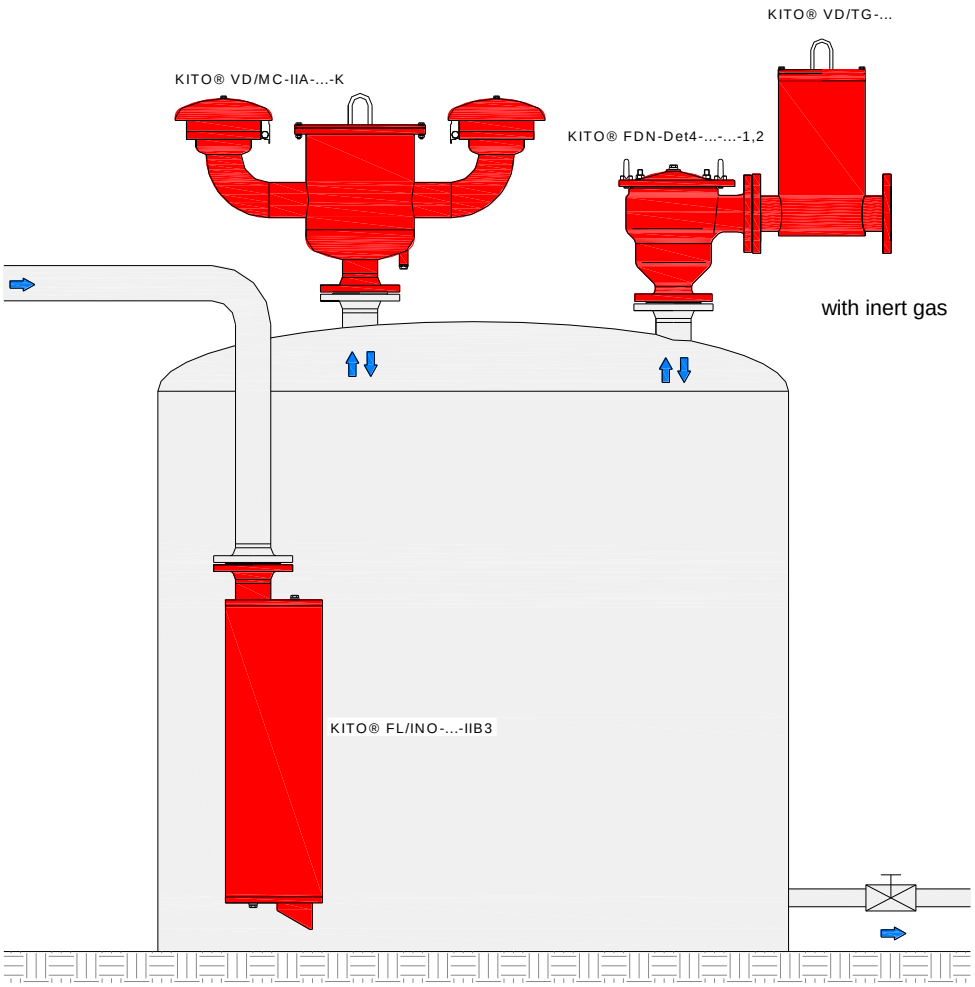
Examples of protection
1. Tank farms

1.1 Exemplary protection of tanks above ground - endurance burning proof performance



Filling pipe : Uni-directional end-of-line liquid detonation flame arrester
KITO® FL/INO-…-IIB3 (G 14.1 N)

Venting and breathing : Deflagration and endurance burning proof pressure and vacuum relief valve
KITO® VD/MC-IIA-…-… (E 16.9 N)

Gas compensation : Uni-directional in-line detonation flame arrester, short-time burning proof
KITO® FDN-Det4-IIA-…-1,2 (G 18.1 N) with In-line pressure and vacuum relief valve
KITO® VD/TG-… (F 31 N)

Protection flammable liquids :
- for liquids a flash point < 55 °C (TRBS 2154 / TRbF 20)
- for liquids a flash point < 60 °C / 140 °F (API 2000 / ISO 28300)

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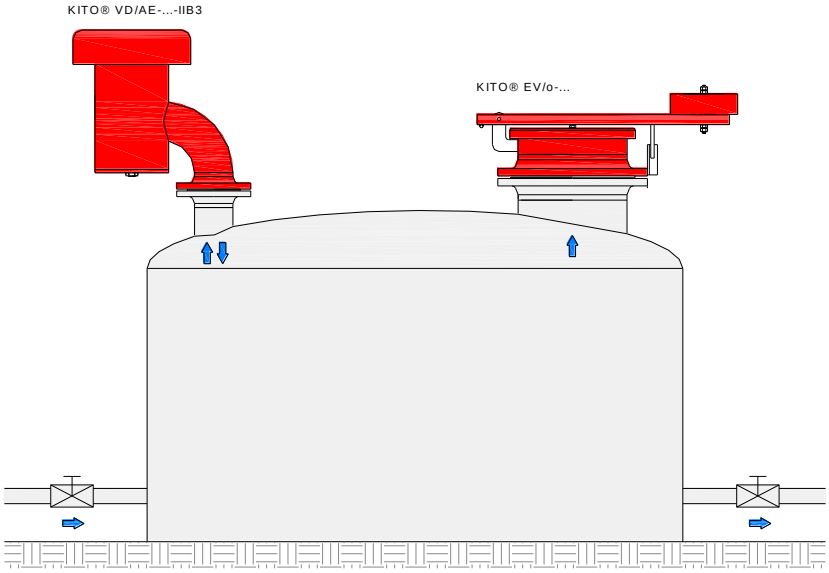
Design subject to change

Examples of protection
1. Tank farms

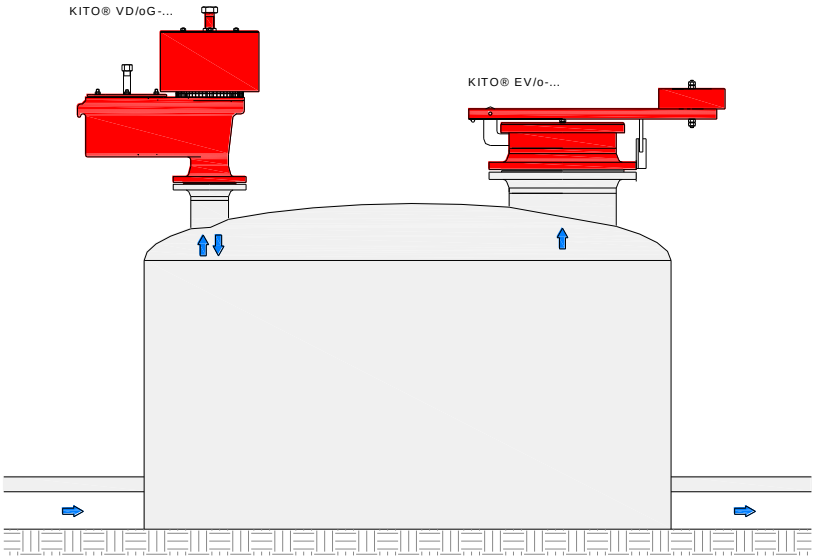
1.2 A Exemplary protection of tanks above ground – explosion-proof, not endurance burning proof



Venting and breathing : Deflagration proof pressure and vacuum relief valve KITO® VD/AE-…-IIB3 (E 20 N)
Emergency venting : Pressure relief valve KITO® EV/o-… (C 10.1.N) (fire case)

Protection flammable liquids :
- for liquids a flash point < 60 °C / 140 °F (API 2000 / ISO 28300)

1.2 B Exemplary protection of tanks above ground – non-flammable liquids



Venting and breathing : Pressure and vacuum relief valve KITO® VD/oG-… (E 21 N)
Emergency venting : Pressure relief valve KITO® EV/o-… (C 10.1.N) (fire case)

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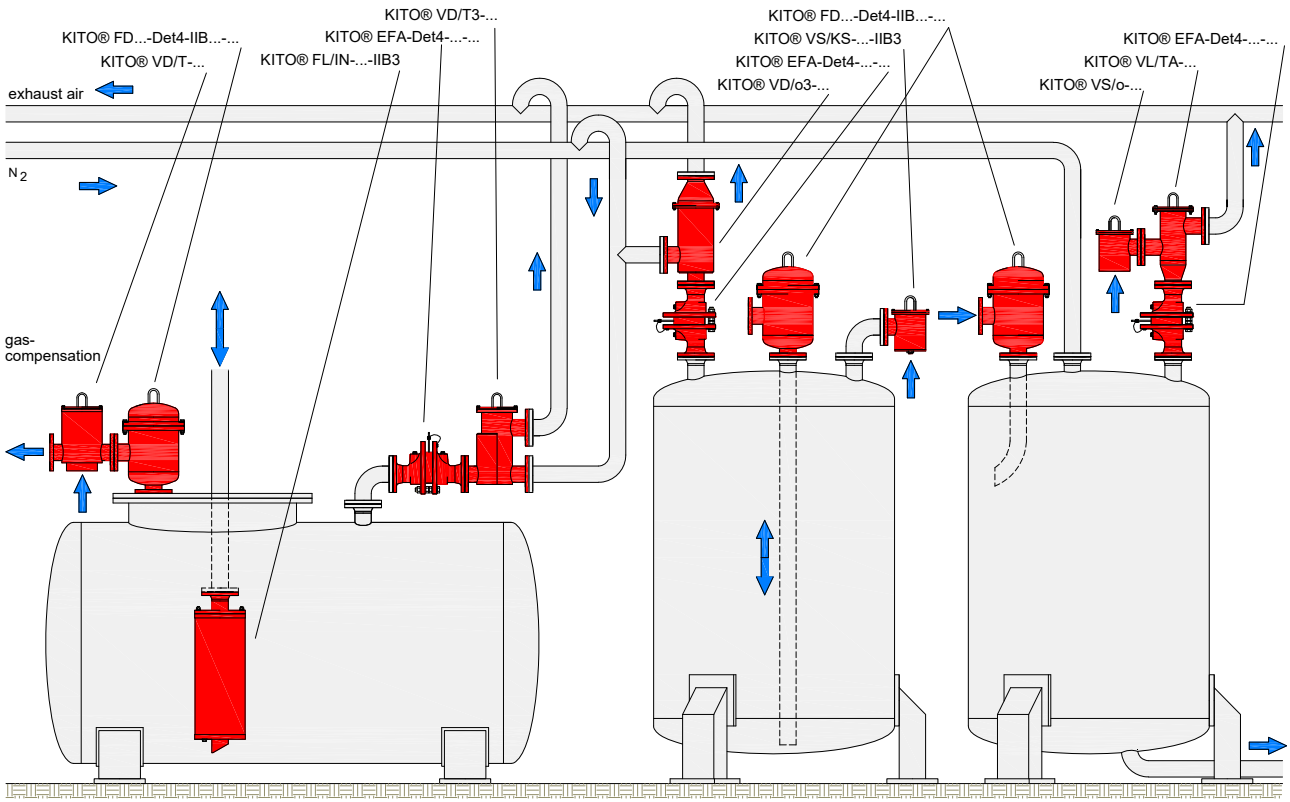
Examples of protection
1. Tank farms

1.3 Exemplary protection of tanks above ground – KITO® flame arrester armatures



Suction and filling line :

- Uni-directional end-of-line liquid detonation flame arrester KITO® FL/IN-...-IIB3 (G 14 N)
- Uni-directional in-line detonation flame arrester, short-time burning proof KITO® FD4-Det4-IIB1-…-1,2 (G 19.3 N)

Armatures for ventilation / exhaust air / gas compensation / N2- overlaying:

- Deflagration proof vacuum relief valve KITO® VS/o-… (D 12 N)
- Bi-directional in-line detonation flame arrester, short-time burning proof KITO® EFA-Det4-IIA-…/…-1,2 (G 22 N)

Inline armatures :

- In-line pressure and vacuum relief valve KITO® VD/o3-… (F 18 N)
- In-line pressure and vacuum relief valve KITO® VD/T-… (F 33 N)
- In-line pressure and vacuum relief valve KITO® VD/T3-… (F 37 N)
- In-line pressure or vacuum relief valve KITO® VL/TA-… (F 50 N)

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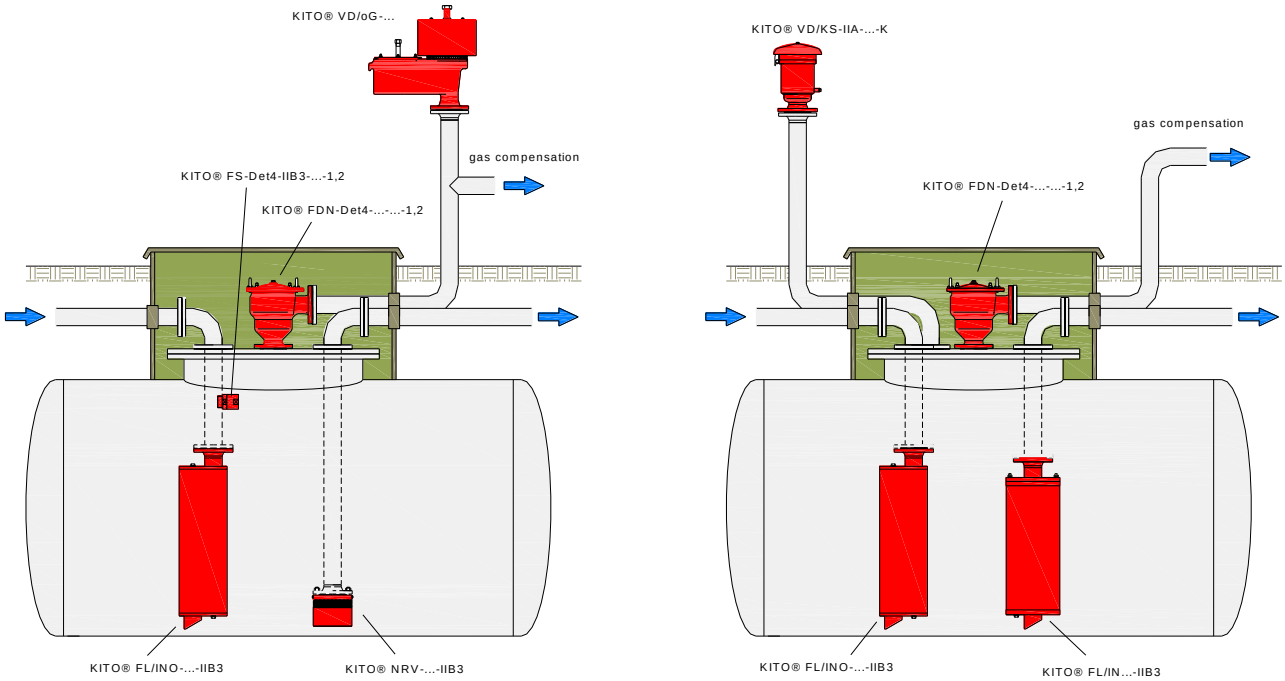
Examples of protection
1. Tank farms

1.4 Exemplary protection of underground tanks



Filling pipe :

- Uni-directional end-of-line liquid detonation flame arrester KITO® FL/INO-...-IIB3 (G 14.1 N)

Breather for filling pipe :

- Bi-directional in-line detonation flame arrester KITO® FS-Det4-IIA-…-1,2 (G 30 N)

Suction pipe :

- Detonation proof foot valve KITO® NRV-...-IIB3 (G 12 N)
- Uni-directional end-of-line liquid detonation flame arrester KITO® FL/IN-...-IIB3 (G 14 N)

Gas compensation pipe / venting and breather pipe :

- Uni-directional in-line detonation flame arrester, short-time burning proof KITO® FDN-Det4-IIA-…-1,2 (G 18.1 N) with or without Pressure and vacuum relief valve KITO® VD/oG-… (E 21 N)
- Deflagration and endurance burning proof pressure and vacuum relief valve KITO® VD/KS-IIA-…-K (E 13.1 N)

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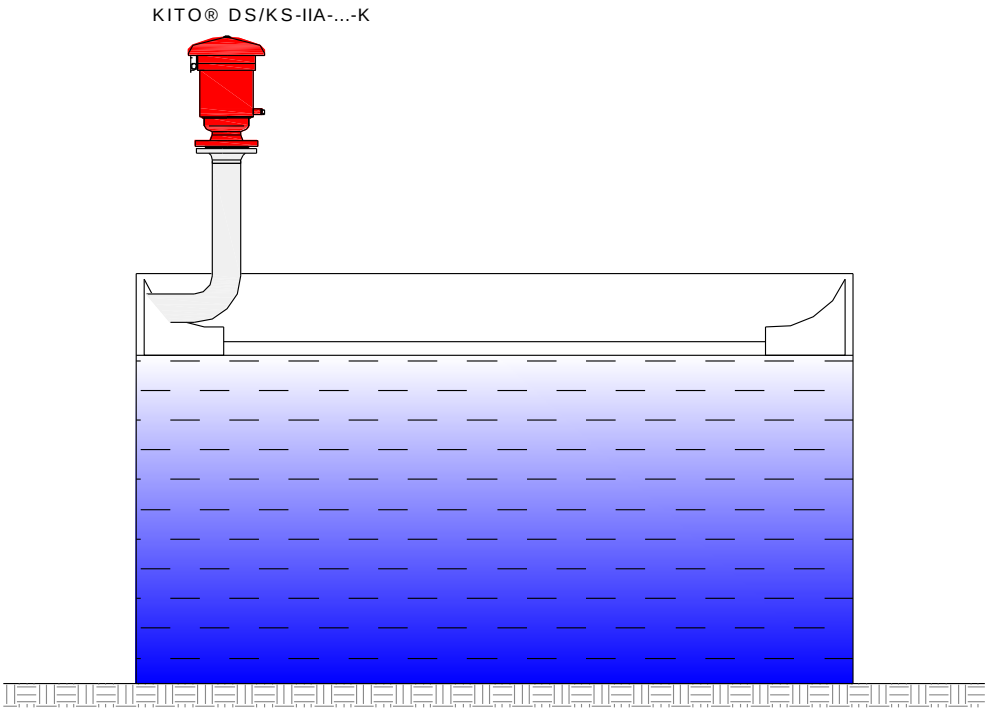
Examples of protection
1. Tank farms

1.5 Exemplary protection of floating roof tanks



Rim venting : Deflagration and endurance burning proof pressure relief valve KITO® DS/KS-IIA-…-K (C 7 N)
alternative Pressure relief valve KITO® DS/o-…(C 8.1 N), not explosion-proof

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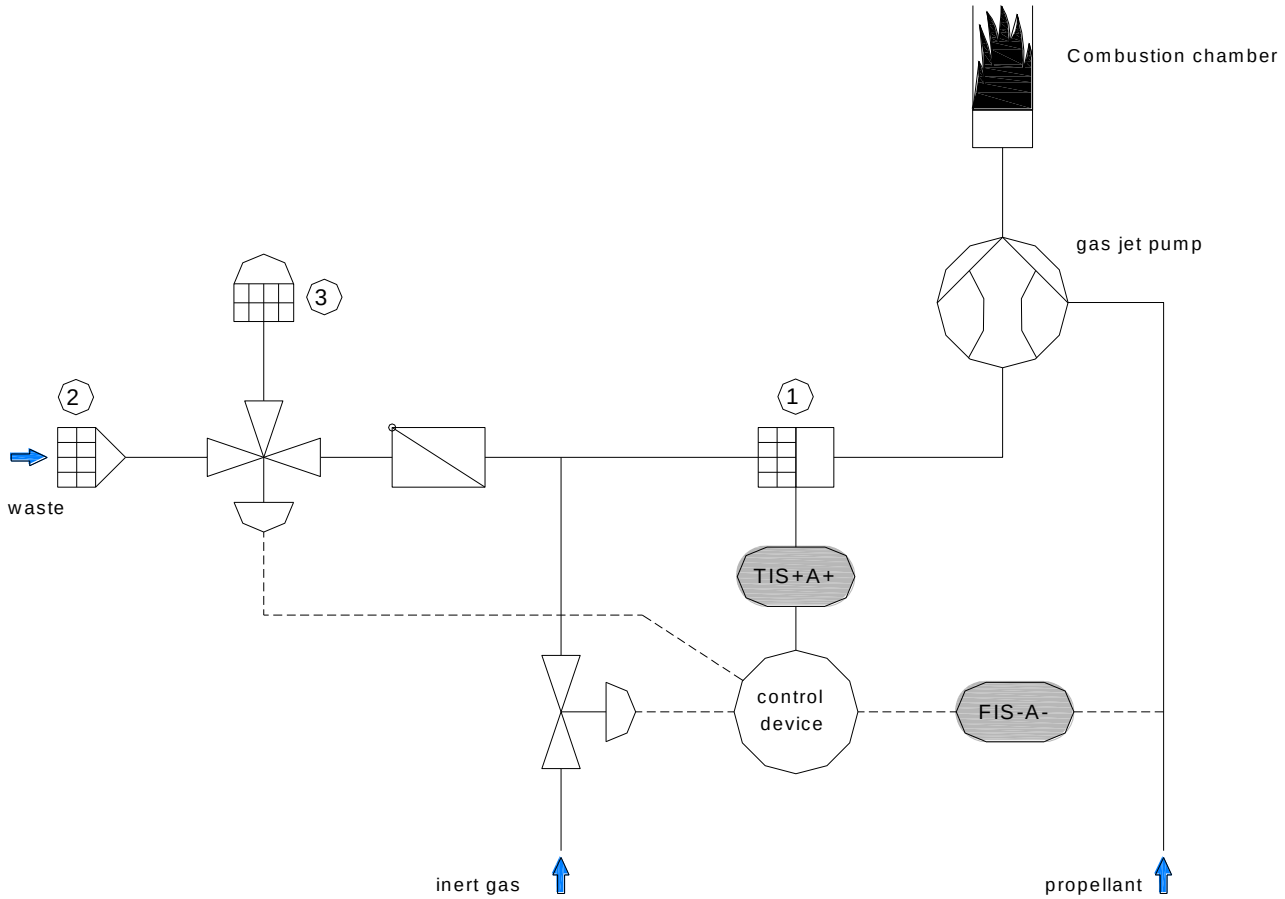
Examples of protection
3. Termal treatment plants

3.1 Combustion chamber



Source : NFPA 69

(1) Bi-directional in-line deflagration flame arrester, short-time burning proof KITO® EFA-Def0-IIA-…/…-1,2 (H 35 N)
(Distance to the ignition source must be observed!)

(2) Bi-directional in-line detonation flame arrester, short-time burning proof KITO® EFA-Det4-IIA-…/…-1,2 (G 22 N)

(3) Deflagration and endurance burning proof ventilation hood KITO® BEH-5-IIA-...-K (B 1 N)

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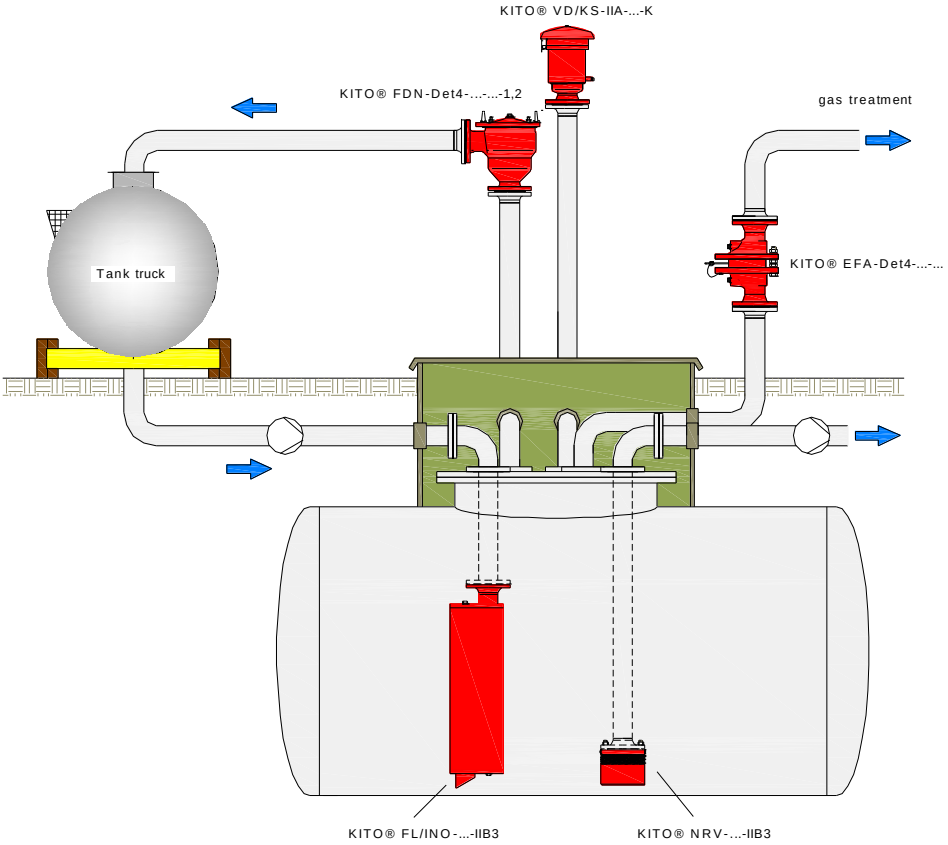
Examples of protection
4. Loading and unloading process as part of logistics

4.1 Rail tank cars and road tanker



Filling pipe	: Uni-directional end-of-line liquid detonation flame arrester KITO® FL/INO-…-IIB3 (G 14.1 N)
Suction pipe	: Detonation proof foot valve KITO® NRV-...-IIB3 (G 12 N)
Waste gas pipe	: Bi-directional in-line detonation flame arrester, short-time burning proof KITO® EFA-Det4-IIA-…/…-1,2 (G 22 N)
Breather and venting pipe	: Deflagration and endurance burning proof pressure and vacuum relief valve KITO® VD/KS-IIA-…-K (E 13.1 N)
Gas compensation pipe	: Uni-directional in-line detonation flame arrester, short-time burning proof KITO® FDN-Det4-IIA-…-1,2 (G 18.1 N)

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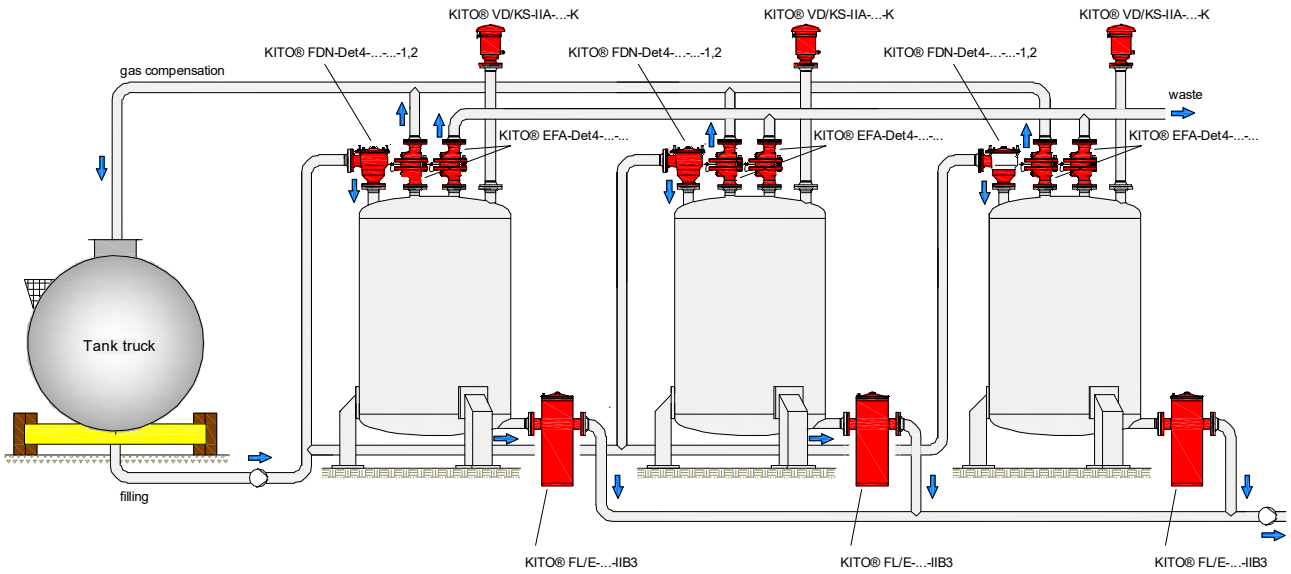
Examples of protection
4. Loading and unloading process as part of logistics

4.2 Rail tank cars and road tanker



Suction and filling pipe	: Uni-directional in-line liquid detonation flame arrester, short-time burning proof KITO® FL/E-...-IIB3 (G 13 N)
Waste gas pipe	: Bi-directional in-line detonation flame arrester, short-time burning proof KITO® EFA-Det4-IIA-…/…-1,2 (G 22 N)
Breather and venting pipe	: Deflagration and endurance burning proof pressure and vacuum relief valve KITO® VD/KS-IIA-…-K (E 13.1 N)
Gas compensation pipe	: Bi-directional in-line detonation flame arrester, short-time burning proof KITO® EFA-Det4-IIA-…/…-1,2 (G 22 N)

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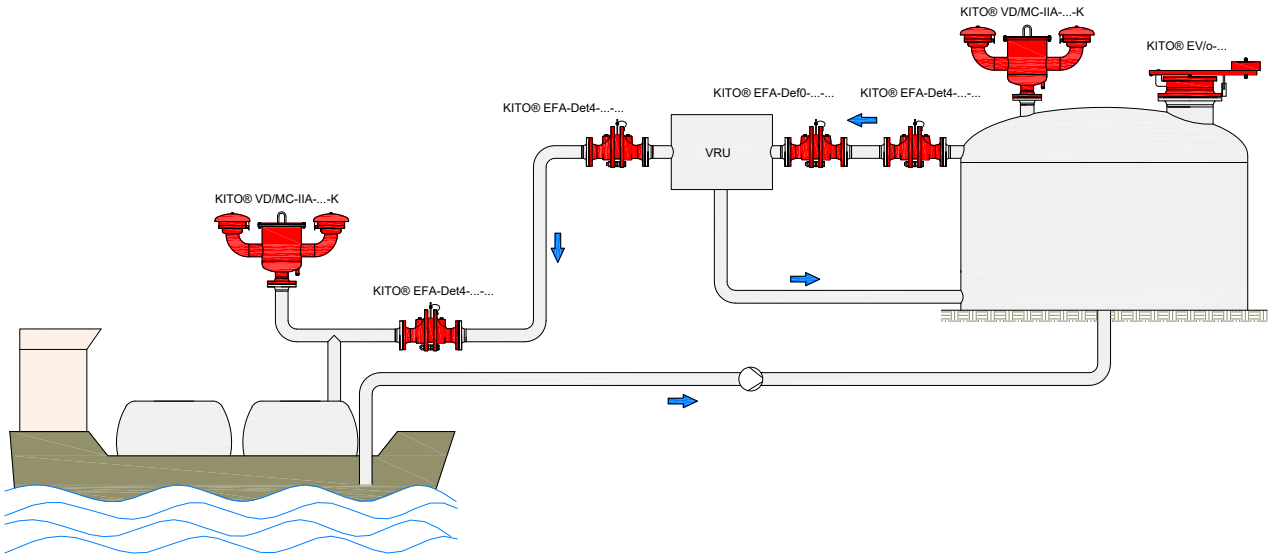
Examples of protection
4. Loading and unloading process as part of logistics

4.3 Ship loading



Emergency venting and breathing of the ships unloading or loading :

- Deflagration and endurance burning proof pressure and vacuum relief valve KITO® VD/MC-IIA-…-… (E 16.9 N)

Tank venting:

- Deflagration and endurance burning proof pressure and vacuum relief valve KITO® VD/MC-IIA-…-… (E 16.9 N)

Emergency venting :

- Pressure relief valve KITO® EV/o-… (C 10.1.N)

Detonation flame arrester :

- Bi-directional in-line detonation flame arrester, short-time burning proof KITO® EFA-Det4-IIA-…/…-1,2 (G 22 N)

Deflagration flame arrester :

- Bi-directional in-line deflagration flame arrester, short-time burning proof KITO® EFA-Def0-IIA-…/…-1,2 (H 35 N)

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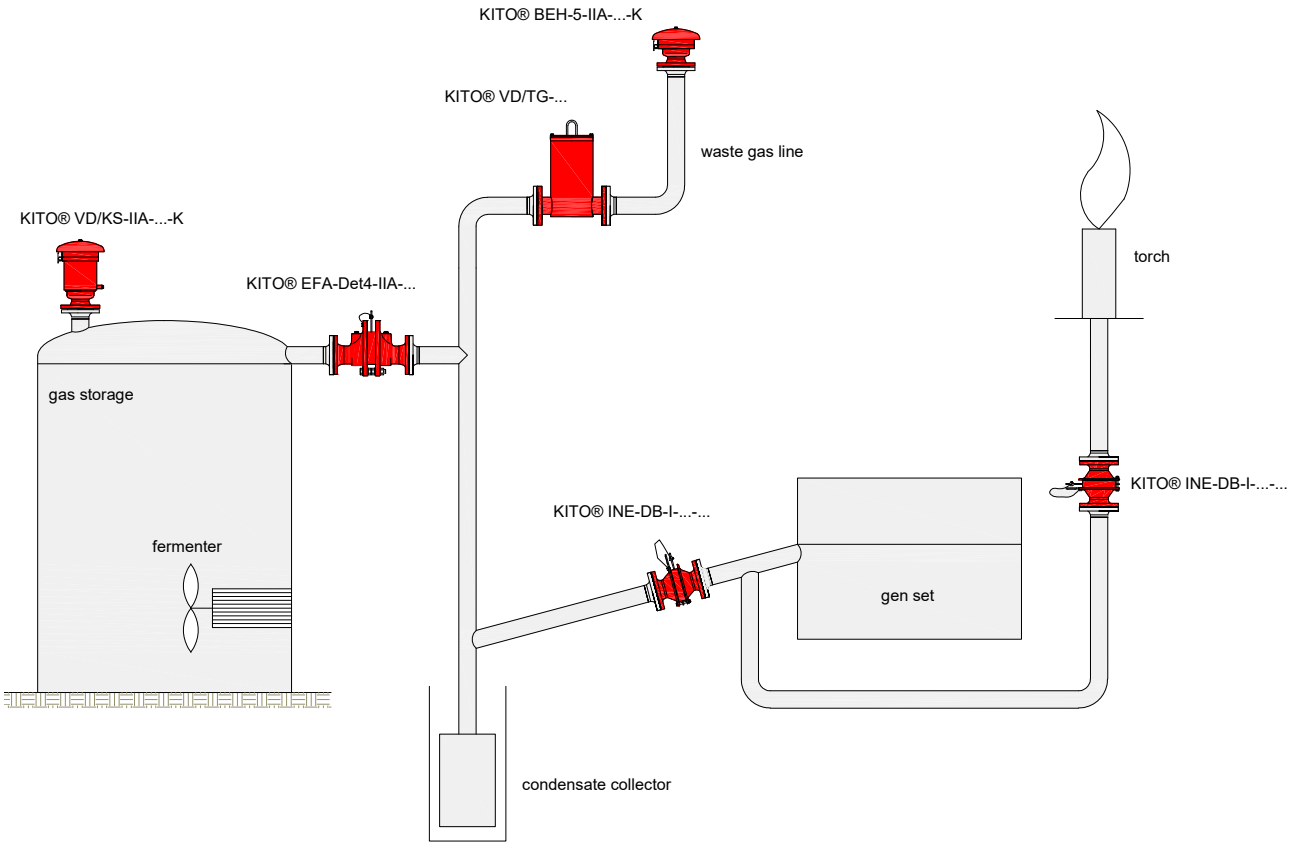
Examples of protection
7. Protection of other plants

7.1 Exemplary protection of a biogas plant



Bi-directional in-line detonation flame arrester, short-time burning proof KITO® EFA-Det4-IIA-…/…-1,2 (G 22 N)

In-line pressure and vacuum relief valve KITO® VD/TG-…(F 31 N)

Deflagration and endurance burning proof ventilation hood KITO® BEH-5-IIA-…-K (B 1 N)

Bi-directional in-line deflagration flame arrester, endurance burning proof KITO® INE-DB-I-…/… (H 32.1 N)

Deflagration and endurance burning proof pressure and vacuum relief valve KITO® VD/KS-IIA-…-A (E 13 N)

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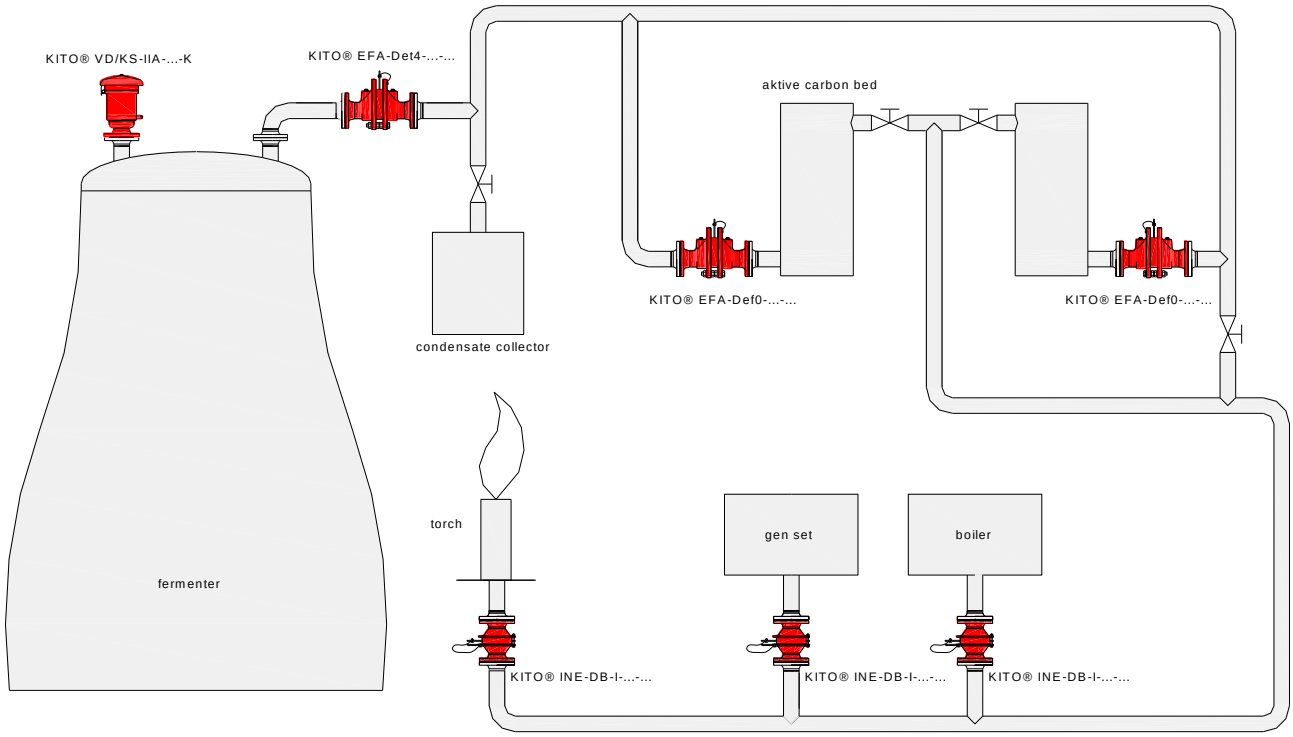
Examples of protection
7. Protection of other plants

7.2 Exemplary protection of a municipal waste water plant



Bi-directional in-line detonation flame arrester, short-time burning proof KITO® EFA-Det4-IIA-…/…-1,2 (G 22 N)

Bi-directional in-line deflagration flame arrester, short-time burning proof KITO® EFA-Def0-I-…/…-1,2 (H 33 N)

Bi-directional in-line deflagration flame arrester, endurance burning proof KITO® INE-DB-I-…/… (H 32.1 N)

Deflagration and endurance burning proof pressure and vacuum relief valve KITO® VD/KS-IIA-…-A (E 13 N)

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Inquiry sheet for KITO® devices

General information	_____		
Company	_____	**Contact person**	_____
Project / inquiry no.	_____	**Projekt title**	_____
Phone number	_____	**Email**	_____

Design data

storage tank / vessel no.	tank construction standard	☐ DIN EN 14015	☐ API 650	☐ API 620
tank construction type	☐ vertical	☐ horizontal	☐ floating roof tank	☐ gas compensation pipe
installation type	☐ aboveground	☐ underground	☐ insulated	☐ under roof
volumetric flow calculation		☐ TRGS 509 (TRbF20)	☐ API 2000 7ed.	☐ ISO 28300
fire case calculation		☐ EN 14015 annex L	☐ API 2000 7ed.	☐ ISO 28300
diameter	m		design pressure	mbarg
height	m		design vaccum	mbarg
installation location			pump rate, filling	m^3/h
insulation thickness	mm		pump rate, discharging	m^3/h
retaining cup height	m		inert gas supply	m^3/h

storage tank or plant					
maximum operational temperature °C		maximum operational pressure mbar		back pressure mbar	
present medium	☐ gaseous		☐ liquid	☐ steam	
components	molecular weight	% Vol	CAS number	flashpoin °C	explosion group

installation	☐ in-line	☐ end-of-line
distance to source of ignition	m	
installation position	☐ vertical	☐ horizontal

application			
☐ pressure	☐ vacuum	☐ pressure/vacuum	
☐ endurance burning proof	☐ short-time burning proof	☐ deflagration proof	☐ detonation proof
temperature monitoring	☐ only one side	☐ both sides	

design data for the device					
connection type	☐ DIN / EN	☐ ASME	☐ JIS	☐ threaded	☐ Tri-Clamp
nominal size DN	nominal pressure PN	volume flow m^3/h	gas density kg/m^3		
set pressure mbarg	set vacuum mbarg	overpressure mbarg	number of pieces		

materials			
housing	KITO®-casing	KITO®-grid	pallet sealing
inspection / documentation			
☐ material certificate	☐ works inspection certificate	☐ miscellaneuos	
special design			
☐ electrical heating	☐ heating jacket	☐ proximity switch	☐ condensate drain device
comment			

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KITO Armaturen GmbH

Standard and special materials for KITO® armatures

Application for housing / cover

DIN / EN-material no.	DIN / EN-designation		ASTM / AISI designation or registered trade name *
1.0038	S235JRG2	unalloyed general structural steel	A 519, A 570, A 668 Gr.A
1.0425	P265GH	unalloyed general structural steel	A 515 Gr.60
1.0460	P250GH	unalloyed forged steel (c-steel)	A 105
1.0570	S355J2+N	unalloyed general structural steel	A 513, A 519, A 572 Gr.50
1.0577	S355J2	unalloyed general structural steel	A 738 Gr.C
1.0619	GP240GH	unalloyed cast steel	A 216
1.1138	GS-21Mn5	cold-tough cast steel	
1.4301	X5CrNi18-10	stainless, austenitic steel	A 182 F304, A 240 Gr.304, A 269 TP304, AISI 304+304H
1.4307	X2CrNi18-9	stainless, austenitic steel	A 182 Gr. F304L, A 240 Gr.304L, A 276 Gr.304L
1.4408	GX5CrNiMo19-11-2	stainless, austenitic cast steel	A 743 CF8M
1.4571	X6CrNiMoTi17-12-2	stainless, austenitic steel	A182 F316Ti, A213 TP316L, A 240 Gr.316Ti, A 276 Gr.316Ti, AISI 316 Ti
1.7219	GS26CrMo4	cold-tough cast steel	
2.4610	NiMo16Cr16 Ti	special alloy	ASTM B574, ASTM B575, ASTM B619, Hastelloy® C-4
2.4686	G-NiMo17Cr	special alloy (cast)	A 494 Hastelloy® C 4
3.2315	AlSi1MgMn	aluminum	
3.2371	G-AlSi6MgTi	cast aluminum alloy	
	PE	polyethylene	
	PP	polypropylene	
	PVDF	polyvinylidene fluoride	

Application for KITO®-casing

DIN / EN-material no.	DIN / EN-designation		ASTM / AISI designation or registered trade name *
1.0038	S235JRG2	unalloyed general structural steel	A 519, A 570, A 668 Gr.A
1.0345	P235GH	unalloyed general structural steel	
1.0460	P250GH	unalloyed forged steel (c-steel)	A 105
1.4301	X5CrNi18-10	stainless, austenitic steel	A 182 F304, A 240 Gr.304, A 269 TP304, AISI 304+304H
1.4308	GX5CrNi19-10	stainless, austenitic cast steel	A 351 CF8A
1.4408	GX5CrNiMo19-11-2	stainless, austenitic cast steel	A 743 CF8M
1.4571	X6CrNiMoTi 17-12-2	stainless, austenitic steel	A182 F316Ti, A213 TP316L, A 240 Gr.316Ti, A 276 Gr.316Ti, AISI 316 Ti
1.4581	GX5CrNiMoNb19-11-2	stainless, austenitic cast steel	A 351 CF8MC
2.4602	NiCr21Mo14W	special alloy	ASTM B574, ASTM B575, ASTM B619, Hastelloy® C-22
2.4610	NiMo16Cr16 Ti	special alloy	ASTM B574, ASTM B575, ASTM B619, Hastelloy® C-4
2.4686	G-NiMo17Cr	special alloy (cast)	Hastelloy® C-4

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Standard and special materials for KITO® armatures

Application for KITO®-grid (grid strap)

DIN / EN-material no.	DIN / EN-designation		ASTM / AISI designation or registered trade name *
1.4016	X6Cr17	stainless, ferritic steel	AISI 430
1.4301	X5CrNi18-10	stainless, austenitic steel	A 182 F304, A 240 Gr.304, A 269 TP304, AISI 304+304H
1.4310	X10CrNi18- 8	stainless, austenitic steel	AISI 301
1.4404	X2CrNiMo17-12-2	stainless, austenitic steel, acid-resistant	A240 Gr.316L, AISI 316L
1.4571	X6CrNiMoTi 17-12-2	stainless, austenitic steel	A182 F316Ti, A213 TP316L, A 240 Gr.316Ti, A 276 Gr.316Ti
2.4360	NiCu30Fe	special alloy	ASTM B164 Monel® 400
2.4600	NiMo29Cr	special alloy	ASTM B335, ASTM B619 Hastelloy® B-3
2.4602	NiCr21Mo14W	special alloy	ASTM B574, ASTM B575, ASTM B619, Hastelloy® C-22
2.4610	NiMo16Cr16 Ti	special alloy	ASTM B574, ASTM B575, ASTM B619, Hastelloy® C-4
Tantal	Tantal	special alloy	ASTM B708

Application for gasket for housing

DIN / EN-material no.	DIN / EN-designation		ASTM / AISI designation or registered trade name *
	1.4571 / graphite	spiral wound gasket from SS316L (1.4571) with graphite filling	
	E-Gyl3504E	EURO- gylon blue 3504E	
	FPM	fluororubber	
	graphite	graphite	
	HD3822	hecker centellen	
	NBR	acrylonitrile-butadiene rubber	
	PTFE	polytetrafluoroethylene	
	VMQ-FEP	silicone, FEP encased (o-ring)	
	VMQ-PFA	silicone, PFA encased (o-ring)	

Application for valve sealing

DIN / EN-material no.	DIN / EN-designation		ASTM / AISI designation or registered trade name *
	FPM	fluororubber	
	EPDM	EPDM rubber	
	FEP	perfluorethylenpropylen	
	NBR	acrylonitrile-butadiene rubber	
	PTFE	polytetrafluoroethylene	

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Standard and special materials for KITO® armatures

Application for fasteners

DIN / EN-material no.	DIN / EN-designation		ASTM / AISI designation or registered trade name *
	A2	stainless, austenitic steel	
	A4	stainless, austenitic steel	
	8.8 verz. / 8 verz.		
	2.4610	special alloy	ASTM B574, ASTM B575, ASTM B619, Hastelloy® C-4
	PEEK	polyetheretherketone	

* Material information according to ASTM / AISI without obligation and only similar and for comparison purposes !

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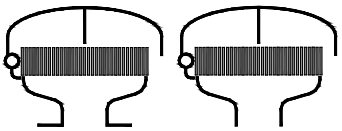
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof ventilation hood

KITO® BEH-4-IIA-...-K

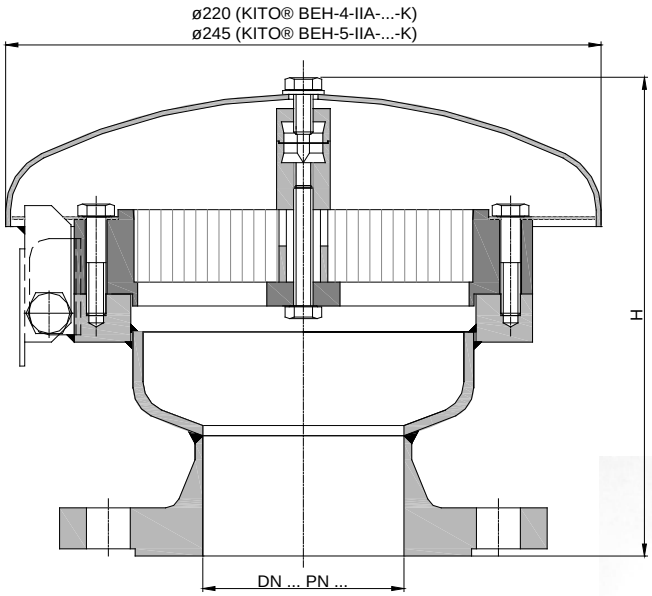
KITO® BEH-5-IIA-...-K

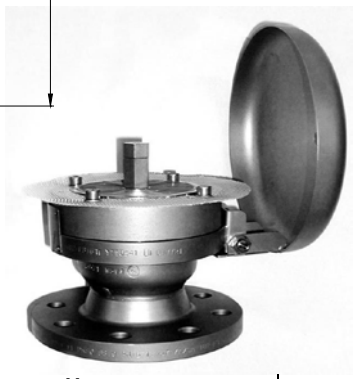


Application

As end of line device for venting connections in tank systems, explosion and endurance burning proof for certain flammable products of explosion group IIA with a maximum experimental safe gap (MESG) > 0.9 mm and an maximum operating temperature of 60 °C. Installation on top of storage tanks, tank access covers or at the end of breather lines. This device is not permitted to be installed in enclosed areas, if it is not ventilated and explosive atmosphere could arise. The end of line device protects against flashback into the tank/pipe. The gases of the storage medium pass unhindered into the atmosphere.

Dimensions (mm)





DN			H		weight (kg)	
DIN	ASME	G	BEH-4-…	BEH-5-…	BEH-4-…	BEH-5-…
25 PN 40	1”	1”	184	-	8.5	-
32 PN 40	1 ¼“	1 ¼“	184	-	9.0	-
40 PN 40	1 ½“	1 ½“	196	-	9.5	-
50 PN 16	2“	2“	189	199	10.0	12.0
65 PN 16	2 ½“	2 ½“	189	200	10.0	14.0
80 PN 16	3“	3“	189	200	11.0	15.0
100 PN 16	4“	4“	-	200	-	15.5

Weight refers to the standard design

Example to order

KITO® BEH-4-IIA-25-K
(design with flange connection DN 25 PN 40)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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B 1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

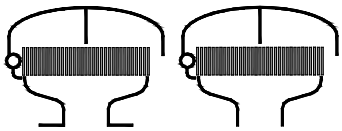
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof ventilation hood

KITO® BEH-4-IIA-...-K

KITO® BEH-5-IIA-...-K



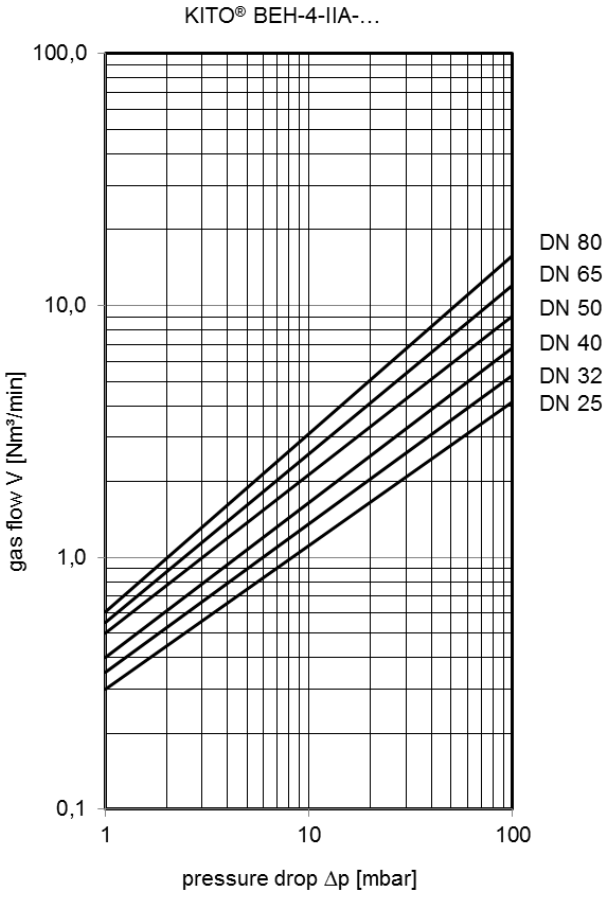
Design

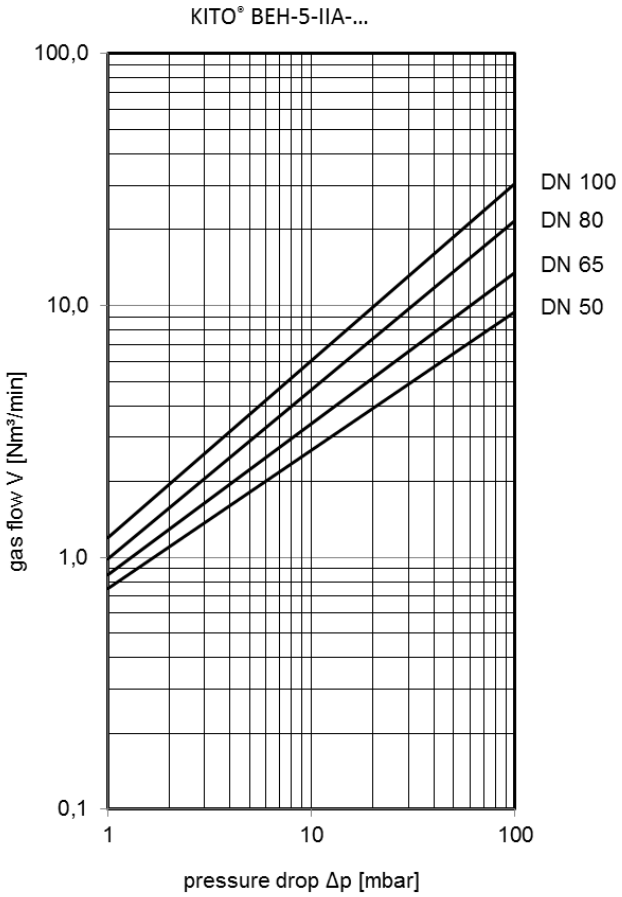
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4308 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element	
protective screen	PA6	
connection	flange EN 1092-1 type B1	flange ASME B16.5 Class 150 RF, threaded format

performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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B 1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

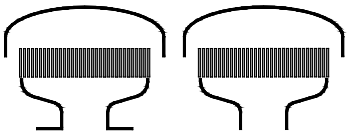
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof ventilation hood

KITO® BEH-4-IIA-...-A

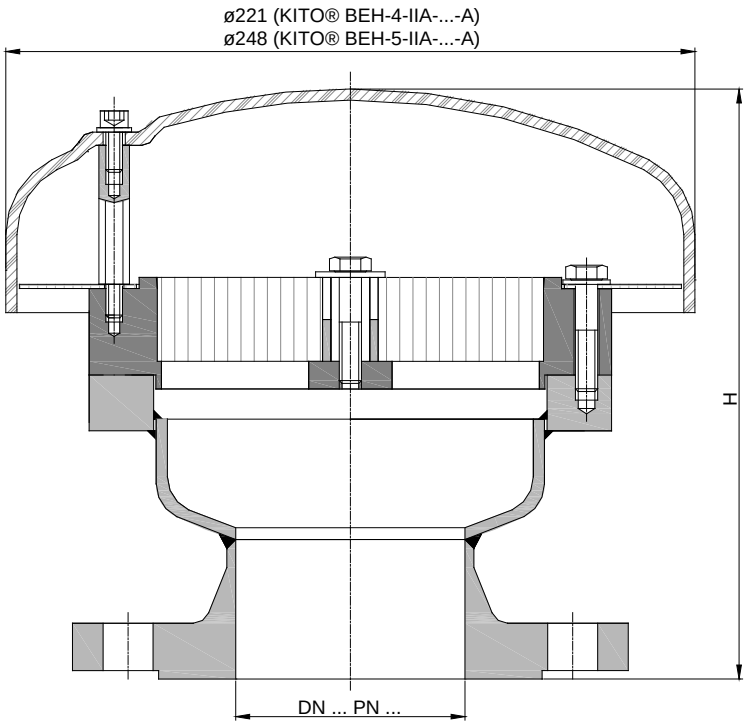
KITO® BEH-5-IIA-...-A

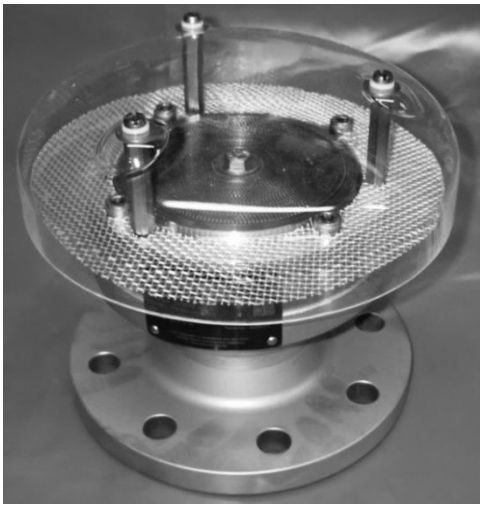


Application

As end of line device for venting connections in tank systems, explosion and endurance burning proof for certain flammable products of explosion group IIA with a maximum experimental safe gap (MESG) > 0.9 mm and an maximum operating temperature of 60 °C. Installation on top of storage tanks, tank access covers or at the end of breather lines. This device is not permitted to be installed in enclosed areas, if it is not ventilated and explosive atmosphere could arise. The end of line device protects against flashback into the tank/pipe. The gases of the storage medium pass unhindered into the atmosphere.

Dimensions (mm)





DN			H		weight (kg)	
DIN	ASME	G	BEH-4-…	BEH-5-…	BEH-4-…	BEH-5-…
25 PN 40	1”	1”	195	-	7.5	-
32 PN 40	1 ¼“	1 ¼“	195	-	8.0	-
40 PN 40	1 ½“	1 ½“	196	-	8.5	-
50 PN 16	2“	2“	196	210	9.0	11.0
65 PN 16	2 ½“	2 ½“	197	220	9.0	13.0
80 PN 16	3“	3“	197	220	10.0	14.0
100 PN 16	4“	4“	-	220	-	14.5

Weight refers to the standard design

Example to order

KITO® BEH-4-IIA-25-A
(design with flange connection DN 25 PN 40)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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B 1.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

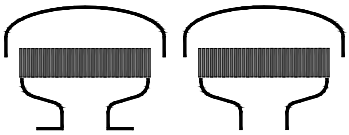
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof ventilation hood

KITO® BEH-4-IIA-...-A

KITO® BEH-5-IIA-...-A



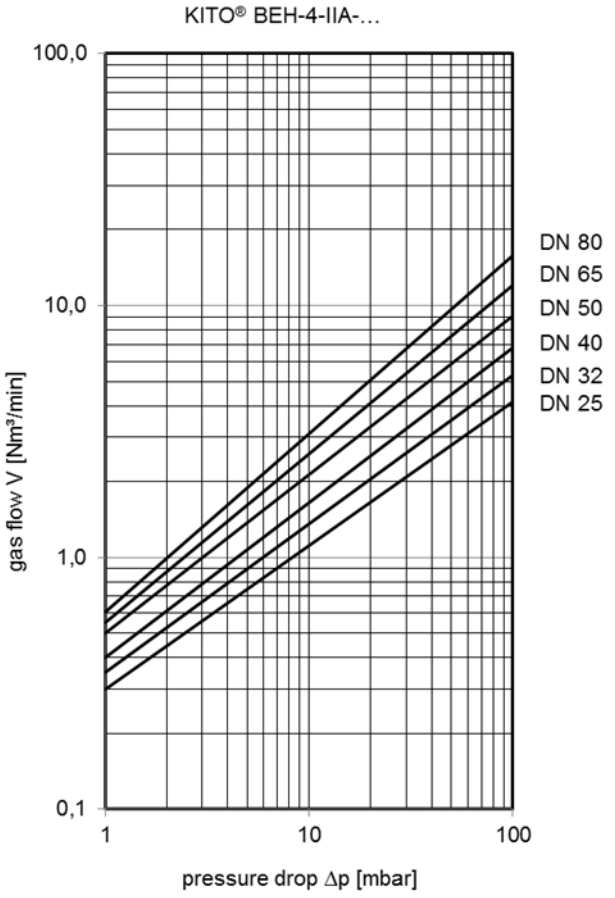
Design

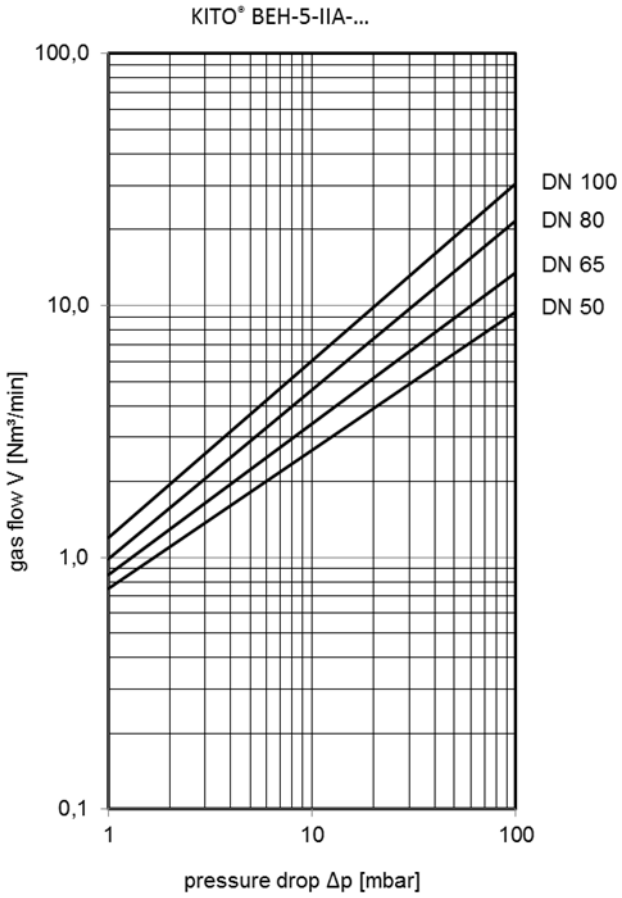
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4308 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood	PMMA	
protective screen	PA6	
connection	flange EN 1092-1 type B1	flange ASME B16.5 Class 150 RF, threaded format

performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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B 1.1 N
Date: 05-2018
Created: Abt. Doku KITO

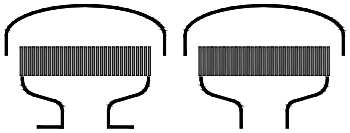
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof ventilation hood

KITO® AEH-4-IIA-…

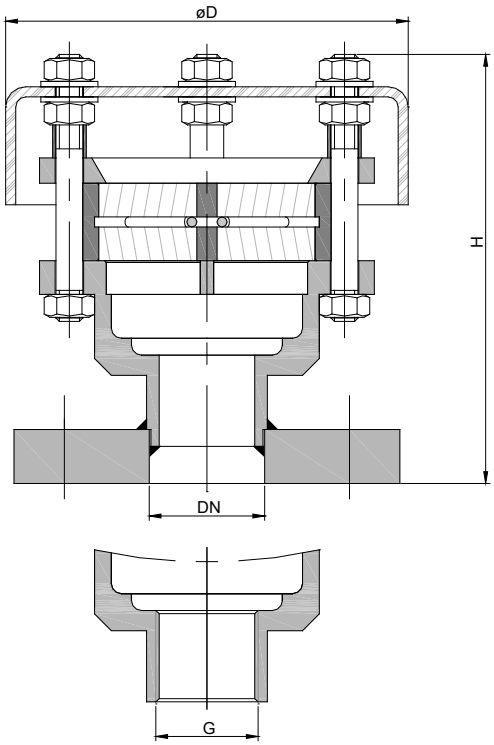
KITO® AEH-5-IIA-…

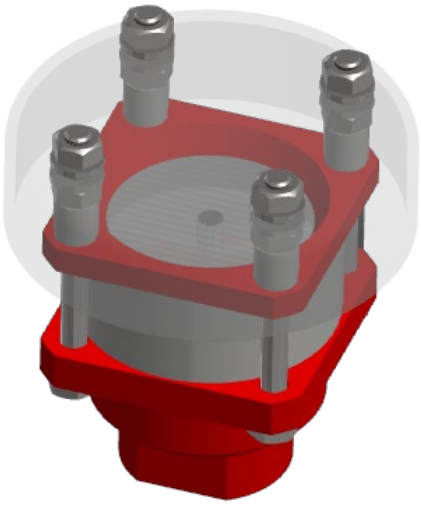


Application

As breather/venting safety device incorporating an explosion and endurance burning flame arrester element for installation on top of storage tanks, tank access covers or breather lines. The breather allows the unimpeded flow of gases out to atmosphere and air into the tank/pipe thereby preventing vacuum locks whilst ensuring provision of a permanent and reliable protection against any flashback into the tank/pipe. This device is not permitted to be installed in enclosed areas. Approved for all materials of the explosion group IIA with a maximum experimental safe gap (MESG) > 0.9 mm and an maximum operating temperature of 60 °C.

Dimensions (mm)





type	G	DN DIN	ASME	D	H *(DIN, ASME)*	H *(G)*	kg
AEH-4-IIA-…	**G ½“**	**15 PN 40**	**½“**	90	~110	96	1.0
	G ¾“	**20 PN 40**	**¾“**				1.0
AEH-5-IIA-…	**G 1“**	**25 PN 40**	**1“**	120	~130	112	1.5
	G 1 ¼“	**32 PN 40**	**1 ¼“**				1.5

Weight refers to the standard design

Example for order

KITO® AEH-4-IIA-20
(design with flange connection DN 20 PN 40)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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B 2 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

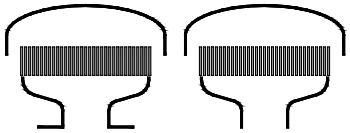
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof ventilation hood

KITO® AEH-4-IIA-…

KITO® AEH-5-IIA-…



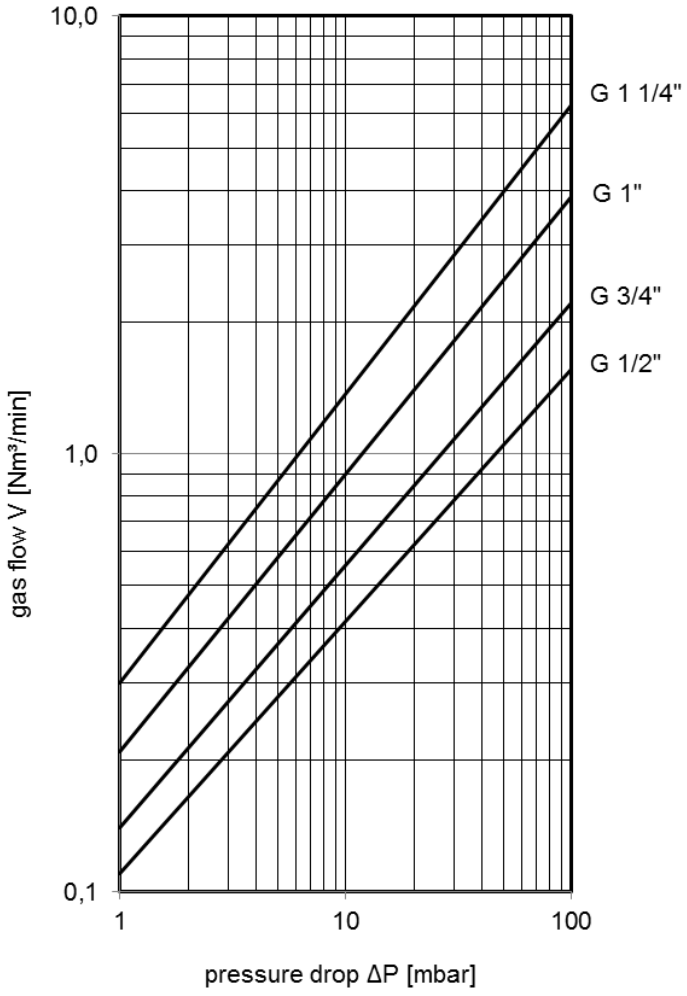
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	stainless steel mat. no. 1.4571	
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
weather hood	PMMA	
connection	threaded format	flange EN 1092-1 type A, flange ASME B16.5 Class 150 RF

performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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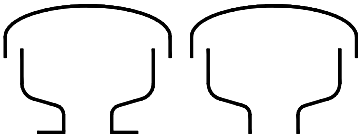
B 2 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Ventilation hood
KITO® Rh/o-…

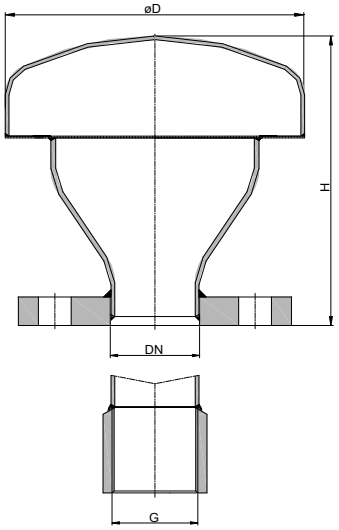


Application

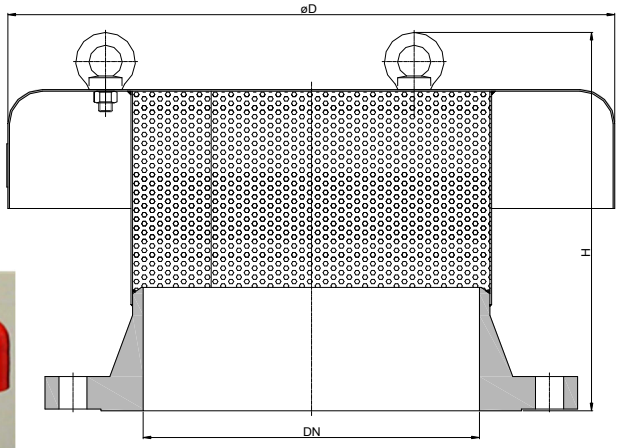
As a hooded breather/venting device to protect the storage tanks contents from contamination by the elements and extraneous objects whilst still allowing for the unimpeded flow of gases out to atmosphere and air into the tank/pipe thereby preventing vacuum locks.
This device does not incorporate a KITO® flame arrester.

Dimensions (mm)

Design DN 25-150



Design DN 200-600



DIN	DN ASME	G	D	H	kg
25 PN 40	1“	1“	89	113	1.8
32 PN 40	1 ¼“	1 ¼“	114	136	2.8
40 PN 40	1 ½“	1 ½“	159	150	5.0
50 PN 16	2“	2“	159	150	5.4
65 PN 16	2 ½“	2 ½“	194	180	6.1
80 PN 16	3“	3“	194	188	6.9
100 PN 16	4“	4“	245	216	9.0
125 PN 16	5“	5“	300	227	13.6
150 PN 16	6“	6“	300	227	14.8
200 PN 10	8“	-	406	300	13.8
250 PN 10	10“	-	550	338	
300 PN 10	12“	-	550	350	20.4
350 PN 10	14“	-			
400 PN 10	16“	-	600	344	40.0
500 PN 10	20“	-	715	480	
600 PN 10	24“		1040	682	

Weight refers to the standard design

Example for order

KITO® Rh/o-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

"
"

"

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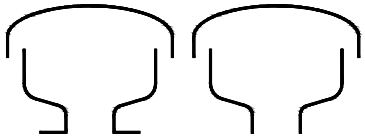
B 3 N
Date: 07-2022
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Ventilation hood
KITO® Rh/o-…



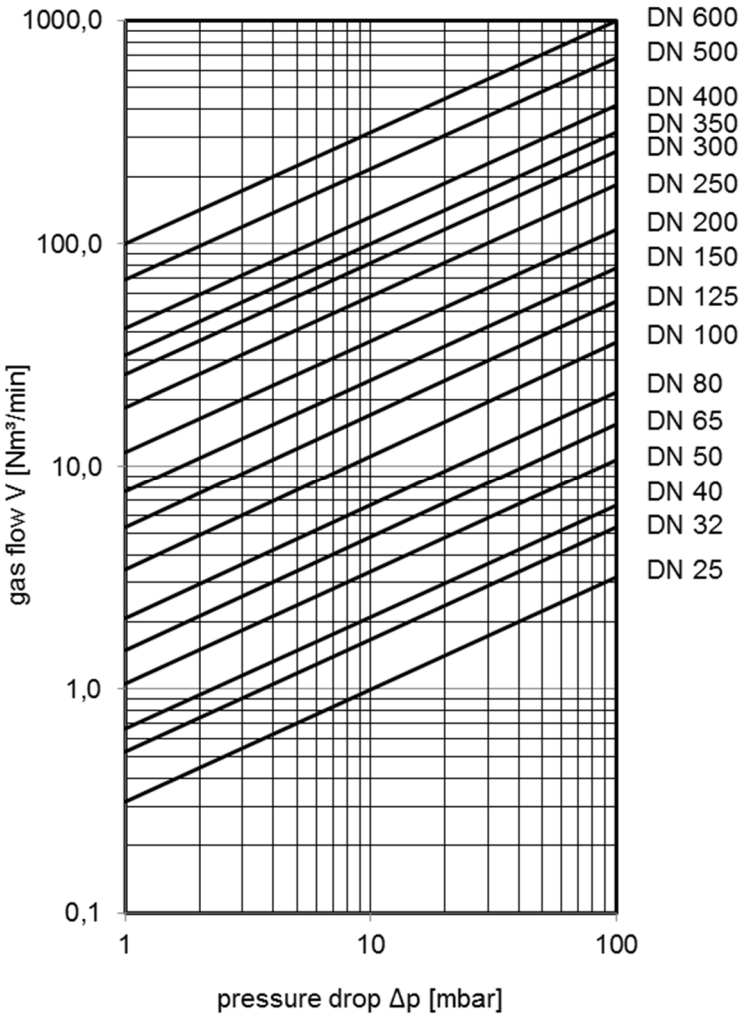
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
weather hood	steel (≥ DN 200 stainless steel)	stainless steel
protective screen	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
connection	flange EN 1092-1 (DN 25-150 type A DN 200-600 type B1)	flange ASME B16.5 Class 150 RF, threaded format

performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof ventilation hood

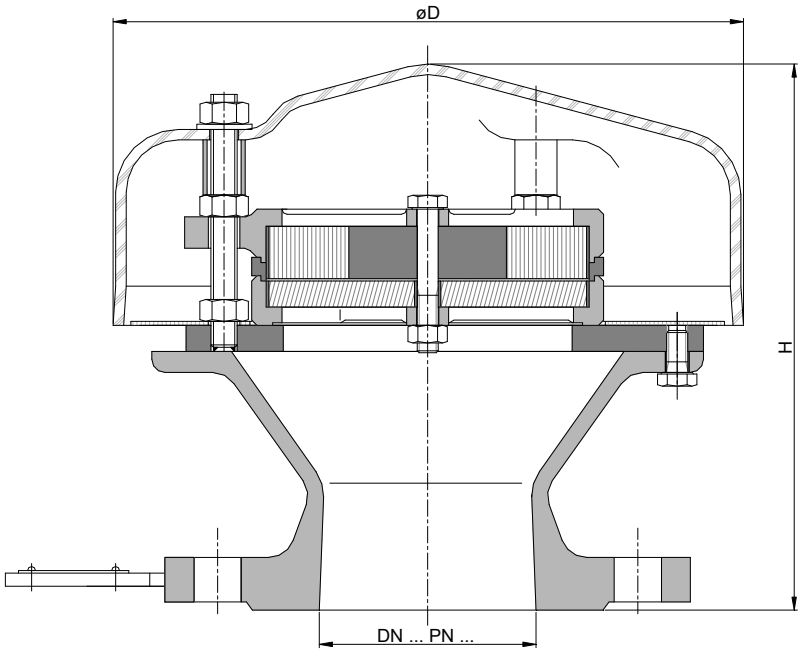
KITO® BEH-3-...-IIB1

Application

As an end-of-line flame arrester to protect vent openings of storage tanks. Explosion and endurance burning proof for all inflammable liquids and vapors of explosion group IIB1 and also for alcohols with a maximum experimental safe gap (MESG) ≥ 0.85 mm and an maximum operating temperature of 60 °C. This device is not permitted to be installed in enclosed areas. Installation on top of storage tanks, tank access covers or breather pipelines. The flame arrester protects a tank against flashbacks but allows the flow of gases out into the atmo-sphere and air into the tank.

With additional examination and approval, applicable also for alcohols (ethanol, methanol...)

Dimensions (mm)



DN		D	H	kg
DIN	ASME			
50 PN 16	**2“**	240	200	9
65 PN 16	**2 ½“**		209	
80 PN 16	**3“**			12

Weight refers to the standard design

Example for order

KITO® BEH-3-50-IIB1
(design with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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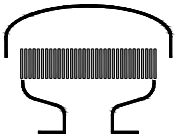
B 4 N
Date: 01-2019
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof ventilation hood

KITO® BEH-3-...-IIB1



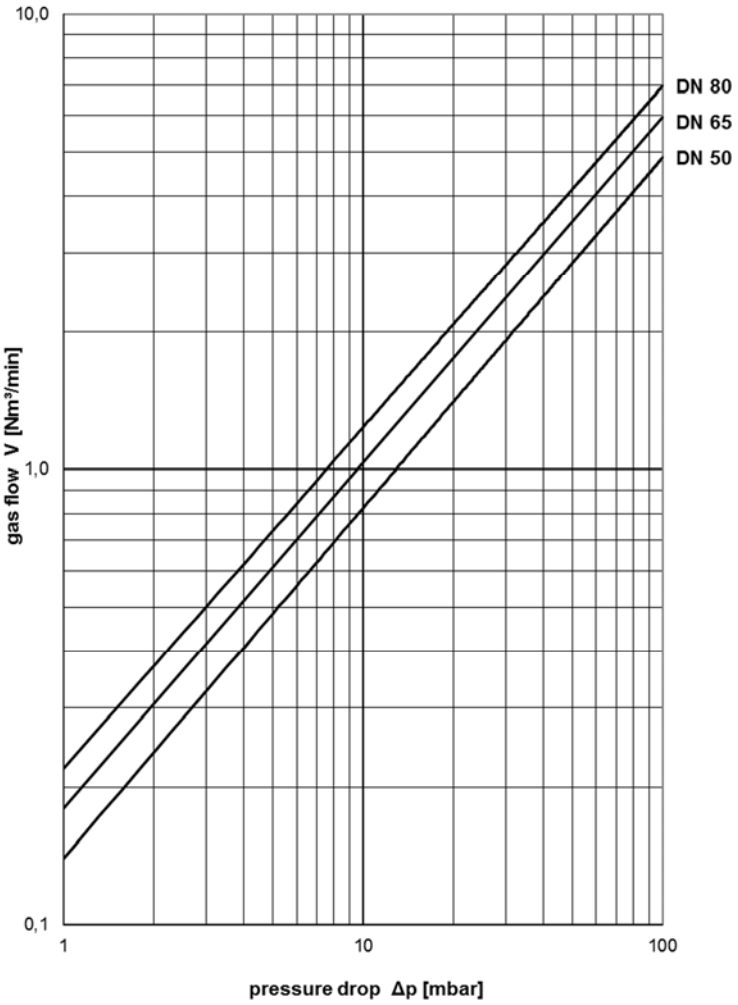
Design

	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4408 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood	PMMA	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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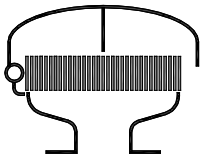
Date: 01-2019
Created: Abt. Doku KITO

KITO Armaturen GmbH

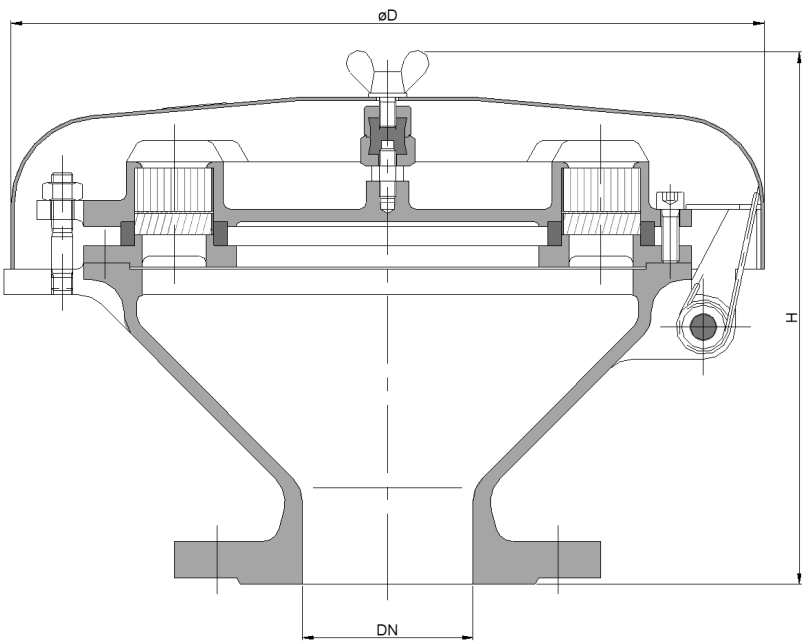
Type sheet
Deflagration and endurance burning proof ventilation hood
KITO® BEH-6-IIB3-…-K

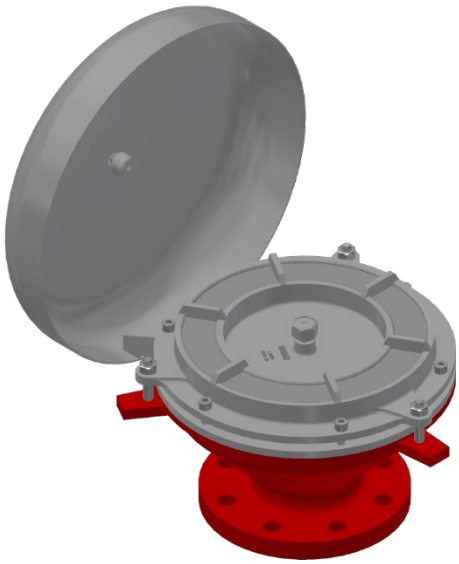


Application

As an end-of-line flame arrester to protect vent openings of storage tanks. Explosion and endurance burning proof for all inflammable liquids and vapors of explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C. This device is not permitted to be installed in enclosed areas. Installation on top of storage tanks, tank access covers or breather pipelines. The flame arrester protects a tank against flashbacks but allows the flow of gases out into the atmo-sphere and air into the tank.

Dimensions (mm)





DN		D	H	kg
DIN	ASME			
80 PN 16	-	353	250	23
100 PN 16	-			24

Weight refers to the standard design

Example for order

KITO® BEH-6-IIB3-80-K
(design with flange connection DN 80 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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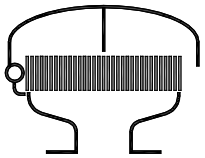
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof ventilation hood

KITO® BEH-6-IIB3-…-K



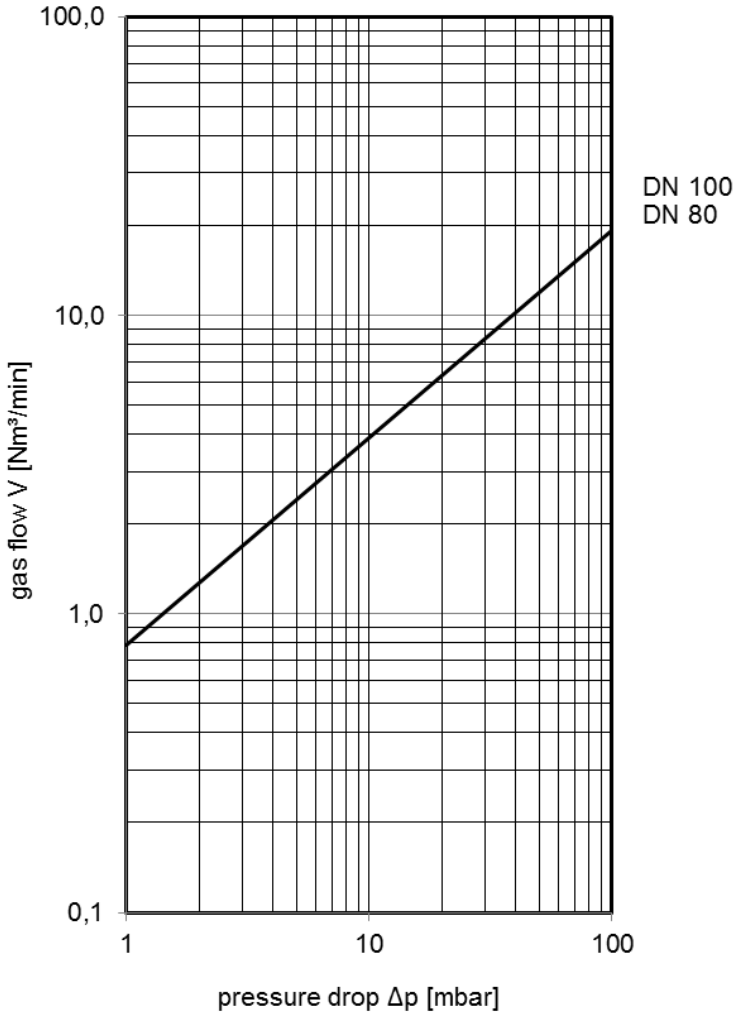
Design

	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4308 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood	steel, hood can fold automatically as a result of folding mechanism and fusing element	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element
connection	flange EN 1092-1 type B1	

performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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B 4.1 N
Date: 01-2020
Created: Abt. Doku KITO
Design subject to change

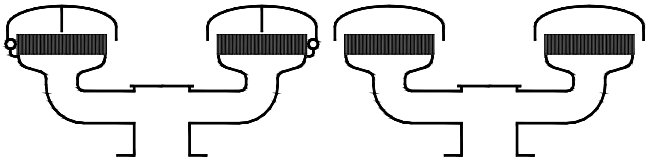
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof ventilation hood

KITO® BEH/M-IIA-…-A

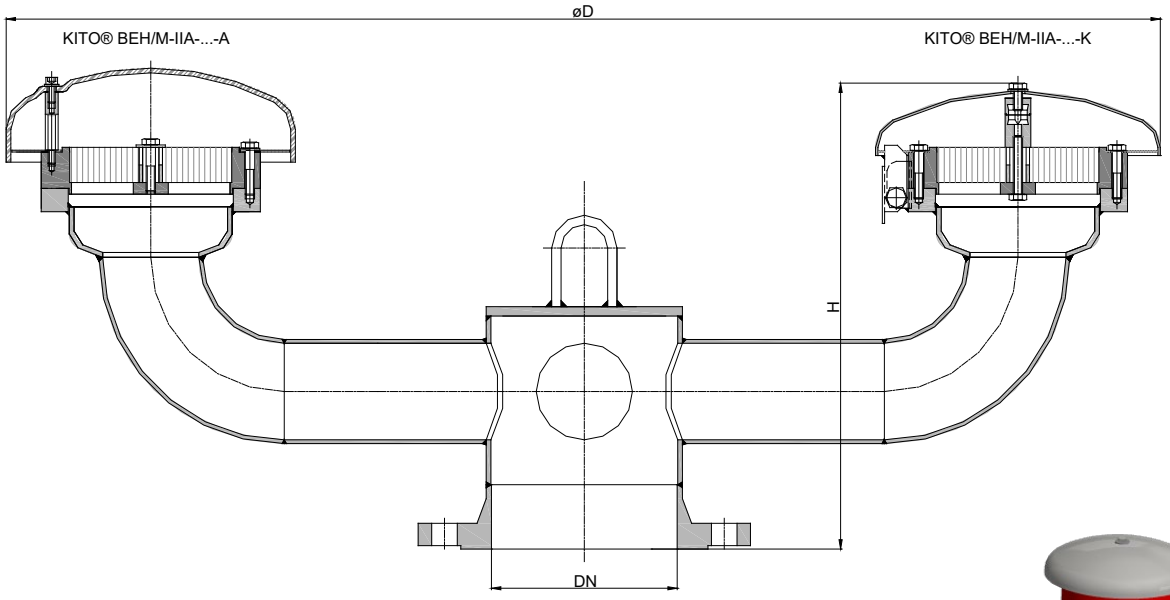
KITO® BEH/M-IIA-…-K

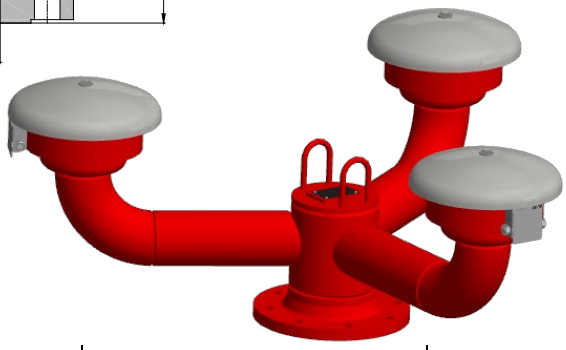


Application

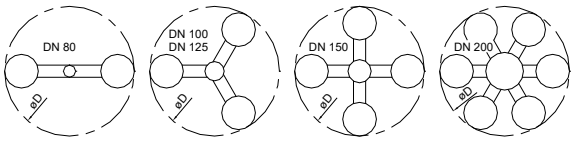
As breather/venting safety device incorporating an explosion and endurance burning flame arrester for installation on storage tanks containing particular categories of inflammable liquids providing for reliable and safe operation whilst ensuring protection against any possible flashback. Approved for all materials of the explosion group IIA with a maximum experimental safe gap (MESG) > 0.9 mm and an maximum operating temperature of 60 °C.

Dimensions (mm)





Arrangement of the KITO® flame arrester elements



DN DIN	DN ASME	D	H	number of KITO® flame arrester elements	kg
80 PN 16	**3“**	940	390	2	28
100 PN 16	**4“**	1054	400	3	45
125 PN 16	**5“**	1054	400	3	48
150 PN 16	**6“**	1234	400	4	59
200 PN 10	**8“**	1634	415	6	99

Weight refers to the standard design

Example for order

KITO® BEH/M-IIA-80-K
(design with weather hood from 1.4571 and flange connection DN 80 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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B 5.8 N
Date: 08-2018
Created: Abt. Doku KITO
Design subject to change

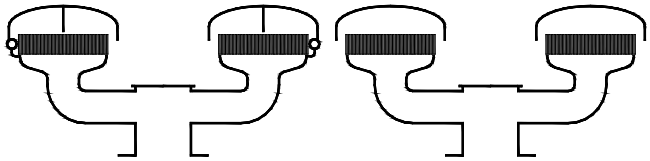
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof ventilation hood

KITO® BEH/M-IIA-…-A

KITO® BEH/M-IIA-…-K



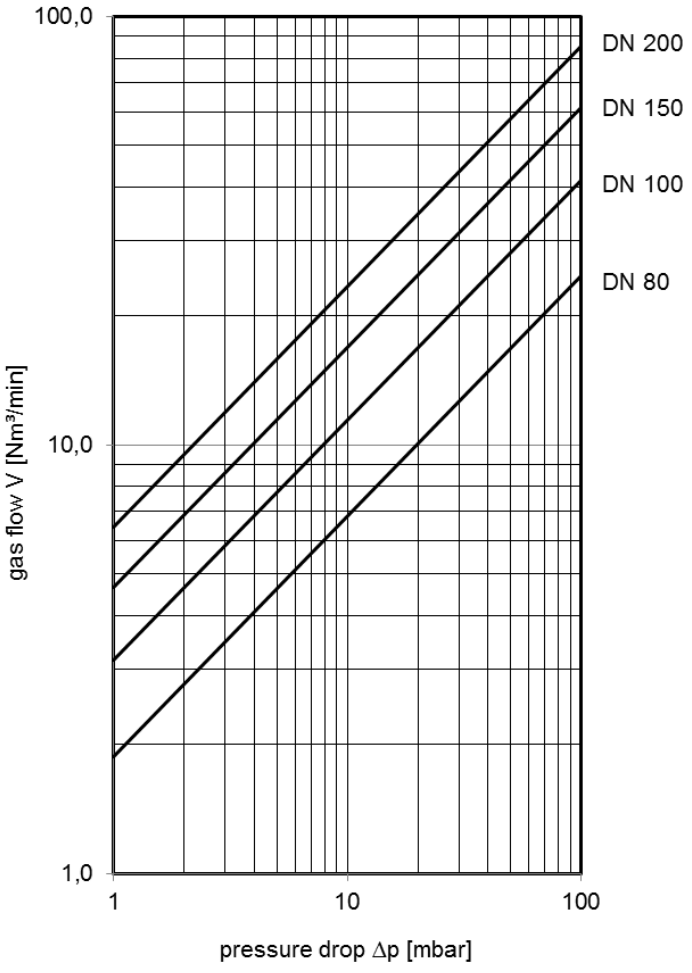
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4308 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood **KITO® BEH/M-IIA-…-A**	PMMA	
weather hood **KITO® BEH/M-IIA-…-K**	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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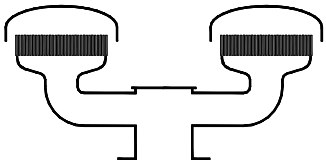
Date: 08-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof ventilation hood

KITO® BEH/M-IIB1-…

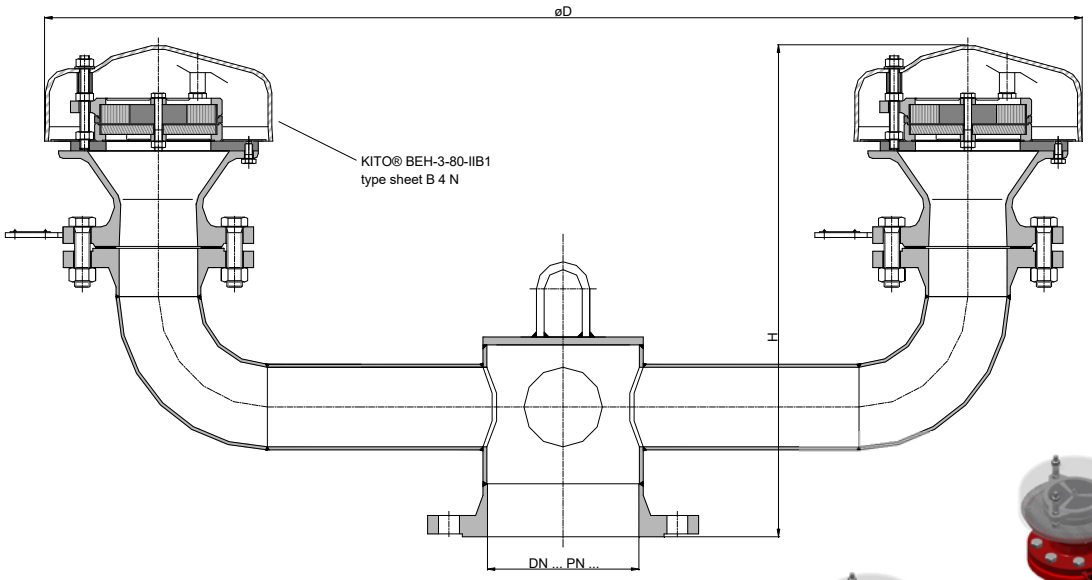


Application

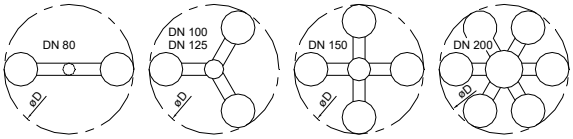
As an end-of-line flame arrester element to protect vent openings of storage tanks. Explosion and endurance burning proof for all inflammable liquids and vapors of explosion group IIB1 with a maximum experimental safe gap (MESG) ≥ 0.85 mm and an maximum operating temperature of 60 °C and also for alcohols. This device is not permitted to be installed in enclosed areas. Installation on top of storage tanks, tank access covers or breather pipes. The flame arrester protects a tank against flashbacks but allows the flow of gases out into the atmosphere and air into the tank.

With additional examination and approval, applicable also for alcohols (ethanol, methanol...)

Dimensions (mm)



Arrangement of the KITO® flame arrester elements



DN DIN	DN ASME	D	H	number of KITO® BEH-3-80-IIB1	kg
80 PN 16	**3“**	855	505	2	28
100 PN 16	**4“**	950	515	3	45
125 PN 16	**5“**	950	515	3	
150 PN 16	**6“**	1110	515	4	59
200 PN 10	**8“**	1470	530	6	99

Weight refers to the standard design

Example for order

KITO® BEH/M-IIB1-80
(design with flange connection DN 80 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU for KITO® BEH-3-80-IIB1

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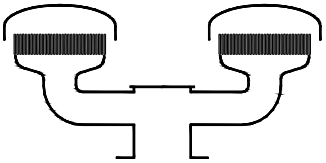
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof ventilation hood

KITO® BEH/M-IIB1-…



Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
housing KITO® BEH-3-80-IIB1	cast steel 1.0619	stainless cast steel 1.4408
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4408 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood	PMMA	
protective screen	PA 6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

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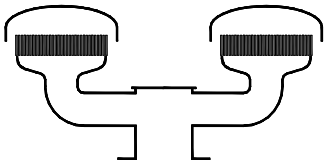
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof ventilation hood

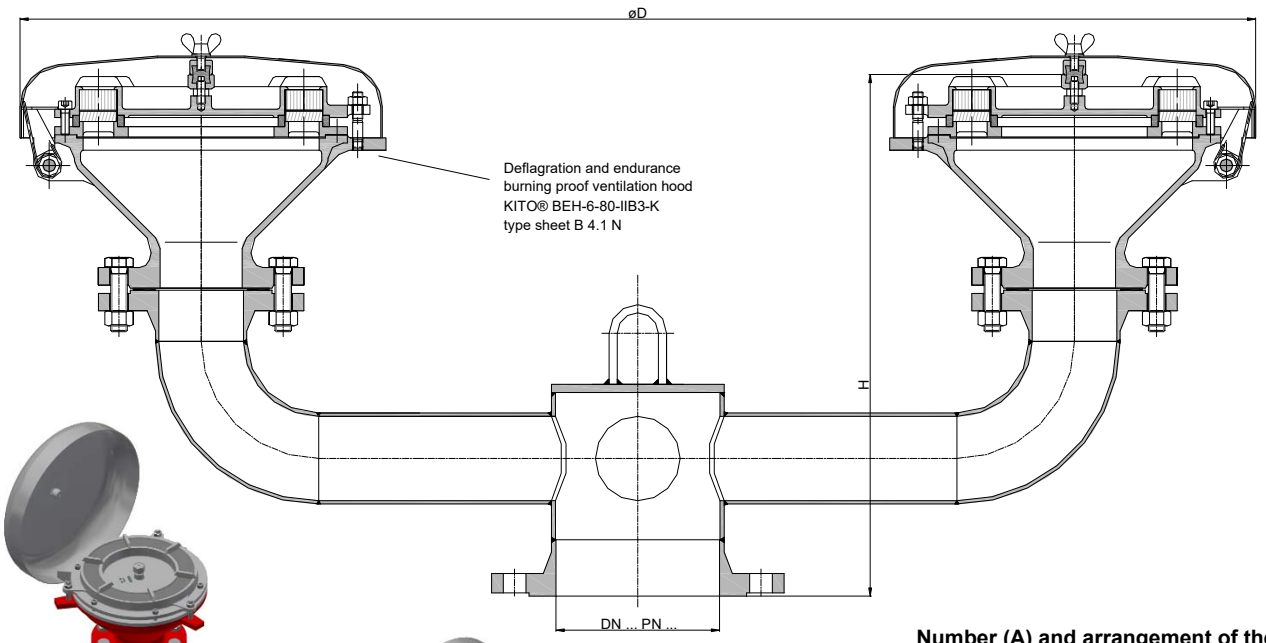
KITO® BEH/M-IIB3-…

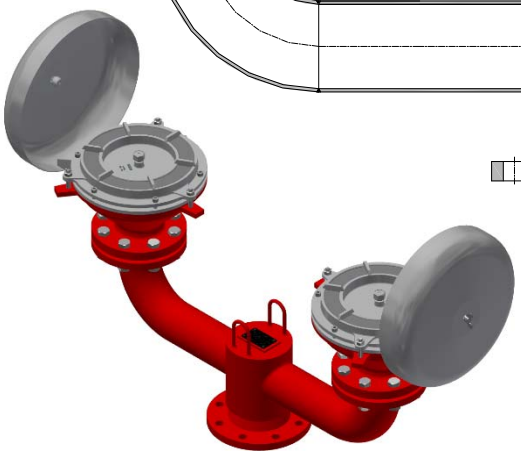


Application

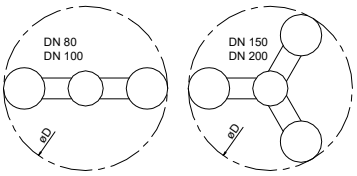
As an end-of-line flame arrester element to protect vent openings of storage tanks. Explosion and endurance burning proof for all inflammable liquids and vapors of explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C and also for alcohols. This device is not permitted to be installed in enclosed areas. Installation on top of storage tanks, tank access covers or breather pipes. The flame arrester protects a tank against flashbacks but allows the flow of gases out into the atmosphere and air into the tank.

Dimensions (mm)





Number (A) and arrangement of the KITO® BEH-6-80-IIB3-K



DN		D	H	A	kg
DIN	ASME				
80 PN 16	3“	1538	550	2	
100 PN 16	4“		550		
150 PN 16	6“	1723	550	3	
200 PN 10	8“		565		

Weight refers to the standard design

Example for order

KITO® BEH/M-IIB3-80
(design with flange connection DN 80 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU for KITO® BEH-3-80-IIB1

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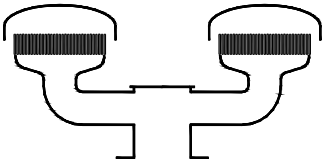
Date: 10-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Deflagration and endurance burning proof ventilation hood
KITO® BEH/M-IIB3-…



Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
housing KITO® BEH-6-80-IIB3-K	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4408 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood	steel, hood can fold automatically as a result of folding mechanism and fusing element	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

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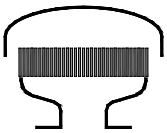
Date: 10-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

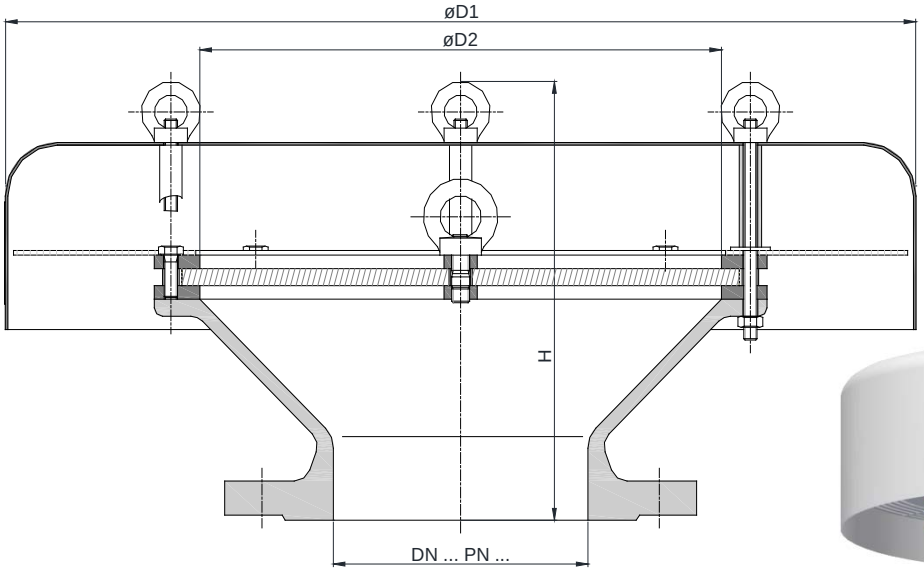
Type sheet
Deflagration proof ventilation hood
KITO® VH-...-IIB3



Application

As breather/venting safety device incorporating an explosion proof flame arrester element for installation on top of storage tanks, tank access covers or breather pipes. The breather allows the unimpeded flow of gases out to atmosphere and air into the tank/pipe thereby preventing vacuum locks whilst ensuring provision of a permanent and reliable protection against any flashback into the tank/pipe. This device is not permitted to be installed in enclosed areas. Approved for all materials of the explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C .

Dimensions (mm)



DN DIN	DN ASME	D1	D2	H		kg
50 PN 16	2“	285	110	170		7.3
80 PN 16	3“	330	150	180		11
100 PN 16	4“	405	185	220		15
150 PN 16	6“	550	315	260		29.9
200 PN 10	8“					31.5
250 PN 10	10“	600	395	355		62.5
300 PN 10	12“			350	396	62
350 PN 10	14“	800	595	405	464	88
400 PN 10	16“			400	455	103
450 PN 10	18”	1000	700	-	489	
500 PN 10	20“			415	485	130
600 PN 10	24“	1200	800	485	558	192
700 PN 10	-	1400	1000	520	-	265
800 PN 10	-	1600	1210	560	-	345

Weight refers to the standard design

Example for order

KITO® VH-300-IIB3
(design with flange connection DN 300 PN 10)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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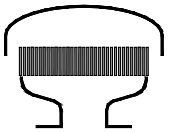
B 6 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Deflagration proof ventilation hood
KITO® VH-...-IIB3



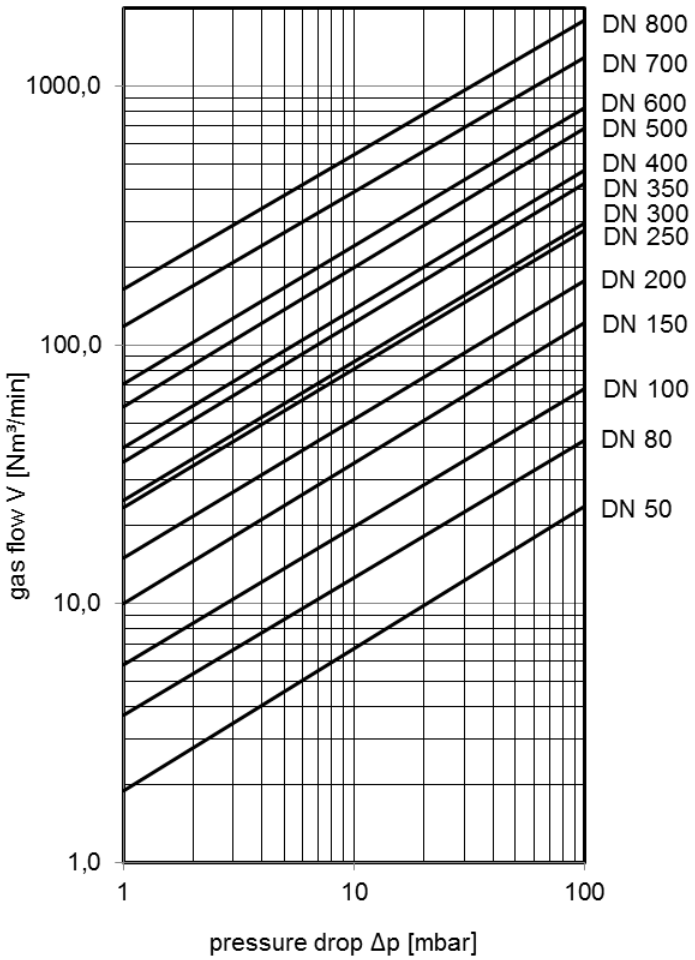
Design

	standard	optionally
housing	cast steel 1.0619 (≥ DN 350 steel)	stainless cast steel 1.4408 (≥ DN 350 stainless steel mat. no. 1.4571)
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel	stainless steel mat. no. 1.4571
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
protective screen *(not for DN 50-100)*	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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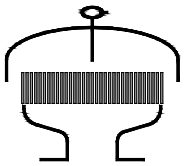
B 6 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and short-time burning proof ventilation hood

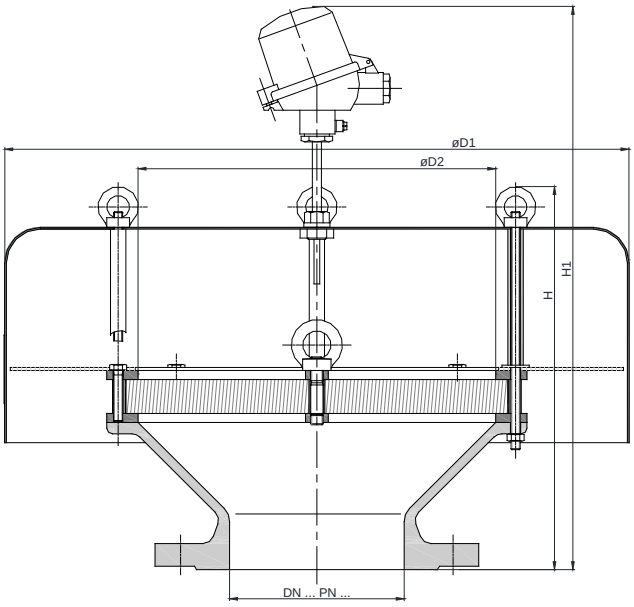
KITO® VH-...-IIB3-T

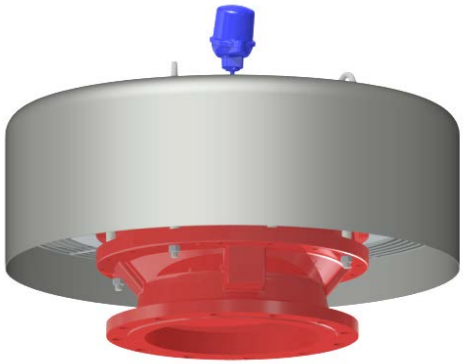


Application

As breather/venting safety device incorporating an explosion and short-time burn proof flame arrester element for installation on top of storage tanks, tank access covers or breather pipes. The breather allows the unimpeded flow of gases out to atmosphere and air into the tank/pipe thereby preventing vacuum locks whilst ensuring provision of a permanent and reliable protection against any flashback into the tank/pipe. This device is not permitted to be installed in enclosed areas. Approved for all materials of the explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C. Design with temperature sensor, to detect a “stabilized burning” (burn time 1 minute).

Dimensions (mm)





DN DIN	DN ASME	D1	D2	H		H1		kg
50 PN 16	**2“**	285	110	214		390		8.5
80 PN 16	**3“**	295	150	242		430		14.5
100 PN 16	**4“**	350	185	297		454		20
150 PN 16	**6“**	600	315	342		500		41
200 PN 10	**8“**							45
250 PN 10	**10“**	800	395	474		614		84
300 PN 10	**12“**			462	509	604	651	81
350 PN 10	**14“**	1000	595	507	567	649	709	136
400 PN 10	**16“**			502	558	644	700	152
450 PN 10	**18“**	1200	700	-	611	-	753	
500 PN 10	**20“**			537	607	679	749	188
600 PN 10	**24“**		800	660	734	803	876	253
700 PN 10	**-**	1500	1000	691	-	834	-	376
800 PN 10	**-**	1700	1210	734	-	876	-	495

Weight refers to the standard design

Example for order

KITO® VH-300-IIB3-T
(design with flange connection DN 300 PN 10 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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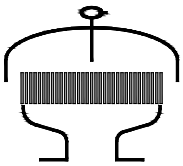
Type sheet
Deflagration and short-time burning proof ventilation hood
KITO® VH-...-IIB3-T



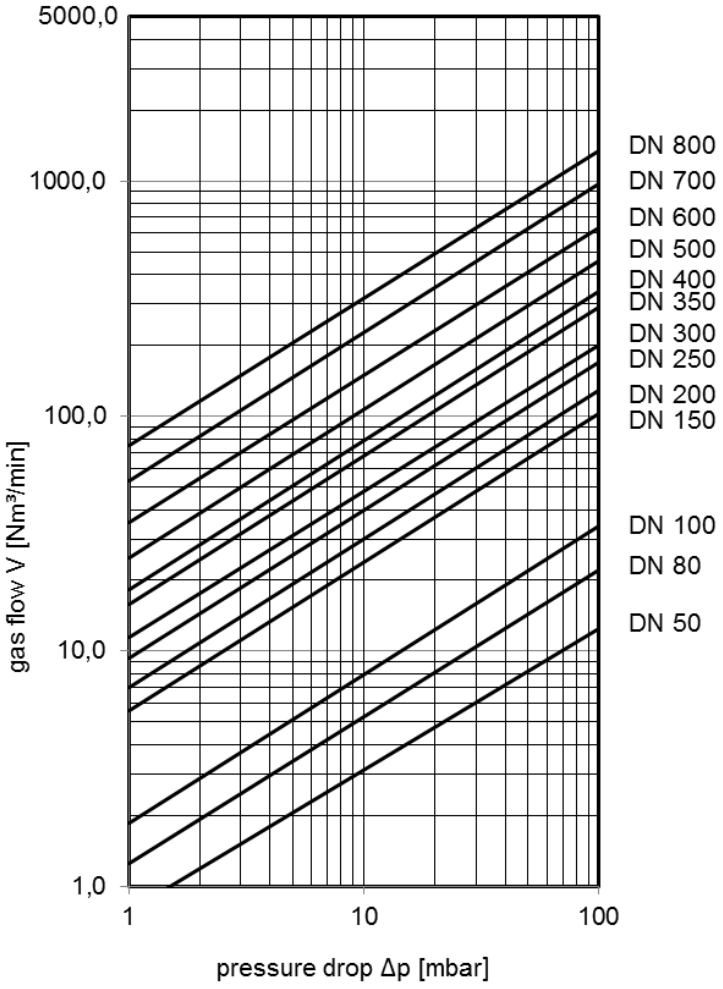
Design

	standard	optionally
housing	cast steel 1.0619 (≥ DN 350 steel)	stainless cast steel 1.4408 (≥ DN 350 stainless steel mat. no. 1.4571)
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel	stainless steel mat. no. 1.4571
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
protective screen	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
temperature sensor	PT 100, connection 3/8“, 1.4571	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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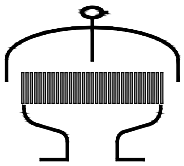
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet

Deflagration and short-time burning proof ventilation hood

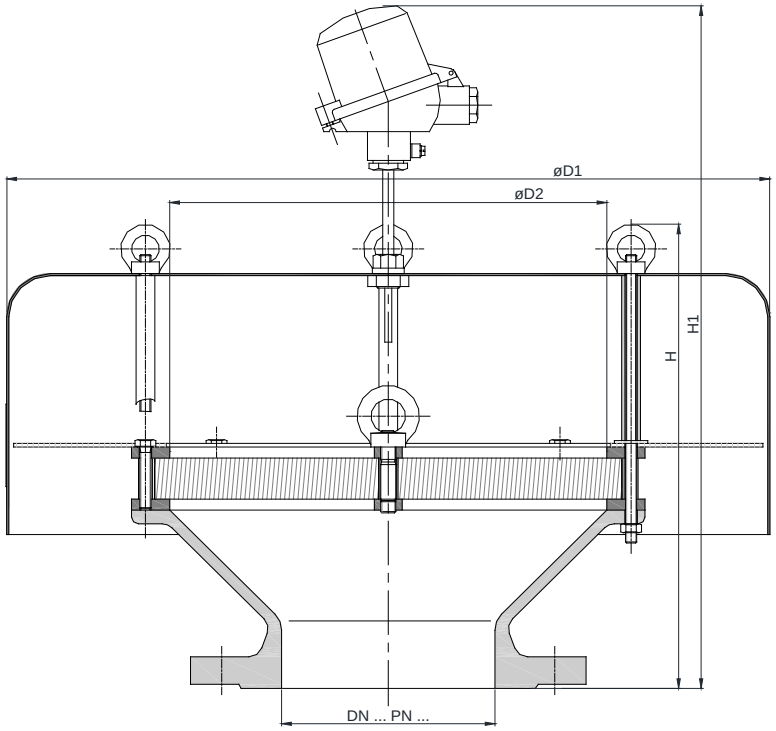
KITO® VH-...-IIB3-XT

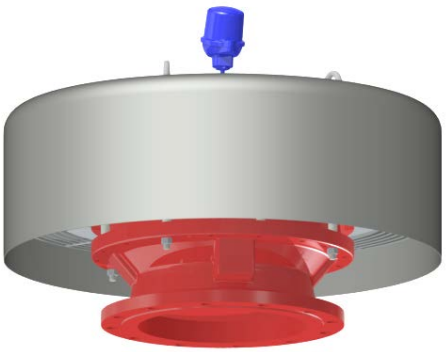


Application

End-of-line venting device incorporating an explosion and short-time burn proof flame arrester element for installation on storage tanks. Suitable to protect flammable products of explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm up to a maximum operating temperature of 180 °C. This device is not permitted to be installed in enclosed areas. Installation on top of storage tanks, tank access covers or at the end of breather pipes. It prevent a flashback into the tank and allows the inbreathing and out breathing of the tank. Design with temperature sensor, to detect a “stabilized burning” (burn time 1 minute).

Dimensions (mm)





DN DIN	DN ASME	D1	D2	H		H1		kg
50 PN 16	2“	285	110	214		390		8.5
80 PN 16	3“	295	150	242		430		14.5
100 PN 16	4“	350	185	297		454		20
150 PN 16	6“	600	315	342		500		41
200 PN 10	8“							45
250 PN 10	10“	800	395	474		614		84
300 PN 10	12“			462	509	604	651	81
350 PN 10	14“	1000	595	507	567	649	709	136
400 PN 10	16“							

Weight refers to the standard design

Example for order

KITO® VH-300-IIB3-XT
(design with flange connection DN 300 PN 10 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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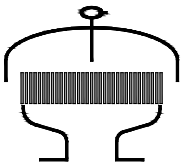
KITO Armaturen GmbH

Type sheet

Deflagration and short-time burning proof ventilation hood

KITO® VH-...-IIB3-XT



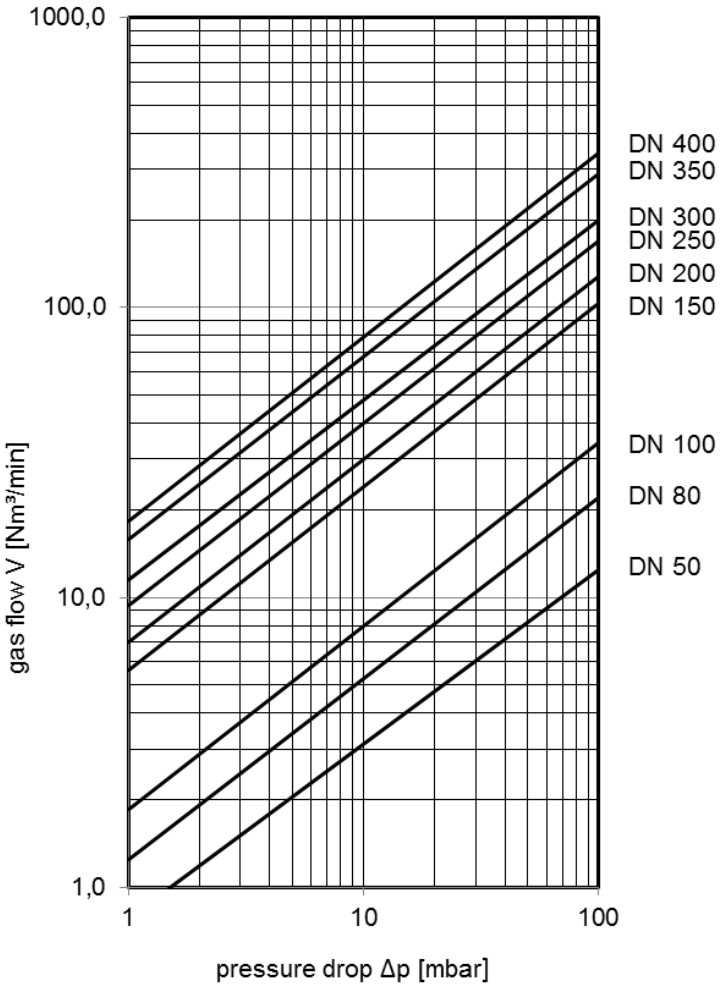
Design

	standard	optionally
housing	cast steel 1.0619 (≥ DN 350 steel)	stainless cast steel 1.4408 (≥ DN 350 stainless steel mat. no. 1.4571)
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel	stainless steel mat. no. 1.4571
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
protective screen	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
temperature sensor	PT 100, connection 3/8“, 1.4571	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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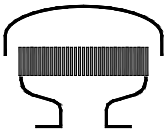
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

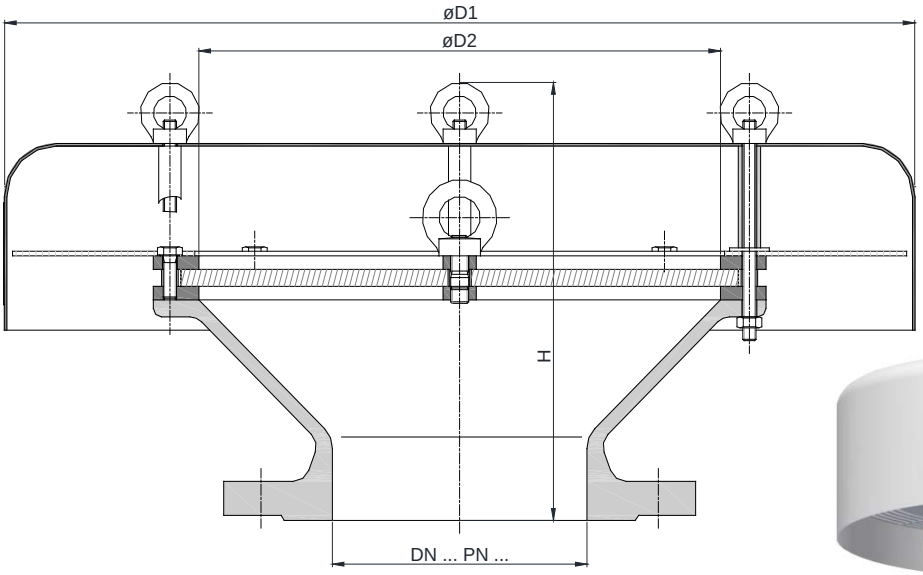
Type sheet
Deflagration proof ventilation hood
KITO® VH-...-IIC



Application

As breather/venting safety device incorporating an explosion proof flame arrester element for installation on top of storage tanks, tank access covers or breather pipes. The breather allows the unimpeded flow of gases out to atmosphere and air into the tank/pipe thereby preventing vacuum locks whilst ensuring provision of a permanent and reliable protection against any flashback into the tank/pipe. This device is not permitted to be installed in enclosed areas. Approved for all materials of the explosion group IIC with a maximum experimental safe gap (MESG) < 0.5 mm and an maximum operating temperature of 60 °C.

Dimensions (mm)



DN DIN	DN ASME	D1	D2	H		kg
50 PN 16	2“	285	110	180		8
80 PN 16	3“	330	150	190		13
100 PN 16	4“	405	185	230		18
150 PN 16	6“	550	315	270		36
200 PN 10	8“					40
250 PN 10	10“	600	395	365		74
300 PN 10	12“			360	406	73
350 PN 10	14“	800	595	415	474	112
400 PN 10	16“			410	465	127
450 PN 10	18”	1000	700	-	499	
500 PN 10	20“			425	495	173
600 PN 10	24“	1200	800	495	568	250
700 PN 10	-	1400	1000	530	-	348
800 PN 10	-	1600	1210	570	-	457

Weight refers to the standard design

Example for order

KITO® VH-300-IIC
(design with flange connection DN 300 PN 10)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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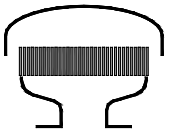
KITO Armaturen GmbH

Type sheet
Deflagration proof ventilation hood
KITO® VH-...-IIC



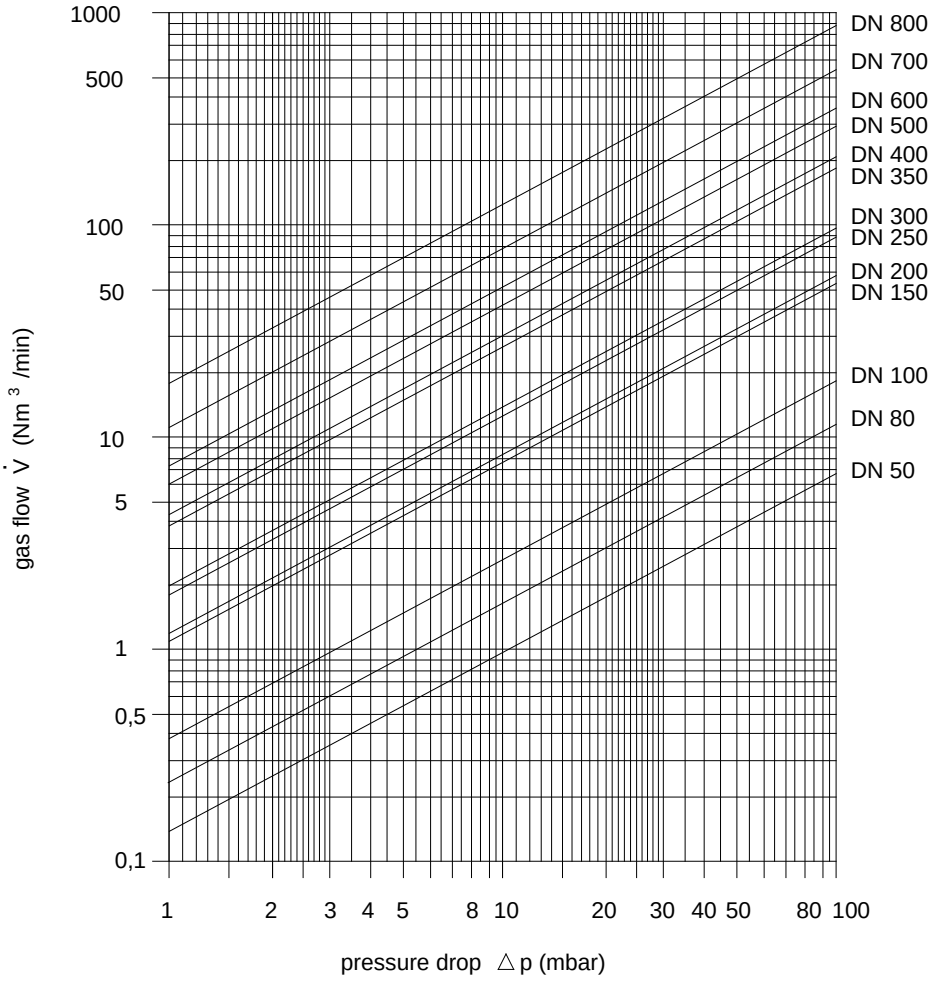
Design

	standard	optionally
housing	cast steel 1.0619 (≥ DN 350 steel)	stainless cast steel 1.4408 (≥ DN 350 stainless steel mat. no. 1.4571)
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel	stainless steel mat. no. 1.4571
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
protective screen *(not for DN 50-100)*	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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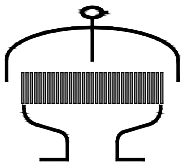
KITO Armaturen GmbH

Type sheet

Deflagration and short-time burning proof ventilation hood

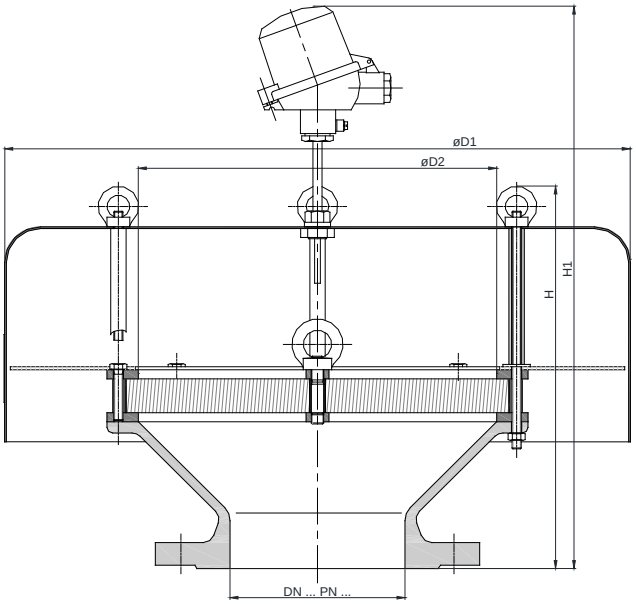
KITO® VH-...-IIC-T

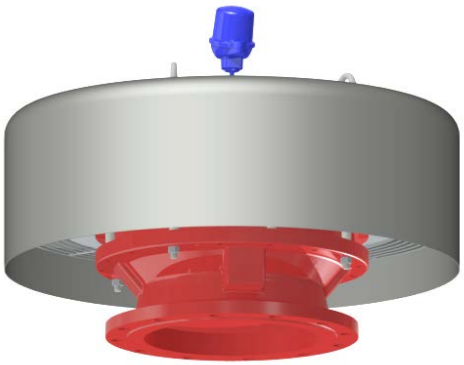


Application

As breather/venting safety device incorporating an explosion and short-time burn proof flame arrester element for installation on top of storage tanks, tank access covers or breather pipes. The breather allows the unimpeded flow of gases out to atmosphere and air into the tank/pipe thereby preventing vacuum locks whilst ensuring provision of a permanent and reliable protection against any flashback into the tank/pipe. This device is not permitted to be installed in enclosed areas. Approved for all materials of the explosion group IIC with a maximum experimental safe gap (MESG) < 0.5 mm and an maximum operating temperature of 60 °C. Design with temperature sensor, to detect a “stabilized burning” (burn time 1 minute).

Dimensions (mm)





DN DIN	DN ASME	D1	D2	H		H1		kg
50 PN 16	**2“**	285	110	225		410		10
80 PN 16	**3“**	295	150	254		438		18
100 PN 16	**4“**	350	185	316		474		25
150 PN 16	**6“**	600	315	366		524		54
200 PN 10	**8“**							57
250 PN 10	**10“**	800	395	487		629		105
300 PN 10	**12“**			482	529	624	671	105
350 PN 10	**14“**	1000	595	527	587	669	729	182
400 PN 10	**16“**			522	578	664	720	197
450 PN 10	**18“**	1200	700	-	631	-	773	
500 PN 10	**20“**			557	627	699	769	259
600 PN 10	**24“**		800	680	754	823	896	346
700 PN 10	**-**	1500	1000	711	-	854	-	500
800 PN 10	**-**	1700	1210	754	-	896	-	668

Weight refers to the standard design

Example for order

KITO® VH-300-IIC-T
(design with flange connection DN 300 PN 10 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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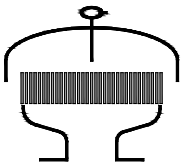
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and short-time burning proof ventilation hood

KITO® VH-...-IIC-T



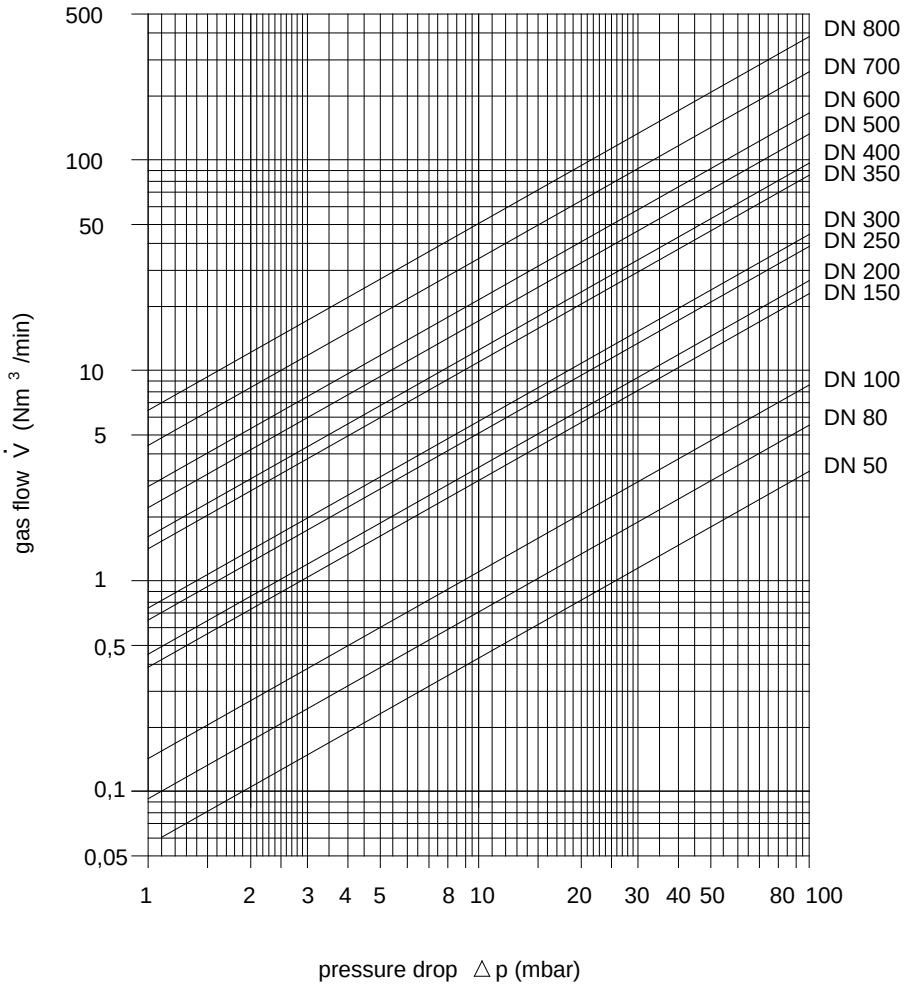
Design

	standard	optionally
housing	cast steel 1.0619 (≥ DN 350 steel)	stainless cast steel 1.4408 (≥ DN 350 stainless steel mat. no. 1.4571)
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel	stainless steel mat. no. 1.4571
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
protective screen	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
temperature sensor	PT 100, connection 3/8“, 1.4571	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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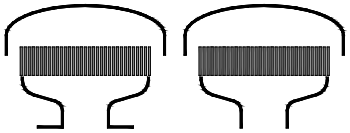
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

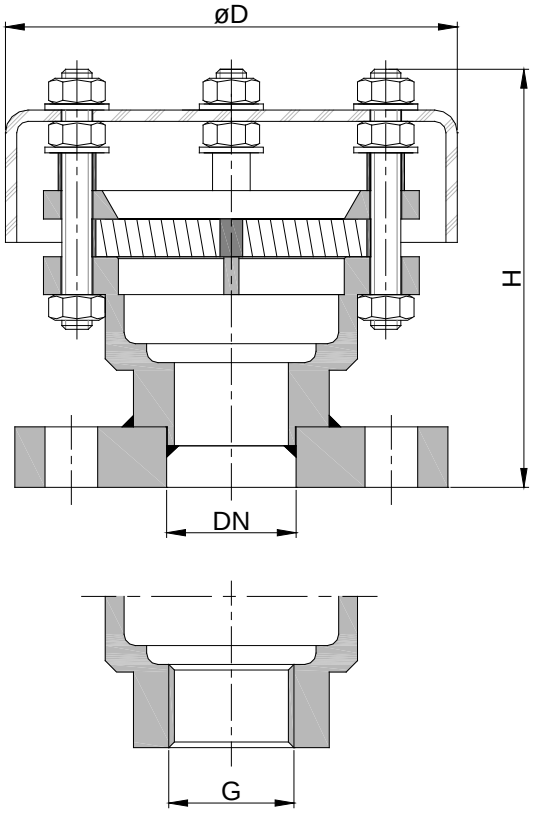
Type sheet
Deflagration proof ventilation hood
KITO® VEH-4-IIB3-…
KITO® VEH-5-IIB3-…



Application

As breather/venting safety device for small tank facilities, explosion proof for flammable fluids of explosion group IIB3 with a gap width (NSW) ≥ 0.65 mm and an maximum operating temperature of 60 °C. This device is not permitted to be installed in enclosed areas. Structure on storage tanks, tank covers or at the end of ventilation pipes. The end armature prevents passage of flame into the tank. The gases enter the storage medium unimpeded into the atmosphere.

Dimensions (mm)



Type	G	DN DIN	ASME	D	H *(DIN, ASME)*	H *(G)*	kg
VEH-4-IIB3-…	**G ½“**	15 PN 40	½“	90	~100	86	0.6
	G ¾“	20 PN 40	¾“				0.6
VEH-5-IIB3-…	**G 1“**	25 PN 40	1“	120	~116	100	1.0
	G 1 ¼“	32 PN 40	1 ¼“				1.0

Weight refers to the standard design

Example for order

KITO® VEH-4-IIB3-20
(design with flange connection DN 20 PN 40)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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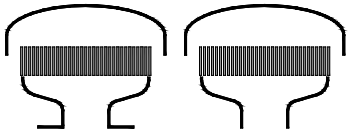
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Deflagration proof ventilation hood
KITO® VEH-4-IIB3-…
KITO® VEH-5-IIB3-…



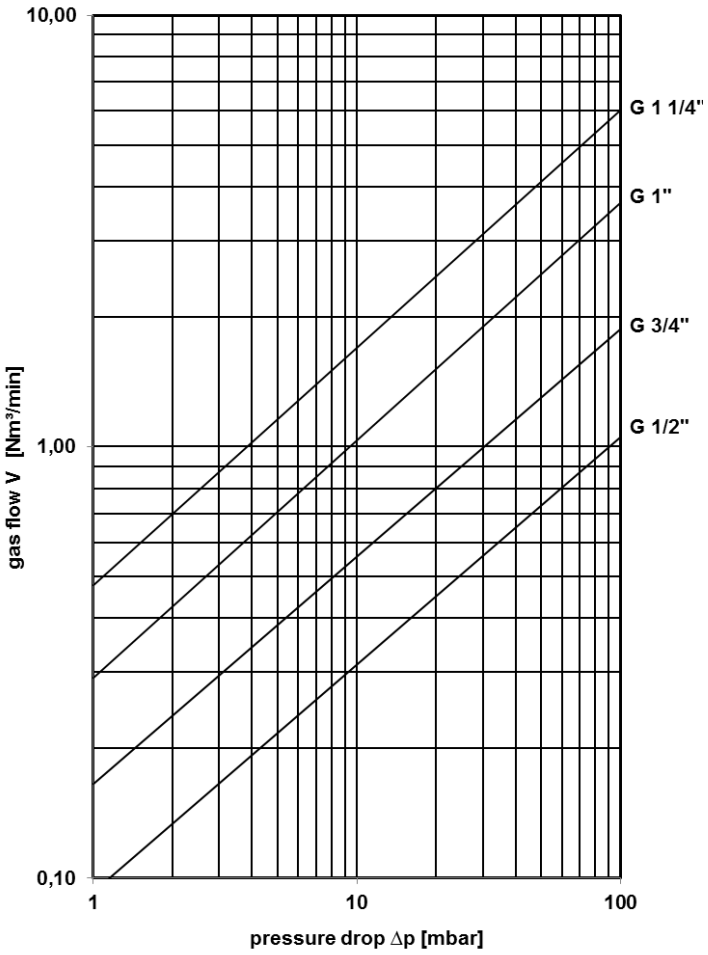
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
KITO®-flame arrester element	completely interchangeable	
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
weather hood	PMMA	
connection	threaded format	flange EN 1092-1 type A, flange ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \qquad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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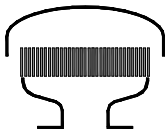
KITO Armaturen GmbH

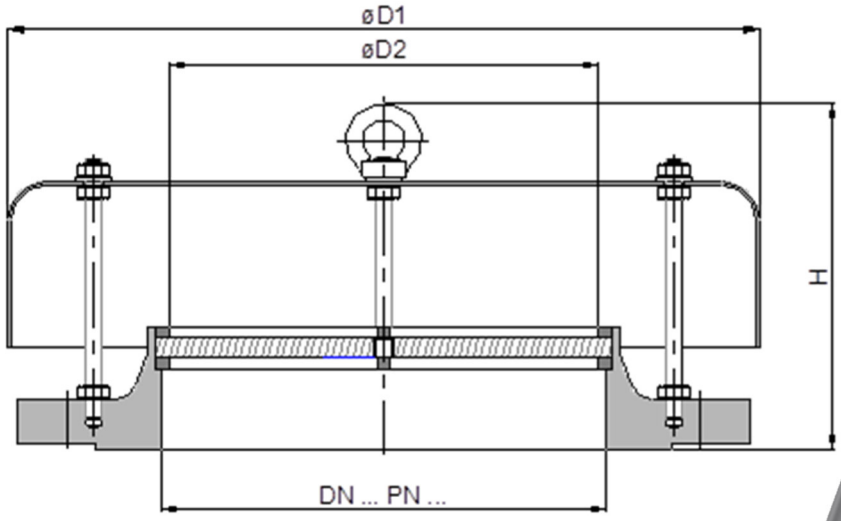
Type sheet
Deflagration proof ventilation hood
KITO® VND-…-IIB3



Application

As breather/venting safety device incorporating an explosion proof flame arrester element for installation on top of storage tanks, tank access covers or breather pipes. The breather allows the unimpeded flow of gases out to atmosphere and air into the tank/pipe thereby preventing vacuum locks whilst ensuring provision of a permanent and reliable protection against any flashback into the tank/pipe. This device is not permitted to be installed in enclosed areas. Approved for all materials of the explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 and an maximum operating temperature of 60 °C.

Dimensions (mm)



DN		D1	D2	H (DIN)	H (ASME)	kg
DIN	ASME					
25 PN 40	1”	200	26	111	128	2,0
32 PN 40	1 ¼”	200	33	111	129	2,3
40 PN 40	1 ½”	200	39	120	135	2,5
50 PN 16	2“	205	46	121	142	3,2
65 PN 16	2 ½”	246	62	116	125	3,7
80 PN 16	3“	286	74	171	190	5,3
100 PN 16	4“	331	100	192	216	6,5
125 PN 16	5”	406	125	210	244	8,5
150 PN 16	6“	406	152	210	244	10,8
200 PN 10	8“	465	200	217	256	17,6
250 PN 10	10“	465	253	223	256	22,0
300 PN 10	12“	550	305	223	268	26,0

Weight refers to the standard design

Example for order

KITO® VND-50-IIB3
(design with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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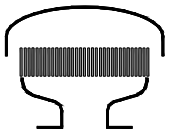
B 9 N
Date: 09-2022
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Deflagration proof ventilation hood
KITO® VND-…-IIB3



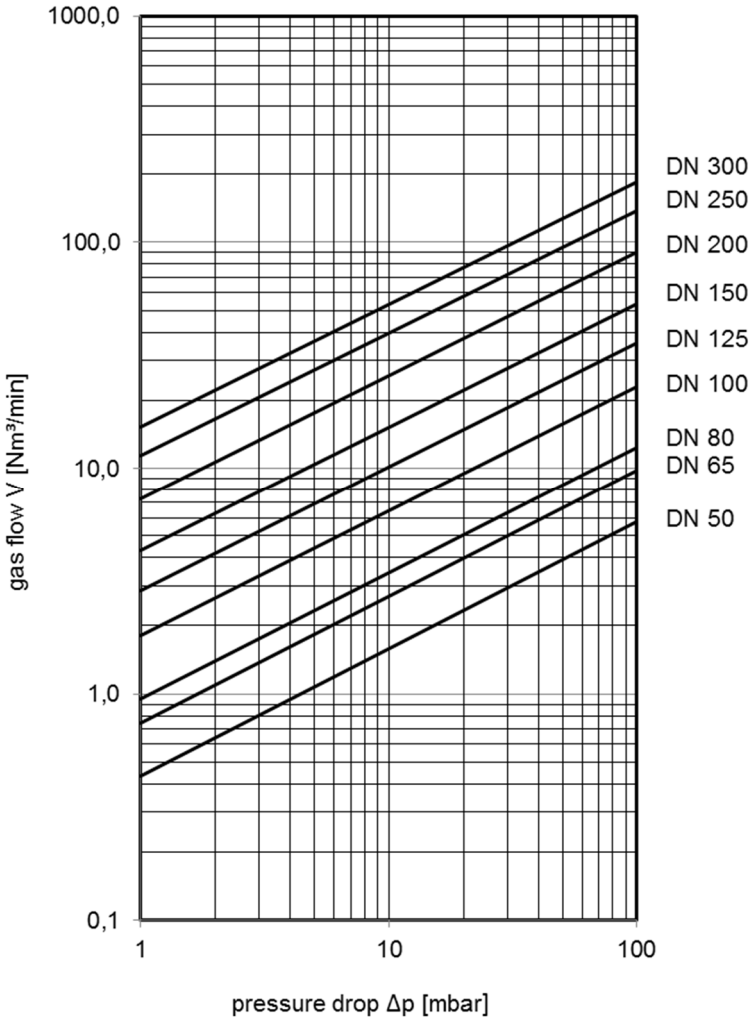
Design

	variant I	variant II
housing	steel	stainless steel mat. no. 1.4571
KITO®-flame arrester element	not interchangeable	
KITO®-casing	steel	stainless steel mat. no. 1.4571
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
weather hood	stainless steel	
flange connection	EN 1092-1 type B1 *optionally* ASME B16.5 Class 150 RF	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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Created: Abt. Doku KITO

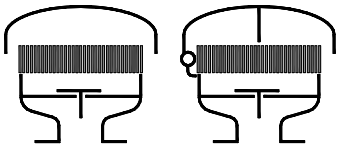
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure relief valve

KITO® DS/KS-IIA-…-A

KITO® DS/KS-IIA-…-K

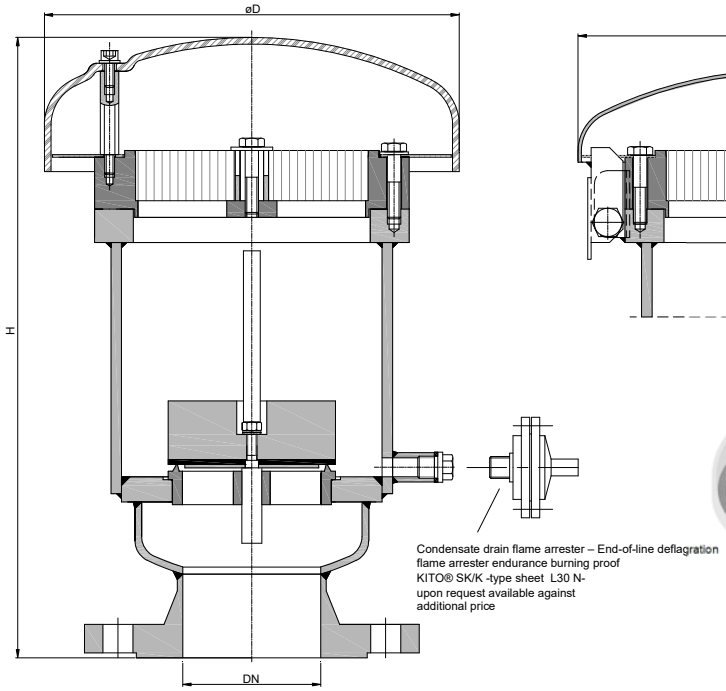


Application

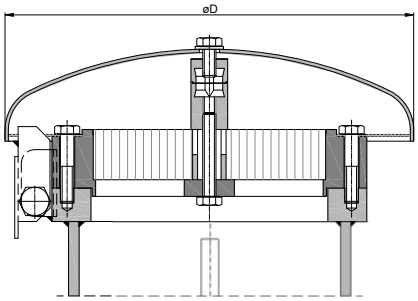
As venting device for installation on storage tanks incorporating an explosion and endurance burning flame arrester element and a PRV to allow for the passage of excess pressure but prevent or minimize the loss of gas/vapours depending on valve adjustment. Approved for all materials of the explosion group IIA with a maximum experimental safe gap (MESG) > 0.9 mm and an maximum operating temperature of 60 °C. Usually mounted on the top of the tank in conjunction with a vacuum relief valve (see KITO® VS/KS-IIB3-… (type sheet D 11 N)). An explosion proof condensate drain is also available for this model at extra cost.

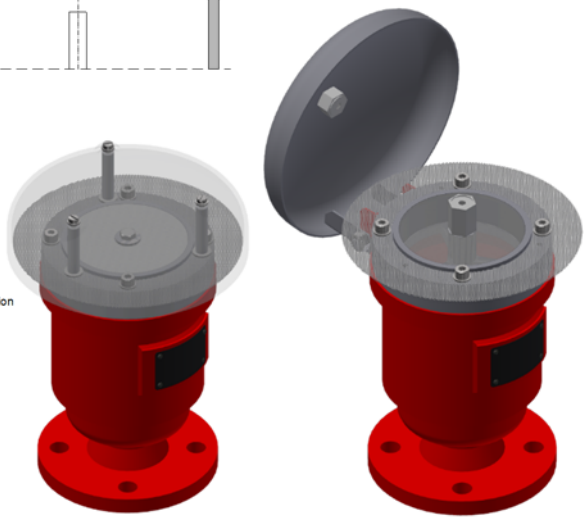
Dimensions (mm) and settings (mbar)

KITO® DS/KS-IIA-...-A



KITO® DS/KS-IIA-...-K





DN		D	H		~ kg	setting		
DIN	ASME		DIN	ASME		min. - max. *(load weight from PE)*	min. - max.	min. - max. *(with housing extension)*
25 PN 40	1“	220	305	320	10	3.1 – 10.4	10.5 - 200	-
50 PN 16	2“		315	335	14	2 – 7.4	7.5 - 100	> 100 - 200
80 PN 16	3“	245	372	390	19	2 – 7.9	8 - 105	> 105 - 200
100 PN 16	4“		370	395	20	2 – 7.9	8 - 95	> 95 - 200

Indicated weights are understood without weight load and refer to the standard design
Attention !!! Dimension H for design with a weather hood from stainless steel 1.4571 ca. 10-15 mm lower
Higher settings see KITO® DS/KS-1-IIA-…-… (type sheet C 7.3 N)

Example for order

KITO® DS/KS-IIA-25-A
(design with weather hood from PMMA and flange connection DN 25 PN 40)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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C 7 N
Date: 08-2018
Created: Abt. Doku KITO
Design subject to change

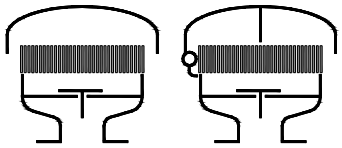
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure relief valve

KITO® DS/KS-IIA-…-A

KITO® DS/KS-IIA-…-K



Design

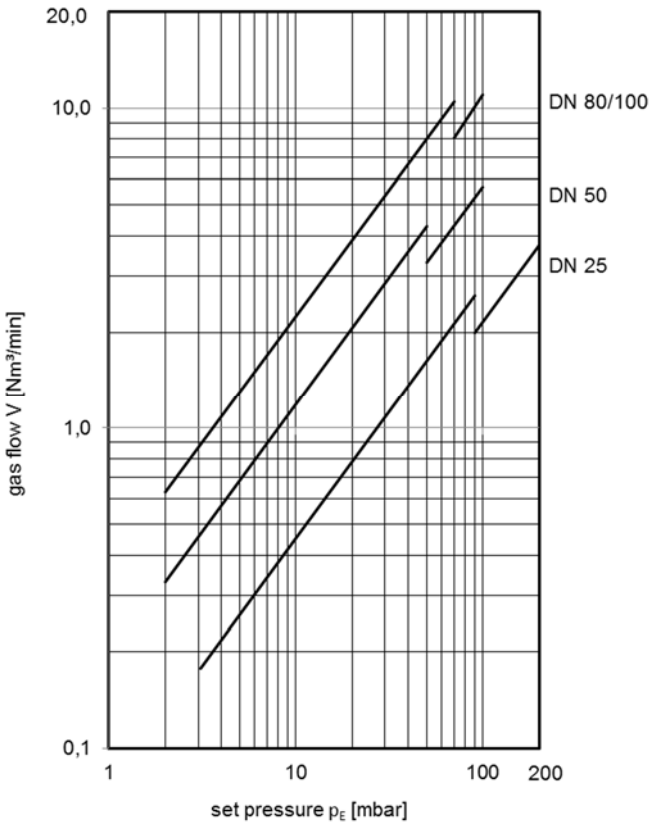
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4308 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood **KITO® DS/KS-IIA-…-A**	PMMA	
weather hood **KITO® DS/KS-IIA-…-K**	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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C 7 N
Date: 08-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

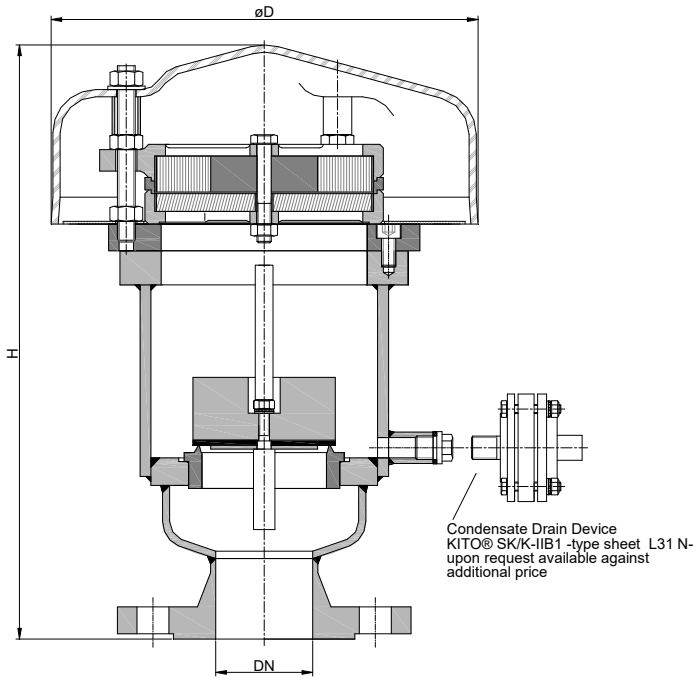
Type sheet
Deflagration and endurance burning proof pressure relief valve
KITO® DS/KS-IIB1-…

Application

As an end-of-line flame arrester, explosion and endurance burning proof for all inflammable liquids and vapors of explo-sion group IIB1 and also for alcohols with a maximum experimental safe gap (MESG) ≥ 0.85 mm and an maximum operating temperature of 60 °C. Safety valve for out breathing pipes of storage tanks as a protection against overpressure. By appropriate pressure adjustment the gasification losses of the storage product are prevented or strongly limited. Usually mounted on the top of the tank in conjunction with a vacuum relief valve (see KITO® VS/KS-IIB3-… (type sheet D 11 N)). An explosion proof condensate drain is also available for this model at extra cost.

With additional examination and approval, applicable also for alcohols (ethanol, methanol...)

Dimensions (mm) and settings (mbar)



DN		D	H		~ kg	setting		
DIN	ASME		DIN	ASME		min. - max. *(load weight from PE)*	min. - max.	min. - max. *(with housing extension)*
25 PN 40	1“	240	324	340		3,1 - 10.4	10,5 - 200	-
50 PN 16	2“		332	351		2 - 7.4	7,5 - 100	> 100 - 200
80 PN 16	3“		383	403		2 - 7.9	8 - 105	> 105 - 200
100 PN 16	4“		381	406		2 - 7.9	8 - 95	> 95 - 200

Indicated weights are understood without weight load and refer to the standard design
Higher settings on request !

Example for order

KITO® DS/KS-IIB1-50
(design with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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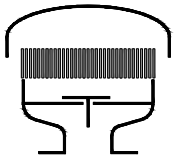
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure relief valve

KITO® DS/KS-IIB1-…



Design

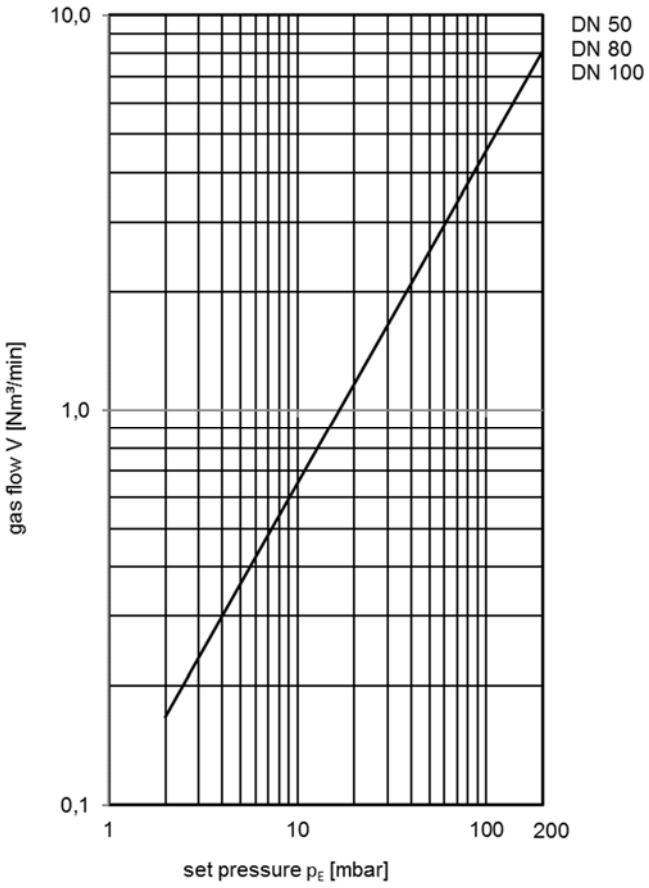
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4408 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood	PMMA	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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C 7.1 N
Date: 05-2019
Created: Abt. Doku KITO
Design subject to change

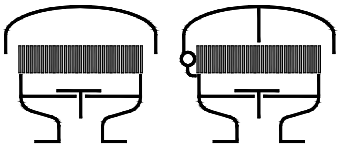
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure relief valve

KITO® DS/KS-1-IIA-…-A

KITO® DS/KS-1-IIA-…-K

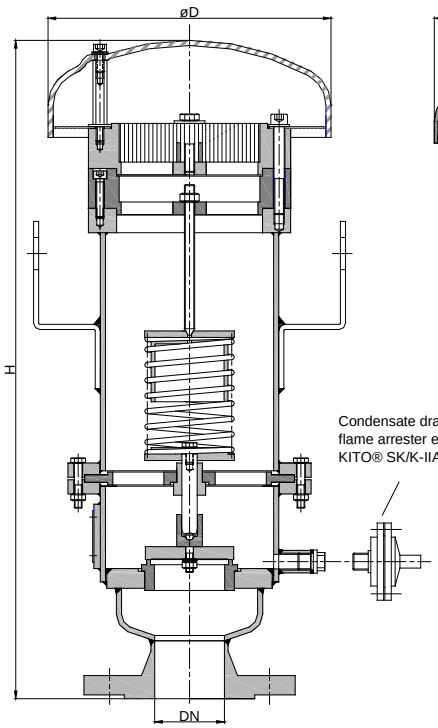


Application

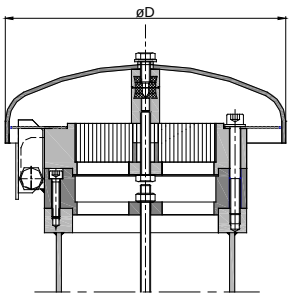
As venting device for installation on storage tanks incorporating an explosion and endurance burning flame arrester element and a PRV to allow for the passage of excess pressure but prevent or minimize the loss of gas/vapours depending on valve adjustment. Usually mounted on top of the tank in conjunction with a vacuum relief valve. Approved for all materials of the explosion group IIA with a maximum experimental safe gap (MESG) > 0.9 mm and an maximum operating temperature of 60 °C. Usually mounted on the top of the tank in conjunction with a vacuum relief valve (see KITO® VS/KS-IIB3-…). An explosion proof condensate drain is also available for this model at extra cost.

Dimensions (mm) and settings (mbar)

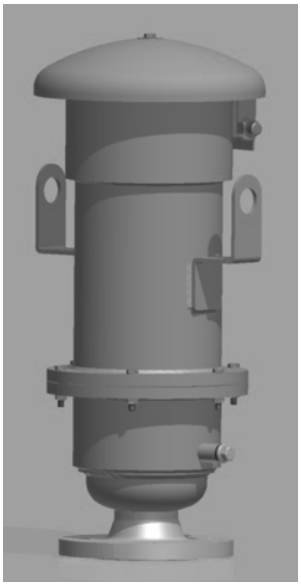
KITO® DS/KS-1-IIA-...-A



KITO® DS/KS-1-IIA-...-K



Condensate drain flame arrester – End-of-line deflagration flame arrester endurance burning proof
KITO® SK/K-IIA -type sheet L30 N-



DN		D	H		kg	setting	
DIN	ASME		DIN	ASME		min.	max.
25 PN 40	1“	220	504	524		>200	350
50 PN 16	2“		512	532			
80 PN 16	3“	245	700	720			
100 PN 16	4“		707	731			

Weight refers to the standard design
Attention !!! Dimension H for design with a weather hood from stainless steel 1.4571 ca. 10-15 mm lower
Lower settings see KITO® DS/KS-IIA-…-… (type sheet C 7 N), higher settings on request

Example for order

KITO® DS/KS-1-IIA-25-A
(design with weather hood from PMMA and flange connection DN 25 PN 40)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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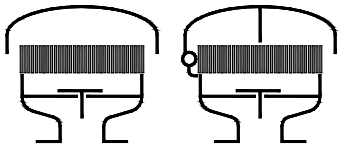
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure relief valve

KITO® DS/KS-1-IIA-…-A

KITO® DS/KS-1-IIA-…-K



Design

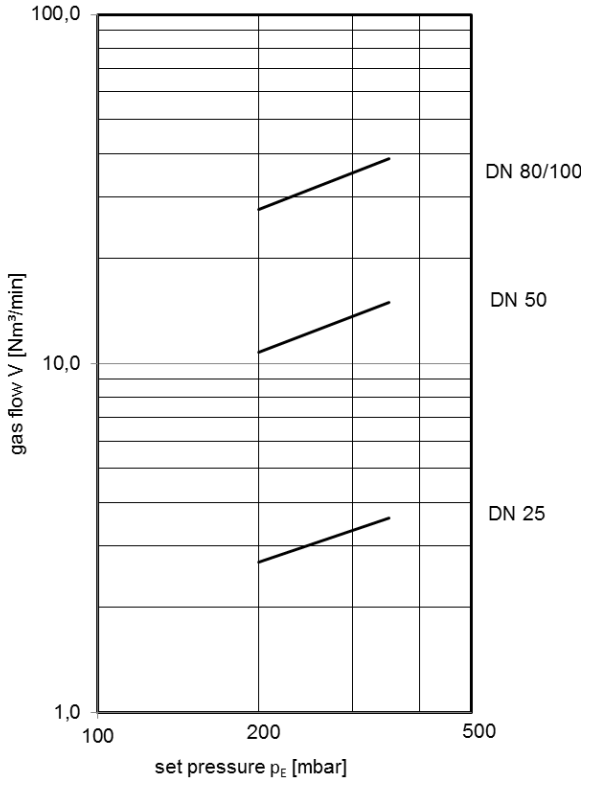
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve pallet	spring loaded	
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4308 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood **KITO® DS/KS-1-IIA-…-A**	PMMA	
weather hood **KITO® DS/KS-1-IIA-…-K**	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting. (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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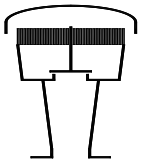
C 7.3 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure relief valve

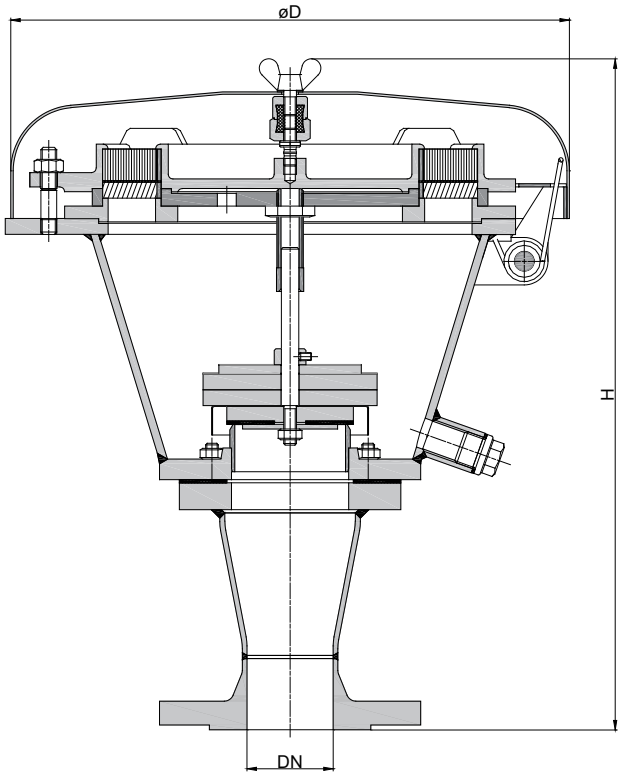
KITO® DS/KG-BEH-6-IIB3-…



Application

As venting device for installation on storage tanks incorporating an explosion and endurance burning flame arrester element and a PRV to allow for the passage of excess pressure but prevent or minimize the loss of gas/vapours depending on valve adjustment. Approved for all materials of the explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C. Usually mounted on the top of the tank in conjunction with a vacuum relief valve (see KITO® VS/KS-IIB3-… (type sheet D 11 N)). An explosion proof condensate drain is also available for this model at extra cost.

Dimensions (mm) and settings (mbar)



DN		D	H (DIN)	H (ASME)	Einstelldruck	kg
DIN	ASME					
50 PN 16	2“	353	420	439	2 – 60	26
80 PN 16	3“		471	495		
100 PN 16	4“		555	577		38

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® DS/KG-BEH-6-IIB3-50
(design with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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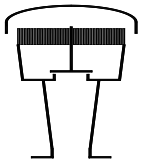
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure relief valve

KITO® DS/KG-BEH-6-IIB3-…



Design

	standard	optionally
housing (upper part)	steel	stainless steel mat. no. 1.4571
housing (lower part)	steel	stainless steel mat. no. 1.4571
gasket	PTFE	
valve seat	stainless steel mat. no. 1.4571	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4308 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood	steel, hood can fold automatically as a result of folding mechanism and fusing element	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet

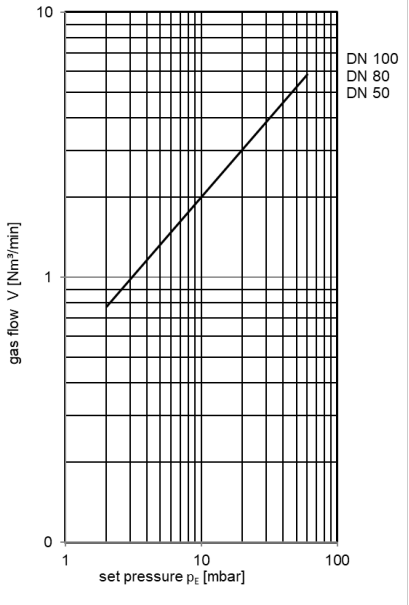
design	pressure range I 2 - < 3.5 mbar	pressure range II ≥ 3.5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve spindle	aluminum / stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

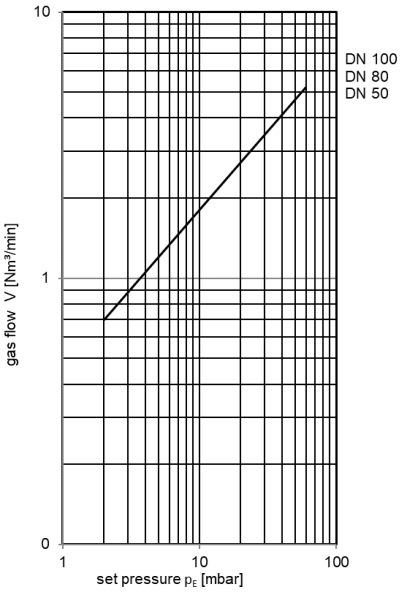
$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad \text{or} \quad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20% above valve's setting (see DIN 4119).



$$\dot{V}_{10\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad \text{or} \quad \dot{V}_b = \dot{V}_{10\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The volume flow at reducsed lift will be reached by an accumulation of 10 % above valve's setting (see DIN 4119).



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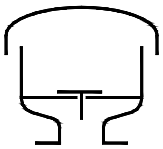
C 7.4 N
Date: 04-2024
Created: Abt. Doku KITO

KITO Armaturen GmbH

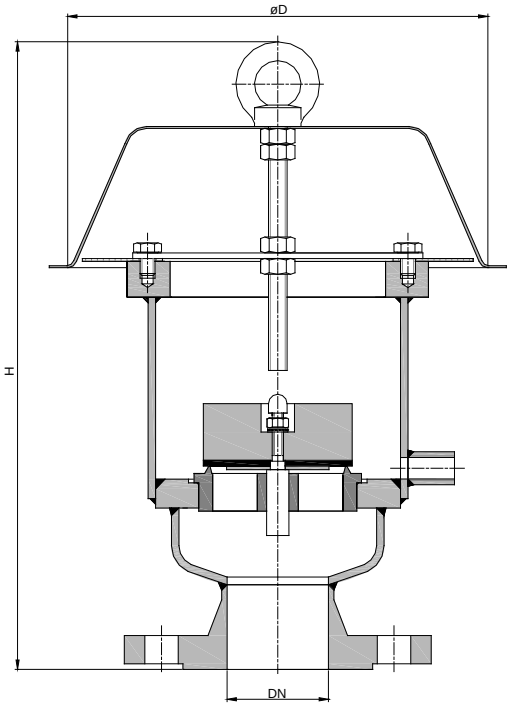
Type sheet
Pressure relief valve
KITO® DS/o-…



Application

As venting device for installation on storage tanks with a VRV to protect against hazardous excess pressure but minimize the loss of gas/vapours. This device does not protect against the hazard of explosion or stabilized burning.

Dimensions (mm) and settings (mbar)



DN		D	H		~ kg	min. - max. *(load weight from PE)*	setting min. - max.	min. - max. *(with housing extension)*
DIN	**ASME**		**DIN**	**ASME**				
25 PN 40	**1“**	220	324	343	9	2.5 – 10.4	10.5 - 200	-
50 PN 16	**2“**		334	353	12	1,8 – 7.3	7.4 - 120	> 120 - 200
80 PN 16	**3“**	260	416	436	13	1.8 – 7.7	7.8 - 120	> 120 - 200
100 PN 16	**4“**		414	439	15	1.8 – 7.7	7.8 - 95	> 95 - 200
125 PN 16	**5“**	380	435	468		1.9 – 6.8	6.9 - 120	> 120 - 150
150 PN 16	**6“**		468	488	31	1.8 – 11.9	12 - 125	> 125 - 150
200 PN 10	**8“**	450	553	595	53	2 – 11.9	12 - 100	-
250 PN 10	**10“**	600	595	630	84	2.2 – 11.9	12 - 100	-

Indicated weights are understood without weight load and refer to the standard design

Higher settings see KITO® DS/o-1-… (type sheet C 8.3 N)

Example for order

KITO® DS/o-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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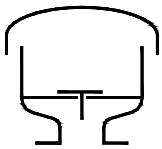
C 8.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Pressure relief valve
KITO® DS/o-…



Design

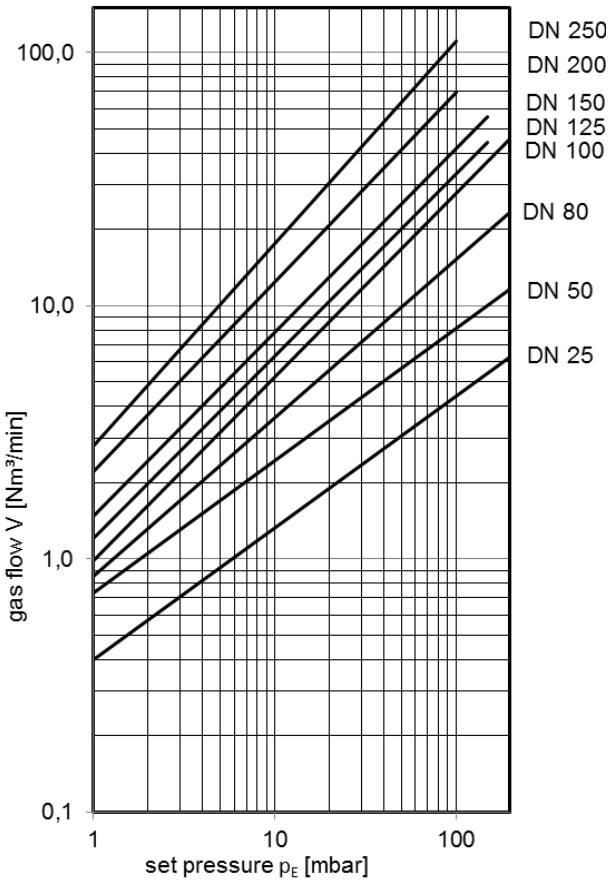
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
protective screen	PA6, from DN 125 stainless steel mat. no. 1.4301	from DN 125 stainless steel mat. no. 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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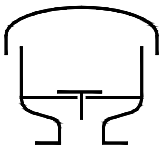
C 8.1 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

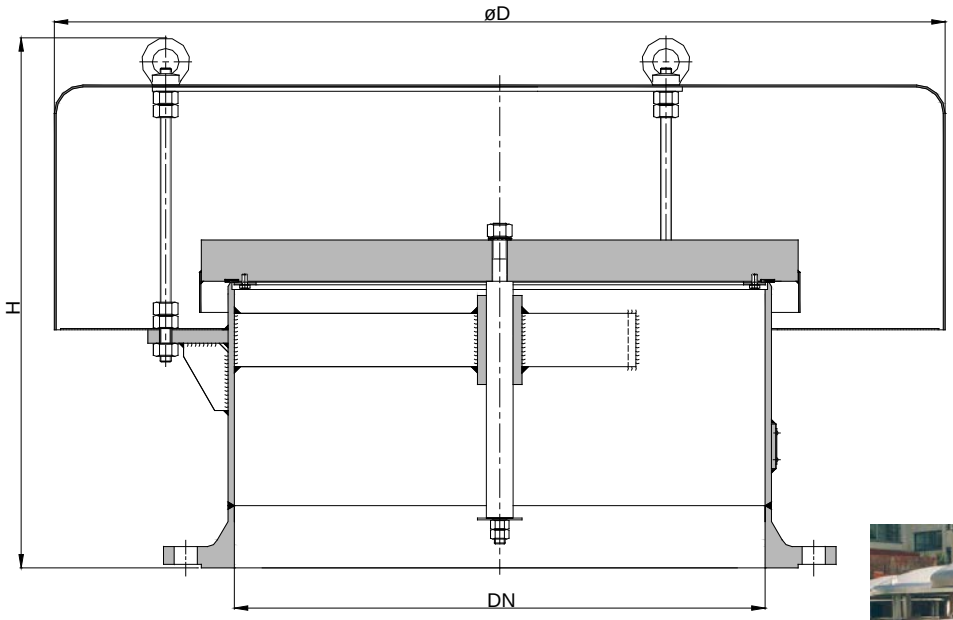
Type sheet
Pressure relief valve
KITO® DS/o-…



Application

As venting device for installation on storage tanks with a PRV to protect against hazardous excess pressure but minimize the loss of gas/vapours. This device does not protect against the hazard of explosion or stabilized burning.

Dimensions (mm) and settings (mbar)



Special design per request available)

DN		D	H	setting	kg
DIN	ASME				
300 PN 10	**12“**	600	430	15 - 70	66 (121)
350 PN 10	**14“**	650	460	15 - 70	74 (141)
400 PN 10	**16“**	750	500	15 - 70	85 (173)
500 PN 10	**20“**	950	560	20 - 60	96 (216)
600 PN 10	**24“**	1000	605	20 - 50	134 (275)
700 PN 10	**28“**	1300	710		195

Indicated weights are understood without weight load and refer to the standard design
(the weights in brackets are with a maximum load weight)

Different settings on request !

Example for order

KITO® DS/o-300
(design with flange connection DN 300 PN 10)

Without EC certificate and CE-marking

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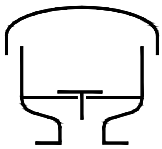
C 8.2 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Pressure relief valve
KITO® DS/o-…



Design

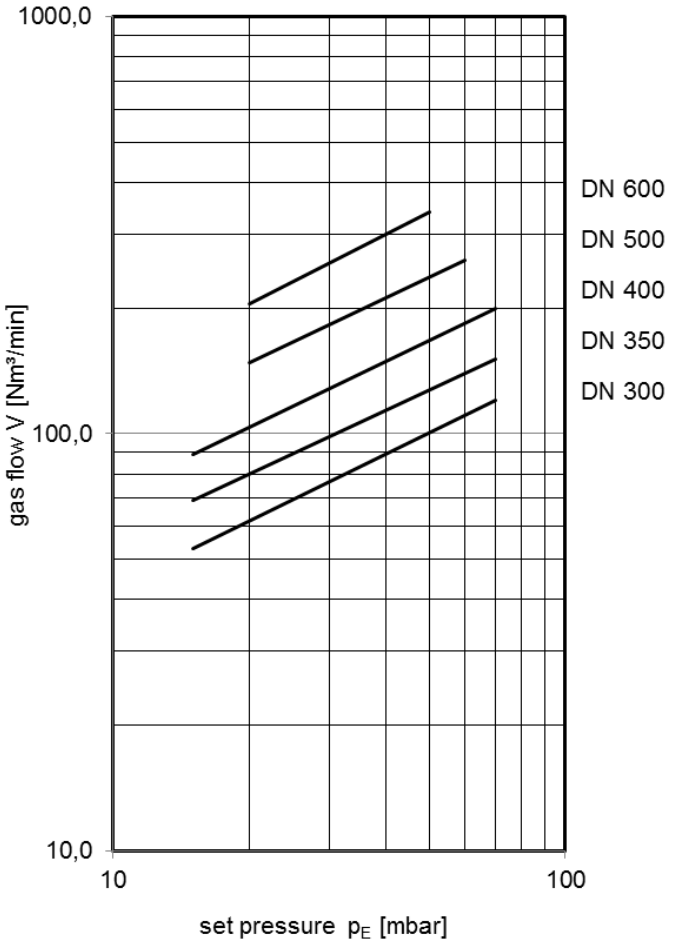
	standard	optionally
housing / valve seat edge	steel / stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571 / 1.4571
valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	
valve sealing	NBR	Viton, PTFE
weather hood	steel	stainless steel mat. no. 1.4301
protective screen	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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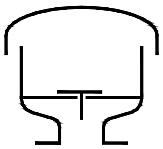
C 8.2 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

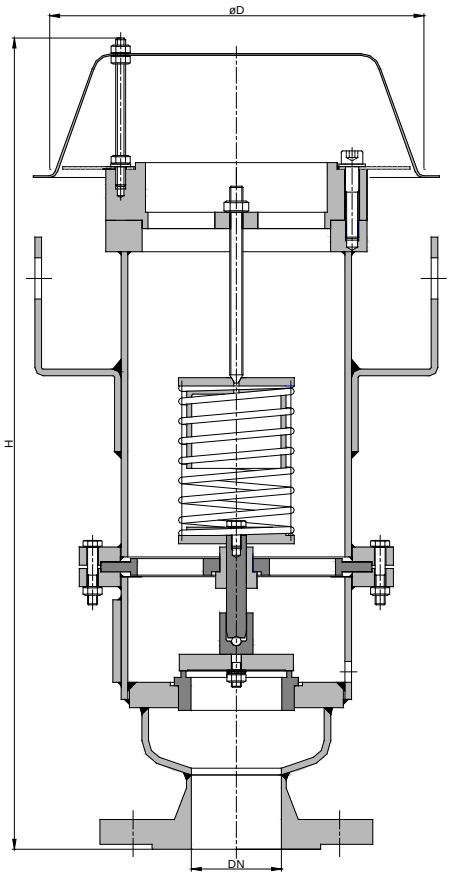
Type sheet
Pressure relief valve
KITO® DS/o-1-…



Application

As venting device for installation on storage tanks with a VRV to protect against hazardous excess pressure but minimize the loss of gas/vapours. This device does not protect against the hazard of explosion or stabilized burning.

Dimensions (mm) and settings (mbar)



DN		D	H		kg	setting	
DIN	ASME		DIN	ASME		min.	max.
25 PN 40	1“	220				>200	350
50 PN 16	2“	220	490	509	57		
80 PN 16	3“	306	716	736			
100 PN 16	4“	306	804	828			
125 PN 16	5“	380				>150	
150 PN 16	6“	380					
200 PN 10	8“	450				>100	
250 PN 10	10“	650	1238	1272	206		

Weight refers to the standard design
Lower settings see KITO® DS/o-… (type sheet C 8.1 N), higher settings on request

Example for order

KITO® DS/o-1-25
(design with flange connection DN 25 PN 40)

Without EC certificate and CE-marking

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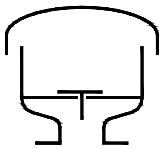
C 8.3 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet
Pressure relief valve
KITO® DS/o-1-…



Design

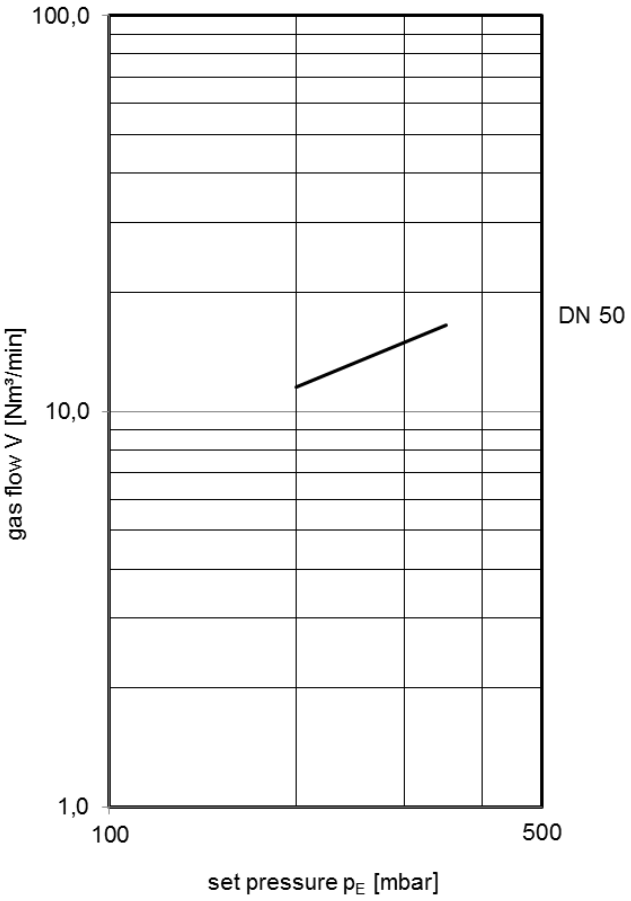
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve pallet	spring loaded	
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
protective screen	PA6, from DN 80 stainless steel mat. no. 1.4301	from DN 80 stainless steel mat. no. 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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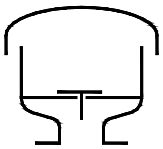
C 8.3 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

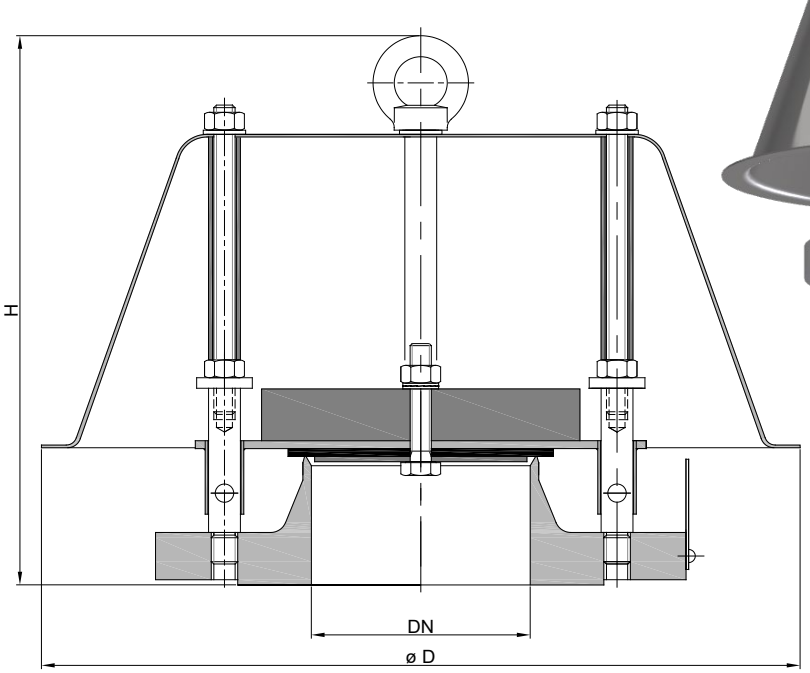
Type sheet
Pressure relief valve
KITO® DS/oP-…



Application

As PRV/venting device to prevent dangerous excess pressures that may be attained in storage containers and silos in which granulate and powder products are stored. All moving parts are outside the storage room.

Dimensions (mm) and settings (mbar)



DN		D	H	setting		kg
DIN	ASME			min.	max.	
50 PN 16	**2“**	280	190	15	200	4,5
80 PN 16	**3“**	280	210	15	180	7
100 PN 16	**4“**	400	230	15	150	
125 PN 16	**5“**	400	230	15	150	
150 PN 16	**6“**	400	230	15	150	
200 PN 10	**8“**	550	230	15	100	
250 PN 10	**10“**	550	235	15	100	

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® DS/oP-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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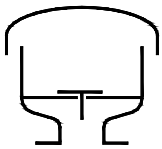
www.kito.de
info@kito.de

KITO Armaturen GmbH

Type sheet
Pressure relief valve
KITO® DS/oP-…



Design

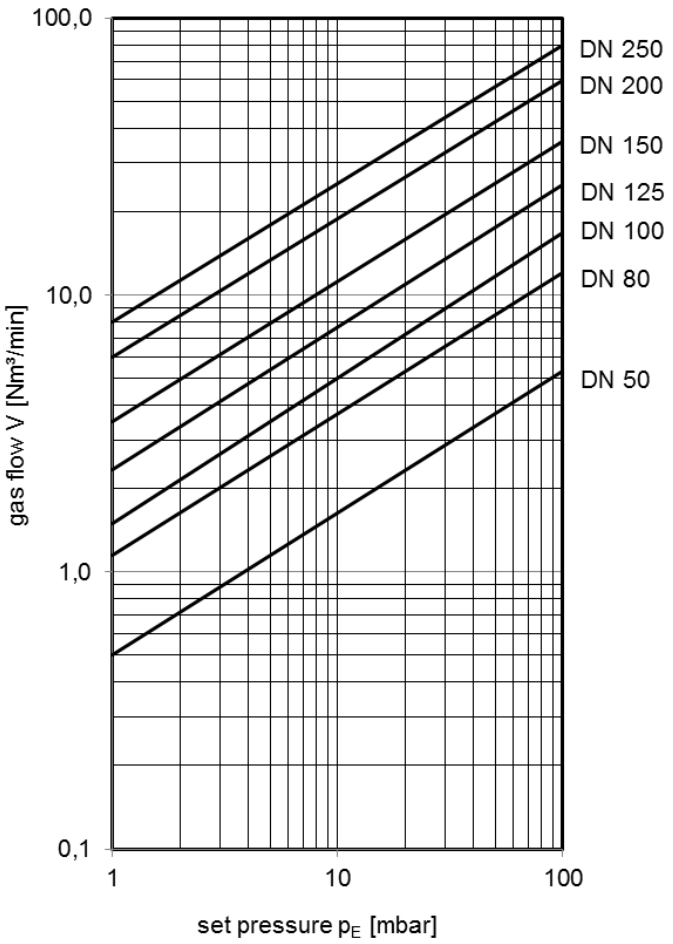
	standard	optionally
housing	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
weather hood	stainless steel	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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C 8.4 N
Date: 08-2024
Created: Abt. Doku KITO

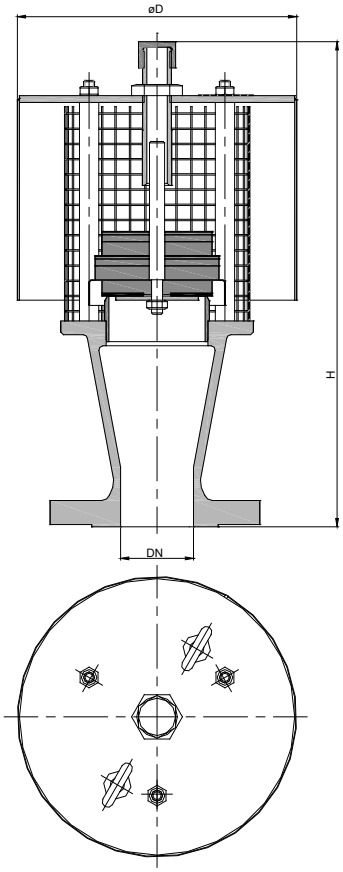
KITO Armaturen GmbH

Type sheet
Pressure relief valve
KITO® DS/oG-…

Application

As venting device for installation on storage tanks with a PRV to protect against hazardous excess pressure but minimize the loss of gas/vapours. This device does not protect against the hazard of explosion or stabilized burning. The housing is mounted perpendicularly on a tank roof.

Dimensions (mm) and settings (mbar)



DN		D	H	setting	kg
DIN	ASME				
50 PN 16	**2“**	203	366	2-60	9
80 PN 16	**3“**	298	417		13
100 PN 16	**4“**	298	473		18
150 PN 16	**6“**	468	546		37
200 PN 10	**8“**	503	631		47
250 PN 10	**10“**	653	734		70
300 PN 10	**12“**	653			

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® DS/oG-50
(design DN 50 with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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KITO Armaturen GmbH

Type sheet
Pressure relief valve
KITO® DS/oG-…

Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat	stainless steel mat. no. 1.4571	
weather hood	stainless steel	
protective screen	stainless steel mat. no. 1.4301	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet

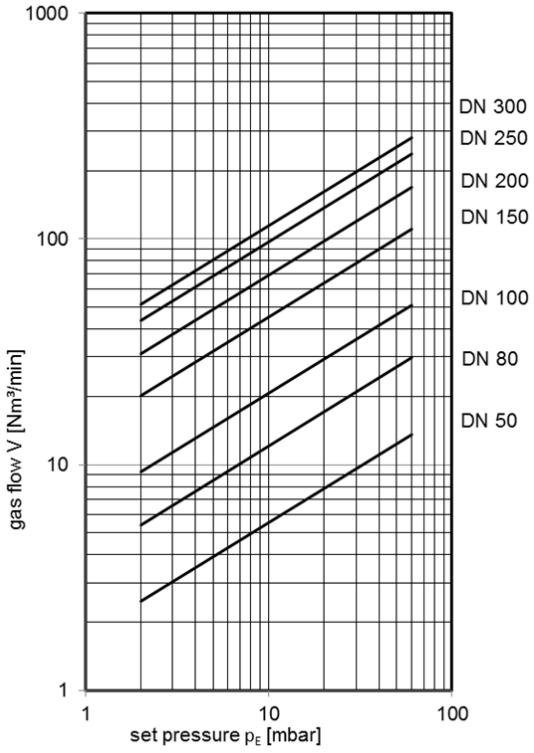
design	pressure range I 2 - < 3.5 mbar	pressure range II ≥ 3.5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve spindle	aluminum / stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting. If the allowable overpressure is less 20%, please consult der factory for the corrected volume flow.



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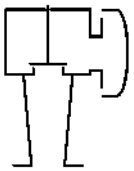
C 8.5 N
Date: 03-2023
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

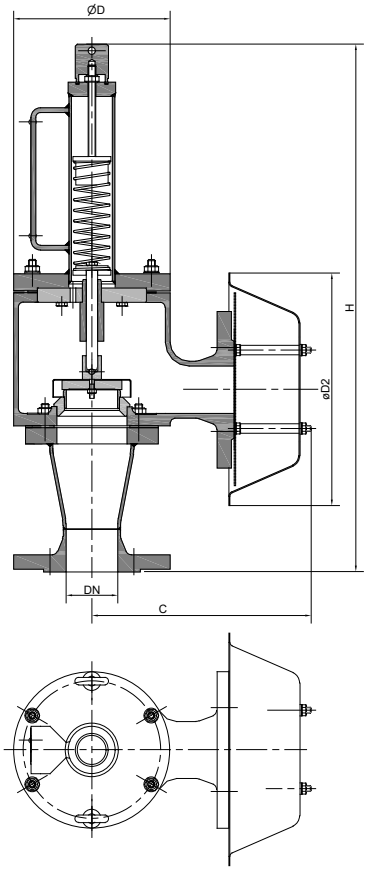
Type sheet
Pressure relief valve
KITO® DS/oG-PA-… DE

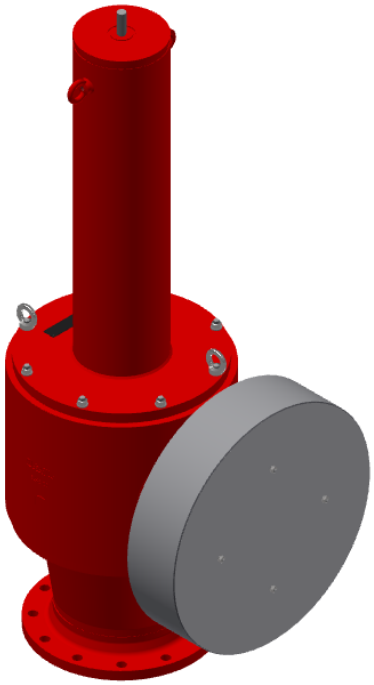


Application

As venting device for installation on storage tanks with a PRV to protect against hazardous excess pressure but minimize the loss of gas/vapours. This device does not protect against the hazard of explosion or stabilized burning. The housing is mounted perpendicularly on a tank roof.

Dimensions (mm) and settings (mbar)





DN		C	D	H		kg	setting
DIN	ASME			DIN	ASME		
50 PN 16	2“	230	165	556	575		>60-415
80 PN 16	3“	320	200	691	713		
100 PN 16	4“	340	250	852	884		
150 PN 16	6“	405	350	1107	1141		
200 PN 10	8“	455	400	1311	1351		
250 PN 10	10“	460	460	1420	1454		
300 PN 10	12“	460	460	1420	1467		

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® DS/oG-PA-50 DE
(design DN 50 with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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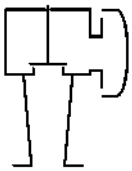
C 8.6 N
Date: 06-2023
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet
Pressure relief valve
KITO® DS/oG-PA-… DE



Design

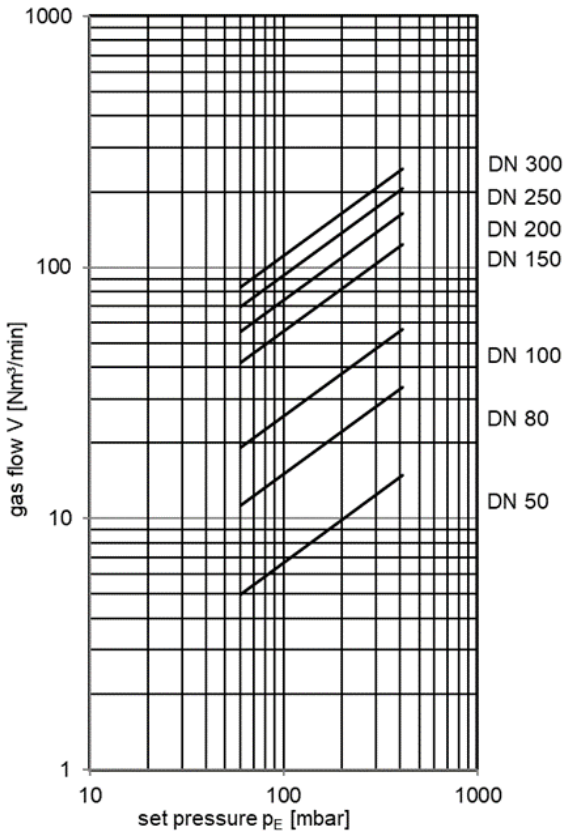
	standard	optionally
housing upper part (PN 1)	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
housing lower part	steel	stainless steel mat. no. 1.4571
cover	steel	stainless steel mat. no. 1.4301/1.4571
gasket	PTFE	
design valve pallet	spring loaded	
valve seat	stainless steel mat. no. 1.4571	
valve pallet / valve spindle	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
weather hood	stainless steel	
protective screen	stainless steel mat. no. 1.4301	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting. If the allowable overpressure is less than 20%, please consult the factory for the corrected volume flow.



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Date: 06-2023
Created: Abt. Doku KITO
Design subject to change

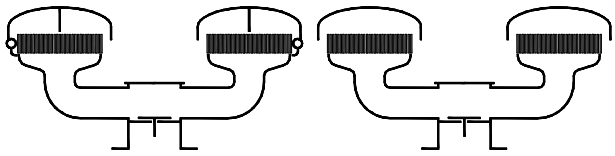
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure relief valve

KITO® DS/M-IIA-…-A

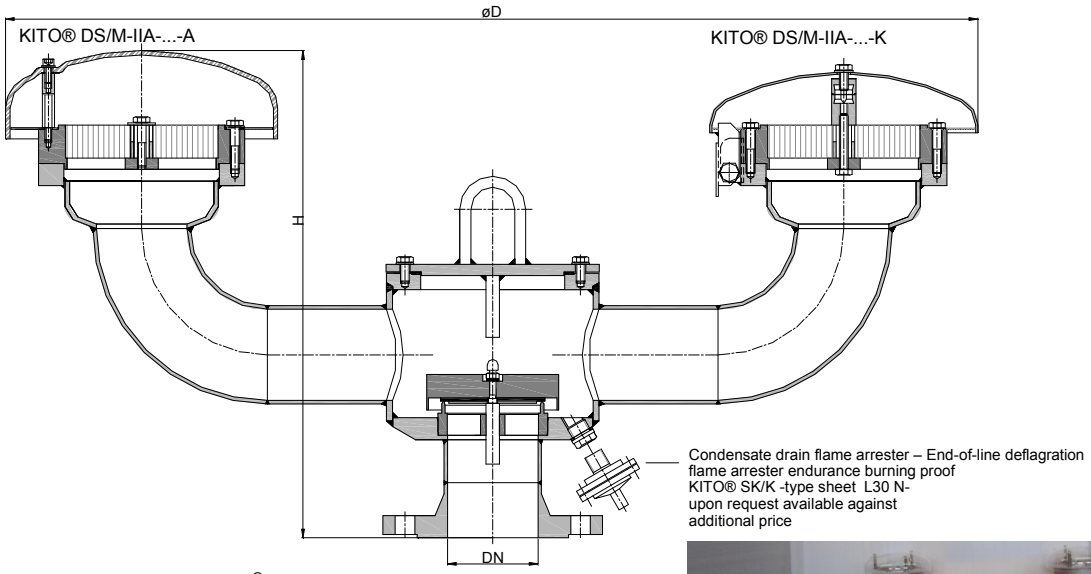
KITO® DS/M-IIA-…-K



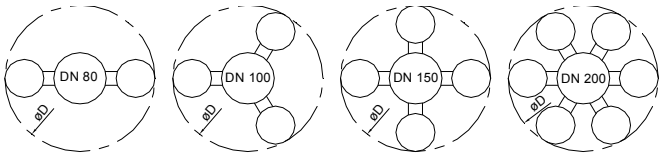
Application

As breather/venting safety device incorporating an explosion and endurance burning proof flame arrester element for installation on storage tanks containing particular categories of inflammable liquids providing for reliable and safe operation whilst ensuring protection against any possible flashback. The PRV allows the passage of hazardous excess pressure but will minimize the loss of gas/vapours depending on valve adjustment. Usually mounted on the top of the tank in conjunction with a vacuum relief valve. Approved for all materials of the explosion group IIA with a maximum experimental safe gap (MESG) > 0.9 mm and an maximum operating temperature of 60 °C. An explosion proof condensate drain is also available for this model at extra cost.

Dimensions (mm) and settings (mbar)



Arrangement of the KITO® flame arrester elements



DN		D	H		number of KITO® flame arrester elements	kg	setting		
DIN	ASME		DIN	ASME			min. - max. *(load weight from PE)*	min. - max.	min. - max. *(with housing extension)*
80 PN 16	**3“**	940	443	463	2	38	2 – 9.9	10 - 115	> 115 - 200
100 PN 16	**4“**	1054	470	497	3	53	2 – 9.9	10 – 125	> 125 - 200
150 PN 16	**6“**	1234	479	513	4	72	2 – 9.9	10 – 90	> 90 - 150
200 PN 10	**8“**	1634	529	569	6	140	2.8 – 13.4	13.5 - 100	-

Indicated weights are understood without weight load and refer to the standard design
Attention !!! Dimension H for design with a weather hood from stainless steel 1.4571 ca. 10-15 mm lower
Higher settings on request !

Example for order

KITO® DS/M-IIA-80-K
(design with weather hood from stainless steel mat. no. 1.4571 and flange connection DN 80 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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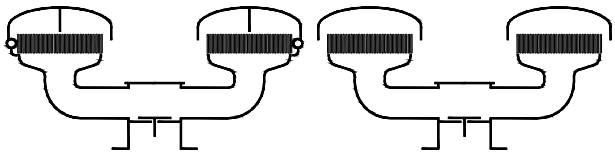
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure relief valve

KITO® DS/M-IIA-…-A

KITO® DS/M-IIA-…-K



Design

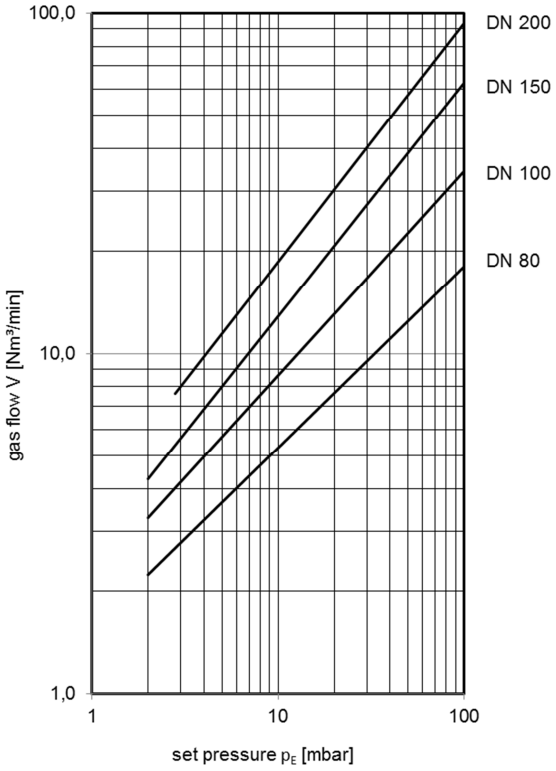
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
design valve pallet	orifice plate	
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4308 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood **KITO® DS/M-IIA-…-A**	PMMA	
weather hood **KITO® DS/M-IIA-…-K**	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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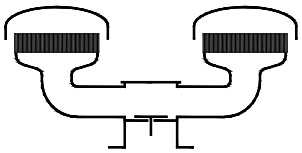
C 9.8 N
Date: 08-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure relief valve

KITO® DS/M-IIB1-…

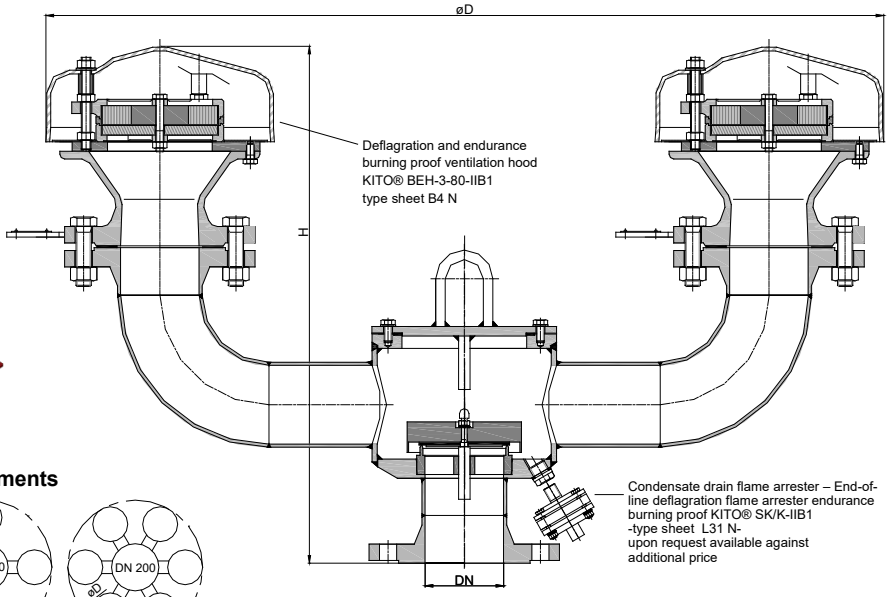


Application

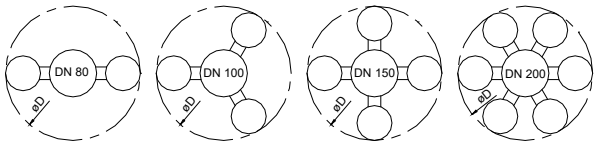
As an end-of-line flame arrester element to protect vent openings of storage tanks. Explosion and endurance burning proof for all inflammable liquids and vapors of explosion group IIB1 and also for alcohols with a maximum experimental safe gap (MESG) ≥ 0.85 mm and an maximum operating temperature of 60 °C. This device is not permitted to be installed in enclosed areas. Installation on top of storage tanks, tank access covers or breather pipes. The PRV allows the passage of hazardous excess pressure but will minimize the loss of gas/vapours depending on valve adjustment. Usually mounted on the top of the tank in conjunction with a vacuum relief valve. An explosion proof condensate drain is also available for this model at extra cost.

KITO® BEH-3-80-IIB1 with additional examination and approval, applicable also for alcohols (ethanol, methanol...)

Dimensions (mm) and settings (mbar)



Arrangement of the flame arrester elements



DN		D	H		number of KITO® BEH-3-80-IIB1	kg	setting		
DIN	ASME		DIN	ASME			min. - max. *(load weight from PE)*	min. - max.	min. - max. *(with housing extension)*
80 PN 16	**3“**	855	545	565	2	53	2 – 9.9	10 - 115	> 115 - 200
100 PN 16	**4“**	950	570	594	3	78	2 – 9.9	10 – 125	> 125 - 200
150 PN 16	**6“**	1110	605	639	4		2 – 9.9	10 – 90	> 90 - 150
200 PN 10	**8“**	1470	630	669	6		2.8 – 13.4	13.5 - 100	-

Indicated weights are understood without weight load and refer to the standard design

Higher settings on request !

Example for order

KITO® DS/M-IIB1-80
(design with flange connection DN 80 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU for KITO® BEH-3-80-IIB1 and KITO® SK/K-IIB1

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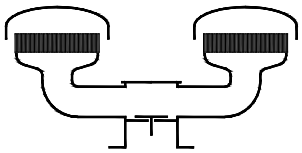
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure relief valve

KITO® DS/M-IIB1-…



Design

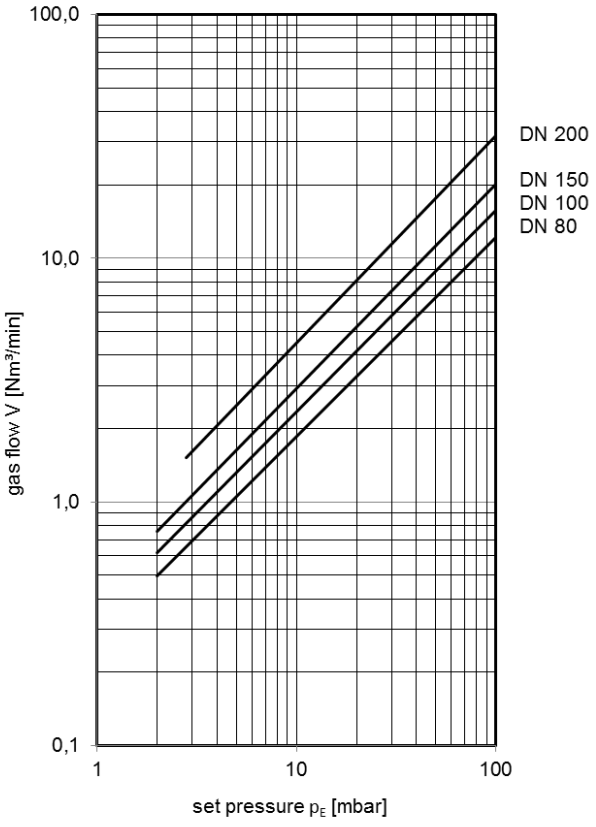
	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
housing KITO® BEH-3-80-IIB1	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
design valve pallet	orifice plate	
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4408 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood	PMMA	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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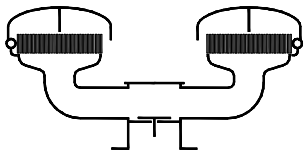
C 9.9 N
Date: 08-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

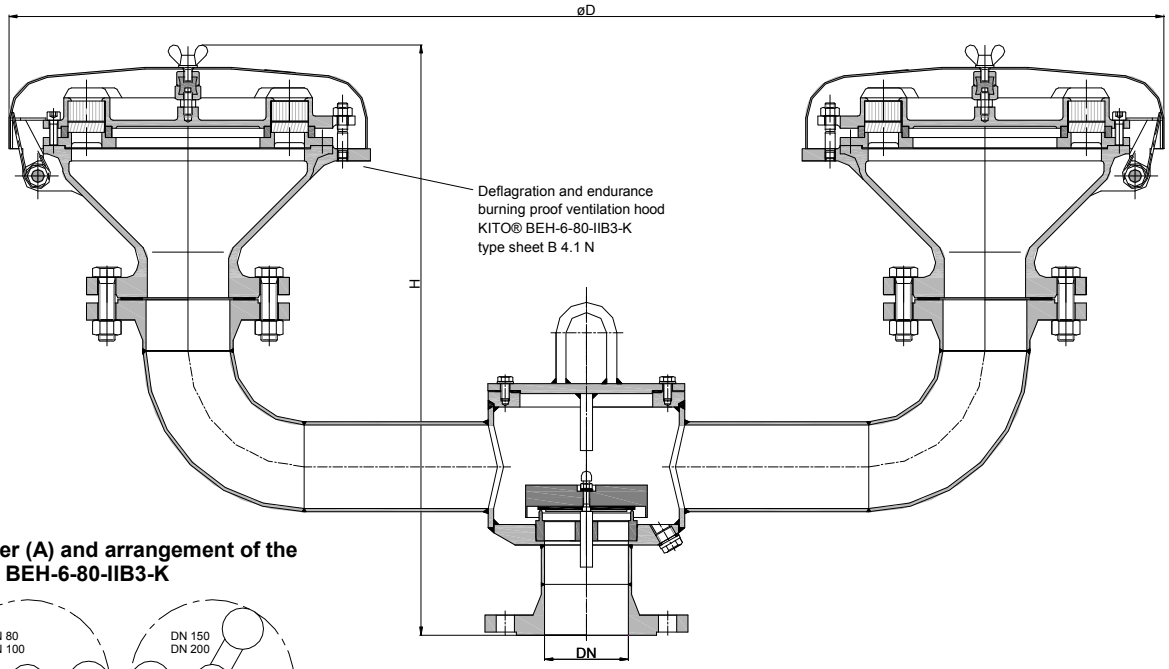
Type sheet
Deflagration and endurance burning proof pressure relief valve
KITO® DS/M-IIB3-…



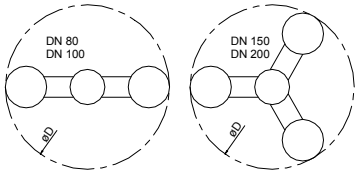
Application

As breather/venting safety device incorporating an explosion and endurance burning proof flame arrester element for installation on storage tanks containing particular categories of inflammable liquids providing for reliable and safe operation whilst ensuring protection against any possible flashback. The PRV allows the passage of hazardous excess pressure but will minimize the loss of gas/vapours depending on valve adjustment. Approved for all materials of the explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C. Usually mounted on the top of the tank in conjunction with a vacuum relief valve, e.g. KITO® VS/KS-IIB3 (type sheet D 11 N).

Dimensions (mm) and settings (mbar)



Number (A) and arrangement of the KITO® BEH-6-80-IIB3-K



DN		D	H		A	kg	setting		
DIN	ASME		DIN	ASME			min. - max. *(load weight from PE)*	min. - max.	min. - max. *(with housing extension)*
80 PN 16	**3“**	1538	583	623	2		2 – 9.9	10 - 115	> 115 - 200
100 PN 16	**4“**		609	653			2 – 9.9	10 – 125	> 125 - 200
150 PN 16	**6“**	1723	618	672	3		2 – 9.9	10 – 90	> 90 - 150
200 PN 10	**8“**		668	728			2.8 – 13.4	13.5 - 100	-

Indicated weights are understood without weight load and refer to the standard design
Higher settings on request !

Example for order

KITO® DS/M-IIB3-80
(design with flange connection DN 80 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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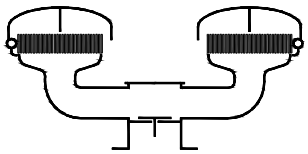
Type sheet
Deflagration and endurance burning proof pressure relief valve
KITO® DS/M-IIB3-…



Design

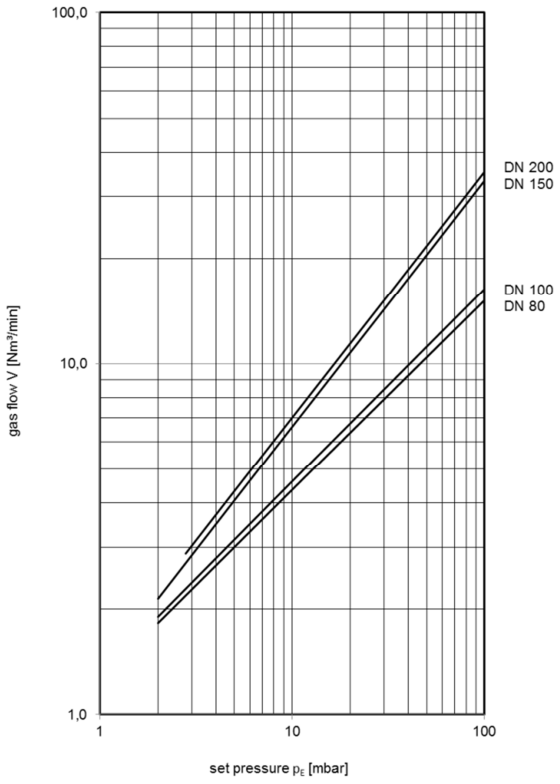
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
housing KITO® BEH-6-80-IIB3-K	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
design valve pallet	orifice plate	
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4408 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood	steel, hood can fold automatically as a result of folding mechanism and fusing element	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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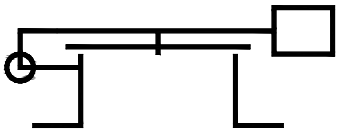
Date: 10-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

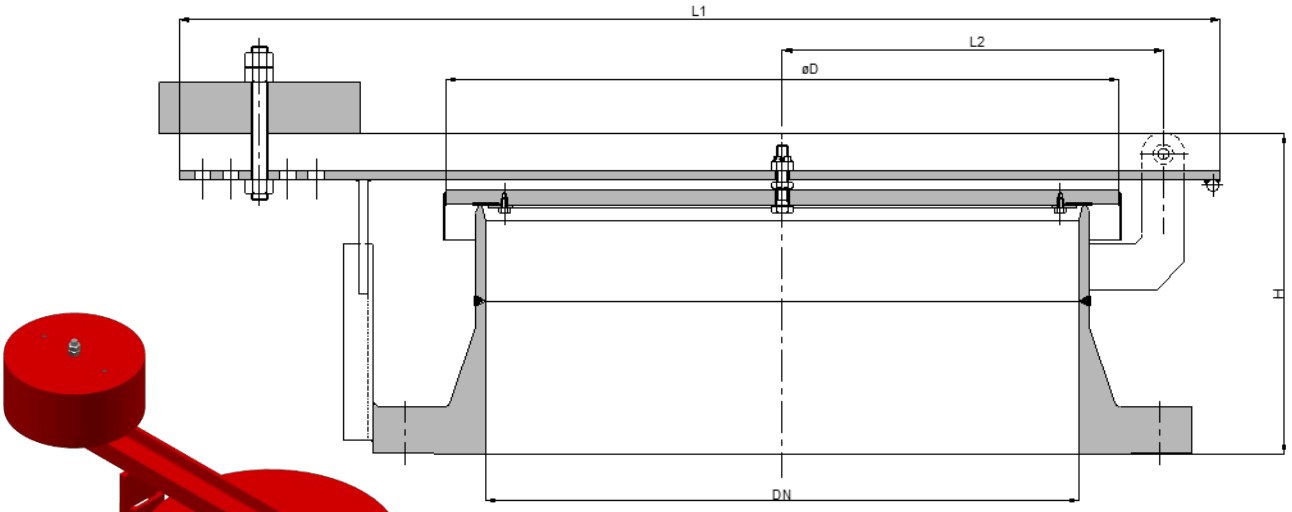
Type sheet
Pressure relief valve
KITO® EV/o-…

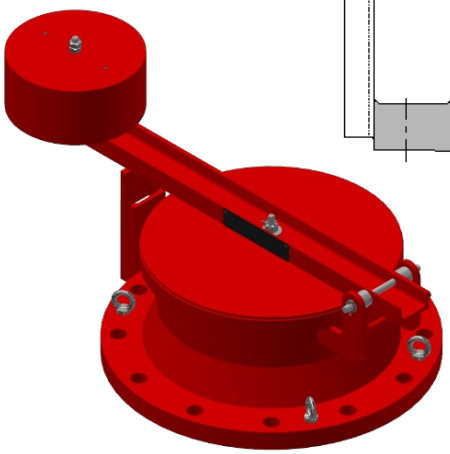


Application

As emergency venting device for installation on storage tanks with a VRV to protect against hazardous excess pressure but minimize the loss of gas/vapours. Also suitable as replacement of a manhole. This device does not protect against the hazard of explosion or stabilized burning.

Dimensions (mm)





DN			D	H (DIN)	H (ASME)	H (API)	L1	L2	kg (DIN)	kg (ASME)	Kg (API)
DIN	ASME	API									
100 PN 16	**4“**	**-**	155	159	183	-	350	96	9	11	-
150 PN 16	**6“**	**-**	205	162	197	-	450	126	15	17	-
200 PN 10	**8“**	**-**	255	181	221	-	550	162	23	29	-
250 PN 10	**10“**	**-**	310	187	221	-	650	192	31	39	-
300 PN 10	**12“**	**-**	370	187	233	-	750	219	40	57	-
350 PN 10	**14“**	**-**	400	197	256	-	750	236	50	73	-
400 PN 10	**16“**	**-**	460	239	294	-	900	274	68	98	-
450 PN 10	**18“**	**-**	510	239	307	-	1000	300	78	112	-
500 PN 10	**20“**	**20“**	560	242	311	311	1100	327	91	135	89
600 PN 10	**24“**	**24“**	670	256	328	328	1200	375	119	181	115

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® EV/o-20” ASME
(design with flange connection 20“ ASME B 16.5 Class 150)

Without EC certificate and CE-marking

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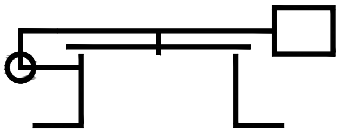
C 10.1 N
Date: 05-2024
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Pressure relief valve
KITO® EV/o-…



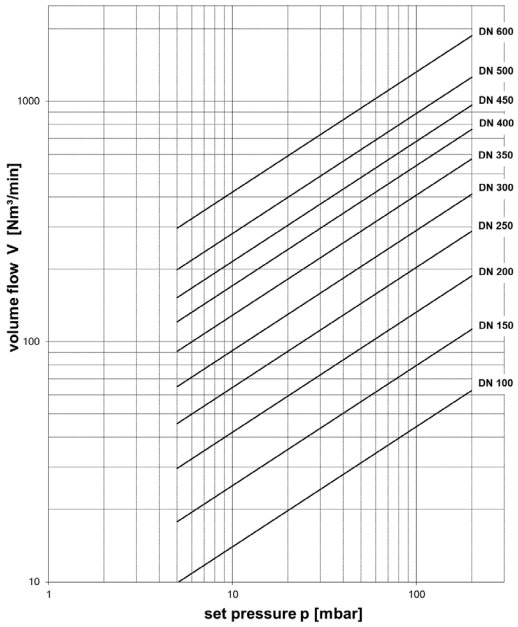
Design

	variant I	variant II
housing / valve seat edge	steel, stainless steel mat. no.1.4301	stainless steel mat. no.1.4301
valve pallet	steel	stainless steel mat. no.1.4301
lever	steel	stainless steel mat. no.1.4301
load weight	steel	stainless steel mat. no.1.4301
valve sealing	NBR, PTFE, EPDM *(optionally)*	
setting	5-100 mbar	
bolt	stainless steel	
protective hood (option)	galvanized steel	
flange connection	EN 1092-1 Typ type B1, ASME B16.5 Class 150 RF, API standard 650 *(optionally)*	

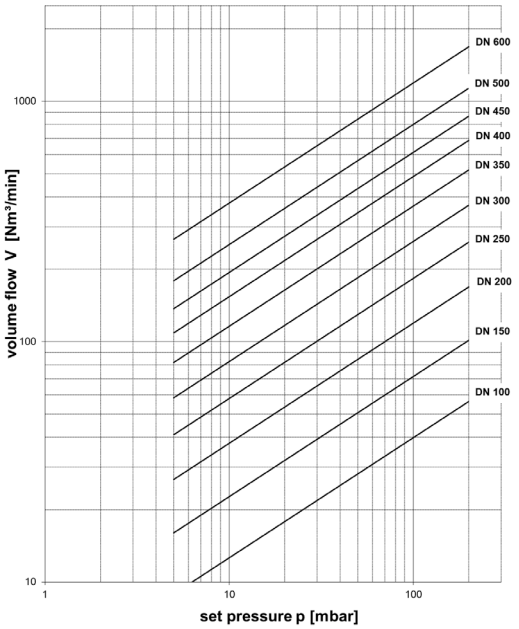
Performance curves

The flow capacity V [Nm³/min] refers to a density of air with ρ = 1.29 kg/m³. When the set pressure is reached, the valve starts to open.

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting (see DIN 4119).



The volume flow at reduced lift will be reached by an accumulation of 10 % above valve's setting (see DIN 4119).



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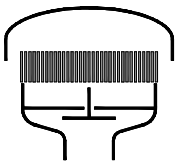
Date: 05-2024
Created: Abt. Doku KITO

KITO Armaturen GmbH

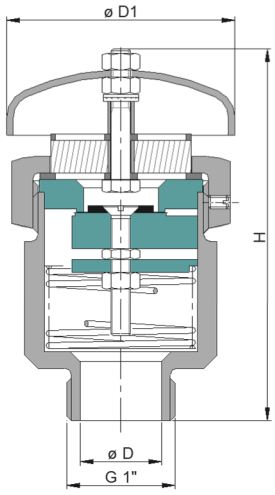
Type sheet
Deflagration proof vacuum relief valve
KITO® VS/cont. …

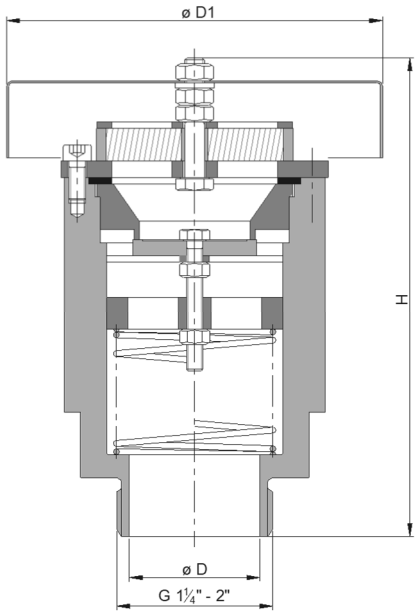


Application

Explosion proof end-of-line vacuum relief valve for storage tanks, vessels and pipes to prevent inadmissible vacuum. Approved for flammable liquids of explosion group IIB3 (MESG) ≥ 0.65 mm. An maximum operating temperature of 60 °C must not be exceeded. Suitable also for portable tanks for the transport of flammable liquids.

Dimensions (mm) and settings (mbar)





	D	D1	H	kg	setting
G 1”	**25**	70	110	1	5 - 210
G 1 ¼“	**32**	115	145	3	
G 1 ½“	**40**				
G 2”					

Weight refers to the standard design

Design

	size G 1“	size G 1 ¼“, G 1 ½“ , G 2“
housing	stainless steel mat. no. 1.4571	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571	
valve seat / valve pallet	PTFE	stainless steel mat. no. 1.4571
sealing	FEP	PTFE
compression spring	stainless steel mat. no. 1.4571	
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
connection	threaded format	

Example for order

KITO® VS/cont. 2”
(design with threaded connection G 2“)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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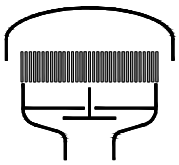
M 8 N / D 8 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

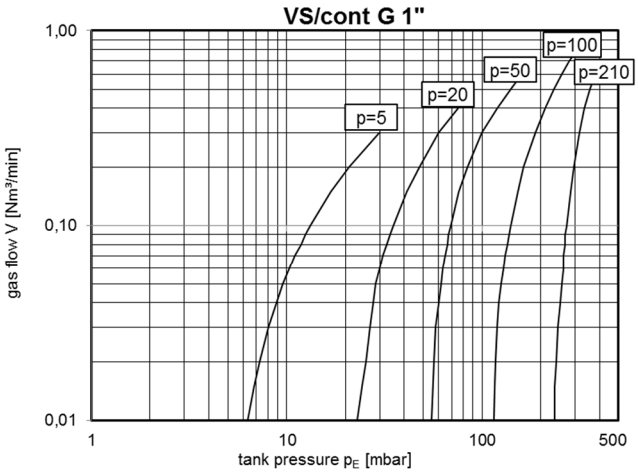
Type sheet
Deflagration proof vacuum relief valve
KITO® VS/cont. …

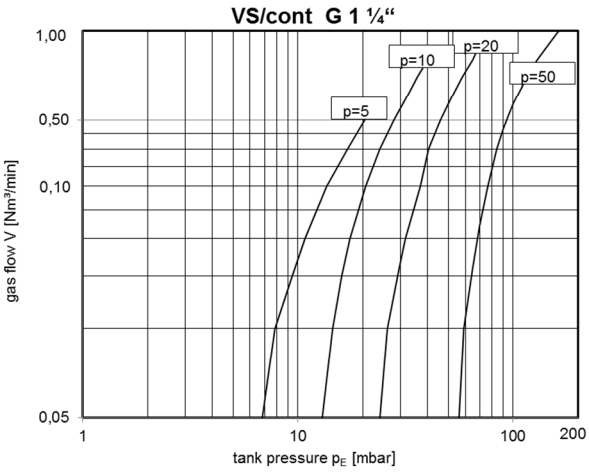


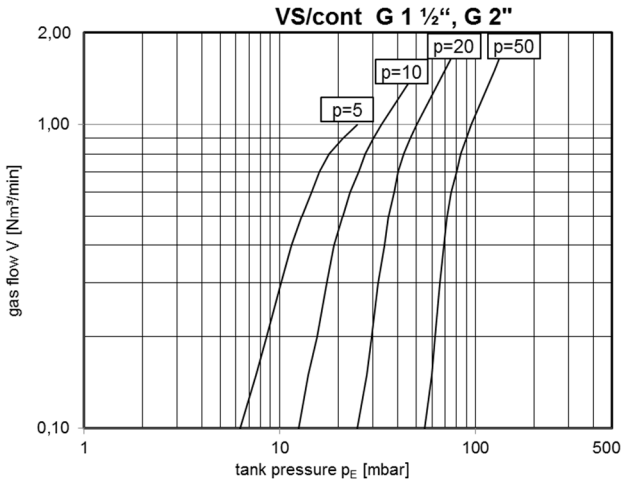
Performance curves

The flow capacity V refers to a density of air with ρ = 1.29 kg/m³. The flow capacity for gases with different densities can be calculated sufficiently accurate by the following approximation equation:

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$







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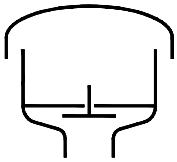
M 8 N / D 8 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

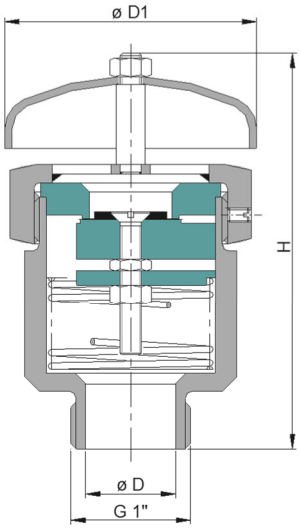
Type sheet
Vacuum relief valve
KITO® VS/o cont. …

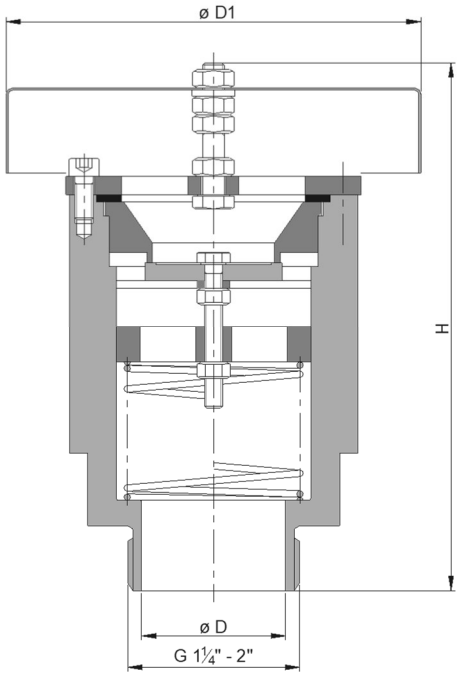


Application

As end-of-line device, for venting of tank installations for ventilation and to prevent inadmissible vacuum. Usually installed on top of a tank, if applicable in conjunction with a pressure relief valve on a common connecting pipe. Valve is not explosion-proof, thus cannot be used for flammable media.

Dimensions (mm) and settings (mbar)





size	D	D1	H	kg	setting
G 1”	**25**	70	110	1	5 - 210
G 1 ¼“	**32**	115	145	3	
G 1 ½“	**40**				
G 2”					

Weight refers to the standard design

Design

	size G 1“	**size G 1 ¼“, G 1 ½“ , G 2“**
housing	stainless steel mat. no. 1.4571	
valve seat / valve pallet	PTFE	stainless steel mat. no. 1.4571
sealing	FEP	PTFE
compression spring	stainless steel mat. no. 1.4571	
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
connection	threaded format	

Example for order

KITO® VS/o cont. 2”
(design with threaded connection G 2“)

Without EC certificate and CE-marking

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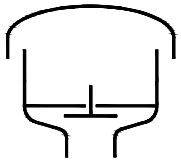
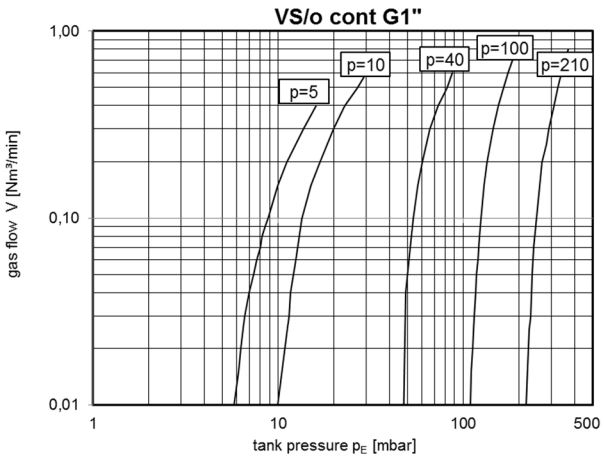
Type sheet
Vacuum relief valve
KITO® VS/o cont. …

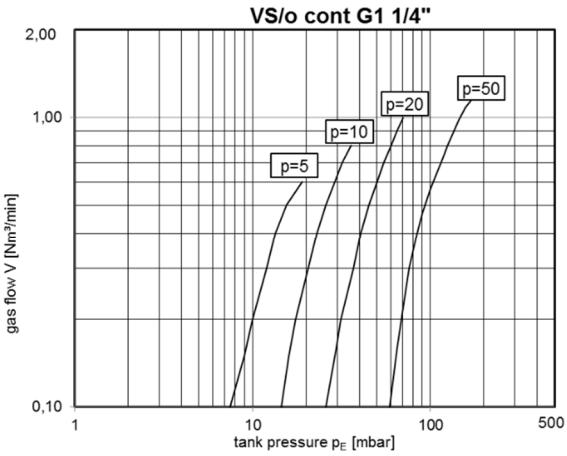


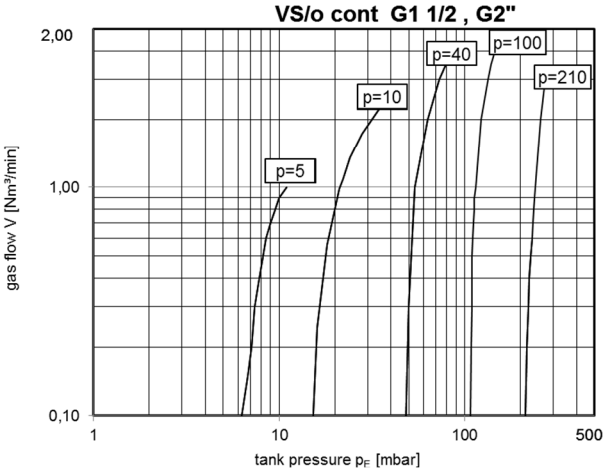
Performance curves

The flow capacity V refers to a density of air with ρ = 1.29 kg/m³. The flow capacity for gases with different densities can be calculated sufficiently accurate by the following approximation equation:

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$







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M 9 N / D 9 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

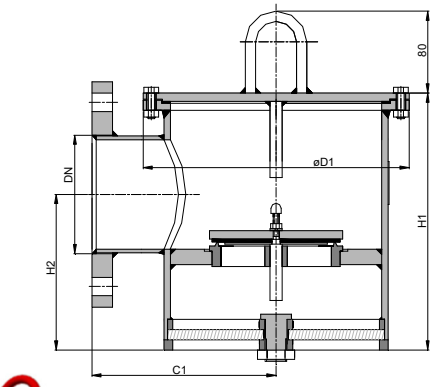
Type sheet
Deflagration proof vacuum relief valve
KITO® VS/KS-…-IIB3

Application

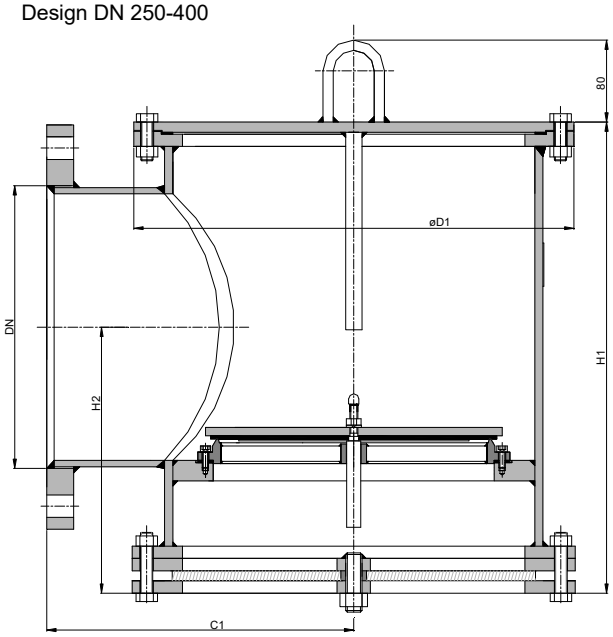
Explosion proof safety valve to protect inbreathing openings of storage tanks, vessels and pipes to prevent inordinate vacuum. Approved for flammable liquids of explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C.

Dimensions (mm) and settings (mbar)

Design DN 50-200



Design DN 250-400



DN DIN	DN ASME	C1	D1	H1	H2	~kg	min. - max. *(load weight from PE)*	setting min. - max.	min. - max. *(with housing extension)*
50 PN 16	**2“**	120	170	212	108	11	1.8 - 7.3	7.4 - 130	> 130 - 200
80 PN 16	**3“**	144	200	236	131	16	1.8 - 7.7	7.8 - 115	> 115 - 200
100 PN 16	**4“**	180	260	258	152	24	1.8 - 7.7	7.8 - 155	> 155 - 200
125 PN 16	**5“**	195	285	305	173	30	1.9 - 6.8	6,9 - 130	> 130 - 150
150 PN 16	**6“**	220	320	344	200	40	1.8 - 11.9	12 - 150	-
200 PN 10	**8“**	255	380	404	232	58	2 - 11.9	12 - 100	-
250 PN 10	**10“**	300	430	469	260	86	2.2 - 11.9	12 - 100	-
300 PN 10	**12“**	345	520	582	342	143	2.5 - 15.2	15.3 - 100	-
350 PN 10	**14“**	390	612	628	360	190	2.5 - 15.2	15.3 - 50	-
400 PN 10	**16“**	450	685	729	438	245	2.5 - 15.2	15.3 - 50	-

Indicated weights are understood without weight load and refer to the standard design
Higher settings see KITO® VS/KS-1-…-IIB3 (type sheet D 11.1 N)

Example for order

KITO® VS/KS-50-IIB3
(design with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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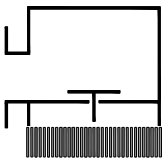
D 11 N
Date: 05-2019
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet
Deflagration proof vacuum relief valve
KITO® VS/KS-…-IIB3



Design

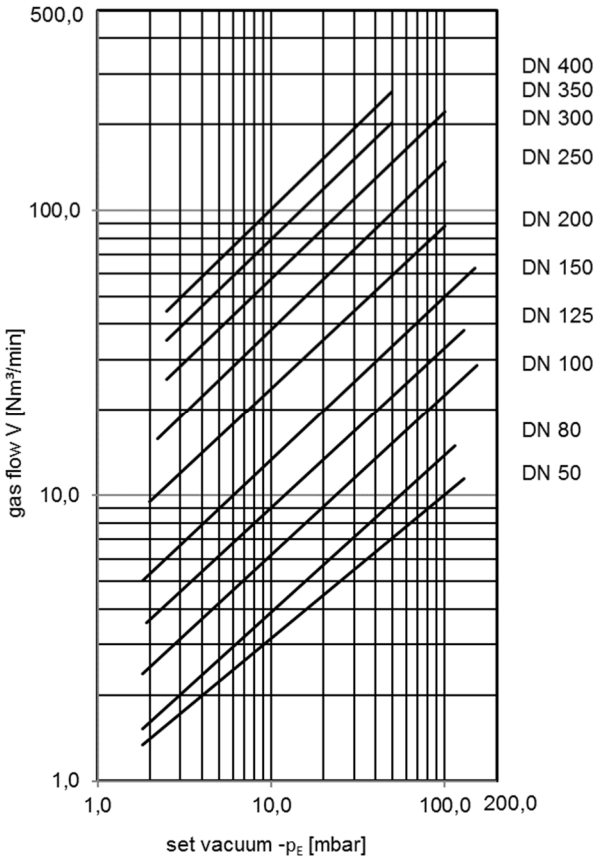
	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
KITO®-flame arrester element	interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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D 11 N
Date: 05-2019
Created: Abt. Doku KITO

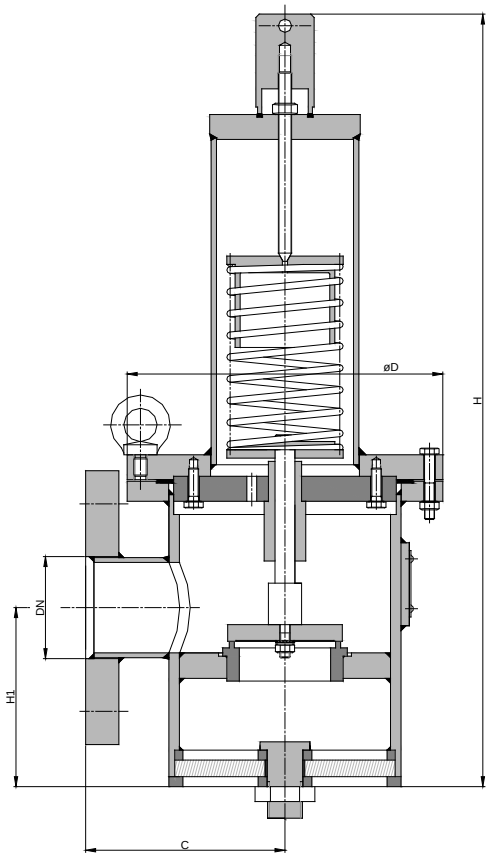
KITO Armaturen GmbH

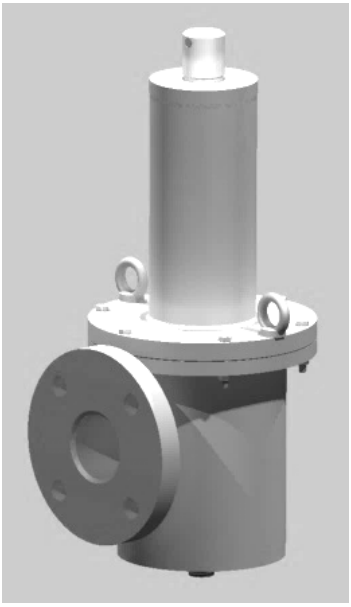
Type sheet
Deflagration proof vacuum relief valve
KITO® VS/KS-1-…-IIB3

Application

Explosion proof safety valve to protect inbreathing openings of storage tanks, vessels and pipes to prevent inordinate vacuum. Approved for flammable liquids of explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C.

Dimensions (mm) and settings (mbar)





DN		C	D	H	H1	kg	setting	
DIN	ASME						min.	max.
50 PN 16	**2“**	120	190	485	108	20	>200	350
80 PN 16	**3“**	145	214	660	131	30		
100 PN 16	**4“**	180	260	690	152			
125 PN 16	**5“**	195			173		>150	
150 PN 16	**6“**	220			200			
200 PN 10	**8“**	255	394	880	232		>100	

Weight refers to the standard design
Lower settings see KITO® VS/KS-…-IIB3 (type sheet D 11 N), higher settings on request

Example for order

KITO® VS/KS-1-50-IIB3
(design with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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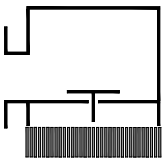
D 11.1 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet
Deflagration proof vacuum relief valve
KITO® VS/KS-1-…-IIB3



Design

	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve pallet	spring loaded	
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
KITO®-flame arrester element	interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

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KITO Armaturen GmbH

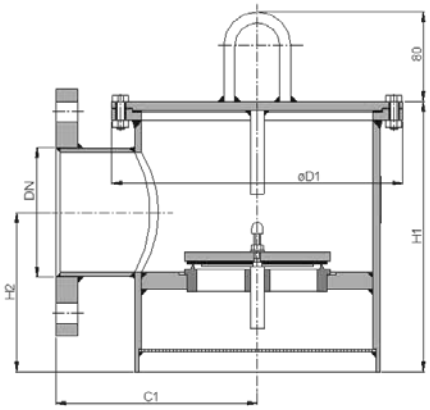
Type sheet
Vacuum relief valve
KITO® VS/o-…

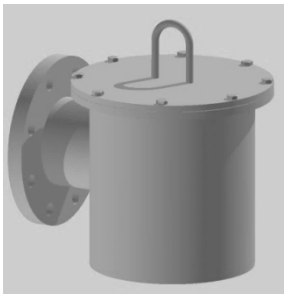
Application

As end-of-line armatures, for venting apertures on tank installations for ventilation and to prevent inadmissible vacuum. Usually mounted on top of a tank, if applicable in conjunction with a pressure relief valve on a common connecting pipe. The valve is not explosion-proof, thus cannot be used for flammable media.

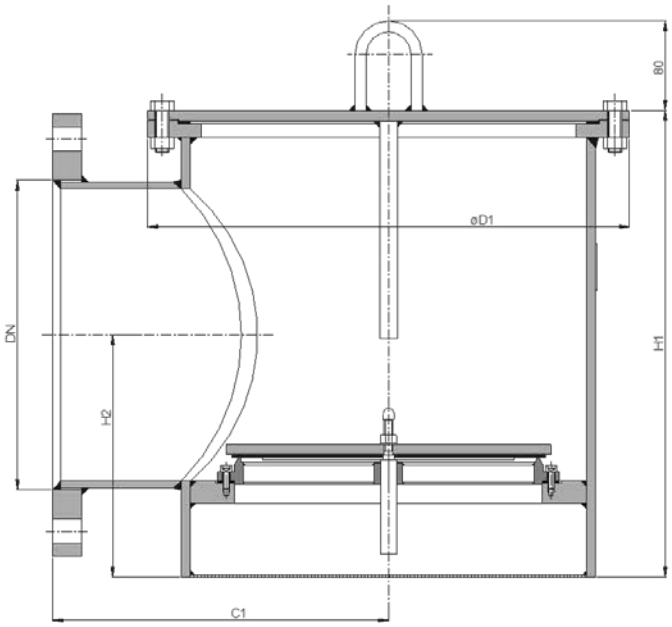
Dimensions (mm) and settings (mbar)

Design DN 50-200





Design DN 250-400



DN DIN	DN ASME	C1	D1	H1	H2	~kg	min. - max. *(load weight from PE)*	setting min. - max.	min. - max. *(with housing extension)*
50 PN 16	**2“**	120	170	206	108	10	1.8 - 7.3	7.4 - 130	> 130 - 200
80 PN 16	**3“**	144	200	232	131	13	1.8 - 7.7	7.8 - 115	> 115 - 200
100 PN 16	**4“**	180	260	262	152	21	1.8 - 7.7	7.8 - 155	> 155 - 200
125 PN 16	**5“**	195	285	296	173	26	1.9 - 6.8	6.9 - 130	> 130 - 150
150 PN 16	**6“**	220	320	337	200	33	1.8 - 11.9	12 - 150	-
200 PN 10	**8“**	255	380	404	232	55	2 - 11.9	12 - 100	-
250 PN 10	**10“**	300	430	459	248	72	2.2 - 11.9	12 - 100	-
300 PN 10	**12“**	345	520	535	296	125	2.5 - 15.2	15.3 - 100	-
350 PN 10	**14“**	390	612	605	348	166	2.5 - 15.2	15.3 - 50	-
400 PN 10	**16“**	450	685	706	386	216	2.5 - 15.,2	15.3 - 50	-

Indicated weights are understood without weight load and refer to the standard design
Higher settings see KITO® VS/o-1-…-IIB3 (type sheet D 12.1 N)

Example for order

KITO® VS/o-2“
(design with flange connection 2“ ASME B16.5 Class 150 RF)

Without EC certificate and CE-marking

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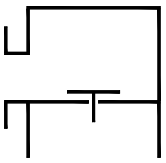
D 12 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Vacuum relief valve
KITO® VS/o-…



Design

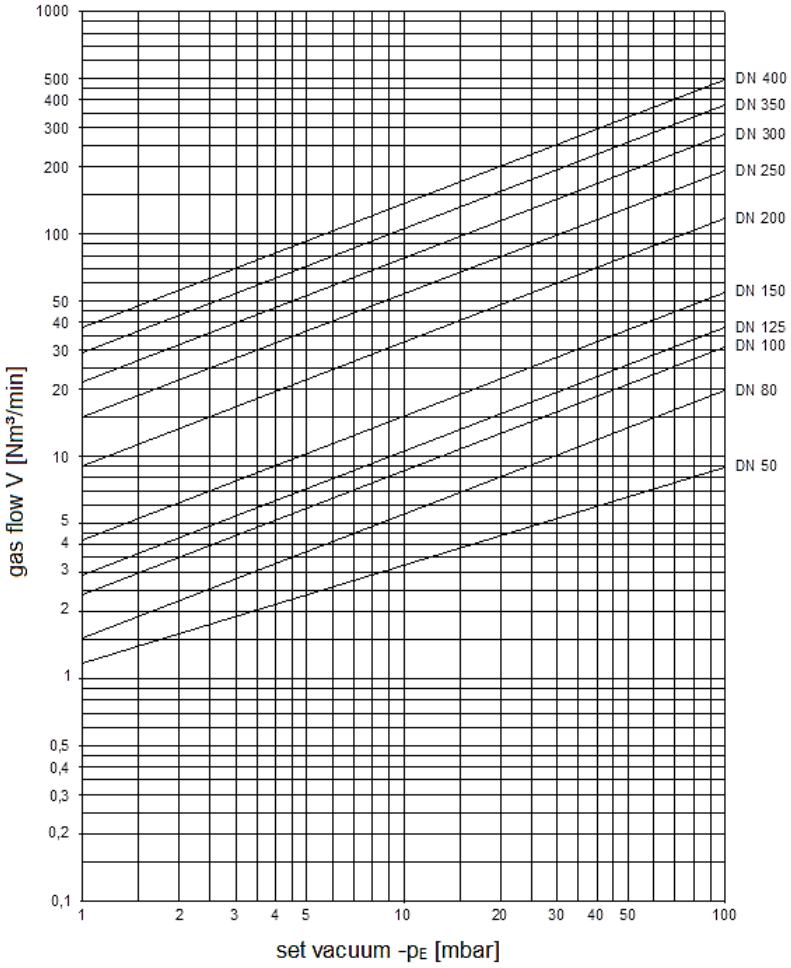
	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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D 12 N
Date: 05-2018
Created: Abt. Doku KITO

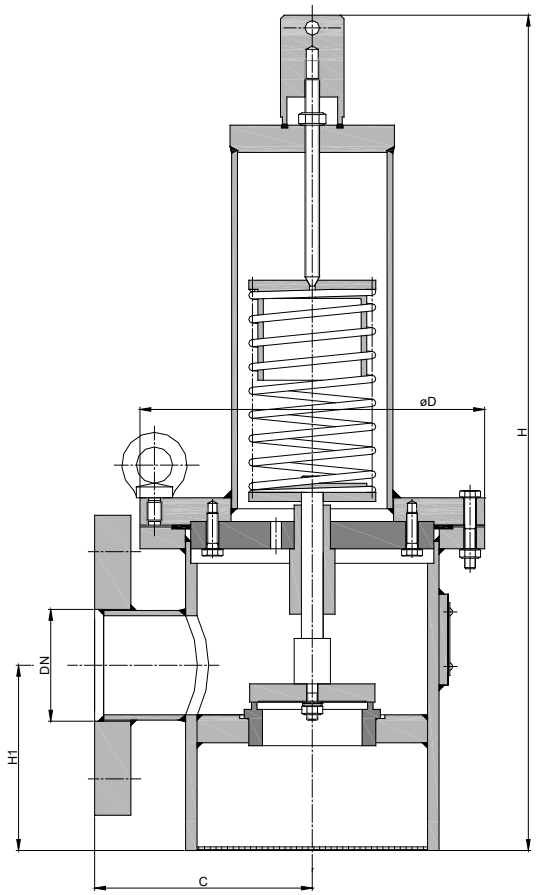
KITO Armaturen GmbH

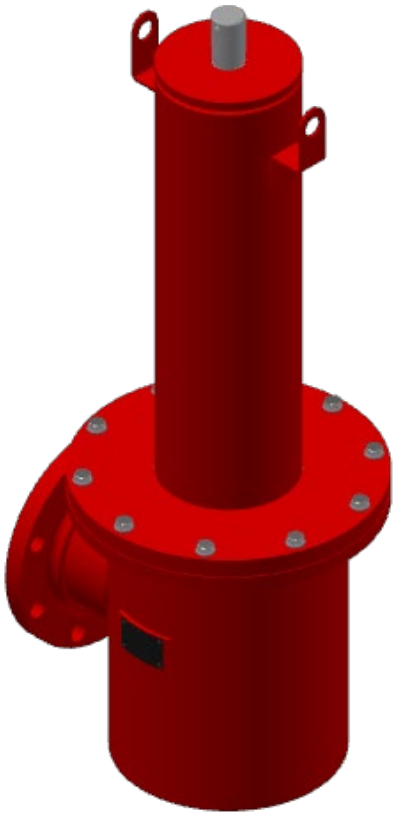
Type sheet
Vacuum relief valve
KITO® VS/o-1-…

Application

As end-of-line armatures, for venting apertures on tank installations for ventilation and to prevent inadmissible vacuum. Usually mounted on top of a tank, if applicable in conjunction with a pressure relief valve on a common connecting pipe. The valve is not explosion-proof, thus cannot be used for flammable media.

Dimensions (mm) and settings (mbar)





DN DIN	DN ASME	C	D	H	H1	kg	setting min.	setting max.
50 PN 16	**2“**	120	190	460	102	20	>200	350
80 PN 16	**3“**	145	214	650	123			
100 PN 16	**4“**	180	300	722	142	46		
125 PN 16	**5“**	195			173		>150	
150 PN 16	**6“**	220	370	1015	190	84		
200 PN 10	**8“**	255	415		220		>100	

Weight refers to the standard design
Lower settings see KITO® VS/o-… (type sheet D 12 N), higher settings on request

Example for order

KITO® VS/o-1-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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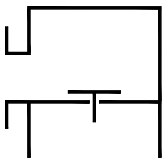
D 12.1 N
Date: 02-2024
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Vacuum relief valve
KITO® VS/o-1-…



Design

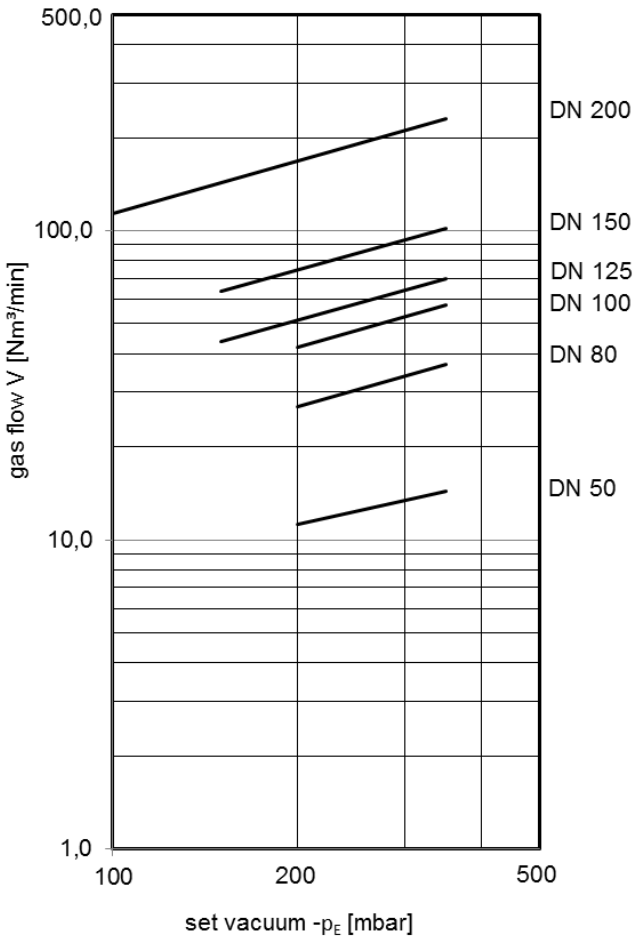
	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve pallet	spring loaded	
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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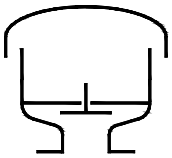
D 12.1 N
Date: 02-2024
Created: Abt. Doku KITO

KITO Armaturen GmbH

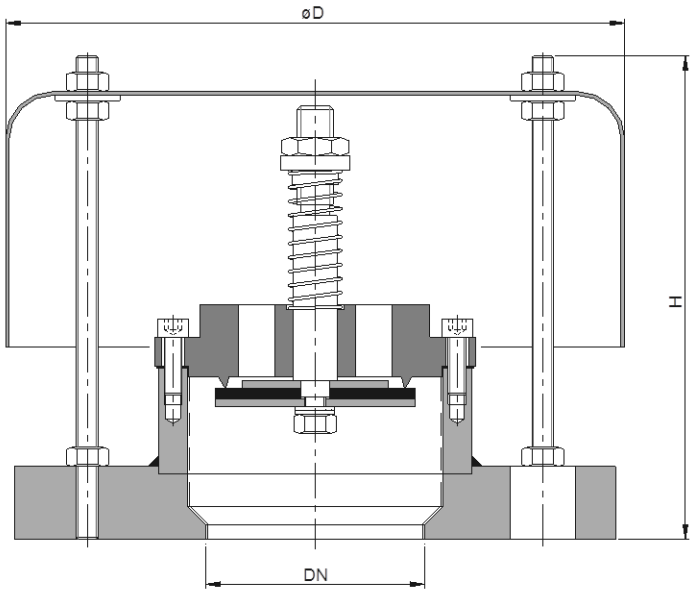
Type sheet
Vacuum relief valve
KITO® VS/oP-...



Application

As end-of-line armature on storage tanks and silos in which powder products and granulates are stored. Ventilation is provided to prevent dangerous vacuum. All moving parts are outside the storage room.

Dimensions (mm) and settings (mbar)



DN		D	H	kg	setting
DIN	ASME				
25 PN 40	1“	205	130	3	2 - 50
50 PN 16	2“	170	133	5	
80 PN 16	3“	285	170	8	
100 PN 16	4“	330	180	10	
125 PN 16	5“	295	240		
150 PN 16	6“	350	248	26	
200 PN 10	8“	550	308	36	
250 PN 10	10“	550	350		

Indicated weight refers to the standard design

Example for order

KITO® VS/oP-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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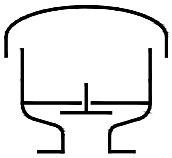
D 12.4 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Vacuum relief valve
KITO® VS/oP-...



Design

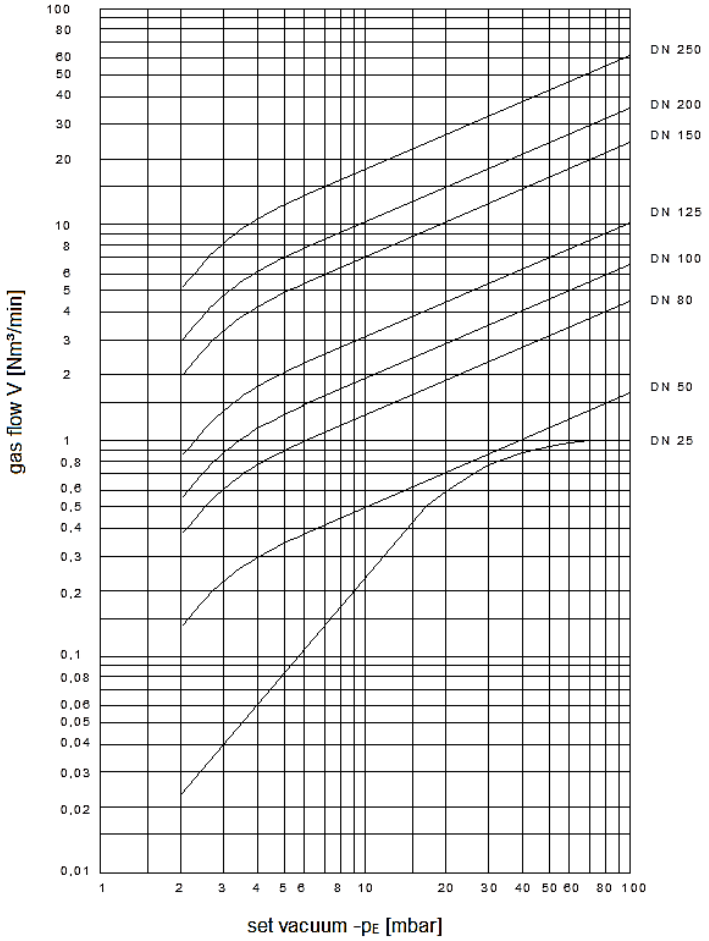
	standard	optionally
housing	steel	stainless steel mat. no.1.4571
inner face of housing	PTFE-coated	
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve sealing	NBR	Viton, PTFE
compression spring	stainless steel mat. no. 1.4310	
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
flange connection	drilled to EN 1092-1 type A	drilled to ASME B16.5 Class 150 RF
	(partial with threaded holes for stud bolts)	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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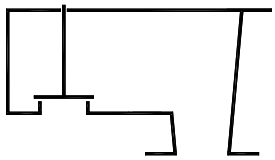
D 12.4 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

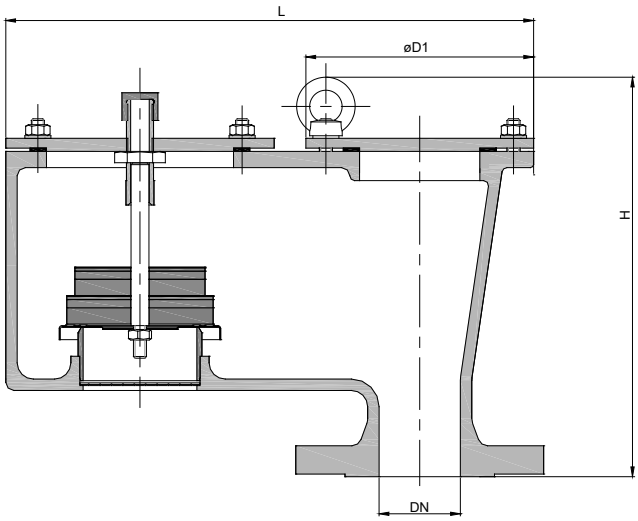
Type sheet
Vacuum relief valve
KITO® VS/oG-…

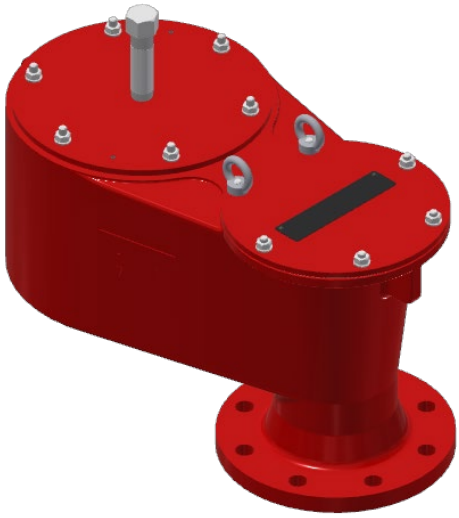


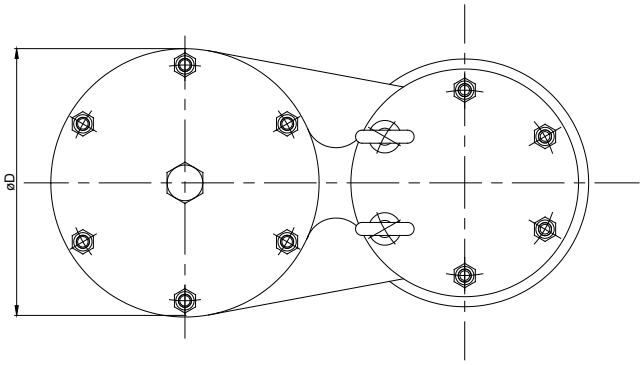
Application

As end-of-line armatures, for venting apertures on tank installations for ventilation and to prevent inadmissible vacuum. Usually mounted on top of a tank. The valve is not explosion-proof, thus cannot be used for flammable media.

Dimensions (mm) and settings (mbar)







DN DIN	DN ASME	D	D1	H	L	setting	kg
50 PN 16	**2“**	165	140	246	325	2 – 60	16
80 PN 16	**3“**	200	180	313	390		22
100 PN 16	**4“**	250	210	359	505		31
150 PN 16	**6“**	350	315	444	713		67
200 PN 10	**8“**	400	365	521	808		88
250 PN 10	**10“**	460	440	589	925		119
300 PN 10	**12“**	460	440	589	925		122

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VS/oG-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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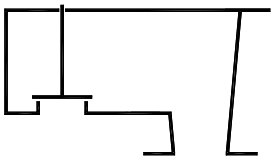
D 13 N
Date: 06-2023
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet
Vacuum relief valve
KITO® VS/oG-…



Design

	standard	optionally
housing	cast steel 1.0619	stainless cast steel mat. no. 1.4408, aluminum (DN 100/4“–300/12“)
cover	steel	stainless steel mat. no. 1.4301, aluminum (DN 100/4“–300/12“)
gasket	PTFE	
valve seat	stainless steel mat. no. 1.4571	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet

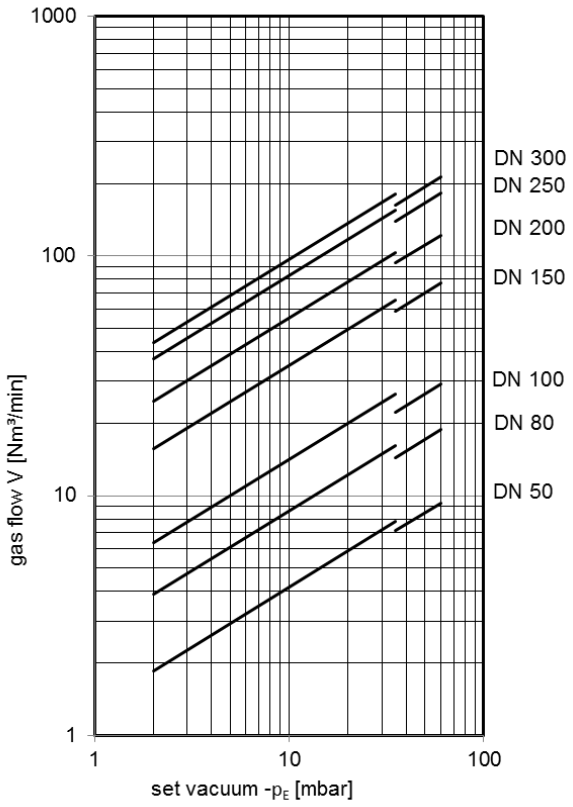
design	pressure range I 2 - < 3,5 mbar	pressure range II ≥ 3,5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel 1.4571	stainless steel 1.4571	stainless steel 1.4571
valve spindle	aluminum / stainless steel 1.4571	stainless steel 1.4571	stainless steel 1.4571	stainless steel 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

Performance curves

The flow capacity V refers to a density of air with ρ = 1.29 kg/m³ at a temperature of 273 K and a pressure of 1.013 mbar. The flow capacity for gases with different densities can be calculated sufficiently accurate by the following approximation equation:

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

Indicated flow rates will be reached by an accumulation of 20% above valve’s setting. If the allowable overpressure is less than 20%, please consult the factory for the corrected volume flow.



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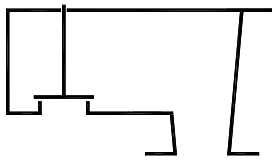
D 13 N
Date: 06-2023
Created: Abt. Doku KITO

KITO Armaturen GmbH

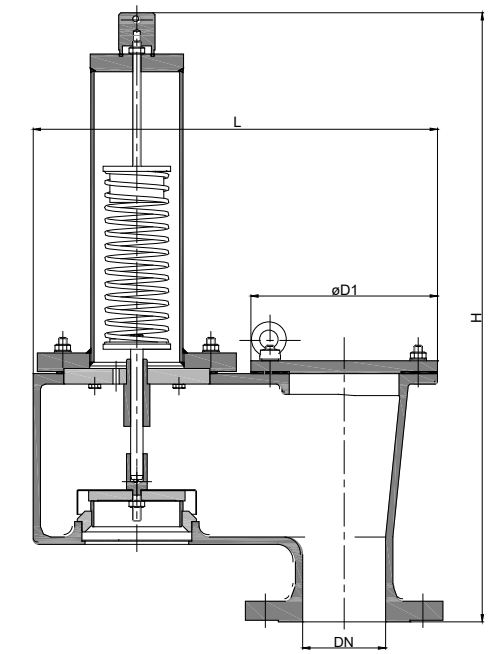
Type sheet
Vacuum relief valve
KITO® VS/oG-… V

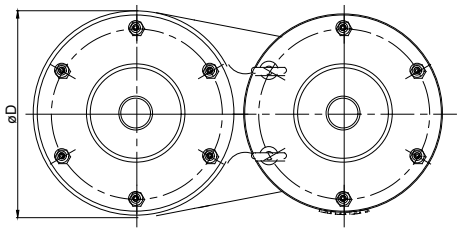


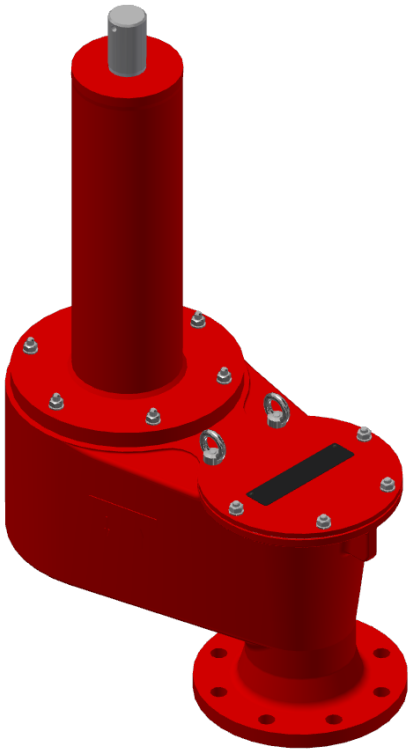
Application

As end-of-line armatures, for venting apertures on tank installations for ventilation and to prevent inadmissible vacuum. Usually mounted on top of a tank. The valve is not explosion-proof, thus cannot be used for flammable media.

Dimensions (mm) and settings (mbar)







DN		D	D1	H	L	setting	kg
DIN	ASME						
50 PN 16	**2“**	165	140	462	325	>60-415	
80 PN 16	**3“**	200	180	589	390		
100 PN 16	**4“**	250	210	719	505		
150 PN 16	**6“**	350	315	956	713		
200 PN 10	**8“**	400	365	1140	808		
250 PN 10	**10“**	460	440	1190	925		
300 PN 10	**12“**	460	440	1190	925		

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VS/oG-50 V
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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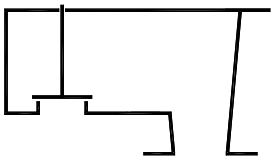
D 13.1 N
Date: 06-2023
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet
Vacuum relief valve
KITO® VS/oG-... V



Design

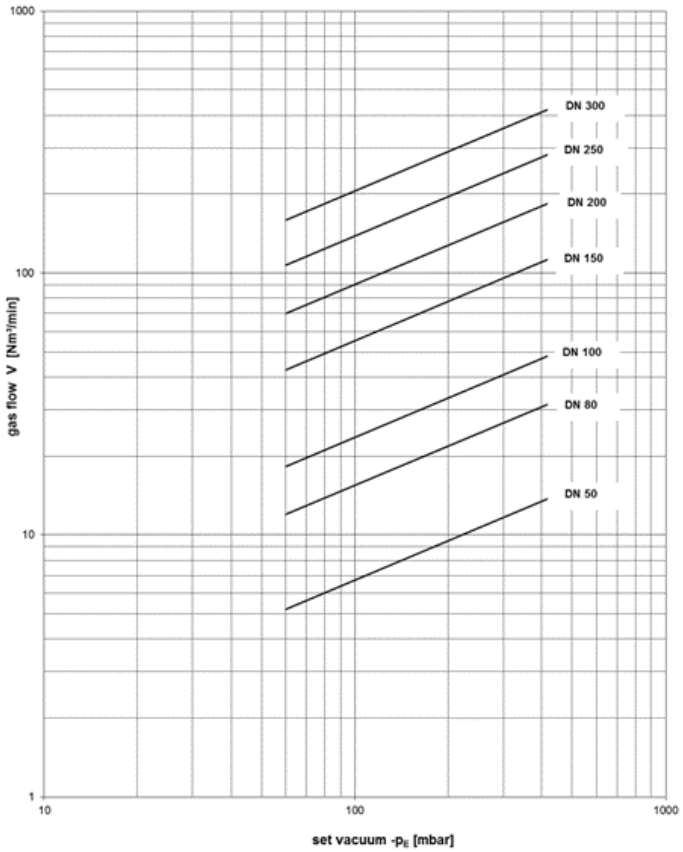
	standard	optionally
housing	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
cover	steel	stainless steel mat. no. 1.4301
gasket	PTFE	
design valve pallet	spring loaded	
valve seat	stainless steel mat. no. 1.4571	
valve pallet, valve spindle	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

The flow capacity V refers to a density of air with ρ = 1.29 kg/m³ at a temperature of 273 K and a pressure of 1.013 mbar. The flow capacity for gases with different densities can be calculated sufficiently accurate by the following approximation equation:

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

Indicated flow rates will be reached by an accumulation of 20% above valve's setting. If the allowable overpressure is less than 20%, please consult the factory for the corrected volume flow.



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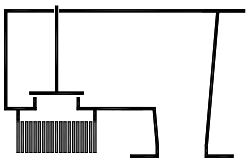
D 13.1 N
Date: 06-2023
Created: Abt. Doku KITO

KITO Armaturen GmbH

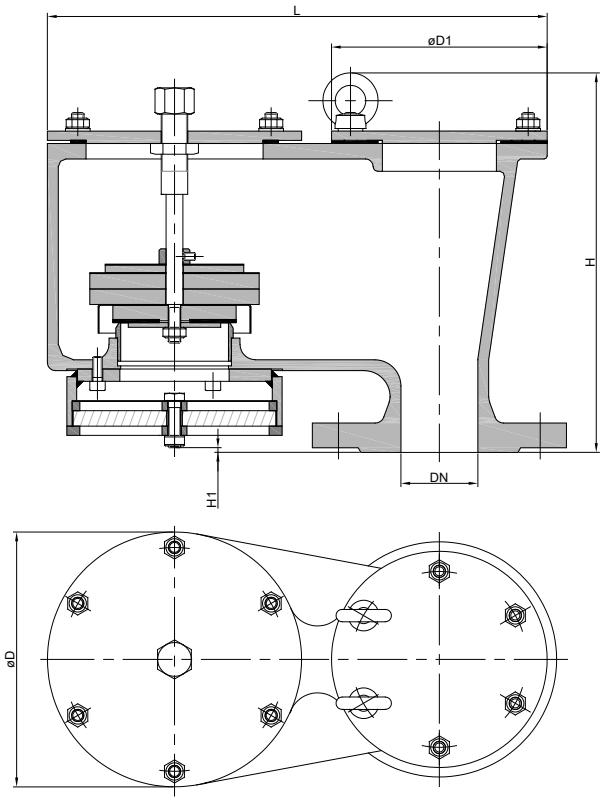
Type sheet
Deflagration proof vacuum relief valve
KITO® VS/KG-IIB3-…

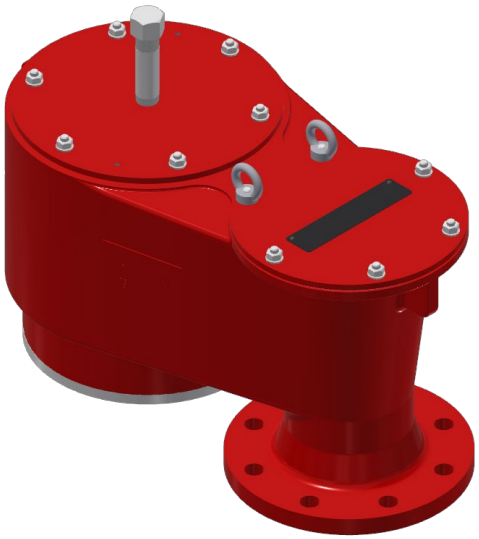


Application

As explosions proof end-of-line armatures, for venting apertures on tank installations for ventilation and to prevent inadmissible vacuum. Usually mounted on top of a tank. Approved for flammable liquids of explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C.

Dimensions (mm) and settings (mbar)





DN		D	D1	H	H1	L	setting	kg
DIN	ASME							
50 PN 16	2“	165	140	246	3	325	2 – 60	18
80 PN 16	3“	200	180	313		390		25
100 PN 16	4“	250	210	359		505		38
150 PN 16	6“	350	315	444		713		82
200 PN 10	8“	420	365	521	12	808		117
250 PN 10	10“	460	440	589		925		146
300 PN 10	12“	460	440	589		925		150

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VS/KG-IIB3-50
(design with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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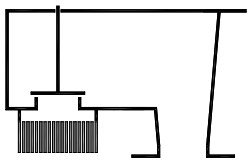
D 14 N
Date: 04-2024
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Deflagration proof vacuum relief valve
KITO® VS/KG-IIB3-…



Design

	standard	optionally
housing	cast steel 1.0619	stainless cast steel mat. no. 1.4408, aluminum (DN 100/4“–300/12“)
cover	steel	stainless steel mat. no. 1.4301, aluminum (DN 100/4“–300/12“)
gasket	PTFE	
valve seat	stainless steel mat. no. 1.4571	
KITO®-flame arrester element	interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet

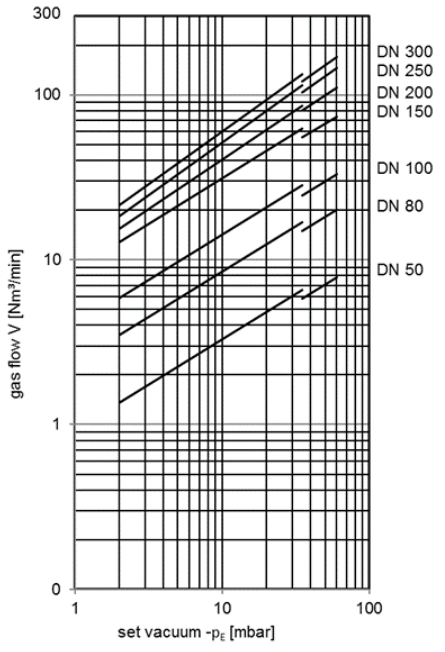
design	pressure range I 2 - < 3,5 mbar	pressure range II ≥ 3,5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel 1.4571	stainless steel 1.4571	stainless steel 1.4571
valve spindle	aluminum / stainless steel 1.4571	stainless steel 1.4571	stainless steel 1.4571	stainless steel 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

Performance curves

The flow capacity V refers to a density of air with ρ = 1.29 kg/m³ at a temperature of 273 K and a pressure of 1.013 mbar. The flow capacity for gases with different densities can be calculated sufficiently accurate by the following approximation equation

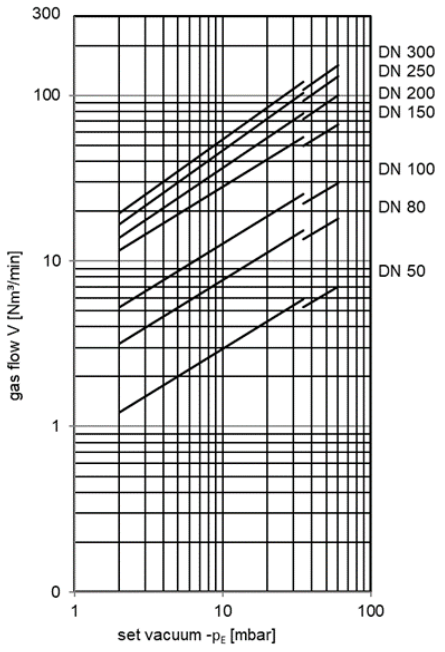
$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \text{ or } \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve’s setting (see DIN 4119).



$$\dot{V}_{10\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \text{ or } \dot{V}_b = \dot{V}_{10\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The volume flow at reducsed lift will be reached by an accumulation of 10 % above valve’s setting (see DIN 4119).



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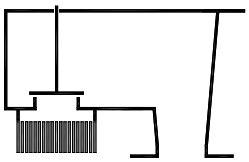
D 14 N
Date: 04-2024
Created: Abt. Doku KITO

KITO Armaturen GmbH

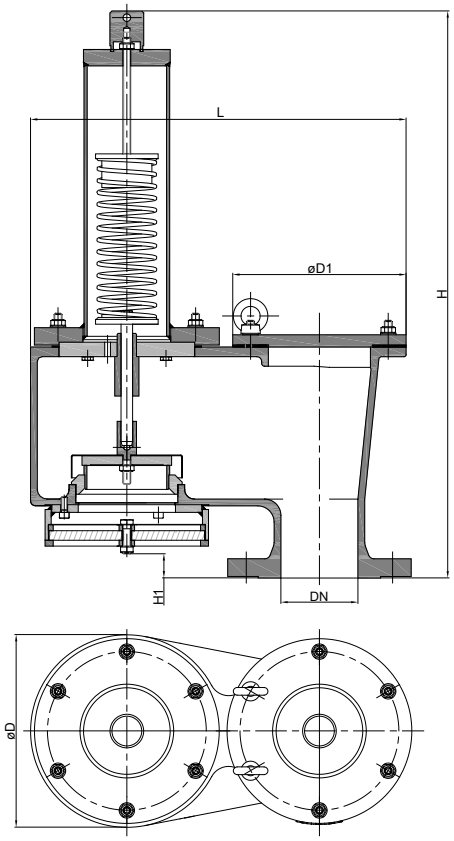
Type sheet
Deflagration proof vacuum relief valve
KITO® VS/KG-IIB3-… V



Application

As explosions proof end-of-line armatures, for venting apertures on tank installations for ventilation and to prevent inadmissible vacuum. Usually mounted on top of a tank. Approved for flammable liquids of explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C.

Dimensions (mm) and settings (mbar)



DN DIN	DN ASME	D	D1	H	H1	L	setting	kg
50 PN 16	2“	165	140	462	3	325	>60-415	
80 PN 16	3“	200	180	589		390		
100 PN 16	4“	250	210	719		505		
150 PN 16	6“	350	315	956		713		
200 PN 10	8“	420	365	1140	12	808		
250 PN 10	10“	460	440	1190		925		
300 PN 10	12“	460	440	1190		925		

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VS/KG-IIB3-50 V
(design with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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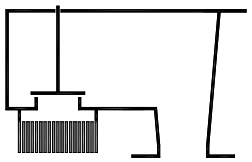
D 14.1 N
Date: 05-2023
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Deflagration proof vacuum relief valve
KITO® VS/KG-IIB3-… V



Design

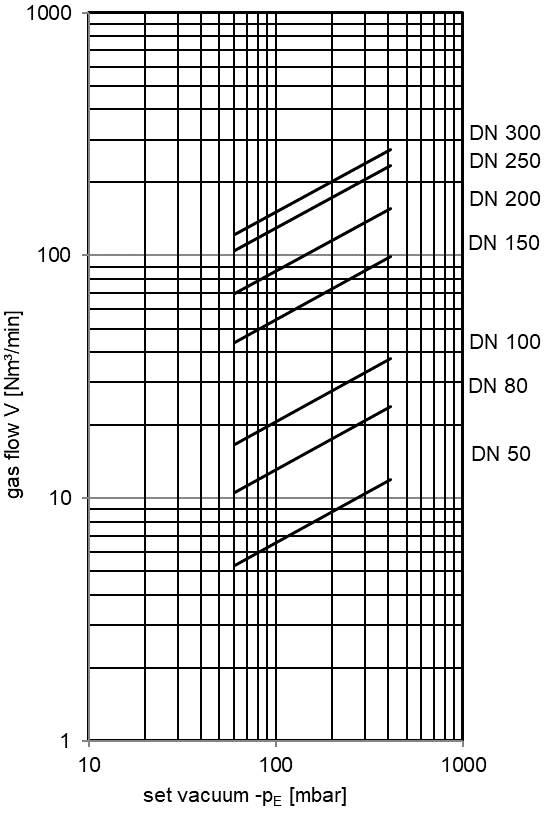
	standard	optionally
housing	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
cover	steel	stainless steel mat. no. 1.4301
gasket	PTFE	
design valve pallet	spring loaded	
valve seat	stainless steel mat. no. 1.4571	
valve pallet, valve spindle	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
KITO®-flame arrester element	interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

The flow capacity V refers to a density of air with ρ = 1.29 kg/m³ at a temperature of 273 K and a pressure of 1.013 mbar. The flow capacity for gases with different densities can be calculated sufficiently accurate by the following approximation equation:

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

Indicated flow rates will be reached by an accumulation of 20% above valve's setting. If the allowable overpressure is less than 20%, please consult the factory for the corrected volume flow.



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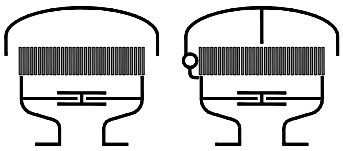
D 14.1 N
Date: 05-2023
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/KS-IIA-…-A
KITO® VD/KS-IIA-…-K

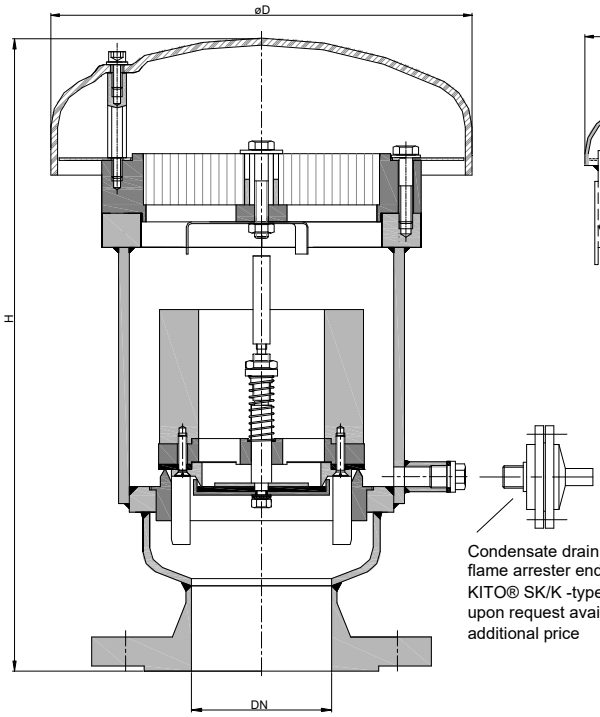


Application

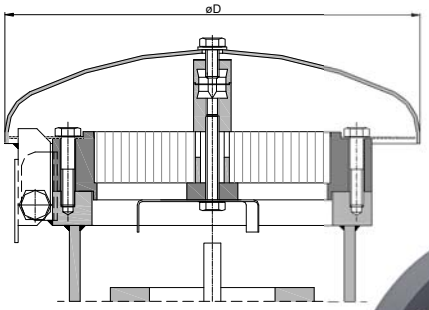
Proof for products of explosion group IIA with a maximum experimental safe gap (MESG) > 0.9 mm and an maximum operating temperature of 60 °C. Mainly used as equipment of fixed roof tanks for venting and inbreathing to prevent undue pressure resp. vacuum and undesired losses of vaporization, respectively undue emissions. Installation on top of storage vessels. Available with an explosion and endurance burning proofed condensate drain device.

Dimensions (mm) and settings (mbar)

KITO® VD/KS-IIA-...-A



KITO® VD/KS-IIA-...-K



Condensate drain flame arrester – End-of-line deflagration flame arrester endurance burning proof
KITO® SK/K -type sheet L30 N-
upon request available against additional price

DN		D	H		~kg	setting vacuum min. - max.	setting pressure min. - max.	setting pressure min. - max. *(with housing extension)*
DIN	ASME		DIN	ASME				
50 PN 16	2“	220	315	335	13.5	3 -100	10 – 50	> 50 - 200
80 PN 16	3“	245	372	390	20.5	3 - 50	12 - 63	> 63 - 200
100 PN 16	4“		370	395	22	3 - 50	10 - 60	> 60 - 200

Indicated weights are understood without weight load and refer to the standard design
Attention !!! Dimension H for design with a weather hood from stainless steel 1.4571 ca. 10-15 mm lower
Higher settings see KITO® VD/KS-1-IIA-…-… (type sheet E 13.1 N)
For largr sizes, we recommend : DN 80-200→ KITO® VD/MC-IIA-…-K or -A (type sheet E 16.9 N)

Example for order

KITO® VD/KS-IIA-50-A
(design with weather hood from PMMA and flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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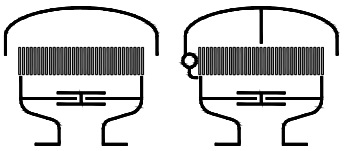
E 13 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/KS-IIA-…-A
KITO® VD/KS-IIA-…-K



Design

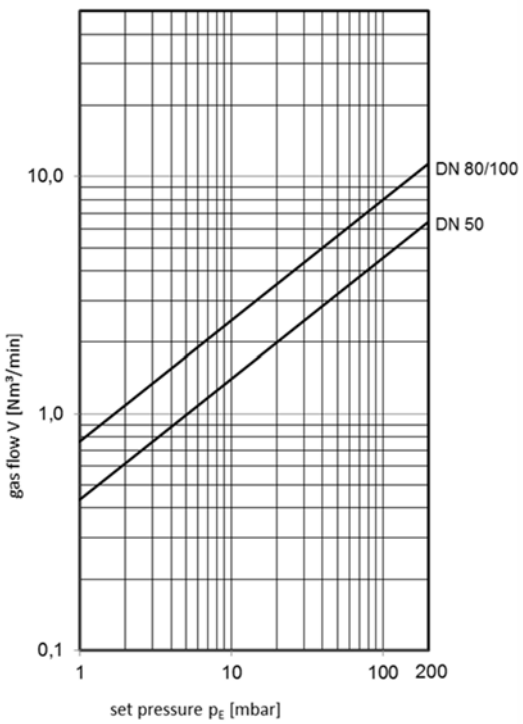
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing (valve pallet for pressure)	
valve pallet (vacuum)	spring loaded	
valve pallet (pressure)	weight loaded	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4308 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood **KITO® VD/KS-IIA-…-A**	PMMA	
weather hood **KITO® VD/KS-IIA-…-K**	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

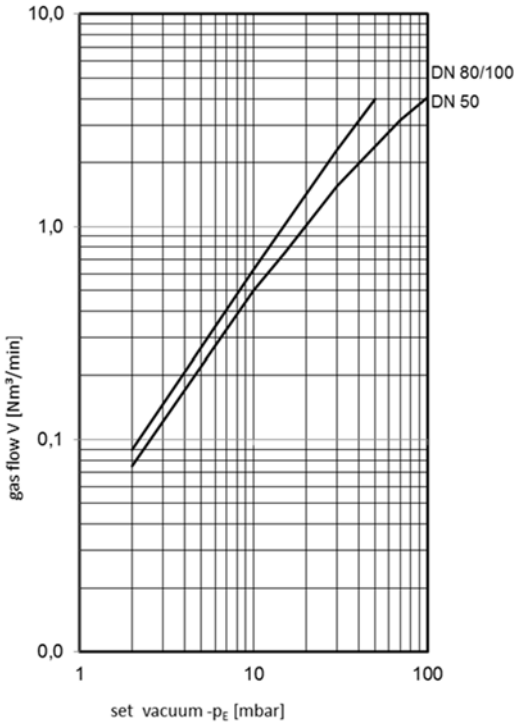
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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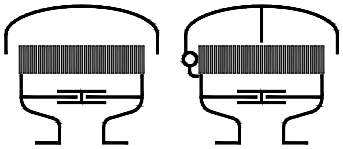
E 13 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

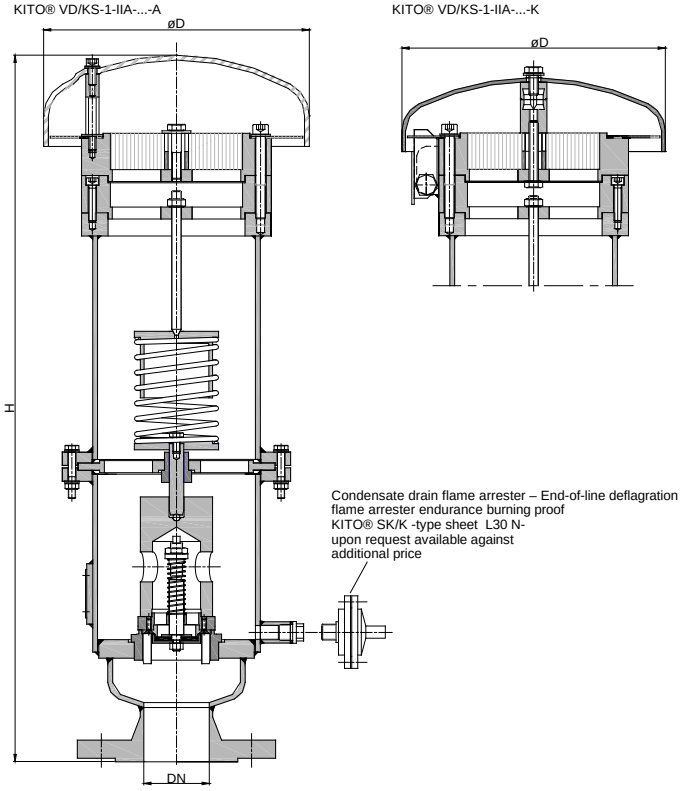
Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/KS-1-IIA-…-A
KITO® VD/KS-1-IIA-…-K



Application

proof for products of explosion group IIA with a maximum experimental safe gap (MESG) > 0.9 mm and an maximum operating temperature of 60 °C. Mainly used as equipment of fixed roof tanks for venting and inbreathing to prevent undue pressure resp. vacuum and undesired losses of vaporization, respectively undue emissions. Installation on top of storage vessels. Available with an explosion and endurance burning proofed condensate drain device.

Dimensions (mm) and settings (mbar)



DN		D	H		kg	setting vacuum		setting pressure	
DIN	ASME		DIN	ASME		min.	max.	min.	max.
50 PN 16	2“	220	585	605	23,5	3	100	>200	350
80 PN 16	3“	245	790	810	40		50		
100 PN 16	4“								

Indicated weights are understood without weight load and refer to the standard design

Attention !!! Dimension H for design with a weather hood from stainless steel 1.4571 ca. 10-15 mm lower

Lower settings see KITO® VD/KS-IIA-…-… (type sheet E 13 N), higher settings on request

Example for order

KITO® VD/KS-IIA-1-50-A
(design with weather hood from PMMA and flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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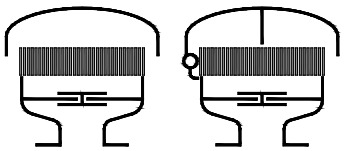
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/KS-1-IIA-…-A
KITO® VD/KS-1-IIA-…-K



Design

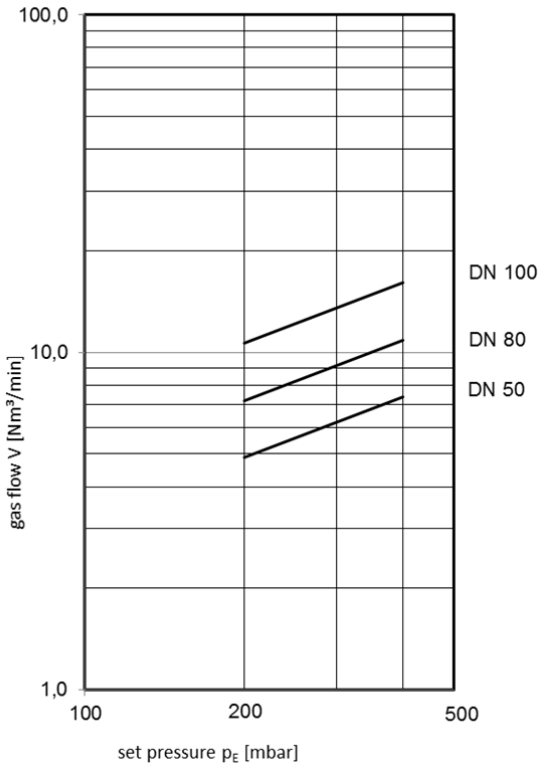
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve sealing (vacuum)	NBR	Viton, PTFE, EPDM
valve sealing (pressure)	metal sealing	
valve pallet	spring loaded	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4308 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood **KITO® VD/KS-1-IIA-…-A**	PMMA	
weather hood **KITO® VD/KS-1-IIA-…-K**	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

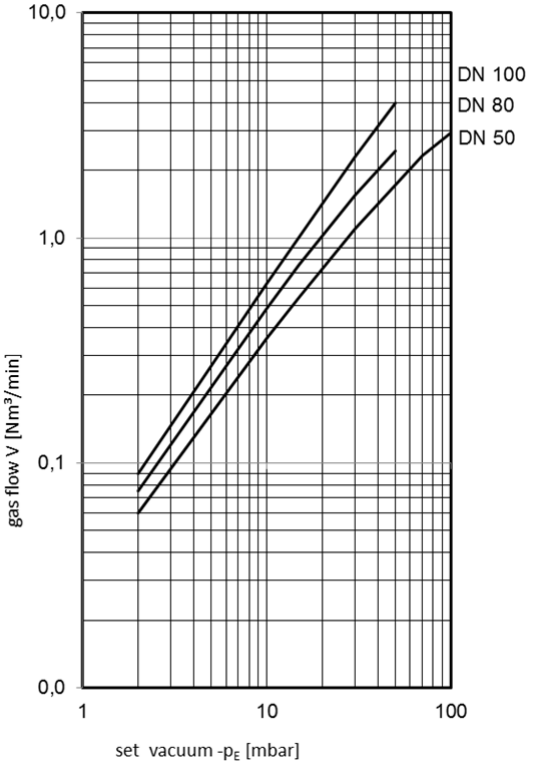
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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E 13.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

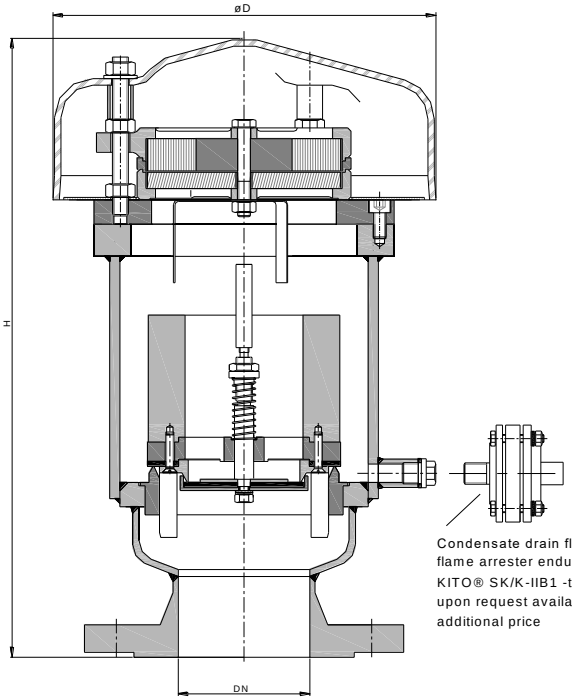
Type sheet
Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/KS-IIB1-…

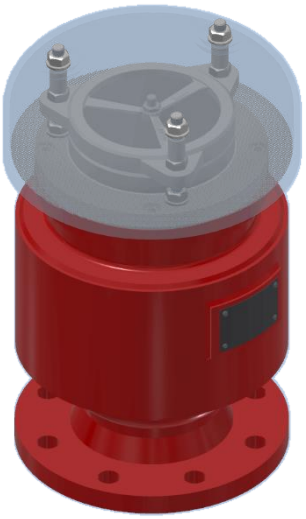
Application

As an end-of-line flame arrester, explosion and endurance burning proof for all inflammable liquids and vapors of explo-sion group IIB1 and also for alcohols with a maximum experimental safe gap (MESG) ≥ 0.85 mm and an maximum operating temperature of 60 °C. Safety valve for out breathing pipes of storage tanks as a protection against pressure resp. vacuum. By appropriate pressure adjust-ment the gasification losses of the storage product are prevented or strongly limited. Installation on top of storage vessels. Available with an explosion and endurance burning proofed condensate drain device.

With additional examination and approval, applicable also for alcohols (ethanol, methanol...)

Dimensions (mm) and settings (mbar)





Condensate drain flame arrester – End-of-line deflagration flame arrester endurance burning proof
KITO® SK/K-IIB1 -type sheet L31 N-
upon request available against
additional price

DN		D	H		~kg	setting pressure vacuum	setting pressure	setting pressure
DIN	ASME		DIN	ASME		min. - max.	min. - max.	min. - max. *(with housing extension)*
50 PN 16	2“	240	332	351		3 -100	10 – 50	> 50 - 200
80 PN 16	3“		383	403		3 - 50	12 - 63	> 63 - 200
100 PN 16	4“		381	406		3 - 50	10 - 60	> 60 - 200

Indicated weights are understood without weight load and refer to the standard design
Higher settings on request !

Example for order

KITO® VD/KS-IIB1-50-A
(design with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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E 13.4 N
Date: 12-2022
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/KS-IIB1-…

Design

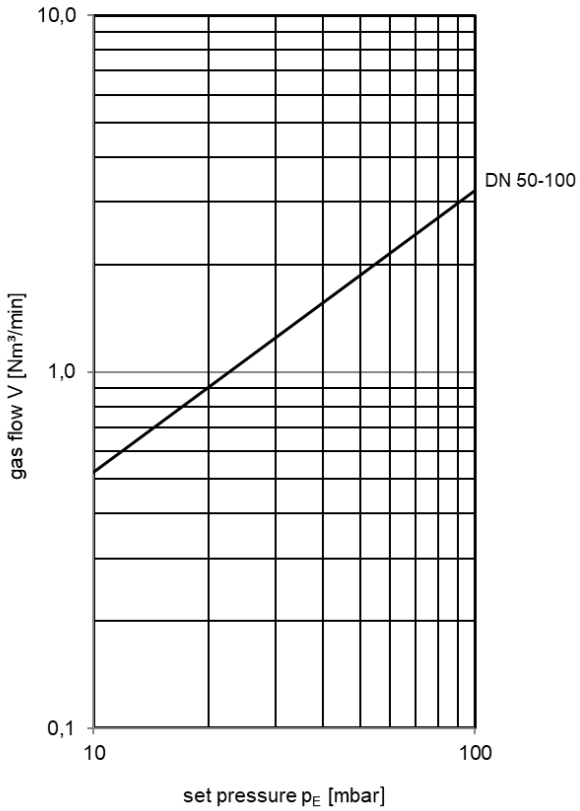
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing (valve pallet for pressure)	
valve pallet (vacuum)	spring loaded	
valve pallet (pressure)	weight loaded	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4408 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood	PMMA	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

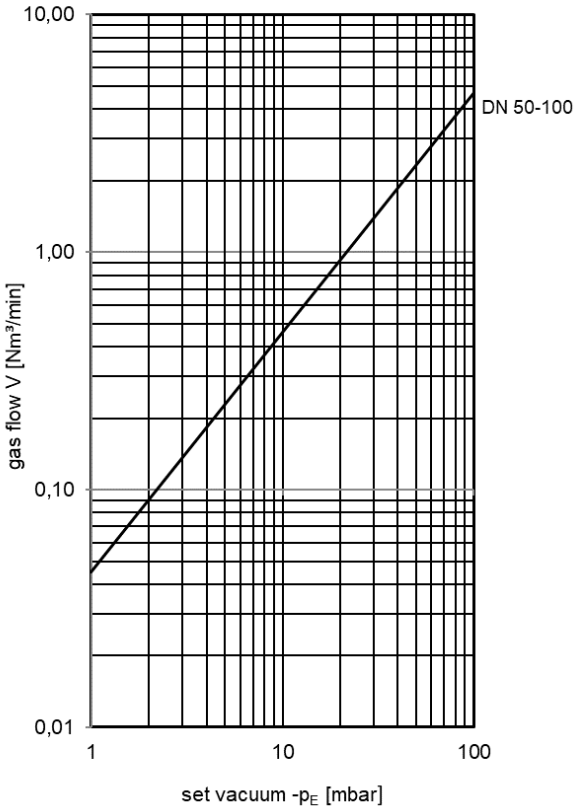
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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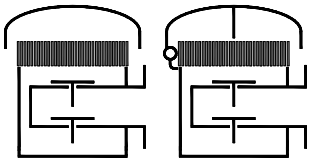
Type sheet

Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/KL-IIA-…/…-A
KITO® VD/KL-IIA-…/…-K

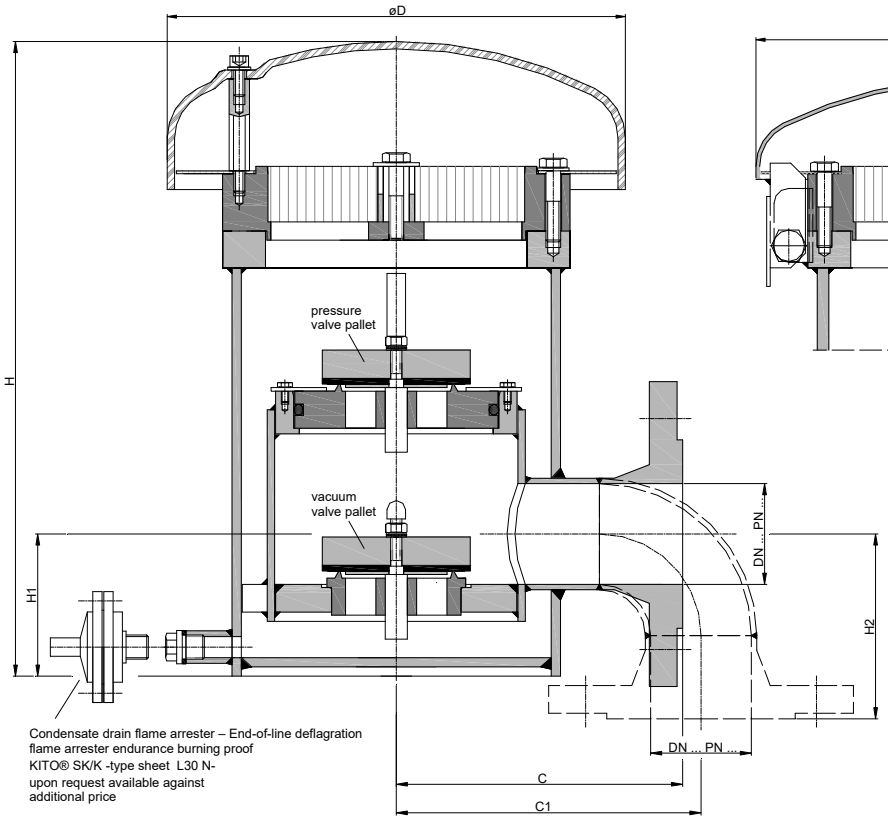


Application

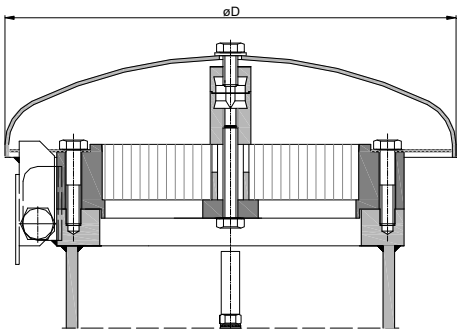
As end-of-line armature, for venting apertures on tank installations, valve is explosion-proof and endurance-burning proof for certain inflammable liquids. Used mainly as venting and breather device for fixed roof tanks to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses and inadmissible emissions. Approved for all materials of the explosion group IIA with a maximum experimental safe gap (MESG) > 0.9 mm and an maximum operating temperature of 60 °C. The housing is mounted perpendicularly on a tank roof. If required by the customer, the valve is equipped with an explosion-proof condensate drain device.

Dimensions (mm)

KITO® VD/KL-IIA-...-A



KITO® VD/KL-IIA-...-K



Vertical connection in size DN 100 only after prior agreement!!! On-site support of the device may be necessary!!!

DN		D	H	H1	H2		C		C1	kg
DIN	ASME				DIN	ASME	DIN	ASME		
50 PN 16	**2“**	248	345	77	121	140	155	174	186	22
80 PN 16	**3“**	248	400	105	165	184	180	200	247	30
100 PN 16	**4“**	248	478	124	204	228	190	190	310	47

Indicated weights are understood without weight load and refer to the standard design
Attention !!! Dimension H for design with a weather hood from stainless steel 1.4571 ca. 10-15 mm lower

Example for order

KITO® VD/KL-IIA-80/50-A (lateral)
(design with lateral flange connection DN 80 PN 16, weather hood from PMMA, vacuum valve pallet DN 80 and pressure valve pallet DN 50)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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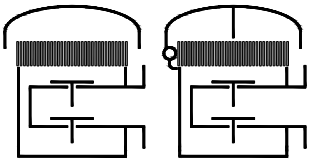
E 14 N
Date: 06-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/KL-IIA-…/…-A
KITO® VD/KL-IIA-…/…-K



Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4308 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood **KITO® VD/KL-IIA-…-A**	PMMA	
weather hood **KITO® VD/KL-IIA-…-K**	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF
connection	lateral	vertical

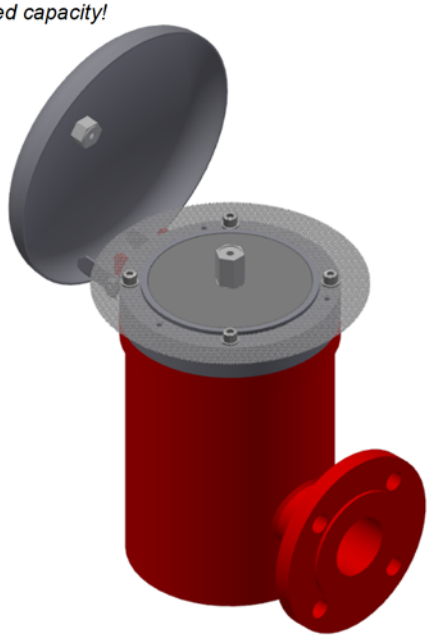
Settings (mbar)

DN	vacuum valve pallet			pressure valve pallet			
	size	**min. - max.** *(load weight from PE)*	**min. - max.**	**size**	**min. - max.** *(load weight from PE)*	**min. - max.**	**min. - max.** *(with housing extension)*
50 PN 16	**50/…**	1.9 - 10.4	10.5 - 65	**50/25**	3.1 - 10.8	10.9 - 200	-
				50/50	1.9 - 10.4	10.5 - 145	> 145 - 200
80 PN 16	**80/…**	1.9 - 7.8	7.9 - 63	**80/50**	1.9 - 10.5	10.6 - 200	-
				80/80	1.9 - 7.8	7.9 - 73	> 73 - 200
100 PN 16	**100/…**	1.8 - 7.6	7.7 - 90	**100/50**	2.7 - 11.3	11.4 - 200	-
				100/80	1.9 - 8.0	8.1 - 90	> 90 - 200
				100/100	1.9 - 7.7	7.8 - 67	> 67 - 200

The size of the vacuum valve pallet is always identical to the size of the flange connection.

The size of pressure valve pallet can be selected in accordance with required capacity!

Higher settings see KITO® VD/KL-1-IIA-…-… (type sheet E 14.1 N).



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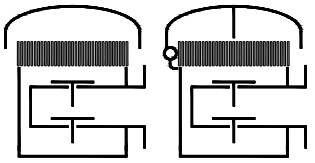
E 14 N
Date: 06-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet
Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/KL-IIA-…/…-A
KITO® VD/KL-IIA-…/…-K

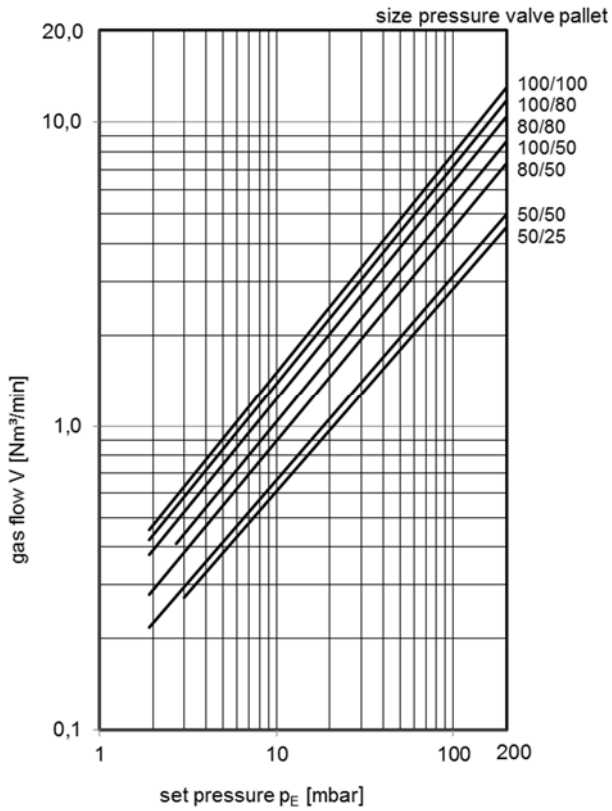


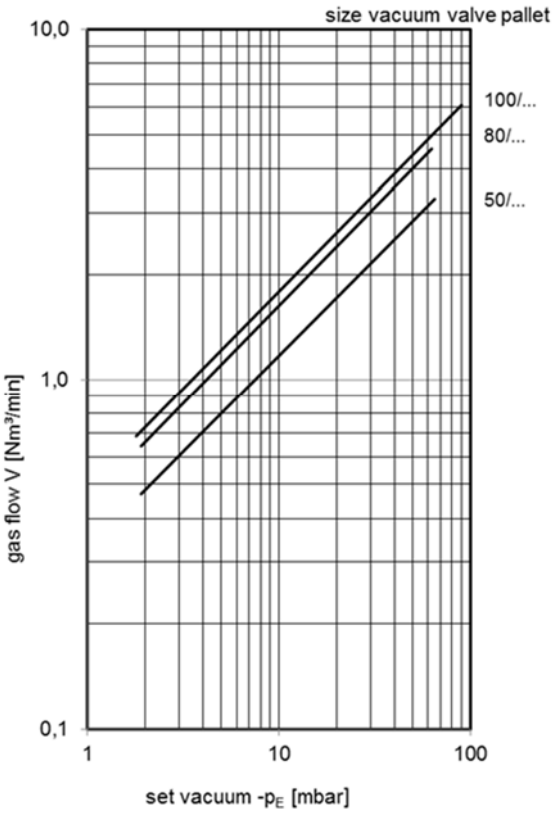
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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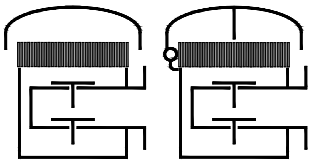
E 14 N
Date: 06-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet

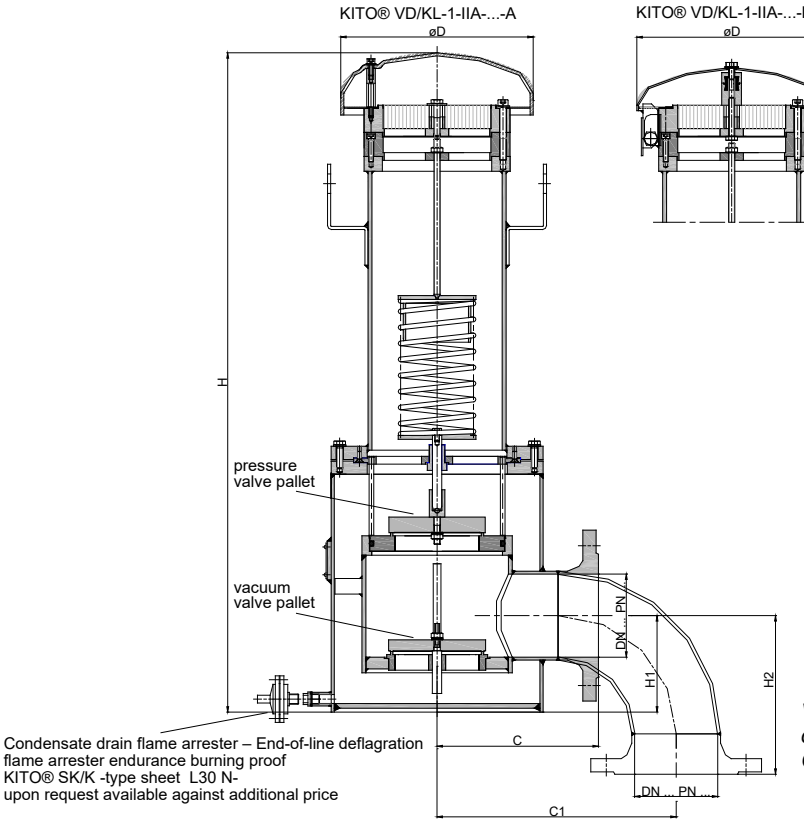
Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/KL-1-IIA-…/…-A
KITO® VD/KL-1-IIA-…/…-K



Application

As end-of-line armature, for venting apertures on tank installations, valve is explosion-proof and endurance-burning proof for certain inflammable liquids. Used mainly as venting and breather device for fixed roof tanks to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses and inadmissible emissions. Approved for all materials of the explosion group IIA with a maximum experimental safe gap (MESG) > 0.9 and an maximum operating temperature of 60 °C. The housing is mounted perpendicularly on a tank roof. If required by the customer, the valve is equipped with an explosion-proof condensate drain device.

Dimensions (mm)



Vertical connection in size DN 100
only after prior agreement!!!
On-site support of the device necessary!!!

DN		D	H	H1	H2		C		C1	kg
DIN	ASME				DIN	ASME	DIN	ASME		
50 PN 16	**2“**	248	552	77	121	140	155	174	186	35
80 PN 16	**3“**	248	645	105	165	184	180	200	247	50
100 PN 16	**4“**	248	850	124	204	228	190	190	310	64

Indicated weights are understood without weight load and refer to the standard design

Attention !!! Dimension H for design with a weather hood from stainless steel 1.4571 ca. 10-15 mm lower

Example for order

KITO® VD/KL-IIA-1-50/25-A (vertical)
(design with vertical flange connection DN 50 PN 16, weather hood from PMMA, vacuum valve pallet DN 50 and pressure valve pallet DN 25)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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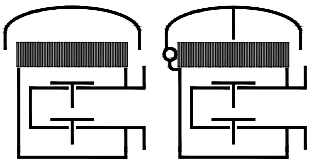
E 14.1 N
Date: 06-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/KL-1-IIA-…/…-A
KITO® VD/KL-1-IIA-…/…-K



Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
valve pallet (pressure)	spring loaded	
valve pallet (vacuum)	weight loaded	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4308 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood **KITO® VD/KL-1-IIA-…-A**	PMMA	
weather hood **KITO® VD/KL-1-IIA-…-K**	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF
connection	lateral	vertical

Settings (mbar)

DN	vacuum valve pallet			pressure valve pallet		
	size	min.	max.	size	min.	max.
50 PN 16	**50/…**	6	55	**…/25**	>200	350
				…/50		
80 PN 16	**80/…**	7	60	**…/50**		
				…/80		
100 PN 16	**100/…**	7	65	**…/50**		
				…/80		
				…/100		

The size of the vacuum valve pallet is always identical to the size of the flange connection.

The size of pressure valve pallet can be selected in accordance with required capacity!

Lower settings see KITO® VD/KL-IIA-…-… (type sheet E 14 N), higher settings on request.

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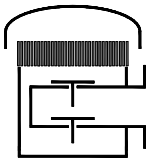
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/KL-IIB1-…/…

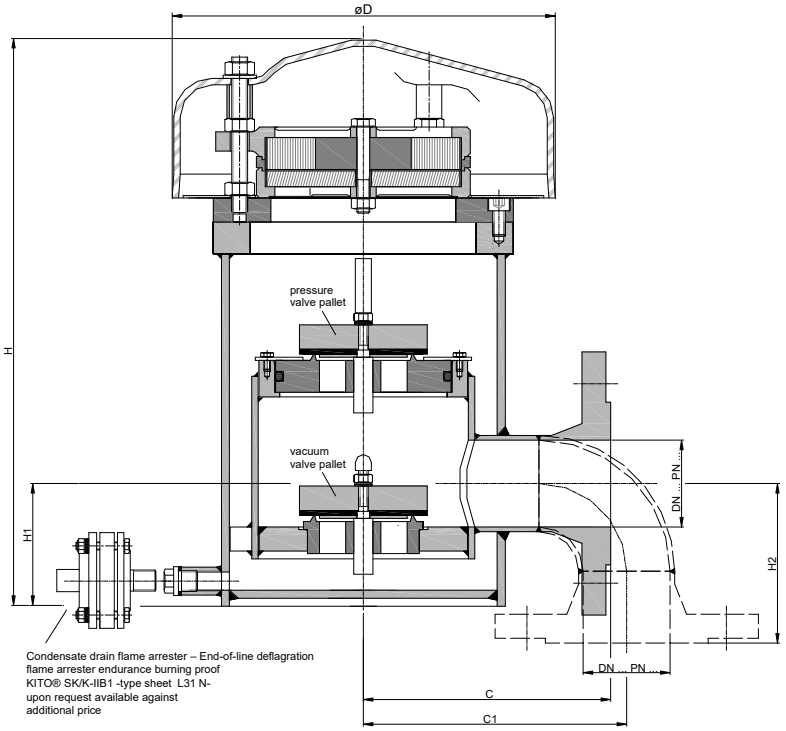


Application

As an end-of-line flame arrester, explosion and endurance burning proof for all inflammable liquids and vapors of explo-sion group IIB1 and also for alcohols with a maximum experimental safe gap (MESG) ≥ 0.85 mm and an maximum operating temperature of 60 °C. Safety valve for out breathing pipes of storage tanks as a protection against pressure resp. vacuum. By appropriate pressure adjustment the gasification losses of the storage product are prevented or strongly limited. An explosion proof condensate drain is also available for this model at extra cost.

With additional examination and approval, applicable also for alcohols (ethanol, methanol...)

Dimensions (mm)



Vertical connection in size DN 100 only after prior agreement!!!
On-site support of the device may be necessary!!!

DN		D	H	H1	H2		C		C1	kg
DIN	ASME				DIN	ASME	DIN	ASME		
50 PN 16	**2“**	240	356	77	121	140	155	174	186	22
80 PN 16	**3“**		410	105	165	184	180	200	247	30
100 PN 16	**4“**		490	124	204	228	190	190	310	47

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/KL-IIB1-80/50 (lateral)
(design with lateral flange connection DN 80 PN 16, vacuum valve pallet DN 80 and pressure valve pallet DN 50)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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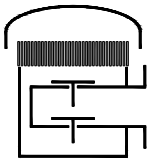
E 15.2 N
Date: 10-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/KL-IIB1-…/…



Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4408 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood	PMMA	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF
connection	lateral	vertical

Settings (mbar)

DN	vacuum valve pallet			pressure valve pallet			
	size	**min. - max.** *(load weight from PE)*	**min. - max.**	**size**	**min. - max.** *(load weight from PE)*	**min. - max.**	**min. - max.** *(with housing extension)*
50 PN 16	**50/…**	1.9 - 10.4	10.5 - 65	**50/25**	3.1 - 10.8	10.9 - 200	-
				50/50	1.9 - 10.4	10.5 - 145	> 145 - 200
80 PN 16	**80/…**	1.9 - 7.8	7.9 - 63	**80/50**	1.9 - 10.5	10.6 - 200	-
				80/80	1.9 - 7.8	7.9 - 73	> 73 - 200
100 PN 16	**100/…**	1.8 - 7.6	7.7 - 90	**100/50**	2.7 - 11.3	11.4 - 200	-
				100/80	1.9 - 8.0	8.1 - 90	> 90 - 200
				100/100	1.9 - 7.7	7.8 - 67	> 67 - 200

The size of the vacuum valve pallet is always identical to the size of the flange connection.

The size of pressure valve pallet can be selected in accordance with required capacity!

Higher settings on request.

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E 15.2 N
Date: 10-2018
Created: Abt. Doku KITO
Design subject to change

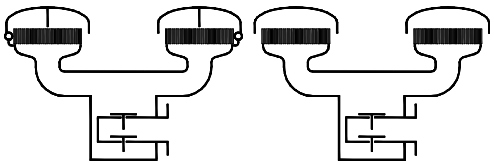
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure and vacuum relief valve

KITO® VD/MB-IIA-…/…-A

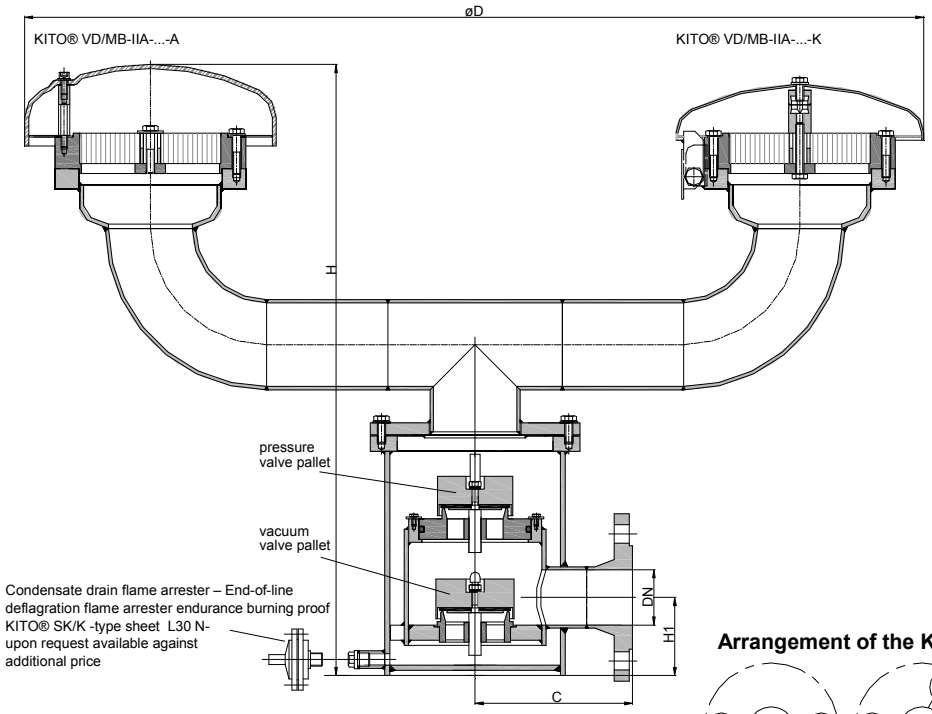
KITO® VD/MB-IIA-…/…-K



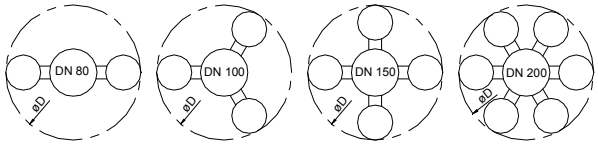
Application

as end-of-line armature, for venting apertures on tank installations, valve is explosion-proof and endurance-burning proof for certain flammable liquids of the explosion group IIA with a maximum experimental safe gap (MESG) > 0.9 and an maximum operating temperature of 60 °C. Used as venting and breather device for fixed roof tanks to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses by variable pressure setting. If desired by the customer, the valve is equipped with an explosion-proof condensate drain device.

Dimensions (mm)



Arrangement of the KITO® flame arrester elements



DN		C	D	H	H1	number of KITO® flame arrester elements	kg
DIN	ASME						
80 PN 16	3“	180	940	655	105	2	
100 PN 16	4“	190	1054	670	124	3	
150 PN 16	6“	245	1234	745	160	4	
200 PN 10	8“	290	1634	835	215	6	

Indicated weights are understood without weight load and refer to the standard design

Attention !!! Dimension H for design with a weather hood from stainless steel 1.4571 ca. 10-15 mm lower

Example for order

KITO® VD/MB-IIA-80/50-K
(design with flange connection DN 80 PN 16, weather hood from stainless steel, vacuum valve pallet DN 80 and pressure valve pallet DN 50)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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E 16.8 N
Date: 06-2018
Created: Abt. Doku KITO
Design subject to change

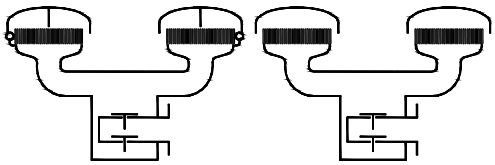
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure and vacuum relief valve

KITO® VD/MB-IIA-…/…-A

KITO® VD/MB-IIA-…/…-K



Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
design valve pallet	orifice plate	
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4308 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood **KITO® VD/MB-IIA-…-A**	PMMA	
weather hood **KITO® VD/MB-IIA-…-K**	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Settings (mbar)

DN	vacuum valve pallet			pressure valve pallet		
	size	min.	max.	size	min.	max.
80 PN 16	**80/…**	1,9	55	**…/50**	2,8	110
				…/80	2,3	40
100 PN 16	**100/…**	1,8	45	**…/50**	2,8	150
				…/80	2,3	60
				…/100	2,1	35
150 PN 16	**150/…**	2,4	60	**…/80**	2,4	170
				…/100	2,2	100
				…/150	2,8	35
200 PN 10	**200/…**	2,2	55	**…/100**	2,4	190
				…/150	2,9	70
				…/200	2,4	30

The size of the vacuum valve pallet is always identical to the size of the flange connection.

The size of pressure valve pallet can be selected in accordance with required capacity!

Higher settings on request!

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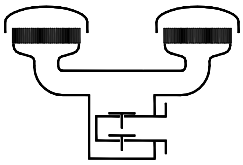
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/MB-IIB1-…/…

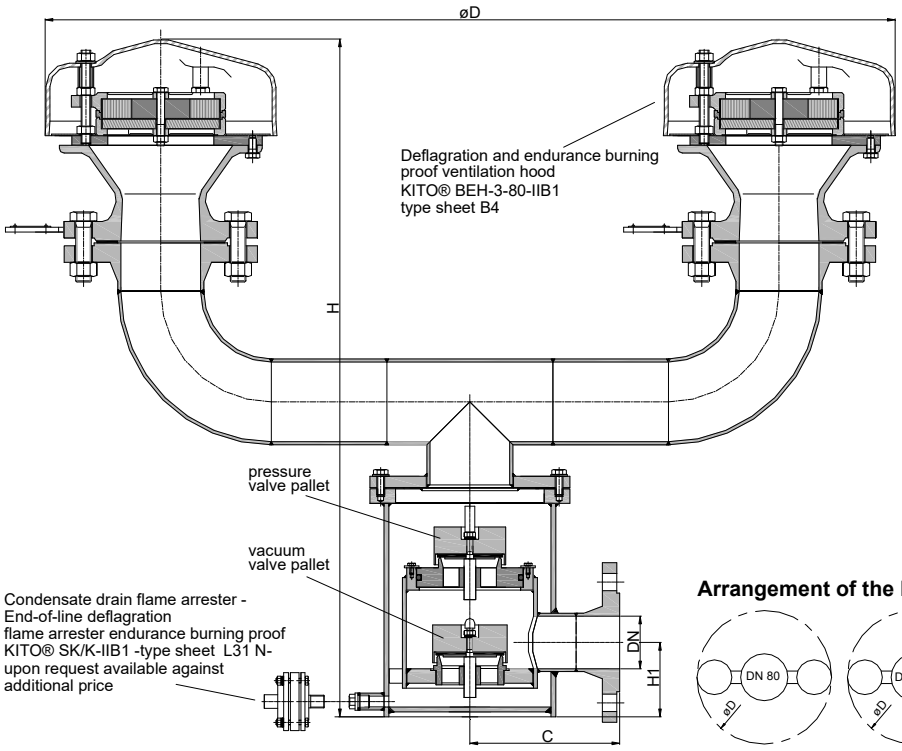


Application

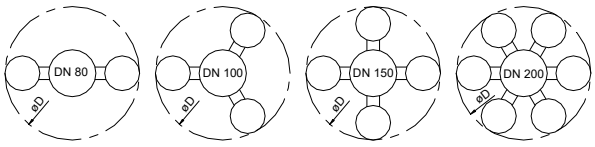
End-of-line flame arrester. Explosion and endurance burning proof for all inflammable liquids and vapors of explosion group IIB1 and also for alcohols with a maximum experimental safe gap (MESG) ≥ 0.85 mm and an maximum operating temperature of 60 °C. This device is not permitted to be installed in enclosed areas. Installation on top of storage tanks, tank access covers or breather pipes. Used as venting and breather device for fixed roof tanks to prevent inadmissible pressure and vacuum and to minimize gas losses by variable pressure setting. An explosion proof condensate drain is also available for this model at extra cost.

KITO® BEH-3-80-IIB1 with additional examination and approval, applicable also for alcohols (ethanol, methanol...)

Dimensions (mm)



Arrangement of the KITO® flame arrester elements



DN		C	D	H	H1	number of KITO® BEH-3-80-IIB1	kg
DIN	ASME						
80 PN 16	**3“**	180	855	770	105	2	
100 PN 16	**4“**	190	950	785	124	3	
150 PN 16	**6“**	245	1110	860	160	4	
200 PN 10	**8“**	290	1470	950	215	6	

Indicated weights are understood without weight load and refer to the stand ard design

Example for order

KITO® VD/MB-IIB1-80/50
(design with flange connection DN 80 PN 16, vacuum valve pallet DN 80 and pressure valve pallet DN 50)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU for KITO® BEH-3-80-IIB1 and KITO® SK/K-IIB1

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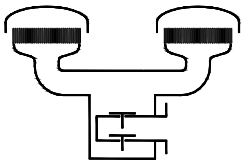
Date: 06-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/MB-IIB1-…/…



Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
housing KITO® BEH-3-80-IIB1	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
gasket	HD 3822	PTFE
design valve pallet	orifice plate	
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4408 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood	PMMA	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Settings (mbar)

DN	vacuum valve pallet			pressure valve pallet		
	size	min.	max.	size	min.	max.
80 PN 16	**80/…**	1,9	55	**…/50**	2,8	110
				…/80	2,3	40
100 PN 16	**100/…**	1,8	45	**…/50**	2,8	150
				…/80	2,3	60
				…/100	2,1	35
150 PN 16	**150/…**	2,4	60	**…/80**	2,4	170
				…/100	2,2	100
				…/150	2,8	35
200 PN 10	**200/…**	2,2	55	**…/100**	2,4	190
				…/150	2,9	70
				…/200	2,4	30

The size of the vacuum valve pallet is always identical to the size of the flange connection.

The size of pressure valve pallet can be selected in accordance with required capacity!

Higher settings on request !

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Date: 06-2018
Created: Abt. Doku KITO
Design subject to change

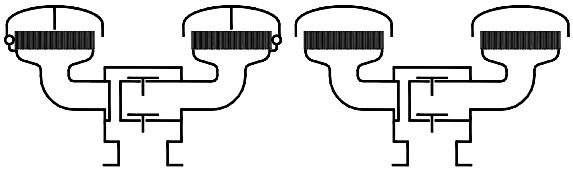
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure and vacuum relief valve

KITO® VD/MC-IIA-…-A

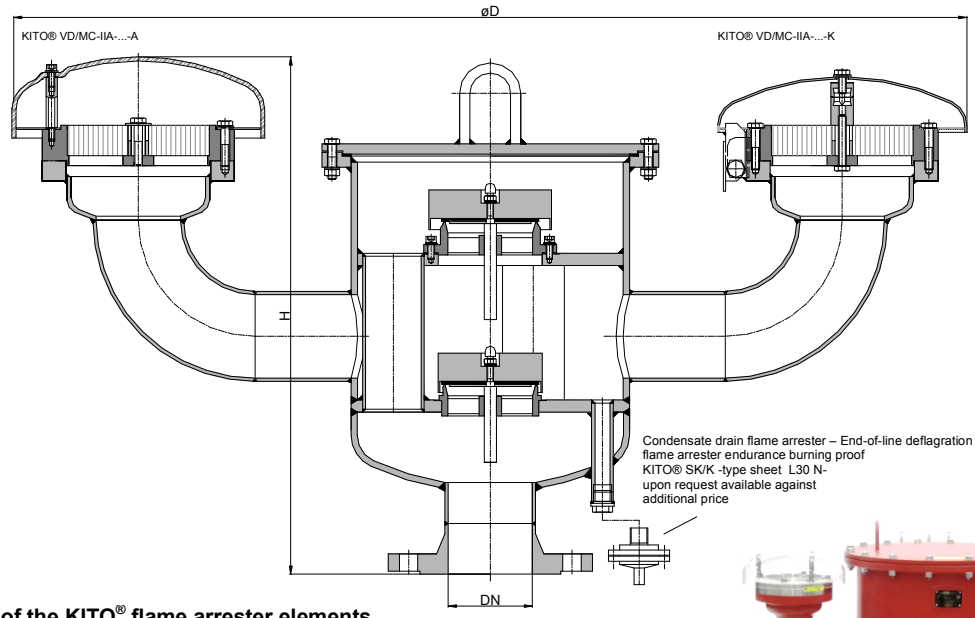
KITO® VD/MC-IIA-…-K



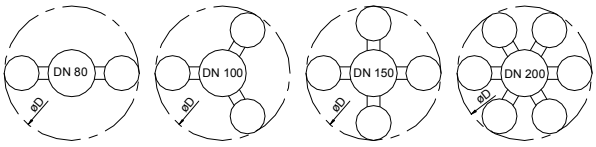
Application

Installations, explosion-proof and endurance burning proof for certain flammable liquids of the explosion group IIA with a maximum experimental safe gap (MESG) > 0.9 mm and an maximum operating temperature of 60 °C. As venting and breather device for fixed roof tanks to prevent inadmissible pressure and vacuum and to minimize gas losses by variable pressure setting of the weight-loaded and/or spring-loaded valve devices. Installation of an explosion-proof condensate drain device is possible.

Dimensions (mm) and settings (mbar)



Arrangement of the KITO® flame arrester elements



DN		D	H	number of KITO® flame arrester elements	setting		kg
DIN	ASME				vacuum min. - max.	pressure min. - max.	
80 PN 16	**3“**	940	500	2	2.9 - 60	1.8 - 100	58
100 PN 16	**4“**	1054	530	3	2.5 - 70	1.7 - 100	110
125 PN 16	**5“**						
150 PN 16	**6“**	1234	535	4	2.9 - 60	2.1 – 110	
200 PN 10	**8“**	1634	680	6	2.9 – 65	2.1 - 105	235
250 PN 10	**10“**						240
300 PN 10	**12“**						245

Indicated weights are understood without weight load and refer to the standard design
Attention !!! Dimension H for design with a weather hood from stainless steel 1.4571 ca. 10-15 mm lower
Higher settings on request !

Example for order

KITO® VD/MC-IIA-80-A
(design with weather hood from PMMA and flange connection DN 80 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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E 16.9 N
Date: 08-2018
Created: Abt. Doku KITO
Design subject to change

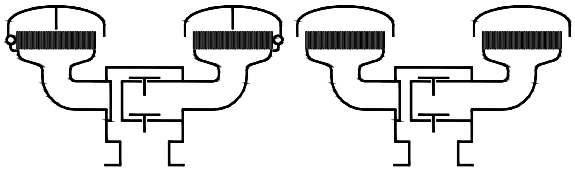
KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure and vacuum relief valve

KITO® VD/MC-IIA-…-A

KITO® VD/MC-IIA-…-K



Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
design valve pallet	orifice plate	
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4308 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood **KITO® VD/MC-IIA-…-A**	PMMA	
weather hood **KITO® VD/MC-IIA-…-K**	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

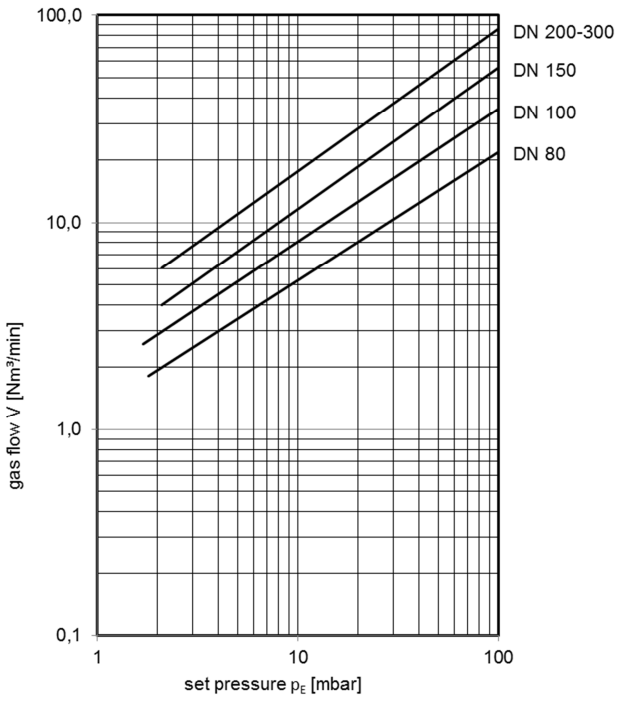
Performance curves

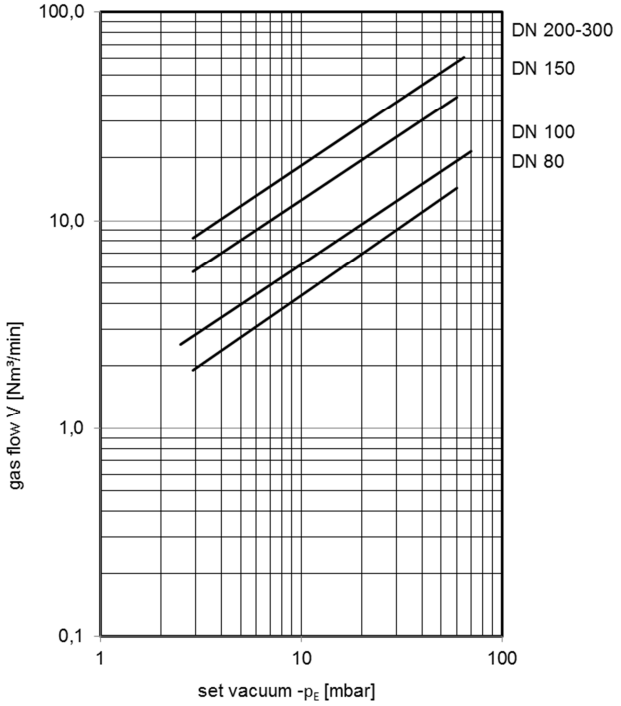
Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.

TÜV Rheinland Group





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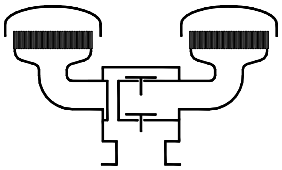
Date: 08-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/MC-IIB1-…

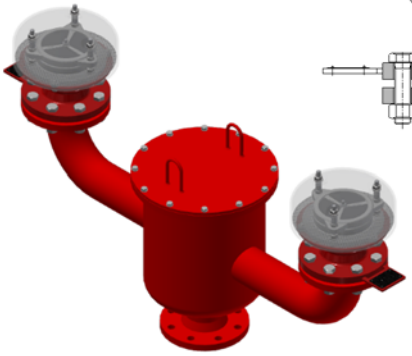


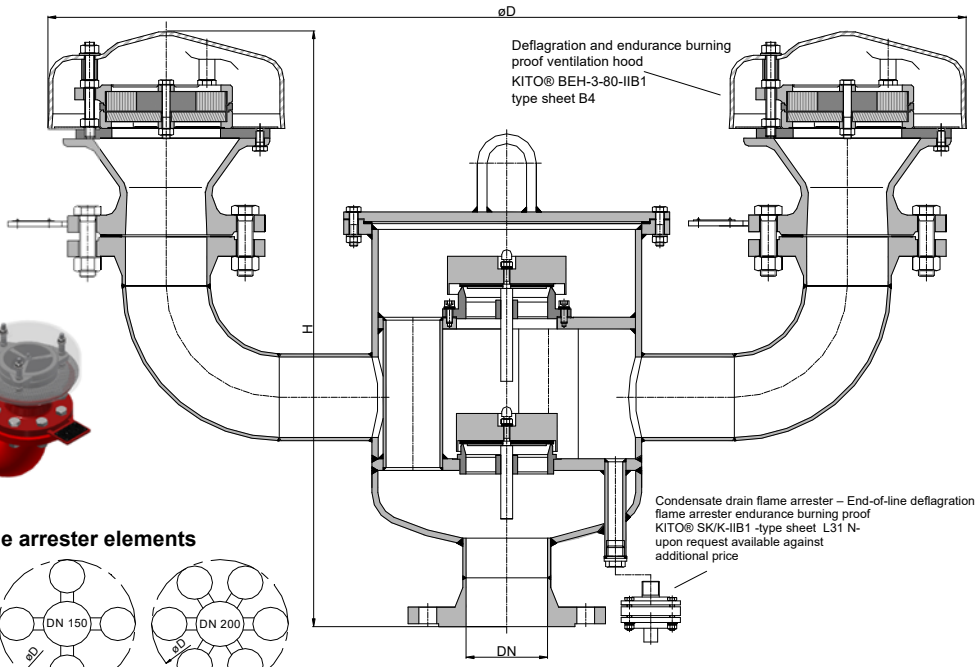
Application

As an end-of-line flame arrester element to protect vent openings of storage tanks. Explosion and endurance burning proof for all inflammable liquids and vapors of explosion group IIB1 and also for alcohols with a maximum experimental safe gap (MESG) ≥ 0.85 mm and an maximum operating temperature of 60 °C. This device is not permitted to be installed in enclosed areas. Installation on top of storage tanks, tank access covers or breather pipes. As venting and breather device for fixed roof tanks to prevent inadmissible pressure and vacuum and to minimize gas losses by variable pressure setting of the weight-loaded valve devices. An explosion proof condensate drain is also available for this model at extra cost.

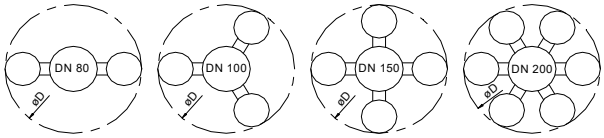
KITO® BEH-3-80-IIB1 with additional examination and approval, applicable also for alcohols (ethanol, methanol...)

Dimensions (mm) and settings (mbar)





Arrangement of the KITO® flame arrester elements



DN		D	H	number of KITO® BEH-3-80-IIB1	setting		kg
DIN	ASME				vacuum min. - max.	pressure min. - max.	
80 PN 16	**3“**	855	615	2	3.3 - 60	1.8 - 100	60
100 PN 16	**4“**	950	645	3	2.5 - 70	1.7 - 100	110
125 PN 16	**5“**						
150 PN 16	**6“**	1110	650	4	3.5 - 60	2.5 – 110	
200 PN 10	**8“**	1470	795	6	2.9 – 65	2.1 - 105	235

Indicated weights are understood without weight load and refer to the standard design
Higher settings on request !

Example for order

KITO® VD/MC-IIB1-80
(design DN 80 with flange connection DN 80 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU for KITO® BEH-3-80-IIB1 and KITO® SK/K-IIB1

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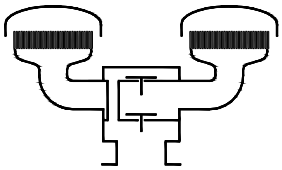
Date: 08-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/MC-IIB1-…



Design

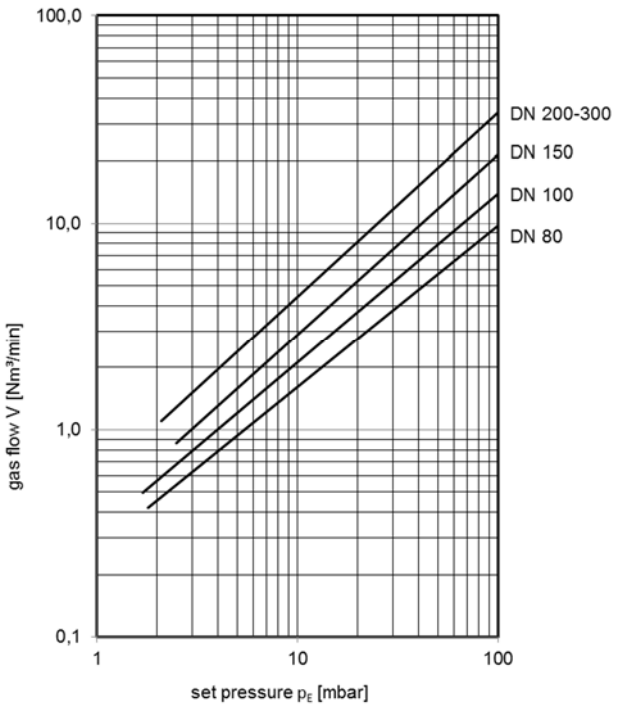
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
housing KITO® BEH-3-80-IIB1	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
gasket	HD 3822	PTFE
design valve pallet	orifice plate	
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4408 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood	PMMA	
protective screen	PA6	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

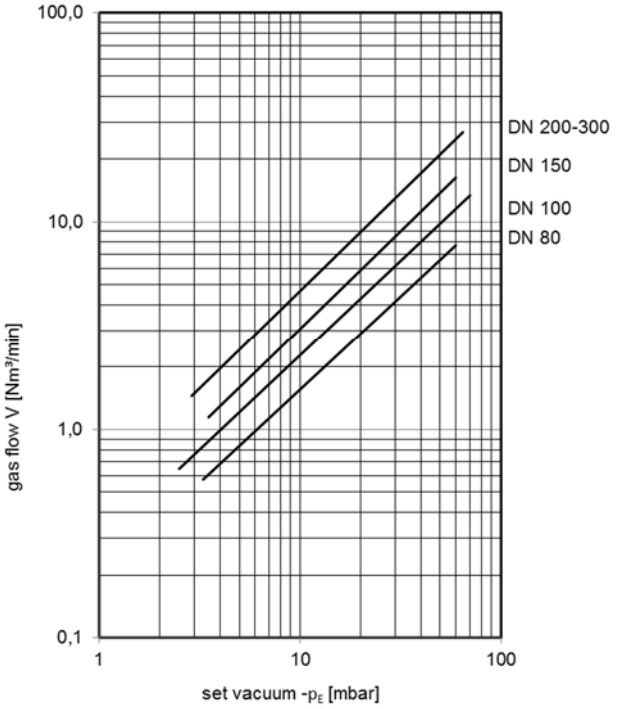
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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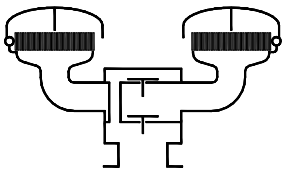
Date: 08-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure and vacuum relief valve

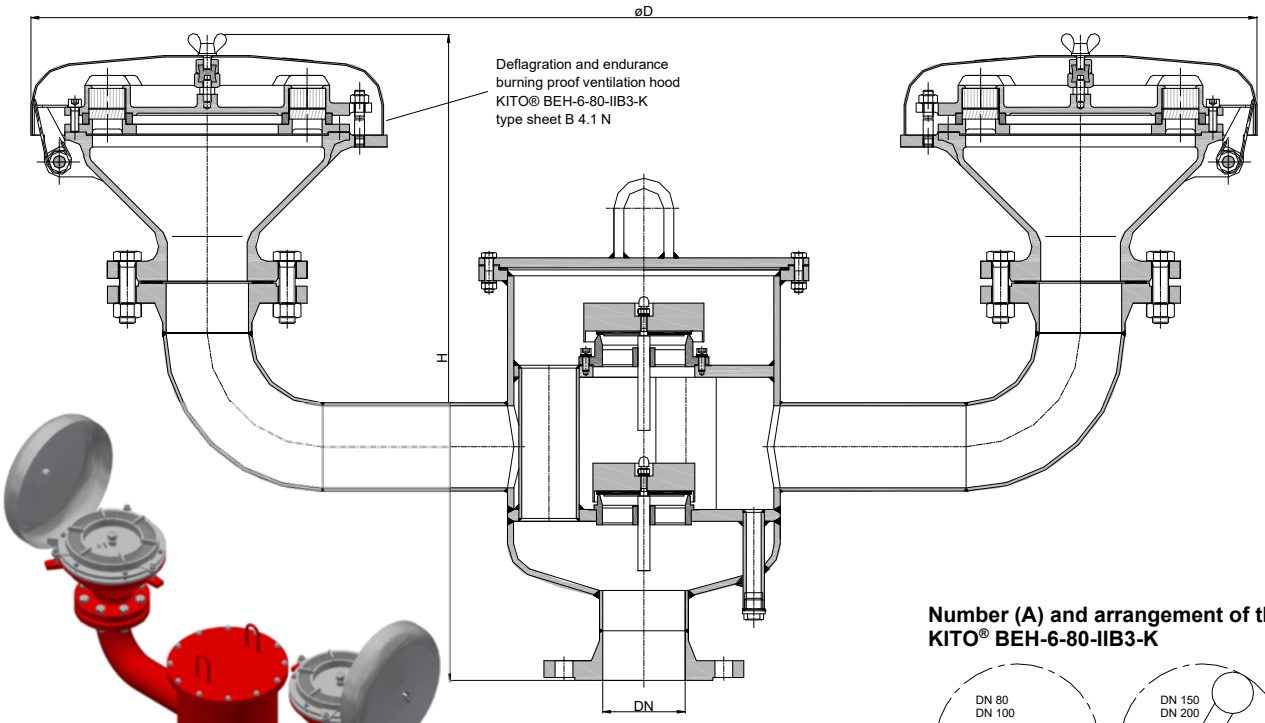
KITO® VD/MC-IIB3-…



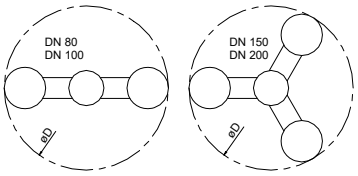
Application

Installations, explosion-proof and endurance burning proof for certain flammable liquids of the explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C. As venting and breather device for fixed roof tanks to prevent inadmissible pressure and vacuum and to minimize gas losses by variable pressure setting of the weight-loaded and/or spring-loaded valve devices. Installation of an explosion-proof condensate drain device is possible.

Dimensions (mm) and settings (mbar)



Number (A) and arrangement of the KITO® BEH-6-80-IIB3-K



DN		D	H		A	setting		kg
DIN	ASME		DIN	ASME		vacuum min. - max.	pressure min. - max.	
80 PN 16	3“	1538	660	700	2	2,9 - 60	1,8 - 100	
100 PN 16	4“		679	723		2,5 - 70	1,7 - 100	
150 PN 16	6“	1723	695	749	3	2,9 - 60	2,1 – 110	
200 PN 10	8“		732	792		2,9 – 65	2,1 - 105	

Indicated weights are understood without weight load and refer to the standard design
Higher settings on request !

Example for order

KITO® VD/MC-IIB3-80-A
(design with flange connection DN 80 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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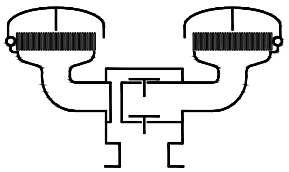
E 16.9.2 N
Date: 10-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/MC-IIB3-…



Design

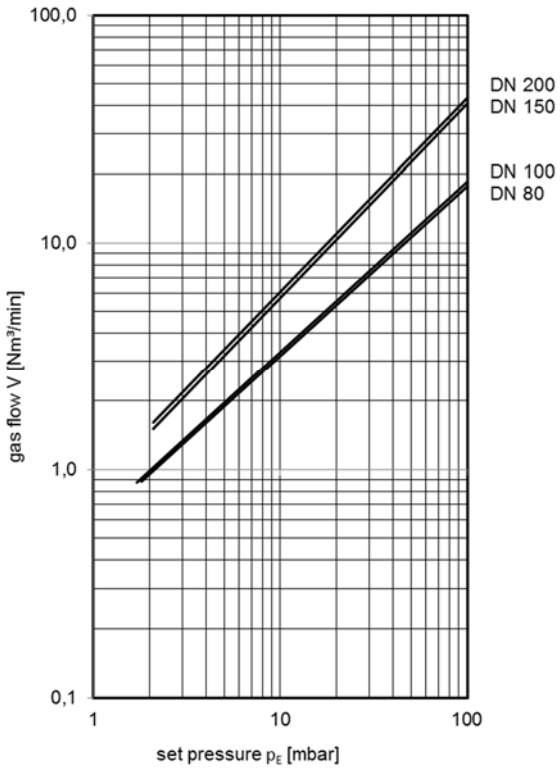
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
housing KITO® BEH-6-80-IIB3-K	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
design valve pallet	orifice plate	
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4408 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
weather hood	steel, hood can fold automatically as a result of folding mechanism and fusing element	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

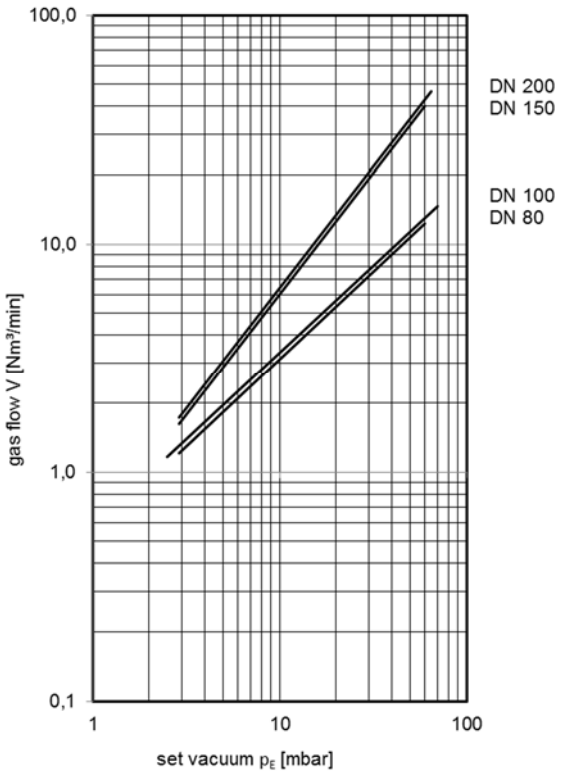
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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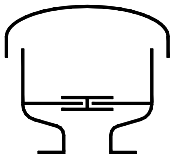
E 16.9.2 N
Date: 10-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

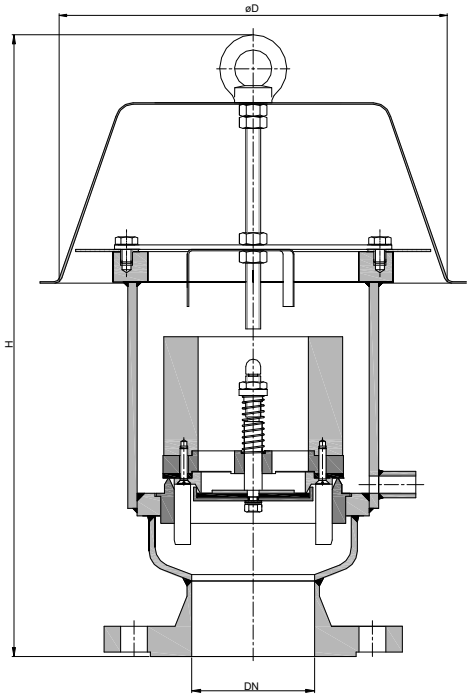
Type sheet
Pressure and vacuum relief valve
KITO® VD/o-…



Application

End-of-line armature, as breather and venting device, mainly used for tanks in which non-flammable liquids are stored. Used to prevent inadmissible pressure or vacuum as well as gas losses or inadmissible emissions respectively. Valve is not explosion-proof or endurance-burning proof. Valve is not explosion-proof or endurance-burning proof.

Dimensions (mm) and settings (mbar)



DN		D	H		kg	setting		
DIN	ASME		DIN	ASME		vacuum min. - max.	pressure min. - max.	pressure min. - max. *(with housing extension)*
50 PN 16	**2“**	220	386	405	11	3 -100	10 – 100	> 100 - 200
80 PN 16	**3“**	260	412	432	15	3 - 50	12 - 70	> 70 - 200
100 PN 16	**4“**		413	438	18		10 - 60	> 60 - 200
125 PN 16	**5“**	380	435	499	22		15 - 75	> 75 - 150
150 PN 16	**6“**		445	537	31			
200 PN 10	**8“**	450	553	595			15 - 55	> 55 - 200
250 PN 10	**10“**	600	600	635	88		15 - 80	> 80 - 200

Indicated weights are understood without weight load and refer to the standard design.

Higher settings see KITO® VD/o-1-… (type sheet E 17.1 N)

Example for order

KITO® VD/o-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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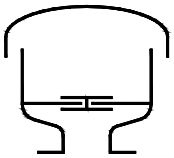
E 17 N
Date: 01-2019
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Pressure and vacuum relief valve
KITO® VD/o-…



Design

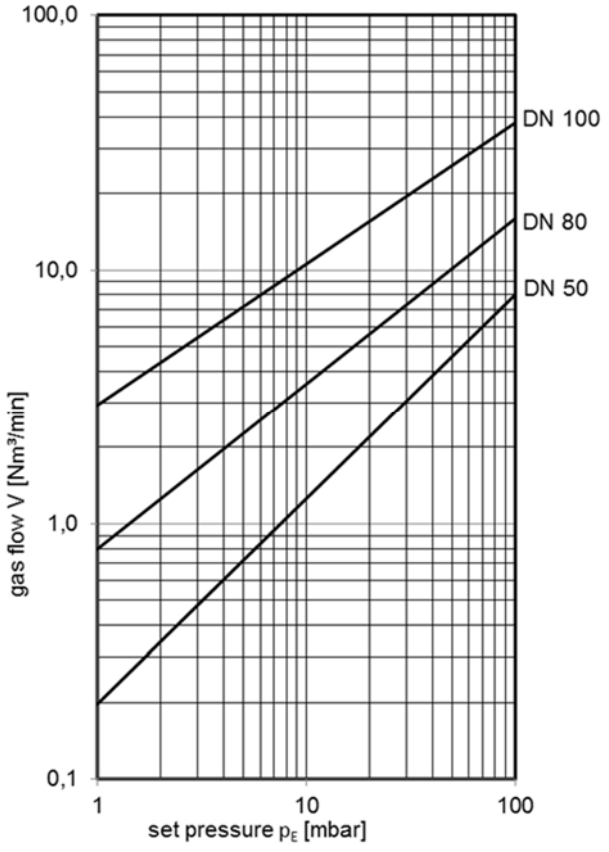
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing (valve pallet for pressure)	
valve pallet (vacuum)	spring loaded	
valve pallet (pressure)	weight loaded	
weather hood	stainless steel mat. no.1.4301	stainless steel mat. no. 1.4571
protective screen	PA6, ≥ DN 125 stainless steel mat. no. 1.4301	≥ DN 125 stainless steel mat. no. 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

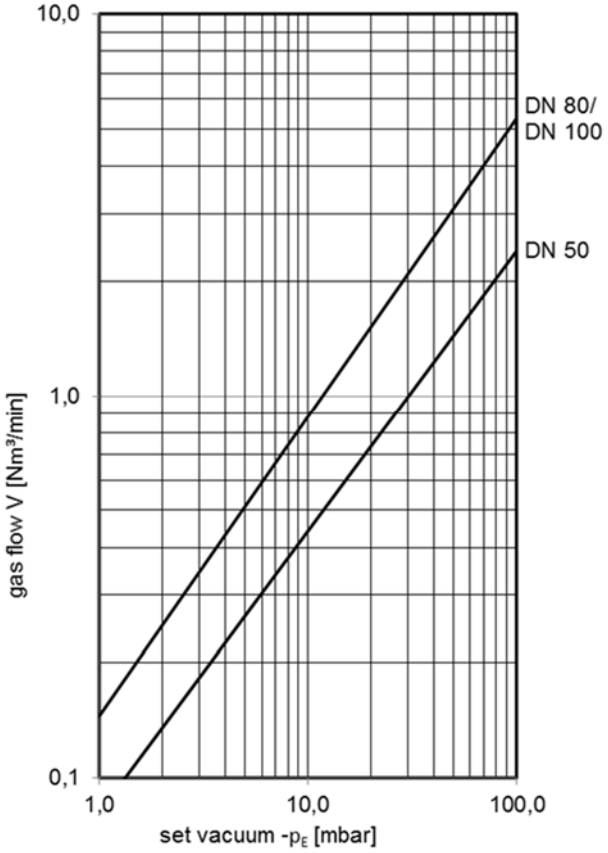
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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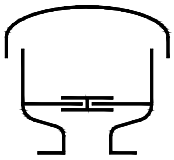
E 17 N
Date: 01-2019
Created: Abt. Doku KITO

KITO Armaturen GmbH

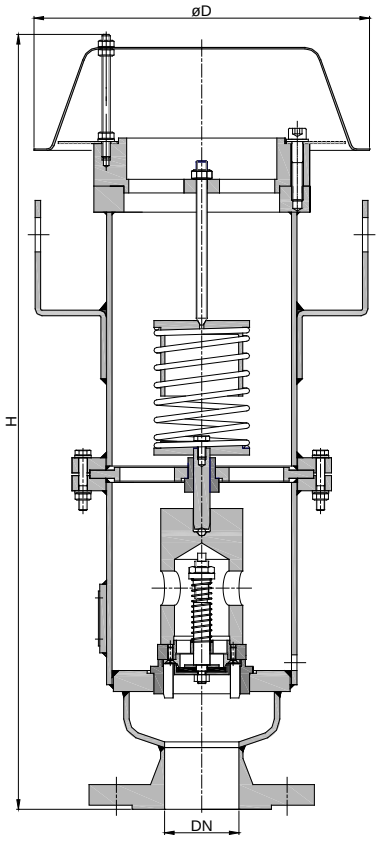
Type sheet
Pressure and vacuum relief valve
KITO® VD/o-1-…



Application

End-of-line armature, as breather and venting device, mainly used for tanks in which non-flammable liquids are stored. Used to prevent inadmissible pressure or vacuum as well as gas losses or inadmissible emissions respectively. Valve is not explosion-proof or endurance-burning proof.

Dimensions (mm) and settings (mbar)



DN		D	H		kg	setting			
						vacuum		pressure	
DIN	ASME		DIN	ASME		min.	max.	min.	max.
50 PN 16	**2“**	220	565	584		3	50	>200	350
80 PN 16	**3“**	331	805	835	34	3	50		
100 PN 16	**4“**	331	805	835		3	50		
125 PN 16	**5“**	405				3	50	>150	
150 PN 16	**6“**	405				3	50		
200 PN 10	**8“**	450				3	50	>100	
250 PN 10	**10“**	650	1375	1375	252	3	50		

Weight refers to the standard design
Lower settings see KITO® VD/o-… (type sheet E 17 N), higher settings on request

Example for order

KITO® VD/o-1-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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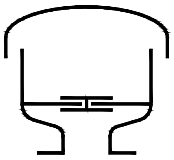
E 17.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Pressure and vacuum relief valve
KITO® VD/o-1-…



Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve sealing (vacuum)	NBR	Viton, PTFE, EPDM
valve sealing (pressure)	metal sealing	
valve pallet	spring loaded	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
protective screen	PA6, ≥ DN 80 stainless steel mat. no. 1.4301	≥ DN 80 stainless steel mat. no. 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

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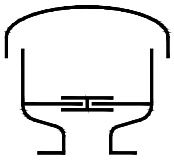
E 17.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

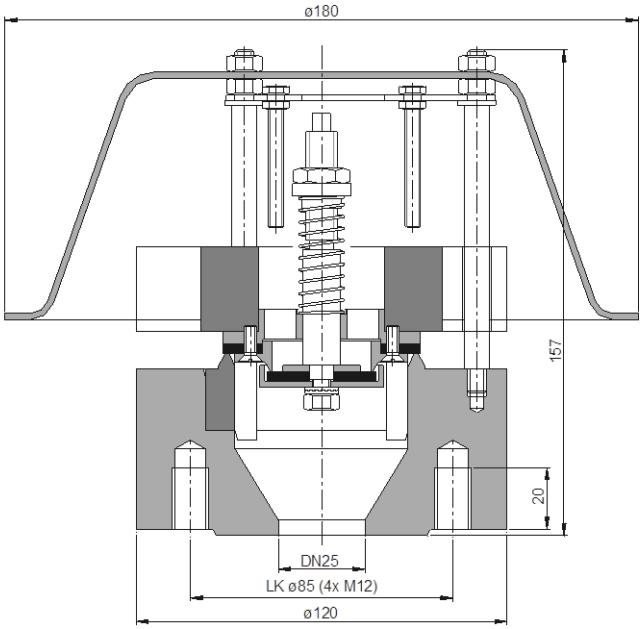
Type sheet
Pressure and vacuum relief valve
KITO® VD/o-25



Application

As end-of-line armature, as venting and breather device mainly for tanks in which non-flammable liquids are stored. Valve is used to prevent inadmissible pressure or vacuum as well as gas losses or inadmissible emissions respectively. Valve is not explosion-proof or endurance-burning proof.

Dimensions (mm) and settings (mbar)



For valves with bigger nominal sizes see type sheet E 17 N

Weight 6.5 kg (indicated weight is understood without weight load and refer to the standard design).

Standard valve setting 10-30 mbar pressure (maximal 70 mbar) and 3-50 mbar vacuum -different settings against additional price-

Design

	standard	optionally
housing / valve seat	steel / stainless steel mat. no. 1.4571 *(Design left half of the sectional image)*	stainless steel mat. no. 1.4571 *(Design right half of the sectional image)*
valve parts / valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	
valve sealing	NBR	Viton, PTFE, EPDM
valve pallet (vacuum)	spring loaded	
valve pallet (pressure)	weight loaded	
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
flange connection	drilled to EN 1092-1 PN 40 type B1	drilled to ASME B16.5 Class 150 RF

Example for order

KITO® VD/o-25
(design with flange connection DN 25 PN 40)

Without EC certificate and CE-marking

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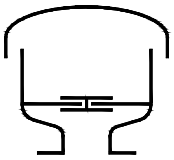
E 17.2 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Pressure and vacuum relief valve
KITO® VD/o-25

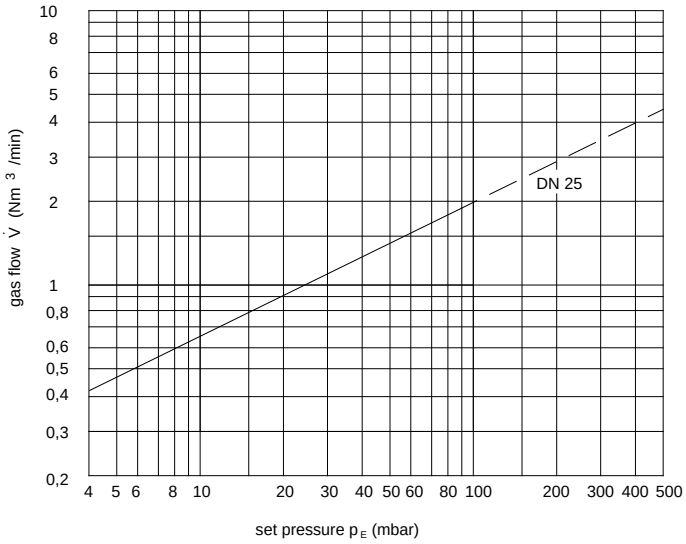


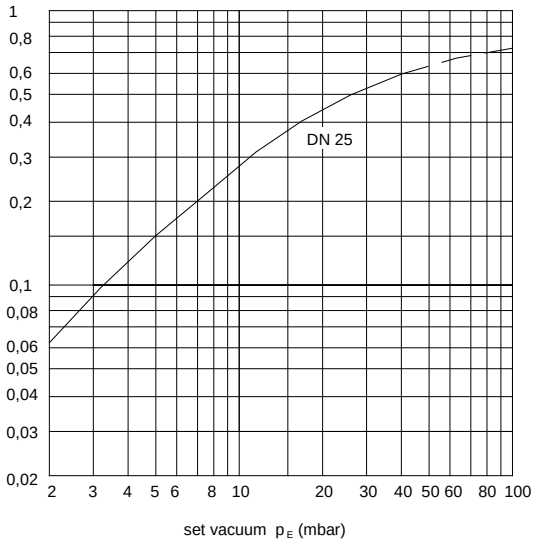
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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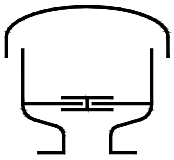
E 17.2 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

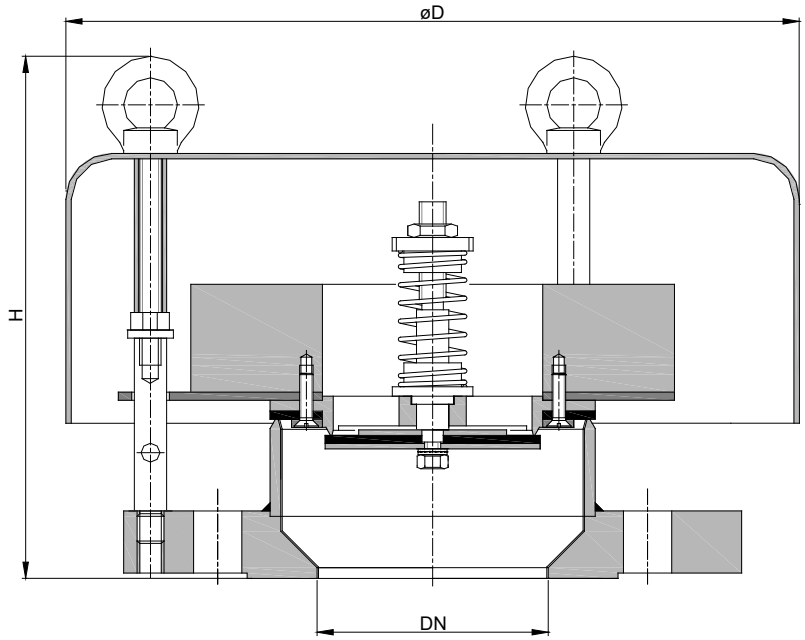
Type sheet
Pressure and vacuum relief valve
KITO® VD/oP-…



Application

As end-of-line armature on storage tanks and silos in which powder products and granulates are stored. Used as venting and breather device to prevent inadmissible pressure or vacuum. All moving parts are outside the storage room.

Dimensions (mm) and settings (mbar)



DN		D	H	kg	vacuum	pressure
DIN	ASME					
50 PN 16	2“	260	180	6.5	3-50	12,5 - 84
80 PN 16	3“	340	220	11.5		12 - 123
100 PN 16	4“	340	225	13.5		13 - 105
125 PN 16	5“	295	245	16		11,5 - 92
150 PN 16	6“	410	320	29		10 - 47
200 PN 10	8“	410	360	37		10 - 52
250 PN 10	10“	550	465	81		14 - 82
300 PN 10	12“					
350 PN 10	14“					

Indicated weights are understood without weight load and refer to the standard design

Different settings on request !

Example for order

KITO® VD/oP-80
(design with flange connection DN 80 PN 16)

Without EC certificate and CE-marking

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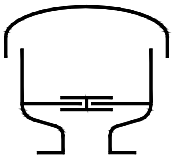
E 17.4 N
Date: 07-2022
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Pressure and vacuum relief valve
KITO® VD/oP-…



Design

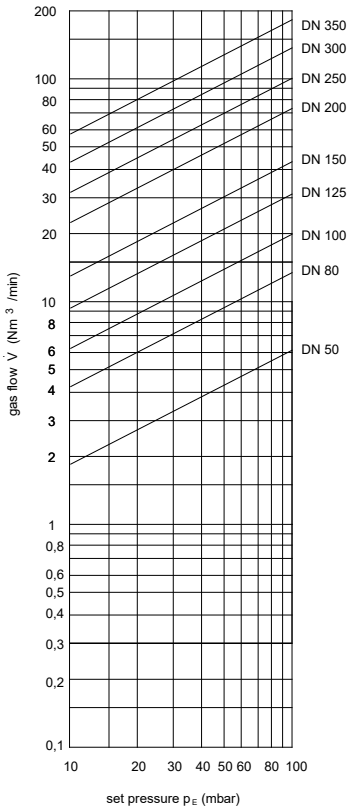
	standard	optionally
housing	steel *(valve face stainless steel mat. no 1.4571)*	stainless steel mat. no. 1.4571
inner faces of the housing	coated with PTFE	
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	
valve sealing	NBR	Viton, PTFE, EPDM
	≥ 100 mbar only PTFE or metal sealing (valve pallet for pressure)	
valve pallet (vacuum)	spring loaded	
valve pallet (pressure)	weight loaded	
weather hood	stainless steel	
flange connection	drilled to EN 1092-1 PN 40 type B1	drilled to ASME B16.5 Class 150 RF
	(threaded holes for stud bolts at DN 150 - 250)	

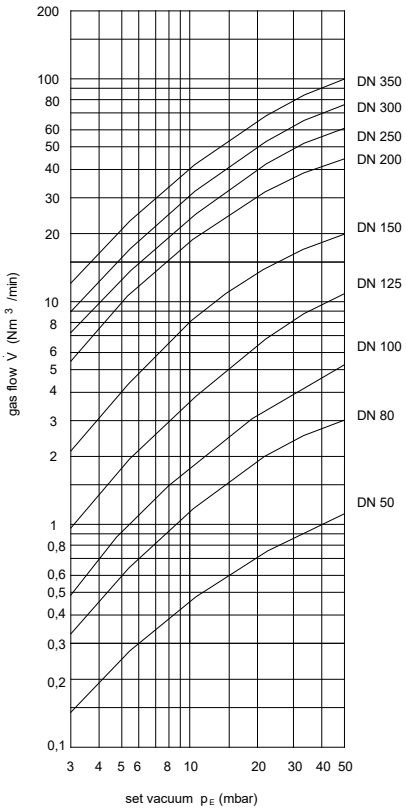
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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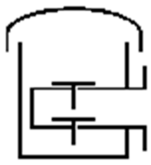
E 17.4 N
Date: 07-2022
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

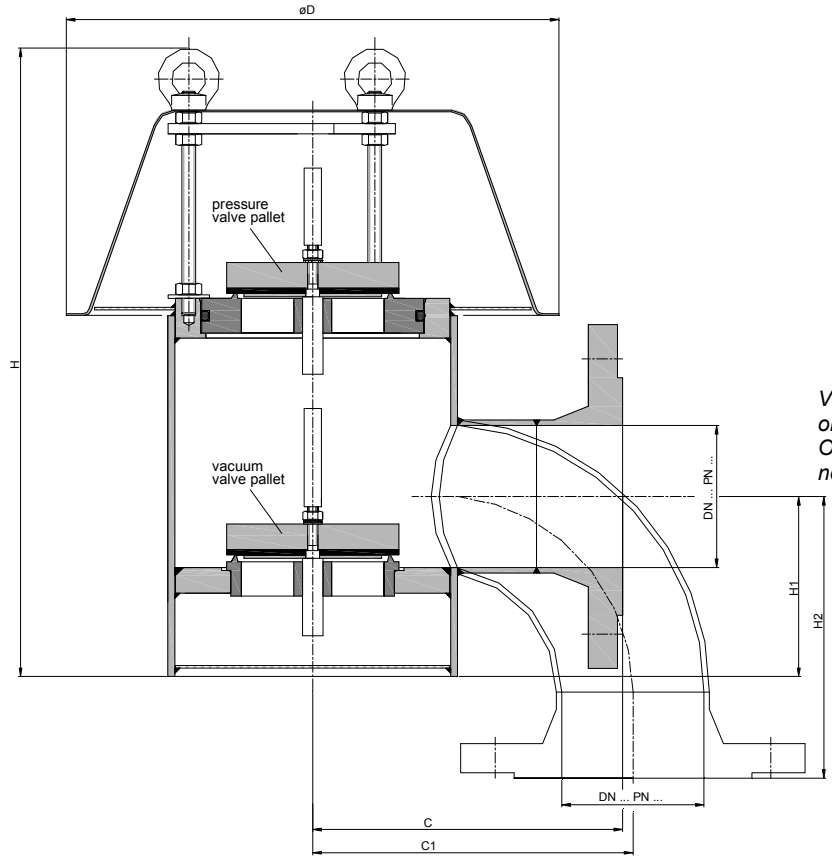
Type sheet
Pressure and vacuum relief valve
KITO® VD/oL-.../...



Application

As end-of-line armature, for venting apertures on tank installations. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof. Valve is not explosion-proof or endurance-burning proof.

Dimensions (mm)



Vertical connection from size DN 100 only after prior agreement!!!
On-site support of the device may be necessary!!!

DN		D	H	H1	H2		C		C1	~kg
DIN	ASME				DIN	ASME	DIN	ASME		
50 PN 16	**2“**	285	326	77	121	139	155	174	140	11
80 PN 16	**3“**	285	365	105	165	184	180	200	186	16
100 PN 16	**4“**	330	395	126	204	228	200	224	248	21
125 PN 16	**5“**	405	450	152	244	278	245	279	291	30
150 PN 16	**6“**	405	469	160	285	320	245	279	340	40
200 PN 10	**8“**	465	573	217	367	407	288	288	533	58
250 PN 10	**10“**	600	650	248	449	483	350	350	645	89

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/oL-50/25 (lateral)
(design lateral flange connection DN 50 PN 16, with vacuum valve pallet DN 50 and pressure valve pallet DN 25)

Without EC certificate and CE-marking

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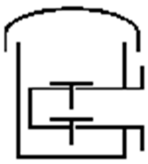
E 17.10 N
Date: 06-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Pressure and vacuum relief valve
KITO® VD/oL-…/…



Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
protective screen	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF
connection	lateral	vertical

settings (mbar)

DN	vacuum valve pallet size	vacuum valve pallet min. - max. *(load weight from PE)*	vacuum valve pallet min. - max.	pressure valve pallet size	pressure valve pallet min. - max. *(load weight from PE)*	pressure valve pallet min. - max.	pressure valve pallet min. - max. *(with housing extension)*
50 PN 16	**50/…**	2.0 -10.8	10.9 - 100	**…/25**	3.0 - 11.0	11.1 - 200	-
				…/50	2.0 - 10.4	10.5 - 140	> 140 - 200
80 PN 16	**80/…**	2.0 - 8.0	8.1 - 90	**…/50**	2.3 - 10.8	10.9 - 150	> 150 - 200
				…/80	1.9 - 7.8	7.9 - 90	> 90 - 200
100 PN 16	**100/…**	1.9 - 7.7	7.8 - 100	**…/50**	2.5 - 11.1	11.2 - 200	-
				…/80	1.9 - 8.1	8.2 - 100	> 100 - 200
				…/100	1.8 - 7.6	7.7 - 90	> 90 - 200
125 PN 16	**125/…**	1.6 - 7.0	7.1 - 110	**…/50**	3.7 - 12.2	12.3 - 200	-
				…/80	2.2 - 8.6	8.7 - 120	> 120 - 200
				…/100	1.9 - 8.0	8.1 -100	> 100 - 200
				…/125	2.0 - 7.3	7.4 - 65	> 65 - 150
150 PN 16	**150/…**	2.0 - 11.9	12.0 - 100	**…/50**	3.7 - 12.2	12.3 - 200	-
				…/80	2.5 - 8.6	8.7 - 130	> 130 - 200
				…/100	1.9 - 8.0	8.1 - 120	> 120 - 200
				…/150	2.1 - 12.0	12.1 - 90	> 90 - 150
200 PN 10	**200/…**	2.2 - 12.0	12.1 - 90	**…/80**	3.0 - 9.3	9.4 - 120	> 120 - 200
				…/100	2.5 - 8.5	8.6 - 110	> 110 - 200
				…/150	2.1 - 12.2	12.3 - 80	> 80 - 150
				…/200	2.0 - 12	12.1 - 65	> 65 - 100
250 PN 10	**250/…**	2.3 - 11.9	12.0 - 70	**…/100**	2.5 - 8.5	8.6 - 130	> 130 - 200
				…/150	2.2 - 12.3	12.4 - 100	> 100 - 150
				…/200	2.1 - 12.1	12.2 - 80	> 80 - 100
				…/250	2.3 - 11.9	12.0 - 55	> 55 - 100

The size of the vacuum valve pallet is always identical to the size of the flange connection.

The size of pressure valve pallet can be selected in accordance with required capacity!

Higher settings see KITO® VD/oL-1-…-… (type sheet E 17.10.1 N).

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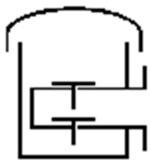
E 17.10 N
Date: 06-2018
Created: Abt. Doku KITO

Type sheet
Pressure and vacuum relief valve
KITO® VD/oL-.../...

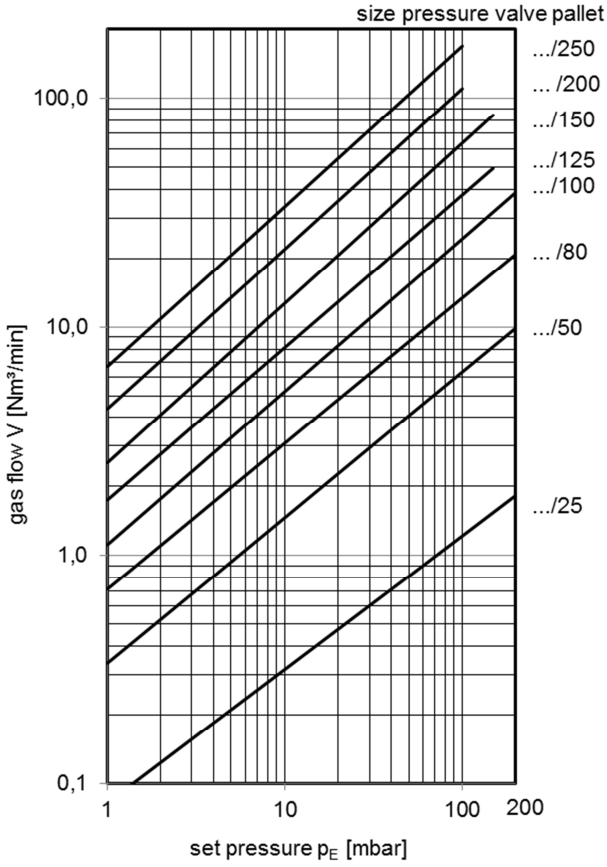


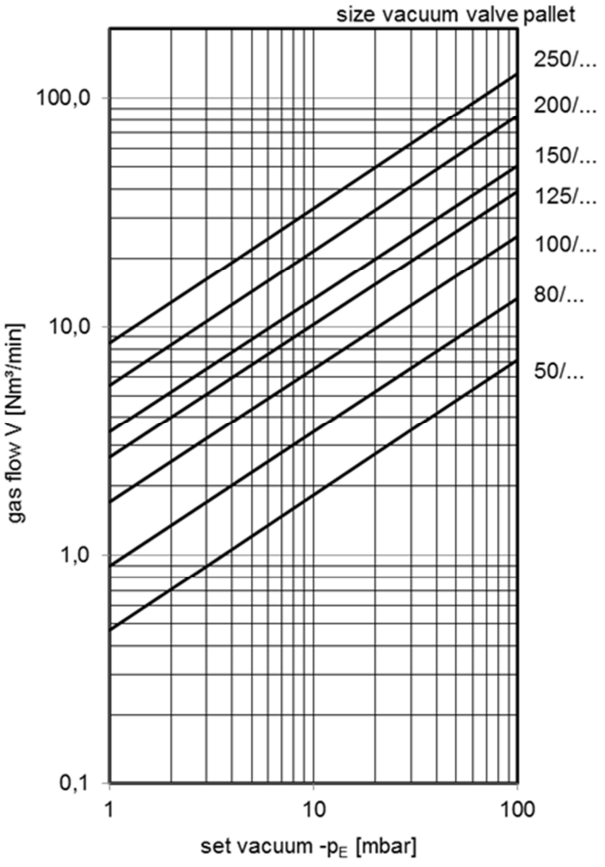
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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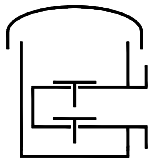
Date: 06-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

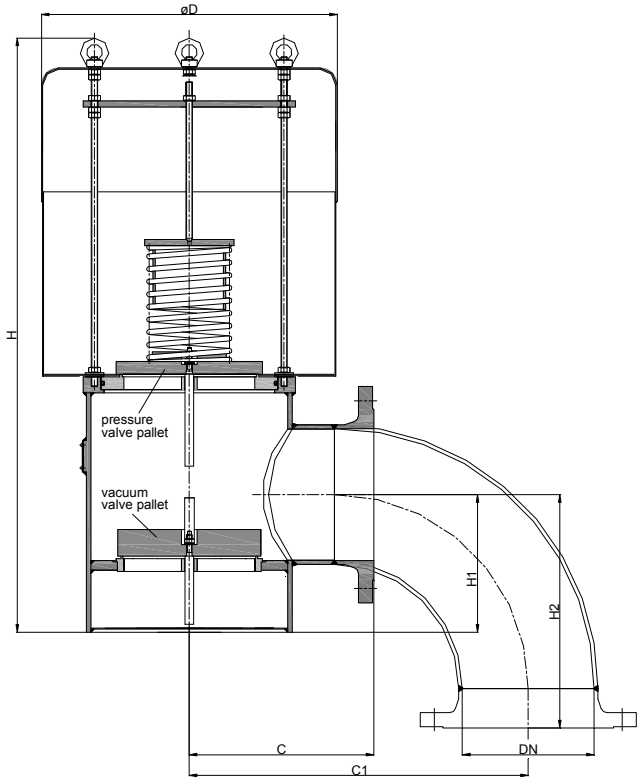
Type sheet
Pressure and vacuum relief valve
KITO® VD/oL-1-…/…

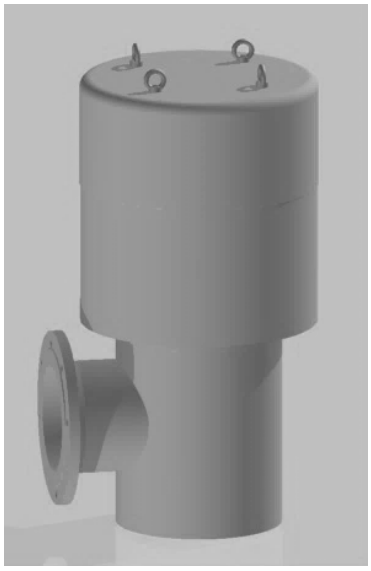


Application

As end-of-line armature, for venting apertures on tank installations. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof. Valve is not explosion-proof or endurance-burning proof.

Dimensions (mm)





Vertical connection from size DN 100 only after prior agreement!!! On-site support of the device may be necessary!!!

DN		D	H	H1	H2		C		C1	kg
DIN	ASME				DIN	ASME	DIN	ASME		
50 PN 16	**2“**	240	460	77	121	139	155	174	140	
80 PN 16	**3“**	255	670	105	165	184	180	200	186	23
100 PN 16	**4“**	320		126	204	228	200	224	248	
125 PN 16	**5“**	400	733	152	244	278	245	279	291	
150 PN 16	**6“**	400		160	285	320	245	279	340	
200 PN 10	**8“**	465	934	217	367	407	288	288	533	100
250 PN 10	**10“**	600		248	449	483	350	350	645	

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/oL-1-50/25 (lateral)
(design lateral flange connection DN 50 PN 16, with vacuum valve pallet DN 50 and pressure valve pallet DN 25)

Without EC certificate and CE-marking

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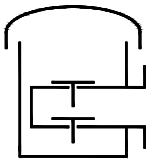
E 17.10.1 N
Date: 06-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Pressure and vacuum relief valve
KITO® VD/oL-1-…/…



Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
valve pallet (pressure)	spring loaded	
valve pallet (vacuum)	weight loaded	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
protective screen	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF
connection	lateral	vertical

Settings (mbar)

DN	vacuum valve pallet			pressure valve pallet		
	size	min.	max.	size	min.	max.
50 PN 16	**50/…**	6	55	**…/25**	>200	350
				…/50		
80 PN 16	**80/…**	7	60	**…/50**	>200	
				…/80		
100 PN 16	**100/…**	7	65	**…/50**	>200	
				…/80		
				…/100		
125 PN 16	**125/…**	7	80	**…/50**	>200	
				…/80		
				…/100		
				…/125	>150	
150 PN 16	**150/…**	8	80	**…/50**	>200	
				…/80		
				…/100		
				…/150	>150	
200 PN 10	**200/…**	8	90	**…/80**	>200	
				…/100		
				…/150	>150	
				…/200	>100	
250 PN 10	**250/…**	10	100	**…/100**	>200	
				…/150	>150	
				…/200	>100	
				…/250		

The size of the vacuum valve pallet is always identical to the size of the flange connection.

The size of pressure valve pallet can be selected in accordance with required capacity!

Lower settings see KITO® VD/oL-…-… (type sheet E 17.10 N), higher settings on request.

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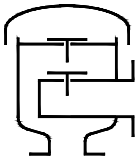
E 17.10.1 N
Date: 06-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

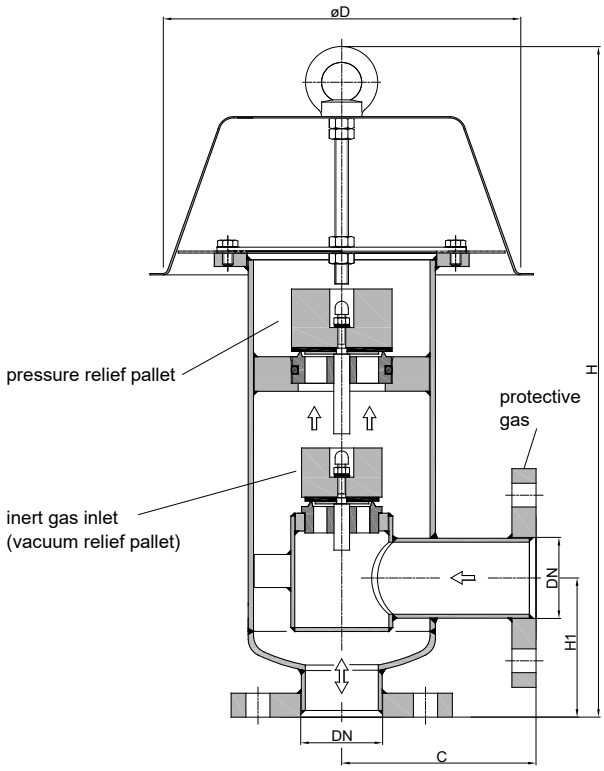
Type sheet
Pressure and vacuum relief valve
KITO® VD/o2-…

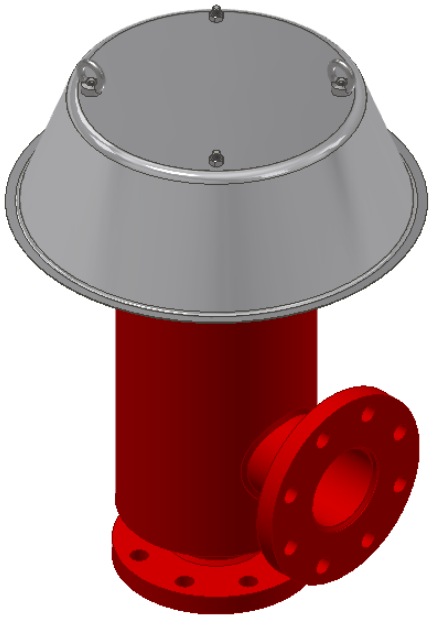


Application

As end-of-line armature, preferably for non-flammable liquids stored under inert gas, for venting and breathing of fixed roof tanks and above-ground tanks, with lateral connection for the inert gas conduit. The upper valve arrangement, which consists of a pressure valve, prevents the development of inadmissible pressure. The lower valve serves to automatically control the supply of inert gas (e. g. nitrogen) and adjusts the necessary inert gas pressure in the tank. For the max. admission pressure see setting „vacuum“.

Dimensions (mm) and settings (mbar)





DN		D	C	H	H1	kg	setting			
							vacuum		pressure	
DIN	ASME						min. - max. *(load weight from PE)*	min. - max.	min. - max. *(load weight from PE)*	min. - max.
50 PN 16	**2“**	260	145	500	105	17	2.7 - 10.6	10.7 - 75	2 - 10	10.1 - 110
80 PN 16	**3“**	380	175	600	163	30	2.7 - 10.6	10.7 - 120	1.7 - 7.9	8 - 100
100 PN 16	**4“**	380	190	655	190	39	1.7 -7.9	8 - 100	1.7 - 7.9	8 - 100

Indicated weights are understood without weight load and refer to the standard design

Higher settings on request !

Example for order

KITO® VD/o2-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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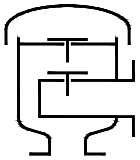
E 18 N
Date: 07-2024
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet
Pressure and vacuum relief valve
KITO® VD/o2-…



Design

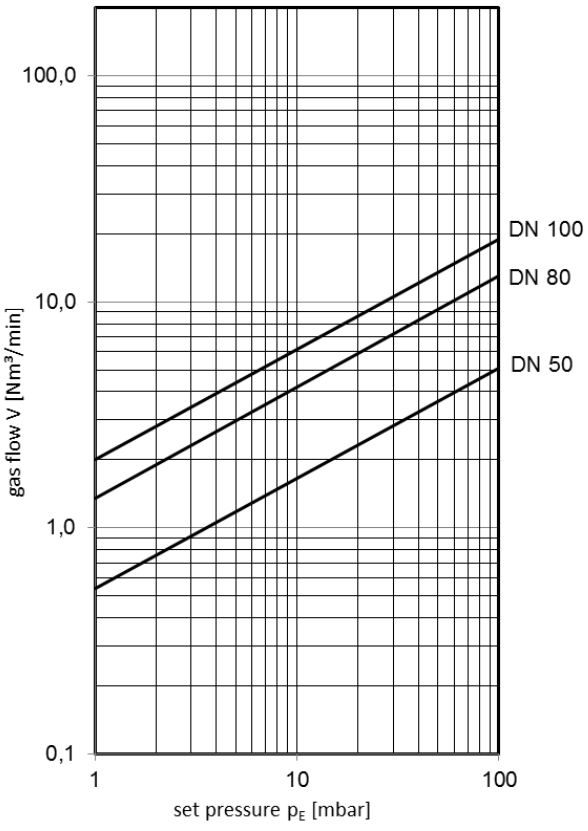
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
protective screen	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

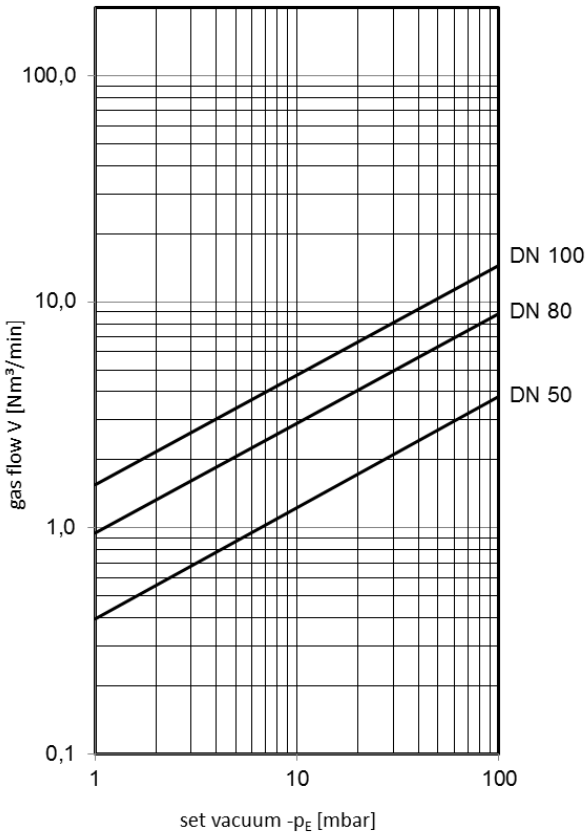
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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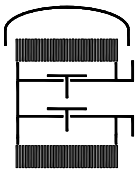
E 18 N
Date: 07-2024
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration proof pressure and vacuum relief valve

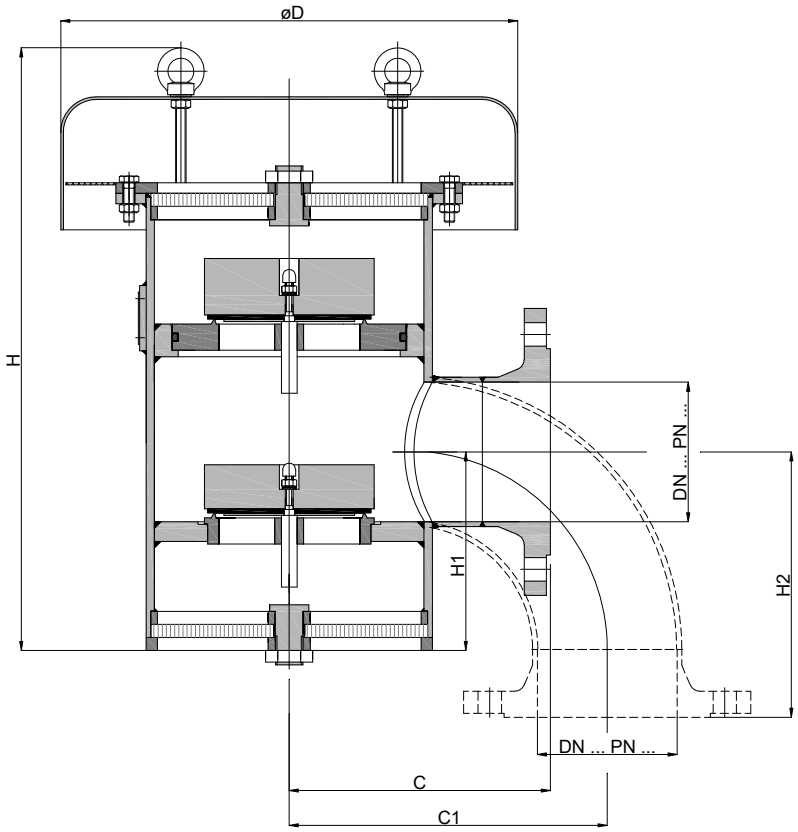
KITO® VD/AE-…-IIB3



Application

As end-of-line armature for venting and breathing of tanks. Tested and approved against atmospheric deflagrations for all materials of the explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C. Vertical mounting (for tank roofs) with an integrated elbow as an option.

Dimensions (mm)



Vertical connection from size DN 100 only after prior agreement!!! On-site support of the device may be necessary!!!

DN		D	H	H1	H2		C		C1	kg
DIN	ASME				DIN	ASME	DIN	ASME		
50 PN 16	**2“**	240	350	108	121	140	150	169	180	17
80 PN 16	**3“**	350	425	131	165	184	180	180	245	25
100 PN 16	**4“**	372	500	156	204	228	200	224	245	26
150 PN 16	**6“**	465	585	200	285	316	245	279	419	60
200 PN 10	**8“**	550	725	262	367	407	275	315	518	100
250 PN 10	**10“**	600	855	260	449	483	320	355	633	180

Indicated weights are understood without weight load and refer to the standard design.

Example for order

KITO® VD/AE-50-IIB3 (lateral)
(design DN 50 with lateral flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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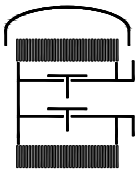
KITO Armaturen GmbH

Type sheet
Deflagration proof pressure and vacuum relief valve
KITO® VD/AE-…-IIB3



Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal DN 50-200 (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
valve seat seal DN 250 (gasket)	HD 3822	PTFE
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
protective screen	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF
connection	lateral	vertical

Settings (mbar)

DN		setting				
		vacuum		pressure		
DIN	ASME	min. - max. *(load weight from PE)*	min. - max.	min. - max. *(load weight from PE)*	min. - max.	min. - max. *(with housing extension)*
50 PN 16	**2“**	2.7 - 10.7	10.8 - 35	2.5 - 10.7	10.8 - 65	> 65 - 200
80 PN 16	**3“**	1.9 - 7.9	8.0 - 35	2.4 - 8.0	8.0 - 52	> 52 - 200
100 PN 16	**4“**	1.9 - 7.9	8.0 - 35	1.9 - 7.9	8.0 - 57	> 57 - 200
150 PN 16	**6“**	2.0 - 11.9	12.0 - 35	2.0 - 11.9	12.0 - 50	> 50 - 150
200 PN 10	**8“**	2.1 - 11.9	12.0 - 35	2.2 - 11.9	12.0 - 50	> 50 - 100
250 PN 10	**10“**	2.3 - 11.9	12.0 - 35	2.3 - 11.9	12.0 - 50	> 50 - 100

Higher settings see KITO® VD/AE-1-…-IIB3 (type sheet E 20.1 N)

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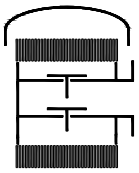
KITO Armaturen GmbH

Type sheet
Deflagration proof pressure and vacuum relief valve
KITO® VD/AE-…-IIB3

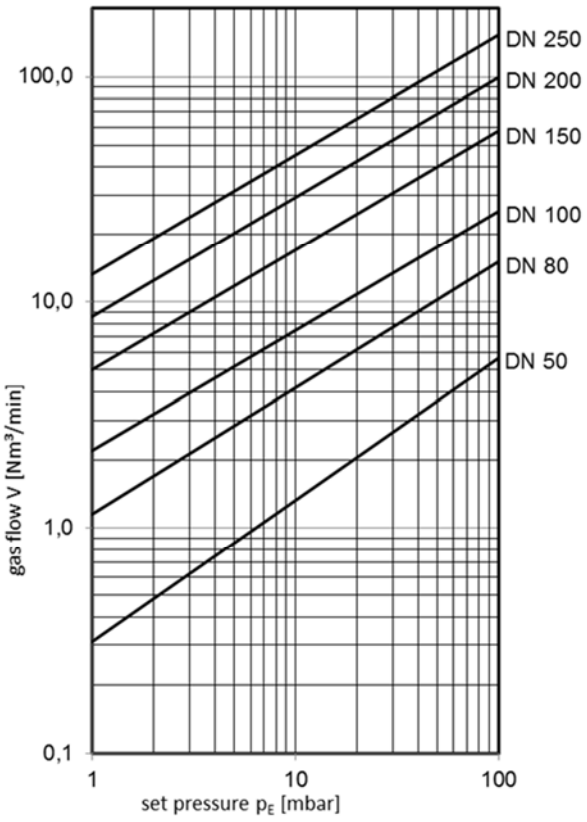


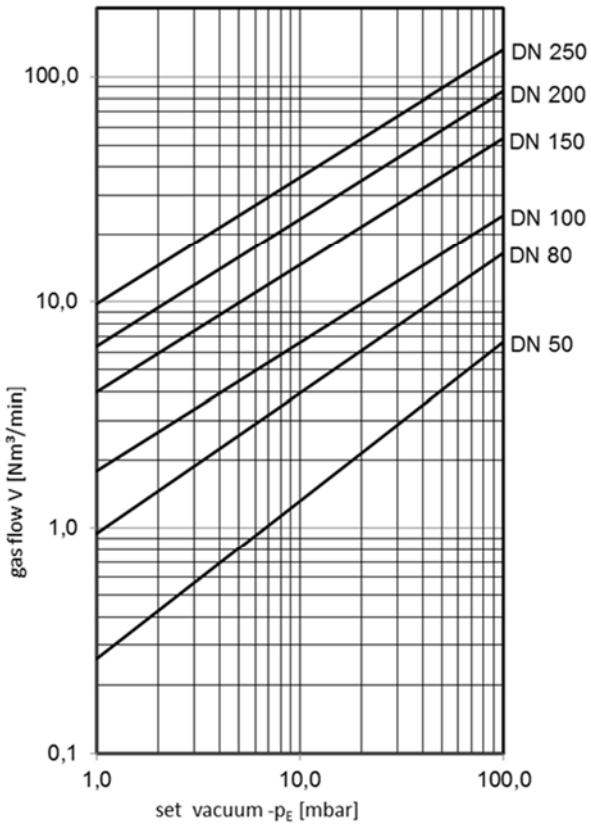
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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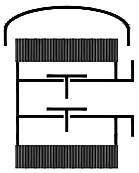
E 20 N
Date: 02-2019
Created: Abt. Doku KITO

KITO Armaturen GmbH

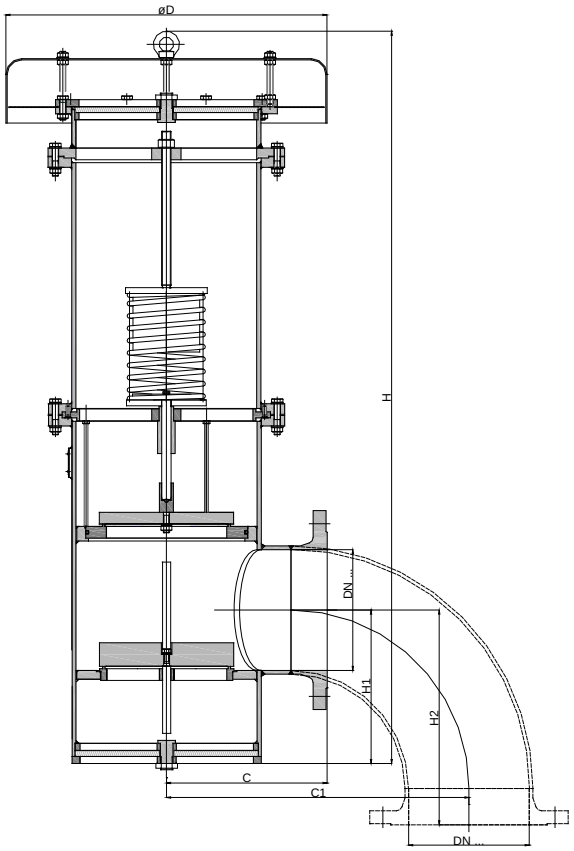
Type sheet
Deflagration proof pressure and vacuum relief valve
KITO® VD/AE-1-…-IIB3

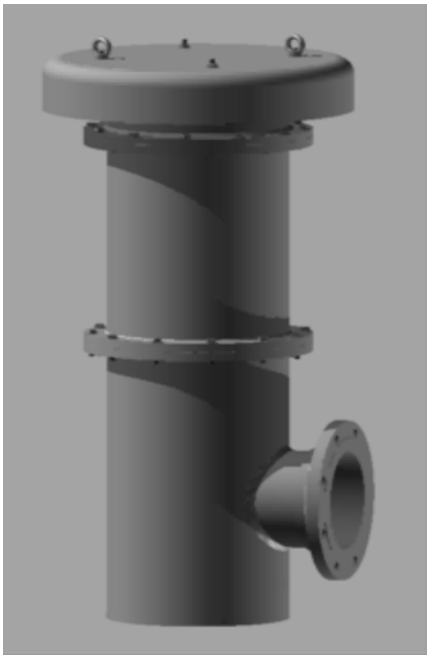


Application

As end-of-line armature for venting and breathing of tanks. Tested and approved against atmospheric deflagrations for all materials of the explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C. Vertical mounting (for tanks roofs) with an integrated elbow as an option.

Dimensions (mm) and settings (mbar)





Vertical connection from size DN 100 only after prior agreement!!!
On-site support of the device necessary!!!

DN DIN	DN ASME	D	H	H1	H2 DIN	H2 ASME	C DIN	C ASME	C1	kg	setting vacuum min.	setting vacuum max.	setting pressure min.	setting pressure max.
50 PN 16	**2“**	240	550	108	121	140	150	169	180		6.5	35	>200	350
80 PN 16	**3“**	350		131	165	184	180	180	245		7	35		
100 PN 16	**4“**	372		156	204	228	200	224	245		8	35		
150 PN 16	**6“**	465	1280	200	285	316	245	279	419		9	35	>150	
200 PN 10	**8“**	550	1250	262	367	407	275	315	518	167	10	35	>100	
250 PN 10	**10“**	600	1525	260	449	483	320	355	633		10	35		

Indicated weights are understood without weight load and refer to the standard design
Lower settings see KITO® VD/AE-…-IIB3 (type sheet E 20 N), higher settings on request

Example for order

KITO® VD/AE-1-50-IIB3 (lateral)
(design DN 50 with lateral flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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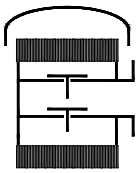
E 20.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration proof pressure and vacuum relief valve

KITO® VD/AE-1-…-IIB3



Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
valve pallet (pressure)	spring loaded	
valve pallet (vacuum)	weight loaded	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
protective screen	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF
connection	lateral	vertical

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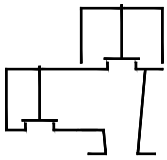
KITO Armaturen GmbH

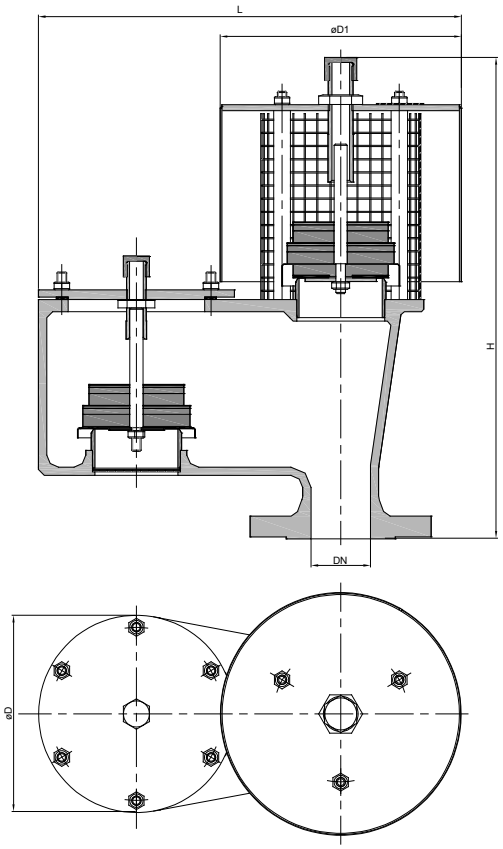
Type sheet
Pressure and vacuum relief valve
KITO® VD/oG-…

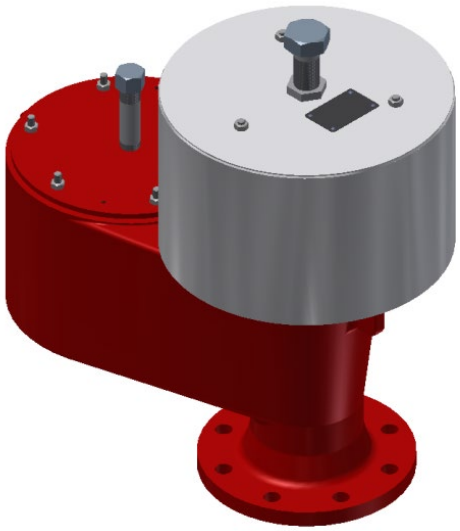


Application

As end-of-line armature, for venting apertures on tank installations. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof.

Dimensions (mm) and settings (mbar)





DN		D	D1	H	L	kg	setting	
DIN	ASME						vacuum	pressure
50 PN 16	2“	165	200	415	355	17	2-60	2-60
80 PN 16	3“	200	295	500	450	25		
100 PN 16	4“	250	295	540	525	34		
150 PN 16	6“	350	465	610	765	73		
200 PN 10	8“	400	500	735	875	94		
250 PN 10	10“	460	650	840	1010	129		
300 PN 10	12“	460	650	840	1010	133		

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/oG-50
(design DN 50 with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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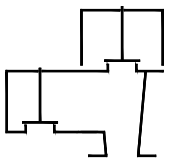
E 21 N
Date: 04-2024
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Pressure and vacuum relief valve
KITO® VD/oG-…



Design

	standard	optionally
housing	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408, aluminum (DN 100/4“–300/12“)
cover	steel	stainless steel mat. no. 1.4301, aluminum (DN 100/4“–300/12“)
gasket	PTFE	
valve seat	stainless steel mat. no. 1.4571	
weather hood	stainless steel	
protective screen	stainless steel mat. no. 1.4301	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet

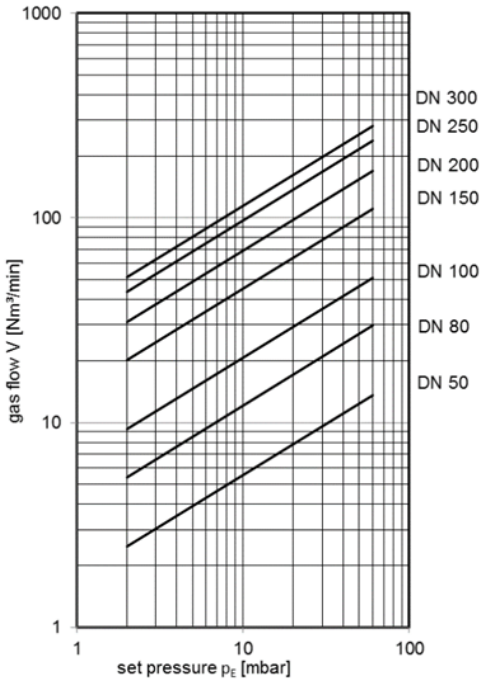
design	pressure range I 2 - < 3.5 mbar	pressure range II ≥ 3.5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve spindle	aluminum / stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

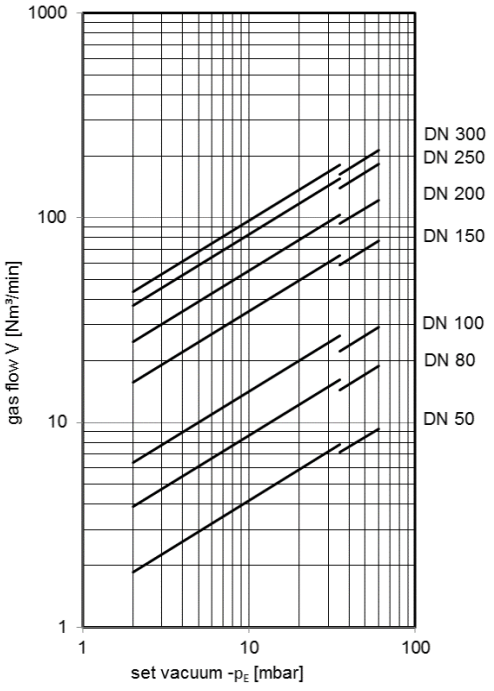
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad \text{or} \quad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve’s setting (see DIN 4119).





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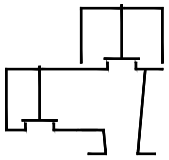
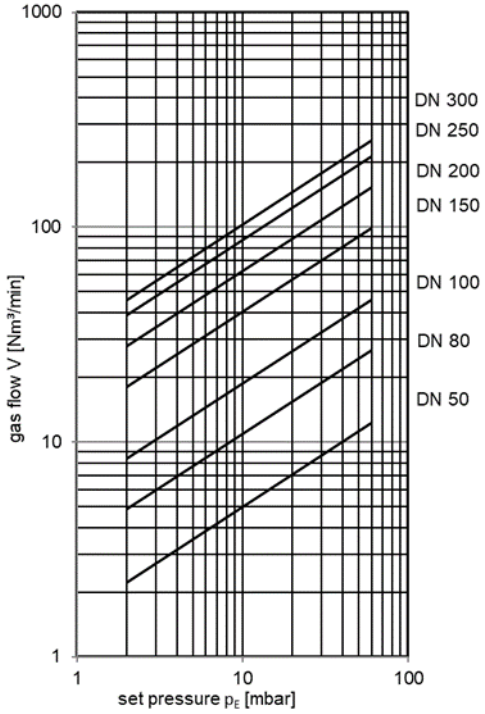
E 21 N
Date: 04-2024
Created: Abt. Doku KITO

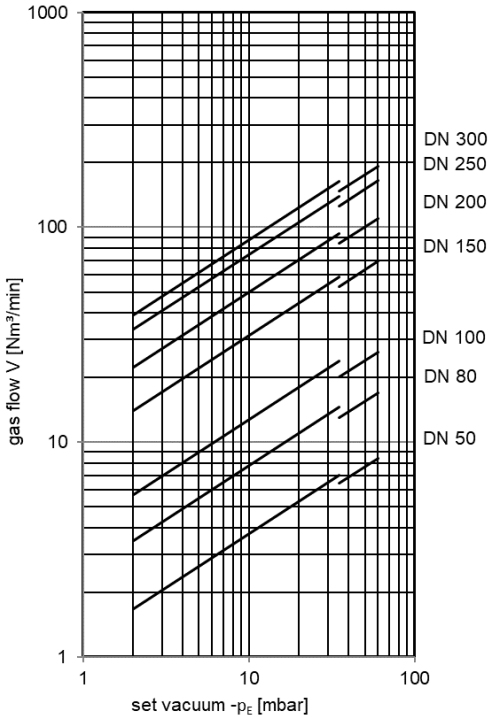
Type sheet
Pressure and vacuum relief valve
KITO® VD/oG-…



$$\dot{V}_{10\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \text{ or } \dot{V}_b = \dot{V}_{10\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The volume flow at reducsed lift will be reached by an accumulation of 10 % above valve's setting (see DIN 4119).





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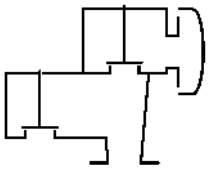
Date: 04-2024
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

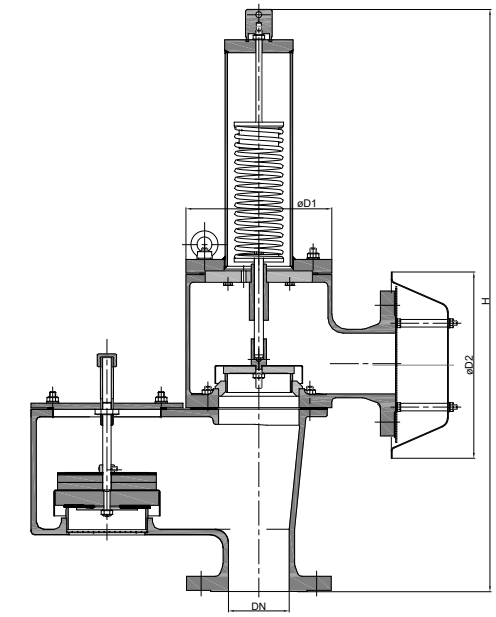
Type sheet
Pressure and vacuum relief valve
KITO® VD/oG-PA-… DE

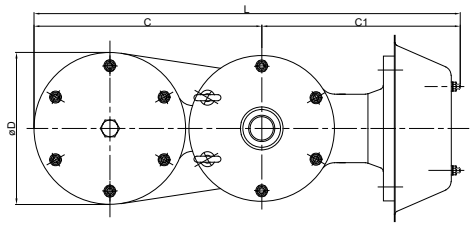


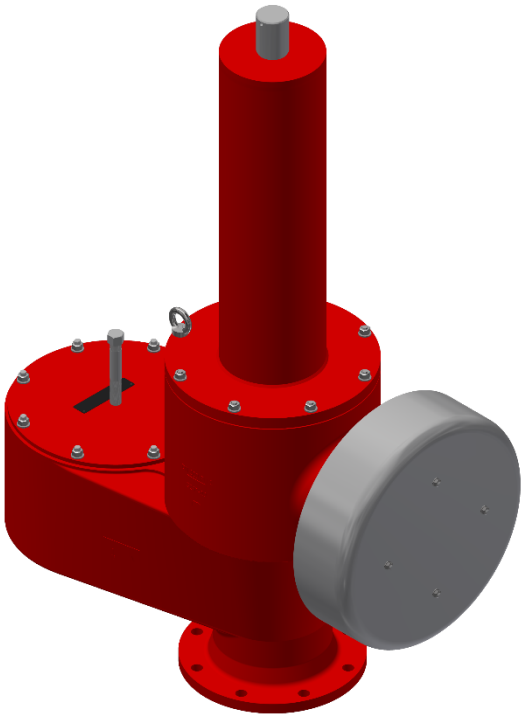
Application

As end-of-line armature, for venting apertures on tank installations. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof.

Dimensions (mm) and settings (mbar)







DN DIN	DN ASME	C	C1	D	D1	D2	H	L	kg	setting vacuum	setting pressure
50 PN 16	2“	255	230	165	165	245	604	485	30	2-60	>60-415
80 PN 16	3“	300	320	200	192	286	766	620			
100 PN 16	4“	400	340	250	240	331	911	740	66		
150 PN 16	6“	555	405	350	350	405	1173	960	142		
200 PN 10	8“	625	455	400	390	465	1526	1080	211		
250 PN 10	10“	705	460	460	460	550	1630	1165			
300 PN 10	12“	705	460	460	460	600	1630	1165			

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/oG-PA-50 DE
(design DN 50 with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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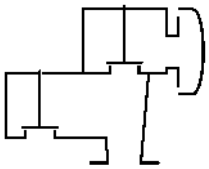
E 21.3 N
Date: 04-2024
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet
Pressure and vacuum relief valve
KITO® VD/oG-PA-… DE



Design

	standard	optionally
housing upper part (PN 1)	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
housing lower part	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
cover	steel	stainless steel mat. no. 1.4301/1.4571
gasket	PTFE	
weather hood	stainless steel	
protective screen	stainless steel mat. no. 1.4301 (DN 200-300)	
design valve pallet	weight loaded *-vacuum-* spring loaded *-pressure-*	
valve seat	stainless steel mat. no. 1.4571	
valve pallet / valve spindle *-pressure-*	stainless steel mat. no. 1.4571	
valve sealing *-pressure-*	metal sealing	
spring loaded parts *-pressure-*	stainless steel mat. no. 1.4571	
compression spring *-pressure-*	stainless steel	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet *-vacuum-*

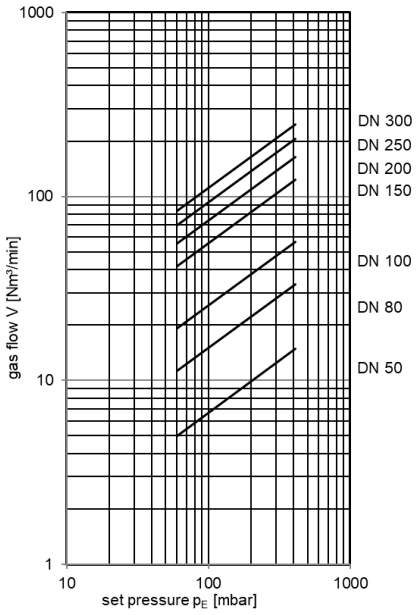
design	pressure range I 2 - < 3.5 mbar	pressure range II ≥ 3.5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve spindle	aluminum / stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

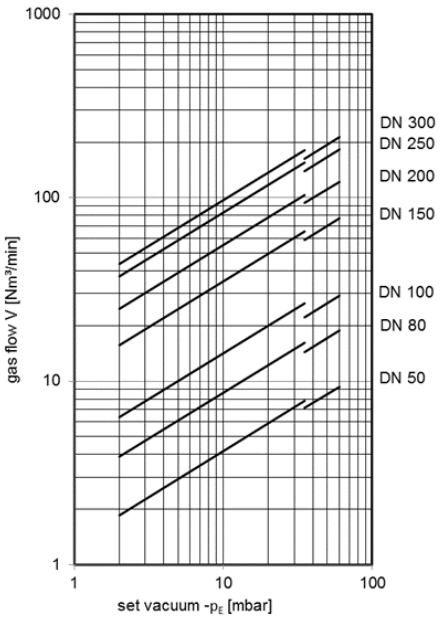
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad \text{or} \quad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting (see DIN 4119).





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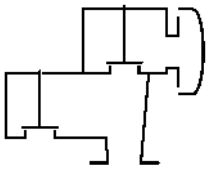
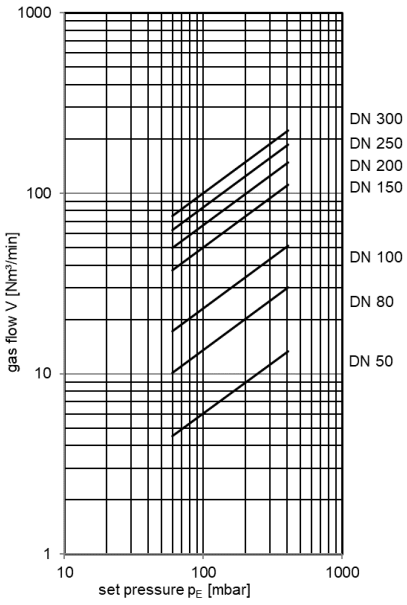
Design subject to change

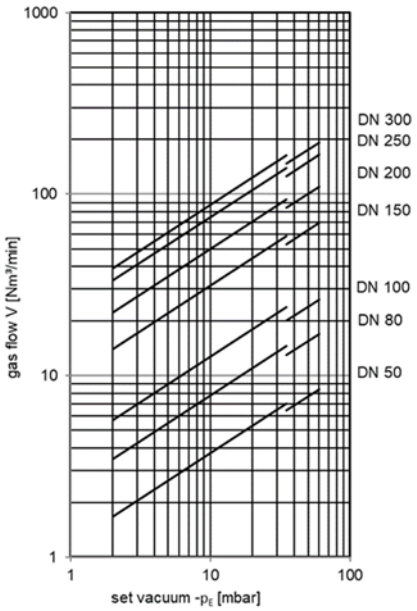
Type sheet
Pressure and vacuum relief valve
KITO® VD/oG-PA-… DE



$$\dot{V}_{10\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \text{ or } \dot{V}_b = \dot{V}_{10\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The volume flow at reducsed lift will be reached by an accumulation of 10 % above valve's setting (see DIN 4119).





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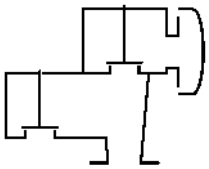
KITO Armaturen GmbH

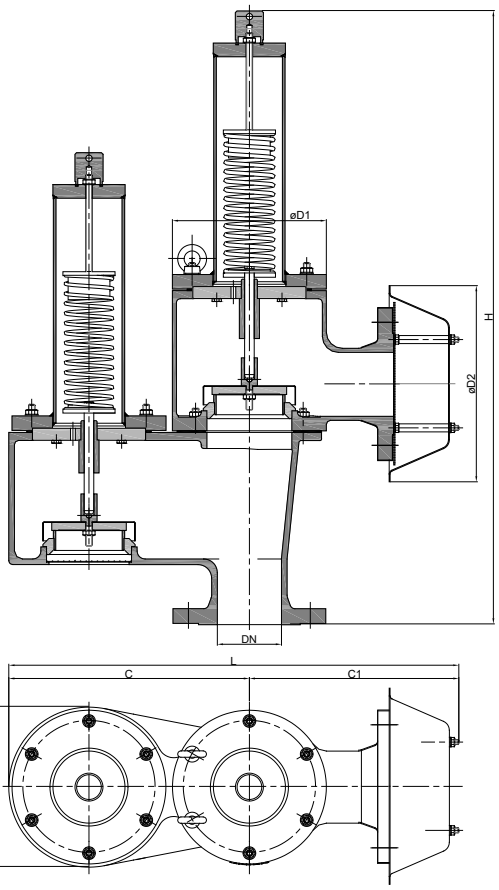
Type sheet
Pressure and vacuum relief valve
KITO® VD/oG-PA-… VDE

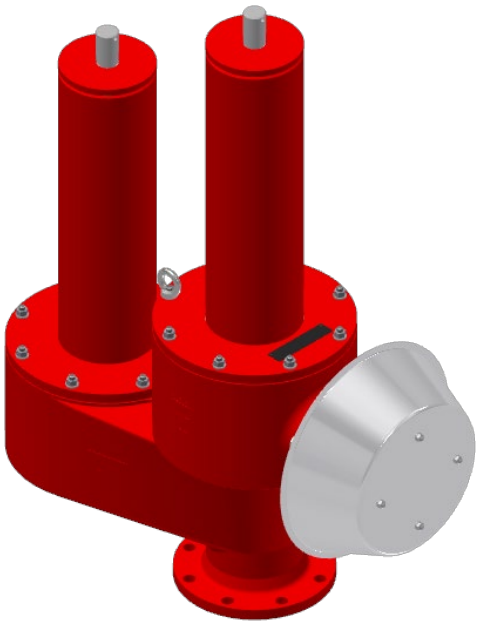


Application

As end-of-line armature, for venting apertures on tank installations. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof.

Dimensions (mm) and settings (mbar)





DN DIN	DN ASME	C	C1	D	D1	D2	H	L	kg	setting vacuum	setting pressure
50 PN 16	2“	255	230	165	165	245	604	485		>60-415	>60-415
80 PN 16	3“	300	320	200	192	286	766	620			
100 PN 16	4“	400	340	250	240	331	911	740			
150 PN 16	6“	555	405	350	350	405	1173	960			
200 PN 10	8“	625	455	400	390	465	1526	1080			
250 PN 10	10“	705	460	460	460	550	1630	1165			
300 PN 10	12“	705	460	460	460	600	1630	1165			

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/oG-PA-50 VDE
(design DN 50 with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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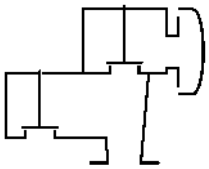
E 21.5 N
Date: 06-2023
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet
Pressure and vacuum relief valve
KITO® VD/oG-PA-… VDE



Design

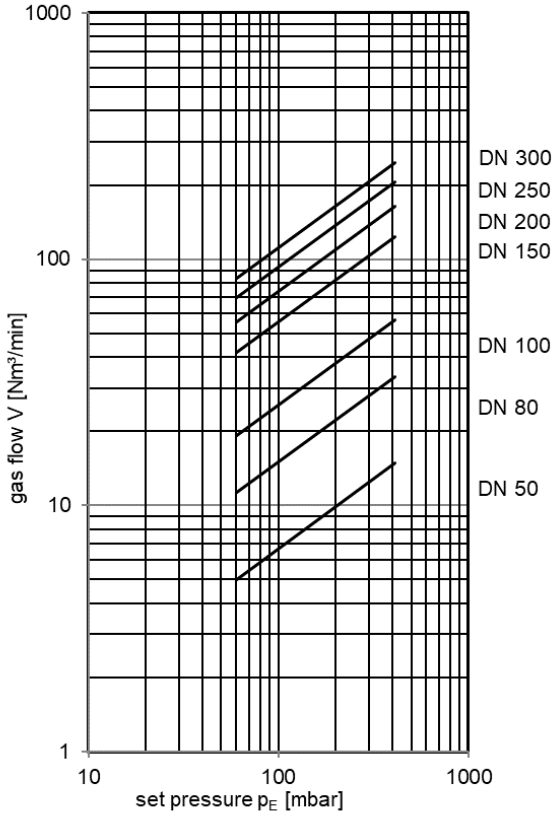
	standard	optionally
housing upper part (PN 1)	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
housing lower part	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
cover	steel	stainless steel mat. no. 1.4301/1.4571
gasket	PTFE	
weather hood	stainless steel	
protective screen	stainless steel mat. no. 1.4301 (DN 200-300)	
design valve pallet	spring loaded	
valve seat	stainless steel mat. no. 1.4571	
valve pallet / valve spindle	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

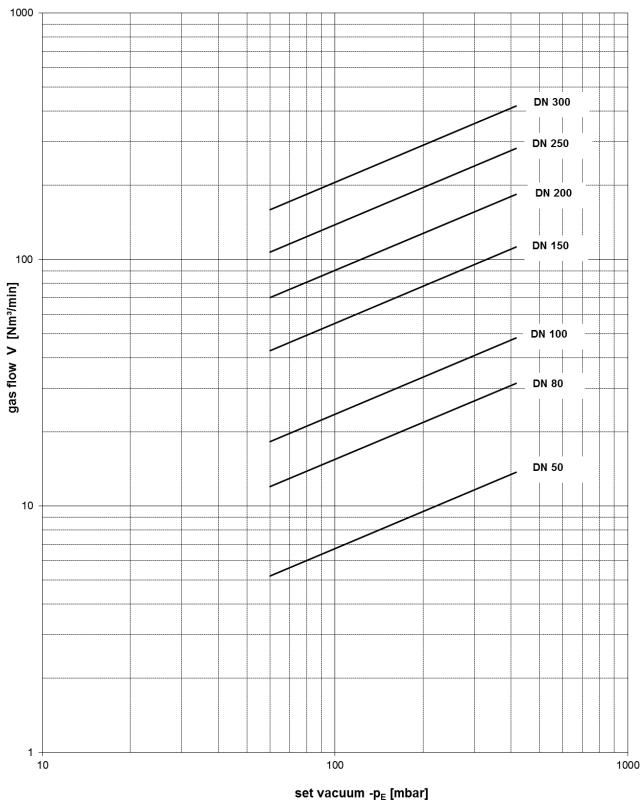
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting. If the allowable overpressure is less than 20%, please consult the factory for the corrected volume flow.





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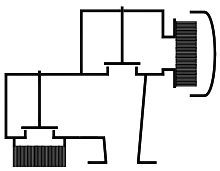
Date: 06-2023
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

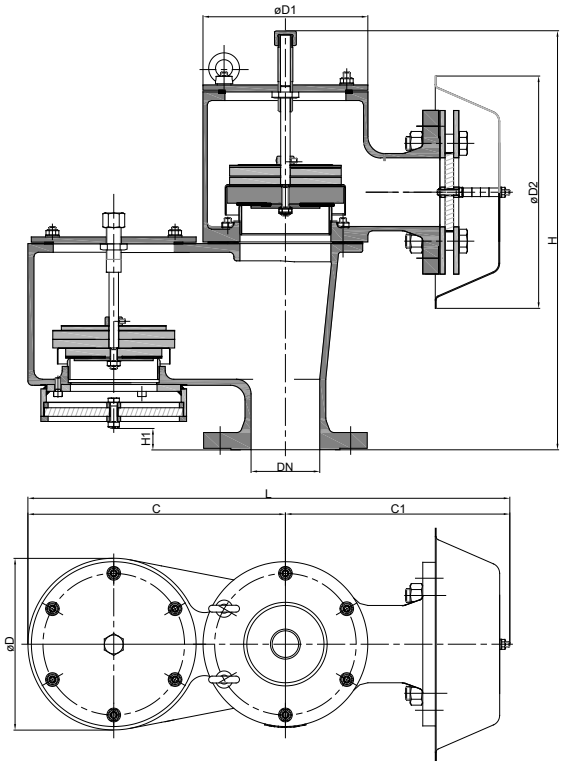
Type sheet
Deflagration proof pressure and vacuum relief valve
KITO® VD/KG-PA-IIB3-…



Application

As end-of-line armature, for venting apertures on tank installations. Tested and approved against atmospheric deflagrations for all materials of the explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof.

Dimensions (mm) and settings (mbar)



DN DIN	DN ASME	C	C1	D	D1	D2	H	H1	L	kg	setting vacuum	setting pressure
50 PN 16	2“	255	230	165	165	245	389	3	485	32	2-60	2-60
80 PN 16	3“	300	320	200	192	286	488		620	46		
100 PN 16	4“	400	340	250	240	331	548		740	70		
150 PN 16	6“	555	405	350	350	405	656		960	143		
200 PN 10	8“	625	455	400	390	465	776	12	1080	202		
250 PN 10	10“	705	460	460	460	550	876		1165	270		
300 PN 10	12“	705	460	460	460	600	882		1165	296		

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/KG-PA-IIB3-50
(design DN 50 with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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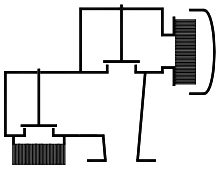
E 22.1 N
Date: 06-2023
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration proof pressure and vacuum relief valve

KITO® VD/KG-PA-IIB3-…



Design

	standard	optionally
housing upper part (PN 1)	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
housing lower part	cast steel mat. no. 1.0619 / steel	stainless cast steel mat. no. 1.4408 / 1.4571
cover	steel	stainless steel mat. no. 1.4301
gasket	PTFE	
valve seat	stainless steel mat. no. 1.4571	
KITO®-flame arrester element	interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
weather hood	stainless steel	
protective screen	stainless steel mat. no. 1.4301 (DN 200-300)	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet

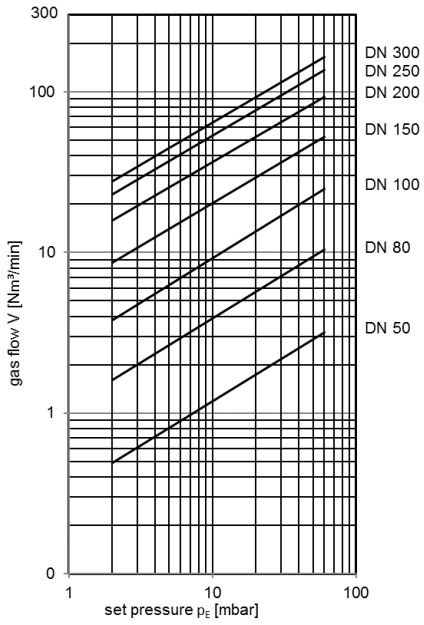
design	pressure range I 2 - < 3.5 mbar	pressure range II ≥ 3.5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve spindle	aluminum / stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

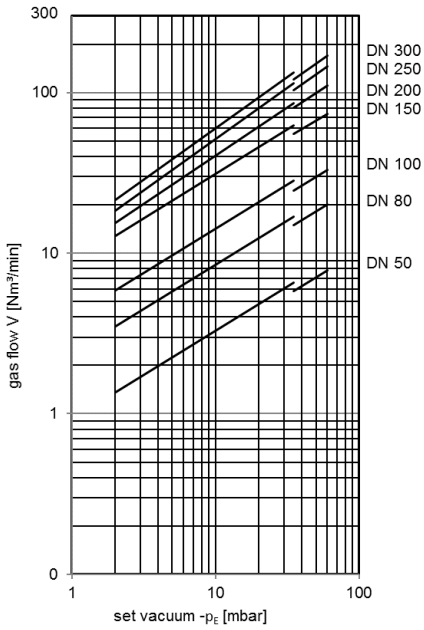
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting. If the allowable overpressure is less than 20%, please consult the factory for the corrected volume flow.





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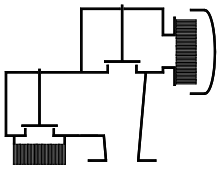
Date: 06-2023
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

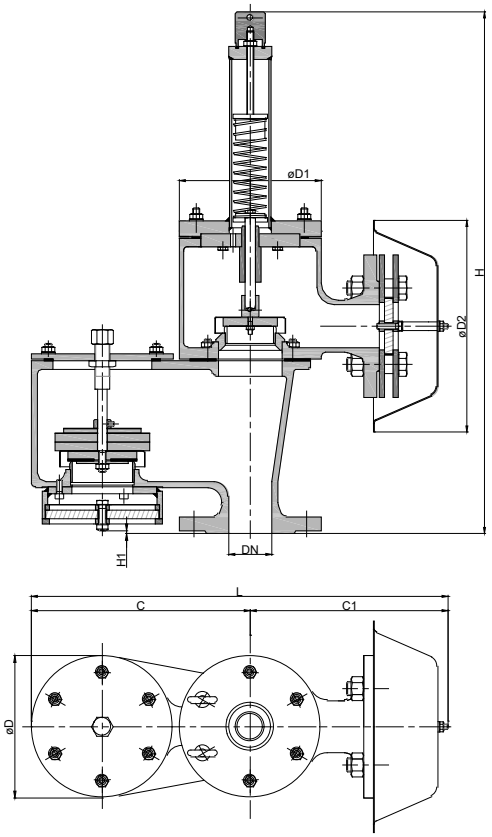
Type sheet
Deflagration proof pressure and vacuum relief valve
KITO® VD/KG-PA-IIB3-… DE

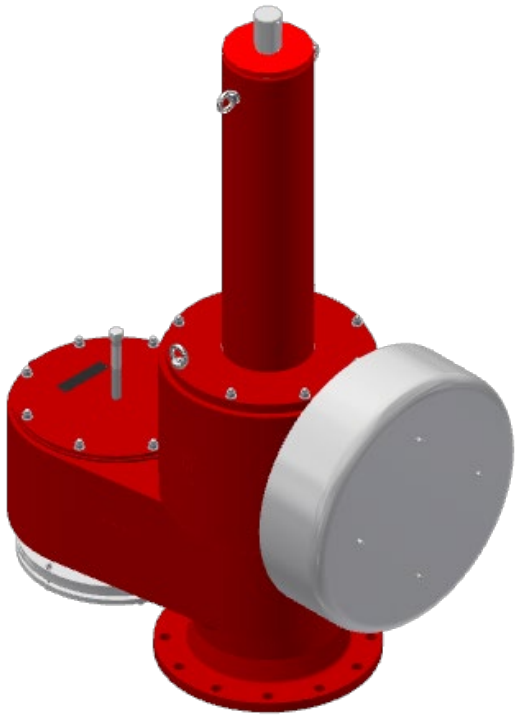


Application

As end-of-line armature, for venting apertures on tank installations. Tested and approved against atmospheric deflagrations for all materials of the explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof.

Dimensions (mm) and settings (mbar)





DN		C	C1	D	D1	D2	H	H1	L	kg	setting	
DIN	ASME										vacuum	pressure
50 PN 16	2“	255	230	165	165	245	604	3	485		2-60	>60-415
80 PN 16	3“	300	320	200	192	286	766		620			
100 PN 16	4“	400	340	250	240	331	911		740			
150 PN 16	6“	555	405	350	350	405	1173		960			
200 PN 10	8“	625	455	400	390	465	1526	12	1080			
250 PN 10	10“	705	460	460	460	550	1630		1165			
300 PN 10	12“	705	460	460	460	600	1630		1165			

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/KG-PA-IIB3-50 DE
(design DN 50 with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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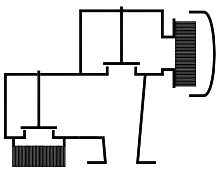
E 22.4 N
Date: 06-2023
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Deflagration proof pressure and vacuum relief valve
KITO® VD/KG-PA-IIB3-… DE



Design

	standard	optionally
housing upper part (PN 1)	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
housing lower part	cast steel mat. no. 1.0619 / steel	stainless cast steel mat. no. 1.4408 / 1.4571
cover	steel	stainless steel mat. no. 1.4301/1.4571
gasket	PTFE	
design valve pallet	weight loaded *-vacuum-* spring loaded *-pressure-*	
valve seat	stainless steel mat. no. 1.4571	
valve pallet / valve spindle *-pressure-*	stainless steel mat. no. 1.4571	
valve sealing *-pressure-*	metal sealing	
spring loaded parts *-pressure-*	stainless steel mat. no. 1.4571	
compression spring *-pressure-*	stainless steel	
KITO®-flame arrester element	interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
weather hood	stainless steel	
protective screen	stainless steel mat. no. 1.4301 (DN 200-300)	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet *-vacuum-*

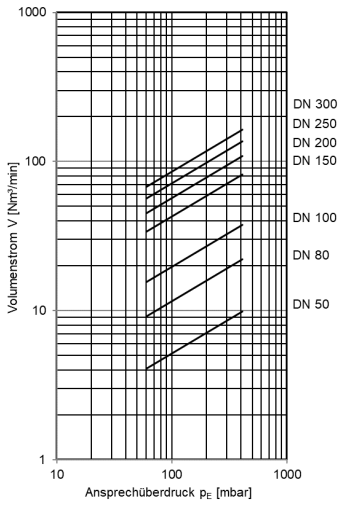
design	pressure range I 2 - < 3.5 mbar	pressure range II ≥ 3.5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve spindle	aluminum / stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

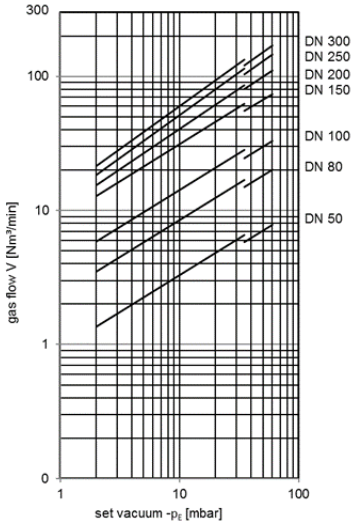
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting. If the allowable overpressure is less than 20%, please consult the factory for the corrected volume flow.





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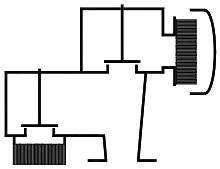
Date: 06-2023
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

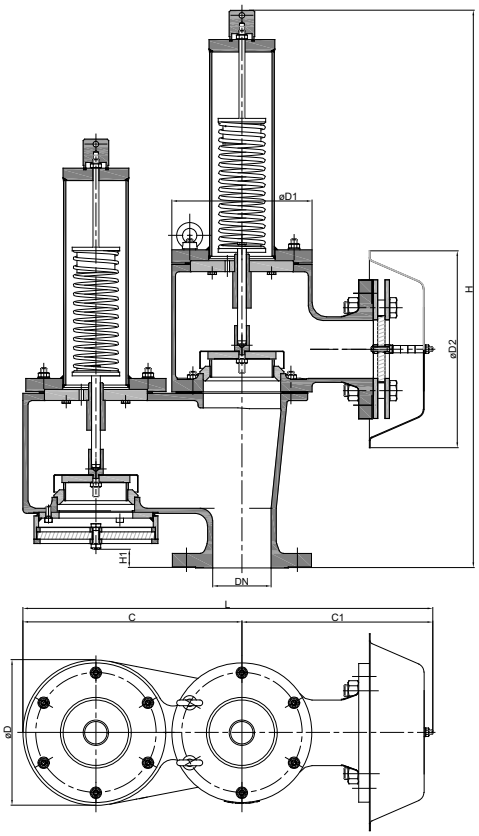
Type sheet
Deflagration proof pressure and vacuum relief valve
KITO® VD/KG-PA-IIB3-… VDE

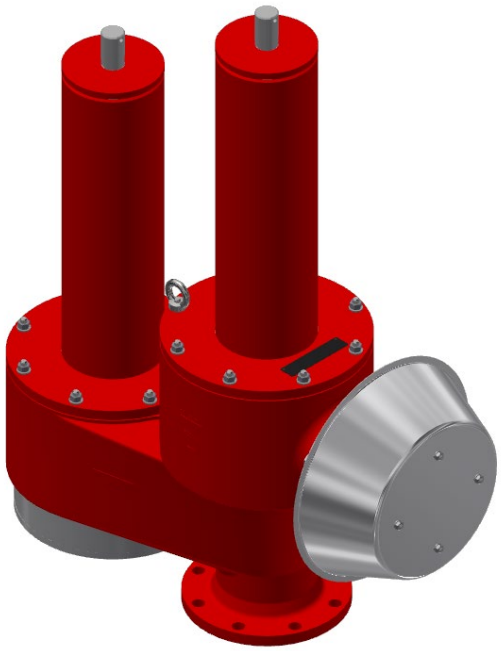


Application

As end-of-line armature, for venting apertures on tank installations. Tested and approved against atmospheric deflagrations for all materials of the explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof.

Dimensions (mm) and settings (mbar)





DN DIN	DN ASME	C	C1	D	D1	D2	H	H1	L	kg	setting vacuum	setting pressure
50 PN 16	2“	255	230	165	165	245	604	3	485		>60-415	>60-415
80 PN 16	3“	300	320	200	192	286	766		620			
100 PN 16	4“	400	340	250	240	331	911		740			
150 PN 16	6“	555	405	350	350	405	1173		960			
200 PN 10	8“	625	455	400	390	465	1526	12	1080			
250 PN 10	10“	705	460	460	460	550	1630		1165			
300 PN 10	12“	705	460	460	460	600	1630		1165			

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/KG-PA-IIB3-50 VDE
(design DN 50 with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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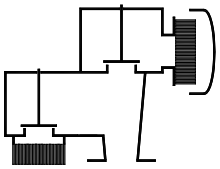
Date: 06-2023
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration proof pressure and vacuum relief valve

KITO® VD/KG-PA-IIB3-… VDE



Design

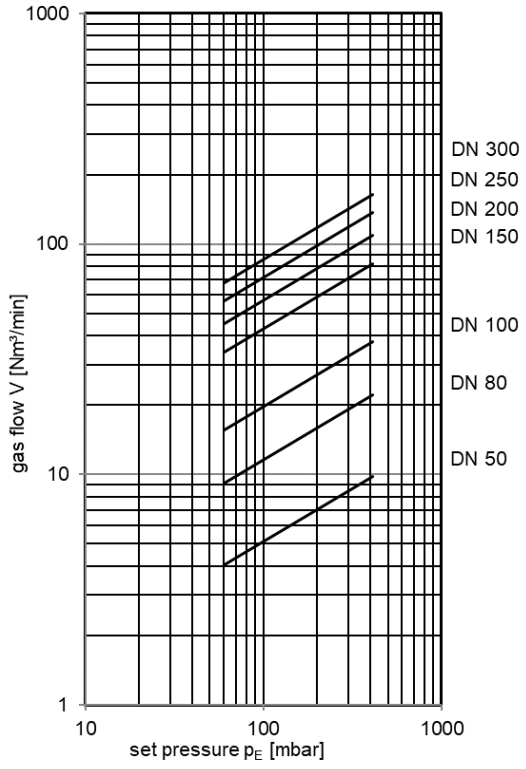
	standard	optionally
housing upper part (PN 1)	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
housing lower part	cast steel mat. no. 1.0619 / steel	stainless cast steel mat. no. 1.4408 / 1.4571
cover	steel	stainless steel mat. no. 1.4301/1.4571
gasket	PTFE	
design valve pallet	spring loaded	
valve seat	stainless steel mat. no. 1.4571	
valve pallet / valve spindle	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
KITO®-flame arrester element	interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
weather hood	stainless steel	
protective screen	stainless steel mat. no. 1.4301 (DN 200-300)	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

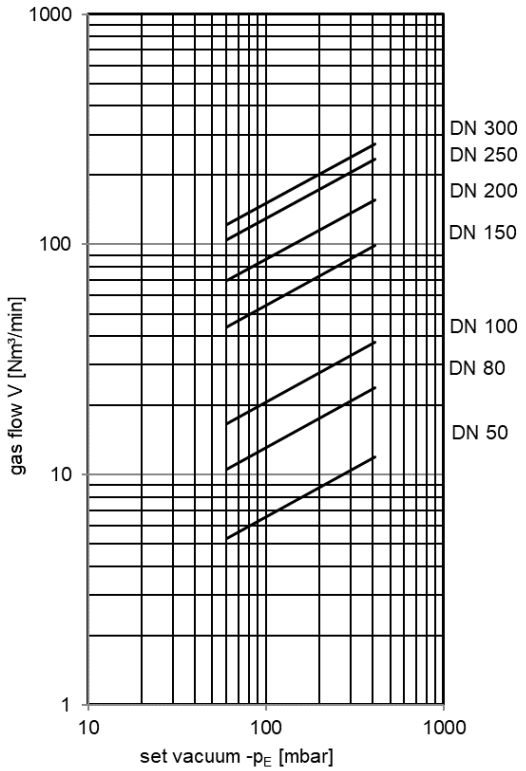
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting. If the allowable overpressure is less than 20%, please consult the factory for the corrected volume flow.





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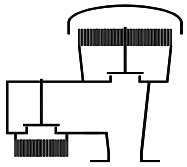
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration proof pressure and vacuum relief valve

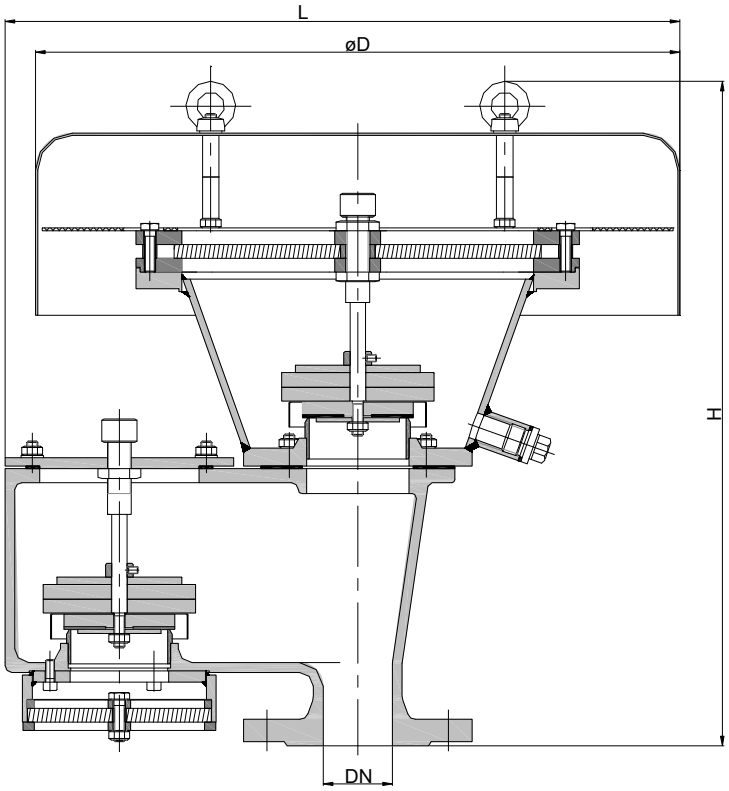
KITO® VD/KG-IIB3-…



Application

As end-of-line armature, for venting apertures on tank installations. Tested and approved against atmospheric deflagrations for all materials of the explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof. Available with an explosion and endurance burning proofed condensate drain device.

Dimensions (mm) and settings (mbar)



DN		D	H	L	kg	setting	
DIN	ASME					vacuum	pressure
50 PN 16	2“	465	480	487		2-60	2-60
80 PN 16	3“		555	533			
100 PN 16	4“	600	650	700			
150 PN 16	6“		712	855			

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/KG-IIB3-50
(design DN 50 with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

KITO Armaturen GmbH
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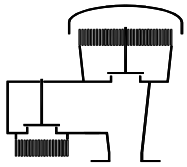
E 23 N
Date: 07-2022
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Deflagration proof pressure and vacuum relief valve
KITO® VD/KG-IIB3-…



Design

	standard	optionally
housing upper part	steel	stainless steel mat. no. 1.4571
housing lower part	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
cover	steel	stainless steel mat. no. 1.4301
gasket	PTFE	
valve seat	stainless steel mat. no. 1.4571	
KITO®-flame arrester element	interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
weather hood	stainless steel	
protective screen	stainless steel mat. no. 1.4301	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet

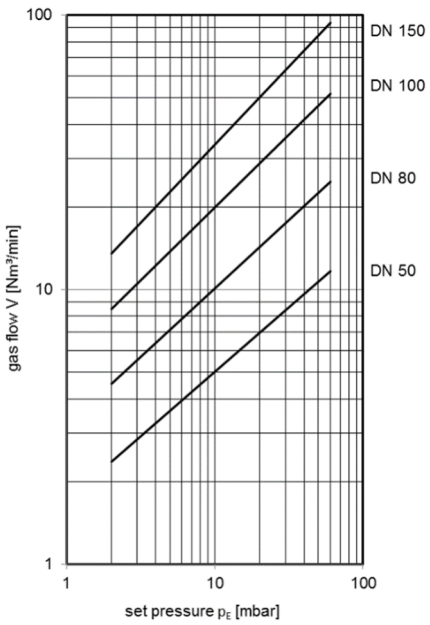
design	pressure range I 2 - < 3.5 mbar	pressure range II ≥ 3.5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve spindle	aluminum / stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

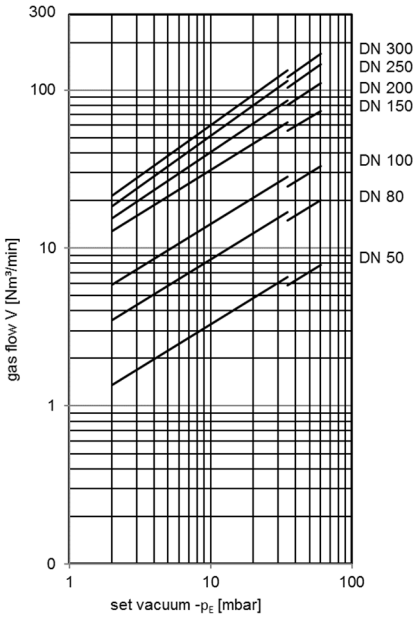
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting. If the allowable overpressure is less than 20%, please consult the factory for the corrected volume flow.





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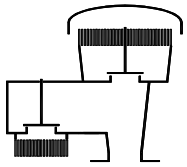
Design subject to change

KITO Armaturen GmbH

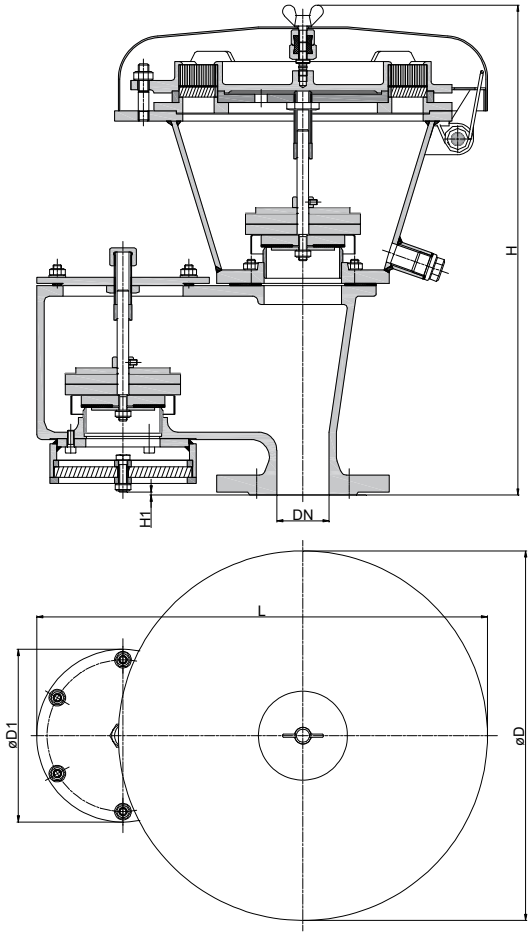
Type sheet
Deflagration and endurance burning proof pressure and vacuum relief valve
KITO® VD/KG-BEH-6-IIB3-…

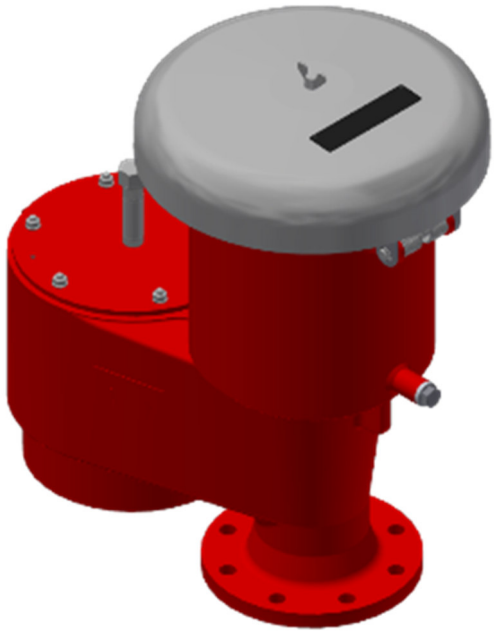


Application

As end-of-line armature, for venting apertures on tank installations, deflagration and endurance burning proof. Tested and approved against atmospheric deflagrations for all materials of the explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof. Available with an explosion and endurance burning proofed condensate drain device.

Dimensions (mm) and settings (mbar)





DN		D	D1	H	H1	L	kg	setting	
DIN	ASME							vacuum	pressure
50 PN 16	2“	353	165	468	3	431		2-60	2-60
80 PN 16	3“		200	549		477			
100 PN 16	4“		250	620		577			

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/KG-BEH-6-IIB3-50
(design DN 50 with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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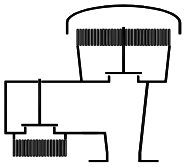
E 25 N
Date: 12-2019
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Deflagration and endurance burning
proof pressure and vacuum relief valve
KITO® VD/KG-BEH-6-IIB3-…



Design

	standard	optionally
housing upper part	steel	stainless steel mat. no. 1.4571
housing lower part	cast steel mat. no. 1.0619 / steel	stainless cast steel mat. no. 1.4408 / ss mat. no. 1.4571
cover	steel	stainless steel mat. no. 1.4301
gasket	PTFE	
valve seat	stainless steel mat. no. 1.4571	
KITO®-flame arrester element	interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4408 / 1.4310 (top), mat. no. 1.4571 / 1.4310 (under)	stainless steel mat. no. 1.4408 / 1.4571 (top), mat. no. 1.4571 / 1.4571 (under)
weather hood	steel, hood can fold automatically as a result of folding mechanism and fusing element	stainless steel mat. no. 1.4571, hood can fold automatically as a result of folding mechanism and fusing element
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet

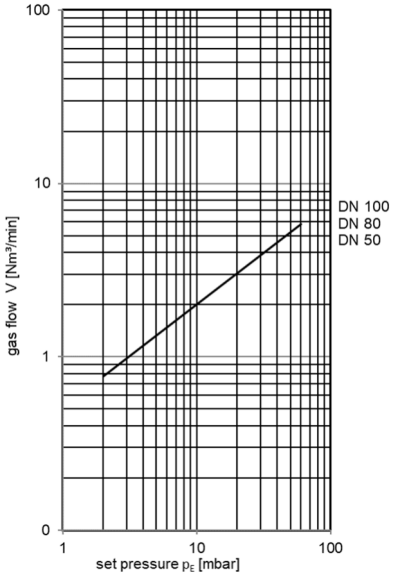
design	pressure range I 2 - < 3.5 mbar	pressure range II ≥ 3.5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve spindle	aluminum / stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

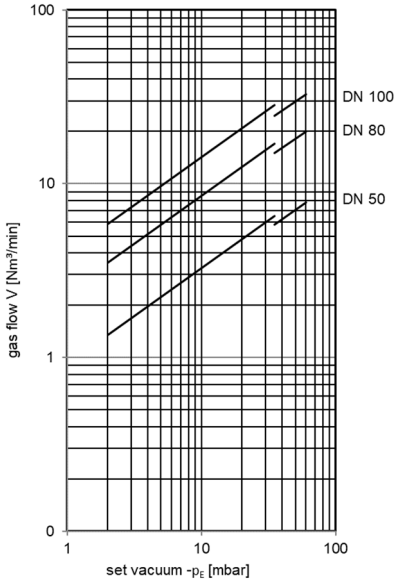
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting. If the allowable overpressure is less than 20%, please consult the factory for the corrected volume flow.





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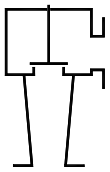
E 25 N
Date: 12-2019
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

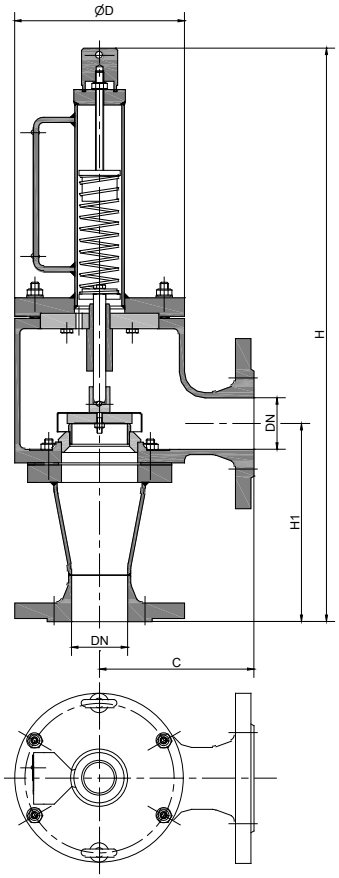
Type sheet
In-line pressure relief valve
KITO® DS/oG-PA-… DR
-End of line device for use in pipeline-

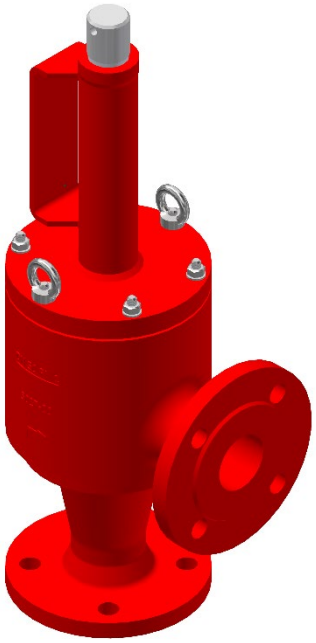


Application

As end-of-line armature, for venting apertures on tank installations. As venting device for fixed roof tanks. Used to prevent inadmissible pressure and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof. **The product vapours can be discharged through a collective line into the atmosphere connected to the line flange.**

Dimensions (mm) and settings (mbar)





DN		C	D	H		H1		kg	setting
DIN	ASME			DIN	ASME	DIN	ASME		
50 PN 16	**2“**	150	165	556	575	192	211		
80 PN 16	**3“**	180	192	691	713	225	247		
100 PN 16	**4“**	200	240	852	884	271	303		
150 PN 16	**6“**	250	350	1107	1141	324	358		>60-415
200 PN 10	**8“**	300	390	1311	1351	387	427		
250 PN 10	**10“**	305	460	1420	1454	443	477		
300 PN 10	**12“**	305	460	1420	1467	470	517		

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® DS/oG-PA-50 DR
(design with flange connection DN 50 PN 16)

Without EC certificate and CE -marking

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F 15 N
Date: 06-2023
Created: Abt. Doku KITO

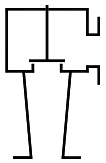
KITO Armaturen GmbH

Type sheet

In-line pressure relief valve

KITO® DS/oG-PA-… DR

-End of line device for use in pipeline-



Design

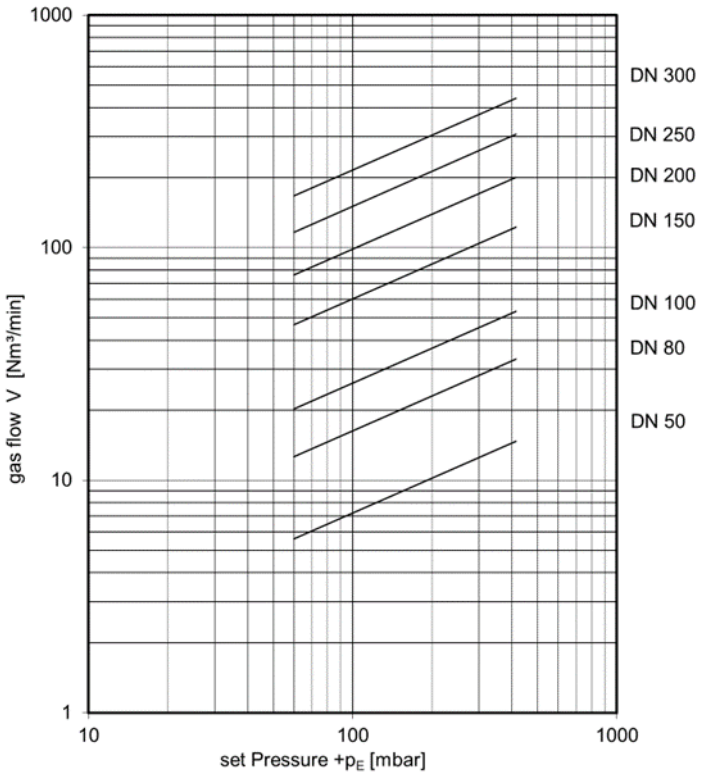
	standard	optionally
housing upper part (PN 1)	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
housing lower part	steel	stainless steel mat. no. 1.4571
cover	steel	stainless steel mat. no. 1.4301/1.4571
gasket	PTFE	
design valve pallet	spring loaded	
valve seat	stainless steel mat. no. 1.4571	
valve pallet / valve spindle	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting. If the allowable overpressure is less than 20%, please consult the factory for the corrected volume flow.



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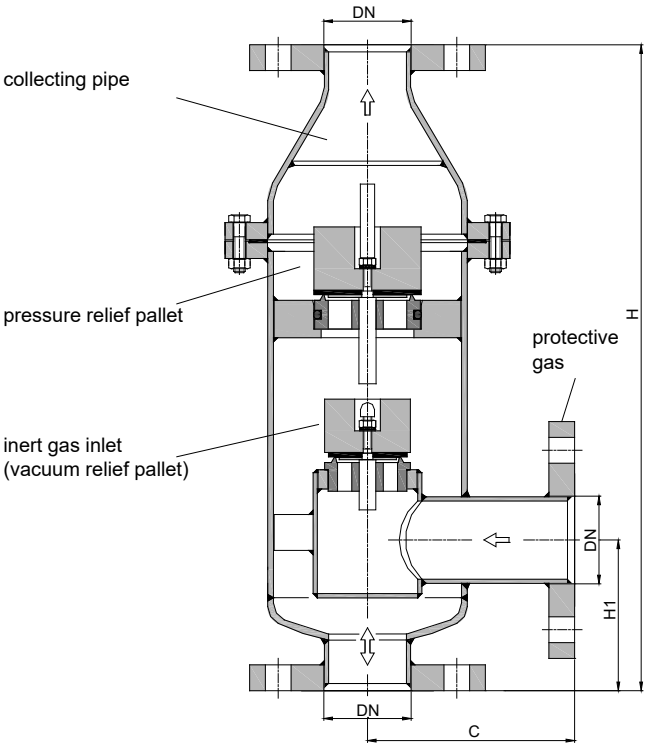
KITO Armaturen GmbH

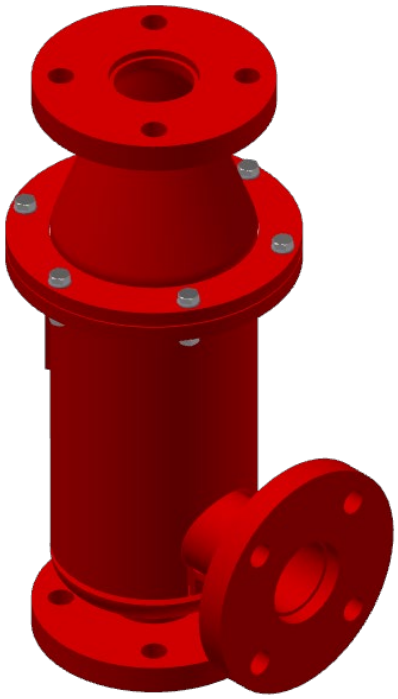
Type sheet
In-line pressure and vacuum relief valve
KITO® VD/o3-…

Application

Pressure compensation valve, preferably for inflammable liquids stored under inert gas, for venting and breathing of fixed roof tanks and above-ground tanks, with lateral connection for the inert gas conduit and a third outlet flange, e. g. for connection to a collecting conduit, for gas compensation or for combustion of exhaust air. The pressure valve prevents unnecessary losses of inert gas. The control valve automatically controls the supply of inert gas and the pressure of the inert gas in the tank. For the max. admission pressure see setting „vacuum“.

Dimensions (mm) and settings (mbar)





DN		C	H	H1	kg	setting			
						vacuum		pressure	
DIN	ASME					min. - max. *(load weight from PE)*	min. - max.	min. - max. *(load weight from PE)*	min. - max.
50 PN 16	**2“**	145	450	105	20	2.7 - 10.6	10.7 - 75	2 - 10	10.1 - 110
80 PN 16	**3“**	175	595	163	45	2.7 - 10.6	10.7 - 120	1.7 - 7.9	8 - 90
100 PN 16	**4“**	190	600	190	54	1.7 -7.9	8 - 100	1.7 - 7.9	8 - 50

Indicated weights are understood without weight load and refer to the standard design

Higher settings on request

Example for order

KITO® VD/o3-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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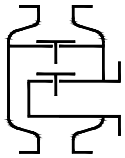
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet
In-line pressure and vacuum relief valve
KITO® VD/o3-…



Design

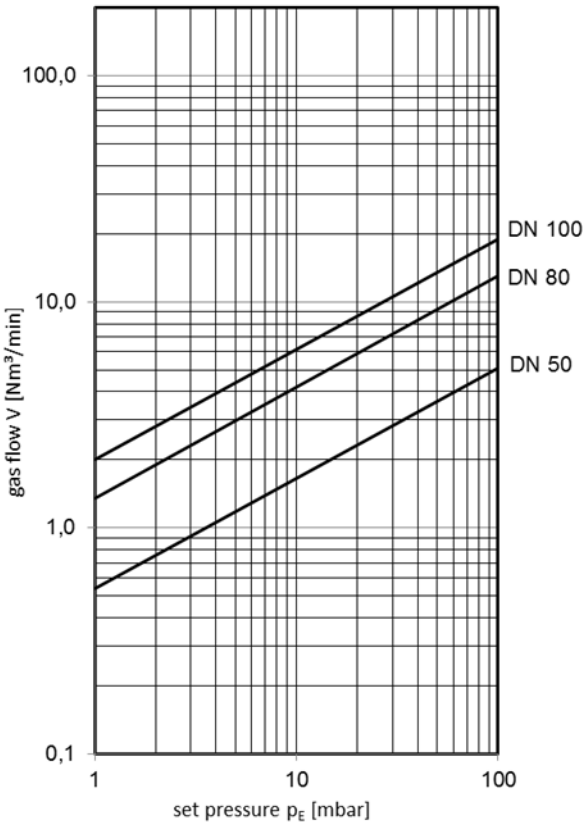
	standard	optionally
housing / connecting piece	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

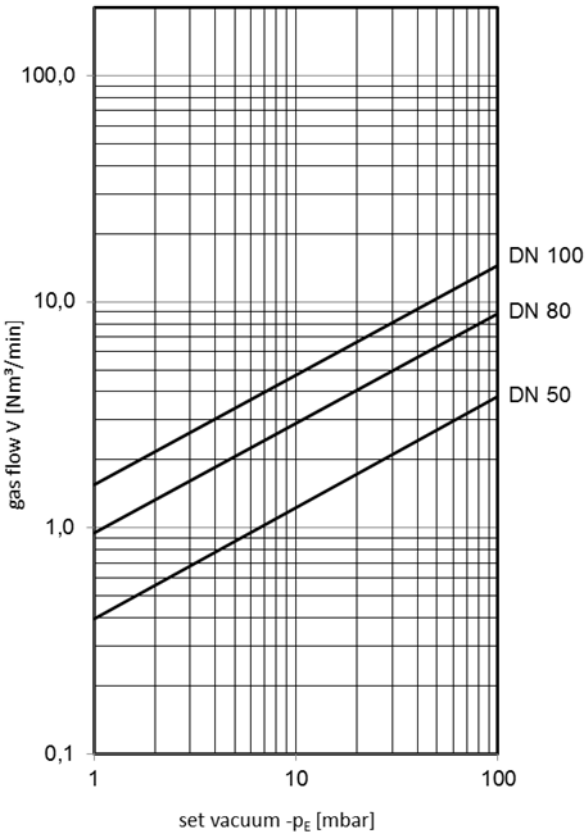
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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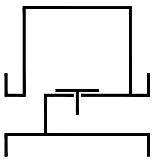
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

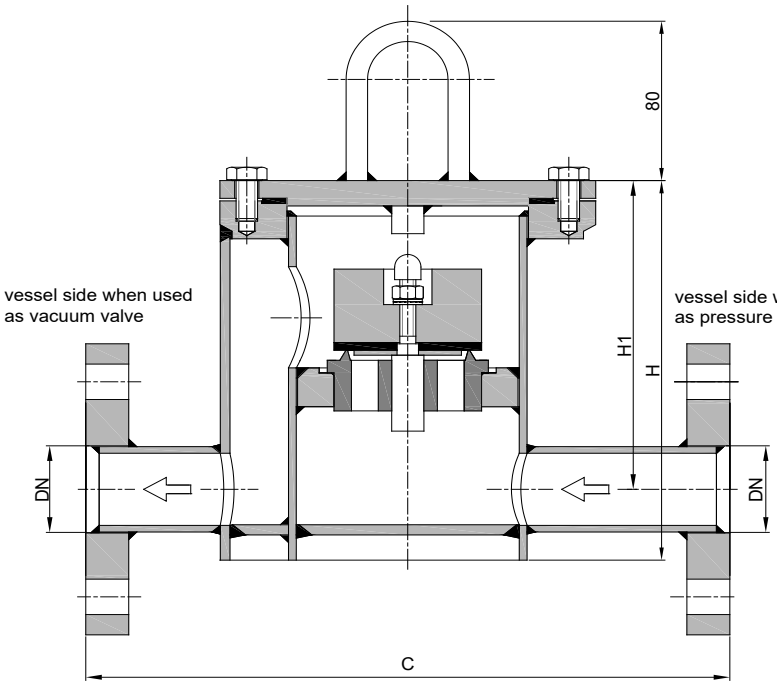
Type sheet
In-line pressure or vacuum relief valve
KITO® VD/TA-…

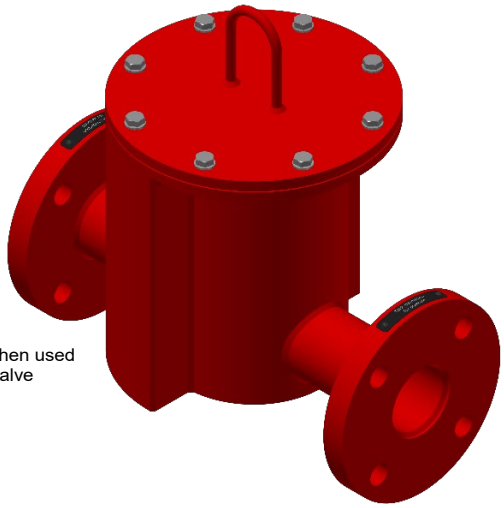


Application

as inline armature with venting or breather valve function for vessels. Preferably used for installation in pipes. Depending on the installation, the valve can be used as pressure or vacuum valve. It can also be used as non-return safety device or overflow valve.

Dimensions (mm) and settings (mbar)





Construction length C can be adapted to customers wish to local situation.

DN DIN	DN ASME	C	H	H1	~kg	setting min. - max. *(load weight from PE)*	setting min. - max.	setting min. - max. *(with housing extension)*
25 PN 40	**1“**	240	153	125	10	2.5 - 10.4	10.5 - 86	> 86 - 200
32 PN 40	**1 ¼“**	240	167	134	12	2.5 - 10.4	10.5 - 82	> 82 - 200
40 PN 40	**1 ½“**	350	230	195	18	1,8 - 10.3	10.4 - 200	-
50 PN 16	**2“**	350	230	189	19	1.8 - 10.3	10.4 - 190	> 190 - 200
65 PN 16	**2 ½“**	350	245	196	20	1.7 - 7.4	7.5 - 165	> 165 - 200
80 PN 16	**3“**	350	303	247	25	1.7 - 7.8	7.9 - 165	> 165 - 200
100 PN 16	**4“**	450	342	272	30	1.7 - 7.6	7.7 - 180	> 180 - 200
125 PN 16	**5“**	500	394	310	35	1.7 - 6.7	6.8 - 150	-
150 PN 16	**6“**	550	455	357	42	1.7 - 11.9	12 - 150	-

Indicated weights are understood without weight load and refer to the standard design

Higher settings see KITO® VD/TA-1-… (type sheet F 30.1 N)

Example for order

KITO® VD/TA-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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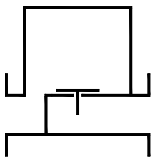
F 30 N
Date: 06-2023
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
In-line pressure or vacuum relief valve
KITO® VD/TA-…



Design

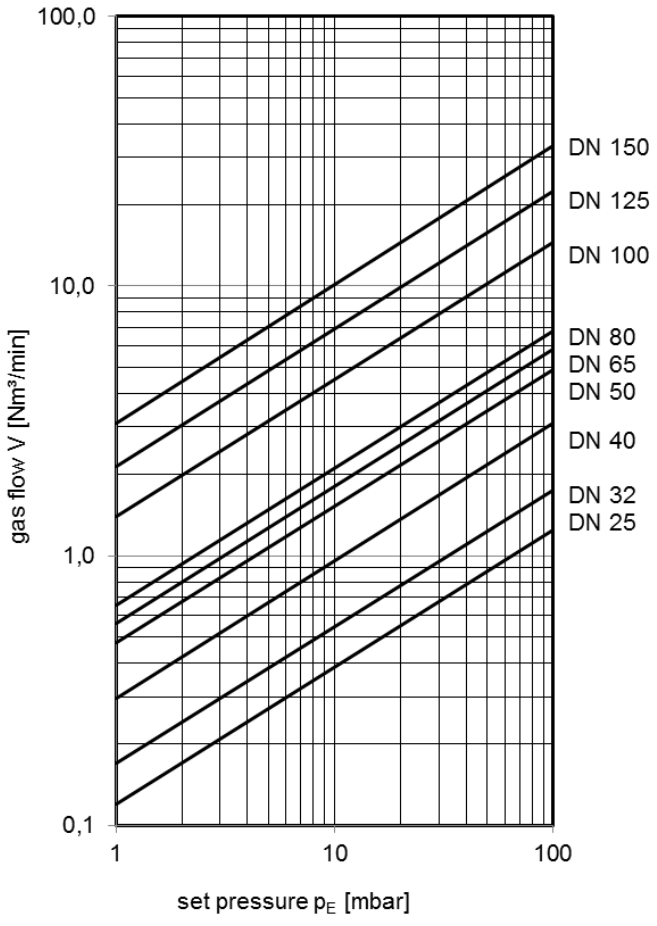
	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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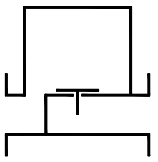
F 30 N
Date: 06-2023
Created: Abt. Doku KITO

KITO Armaturen GmbH

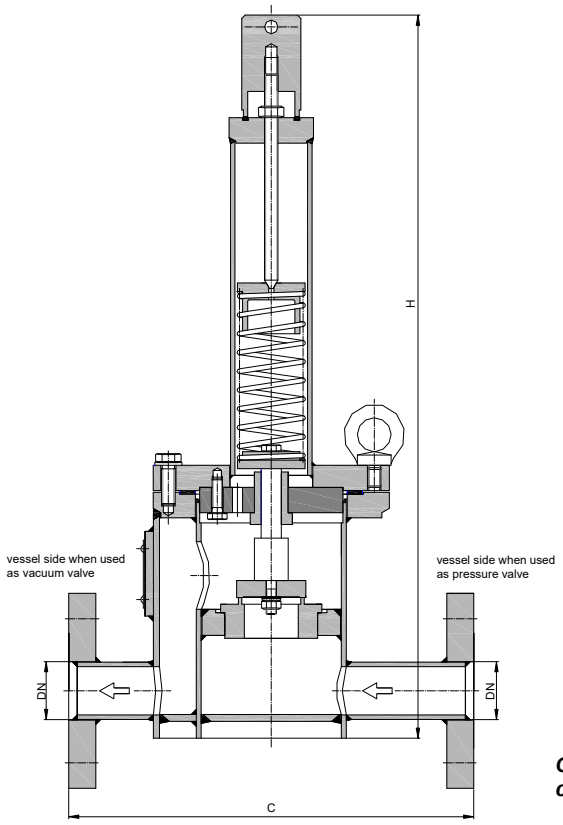
Type sheet
In-line pressure or vacuum relief valve
KITO® VD/TA-1-…

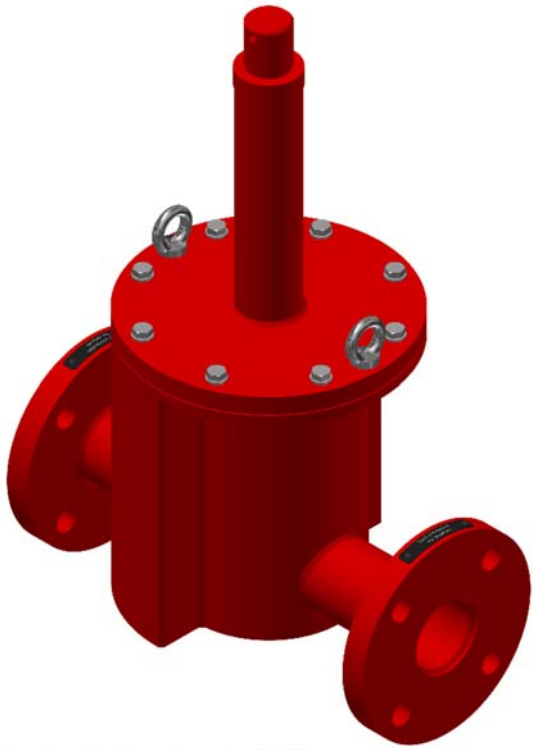


Application

As inline armature with venting or breather valve function for vessels. Preferably used for installation in pipes. Depending on the installation, the valve can be used as pressure or vacuum valve. It can also be used as non-return safety device or overflow valve.

Dimensions (mm) and settings (mbar)





Construction length C can be adapted to customers wish to local situation.

DN		C	H	kg	setting	
DIN	ASME				min.	max.
25 PN 40	**1“**	240	406	11	>200	350
32 PN 40	**1 ¼“**	240	421			
40 PN 40	**1 ½“**	350	482			
50 PN 16	**2“**	350	482	26		
65 PN 16	**2 ½“**	350	743			
80 PN 16	**3“**	350	743			
100 PN 16	**4“**	450	775			
125 PN 16	**5“**	500			>150	
150 PN 16	**6“**	550				

Indicated weights are understood without weight load and refer to the standard design
Lower settings see KITO® VD/TA-… (type sheet F 30 N), higher settings on request

Example for order

KITO® VD/TA-1-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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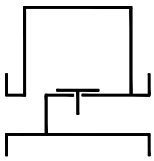
F 30.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
In-line pressure or vacuum relief valve
KITO® VD/TA-1-…



Design

	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
valve pallet	spring loaded	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

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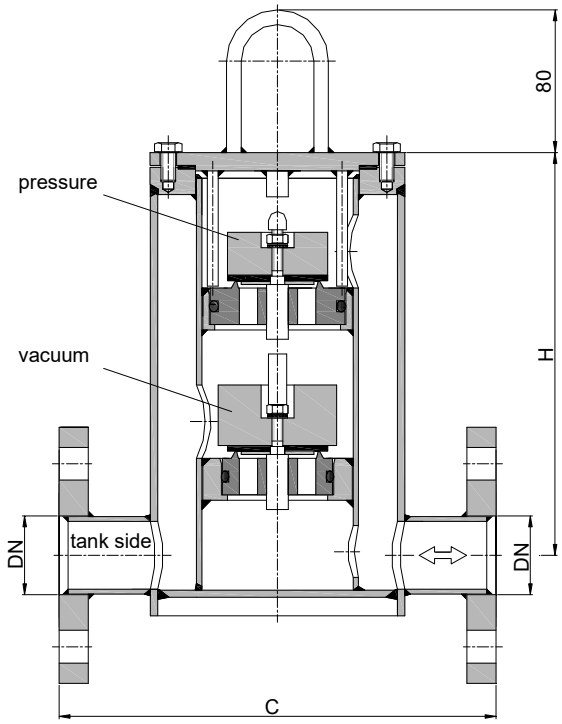
KITO Armaturen GmbH

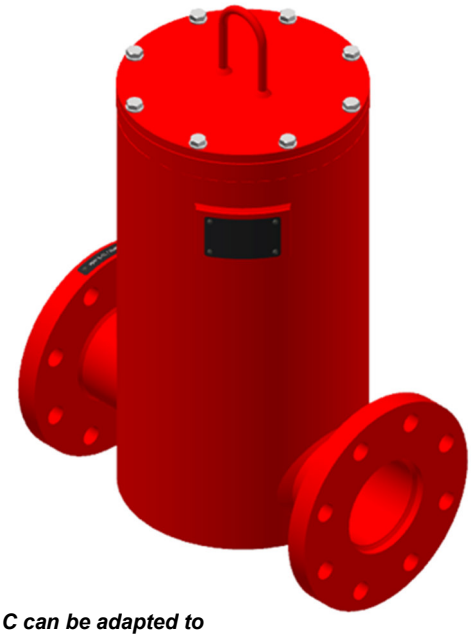
Type sheet
In-line pressure and vacuum relief valve
KITO® VD/TG-…

Application

As inline armature with venting and breather valve function for vessels. Preferably used for installation in pipes.

Dimensions (mm) and settings (mbar)





Construction length C can be adapted to customers wish to local situation.

DN		C	H	~kg	setting vacuum		setting pressure		
DIN	ASME				min. - max. *(load weight from PE)*	min. - max.	min. - max. *(load weight from PE)*	min. - max.	min. - max. *(with housing extension)*
25 PN 40	**1“**	240	210	10	2.7 - 10.4	10.5 - 75	2.5 - 10.4	10.5 - 70	> 70 - 200
32 PN 40	**1 ¼“**	240	220	12	2.7 - 10.4	10.5 - 73	2.5 - 10.4	10.5 - 68	> 68 - 200
40 PN 40	**1 ½“**	350	308	18	2.1 - 10.4	10.5 - 148	1.8 - 10.3	10.4 - 200	-
50 PN 16	**2“**	350	308	19	2.1 - 10.4	10.5 - 145	1.8 - 10.3	10.4 - 200	-
65 PN 16	**2 ½“**	350	316	20	1.7 - 7.4	7.5 - 90	1.7 - 7.4	7.5 - 130	> 130 - 200
80 PN 16	**3“**	350	364	25	1.7 - 7.9	8.0 - 105	1.7 - 7.8	7.9 - 130	> 130 - 200
100 PN 16	**4“**	450	415	30	1.7 - 7.6	7.7 - 97	1.7 - 7.6	7.7 - 180	> 180 - 200
125 PN 16	**5“**	500	400	35	1.7 - 6.7	6.8 - 80	1.7 - 6.7	6.8 - 135	> 135 - 150
150 PN 16	**6“**	550	441	42	1.9 - 11.9	12 - 100	1.7 - 11.9	12 - 150	-

Indicated weights are understood without weight load and refer to the standard design

Higher settings see KITO® VD/TG-1-… (type sheet F 31.1 N)

Example for order

KITO® VD/TG-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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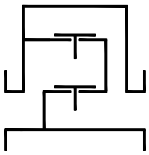
F 31 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
In-line pressure and vacuum relief valve
KITO® VD/TG-…



Design

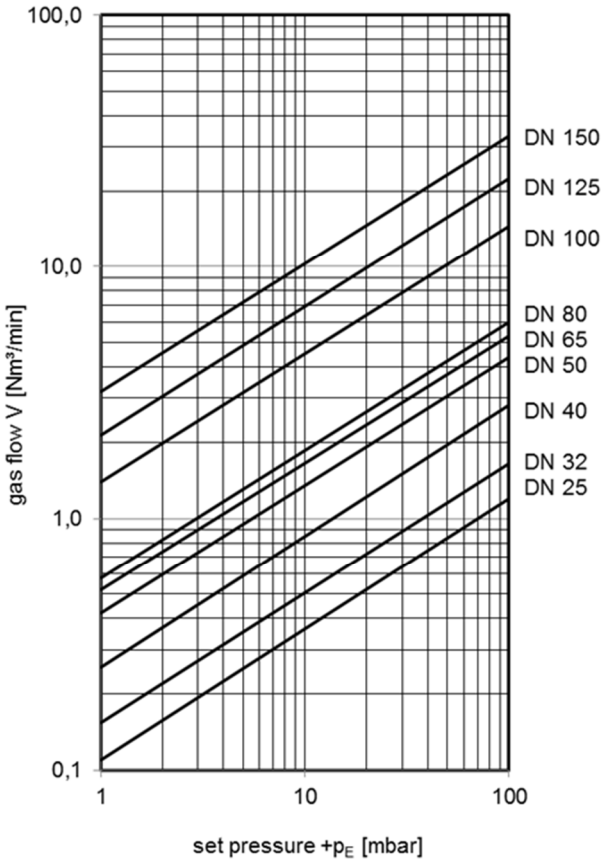
	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

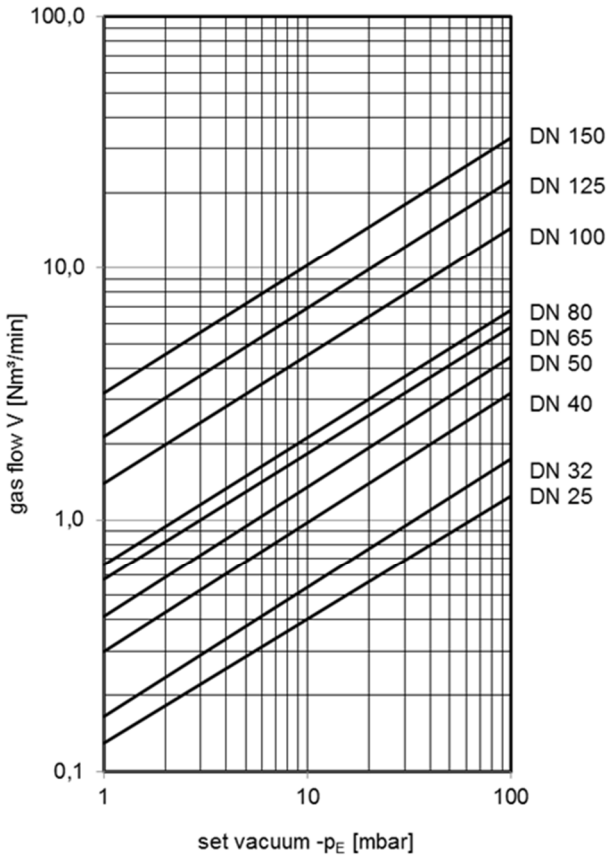
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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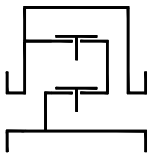
F 31 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

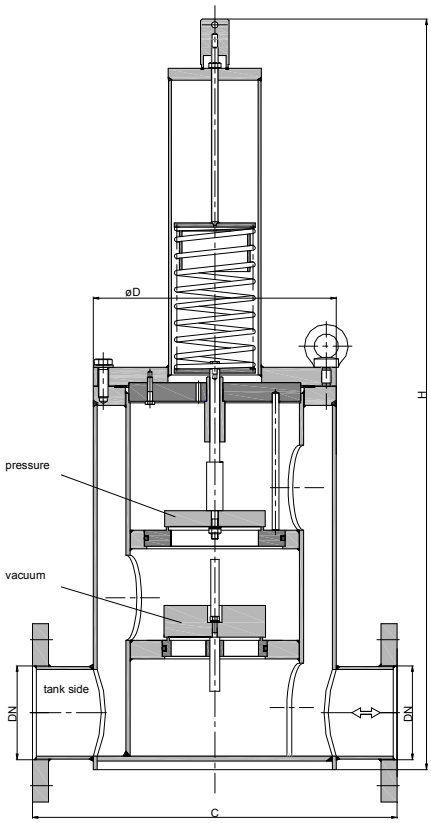
Type sheet
In-line pressure and vacuum relief valve
KITO® VD/TG-1-…



Application

As inline armature with venting and breather valve function for vessels. Preferably used for installation in pipes.

Dimensions (mm) and settings (mbar)



Construction length C can be adapted to customers wish to local situation.

DN		D	C	H	kg	setting			
						vacuum		pressure	
DIN	ASME					min.	max.	min.	max.
25 PN 40	**1“**	140	240	492		6	93		
32 PN 40	**1 ¼“**	140	240	492		6	91		
40 PN 40	**1 ½“**	220	350	601		6	158		
50 PN 16	**2“**	220	350	601		6	154	>200	
65 PN 16	**2 ½“**	220	350	805		7	105		350
80 PN 16	**3“**	220	350	860		7	120		
100 PN 16	**4“**	300	450	926		7	140		
125 PN 16	**5“**	324	500			7	140	>150	
150 PN 16	**6“**	370	550	1286		8	150		

Indicated weights are understood without weight load and refer to the standard design
Lower settings see KITO® VD/TG-… (type sheet F 31 N), higher settings on request

Example for order

KITO® VD/TG-1-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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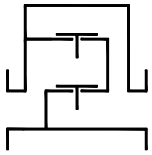
F 31.1 N
Date: 08-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet
In-line pressure and vacuum relief valve
KITO® VD/TG-1-…



Design

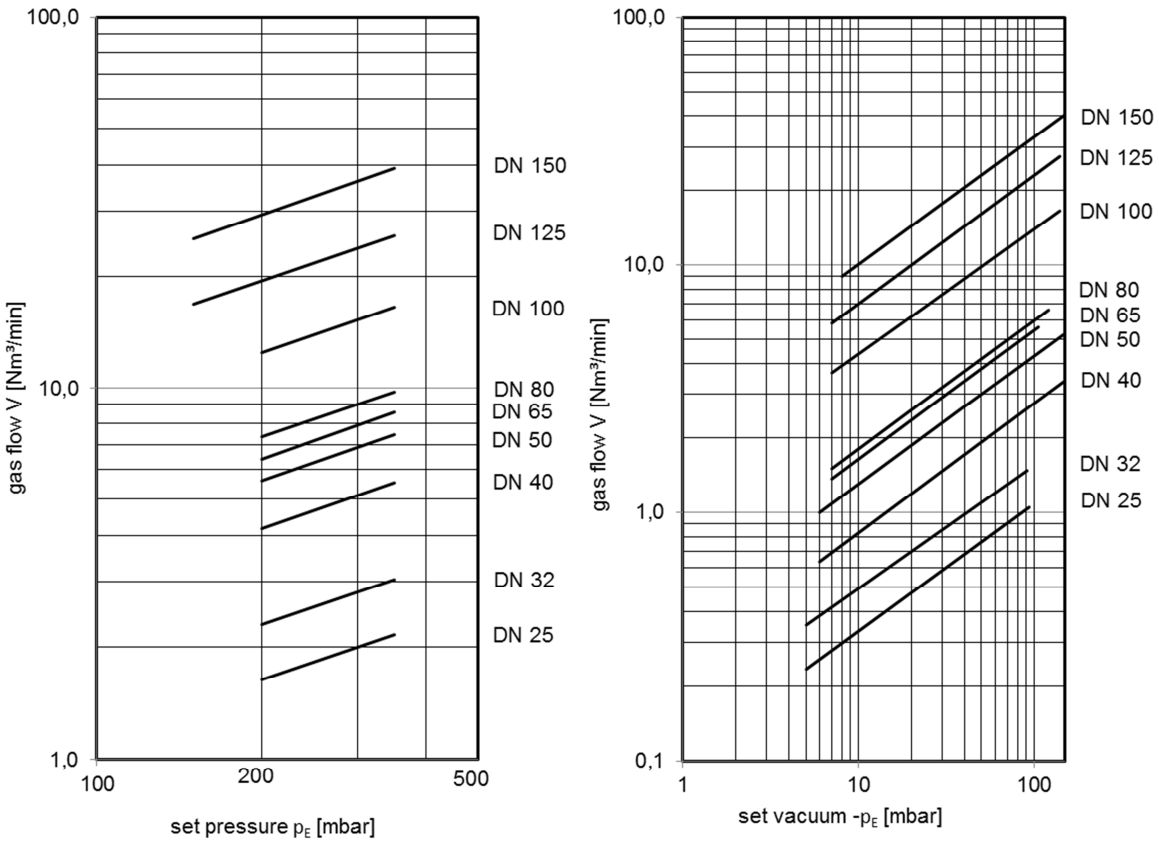
	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
valve pallet (pressure)	spring loaded	
valve pallet (vacuum)	weight loaded	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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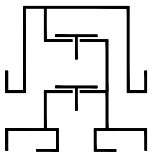
F 31.1 N
Date: 08-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

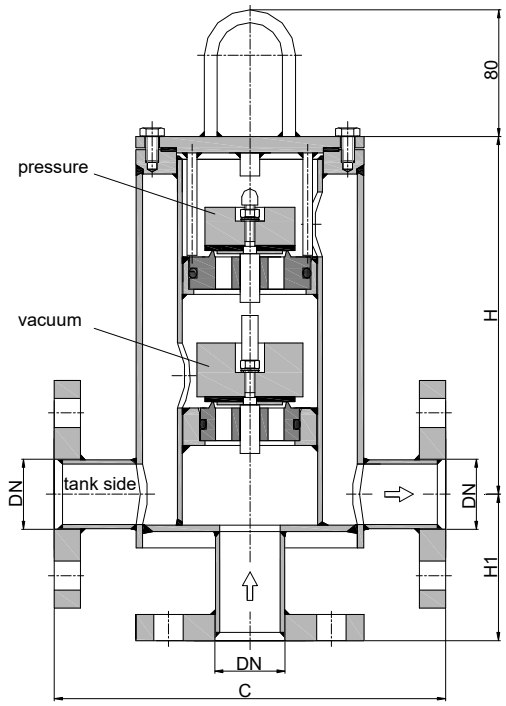
Type sheet
In-line pressure and vacuum relief valve
KITO® VD/TL-…

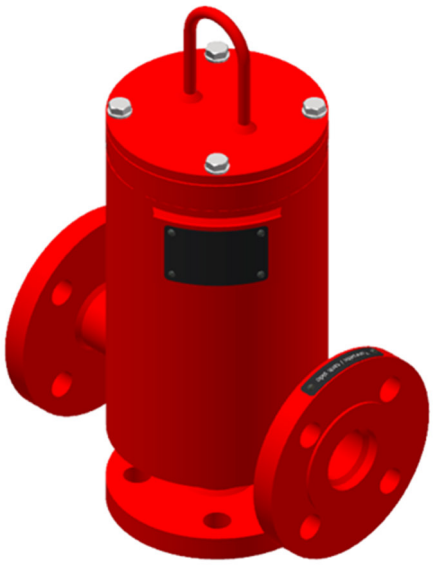


Application

As inline armature, with venting and breather valve function for vessels, used preferably for installations in pipes. The exhaust air is carried away via a pipe. The ventilation is also effected via a pipe, which is preferably used to carry inert gas. Functions the same as KITO® VD/o3-… (type sheet F 18 N).

Dimensions (mm) and settings (mbar)





Construction length C can be adapted to customers wish to local situation.

DN		C	H	H1	~kg	setting vacuum		setting pressure		
DIN	**ASME**					**min. - max.** *(load weight from PE)*	**min. - max.**	**min. - max.** *(load weight from PE)*	**min. - max.**	**min. - max.** *(with housing extension)*
25 PN 40	**1“**	240	210	90	10	2.7 - 10.4	10.5 - 75	2.5 - 10.4	10.5 - 70	> 70 - 200
32 PN 40	**1 ¼“**	240	220	90	12	2.7 - 10.4	10.5 - 73	2.5 - 10.4	10.5 - 68	> 68 - 200
40 PN 40	**1 ½“**	350	308	120	18	2.1 - 10.4	10.5 - 148	1.8 - 10.3	10.4 - 200	-
50 PN 16	**2“**	350	308	120	19	2.1 - 10.4	10.5 - 145	1.8 - 10.3	10.4 - 200	-
65 PN 16	**2 ½“**	350	316	120	20	1.7 - 7.4	7.5 - 90	1.7 - 7.4	7.5 - 130	> 130 - 200
80 PN 16	**3“**	350	364	130	25	1.7 - 7.9	8.0 - 105	1.7 - 7.8	7.9 - 130	> 130 - 200
100 PN 16	**4“**	450	415	150	30	1.7 - 7.6	7.7 - 97	1.7 - 7.6	7.7 - 180	> 180 - 200
125 PN 16	**5“**	500	400	160	35	1.7 - 6.7	6.8 - 80	1.7 - 6.7	6.8 - 135	> 135 - 150
150 PN 16	**6“**	550	441	180	42	1.9 - 11.9	12 - 100	1.7 - 11.9	12 - 150	-

Indicated weights are understood without weight load and refer to the standard design

Higher settings see KITO® VD/TL-1-… (type sheet F 32.1 N)

Example for order

KITO® VD/TL-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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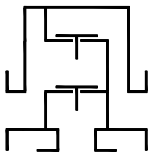
F 32 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
In-line pressure and vacuum relief valve
KITO® VD/TL-…



Design

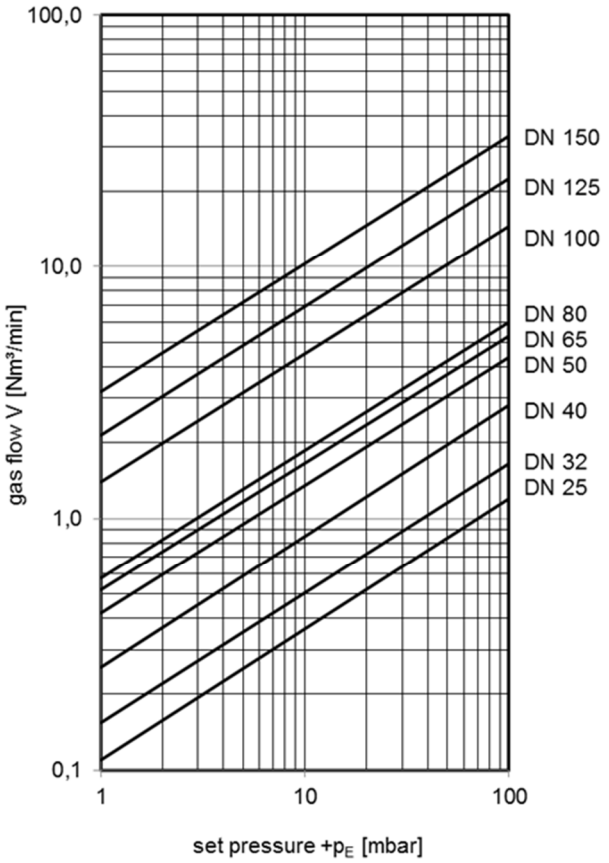
	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

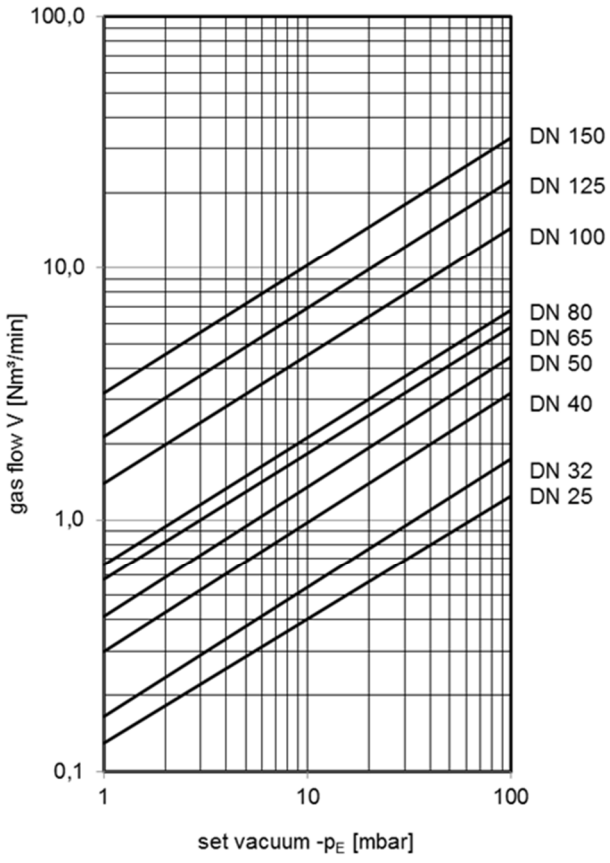
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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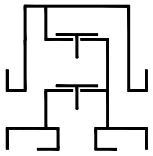
KITO Armaturen GmbH

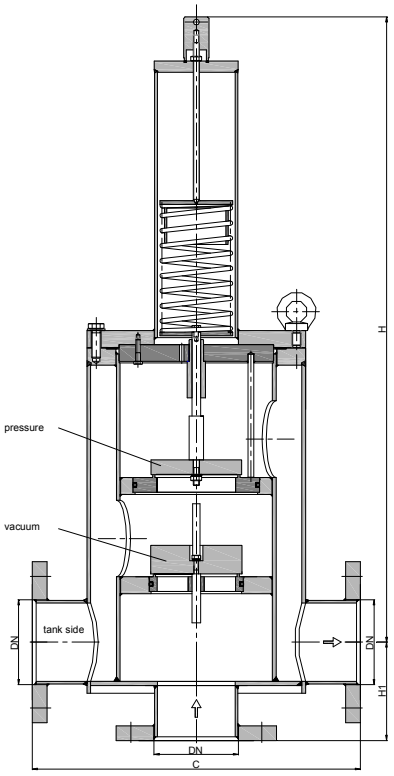
Type sheet
In-line pressure and vacuum relief valve
KITO® VD/TL-1-…

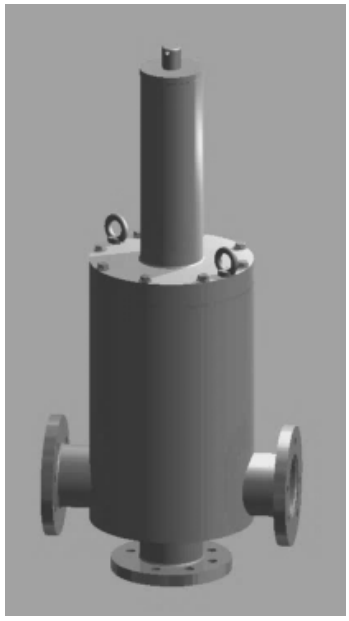


Application

As inline armature, with venting and breather valve function for vessels, used preferably for installations in pipes. The exhaust air is carried away via a pipe. The ventilation is also effected via a pipe, which is preferably used to carry inert gas. Functions the same as KITO® VD/o3-… (type sheet F 18 N).

Dimensions (mm) and settings (mbar)





Construction length C can be adapted to customers wish to local situation.

DN		C	H	H1	kg	setting			
						vacuum		pressure	
DIN	ASME					min.	max.	min.	max.
25 PN 40	**1“**	240	464	90		6	93		
32 PN 40	**1 ¼“**	240	560	90		6	91		
40 PN 40	**1 ½“**	350	563	120		6	158		
50 PN 16	**2“**	350	563	120		6	154	>200	
65 PN 16	**2 ½“**	350		120		7	105		350
80 PN 16	**3“**	350	934	130		7	100		
100 PN 16	**4“**	450	943	150		7	140		
125 PN 16	**5“**	500		160		7	140	>150	
150 PN 16	**6“**	550		180		8	150		

Indicated weights are understood without weight load and refer to the standard design
Lower settings see KITO® VD/TL-… (type sheet F 32 N), higher settings on request

Example for order

KITO® VD/TL-1-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

KITO Armaturen GmbH
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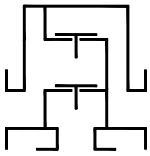
F 32.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
In-line pressure and vacuum relief valve
KITO® VD/TL-1-...



Design

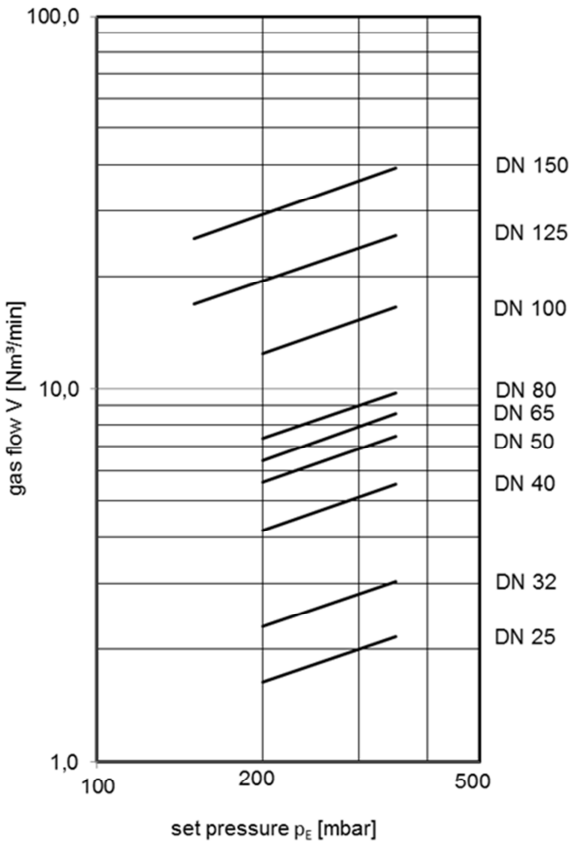
	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	metal sealing	
valve pallet (pressure)	spring loaded	
valve pallet (vacuum)	weight loaded	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

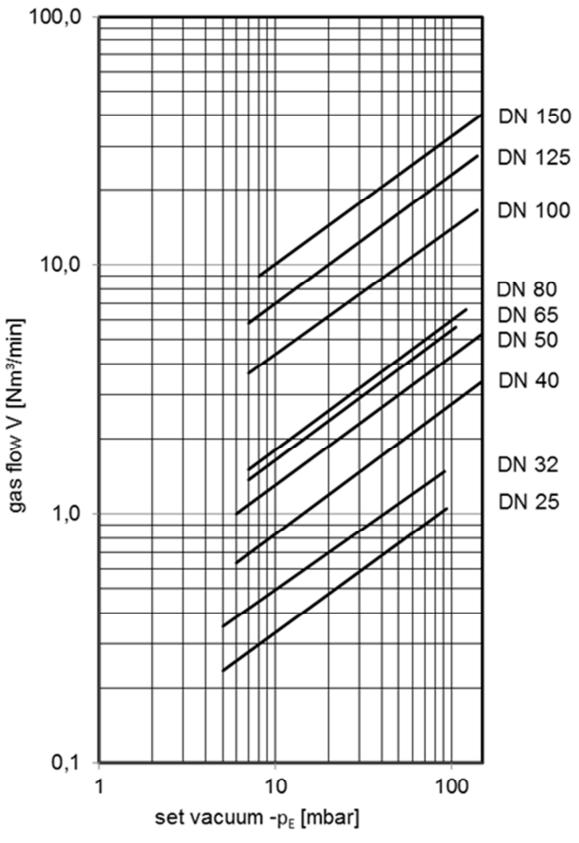
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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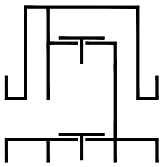
F 32.1 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

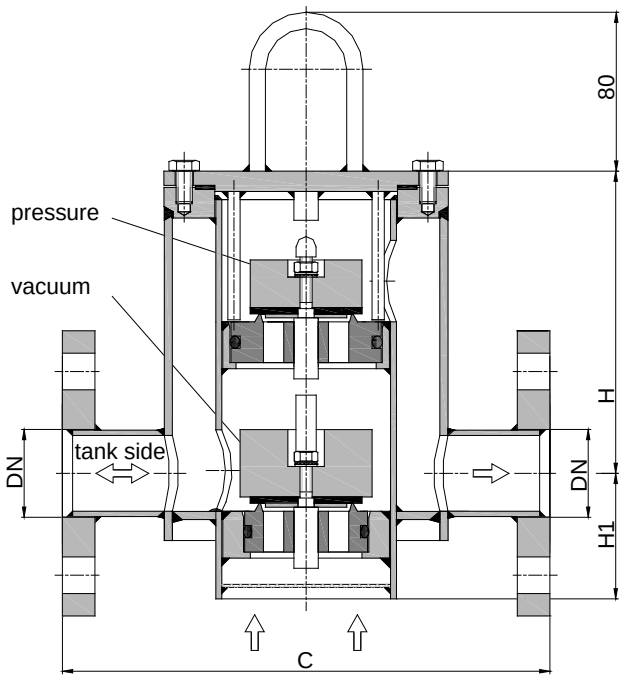
Type sheet
In-line pressure and vacuum relief valve
KITO® VD/T-…

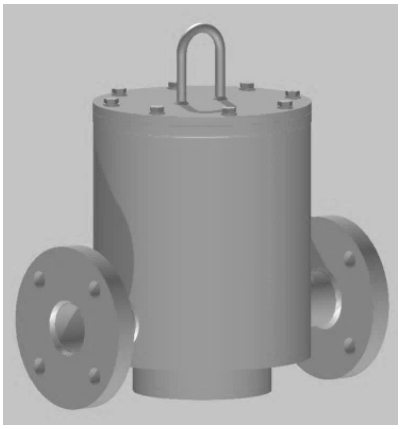


Application

As inline armature, with venting and breather valve function for vessels, preferably used for installation in pipes. The exhaust air is carried away via a pipe while the ventilation comes from the atmosphere.

Dimensions (mm) and settings (mbar)





Construction length C can be adapted to customers wish to local situation.

DN		C	H	H1	~kg	setting vacuum		setting pressure		
DIN	**ASME**					**min. - max.** *(load weight from PE)*	**min. - max.**	**min. - max.** *(load weight from PE)*	**min. - max.**	**min. - max.** *(with housing extension)*
25 PN 40	**1“**	240	155	60	11	2.7 - 10.4	10.5 - 75	2.5 - 10.4	10.5 - 70	> 70 - 200
32 PN 40	**1 ¼“**	240	150	65	14	2.7 - 10.4	10.5 - 73	2.5 - 10.4	10.5 - 68	> 68 - 200
40 PN 40	**1 ½“**	350	206	92	28	2.1 - 10.4	10.5 - 148	1.8 - 10.3	10.4 - 200	-
50 PN 16	**2“**	350	217	77	30	2.1 - 10.4	10.5 - 145	1.8 - 10.3	10.4 - 200	-
65 PN 16	**2 ½“**	350	209	85	31	1.7 - 7.4	7.5 - 90	1.7 - 7.4	7.5 - 130	> 130 - 200
80 PN 16	**3“**	350	250	100	36	1.7 - 7.9	8.0 - 105	1.7 - 7.8	7.9 - 130	> 130 - 200
100 PN 16	**4“**	450	272	125		1.7 - 7.6	7.7 - 97	1.7 - 7.6	7.7 - 180	> 180 - 200
125 PN 16	**5“**	500	286	200		1.7 - 6.7	6.8 - 80	1.7 - 6.7	6.8 - 135	> 135 - 150
150 PN 16	**6“**	550	330	225		1.9 - 11.9	12 - 100	1.7 - 11.9	12 - 150	-

Indicated weights are understood without weight load and refer to the standard design

Higher settings on request!

Example for order

KITO® VD/T-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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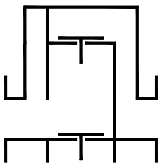
F 33 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
In-line pressure and vacuum relief valve
KITO® VD/T-…



Design

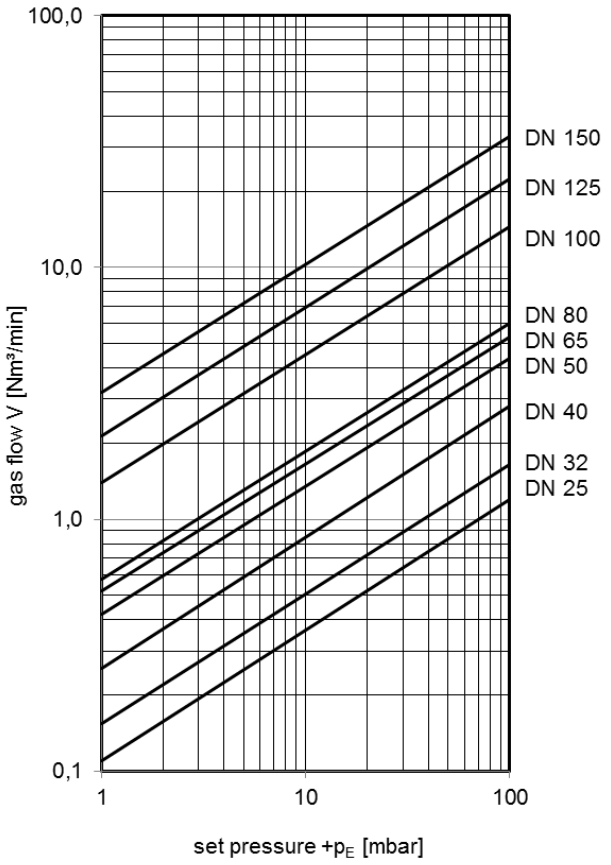
	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

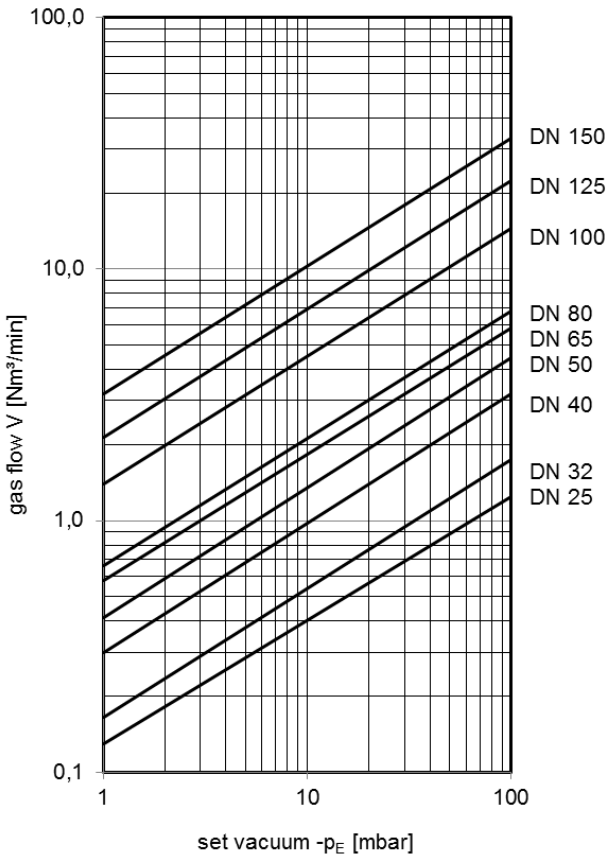
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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F 33 N
Date: 05-2018
Created: Abt. Doku KITO

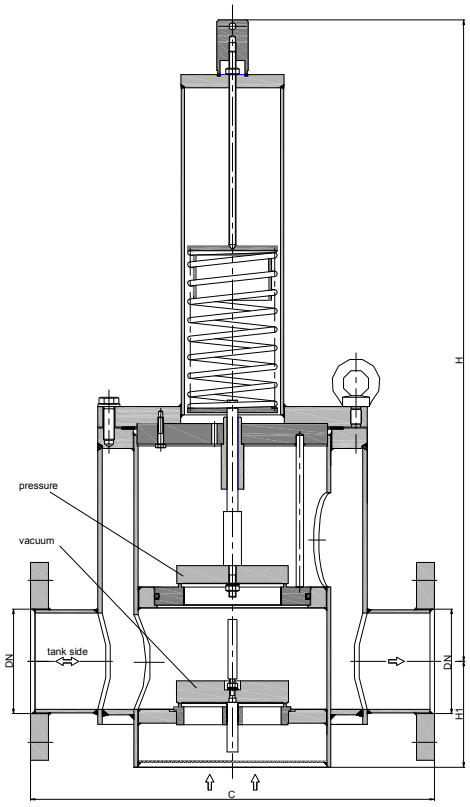
KITO Armaturen GmbH

Type sheet
In-line pressure and vacuum relief valve
KITO® VD/T-1-…

Application

As inline armature, with venting and breather valve function for vessels, preferably used for installation in pipes. The exhaust air is carried away via a pipe while the ventilation comes from the atmosphere.

Dimensions (mm) and settings (mbar)



Construction length C can be adapted to customers wish to local situation.

DN		C	H	H1	kg	setting			
DIN	ASME					vacuum		pressure	
						min.	max.	min.	max.
25 PN 40	**1“**	240	400	60		6	93		
32 PN 40	**1 ¼“**	240	395	65		6	91		
40 PN 40	**1 ½“**	350	452	92		6	158		
50 PN 16	**2“**	350	463	77		6	154	>200	
65 PN 16	**2 ½“**	350		85		7	105		350
80 PN 16	**3“**	350	685	100		7	100		
100 PN 16	**4“**	450	707	125		7	140		
125 PN 16	**5“**	500	920	200		7	140	>150	
150 PN 16	**6“**	550	965	225		8	150		

Indicated weights are understood without weight load and refer to the standard design
Lower settings see KITO® VD/T-… (type sheet F 33 N), higher settings on request

Example for order

KITO® VD/T-1-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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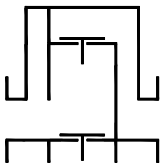
F 33.1 N
Date: 08-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
In-line pressure and vacuum relief valve
KITO® VD/T-1-...



Design

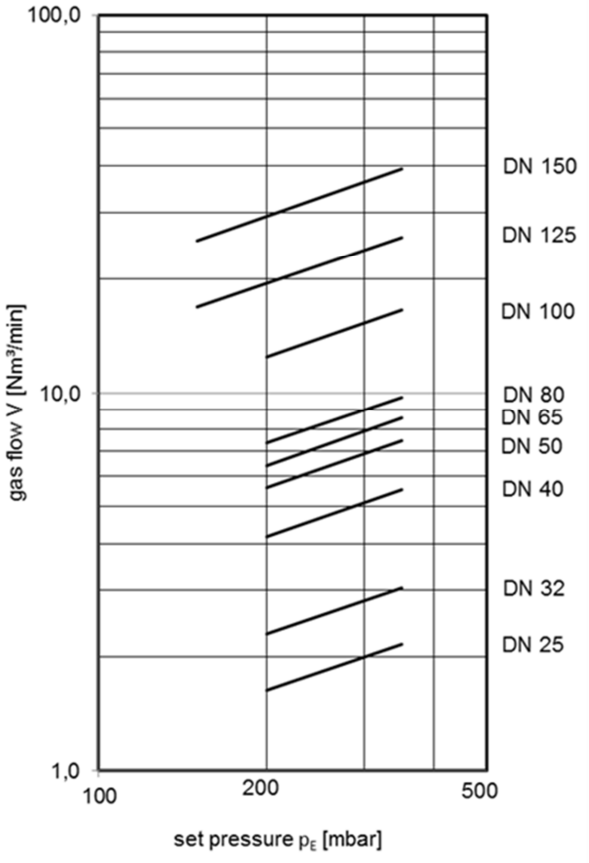
	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	metal sealing	
valve pallet (pressure)	spring loaded	
valve pallet (vacuum)	weight loaded	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

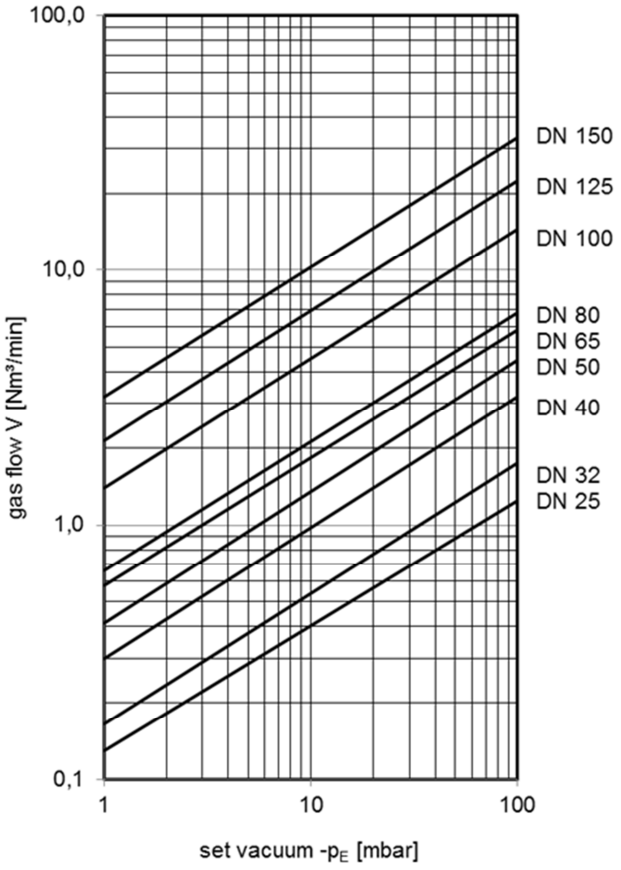
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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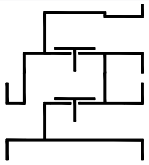
F 33.1 N
Date: 08-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

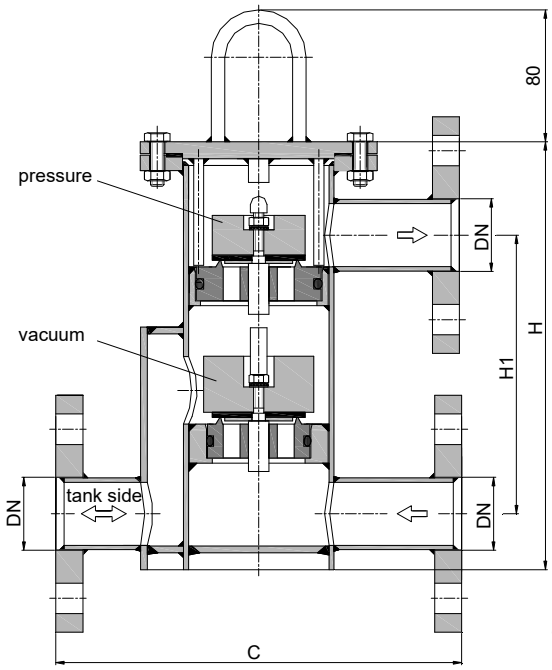
Type sheet
In-line pressure and vacuum relief valve
KITO® VD/T3-…

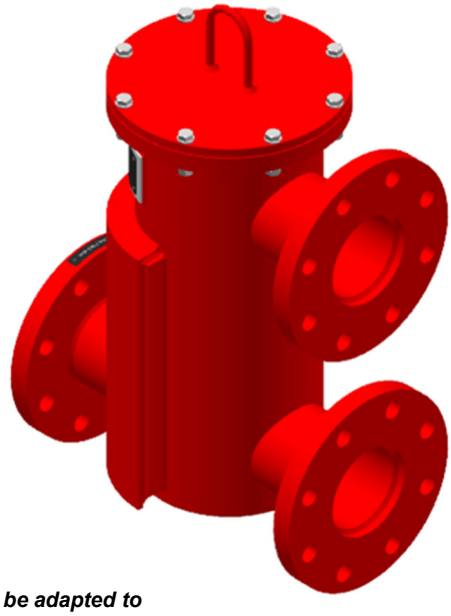


Application

As inline armature with venting and breathing function for application on fixed roof tanks and vessels. Equipped with a lateral connection for the tank connecting pipe, a lower flange connection for a venting conduit and an upper flange connection for a breather conduit. The lower valve can be used to automatically control a supply of inert gas (e. g. nitrogen). For flammable liquids, a detonation flame arrester, e.g. KITO® EFA-Det-... should be provided between the tank and the KITO® VD/T3-… .

Dimensions (mm) and settings (mbar)





Construction length C can be adapted to customers wish to local situation.

DN		C	~H	H1	~kg	setting vacuum		setting pressure		
DIN	**ASME**					**min. - max.** *(load weight from PE)*	**min. - max.**	**min. - max.** *(load weight from PE)*	**min. - max.**	**min. - max.** *(with housing extension)*
25 PN 40	**1“**	240	240	150	12	2.7 - 10.4	10.5 - 75	2.5 - 10.4	10.5 - 70	> 70 - 200
32 PN 40	**1 ¼“**	240	255	165	14	2.7 - 10.4	10.5 - 73	2.5 - 10.4	10.5 - 68	> 68 - 200
40 PN 40	**1 ½“**	350	340	195	26	2.1 - 10.4	10.5 - 148	1.8 - 10.3	10.4 - 200	-
50 PN 16	**2“**	350	350	204	27	2.1 - 10.4	10.5 - 145	1.8 - 10.3	10.4 - 200	-
65 PN 16	**2 ½“**	350	425	224	31	1.7 - 7.4	7.5 - 90	1.7 - 7.4	7.5 - 130	> 130 - 200
80 PN 16	**3“**	350	425	253	36	1.7 - 7.9	8.0 - 105	1.7 - 7.8	7.9 - 130	> 130 - 200
100 PN 16	**4“**	450	485	279	40	1.7 - 7.6	7.7 - 97	1.7 - 7.6	7.7 - 180	> 180 - 200
125 PN 16	**5“**	500	485	332	48	1.7 - 6.7	6.8 - 80	1.7 - 6.7	6.8 - 135	> 135 - 150
150 PN 16	**6“**	550	525	387	59	1.9 - 11.9	12 - 100	1.7 - 11.9	12 - 150	-

Indicated weights are understood without weight load and refer to the standard design

Higher settings see KITO® VD/T3-1-… (type sheet F 37.1 N)

Example for order

KITO® VD/T3-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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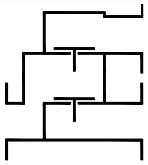
F 37 N
Date: 07-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
In-line pressure and vacuum relief valve
KITO® VD/T3-…



Design

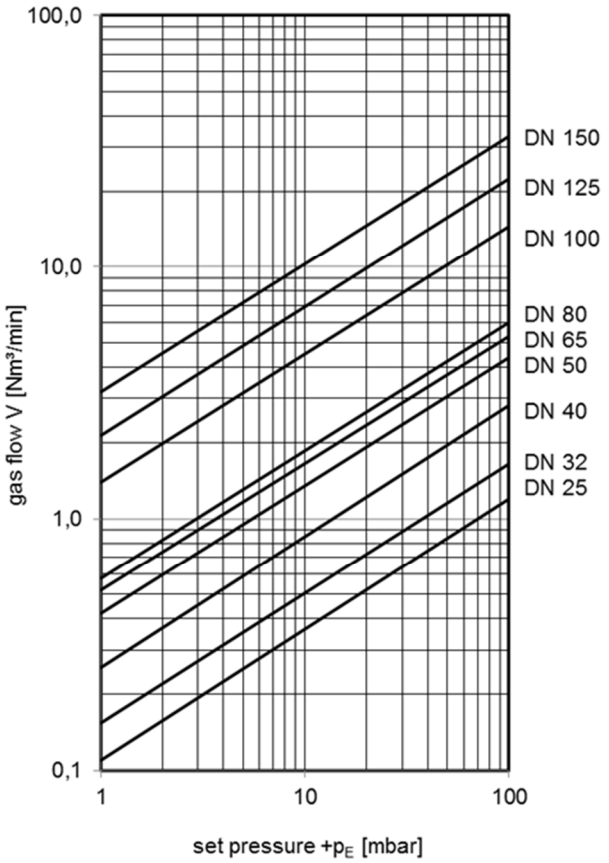
	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

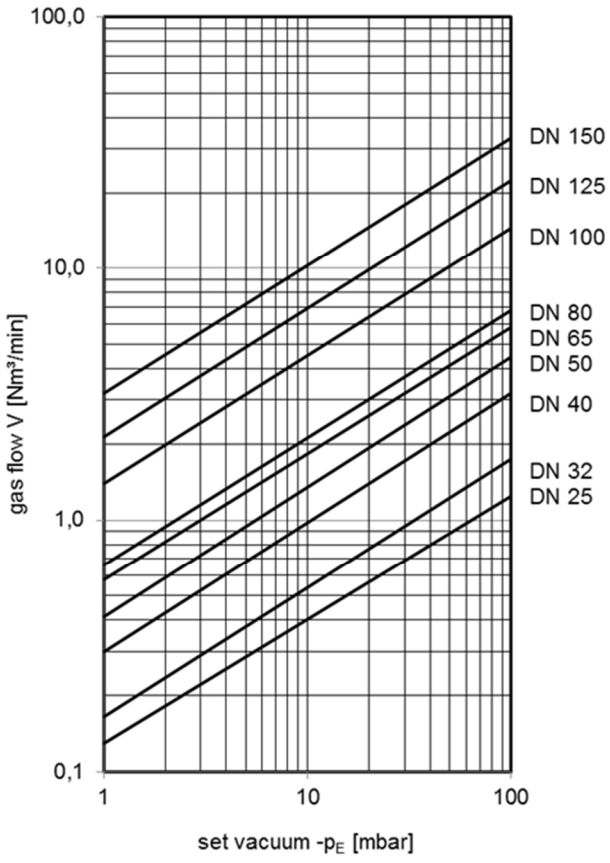
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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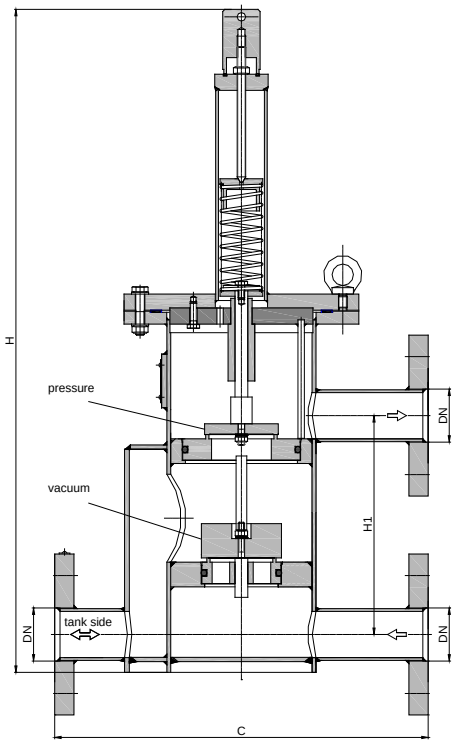
KITO Armaturen GmbH

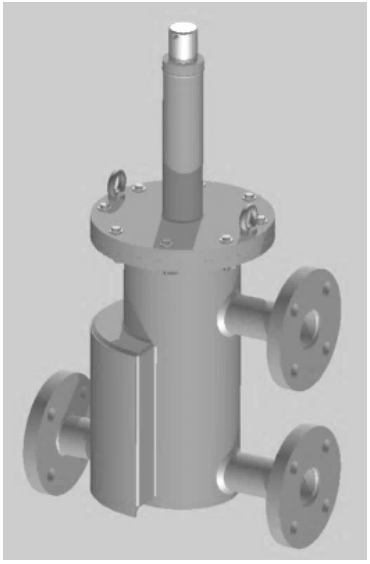
Type sheet
In-line pressure and vacuum relief valve
KITO® VD/T3-1-…

Application

As inline armature with venting and breathing function for application on fixed roof tanks and vessels. Equipped with a lateral connection for the tank connecting pipe, a lower flange connection for a venting conduit and an upper flange connection for a breather conduit. The lower valve can be used to automatically control a supply of inert gas (e. g. nitrogen). For flammable liquids, a detonation flame arrester, e. g. KITO® EFA-Det-... should be provided between the tank and the KITO® VD/T3-… .

Dimensions (mm) and settings (mbar)





Construction length C can be adapted to customers wish to local situation.

DN		C	H	H1	kg	setting			
DIN	ASME					vacuum		pressure	
						min.	max.	min.	max.
25 PN 40	**1“**	240	492	150		6	93		
32 PN 40	**1 ¼“**	240	507	165		6	91		
40 PN 40	**1 ½“**	350	598	204		6	158		
50 PN 16	**2“**	350	598	204		6	154	>200	
65 PN 16	**2 ½“**	350	805	224		7	105		350
80 PN 16	**3“**	350	860	253		7	120		
100 PN 16	**4“**	450	926	279		7	140		
125 PN 16	**5“**	500		332		7	140	>150	
150 PN 16	**6“**	550		387		8	150		

Indicated weights are understood without weight load and refer to the standard design
Lower settings see KITO® VD/T3-… (type sheet F 37 N), higher settings on request

Example for order

KITO® VD/T3-1-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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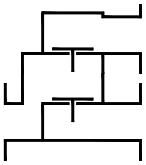
F 37.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
In-line pressure and vacuum relief valve
KITO® VD/T3-1-…



Design

	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve seat seal (o-ring)	VMQ-FEP	Viton, NBR, VMQ-PFA
load weight	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
valve pallet (pressure)	spring loaded	
valve pallet (vacuum)	weight loaded	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

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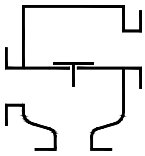
KITO Armaturen GmbH

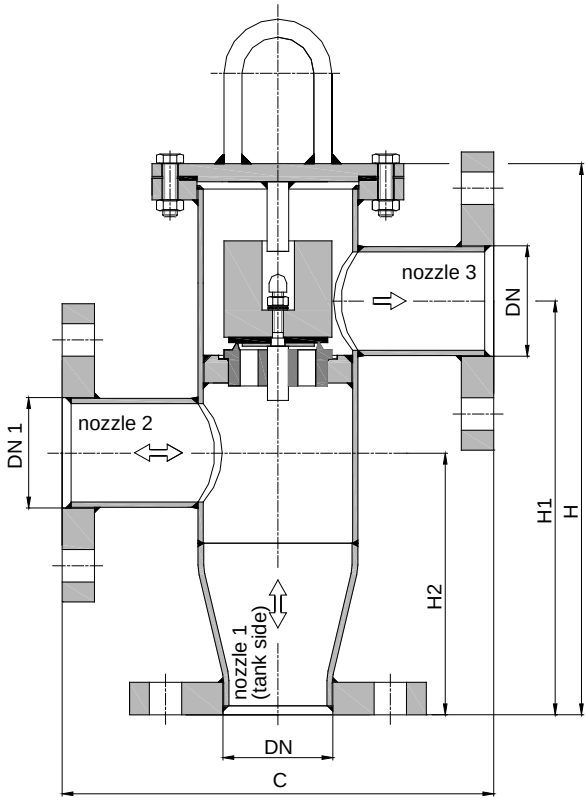
Type sheet
In-line pressure or vacuum relief valve
KITO® VL/TA-...



Application

Distributing piece for vertical flange connection to a tank connecting pipe. The tank connection is nozzle 1. The two branching connections have many uses. Nozzle 2 can be used to connect a vacuum valve or an inert gas conduit, nozzle 3 with pressure valve function can be used as protection against pressure or to carry away exhaust gas or as gas compensation when filling a tank. For flammable storage media, the vacuum valve (connecting nozzle 2) and the connection 3 have to be secured with the respective flame arrester.

Dimensions (mm) and settings (mbar)



Construction lengths can be adapted to customers wish to local situation.

DN		DN1		C	H	H1	H2	kg	setting	
DIN	ASME	DIN1	ASME 1						min.	max.
40 PN 40	**1 ½“**	**50**	**2“**	240	305	230	145	12.0	2.5	90
50 PN 16	**2“**	**50**	**2“**	240	305	230	145	12.5	2.5	93
65 PN 16	**2 ½“**	**80**	**3“**	350	400	305	200	22.0	1.8	130
80 PN 16	**3“**	**80**	**3“**	350	415	320	205	24.0	1.5	70
100 PN 16	**4“**	**100**	**4“**	350	475	365	230	26.5	1.6	127
125 PN 16	**5“**	**125**	**5“**	450	545	415	250	44.0	1.6	136
150 PN 16	**6“**	**150**	**6“**	500	595	445	255	53.5	1.6	165

Indicated weights are understood without weight load and refer to the standard design

Higher settings on request!

Example for order

KITO® VL/TA-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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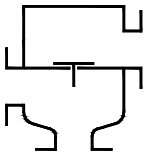
F 50 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
In-line pressure or vacuum relief valve
KITO® VL/TA-…



Design

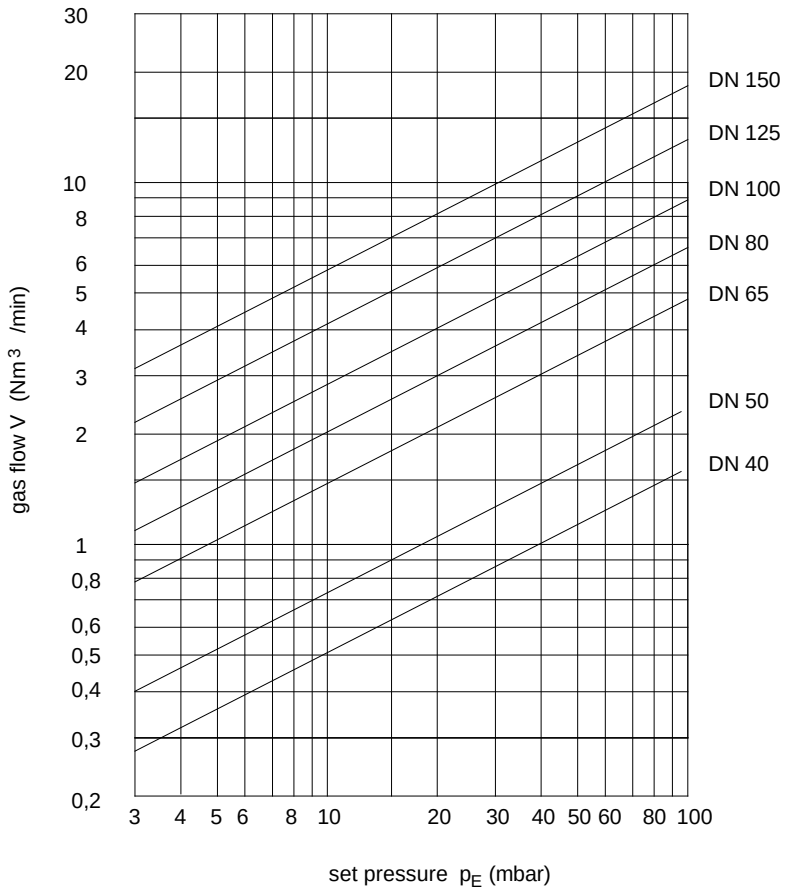
	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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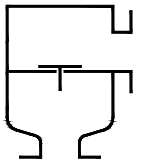
KITO Armaturen GmbH

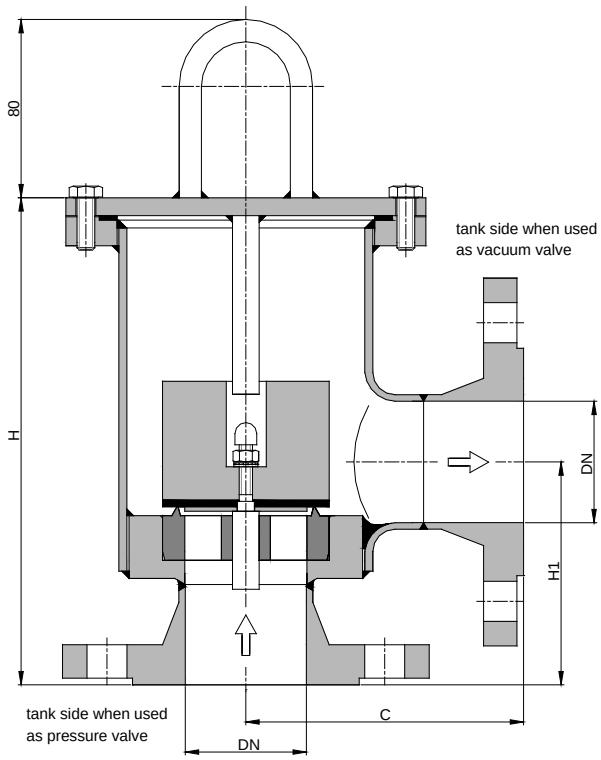
Type sheet
In-line pressure or vacuum relief valve
KITO® VD/Sc-…



Application

As inline armature, for venting or breathing of vessels but preferably for installations in pipe. Depending on the mounting position the valve can be used as pressure or as vacuum valve. It can also be used as non-return armature or overflow valve. Same function as KITO® VD/TA-…, see type sheet F 30 N.

Dimensions (mm) and settings (mbar)



Installation dimensions are only partly identical to the old construction according to type sheet F61 page 1. Construction length C and H1 can be adapted to customers wish to local situation.

DN		C		H		H1		kg	setting		
DIN	ASME	DIN	ASME	DIN	ASME	DIN	ASME		min. - max. *(load weight from PE)*	min. - max.	min. - max. *(with housing extension)*
25 PN 40	**1”**	90	108	180	198	90	108	5.4	2.5 - 10.1	10.2 - 80	> 80 - 200
50 PN 16	**2”**	125	144	220	239	100	119	12	1.8 - 10.3	10.4 - 135	> 135 - 200
80 PN 16	**3”**	161	181	260	280	121	141	17	1.7 - 7.8	7.9 - 125	> 125 - 200
100 PN 16	**4”**	175	199	301	325	140	164	27	1.7 - 7.6	7.7 - 150	> 150 - 200
125 PN 16	**5”**	217	251	354	388	158	192		1.7 - 6.7	6.8 - 150	-
150 PN 16	**6”**	247	281	324	358	190	224	44	1.7 - 11.9	12.0 - 150	-
200 PN 10	**8”**	275	315	390	430	225	265		2.0 - 11.9	12.0 - 100	-

Indicated weights are understood without weight load and refer to the standard design

Higher settings see KITO® VD/Sc-1-… (type sheet F 61.1 N)

Example for order

KITO® VD/Sc-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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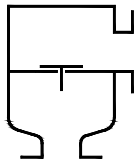
F 61 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
In-line pressure or vacuum relief valve
KITO® VD/Sc-…



Design

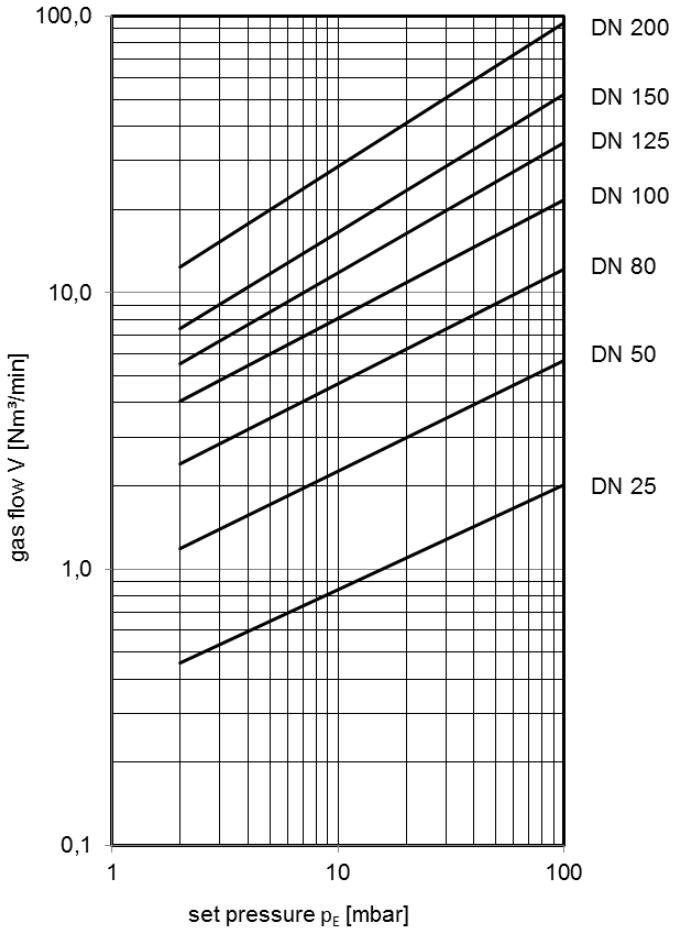
	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	PE
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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Date: 05-2018
Created: Abt. Doku KITO

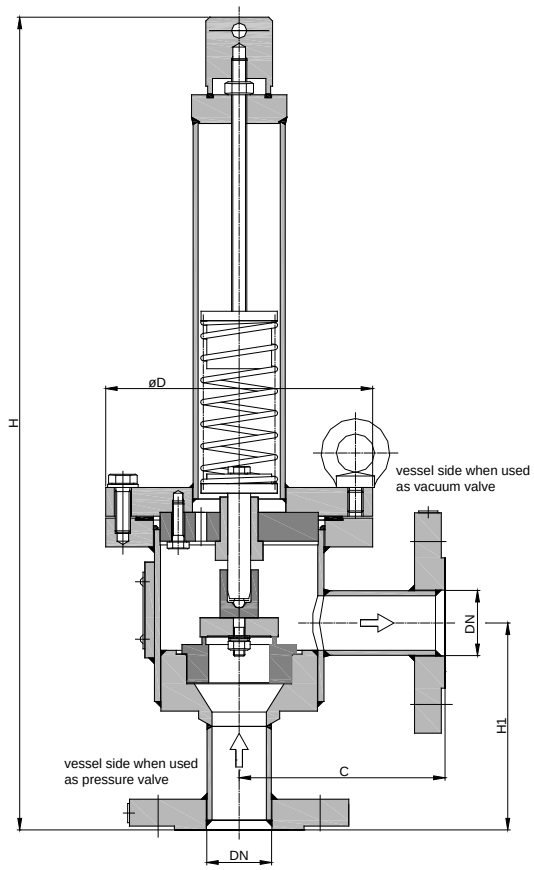
KITO Armaturen GmbH

Type sheet
In-line pressure or vacuum relief valve
KITO® VD/Sc-1-…

Application

As inline armature, for venting or breathing of vessels but preferably for installations in pipe. Depending on the mounting position the valve can be used as pressure or as vacuum valve. It can also be used as non-return armature or overflow valve. Same function as KITO® VD/TA-1-…, see type sheet F 30.1 N.

Dimensions (mm) and settings (mbar)



Construction length C and H1 can be adapted to customers wish to local situation.

DN		C		D	H		H1		kg	setting	
DIN	ASME	DIN	ASME		DIN	ASME	DIN	ASME		min.	max.
25 PN 40	**1”**	90	108	140	406	424	90	108		>200	350
50 PN 16	**2”**	125	144				100	119			
80 PN 16	**3”**	161	181				121	141			
100 PN 16	**4”**	175	199				140	164			
125 PN 16	**5”**	217	251				158	192		>150	
150 PN 16	**6”**	247	281	330	980	1014	190	224			
200 PN 10	**8”**	275	315				225	265		>100	

Indicated weights are understood without weight load and refer to the standard design
Minor settings see KITO® VD/Sc-… (type sheet F 61 N), higher settings on request

Example for order

KITO® VD/Sc-1-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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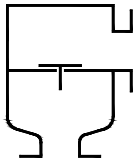
F 61.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
In-line pressure or vacuum relief valve
KITO® VD/Sc-1-…



Design

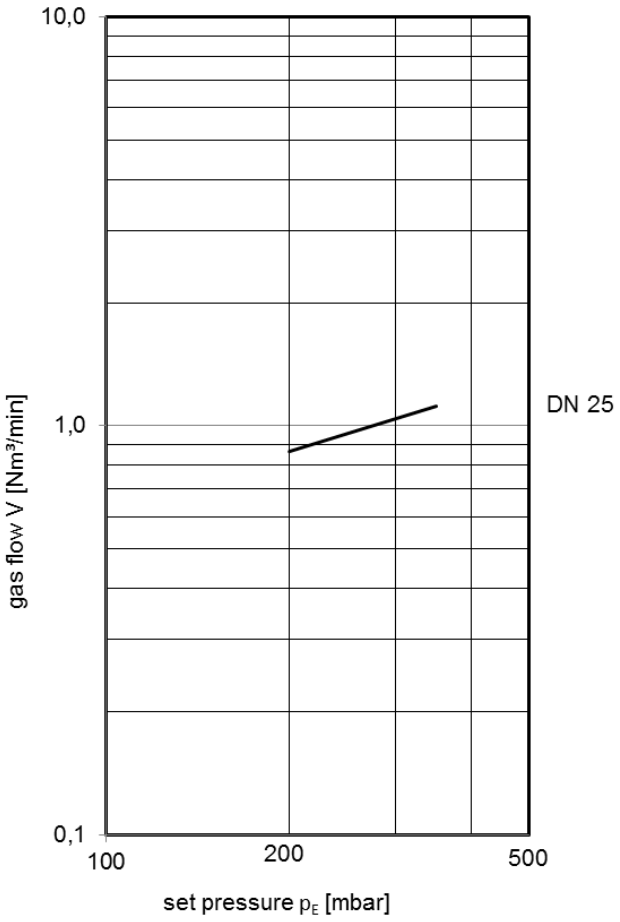
	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
valve pallet	spring loaded	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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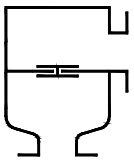
F 61.1 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

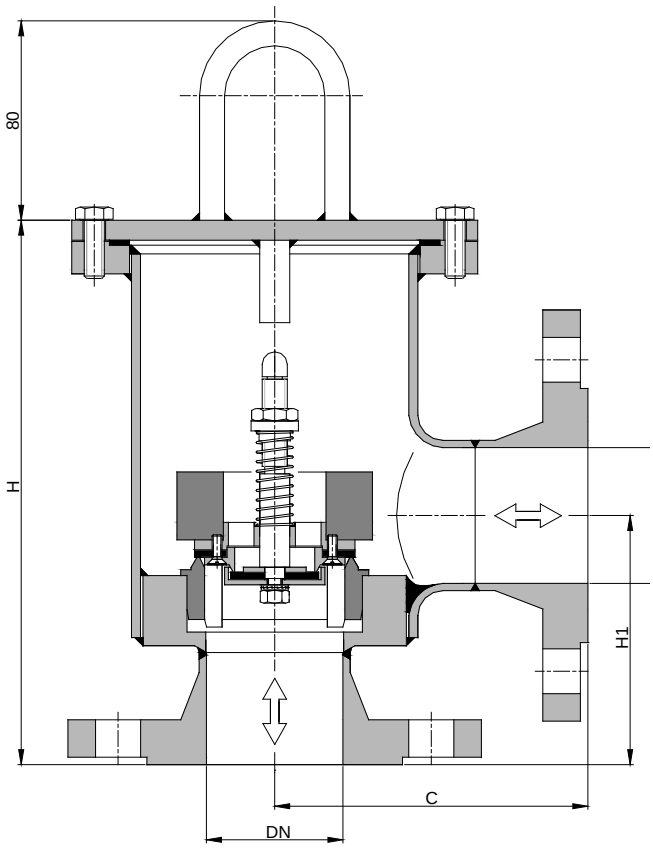
Type sheet
In-line pressure and vacuum relief valve
KITO® VD/Sc2-…



Application

As inline armature, with venting and breathing valve function for tanks and for installation in pipe, for example also for connection to an air drying apparatus. Same function as KITO® VD/TG-…, see type sheet F 31 N.

Dimensions (mm) and settings (mbar)



Installation dimensions are only partly identical to the old construction according to type sheet F63 page 1. Construction length C and H1 can be adapted to customers wish to local situation.

DN		C		H		H1		kg	setting			
									vacuum		pressure	
DIN	ASME	DIN	ASME	DIN	ASME	DIN	ASME		min.	max.	min.	max.
50 PN 16	**2”**	125	144	220	239	100	119		3	50	10	155
80 PN 16	**3”**	161	181	260	280	121	141		3	50	10	102
100 PN 16	**4”**	175	199	301	325	140	164		3	50	10	102
125 PN 16	**5”**	217	251	354	388	158	192		3	50	12	
150 PN 16	**6”**	247	281	324	358	190	224		3	50	13	
200 PN 10	**8”**	275	315	390	430	225	265		3	50	13	95

Indicated weights are understood without weight load and refer to the standard design

Higher settings on request!

Example for order

KITO® VD/Sc2-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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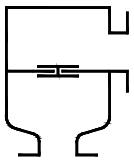
F 63 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
In-line pressure and vacuum relief valve
KITO® VD/Sc2-…



Design

	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
valve seat, valve spindle	stainless steel mat. no. 1.4571	
load weight	stainless steel mat. no. 1.4571	
valve sealing	NBR	Viton, PTFE, EPDM, metal sealing
	≥ 100 mbar only PTFE or metal sealing (valve pallet for pressure)	
valve pallet (vacuum)	spring loaded	
valve pallet (pressure)	weight loaded	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

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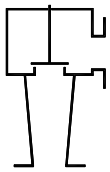
KITO Armaturen GmbH

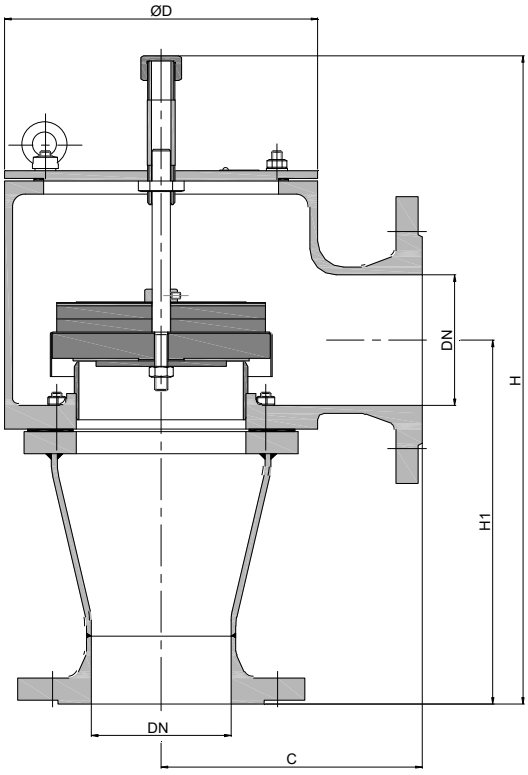
Type sheet
In-line pressure relief valve
KITO® DS/oG-PA-…
-End of line device for use in pipeline-



Application

As end-of-line armature, for venting apertures on tank installations. As venting device for fixed roof tanks. Used to prevent inadmissible pressure and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof. **The product vapours can be discharged through a collective line into the atmosphere connected to the line flange.**

Dimensions (mm) and settings (mbar)



DN		C	D	H		H1		kg	setting
DIN	ASME			DIN	ASME	DIN	ASME		
50 PN 16	**2“**	150	165	341	360	192	211		2-60
80 PN 16	**3“**	180	192	413	435	225	247		
100 PN 16	**4“**	200	240	489	521	271	303		
150 PN 16	**6“**	250	350	590	624	324	358		
200 PN 10	**8“**	300	390	683	723	387	427		
250 PN 10	**10“**	305	460	764	798	443	477		
300 PN 10	**12“**	305	460	764	811	470	517		

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® DS/oG-PA-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE -marking

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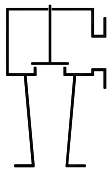
F 70 N
Date: 07-2022
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
In-line pressure relief valve
KITO® DS/oG-PA-…
-End of line device for use in pipeline-



Design

	standard	optionally
housing upper part (PN 1)	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
housing lower part	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
cover	steel	stainless steel mat. no. 1.4301
gasket	PTFE	
valve seat	stainless steel mat. no. 1.4571	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet

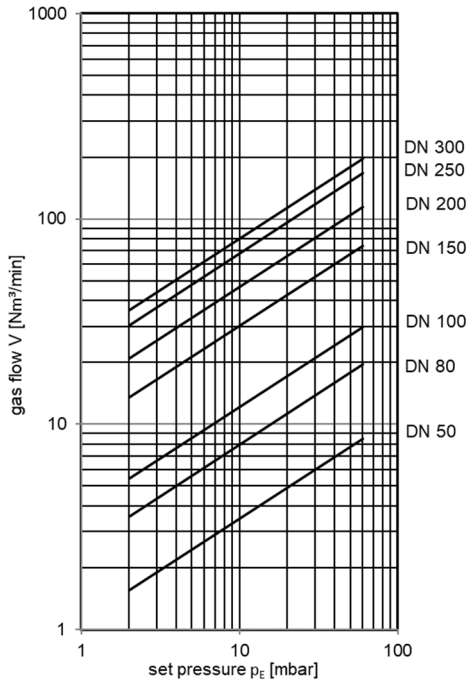
design	pressure range I 2 - < 3.5 mbar	pressure range II ≥ 3.5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve spindle	aluminum / stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting. If the allowable overpressure is less than 20%, please consult the factory for the corrected volume flow.



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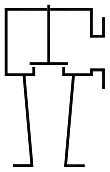
KITO Armaturen GmbH

Type sheet

In-line pressure relief valve

KITO® DS/oG-PAL-…/…

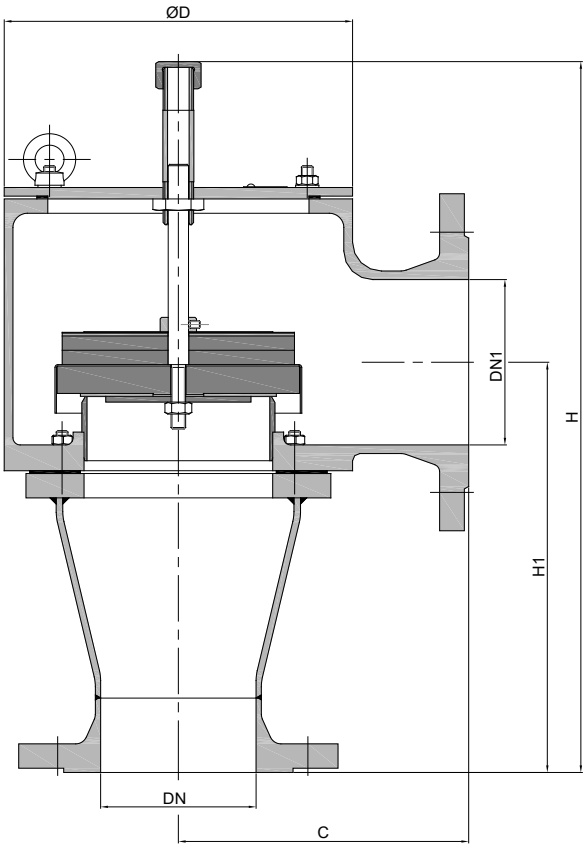
-End of line device for use in pipeline-



Application

As end-of-line armature, for venting apertures on tank installations. As venting device for fixed roof tanks. Used to prevent inadmissible pressure and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof. **The product vapours can be discharged through a collective line into the atmosphere connected to the line flange.**

Dimensions (mm) and settings (mbar)



DN		DN1		C	D	H		H1		kg	setting
DIN	ASME	DIN	ASME			DIN	ASME	DIN	ASME		
50 PN 16	2“										2-60
80 PN 16	3“										
100 PN 16	4“	150 PN 16	6“	250	350		345		611	75	
150 PN 16	6“										
200 PN 10	8“	250 PN 10	10“	305	460		796		475	155	
250 PN 10	10“										
300 PN 10	12“										

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® DS/oG-PAL-50/80
(design with flange connection vertically DN 50 PN 16 and laterally DN 80 PN 16)

Without EC certificate and CE -marking

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F 70.1 N
Date: 05-2024
Created: Abt. Doku KITO

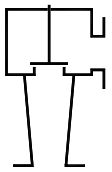
KITO Armaturen GmbH

Type sheet

In-line pressure relief valve

KITO® DS/oG-PAL-…/…

-End of line device for use in pipeline-



Design

	standard	optionally
housing upper part (PN 1)	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
housing lower part	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
cover	steel	stainless steel mat. no. 1.4301
gasket	PTFE	
valve seat	stainless steel mat. no. 1.4571	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet

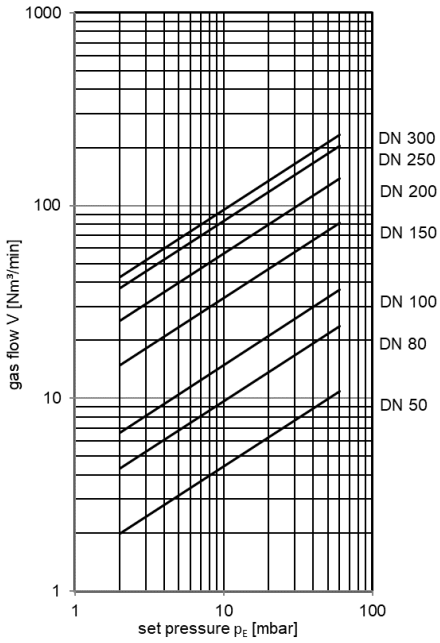
design	pressure range I 2 - < 3.5 mbar	pressure range II ≥ 3.5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve spindle	aluminum / stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

Performance curves

The flow capacity V refers to a density of air with ρ = 1.29 kg/m³ at a temperature of 273 K and a pressure of 1.013 mbar. The flow capacity for gases with different densities can be calculated sufficiently accurate by the following approximation equation

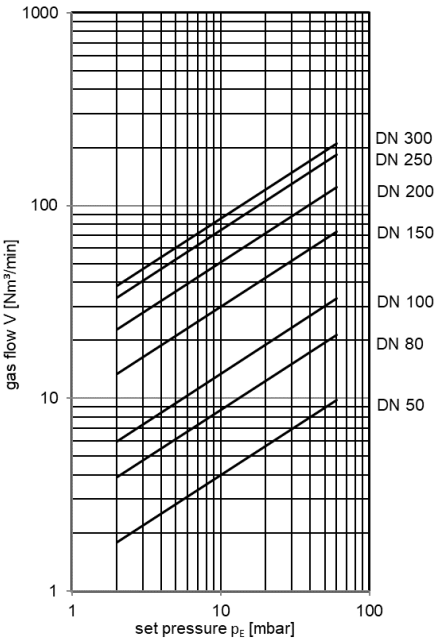
$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad \text{or} \quad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting (see DIN 4119).



$$\dot{V}_{10\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad \text{or} \quad \dot{V}_b = \dot{V}_{10\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The volume flow at reduced lift will be reached by an accumulation of 10 % above valve's setting (see DIN 4119).



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Date: 05-2024
Created: Abt. Doku KITO

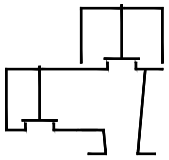
KITO Armaturen GmbH

Type sheet

In-line pressure and vacuum relief valve

KITO® VD/oG-PA-…

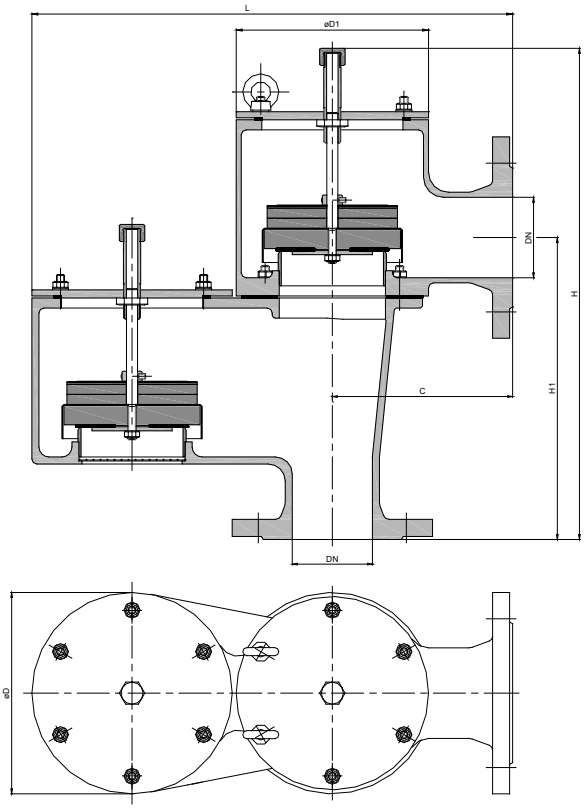
-End of line device for use in pipeline-

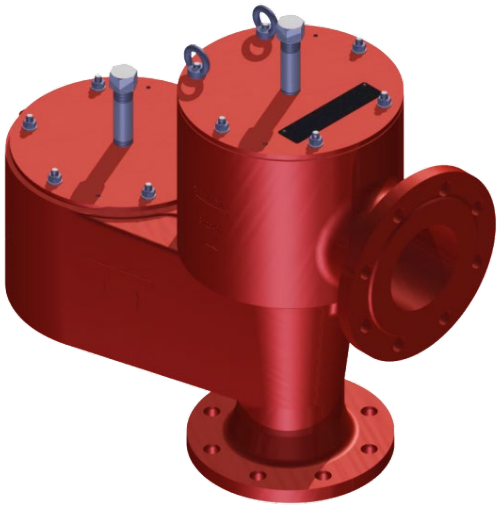


Application

As end-of-line armature, for venting apertures on tank installations. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof. **The product vapours can be discharged through a collective line into the atmosphere connected to the line flange on the pressure side.**

Dimensions (mm) and settings (mbar)





DN		C	D	D1	H	H1	L	kg	setting	
DIN	ASME								vacuum	pressure
50 PN 16	**2“**	150	165	165	389	240	405	23	2-60	2-60
80 PN 16	**3“**	180	200	192	487	300	480	33		
100 PN 16	**4“**	200	250	240	547	330	600	48		
150 PN 16	**6“**	250	350	350	655	390	805	101		
200 PN 10	**8“**	300	400	390	775	480	925	140		
250 PN 10	**10“**	305	460	460	875	555	1010	193		
300 PN 10	**12“**	305	460	460	875	582	1010	201		

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/oG-PA-50
(design DN 50 with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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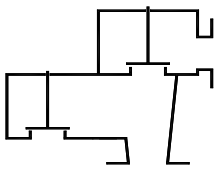
KITO Armaturen GmbH

Type sheet
Pressure and vacuum relief valve
KITO® VD/oG-PA-…



Design

	standard	optionally
housing upper part (PN 1)	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
housing lower part	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
cover	steel	stainless steel mat. no. 1.4301
gasket	PTFE	
valve seat	stainless steel mat. no. 1.4571	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet

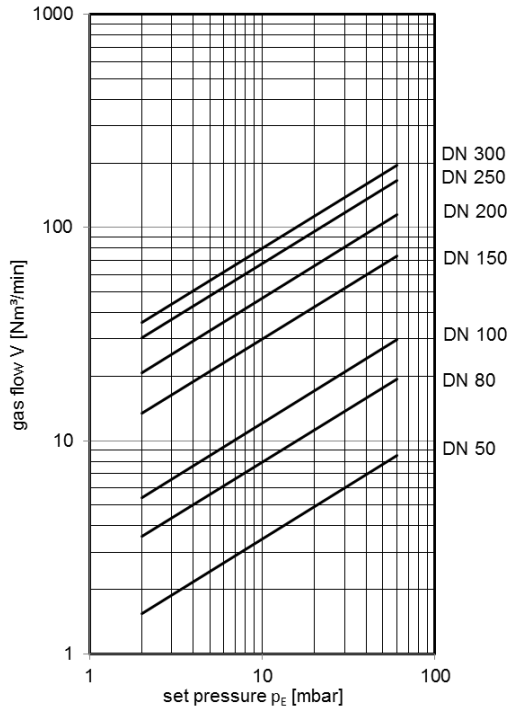
design	pressure range I 2 - < 3.5 mbar	pressure range II ≥ 3.5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve spindle	aluminum / stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

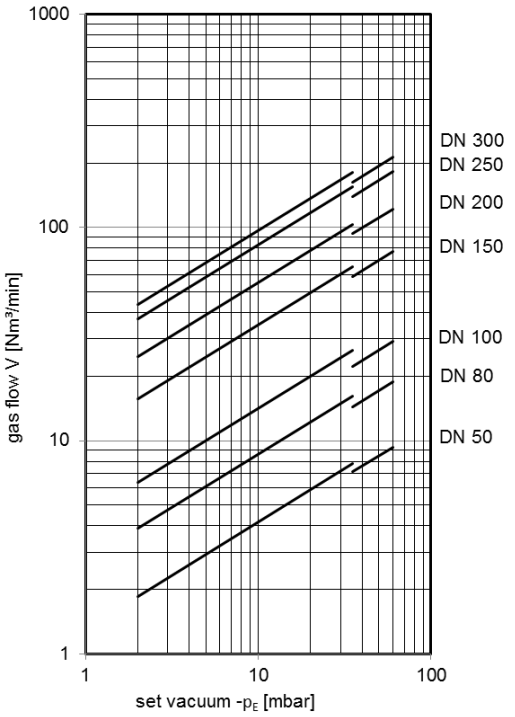
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad \text{or} \quad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting (see DIN 4119).





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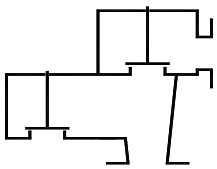
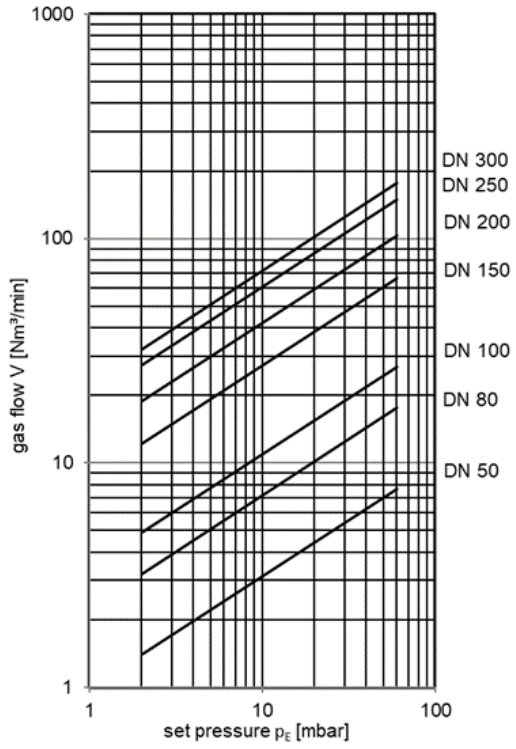
Date: 04-2024
Created: Abt. Doku KITO
Design subject to change

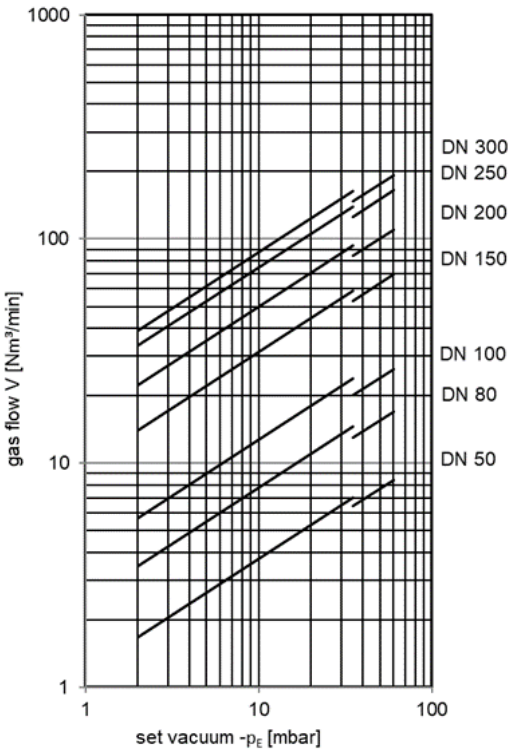
Type sheet
Pressure and vacuum relief valve
KITO® VD/oG-PA-…



$$\dot{V}_{10\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \text{ or } \dot{V}_b = \dot{V}_{10\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The volume flow at reducsed lift will be reached by an accumulation of 10 % above valve's setting (see DIN 4119).





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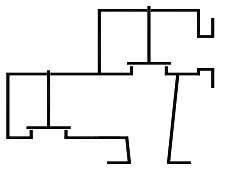
KITO Armaturen GmbH

Type sheet

In-line pressure and vacuum relief valve

KITO® VD/oG-PAL-.../...

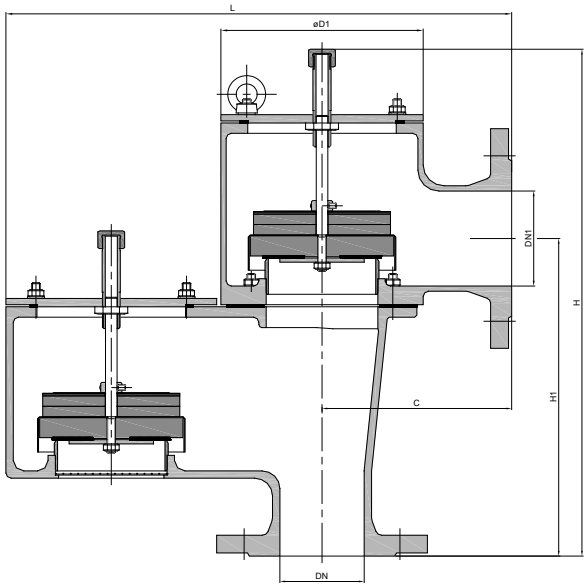
-End of line device for use in pipeline-

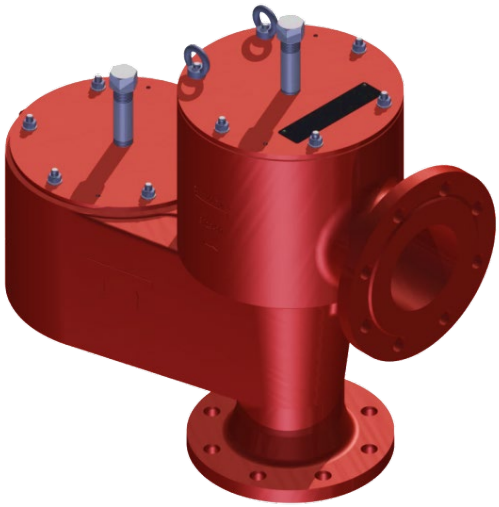


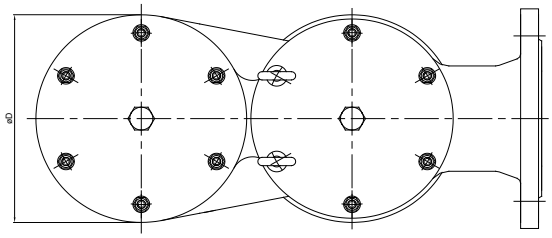
Application

As end-of-line armature, for venting apertures on tank installations. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof. **The product vapours can be discharged through a collective line into the atmosphere connected to the line flange on the pressure side.**

Dimensions (mm) and settings (mbar)







DN		DN1		C	D	D1	H	H1	L	kg	setting	
DIN	ASME	DIN	ASME								vacuum	pressure
50 PN 16	2“	80 PN 16	3“	140	165	165	389	255	395			
80 PN 16	3“	100 PN 16	4“	143	200	192	488	308	443			
100 PN 16	4“											
150 PN 16	6“										2-60	2-60
200 PN 10	8“	200 PN 10	8“	216	350	350	654	417	771			
250 PN 10	10“											
300 PN 10	12“											

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/oG-PAL-50/80
(design DN 50 with flange connection vertically DN 50 PN 16 and laterally DN 80 PN 16)

Without EC certificate and CE-marking

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Date: 05-2024
Created: Abt. Doku KITO
Design subject to change

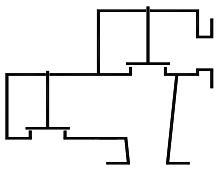
KITO Armaturen GmbH

Type sheet

In-line pressure and vacuum relief valve

KITO® VD/oG-PAL-…/…

-End of line device for use in pipeline-



Design

	standard	optionally
housing upper part (PN 1)	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
housing lower part	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
cover	steel	stainless steel mat. no. 1.4301
gasket	PTFE	
valve seat	stainless steel mat. no. 1.4571	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet

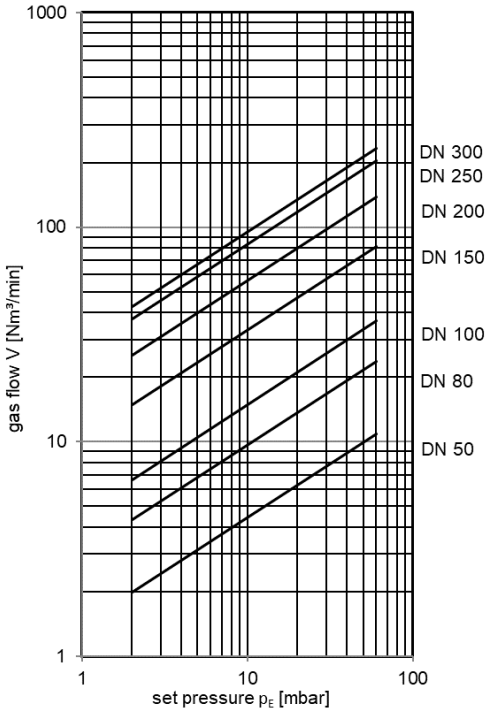
design	pressure range I 2 - < 3.5 mbar	pressure range II ≥ 3.5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve spindle	aluminum / stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

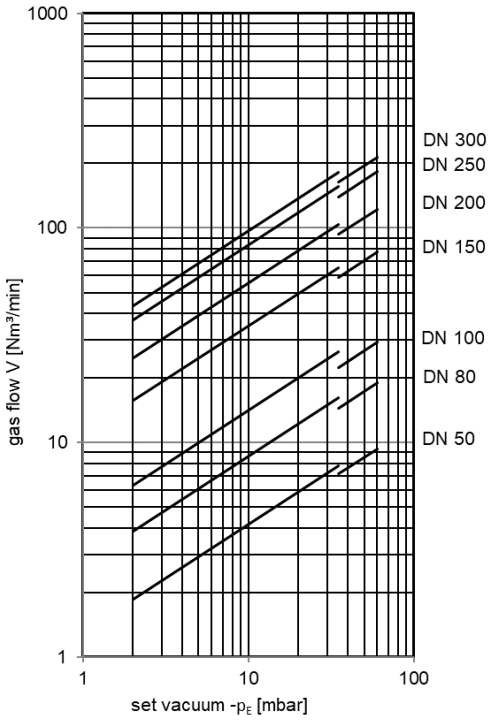
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad \text{or} \quad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting (see DIN 4119).





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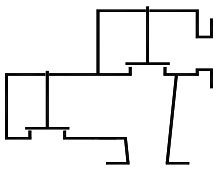
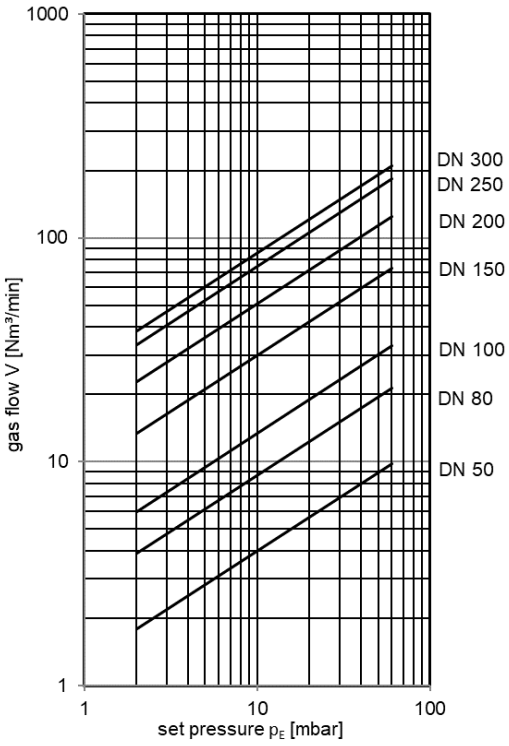
Created: Abt. Doku KITO
Design subject to change

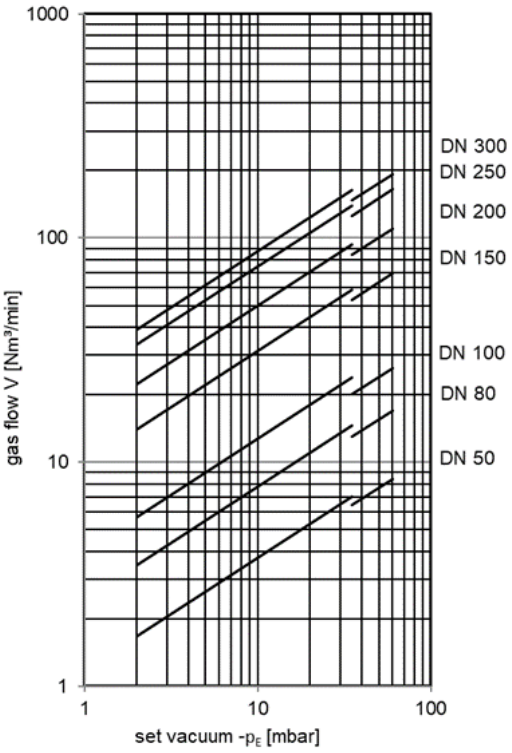
Type sheet
In-line pressure and vacuum relief valve
KITO® VD/oG-PAL-…/…
-End of line device for use in pipeline-



$$\dot{V}_{10\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \text{ or } \dot{V}_b = \dot{V}_{10\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The volume flow at reduced lift will be reached by an accumulation of 10 % above valve's setting (see DIN 4119).





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F 71.1 N
Date: 05-2024
Created: Abt. Doku KITO
Design subject to change

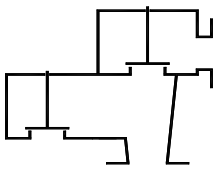
KITO Armaturen GmbH

Type sheet

In-line pressure and vacuum relief valve

KITO® VD/oG-PA-… D

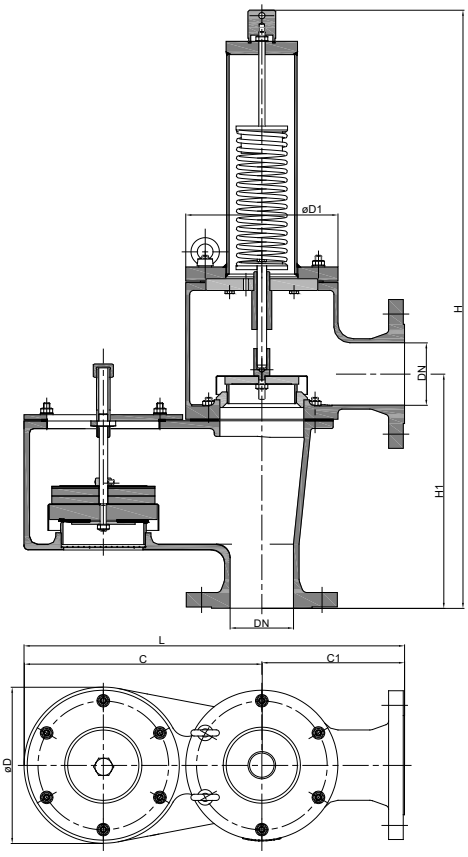
-End of line device for use in pipeline-

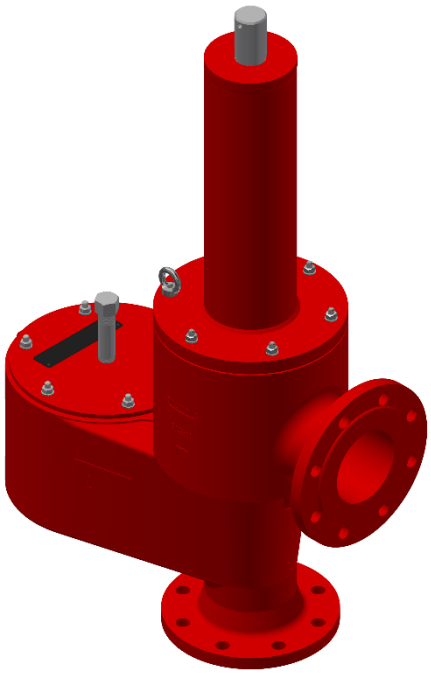


Application

As end-of-line armature, for venting apertures on tank installations. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof. **The product vapours can be discharged through a collective line into the atmosphere connected to the line flange on the pressure side.**

Dimensions (mm) and settings (mbar)





DN DIN	DN ASME	C	C1	D	D1	H	H1	L	kg	setting vacuum	setting pressure
50 PN 16	**2“**	255	150	165	165	604	240	405		2-60	>60-415
80 PN 16	**3“**	300	180	200	192	766	300	480			
100 PN 16	**4“**	400	200	250	240	911	330	600			
150 PN 16	**6“**	555	250	350	350	1173	390	805			
200 PN 10	**8“**	625	300	400	390	1526	480	925			
250 PN 10	**10“**	705	305	460	460	1630	555	1010			
300 PN 10	**12“**	705	305	460	460	1630	582	1010			

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/oG-PA-50 D
(design DN 80 with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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F 72.1 N
Date: 06-2023
Created: Abt. Doku KITO

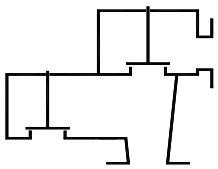
KITO Armaturen GmbH

Type sheet

In-line pressure and vacuum relief valve

KITO® VD/oG-PA-… D

-End of line device for use in pipeline-



Design

	standard	optionally
housing upper part (PN 1)	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
housing lower part	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
cover	steel	stainless steel mat. no. 1.4301/1.4571
gasket	PTFE	
design valve pallet	weight loaded *-vacuum-* spring loaded *-pressure-*	
valve seat	stainless steel mat. no. 1.4571	
valve pallet / valve spindle *-pressure-*	stainless steel mat. no. 1.4571	
valve sealing *-pressure-*	metal sealing	
spring loaded parts *-pressure-*	stainless steel mat. no. 1.4571	
compression spring *-pressure-*	stainless steel	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet *-vacuum-*

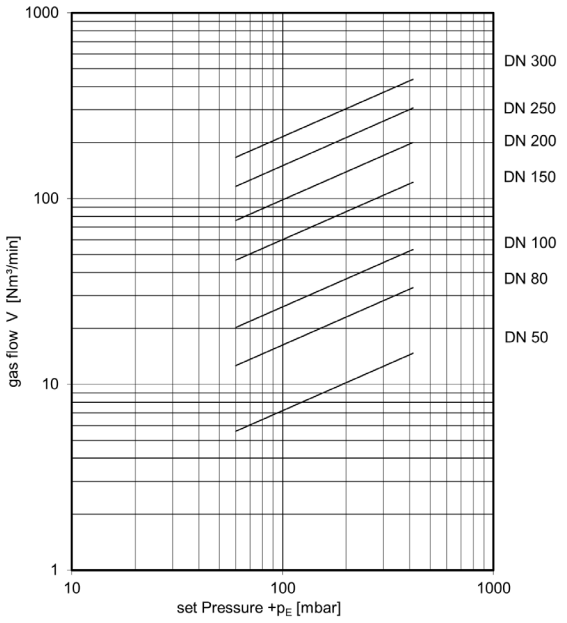
design	pressure range I 2 - < 3.5 mbar	pressure range II ≥ 3.5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve spindle	aluminum / stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

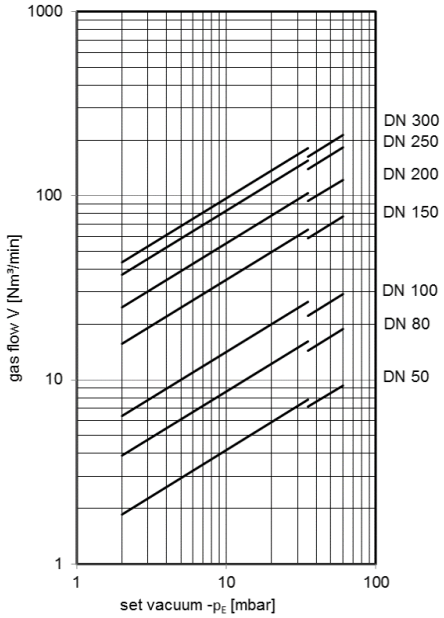
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting. If the allowable overpressure is less than 20%, please consult the factory for the corrected volume flow.





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F 72.1 N
Date: 06-2023
Created: Abt. Doku KITO
Design subject to change

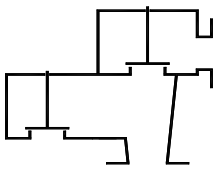
KITO Armaturen GmbH

Type sheet

In-line pressure and vacuum relief valve

KITO® VD/oG-PA-… VD

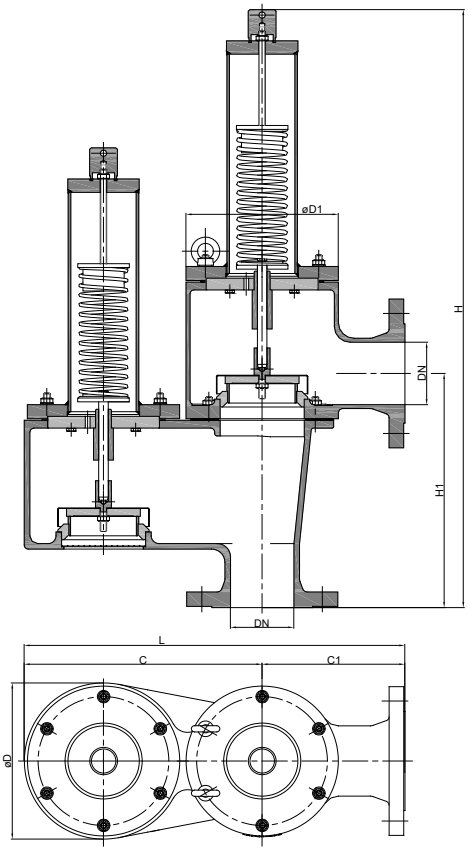
-End of line device for use in pipeline-

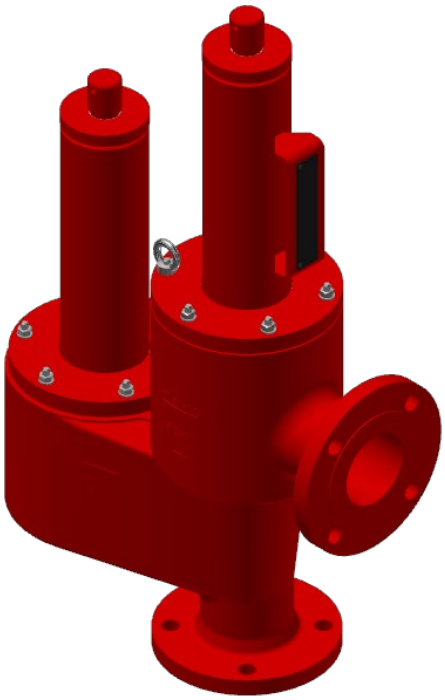


Application

As end-of-line armature, for venting apertures on tank installations. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof. **The product vapours can be discharged through a collective line into the atmosphere connected to the line flange on the pressure side.**

Dimensions (mm) and settings (mbar)





DN DIN	DN ASME	C	C1	D	D1	H	H1	L	kg	setting vacuum	setting pressure
50 PN 16	2“	255	150	165	165	604	240	405		>60-415	>60-415
80 PN 16	3“	300	180	200	192	766	300	480	51		
100 PN 16	4“	400	200	250	240	911	330	600			
150 PN 16	6“	555	250	350	350	1173	390	805			
200 PN 10	8“	625	300	400	390	1526	480	925			
250 PN 10	10“	705	305	460	460	1630	555	1010			
300 PN 10	12“	705	305	460	460	1630	582	1010			

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/oG-PA-80 VD
(design DN 80 with flange connection DN 80 PN 16)

Without EC certificate and CE-marking

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F 72.3 N
Date: 06-2023
Created: Abt. Doku KITO
Design subject to change

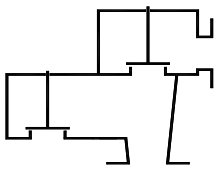
KITO Armaturen GmbH

Type sheet

In-line pressure and vacuum relief valve

KITO® VD/oG-PA-… VD

-End of line device for use in pipeline-



Design

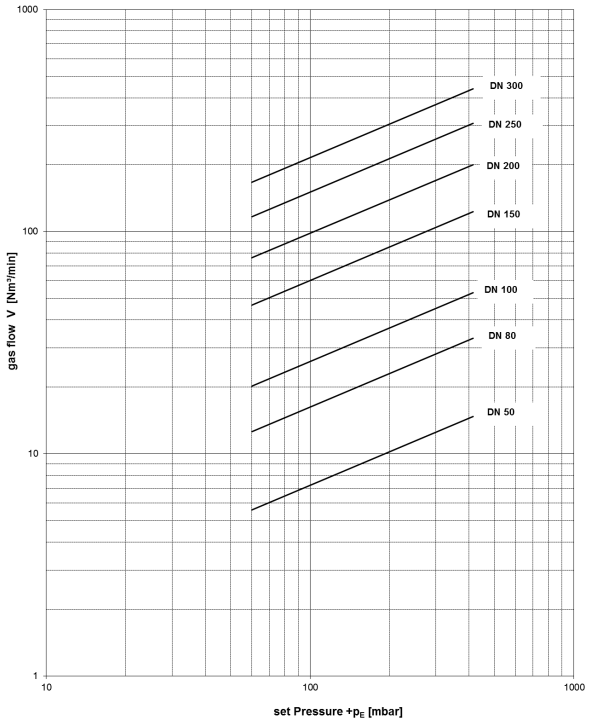
	standard	optionally
housing upper part (PN 1)	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
housing lower part	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
cover	steel	stainless steel mat. no. 1.4301/1.4571
gasket	PTFE	
design valve pallet	spring loaded	
valve seat	stainless steel mat. no. 1.4571	
valve pallet, valve spindle	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

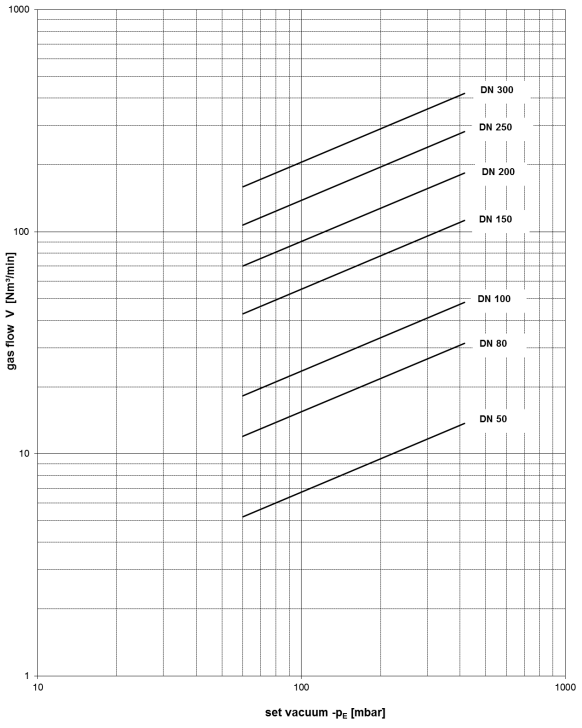
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting. If the allowable overpressure is less than 20%, please consult the factory for the corrected volume flow.





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F 72.3 N
Date: 06-2023
Created: Abt. Doku KITO

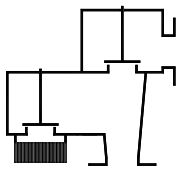
KITO Armaturen GmbH

Type sheet

Pressure and deflagration proof vacuum relief valve

KITO® VD/KGV-PA-IIB3-…

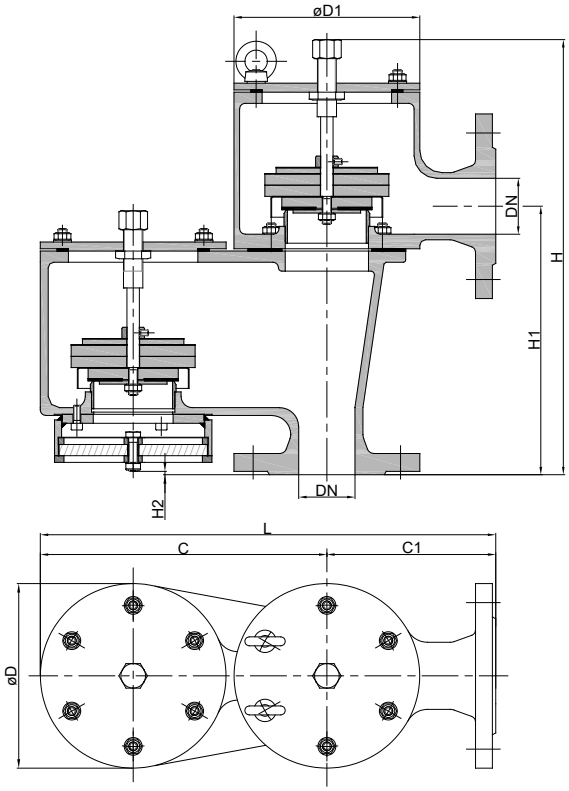
-End of line device for use in pipeline-

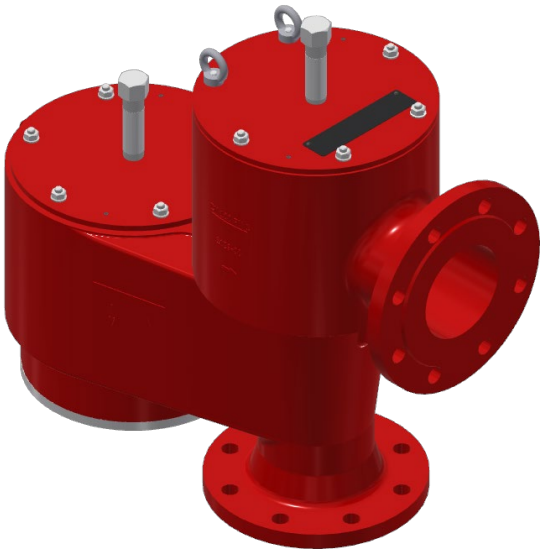


Application

As end-of-line armature, for venting apertures on tank installations. Tested and approved against atmospheric deflagrations for all materials of the explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof. **The product vapours can be discharged through a collective line into the atmosphere connected to the line flange on the pressure side**. This pipeline must be secured individually.

Dimensions (mm) and settings (mbar)





DN DIN	DN ASME	C	C1	D	D1	H	H1	H2	L	kg	setting vacuum	setting pressure
50 PN 16	2“	255	150	165	165	389	240	3	405	26	2-60	2-60
80 PN 16	3“	300	180	200	192	487	300		480	38		
100 PN 16	4“	400	200	250	240	547	330		600	56		
150 PN 16	6“	555	250	350	350	655	390		805	119		
200 PN 10	8“	625	300	400	390	775	480	12	925	171		
250 PN 10	10“	705	305	460	460	875	555		1010	224		
300 PN 10	12“	705	305	460	460	875	582		1010	323		

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/KGV-PA-IIB3-50
(design DN 50 with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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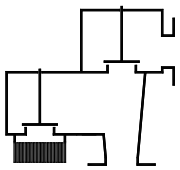
KITO Armaturen GmbH

Type sheet

Pressure and deflagration proof vacuum relief valve

KITO® VD/KGV-PA-IIB3-…

-End of line device for use in pipeline-



Design

	standard	optionally
housing upper part (PN 1)	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
housing lower part	cast steel mat. no. 1.0619 / steel	stainless cast steel mat. no. 1.4408 / 1.4571
cover	steel	stainless steel mat. no. 1.4301
gasket	PTFE	
valve seat	stainless steel mat. no. 1.4571	
KITO®-flame arrester element	interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet

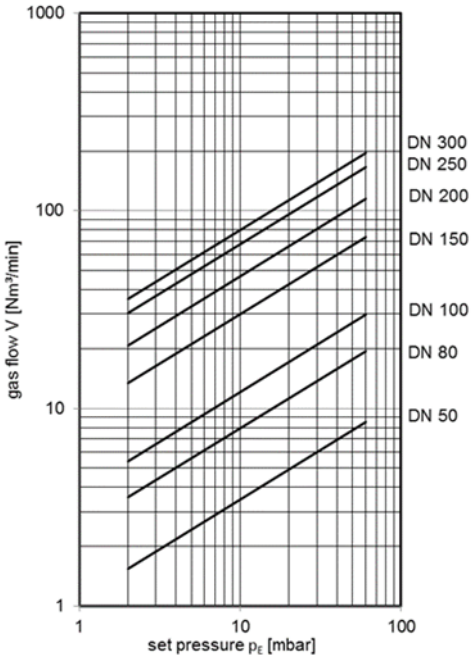
design	pressure range I 2 - < 3.5 mbar	pressure range II ≥ 3.5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve spindle	aluminum / stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

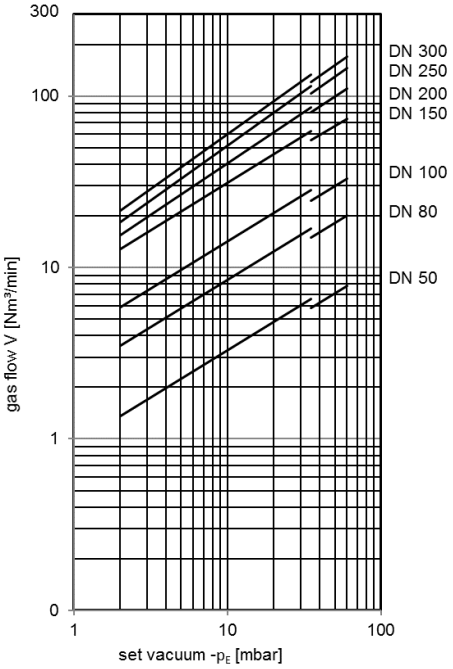
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \text{ or } \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting (see DIN 4119).





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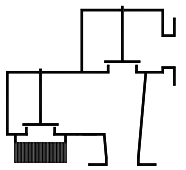
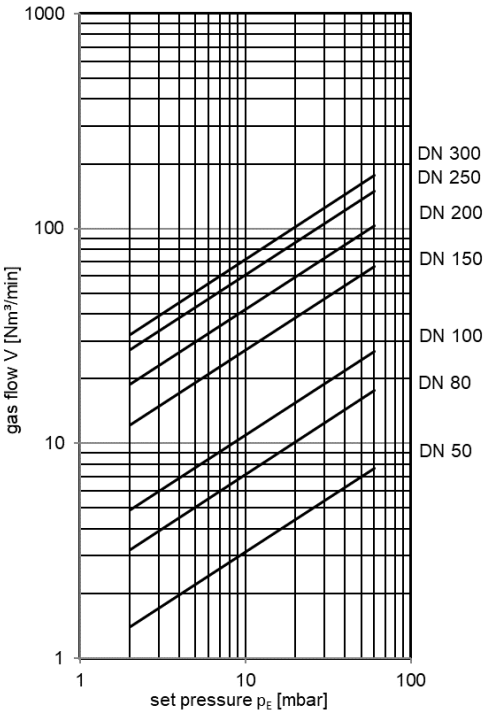
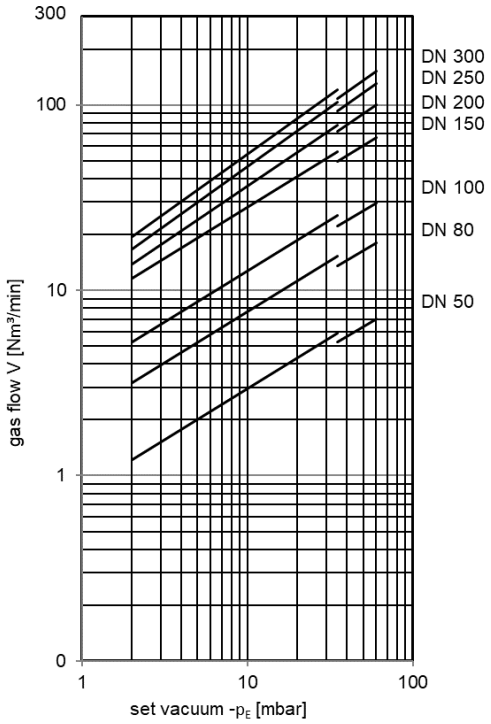
Type sheet
Pressure and deflagration proof vacuum relief valve
KITO® VD/KGV-PA-IIB3-…
-End of line device for use in pipeline-



$$\dot{V}_{10\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \text{ or } \dot{V}_b = \dot{V}_{10\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The volume flow at reducsed lift will be reached by an accumulation of 10 % above valve's setting (see DIN 4119).





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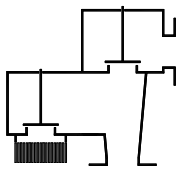
KITO Armaturen GmbH

Type sheet

Pressure and deflagration proof vacuum relief valve

KITO® VD/KGV-PA-IIB3-… D

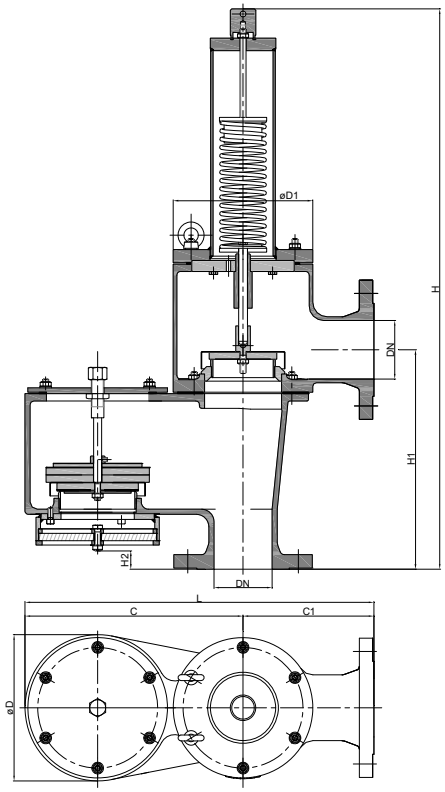
-End of line device for use in pipeline-

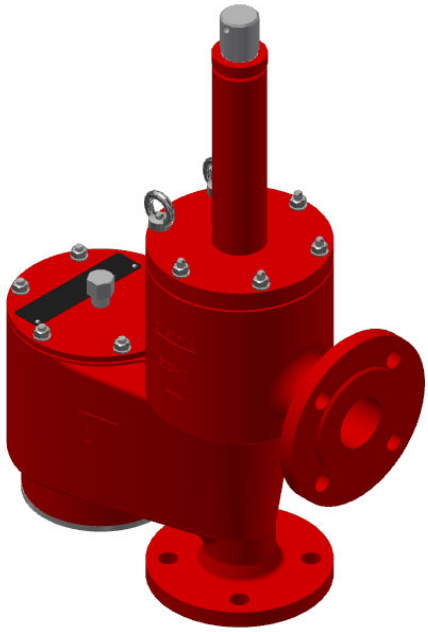


Application

As end-of-line armature, for venting apertures on tank installations. Tested and approved against atmospheric deflagrations for all materials of the explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof. **The product vapours can be discharged through a collective line into the atmosphere connected to the line flange on the pressure side**. This pipeline must be secured individually.

Dimensions (mm) and settings (mbar)





DN DIN	DN ASME	C	D	D1	H	H1	H2	L	kg	setting vacuum	setting pressure
50 PN 16	**2“**	150	165	165	604	240	3	405		2-60	>60-415
80 PN 16	**3“**	180	200	192	766	300		480			
100 PN 16	**4“**	200	250	240	911	330		600			
150 PN 16	**6“**	250	350	350	1173	390		805			
200 PN 10	**8“**	300	400	390	1526	480	12	925			
250 PN 10	**10“**	305	460	460	1630	555		1010			
300 PN 10	**12“**	305	460	460	1630	582		1010			

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/KGV-PA-IIB3-50 D
(design DN 50 with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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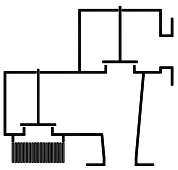
KITO Armaturen GmbH

Type sheet

Pressure and deflagration proof vacuum relief valve

KITO® VD/KGV-PA-IIB3-… D

-End of line device for use in pipeline-



Design

	standard	optionally
housing upper part (PN 1)	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
housing lower part	cast steel mat. no. 1.0619 / steel	stainless cast steel mat. no. 1.4408 / 1.4571
cover	steel	stainless steel mat. no. 1.4301/1.4571
gasket	PTFE	
design valve pallet	weight loaded *-vacuum-* spring loaded *-pressure-*	
valve seat	stainless steel mat. no. 1.4571	
valve pallet / valve spindle *-pressure-*	stainless steel mat. no. 1.4571	valve pallet / valve spindle *-pressure-*
valve sealing *-pressure-*	metal sealing	valve sealing *-pressure-*
spring loaded parts *-pressure-*	stainless steel mat. no. 1.4571	spring loaded parts *-pressure-*
compression spring *-pressure-*	stainless steel	compression spring *-pressure-*
KITO®-flame arrester element	interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Design valve pallet *-vacuum-*

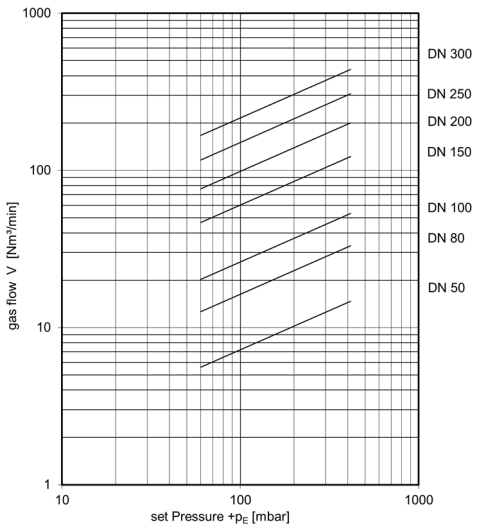
design	pressure range I 2 - < 3.5 mbar	pressure range II ≥ 3.5 - 14 mbar	pressure range III > 14 - 35 mbar	pressure range IV > 35 - 60 mbar
pallet	aluminum	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve spindle	aluminum / stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
valve sealing	FEP & HD3822	FEP & HD3822	PTFE	PTFE

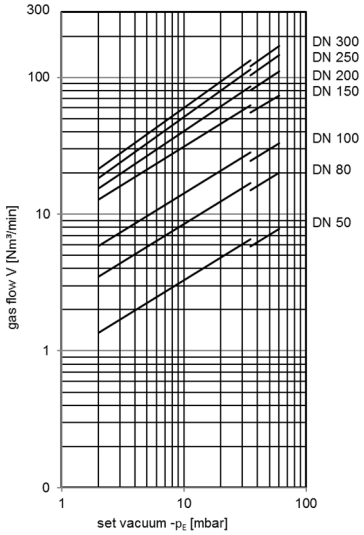
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting. If the allowable overpressure is less than 20%, please consult the factory for the corrected volume flow.





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F 81.1 N
Date: 04-2023
Created: Abt. Doku KITO
Design subject to change

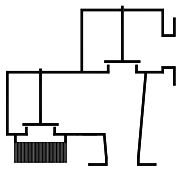
KITO Armaturen GmbH

Type sheet

Pressure and deflagration proof vacuum relief valve

KITO® VD/KGV-PA-IIB3-… VD

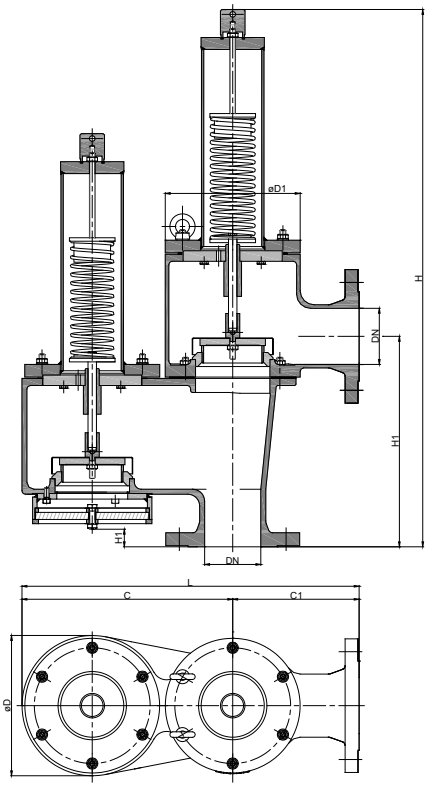
-End of line device for use in pipeline-

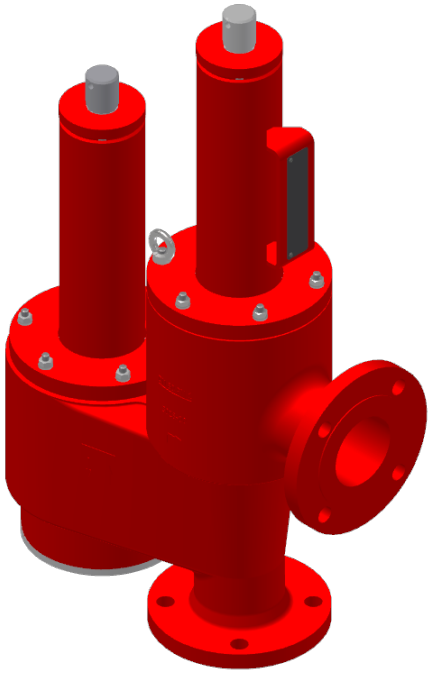


Application

As end-of-line armature, for venting apertures on tank installations. Tested and approved against atmospheric deflagrations for all materials of the explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C. Used mainly as venting and breather device for fixed roof tanks. Used to prevent inadmissible pressure and vacuum and to minimize unwelcome gas losses or inadmissible emissions respectively. The housing is mounted perpendicularly on a tank roof. **The product vapours can be discharged through a collective line into the atmosphere connected to the line flange on the pressure side**. This pipeline must be secured individually.

Dimensions (mm) and settings (mbar)





DN DIN	ASME	C	C1	D	D1	H	H1	H2	L	kg	setting vacuum	setting pressure
50 PN 16	**2“**	255	150	165	165	604	240	3	405		>60-415	>60-415
80 PN 16	**3“**	300	180	200	192	766	300		480			
100 PN 16	**4“**	400	200	250	240	911	330		600			
150 PN 16	**6“**	555	250	350	350	1173	390		805			
200 PN 10	**8“**	625	300	400	390	1526	480	12	925			
250 PN 10	**10“**	705	305	460	460	1630	555		1010			
300 PN 10	**12“**	705	305	460	460	1630	582		1010			

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/KGV-PA-IIB3-50 VD
(design DN 50 with flange connection DN 50 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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F 81.3 N
Date: 05-2023
Created: Abt. Doku KITO
Design subject to change

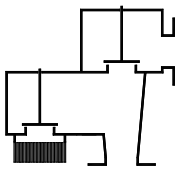
KITO Armaturen GmbH

Type sheet

Pressure and deflagration proof vacuum relief valve

KITO® VD/KGV-PA-IIB3-… VD

-End of line device for use in pipeline-



Design

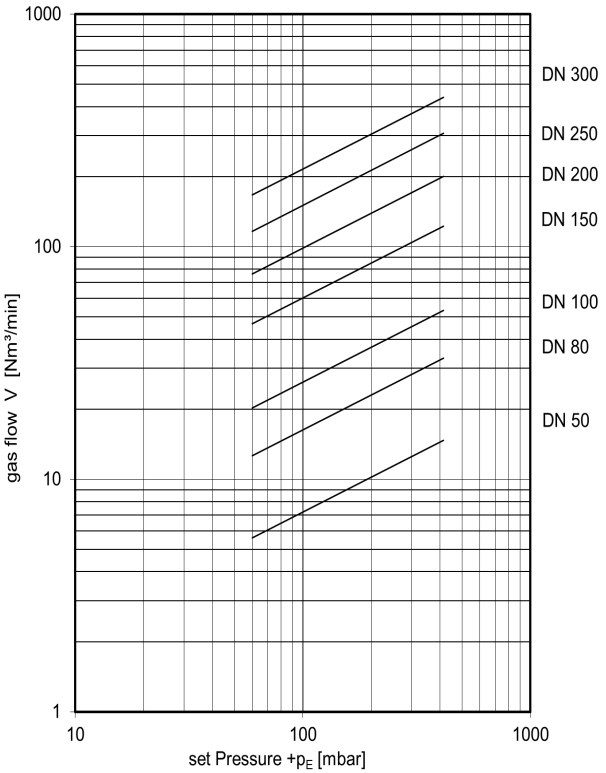
	standard	optionally
housing upper part (PN 1)	cast steel mat. no. 1.0619	stainless cast steel mat. no. 1.4408
housing lower part	cast steel mat. no. 1.0619 / steel	stainless cast steel mat. no. 1.4408 / 1.4571
cover	steel	stainless steel mat. no. 1.4301/1.4571
gasket	PTFE	
design valve pallet	spring loaded	
valve seat	stainless steel mat. no. 1.4571	
valve pallet / valve spindle	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	
spring loaded parts	stainless steel mat. no. 1.4571	
compression spring	stainless steel	
KITO®-flame arrester element	interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

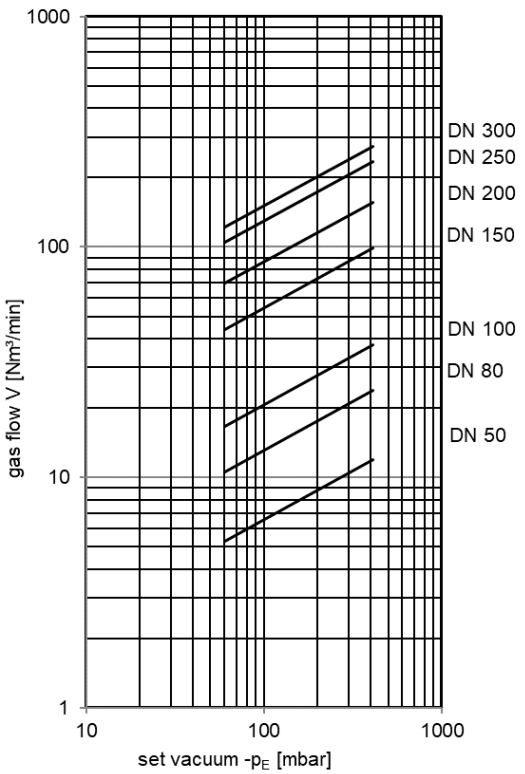
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{20\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{20\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 20 % above valve's setting. If the allowable overpressure is less than 20%, please consult the factory for the corrected volume flow.





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Date: 05-2023
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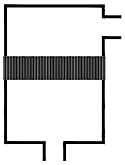
Design subject to change

KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester

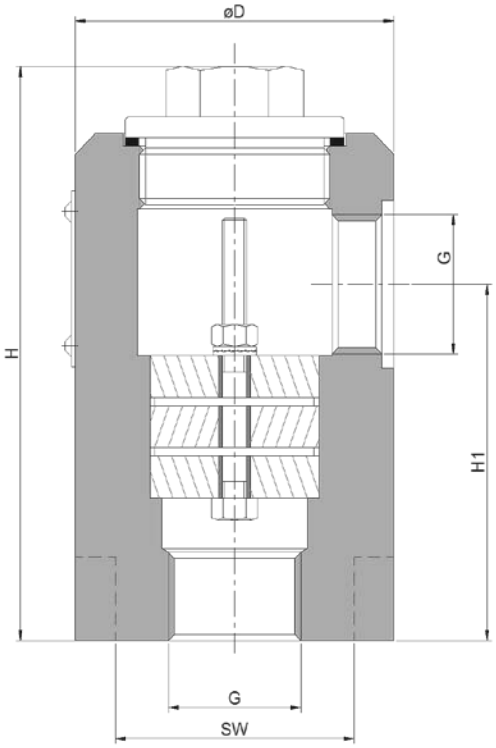
KITO® Rd/C-Det4-IIA-…-1.2



Application

Detonation flame arrester for installation into pipes to protect containers and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4**. Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. An operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. Positioning should be as close as possible to the protected object; it is only allowed to connect pipes with the same or a smaller diameter than the diameter (G) of the device. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible.

Dimensions (mm)



thread	D	H	H1	SW	~kg
G 1/8“	80	137	85	60	4.5
G 1/4“					
G 3/8“					
G 1/2“					
G 3/4“					
G 1“					

Weight refers to the standard design

Example for order

KITO® Rd/C-Det4-IIA-1“-1,2
(design with threaded connections G 1“)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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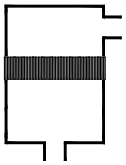
M 5 N / G 5 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester

KITO® Rd/C-Det4-IIA-…-1.2



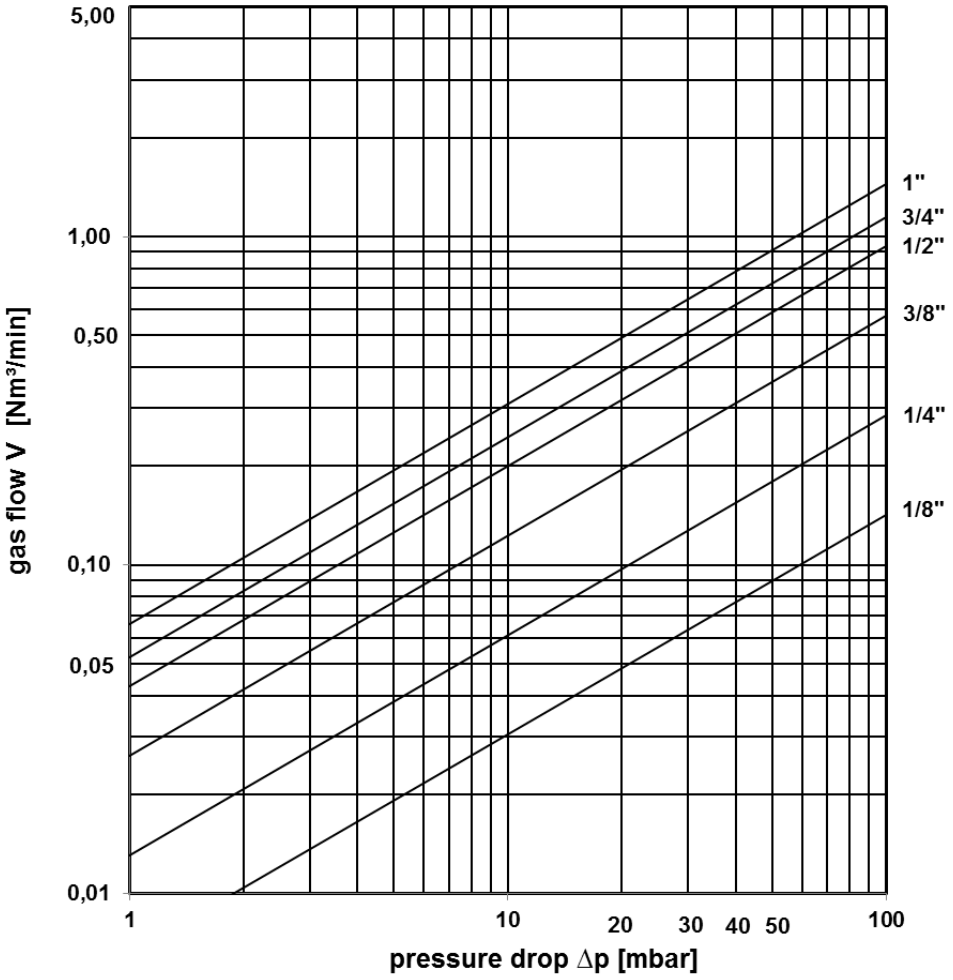
Design

	standard	optionally
housing	steel (St 52-3N)	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	interchangeable	
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
connection	thread connection BSP	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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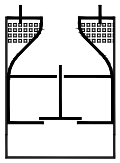
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

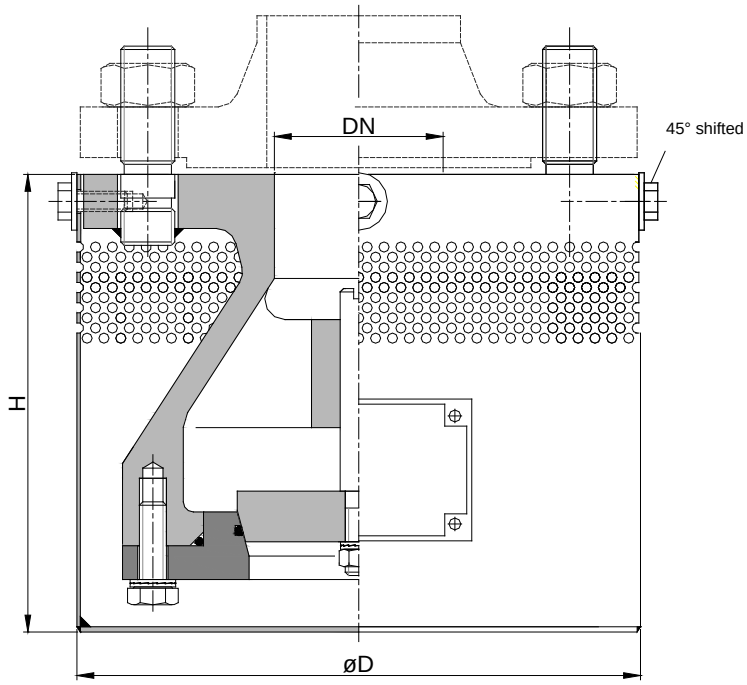
Type sheet
Detonation proof foot valve
KITO® NRV-...-IIB3



Application

For end of line service, detonation proof, valve with superposed valve pallets, for installation into suction pipes of underground tanks in which inflammable liquids of explosion group IIA1 to IIB3 with a maximum experimental safety gap (MESG) ≥ 0.65 mm and an maximum operating temperature of 60 °C are stored. Tested and approved as detonation flame arrester **type 4.** A draining of the liquid column will be prevented reliably. Installation of the foot valve has to be exact vertically at the end of the suction pipe. It is not allowed to connect it to pipelines with a larger diameter than the connecting size of valve itself.

Dimensions (mm)



DN		D	H	kg
DIN	ASME			
25 PN 40	**1“**	144	125	7.1
32 PN 40	**1 ¼“**	144	125	7.0
40 PN 40	**1 ½“**	169	135	9.6
50 PN 16	**2“**	169	135	11.4
65 PN 16	**2 ½“**	189	150	14.3
80 PN 16	**3“**	204	165	14.3
100 PN 16	**4“**	239	200	21.0
125 PN 16	**5“**	300	235	37.2
150 PN 16	**6“**	350	260	49.5

Weight refers to the standard design

Example for order

KITO® NRV-100-IIB3
(design with flange connection DN 100 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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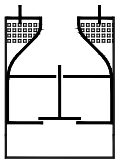
G 12 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Detonation proof foot valve
KITO® NRV-...-IIB3



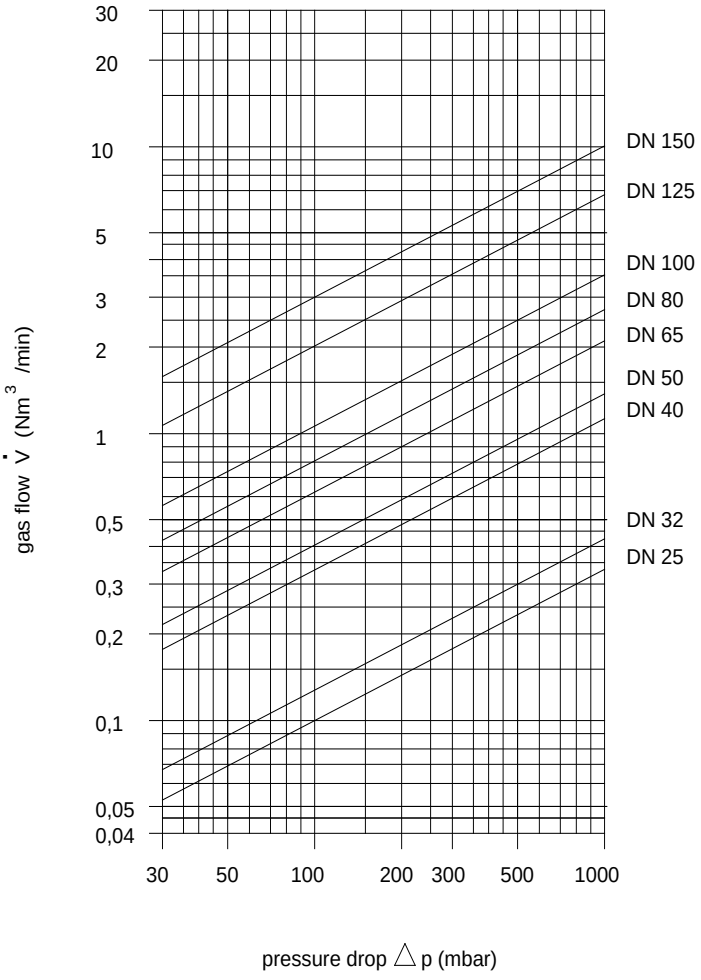
Design

	standard	optionally
housing / suction cup	GS-C25 (1.0619) / mat. no. 1.4301	stainless steel mat. no. 1.4408 / 1.4571
valve seat, valve spindle	stainless steel mat. no. 1.4571	
valve sealing	PTFE	
valve cone	stainless steel mat. no. 1.4571	
connection	drilled according to EN 1092-1 type A *(with suitable studs for easy connection)*	drilled according to ASME B16.5 Class 150 RF *(with suitable studs for easy connection)*, socket thread

Performance curves

The volume flow V in Nm^3/min was determined with water according to DIN EN 60534 at a temperature T_n = 15°C and an atmospheric pressure ρ_n = 1013 mbar.
For media of different density the flow rate may be calculated with an appropriate accuracy with this formula :

$$\dot{V}_{liquid} \cong \dot{V}_{water} \cdot \sqrt{\frac{\rho_{water}}{\rho_{liquid}}}$$



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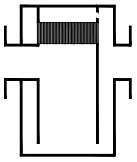
KITO Armaturen GmbH

Type sheet

Uni-directional in-line liquid detonation flame arrester

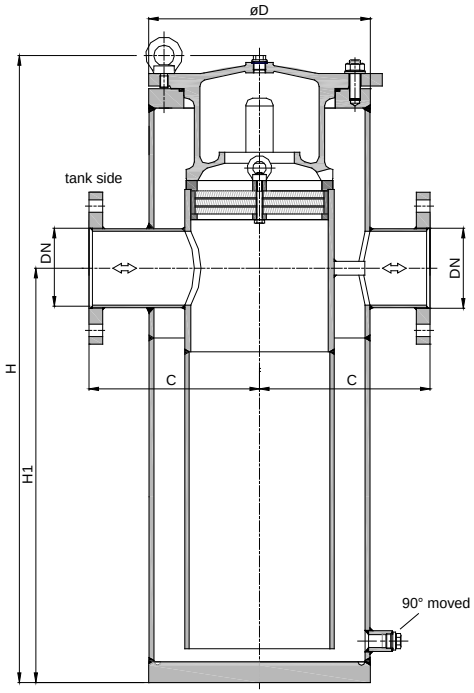
KITO® FL/E-...-IIB3



Application

As inline armature, detonation-proof and flameproof, used for installation in **filling and suction pipes** outside from tanks in which inflammable liquids are stored. Tested and approved as detonation flame arrester **type 4.** Approved for all materials of the explosion group IIA1 to IIB3 with MESG ≥ 0.65 mm and an maximum operating temperature of 60 °C. Equipped with a safety device against complete emptying which is constructed as flame arrester element in order to prevent the suction of sealing liquid. It is only allowed to install pipe of nominal widths ≤ than the nominal widths of the flange. Mounting position is perpendicular. The body of the housing has to be permanently filled with the storage liquid up to the height of the connecting flanges. Suction rate *V* max specified in above table may not be exceeded.

Dimensions (mm)



DN DIN	ASME	D	C	H	H1	*V* max [m³/h]	kg
25 PN 40	**1“**	150	125	475	325	30	17
32 PN 40	**1 ¼“**	150	125	475	325	30	18
40 PN 40	**1 ½“**	210	173	620	415	120	32
50 PN 16	**2“**	210	175	620	415	120	33
65 PN 16	**2 ½“**	275	223	810	535	240	85
80 PN 16	**3“**	275	225	810	535	270	86
100 PN 16	**4“**	325	250	900	600	480	132
125 PN 16	**5“**	460	300	1320	915	720	315
150 PN 16	**6“**	460	300	1320	915	960	322
200 PN 10	**8“**	510	350	1495	1090	1020	413

Weight refers to the standard design

Example for order

KITO® FL/E-100-IIB3
(design with flange connection DN 100 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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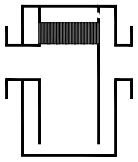
G 13 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Uni-directional in-line liquid detonation flame arrester

KITO® FL/E-...-IIB3



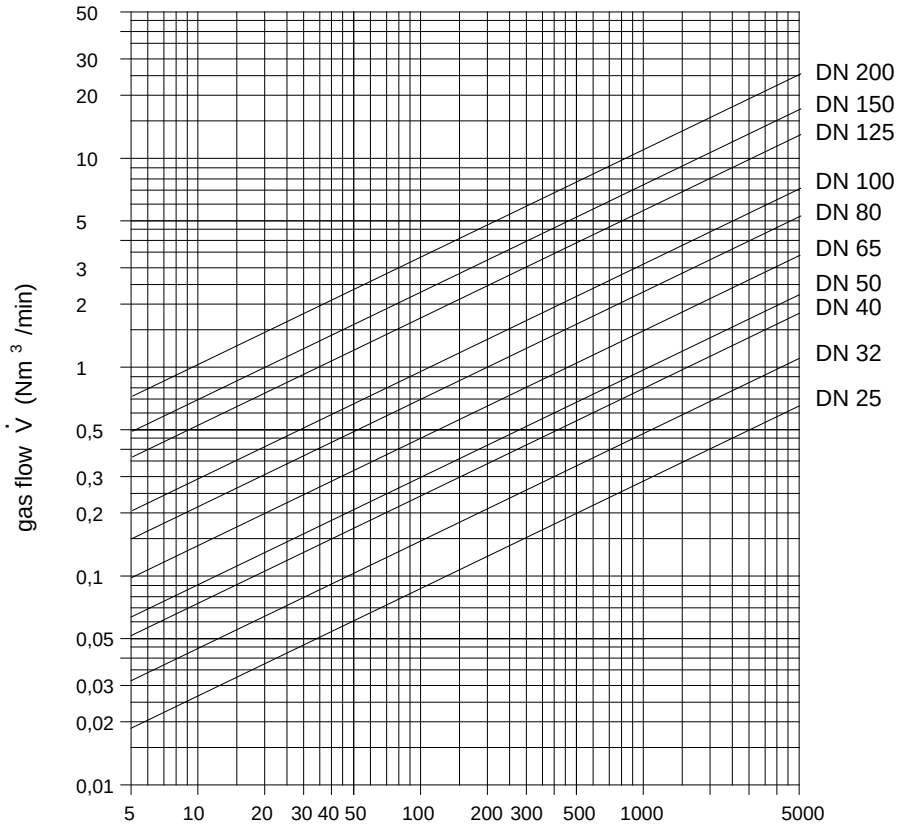
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
cover	cast steel 1.0619	cast steel 1.4408
gasket (o-ring)	Viton	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4408 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
flange connection	EN 1092-1 Form A	ASME B16.5 Class 150 RF

Performance curves

The volume flow *V* in Nm^3/min was determined with water according to DIN EN 60534 at a temperature T_n = 15°C and an atmospheric pressure ρ_n = 1013 mbar.
For media of different density the flow rate may be calculated with an appropriate accuracy with this formula :

$$\dot{V}_{liquid} \cong \dot{V}_{water} \cdot \sqrt{\frac{\rho_{water}}{\rho_{liquid}}}$$



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Created: Abt. Doku KITO

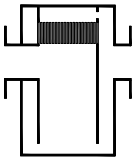
KITO Armaturen GmbH

Type sheet

Uni-directional in-line liquid detonation flame arrester

KITO® FL/E-...-IIB3 (wf)

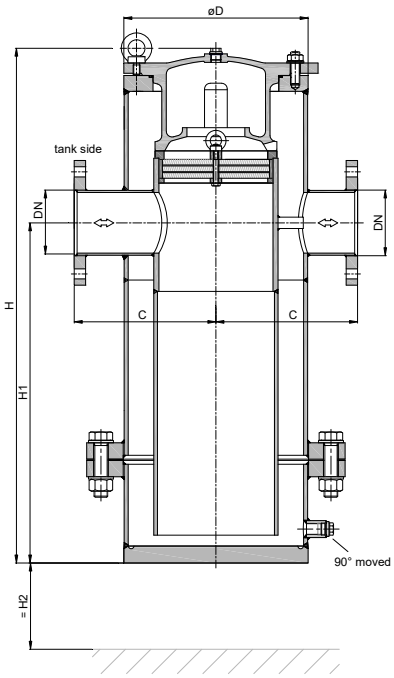
-maintenance-friendly and easy to clean design-



Application

As inline armature, detonation-proof and flameproof, used for installation in **filling and suction pipes** outside from tanks in which inflammable liquids are stored. Tested and approved as detonation flame arrester **type 4.** Approved for all materials of the explosion group IIA1 to IIB3 with MESG ≥ 0.65 mm and an maximum operating temperature of 60 °C. Equipped with a safety device against complete emptying which is constructed as flame arrester element in order to prevent the suction of sealing liquid. It is only allowed to install pipe of nominal widths ≤ than the nominal widths of the flange. Mounting position is perpendicular. The body of the housing has to be permanently filled with the storage liquid up to the height of the connecting flanges. Suction rate *V* max specified in above table may not be exceeded.

Dimensions (mm)



DN DIN	ASME	D	C	H	H1	≥ H2	*V* max [m³/h]	kg
25 PN 40	**1“**	150	125	475	325	170	30	29
32 PN 40	**1 ¼“**	150	125	475	325	170	30	30
40 PN 40	**1 ½“**	210	173	620	415	246	120	55
50 PN 16	**2“**	210	175	620	415	246	120	56
65 PN 16	**2 ½“**	275	223	810	535	290	240	113
80 PN 16	**3“**	275	225	810	535	290	270	114
100 PN 16	**4“**	325	250	900	600	300	480	163
125 PN 16	**5“**	460	300	1320	915	400	720	395
150 PN 16	**6“**	460	300	1320	915	400	960	402
200 PN 10	**8“**	510	350	1495	1090	400	1020	510

Weight refers to the standard design

Example for order

KITO® FL/E-100-IIB3 (wf)
(design with flange connection DN 100 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 10-2020
Created: Abt. Doku KITO
Design subject to change

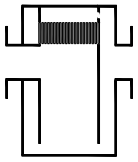
KITO Armaturen GmbH

Type sheet

Uni-directional in-line liquid detonation flame arrester

KITO® FL/E-...-IIB3 (wf)

-maintenance-friendly and easy to clean design-



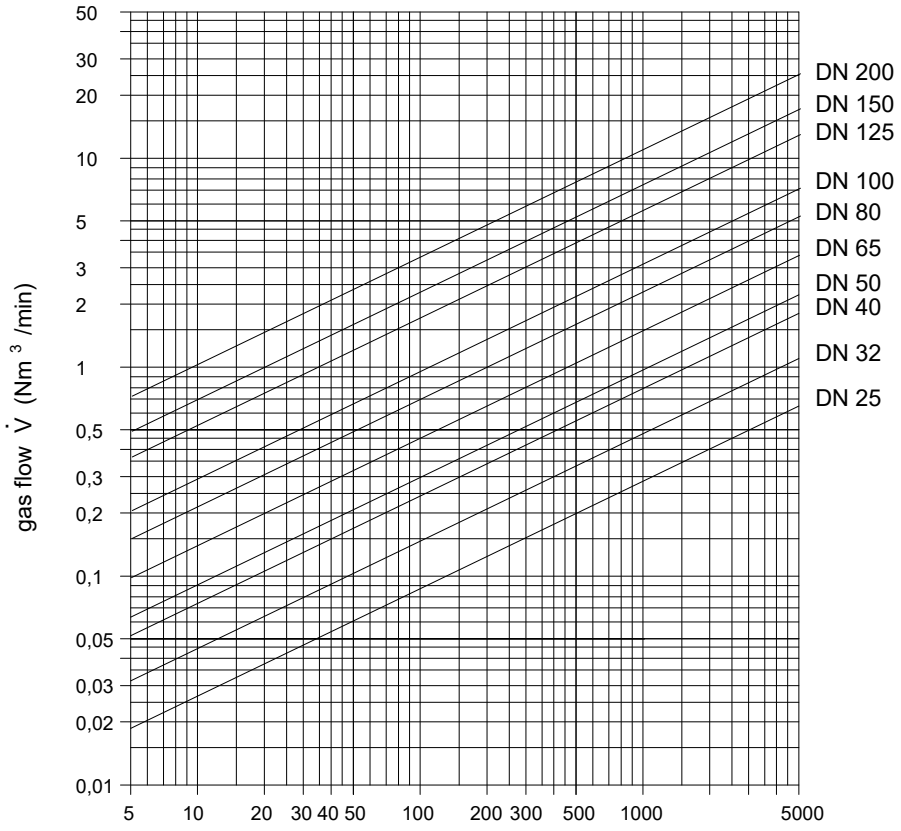
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
cover	cast steel 1.0619	cast steel 1.4408
gasket (o-ring)	Viton	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4408 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
flange connection	EN 1092-1 Form A	ASME B16.5 Class 150 RF

Performance curves

The volume flow *V* in Nm^3/min was determined with water according to DIN EN 60534 at a temperature T_n = 15°C and an atmospheric pressure ρ_n = 1013 mbar.
For media of different density the flow rate may be calculated with an appropriate accuracy with this formula :

$$\dot{V}_{liquid} \cong \dot{V}_{water} \cdot \sqrt{\frac{\rho_{water}}{\rho_{liquid}}}$$



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G 13.0 N
Date: 10-2020
Created: Abt. Doku KITO

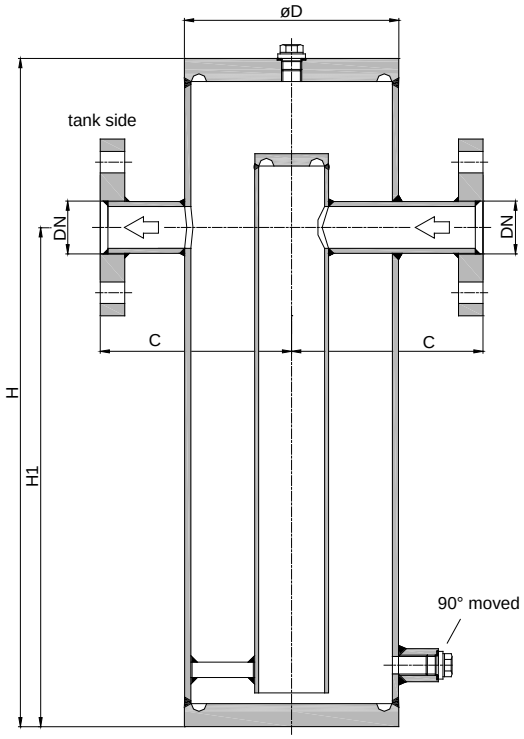
KITO Armaturen GmbH

Type sheet
Uni-directional in-line liquid detonation flame arrester
KITO® FL/EO-...-IIB3

Application

as inline armature, detonation-proof and flameproof, used for installation in **filling pipes** outside from tanks in which inflammable liquids are stored. Tested and approved as detonation flame arrester **type 4.** Approved for all materials of the explosion group IIA1 to IIB3 with MESG ≥ 0.65 mm and an maximum operating temperature of 60 °C. It is only allowed to install pipes of nominal widths ≤ than the nominal widths of the flange. Mounting position is perpendicular. The body of the housing has to be permanently filled with the storage liquid up to the height of the connecting flanges. Equipped with a hexagon head pipe plug for emptying the liquid.

Dimensions (mm)



DN DIN	ASME	D	C	H	H1	kg
25 PN 40	**1“**	140	125	445	325	13
32 PN 40	**1 ¼“**	140	137,5	480	360	15
40 PN 40	**1 ½“**	195	175	565	420	28
50 PN 16	**2“**	195	175	570	415	31
65 PN 16	**2 ½“**	275	225	720	540	62
80 PN 16	**3“**	275	225	720	540	64
100 PN 16	**4“**	325	250	800	595	90
125 PN 16	**5“**	460	300	1265	915	260
150 PN 16	**6“**	460	300	1265	915	262
200 PN 10	**8“**	510	350	1520	1100	368

Weight refers to the standard design

Example for order

KITO® FL/EO-100-IIB3
(design with flange connection DN 100 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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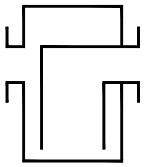
G 13.1 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet

Uni-directional in-line liquid detonation flame arrester

KITO® FL/EO-...-IIB3



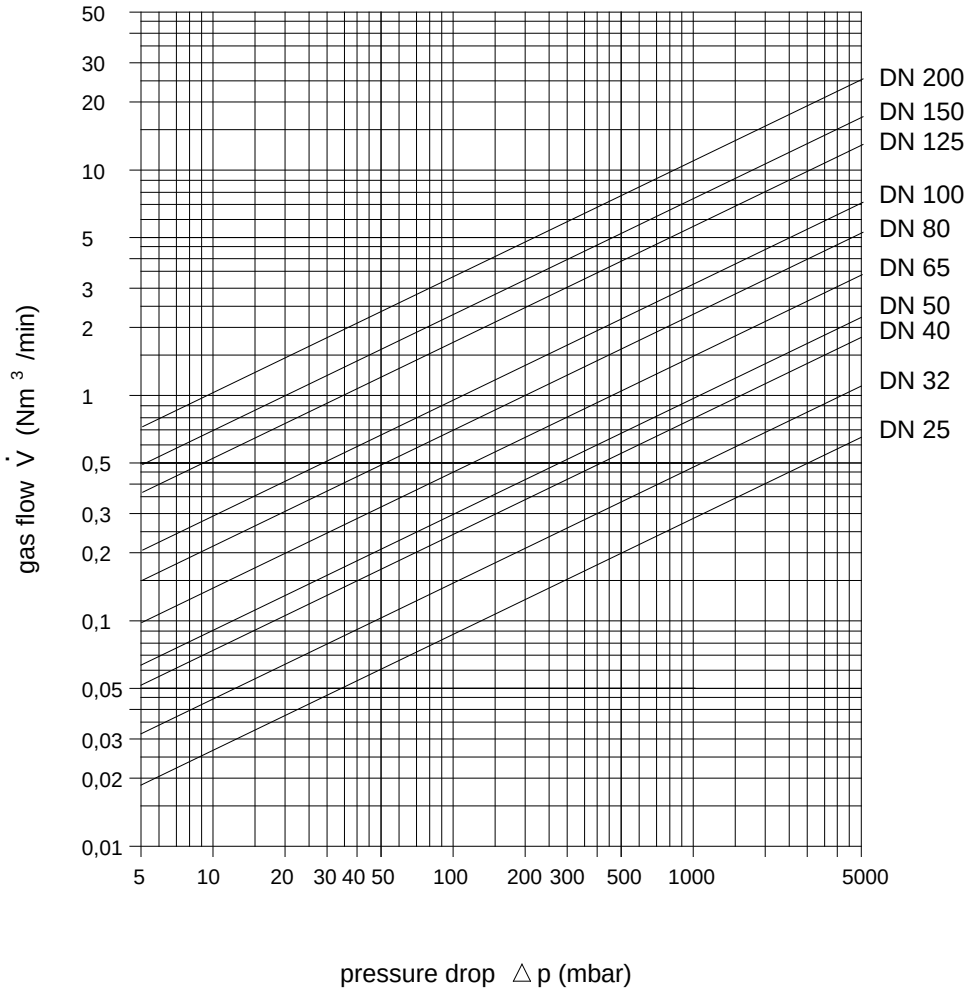
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
flange connection	EN 1092-1 Form A	ASME B16.5 Class 150 RF

Performance curves

The volume flow *V* in Nm^3/min was determined with water according to DIN EN 60534 at a temperature T_n = 15°C and an atmospheric pressure ρ_n = 1013 mbar.
For media of different density the flow rate may be calculated with an appropriate accuracy with this formula :

$$\dot{V}_{liquid} \cong \dot{V}_{water} \cdot \sqrt{\frac{\rho_{water}}{\rho_{liquid}}}$$



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KITO Armaturen GmbH

Type sheet

Uni-directional in-line liquid detonation flame arrester

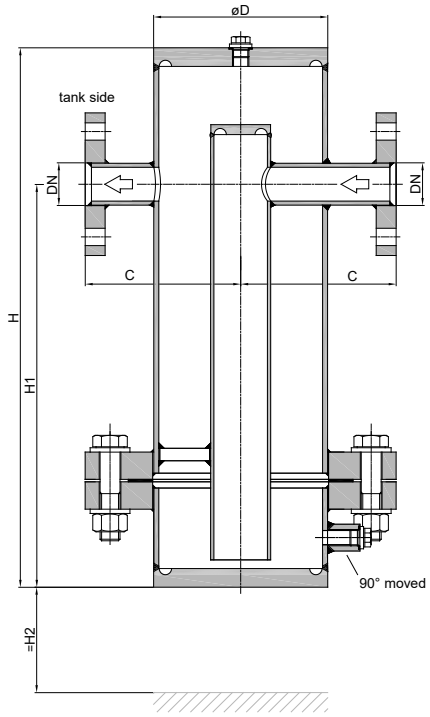
KITO® FL/EO-...-IIB3 (wf)

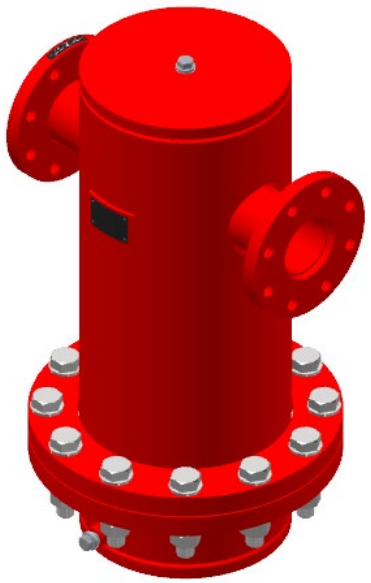
-maintenance-friendly and easy to clean design-

Application

as inline armature, detonation-proof and flameproof, used for installation in **filling pipes** outside from tanks in which inflammable liquids are stored. Tested and approved as detonation flame arrester **type 4.** Approved for all materials of the explosion group IIA1 to IIB3 with MESG ≥ 0.65 mm and an maximum operating temperature of 60 °C. It is only allowed to install pipes of nominal widths ≤ than the nominal widths of the flange. Mounting position is perpendicular. The body of the housing has to be permanently filled with the storage liquid up to the height of the connecting flanges. Equipped with a hexagon head pipe plug for emptying the liquid.

Dimensions (mm)





DN DIN	DN ASME	D	C	H	H1	≥ H2	kg
25 PN 40	**1“**	140	125	445	325	170	25
32 PN 40	**1 ¼“**	140	137,5	480	360	170	27
40 PN 40	**1 ½“**	195	175	565	420	246	51
50 PN 16	**2“**	195	175	570	415	246	54
65 PN 16	**2 ½“**	275	225	720	540	290	90
80 PN 16	**3“**	275	225	720	540	290	92
100 PN 16	**4“**	325	250	800	595	300	121
125 PN 16	**5“**	460	300	1265	915	400	340
150 PN 16	**6“**	460	300	1265	915	400	342
200 PN 10	**8“**	510	350	1520	1100	400	465

Weight refers to the standard design

Example for order

KITO® FL/EO-100-IIB3 (wf)
(design with flange connection DN 100 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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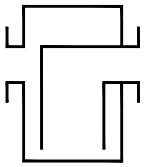
G 13.2 N
Date: 10-2020
Created: Abt. Doku KITO
Design subject to change

Type sheet

Uni-directional in-line liquid detonation flame arrester

KITO® FL/EO-...-IIB3 (wf)

-maintenance-friendly and easy to clean design-



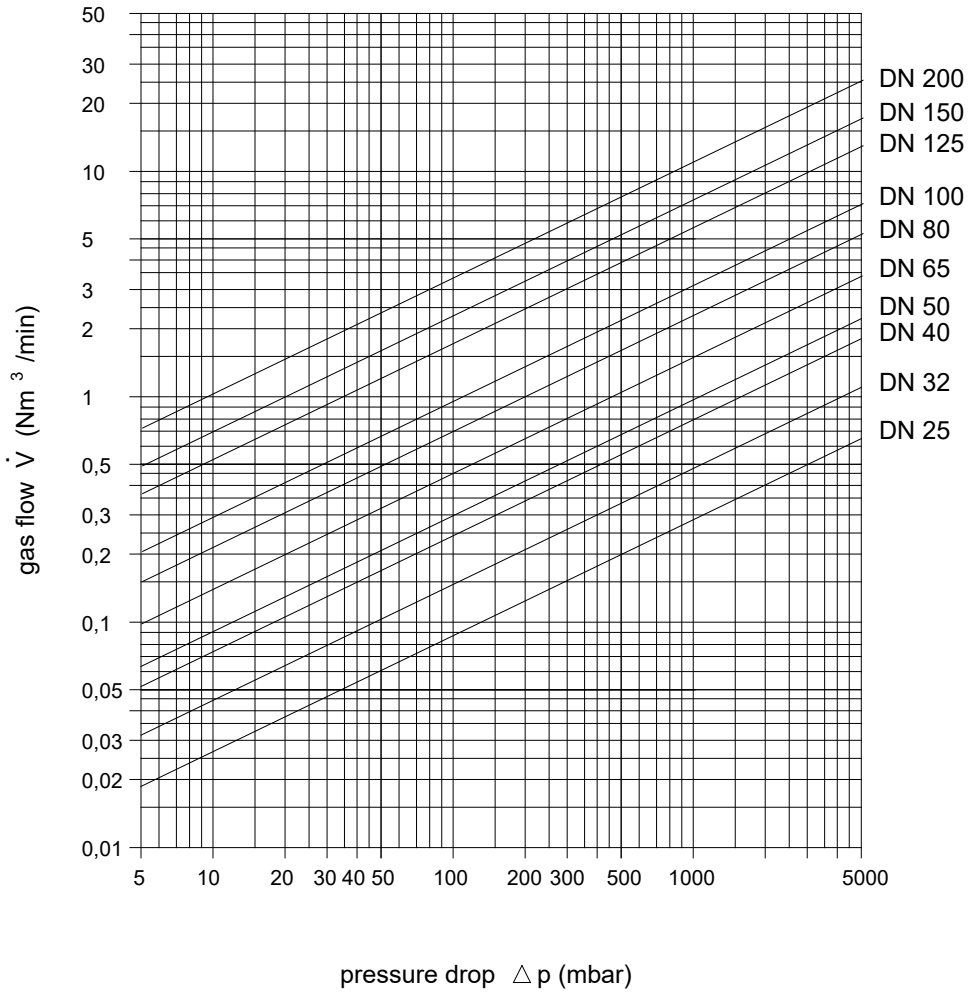
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
flange connection	EN 1092-1 Form A	ASME B16.5 Class 150 RF

Performance curves

The volume flow *V* in Nm^3/min was determined with water according to DIN EN 60534 at a temperature T_n = 15°C and an atmospheric pressure ρ_n = 1013 mbar.
For media of different density the flow rate may be calculated with an appropriate accuracy with this formula :

$$\dot{V}_{liquid} \cong \dot{V}_{water} \cdot \sqrt{\frac{\rho_{water}}{\rho_{liquid}}}$$



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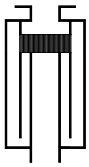
KITO Armaturen GmbH

Type sheet

Uni-directional end-of-line liquid detonation flame arrester

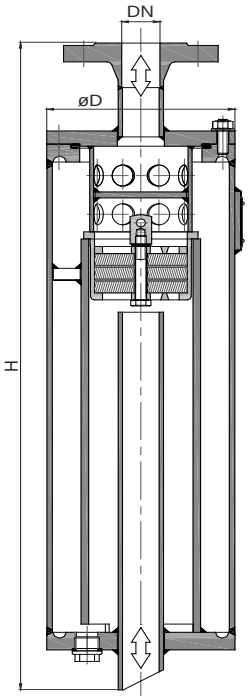
KITO® FL/IN-...-IIB3



Application

As end-of-line armature, detonation-proof and flameproof, used for mounting on the pipe end of filling and discharging pipes inside of tanks, in which inflammable liquids of the explosion groups IIA1 to IIB3 are stored, with a nominal gap width (MESG) of ≥ 0.65 mm and an maximum operating temperature of 60 °C. Equipped with a safety device against complete emptying which is constructed as flame arrester element in order to prevent the suction of sealing liquid. Tested and approved as detonation flame arrester **type 4.** Any direction of flow can be chosen. Particularly suitable for horizontal and underground vessels. Mounting position is perpendicular. It is only allowed to install pipes of nominal widths ≤ than the nominal widths of the flange. The body of the housing has to be permanently filled with storage liquid. Equipped with a hexagon head pipe plug for emptying the liquid. Suction rate *V* max specified in above table may not be exeeded.

Dimensions (mm)



DN DIN	DN ASME	D	H	*V* max [m³/h]	kg
25 PN 40	**1“**	140	552	30	15
32 PN 40	**1 ¼“**	140	552	30	16
40 PN 40	**1 ½“**	219	652	120	40
50 PN 16	**2“**	219	652	120	46
65 PN 16	**2 ½“**	273	854	240	79
80 PN 16	**3“**	273	875	270	81
100 PN 16	**4“**	354	1057	480	131
125 PN 16	**5“**	457	1254	720	287

Weight refers to the standard design

Example for order

KITO® FL/IN-100-IIB3
(design with flange connection DN 100 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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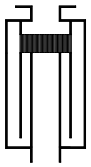
G 14 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Uni-directional end-of-line liquid detonation flame arrester

KITO® FL/IN-...-IIB3



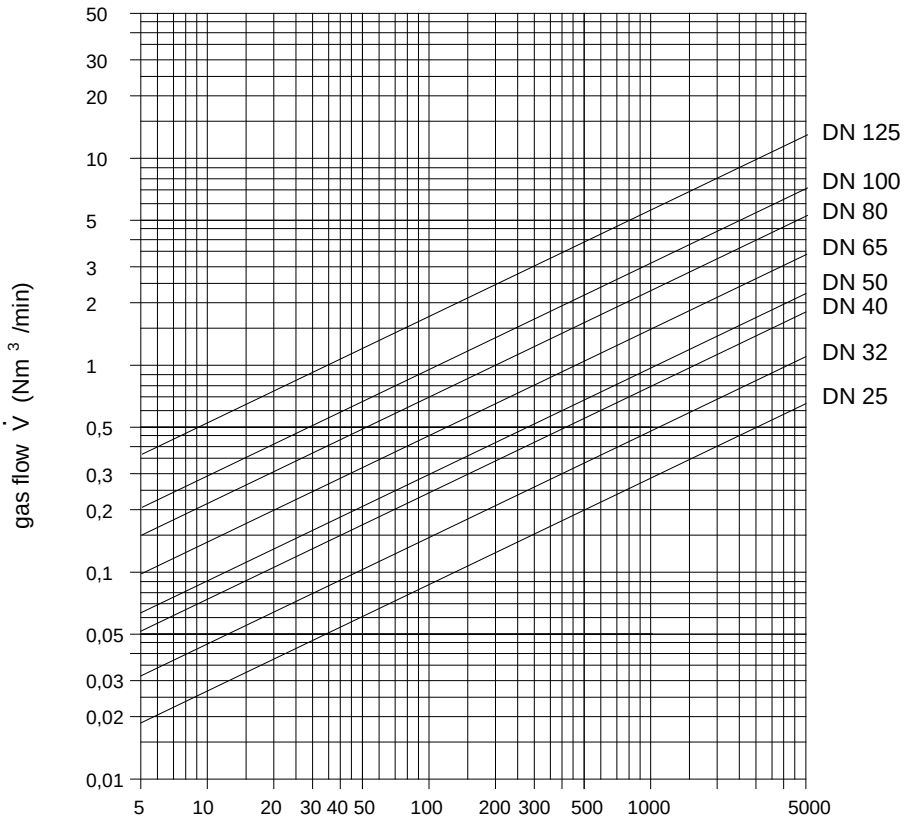
Design

	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket (o-ring)	Viton	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4408 / 1.4310	stainless steel mat. no. 1.4408 / 1.4571
outlet	beveled end	straight end
flange connection	EN 1092-1 Form A	ASME B16.5 Class 150 RF

Performance curves

The volume flow *V* in Nm^3/min was determined with water according to DIN EN 60534 at a temperature T_n = 15°C and an atmospheric pressure ρ_n = 1013 mbar.
For media of different density the flow rate may be calculated with an appropriate accuracy with this formula :

$$\dot{V}_{liquid} \cong \dot{V}_{water} \cdot \sqrt{\frac{\rho_{water}}{\rho_{liquid}}}$$



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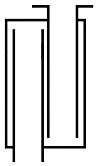
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

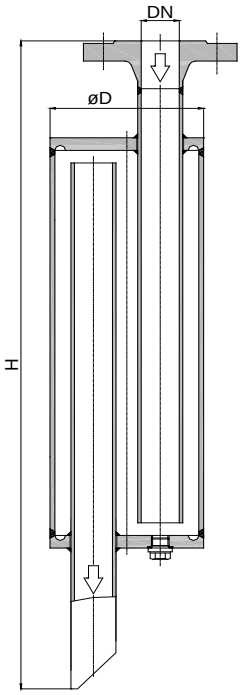
Type sheet
Uni-directional end-of-line liquid detonation flame arrester
KITO® FL/INO-...-IIB3



Application

As end-of-line armature, detonation-proof and flameproof, used for mounting on the pipes end of **filling pipes** inside of tanks, in which inflammable liquids of the explosion groups IIA1 to IIB3 are stored, with a nominal gap width (MESG) of ≥ 0.65 mm and an maximum operating temperature of 60 °C. Tested and approved as detonation flame arrester **type 4.** Particularly suitable for horizontal and underground vessels. Mounting position is perpendicular. It is only allowed to install pipes of nominal widths ≤ than the nominal widths of the flange. The body of the housing has to be permanently filled with storage liquid. Equipped with a hexagon head pipe plug for emptying the liquid.

Dimensions (mm)



DN DIN	DN ASME	D	H	kg
25 PN 40	**1“**	115	500	8
32 PN 40	**1 ¼“**	140	580	11
40 PN 40	**1 ½“**	168	700	19.5
50 PN 16	**2“**	168	700	20
65 PN 16	**2 ½“**	220	825	40
80 PN 16	**3“**	245	925	52
100 PN 16	**4“**	325	1050	95
125 PN 16	**5“**	356	1150	126
150 PN 16	**6“**	500	1450	228
200 PN 10	**8“**	600	1750	427
250 PN 10	**10“**	700	2100	603

Weight refers to the standard design

Example for order

KITO® FL/INO-100-IIB3
(design with flange connection DN 100 PN 16)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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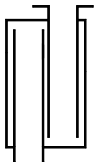
KITO Armaturen GmbH

Type sheet

Uni-directional end-of-line liquid detonation flame arrester

KITO® FL/INO-...-IIB3



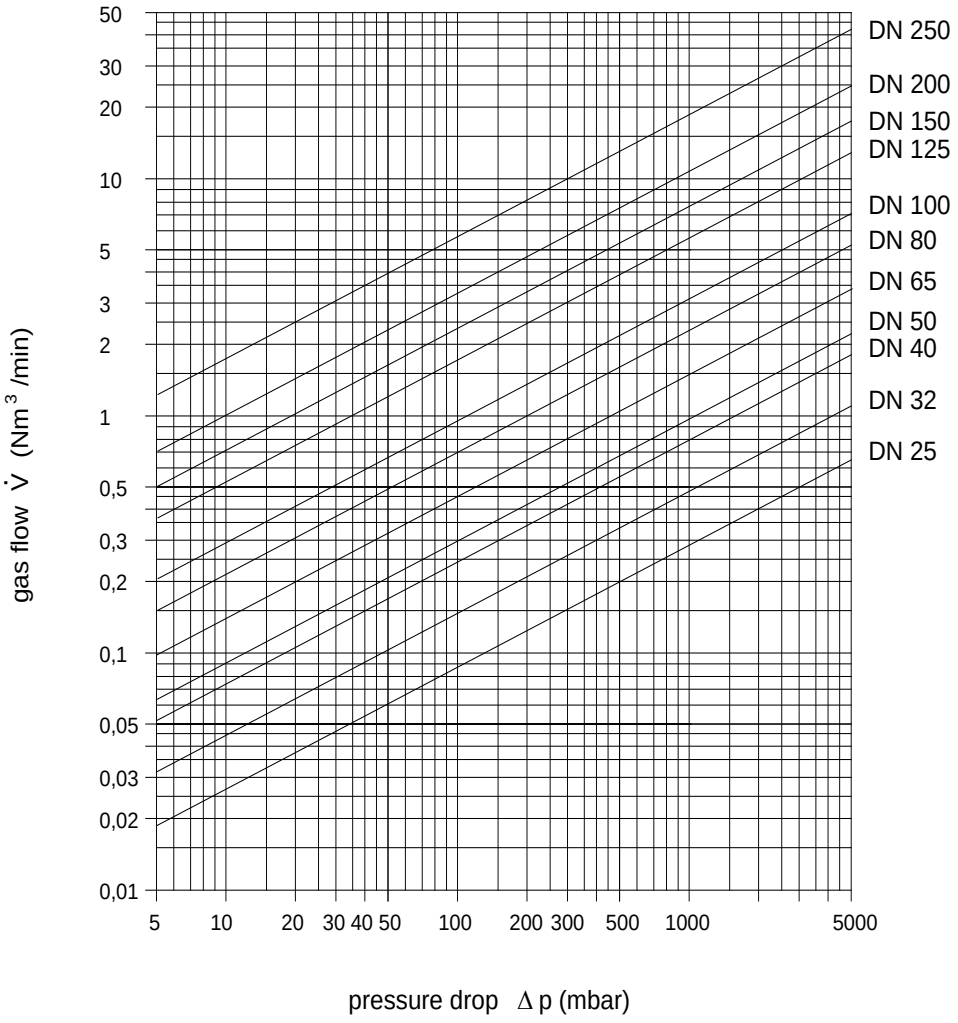
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
outlet	beveled end	straight end
flange connection	EN 1092-1 Form A	ASME B16.5 Class 150 RF

Performance curves

The volume flow *V* in Nm^3/min was determined with water according to DIN EN 60534 at a temperature T_n = 15°C and an atmospheric pressure ρ_n = 1013 mbar.
For media of different density the flow rate may be calculated with an appropriate accuracy with this formula :

$$\dot{V}_{liquid} \cong \dot{V}_{water} \cdot \sqrt{\frac{\rho_{water}}{\rho_{liquid}}}$$



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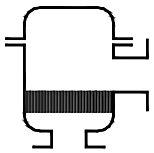
KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester, short-time burning proof

KITO® FDN-Det4-IIA-…-1.2

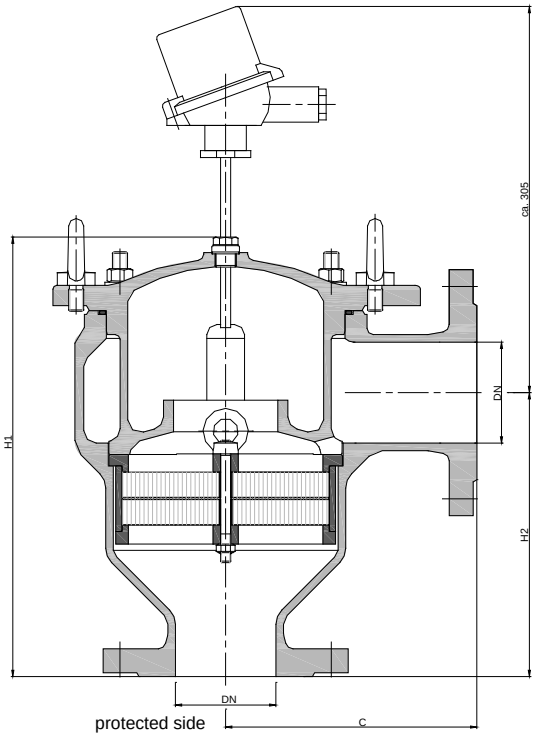
KITO® FDN-Det4-IIA-…-1.2-T



Application

For installation into pipes to protect containers and components against stable detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4**. Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Working unidirectional in pipes, whereby an operating pressure of 1.2 bar abs. and an maximum operating temperature of 60 °C must not be exceeded. Provided with one temperature sensor (PT 100) the armature is certified against short time burning from one side. The installation is not dependent on the position and both directions of flow are possible. During installation, please observe the direction of detonation and the indication „protected side“.

Dimensions (mm)



DN		C	H1	H2	kg
DIN	ASME				
25 PN 40	1“	125	206	140	
32 PN 40	1 ¼“	125	206	140	
40 PN 40	1 ½“	153	284	183	
50 PN 16	2“	155	286	185	
65 PN 16	2 ½“	198	346	223	
80 PN 16	3“	200	348	225	
100 PN 16	4“	250	415	290	

Weight refers to the standard design

Example for order

KITO® FDN-Det4-IIA-50-1.2-T
(design with flange connection DN 50 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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G 18.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

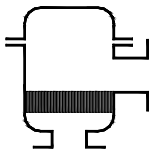
KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester, short-time burning proof

KITO® FDN-Det4-IIA-…-1.2

KITO® FDN-Det4-IIA-…-1.2-T



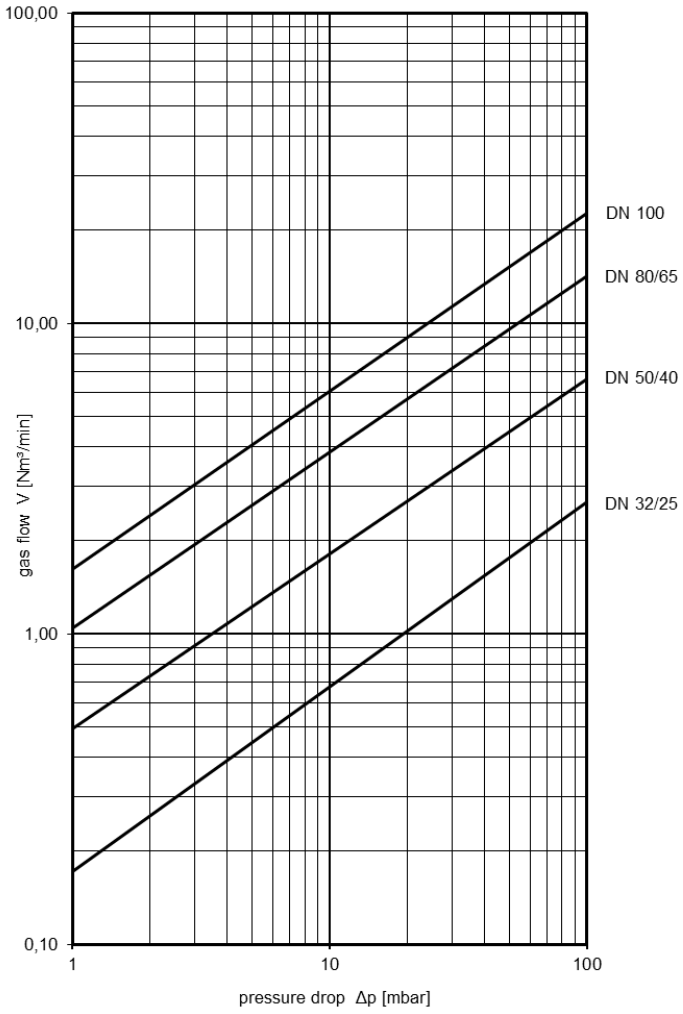
Design

	standard	optionally
housing / cover	cast steel 1.0619	cast steel 1.4408
gasket (o-ring)	Viton	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4571	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 Form B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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Date: 05-2018
Created: Abt. Doku KITO

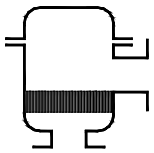
KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester, short-time burning proof

KITO® FDN-Det4-IIB3-…-1.2

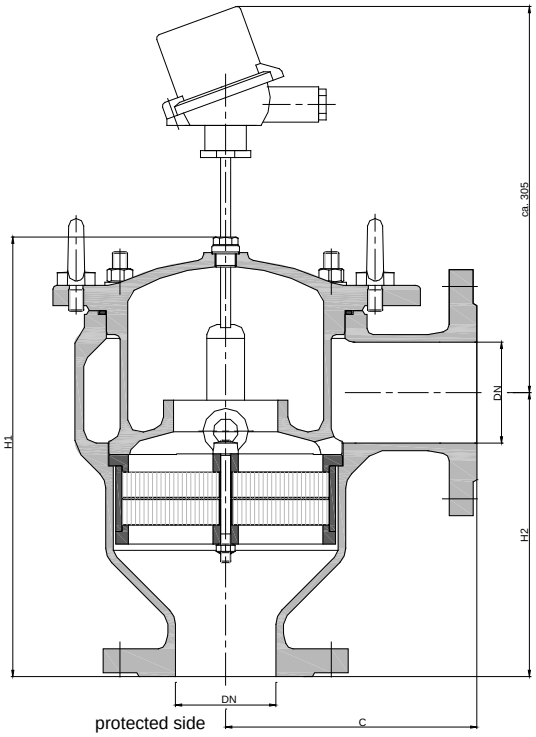
KITO® FDN-Det4-IIB3-…-1.2-T



Application

For installation into pipes to protect containers and components against stable detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4**. Approved for all substances of explosion groups IIA1 to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Working unidirectional in pipes, whereby an operating pressure of 1.2 bar abs. and an maximum operating temperature of 60 °C must not be exceeded. Provided with one temperature sensor (PT 100) the armature is certified against short time burning from one side. The installation is not dependent on the position and both directions of flow are possible. During installation, please observe the direction of detonation and the indication „protected side“.

Dimensions (mm)



DN		C	H1	H2	kg
DIN	ASME				
25 PN 40	1“	125	206	140	
32 PN 40	1 ¼“	125	206	140	
40 PN 40	1 ½“	153	284	183	
50 PN 16	2“	155	286	185	
65 PN 16	2 ½“	198	346	223	
80 PN 16	3“	200	348	225	
100 PN 16	4“	250	415	290	

Weight refers to the standard design

Example for order

KITO® FDN-Det4-IIB3-50-1.2-T
(design with flange connection DN 50 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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G 18.2 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

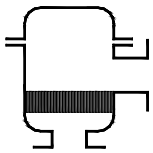
KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester, short-time burning proof

KITO® FDN-Det4-IIB3-…-1.2

KITO® FDN-Det4-IIB3-…-1.2-T



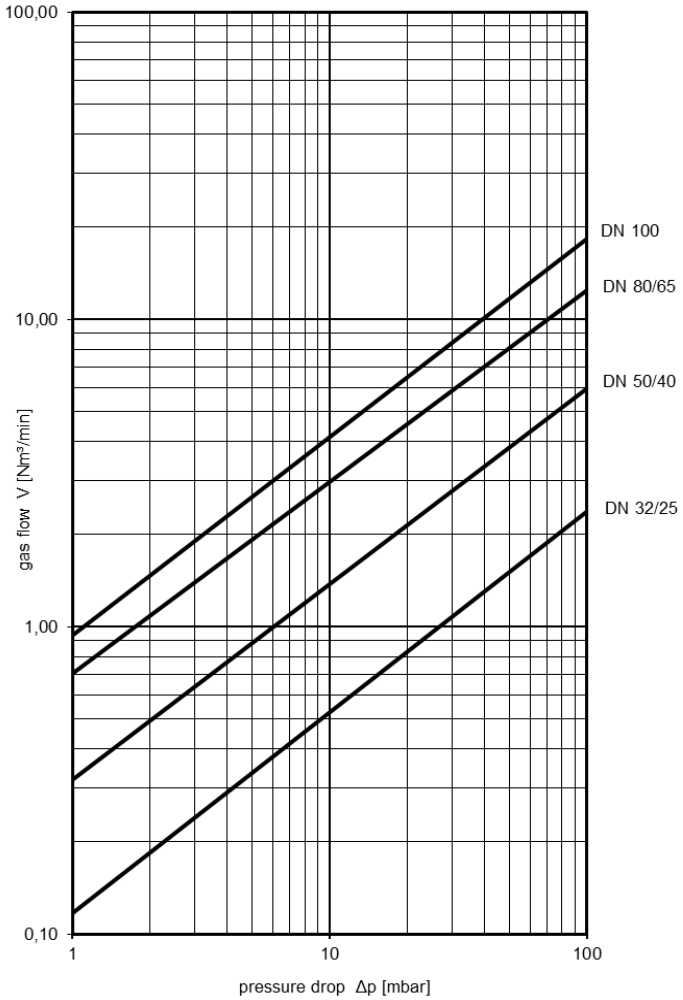
Design

	standard	optionally
housing / cover	cast steel 1.0619	cast steel 1.4408
gasket (o-ring)	Viton	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4571	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 Form B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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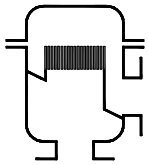
KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester, short-time burning proof

KITO® FD4-Det4-IIB1-…-1.2

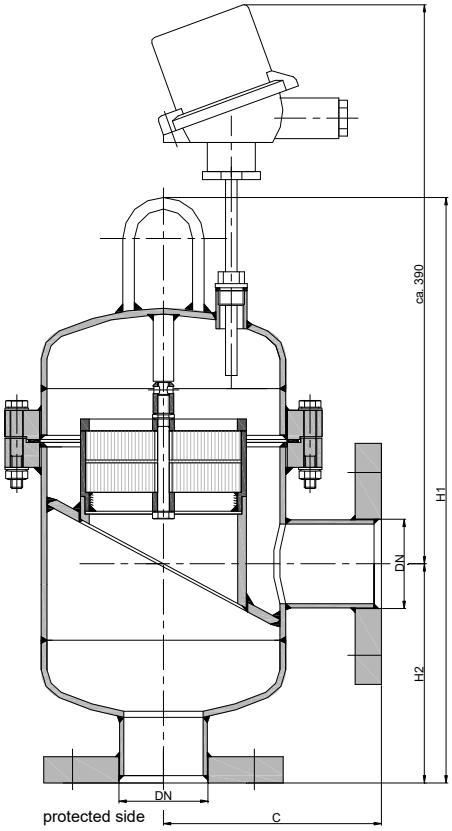
KITO® FD4-Det4-IIB1-…-1.2-T

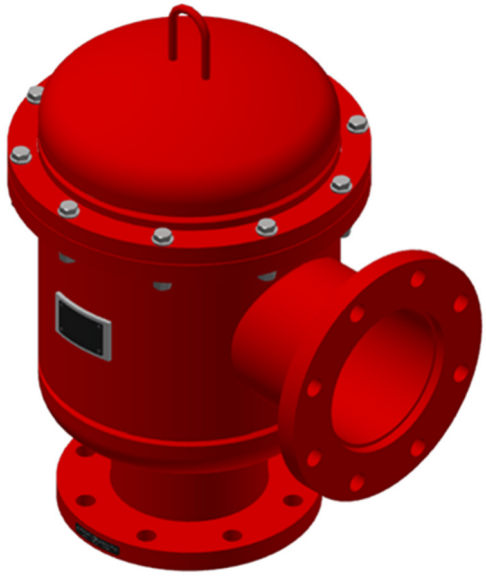


Application

For installation into pipes to protect containers and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIB1 with a maximum experimental safe gap (MESG) ≥ 0.85 mm. Working unidirectional in pipes, whereby an operating pressure of 1.2 bar abs. and an maximum operating temperature of 60 °C must not be exceeded. Provided with one temperature sensor (PT 100) the armature is certified against short time burning from one side. The installation is not dependent on the position and both directions of flow are possible. During installation, please observe the direction of detonation and the indication „protected side“.

Dimensions (mm)





Size DN 50 / 2“: the dimensions C und H2 can be adopted to older devices (e.g. KITO® xRd/T) in case of replacement.

DN		C	H1	H2	kg
DIN	ASME				
25 PN 40	1“	150	400	150	18.5
32 PN 40	1 ¼“				19
40 PN 40	1 ½“				20
50 PN 16	2“				21

Weight refers to the standard design

Example for order

KITO® FD4-Det4-IIB1-50-1.2-T
(design with flange connection DN 50 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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G 19.3 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

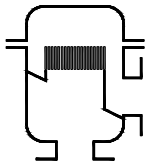
KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester, short-time burning proof

KITO® FD4-Det4-IIB1-…-1.2

KITO® FD4-Det4-IIB1-…-1.2-T



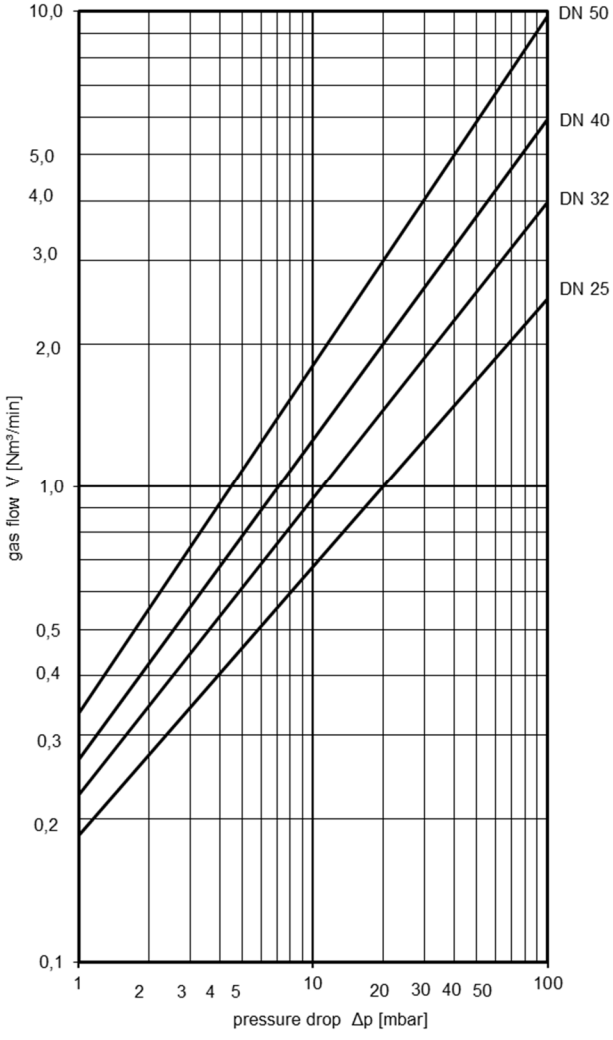
Design

	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4571	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 Form B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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G 19.3 N
Date: 05-2018
Created: Abt. Doku KITO

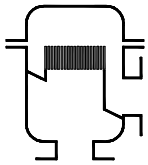
KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester, short-time burning proof

KITO® FD4-Det4-IIB-…

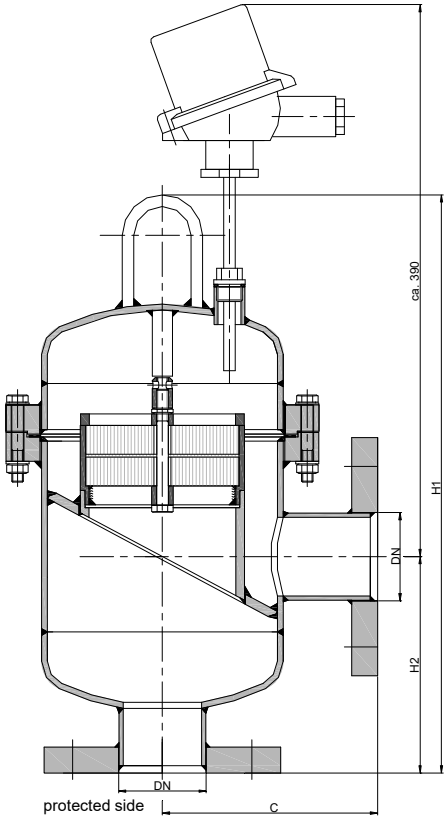
KITO® FD4-Det4-IIB-…-T

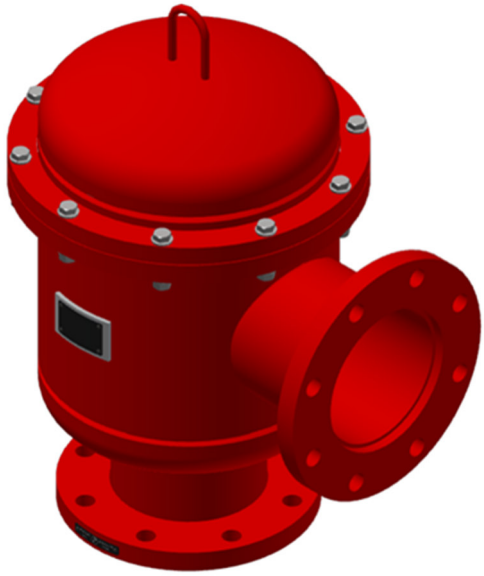


Application

For installation into pipes to protect containers and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4**. Approved for all substances of explosion groups IIA1 to IIB with a maximum experimental safe gap (MESG) ≥ 0.5 mm. Working unidirectional in pipes, whereby an operating pressure of 1.1 bar abs. and an maximum operating temperature of 60 °C must not be exceeded. Provided with one temperature sensor (PT 100) the armature is certified against short time burning from one side. The installation is not dependent on the position and both directions of flow are possible. During installation, please observe the direction of detonation and the indication „protected side“.

Dimensions (mm)





DN		C	H1	H2	kg
DIN	ASME				
25 PN 40	1“	150	400	150	18.5
32 PN 40	1 ¼“				19
40 PN 40	1 ½“				20
50 PN 16	2“				21

Weight refers to the standard design

Example for order

KITO® FD4-Det4-IIB-50-T
(design with flange connection DN 50 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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G 19.4 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

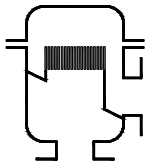
KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester, short-time burning proof

KITO® FD4-Det4-IIB-…

KITO® FD4-Det4-IIB-…-T



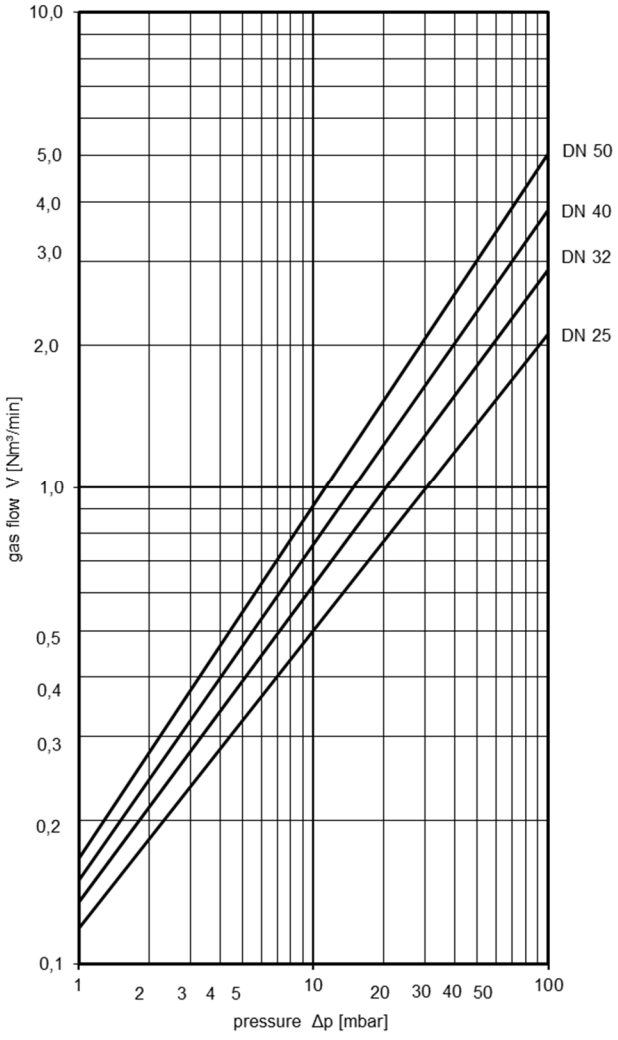
Design

	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4571	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 Form B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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G 19.4 N
Date: 05-2018
Created: Abt. Doku KITO

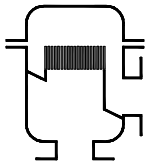
KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester, short-time burning proof

KITO® FD4-Det4-IIB3-…-1.2

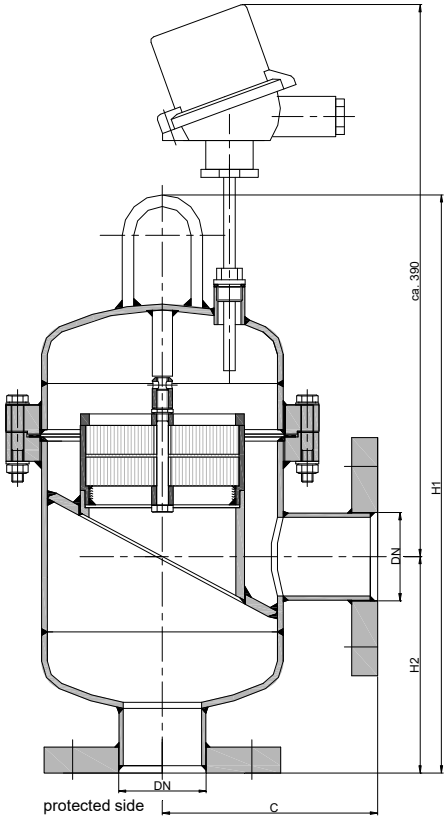
KITO® FD4-Det4-IIB3-…-1.2-T

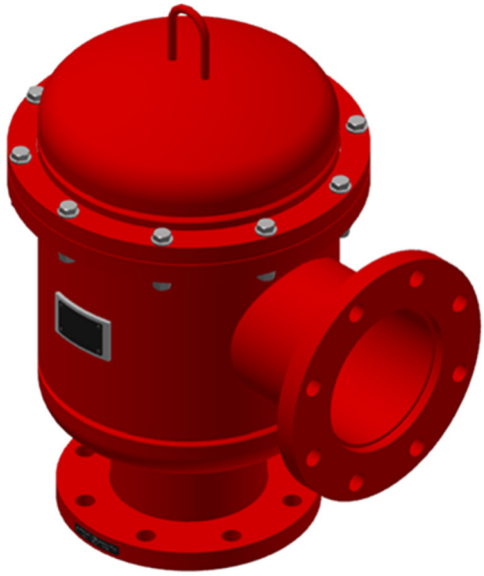


Application

For installation into pipes to protect containers and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4**. Approved for all substances of explosion groups IIA1 to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Working unidirectional in pipes, whereby an operating pressure of 1.2 bar abs. and an maximum operating temperature of 60 °C must not be exceeded. Provided with one temperature sensor (PT 100) the armature is certified against short time burning from one side.The installation is not dependent on the position and both directions of flow are possible. During installation, please observe the direction of detonation and the indication „protected side“.

Dimensions (mm)





DN		C	H1	H2	kg
DIN	ASME				
25 PN 40	1“	150	400	150	18.5
32 PN 40	1 ¼“				19
40 PN 40	1 ½“				20
50 PN 16	2“				21

Weight refers to the standard design

Example for order

KITO® FD4-Det4-IIB3-50-1.2-T
(design with flange connection DN 50 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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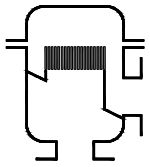
KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester, short-time burning proof

KITO® FD4-Det4-IIB3-…-1.2

KITO® FD4-Det4-IIB3-…-1.2-T



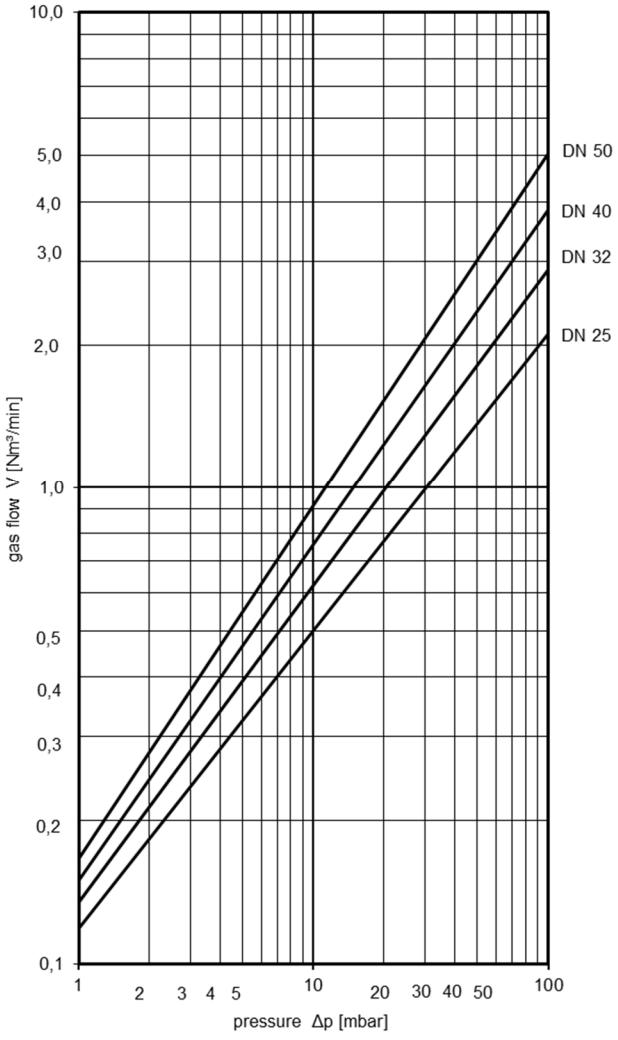
Design

	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4571	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 Form B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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G 19.5 N
Date: 05-2018
Created: Abt. Doku KITO

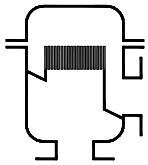
KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester, short-time burning proof

KITO® FD6-Det4-IIB1-…-1.2

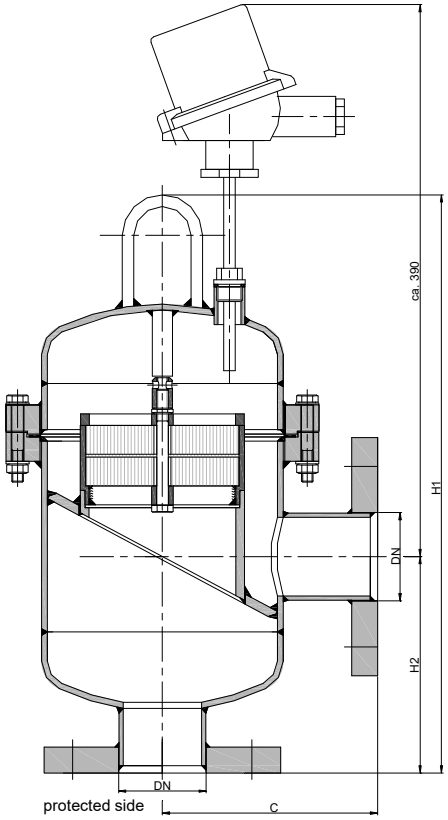
KITO® FD6-Det4-IIB1-…-1.2-T

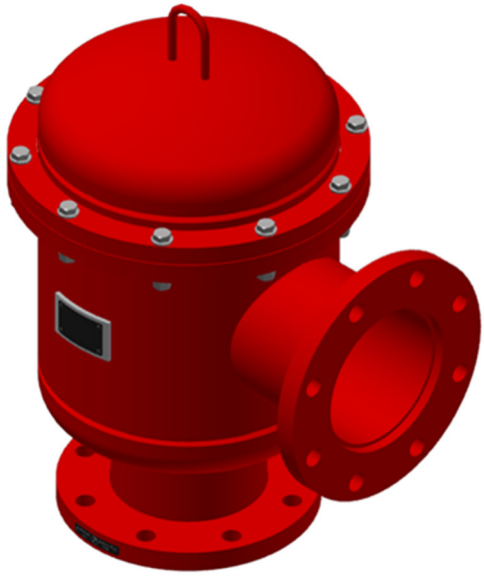


Application

For installation into pipes to protect containers and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIB1 with a maximum experimental safe gap (MESG) ≥ 0.85 mm. Working unidirectional in pipes, whereby an operating pressure of 1.2 bar abs. and an maximum operating temperature of 60 °C must not be exceeded. Provided with one temperature sensor (PT 100) the armature is certified against short time burning from one side. The installation is not dependent on the position and both directions of flow are possible. During installation, please observe the direction of detonation and the indication „protected side“.

Dimensions (mm)





Size DN 100 / 4“: the dimensions C und H2 can be adopted to older devices (e.g. KITO® xRd/T) in case of replacement.

DN		C	H1	H2	kg
DIN	**ASME**				
50 PN 16	**2“**	215	570	215	54
65 PN 16	**2 ½“**				56
80 PN 16	**3“**				57
100 PN 16	**4“**				63.5

Weight refers to the standard design

Example for order

KITO® FD6-Det4-IIB1-50-1.2-T
(design with flange connection DN 50 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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G 20.3 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

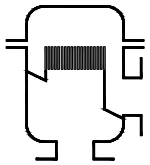
KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester, short-time burning proof

KITO® FD6-Det4-IIB1-…-1.2

KITO® FD6-Det4-IIB1-…-1.2-T



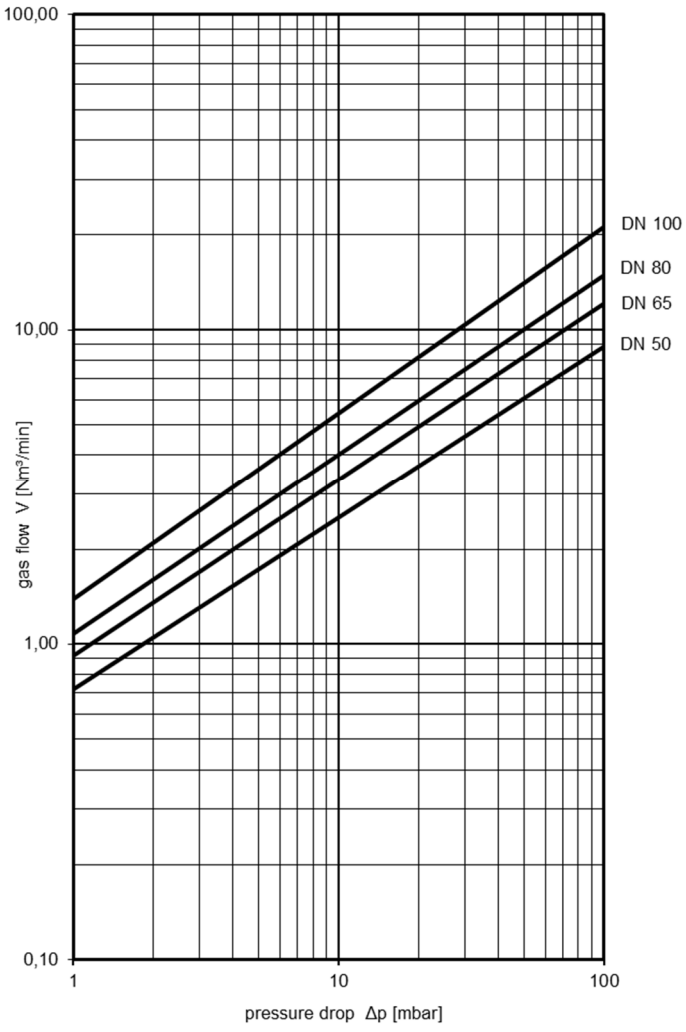
Design

	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4571	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 Form B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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Design subject to change

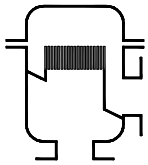
KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester, short-time burning proof

KITO® FD6-Det4-IIB3-…-1.2

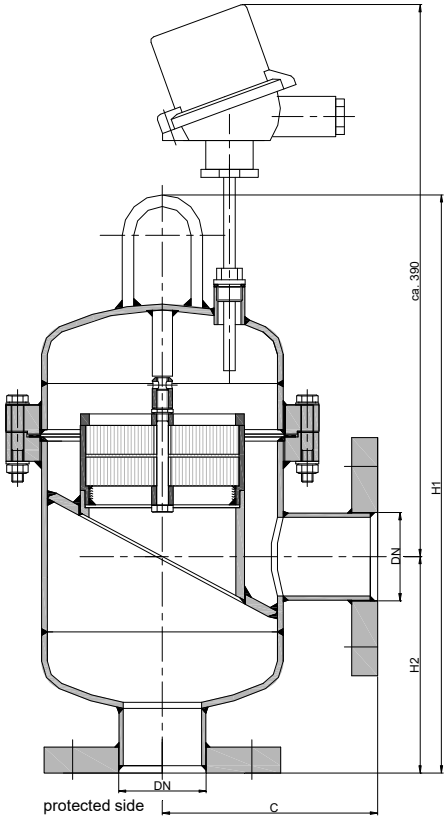
KITO® FD6-Det4-IIB3-…-1.2-T

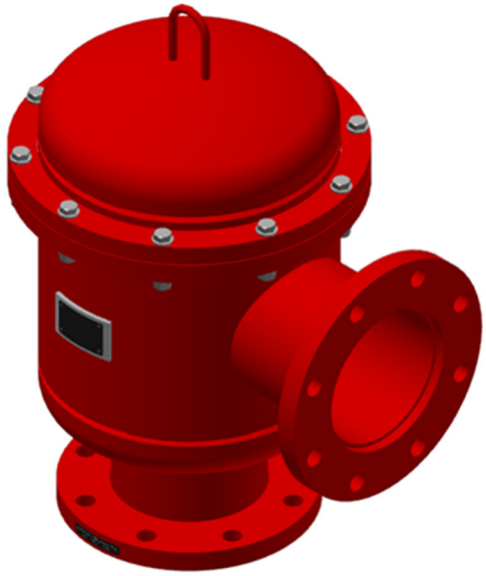


Application

For installation into pipes to protect containers and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4**. Approved for all substances of explosion groups IIA1 to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Working unidirectional in pipes, whereby an operating pressure of 1.2 bar abs. and an maximum operating temperature of 60 °C must not be exceeded. Provided with one temperature sensor (PT 100) the armature is certified against short time burning from one side. The installation is not dependent on the position and both directions of flow are possible. During installation, please observe the direction of detonation and the indication „protected side“.

Dimensions (mm)





DN		C	H1	H2	kg
DIN	ASME				
50 PN 16	2“	215	585	215	54
65 PN 16	2 ½“				56
80 PN 16	3“				57
100 PN 16	4“				63.5

Weight refers to the standard design

Example for order

KITO® FD6-Det4-IIB3-50-1.2-T
(design with flange connection DN 50 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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G 20.5 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

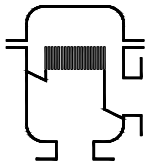
KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester, short-time burning proof

KITO® FD6-Det4-IIB3-…-1.2

KITO® FD6-Det4-IIB3-…-1.2-T



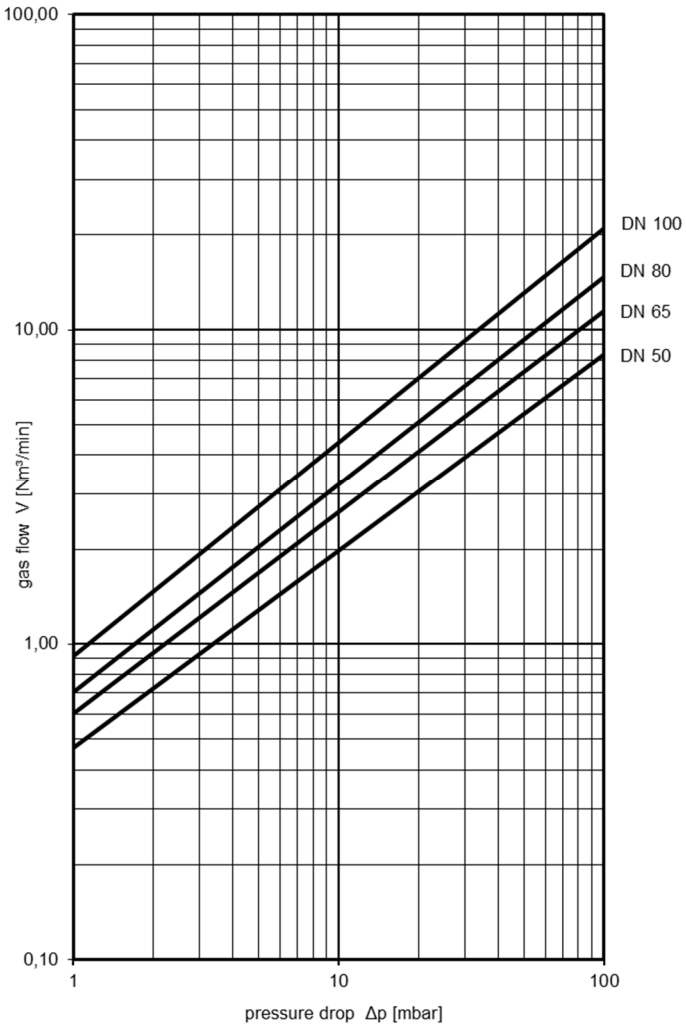
Design

	standard	optionally
housing / cover	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571 / 1.4571	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 Form B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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Date: 05-2018
Created: Abt. Doku KITO

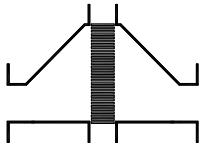
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-I-…/…-2.5

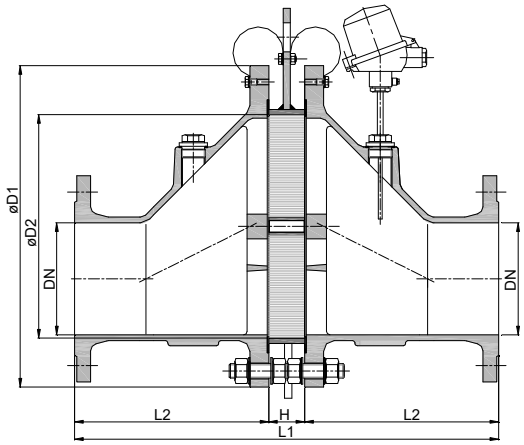
KITO® EFA-Det4-I-…/…-2.5-T (-TT)

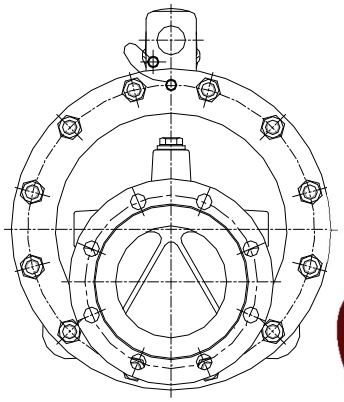


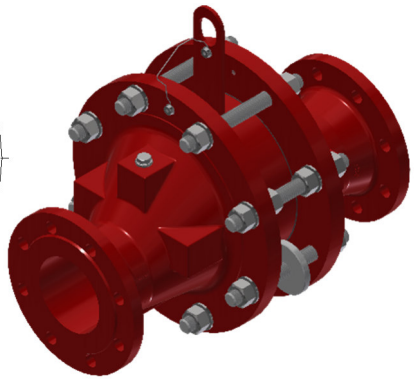
Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion group IIA1 with a maximum experimental safe gap (MESG) ≥ 1.14 mm. Bi-directionally working in pipes, whereby an operating pressure of 2.5 bar abs. and an operating temperature of 60 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	290	50	120	12
	32 PN 40	1 ¼“						13
100	40 PN 40	1 ½“	220	106	340	50	145	24
	50 PN 16	2“						26
150	50 PN 16	2“	285	159	400	50	175	42
	65 PN 16	2 ½“						43
	80 PN 16	3“						45
200	80 PN 16	3“	340	206	502	102	200	70
	100 PN 16	4“						71
300	100 PN 16	4“	445	308	642	102	270	119
	125 PN 16	5“						125
	150 PN 16	6“						128
400	150 PN 16	6“	565	388	732	102	315	207
	200 PN 10	8“						223
500	200 PN 10	8“	670	485	862	102	380	312
	250 PN 10	10“						330
600	250 PN 10	10“	780	584	1002	102	450	440
	300 PN 10	12“						456

Weight refers to the standard design

Example for order

KITO® EFA-Det4-I-100/40-2.5-T
(design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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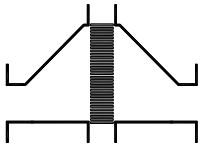
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-I-…/…-2.5

KITO® EFA-Det4-I-…/…-2.5-T (-TT)



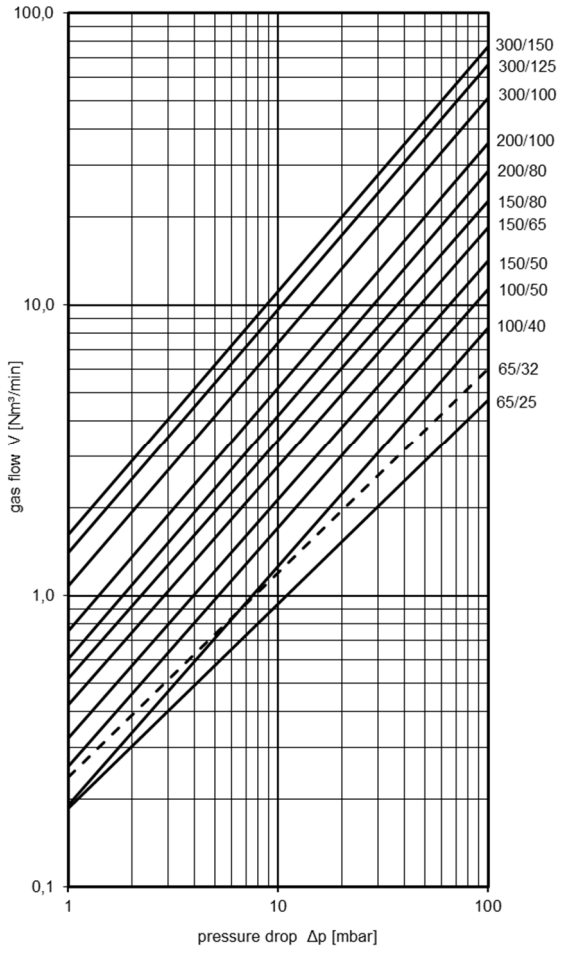
Design

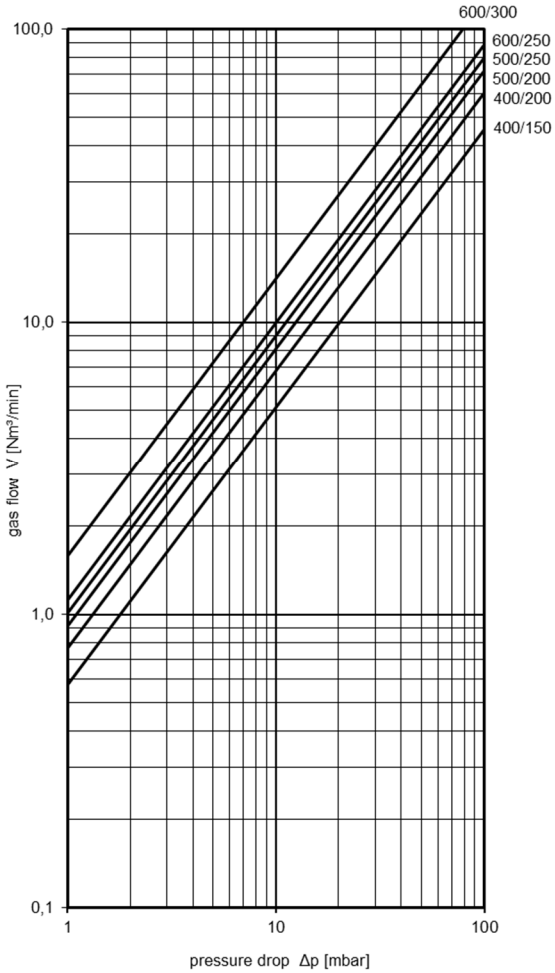
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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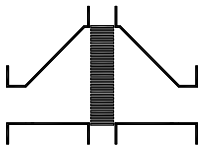
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-1.2

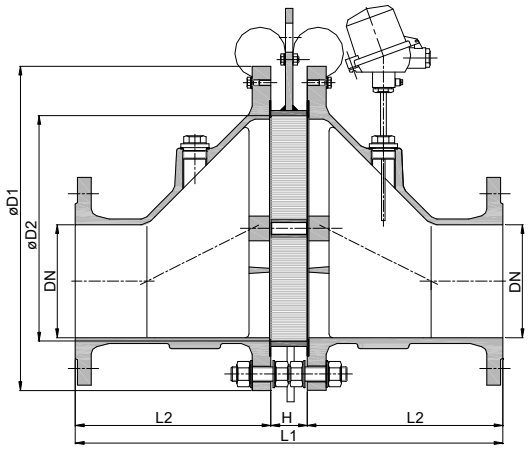
KITO® EFA-Det4-IIA-…/…-1.2-T (-TT)

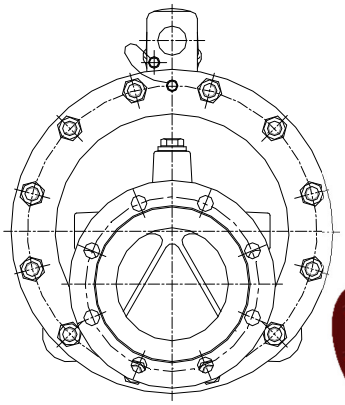


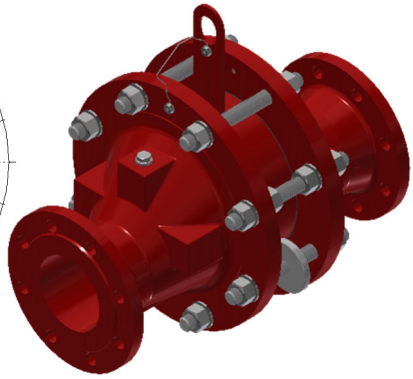
Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	290	50	120	12
	32 PN 40	1 ¼“						13
100	40 PN 40	1 ½“	220	106	340	50	145	24
	50 PN 16	2“						26
150	50 PN 16	2“	285	159	400	50	175	41
	65 PN 16	2 ½“						43
	80 PN 16	3“						44
200	80 PN 16	3“	340	206	464	64	200	64
	100 PN 16	4“						65
300	100 PN 16	4“	445	308	604	64	270	107
	125 PN 16	5“						113
	150 PN 16	6“						116
400	150 PN 16	6“	565	388	694	64	315	173
	200 PN 10	8“						189
500	200 PN 10	8“	670	485	824	64	380	260
	250 PN 10	10“						278
600	250 PN 10	10“	780	584	964	64	450	367
	300 PN 10	12“						383
800	350 PN 10	14“	1015	810	1350	110	620	
	400 PN 10	16“						

Weight refers to the standard design

Example for order

KITO® EFA-Det4-IIA-100/40-1.2-T
(design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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G 22 N
Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

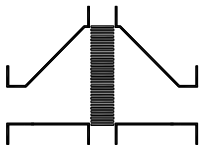
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-1.2

KITO® EFA-Det4-IIA-…/…-1.2-T (-TT)



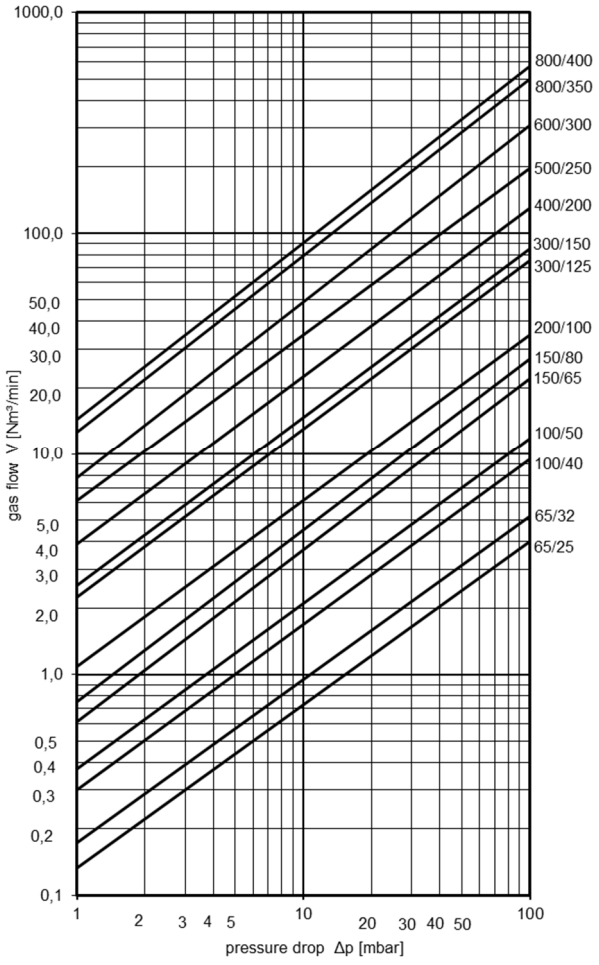
Design

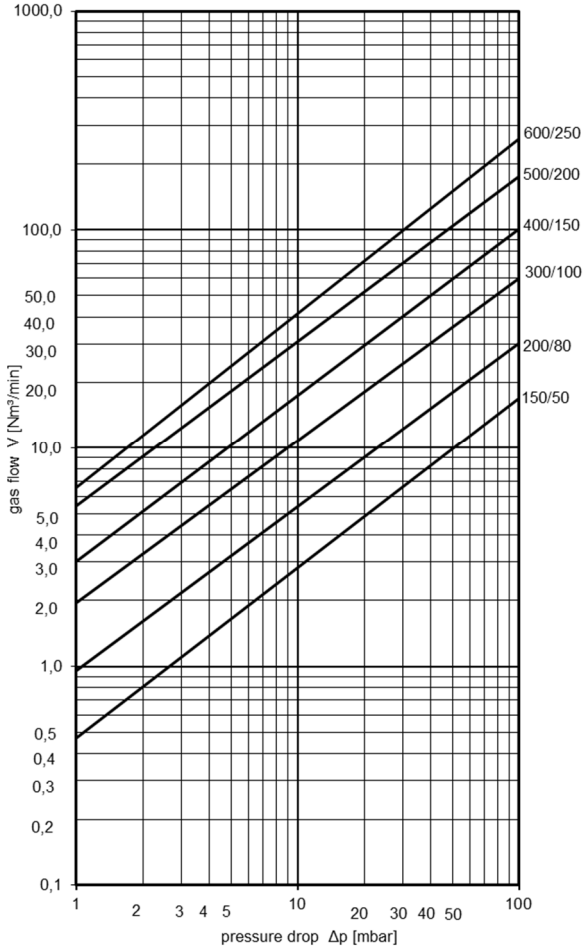
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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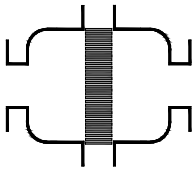
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® CFA-Det4-IIA-…/…-1.2

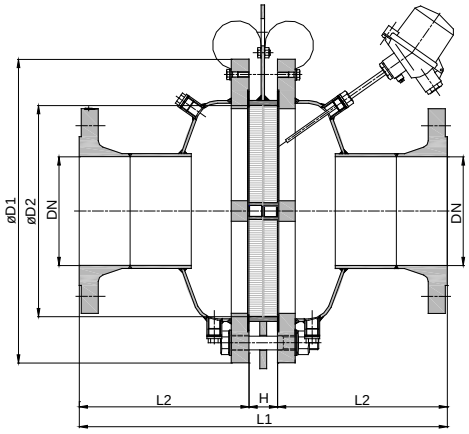
KITO® CFA-Det4-IIA-…/…-1.2-T (-TT)

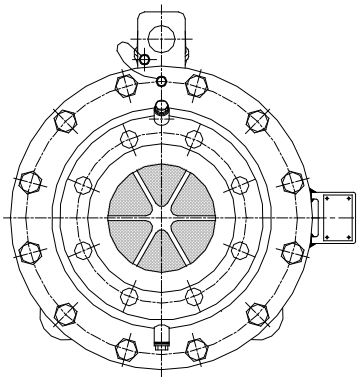


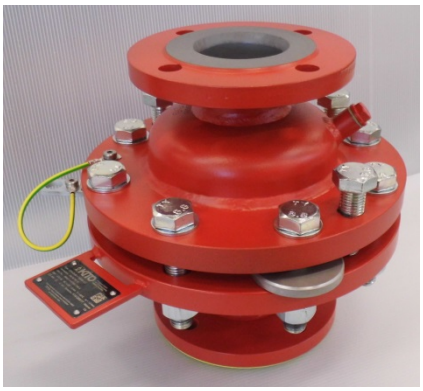
Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected. Equipped with two head pipes plugs for draining condensate.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
150	50 PN 16	2“	285	159	310	50	130	33
	65 PN 16	2 ½“						33
	80 PN 16	3“						35
200	80 PN 16	3“	340	206	374	64	155	50
	100 PN 16	4“						52
300	100 PN 16	4“	445	308	564	64	250	87
	125 PN 16	5“						95
	150 PN 16	6“						98
400	150 PN 16	6“	565	388	664	64	300	141
	200 PN 10	8“						149
500	200 PN 10	8“	670	485	824	64	380	204
	250 PN 10	10“						212
600	250 PN 10	10“	780	584	964	64	450	298
	300 PN 10	12“						303
800	350 PN 10	14“	1015	815	1010	110	450	
	400 PN 10	16“						

Weight refers to the standard design

Example for order

KITO® CFA-Det4-IIA-150/50-1.2-T
(design NG 150 with flange connection DN 50 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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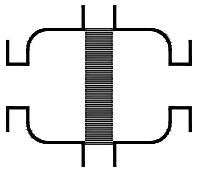
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® CFA-Det4-IIA-…/…-1.2

KITO® CFA-Det4-IIA-…/…-1.2-T (-TT)



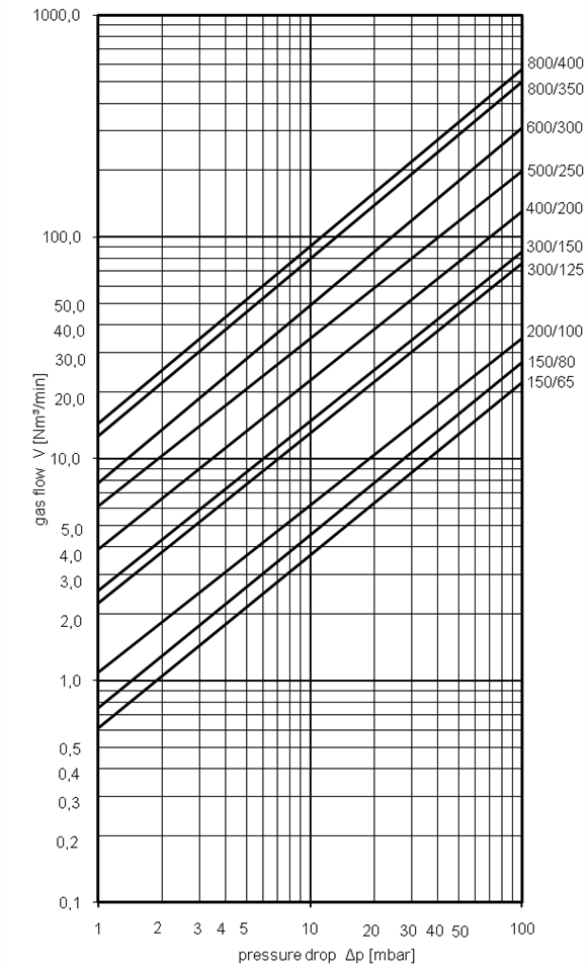
Design

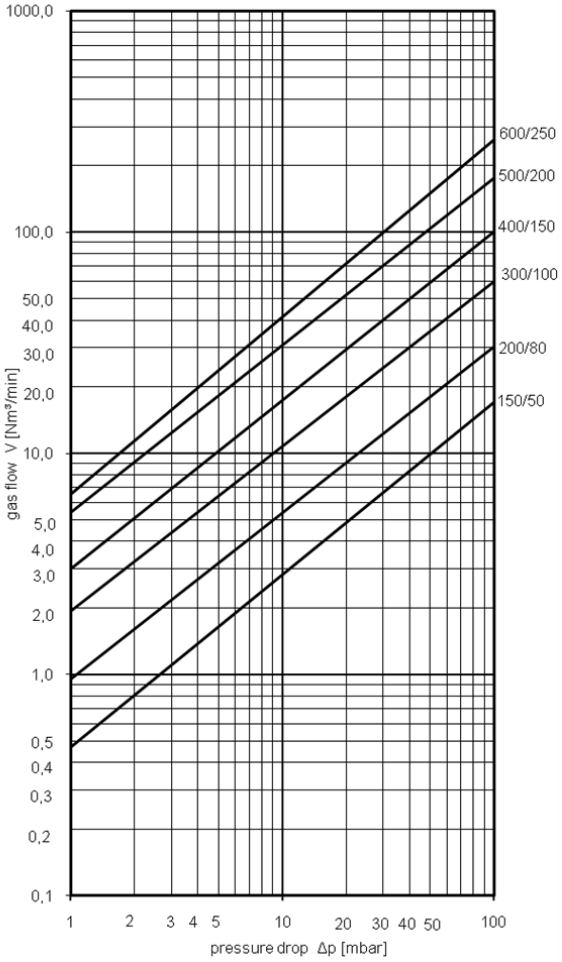
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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Date: 05-2018
Created: Abt. Doku KITO

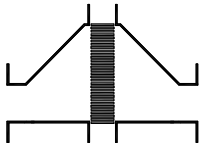
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-X10

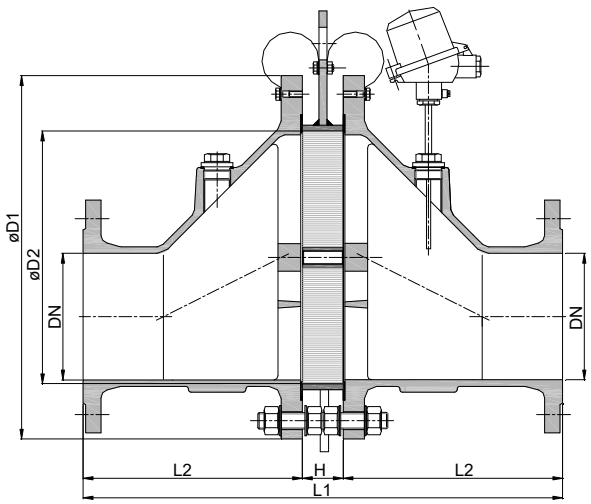
KITO® EFA-Det4-IIA-…/…-X10-T (-TT)

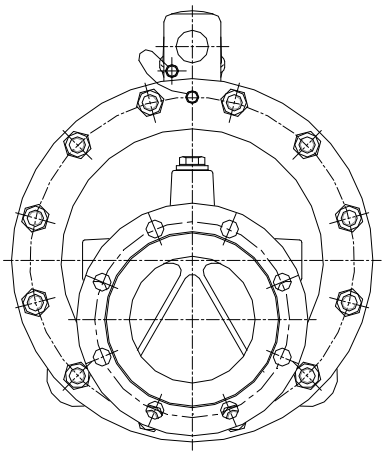


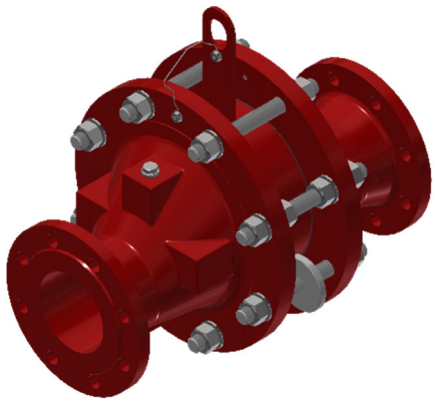
Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4**. Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.1 bar abs. and an operating temperature of 100 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. If equipped with a temperature sensor (PT 100) a protection against stabilized burning is given from one resp. both sides. The devices are tested and approved with different burning times depending on their sizes (NG 100: T_{BT}= 30 min, NG 500: T_{BT}= 1 min).

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
100	40 PN 40	1 ½“	220	106	340	50	145	24
	50 PN 16	2“						26
500	200 PN 10	8“	670	485	824	64	380	260
	250 PN 10	10“						278

Weight refers to the standard design

Example for order

KITO® EFA-Det4-IIA-100/40-X10-T
(design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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G 22.2 N
Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

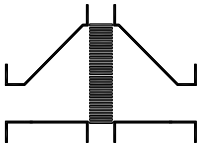
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-X10

KITO® EFA-Det4-IIA-…/…-X10-T (-TT)



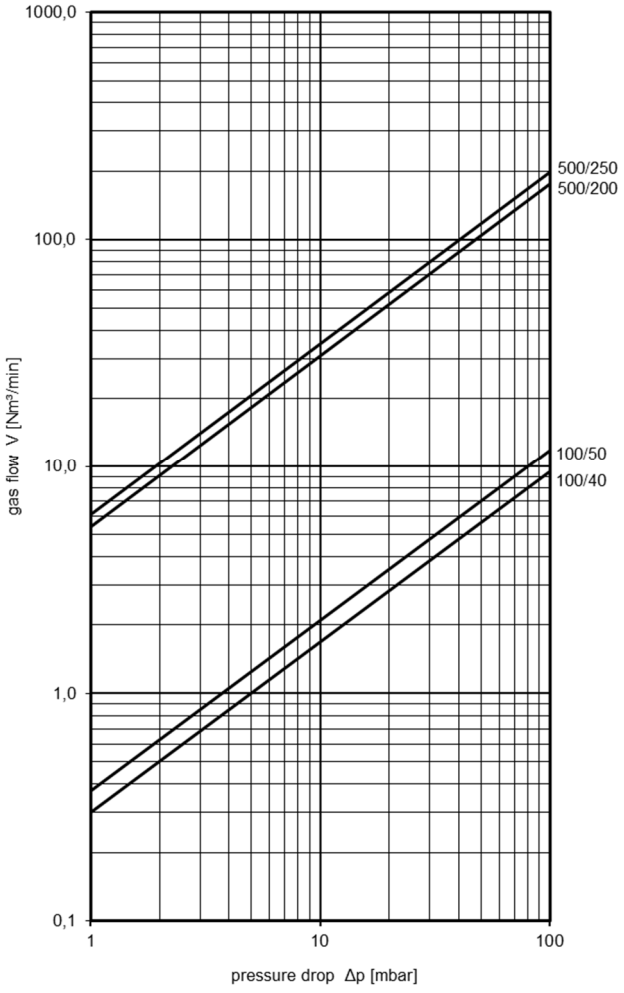
Design

	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (NG 100 galvanized)	stainless steel mat. no. 1.4571
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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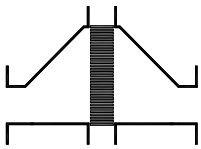
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-X16

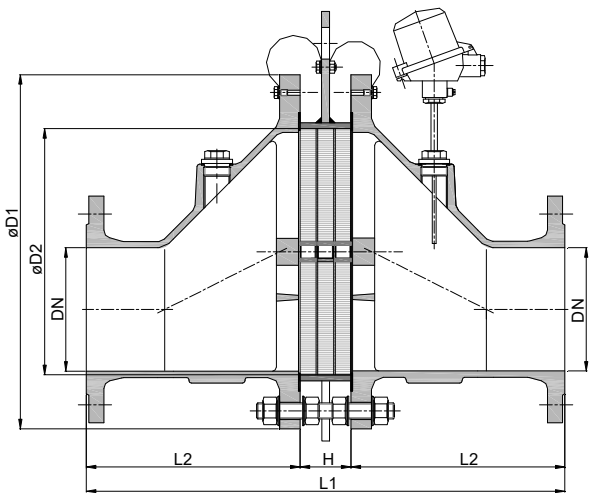
KITO® EFA-Det4-IIA-…/…-X16-T (-TT)

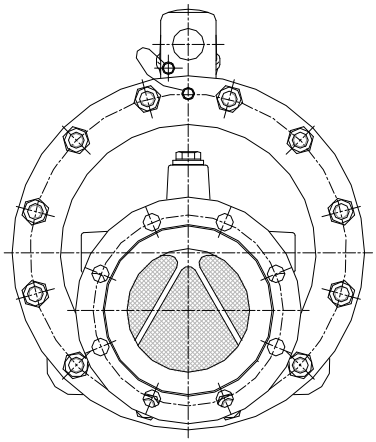


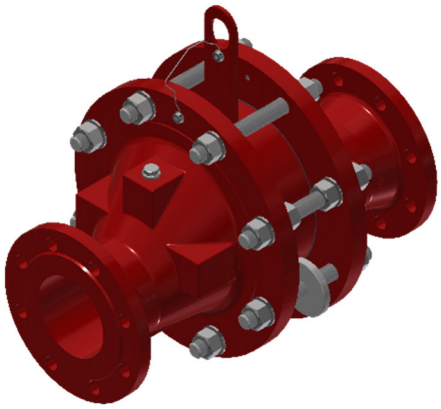
Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.1 bar abs. and an operating temperature of 160 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
100	40 PN 40	1 ½“	220	106	354	64	145	25
	50 PN 16	2“						27

Weight refers to the standard design

Example for order

KITO® EFA-Det4-IIA-100/40-X16-T
(design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

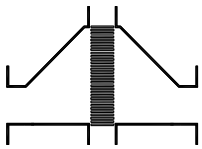
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-X16

KITO® EFA-Det4-IIA-…/…-X16-T (-TT)



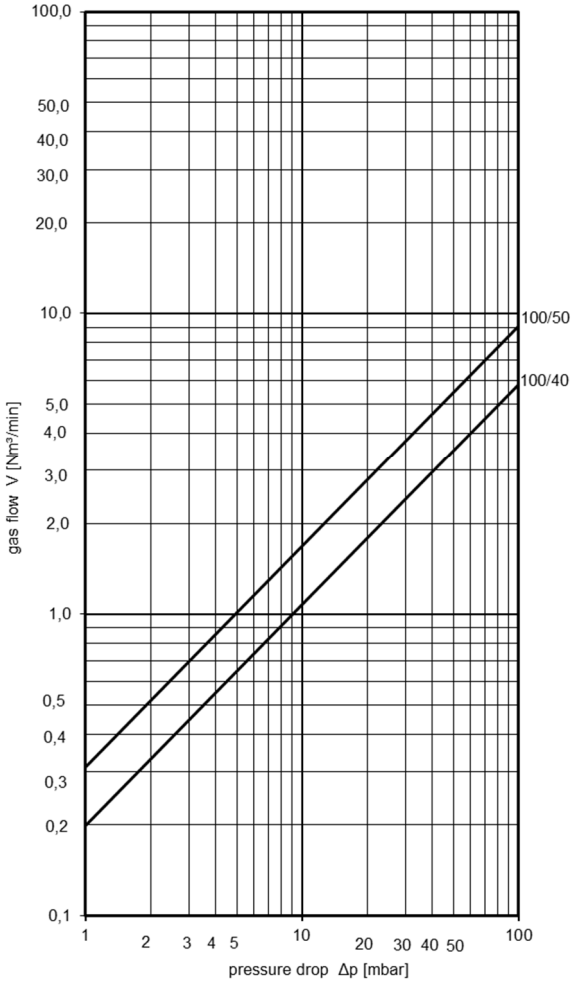
Design

	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	stainless steel mat. no. 1.4571	
KITO®-grid	stainless steel mat. no. 1.4571	
bolts / nuts	A2	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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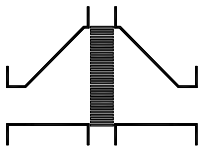
Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-1.2-X16

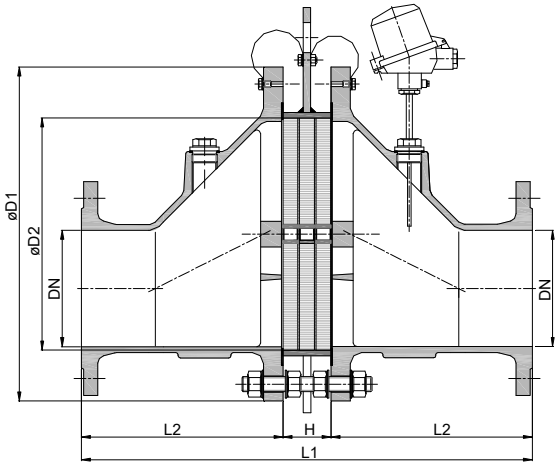
KITO® EFA-Det4-IIA-…/…-1.2-X16-T (-TT)

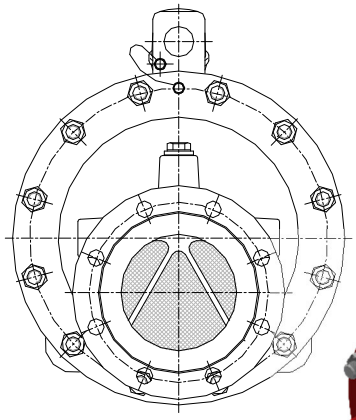


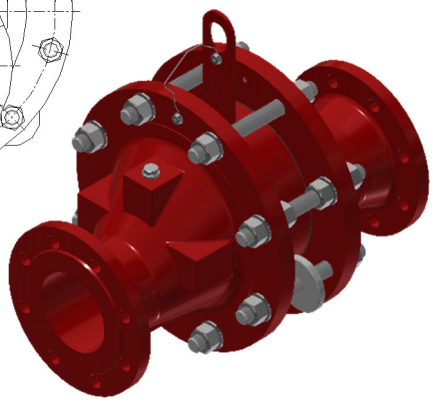
Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 160 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	304	64	120	12
	32 PN 40	1 ¼“						13
100	40 PN 40	1 ½“	220	106	354	64	145	25
	50 PN 16	2“						27
150	50 PN 16	2“	285	159	414	64	175	43
	65 PN 16	2 ½“						44
	80 PN 16	3“						45
200	80 PN 16	3“	340	206	486	86	200	67
	100 PN 16	4“						68
300	100 PN 16	4“	445	308	626	86	270	113
	125 PN 16	5“						119
	150 PN 16	6“						122

Weight refers to the standard design

Example for order

KITO® EFA-Det4-IIA-100/40-1.2-X16-T
(design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

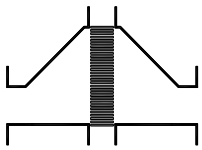
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-1.2-X16

KITO® EFA-Det4-IIA-…/…-1.2-X16-T (-TT)



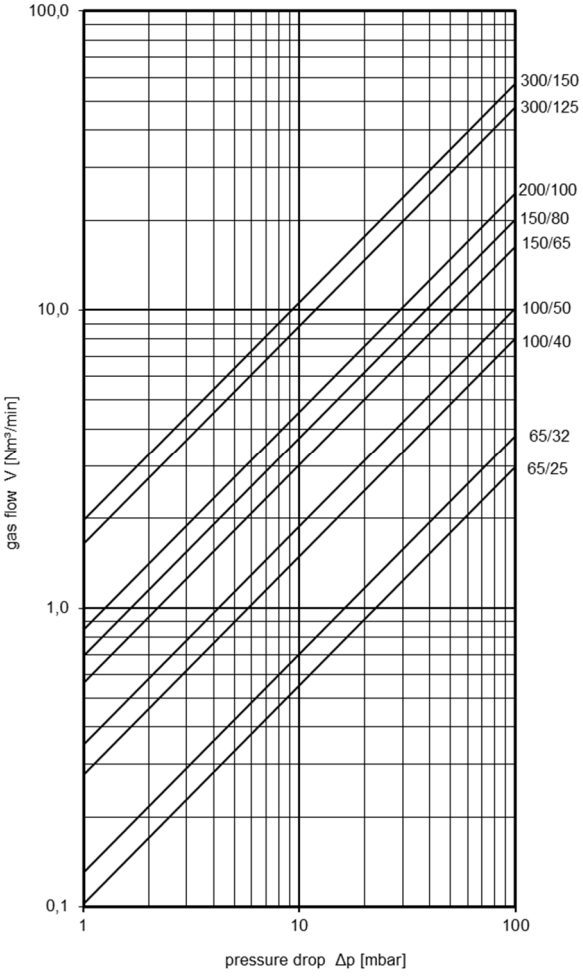
Design

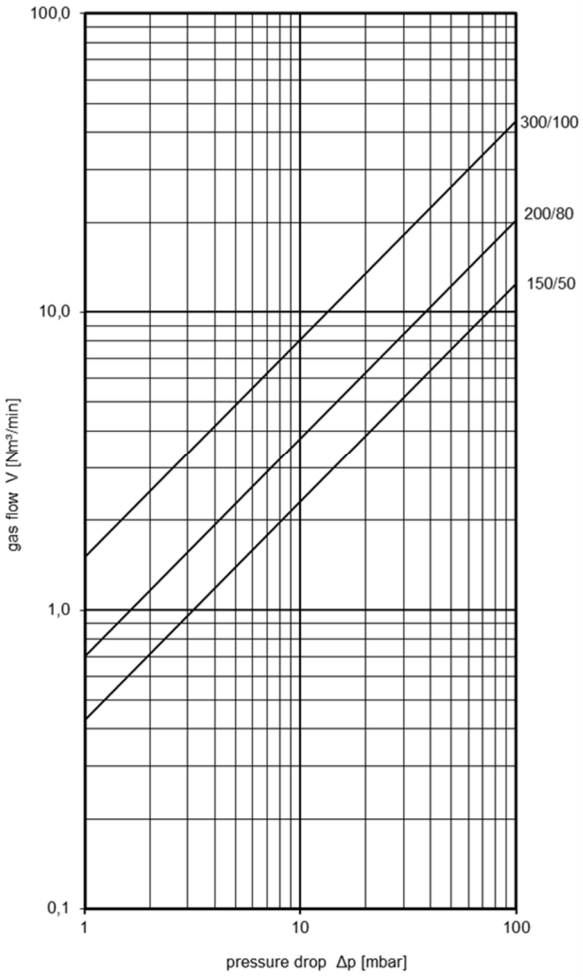
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	stainless steel mat. no. 1.4571	
KITO®-grid	stainless steel mat. no. 1.4571	
bolts / nuts	A2	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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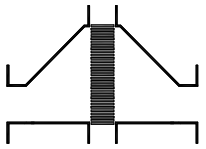
Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-1.2-X22

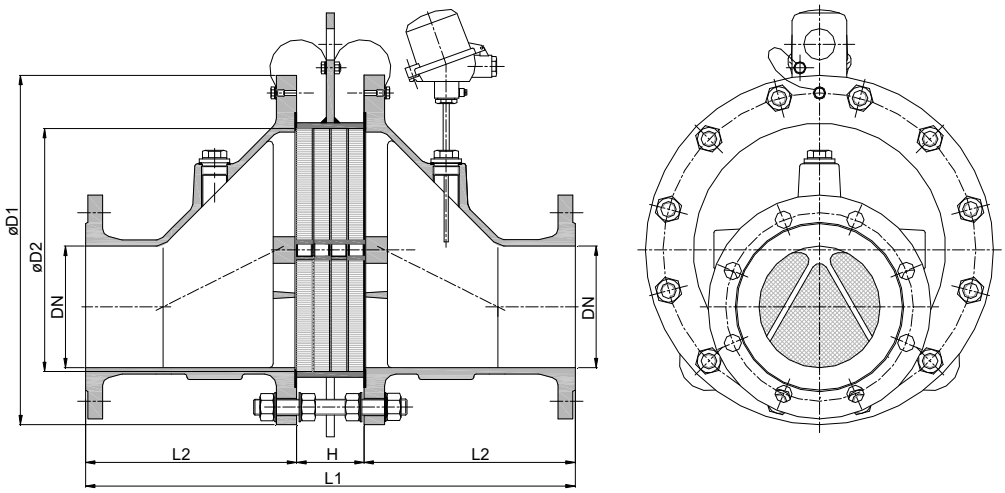
KITO® EFA-Det4-IIA-…/…-1.2-X22-T (-TT)

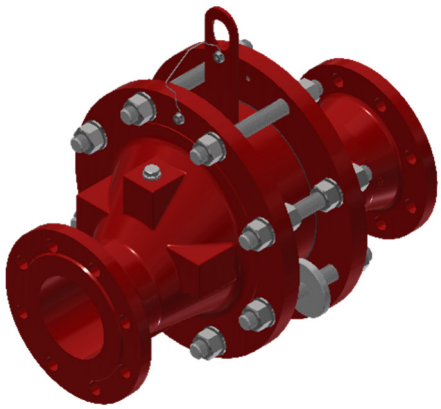


Verwendung

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 220 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Abmessungen (mm)





NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
400	150 PN 16	6“	565	388	716	86	315	194
	200 PN 10	8“						211

Weight refers to the standard design

Example for order

KITO® Det4-IIA-400/150-1.2-X22-T
(design NG 400 with flange connection DN 150 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

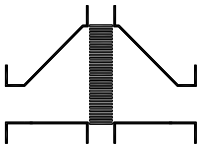
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-1.2-X22

KITO® EFA-Det4-IIA-…/…-1.2-X22-T (-TT)



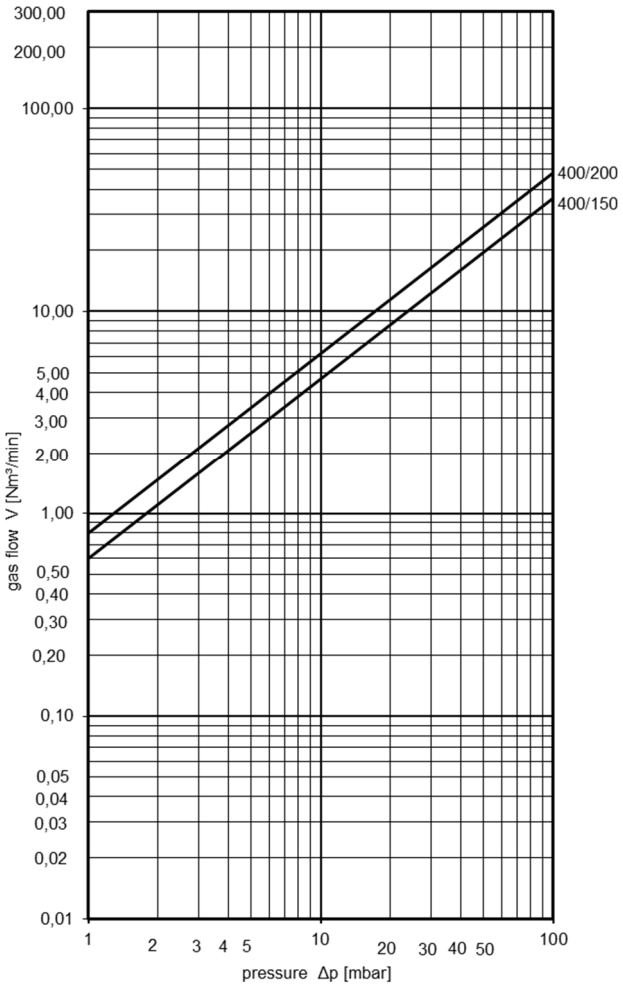
Ausführung

	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	graphite
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	stainless steel mat. no. 1.4581	
KITO®-grid	stainless steel mat. no. 1.4571	
bolts / nuts	A2	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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Design subject to change

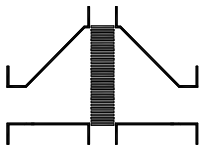
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-…

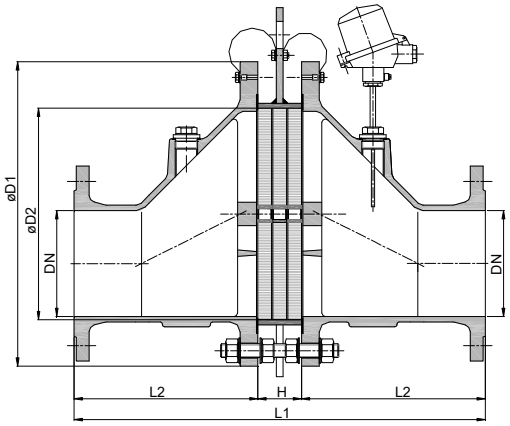
KITO® EFA-Det4-IIA-…/…-…-T (-TT)

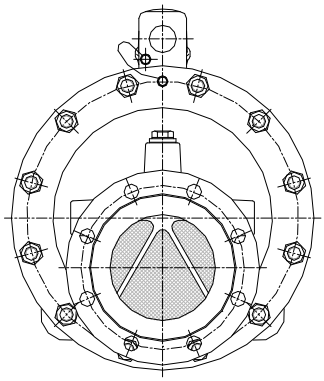


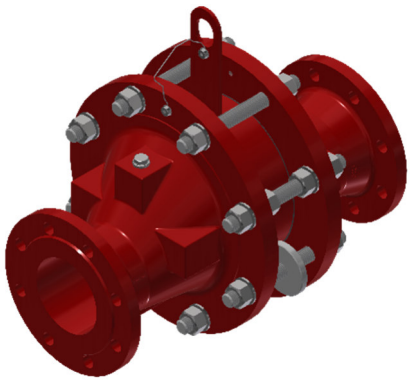
Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 2.5 bar abs. up to NG 300, p_{max} = 2.0 bar abs. from NG 400 and an operating temperature of 60 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	p max. (bar abs.)	kg
	DIN	ASME							
65	25 PN 40	1“	155	70	304	64	120	2.5	12
	32 PN 40	1 ¼“							14
100	40 PN 40	1 ½“	220	106	354	64	145	2.5	25
	50 PN 16	2“							27
150	50 PN 16	2“	285	159	414	64	175	2.5	44
	65 PN 16	2 ½“							45
	80 PN 16	3“							47
200	80 PN 16	3“	340	206	464	64	200	2.5	66
	100 PN 16	4“							67
300	100 PN 16	4“	445	308	626	86	270	2.5	120
	125 PN 16	5“							126
	150 PN 16	6“							129
400	150 PN 16	6“	565	388	716	86	315	2.0	195
	200 PN 10	8“							210
500	200 PN 10	8“	670	485	846	86	380	2.0	293
	250 PN 10	10“							311
600	250 PN 10	10“	780	584	986	86	450	2.0	414
	300 PN 10	12“							431
800	350 PN 10	14“	1015	810	1350	110	620	2.0	
	400 PN 10	16“							

Weight refers to the standard design

Example for order

KITO® EFA-Det4-IIA-100/40-2.5-T
(design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

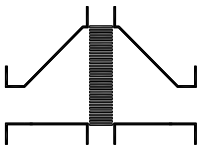
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-…

KITO® EFA-Det4-IIA-…/…-…-T (-TT)



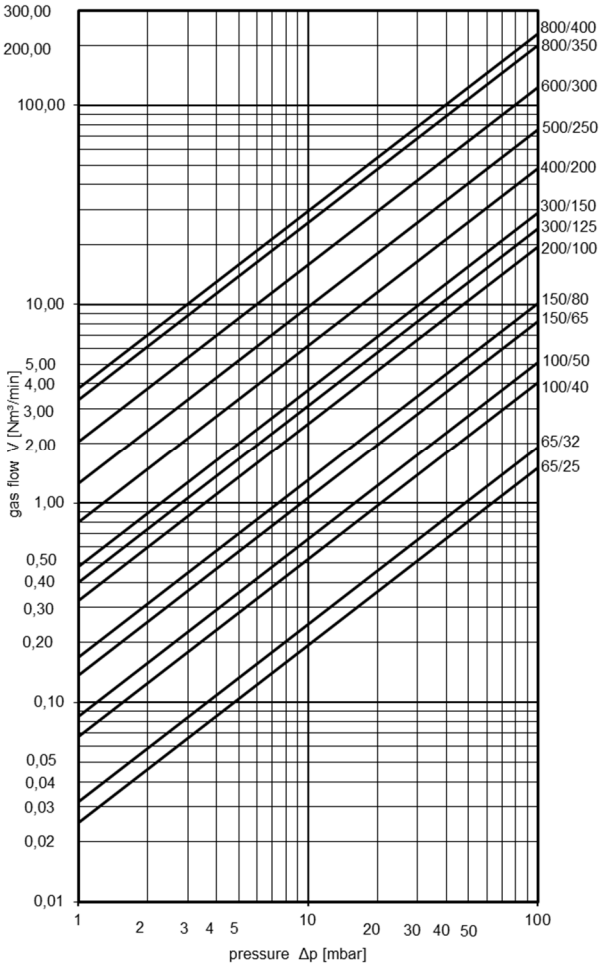
Design

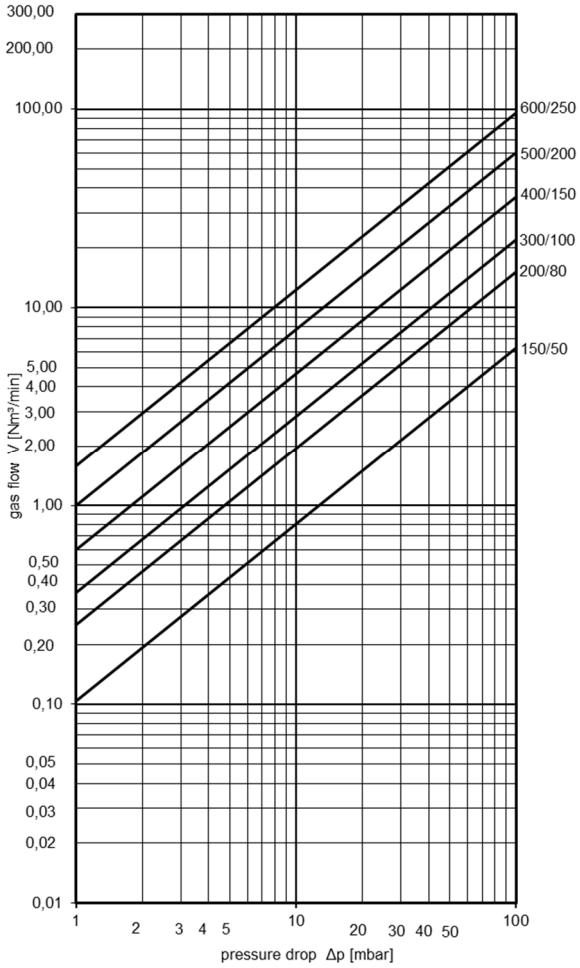
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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G 23 N
Date: 07-2020
Created: Abt. Doku KITO

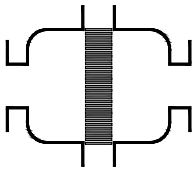
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® CFA-Det4-IIA-…/…-…

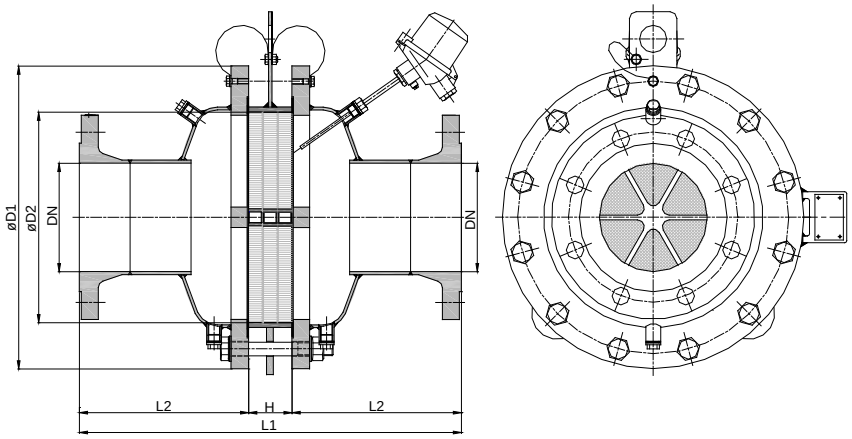
KITO® CFA-Det4-IIA-…/…-…-T (-TT)



Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 2.5 bar abs. up to NG 300, p_{max} = 2.0 bar abs. from NG 400 and an operating temperature of 60 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected. Equipped with two head pipes plugs for draining condensate.

Dimension (mm)



NG	DN		D1	D2	L1	H	L2	p max. (bar abs.)	kg
	DIN	ASME							
150	**50 PN 16**	**2“**	285	159	324	64	130	**2.5**	35
	65 PN 16	**2 ½“**							36
	80 PN 16	**3“**							38
200	**80 PN 16**	**3“**	340	206	374	64	155	**2.5**	53
	100 PN 16	**4“**							54
300	**100 PN 16**	**4“**	445	308	586	86	250	**2.5**	94
	125 PN 16	**5“**							102
	150 PN 16	**6“**							105
400	**150 PN 16**	**6“**	565	388	686	86	300	**2.0**	161
	200 PN 10	**8“**							168
500	**200 PN 10**	**8“**	670	485	846	86	380	**2.0**	237
	250 PN 10	**10“**							245
600	**250 PN 10**	**10“**	780	584	986	86	450	**2.0**	361
	300 PN 10	**12“**							366
800	**350 PN 10**	**14“**	1015	815	1010	110	450	**2.0**	
	400 PN 10	**16“**							

Weight refers to the standard design

Example for order

KITO® CFA- Det4-IIA-150/50-2.5-T
(design NG 150 with flange connection DN 50 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Created: Abt. Doku KITO
Design subject to change

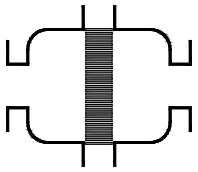
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® CFA-Det4-IIA-…/…-…

KITO® CFA-Det4-IIA-…/…-…-T (-TT)



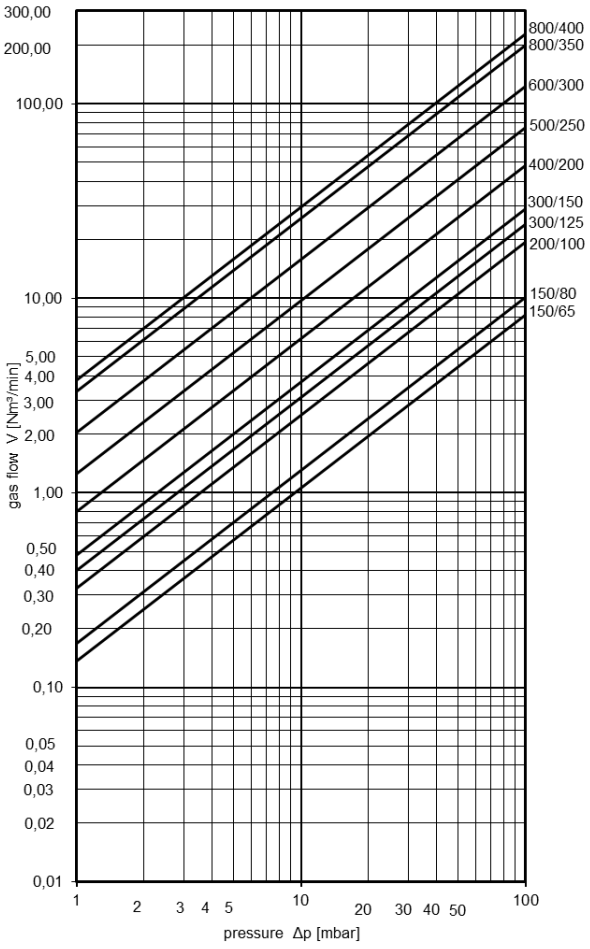
Design

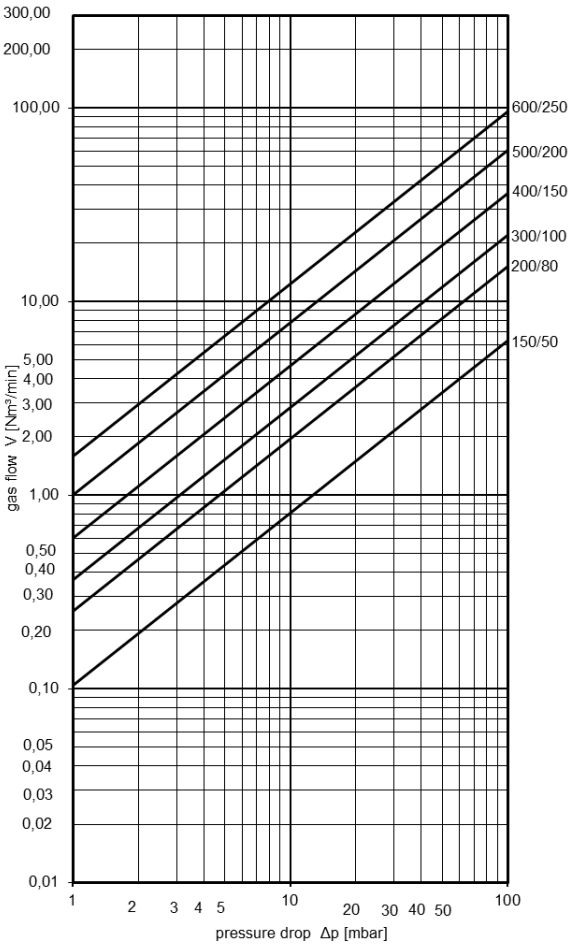
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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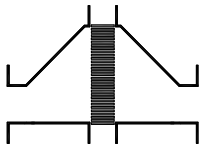
Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-3.0

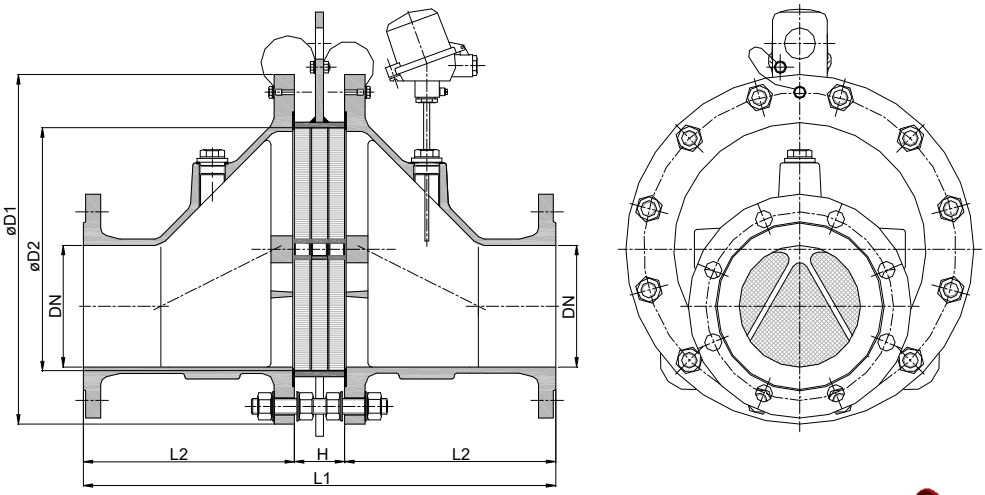
KITO® EFA-Det4-IIA-…/…-3.0-T (-TT)

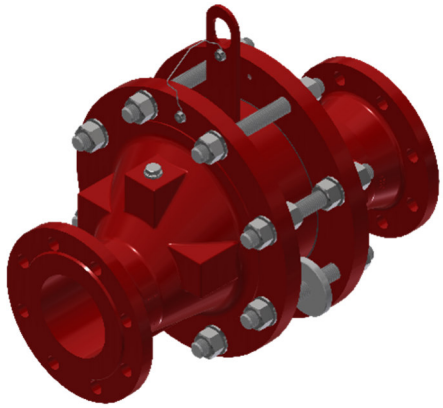


Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 3.0 bar abs. and an operating temperature of 60 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Dimension (mm)





NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
100	40 PN 40	1 ½“	220	106	354	64	145	25
	50 PN 16	2“						27

Weight refers to the standard design

Example for order

KITO® EFA- Det4-IIA-100/40-3.0-T
(design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

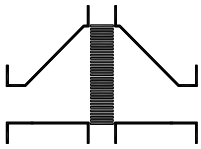
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-3.0

KITO® EFA-Det4-IIA-…/…-3.0-T (-TT)



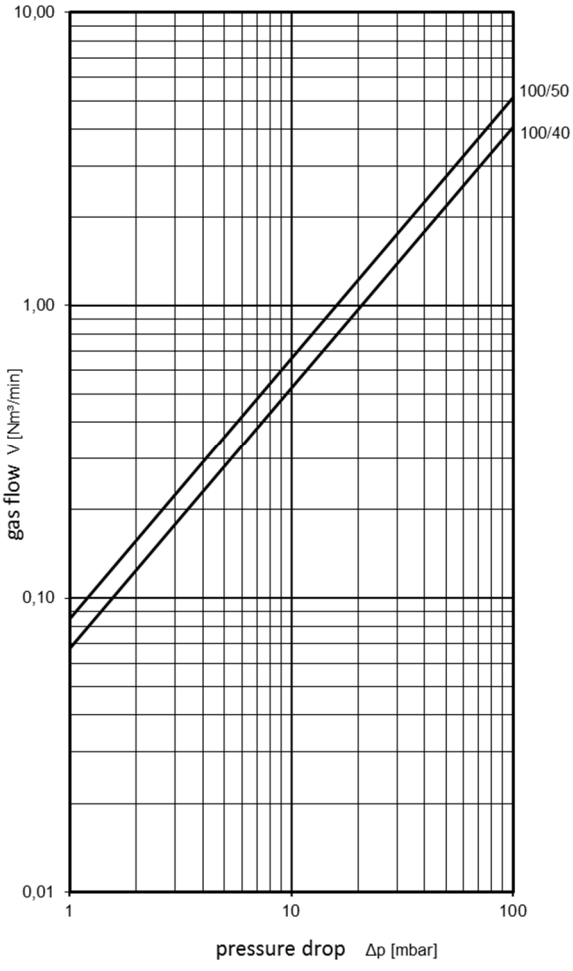
Design

	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	galvanized steel	stainless steel mat. no. 1.4571
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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Created: Abt. Doku KITO
Design subject to change

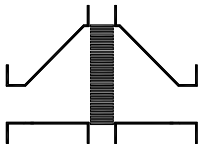
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-3.0-X25

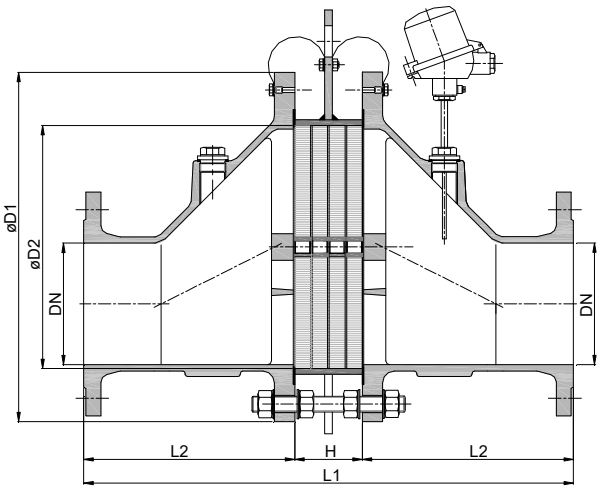
KITO® EFA-Det4-IIA-…/…-3.0-X25-T (-TT)

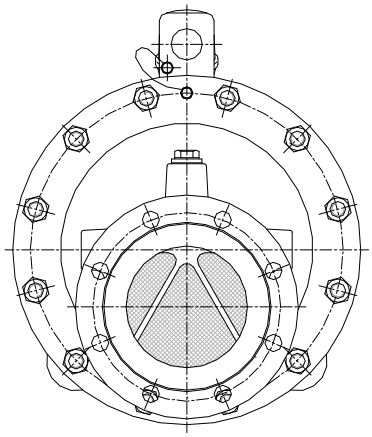


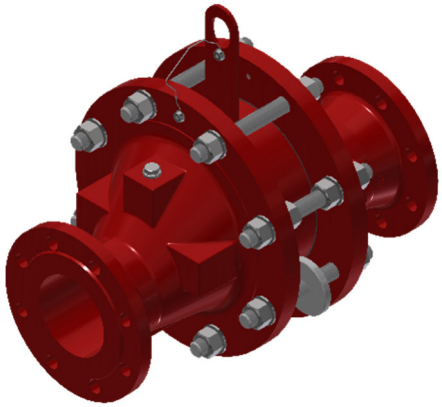
Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 3.0 bar abs. and an operating temperature of 250 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
300	100 PN 16	4“	445	308	626	86	270	120
	125 PN 16	5“						126
	150 PN 16	6“						128

Weight refers to the standard design

Example for order

KITO® Det4-IIA-300/150-3.0-X25-T
(design NG 300 with flange connection DN 150 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Design subject to change

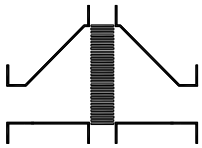
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-3.0-X25

KITO® EFA-Det4-IIA-…/…-3.0-X25-T (-TT)



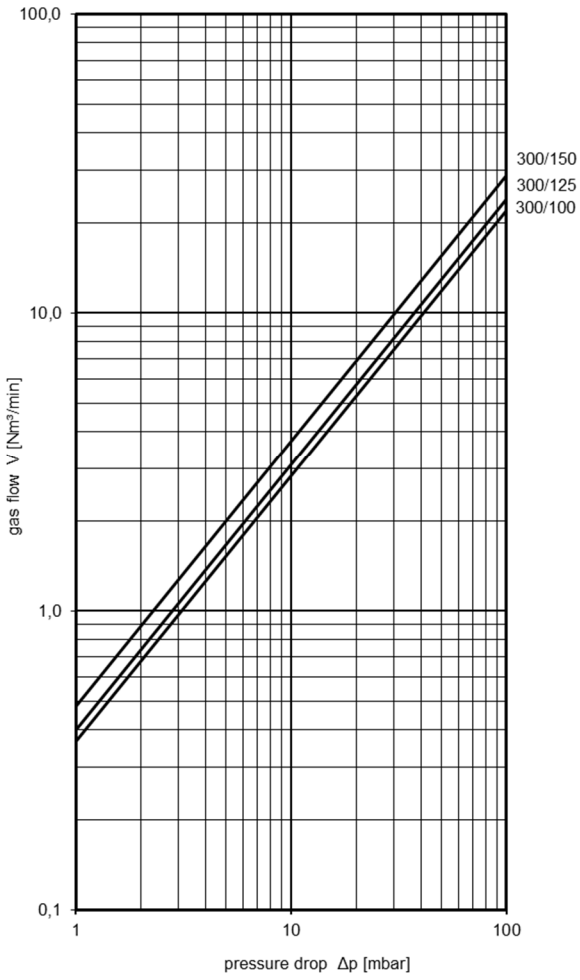
Design

	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	graphite	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	stainless steel mat. no. 1.4571	
KITO®-grid	stainless steel mat. no. 1.4571	
bolts / nuts	A2	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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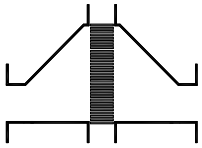
Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-3.0-X12

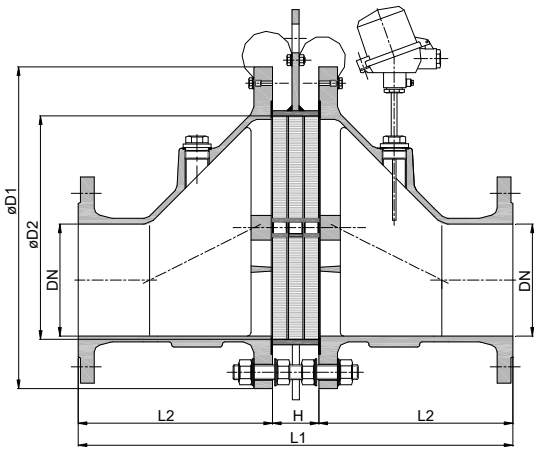
KITO® EFA-Det4-IIA-…/…-3.0-X12-T (-TT)

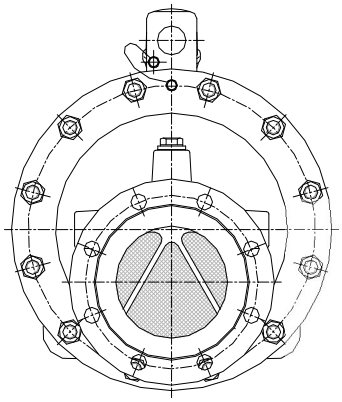


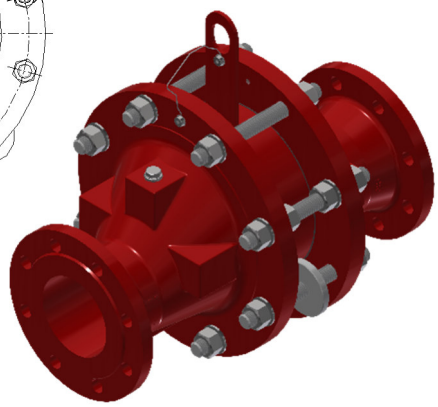
Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 3.0 bar abs. and an operating temperature of 120 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
150	50 PN 16	2“	285	159	414	64	175	44
	65 PN 16	2 ½“						45
	80 PN 16	3“						47
200	80 PN 16	3“	340	206	486	86	200	70
	100 PN 16	4“						71
300	100 PN 16	4“	445	308	626	86	270	120
	125 PN 16	5“						126
	150 PN 16	6“						129
400	150 PN 16	6“	565	388	738	108	315	209
	200 PN 10	8“						224
500	200 PN 10	8“	670	485	868	108	380	317
	250 PN 10	10“						333

Weight refers to the standard design

Example for order

KITO® EFA-Det4-IIA-300/150-3.0-X12-T
(design NG 300 with flange connection DN 150 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 07-2020
Created: Abt. Doku KITO

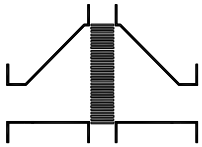
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIA-…/…-3.0-X12

KITO® EFA-Det4-IIA-…/…-3.0-X12-T (-TT)



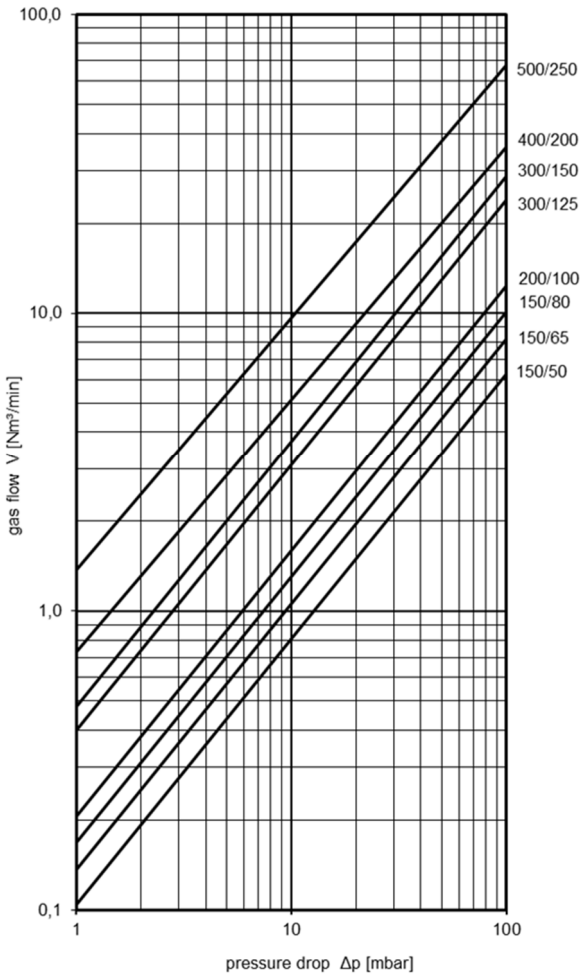
Design

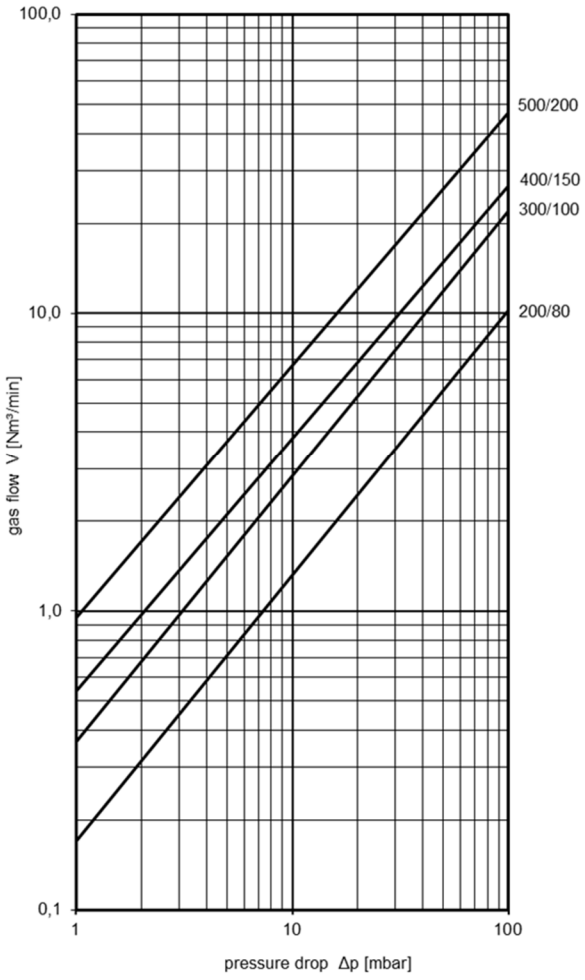
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	stainless steel mat. no. 1.4571 or 1.4581	
KITO®-grid	stainless steel mat. no. 1.4571	
bolts / nuts	A2	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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Created: Abt. Doku KITO

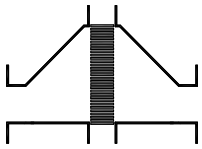
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIB3-…/…-1.2

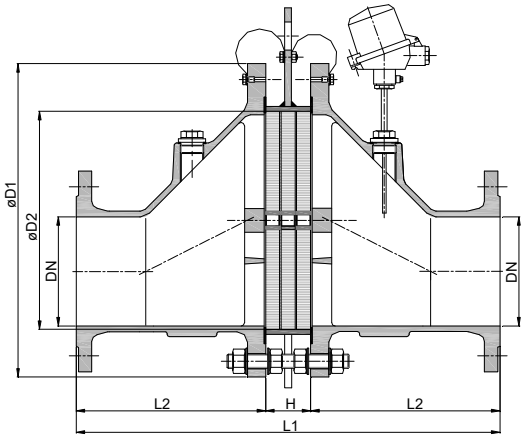
KITO® EFA-Det4-IIB3-…/…-1.2-T (-TT)

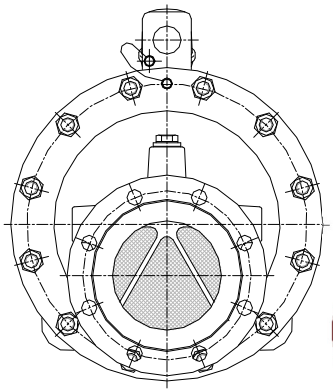


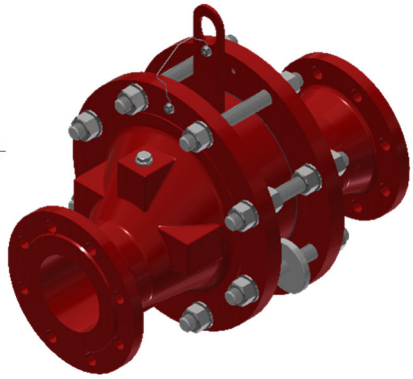
Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	304	64	120	12
	32 PN 40	1 ¼“						14
100	40 PN 40	1 ½“	220	106	354	64	145	25
	50 PN 16	2“						27
150	50 PN 16	2“	285	159	414	64	175	44
	65 PN 16	2 ½“						45
	80 PN 16	3“						47
200	80 PN 16	3“	340	206	464	64	200	66
	100 PN 16	4“						67
300	100 PN 16	4“	445	308	626	86	270	120
	125 PN 16	5“						126
	150 PN 16	6“						129
400	150 PN 16	6“	565	388	716	86	315	195
	200 PN 10	8“						210
500	200 PN 10	8“	670	485	846	86	380	293
	250 PN 10	10“						311
600	250 PN 10	10“	780	584	986	86	450	414
	300 PN 10	12“						431
800	350 PN 10	14“	1015	810	1350	110	620	
	400 PN 10	16“						

Weight refers to the standard design

Example for order

KITO® EFA-Det4-IIB3-100/40-1.2-T
(design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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G 24 N
Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

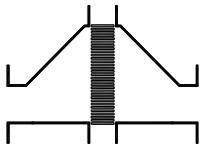
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIB3-…/…-1.2

KITO® EFA-Det4-IIB3-…/…-1.2-T (-TT)



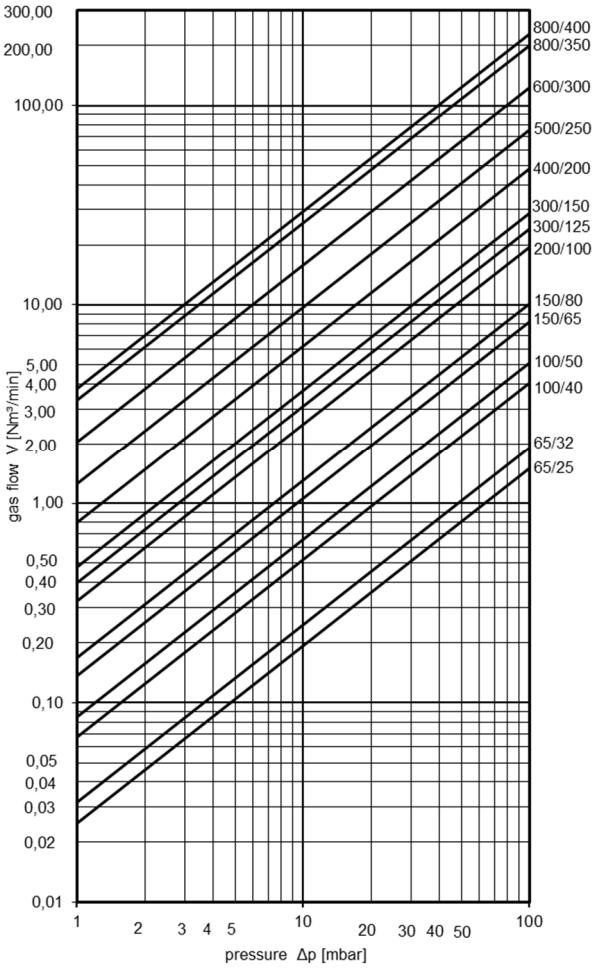
Design

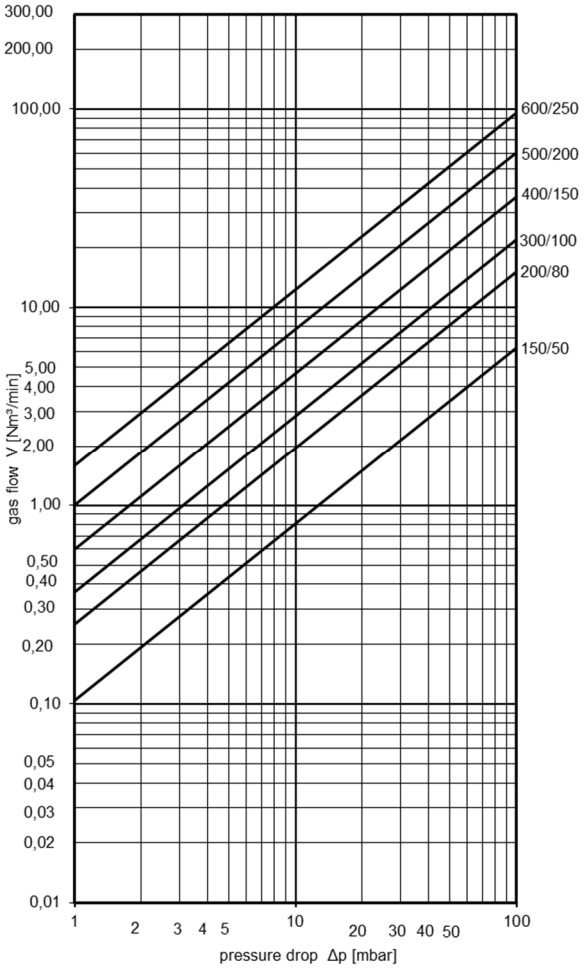
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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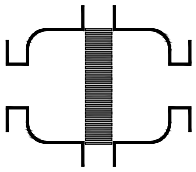
Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® CFA-Det4-IIB3-…/…-1.2

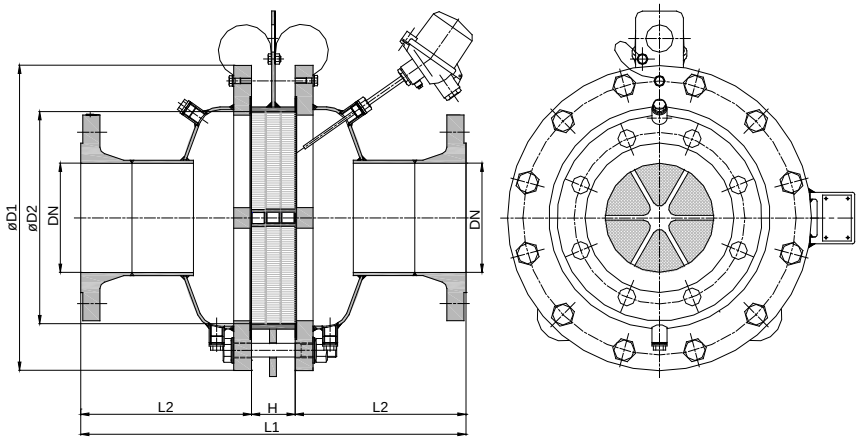
KITO® CFA-Det4-IIB3-…/…-1.2-T (-TT)

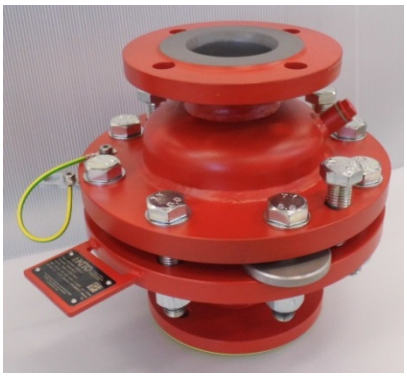


Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected. Equipped with two head pipes plugs for draining condensate.

Dimension (mm)





NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
150	50 PN 16	2“	285	159	324	64	130	35
	65 PN 16	2 ½“						36
	80 PN 16	3“						38
200	80 PN 16	3“	340	206	374	64	155	53
	100 PN 16	4“						54
300	100 PN 16	4“	445	308	586	86	250	94
	125 PN 16	5“						102
	150 PN 16	6“						105
400	150 PN 16	6“	565	388	686	86	300	161
	200 PN 10	8“						168
500	200 PN 10	8“	670	485	846	86	380	237
	250 PN 10	10“						245
600	250 PN 10	10“	780	584	986	86	450	361
	300 PN 10	12“						366
800	350 PN 10	14“	1015	815	1010	110	450	
	400 PN 10	16“						

Weight refers to the standard design

Example for order

KITO® CFA-Det4-IIB3-150/50-1.2-T
(design NG 150 with flange connection DN 50 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

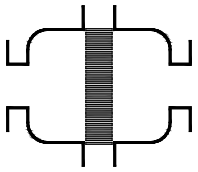
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® CFA-Det4-IIB3-…/…-1.2

KITO® CFA-Det4-IIB3-…/…-1.2-T (-TT)



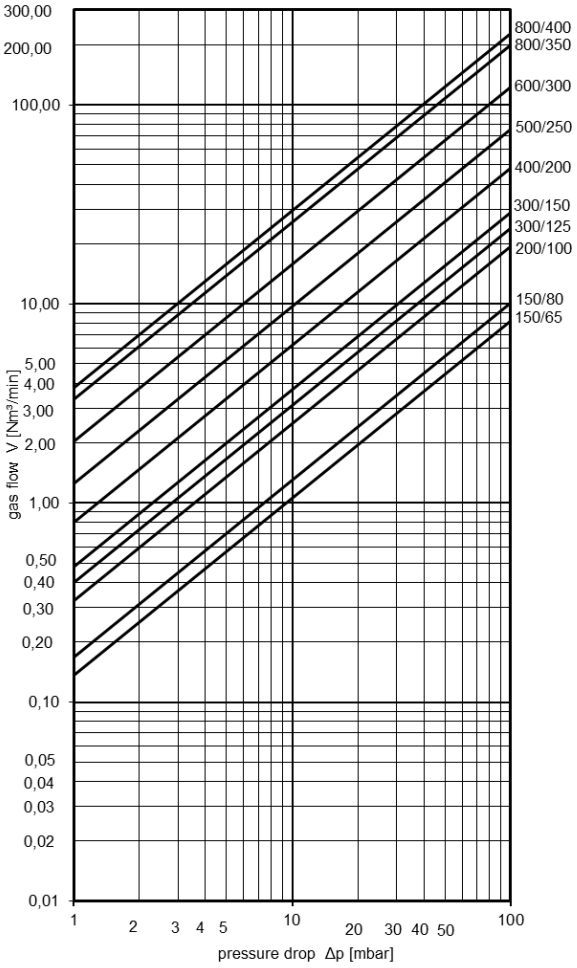
Design

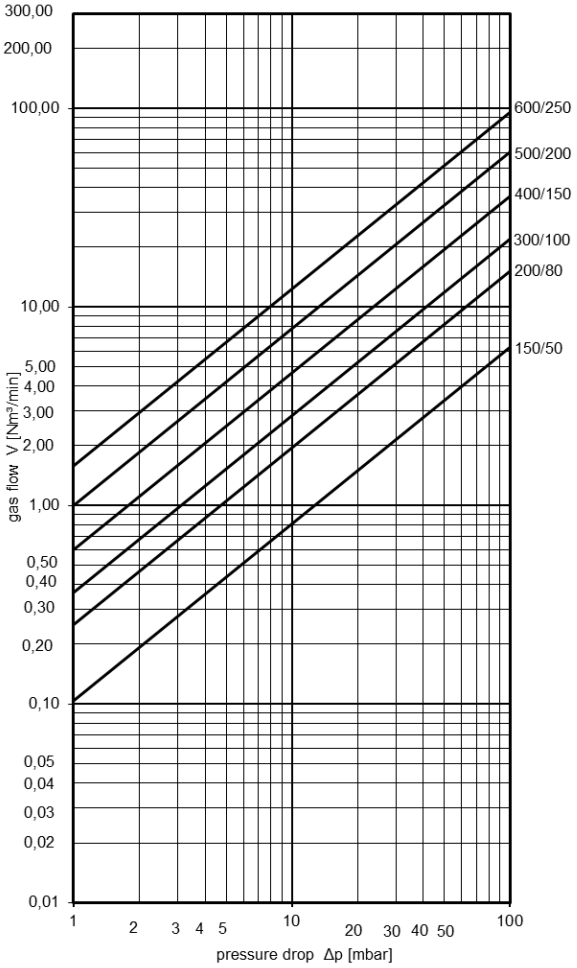
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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Created: Abt. Doku KITO

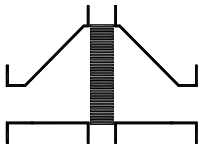
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIB3-…/…-1.2-X16

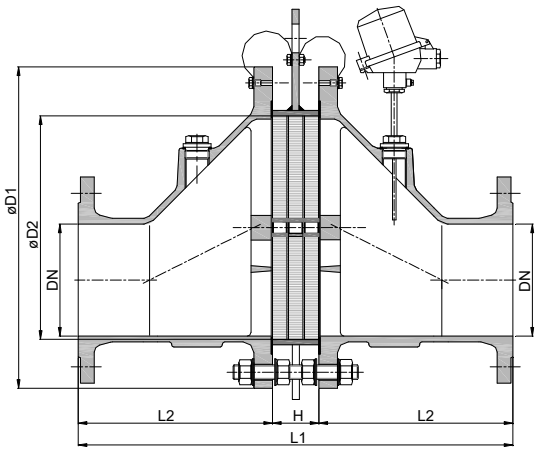
KITO® EFA-Det4-IIB3-…/…-1.2-X16-T (-TT)

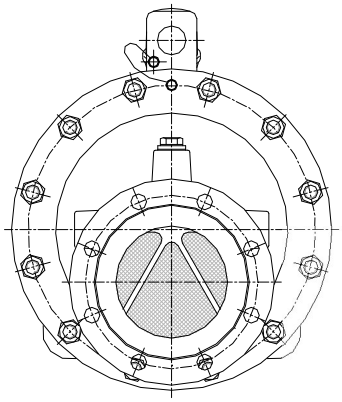


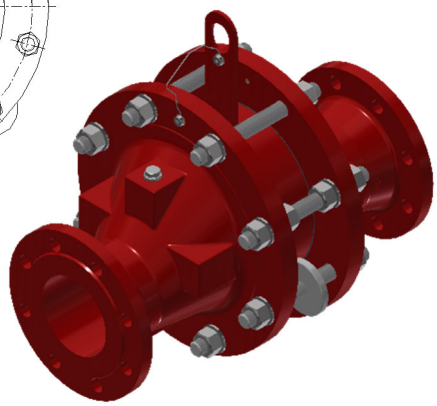
Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 160 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	304	64	120	12
	32 PN 40	1 ¼“						14
100	40 PN 40	1 ½“	220	106	354	64	145	25
	50 PN 16	2“						27
150	50 PN 16	2“	285	159	414	64	175	44
	65 PN 16	2 ½“						45
	80 PN 16	3“						47
200	80 PN 16	3“	340	206	486	86	200	70
	100 PN 16	4“						71
300	100 PN 16	4“	445	308	626	86	270	120
	125 PN 16	5“						126
	150 PN 16	6“						129

Weight refers to the standard design

Example for order

KITO® EFA-Det4-IIB3-100/40-1.2-X16-T
(design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Created: Abt. Doku KITO
Design subject to change

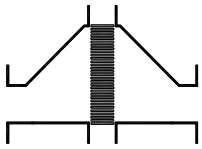
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIB3-…/…-1.2-X16

KITO® EFA-Det4-IIB3-…/…-1.2-X16-T (-TT)



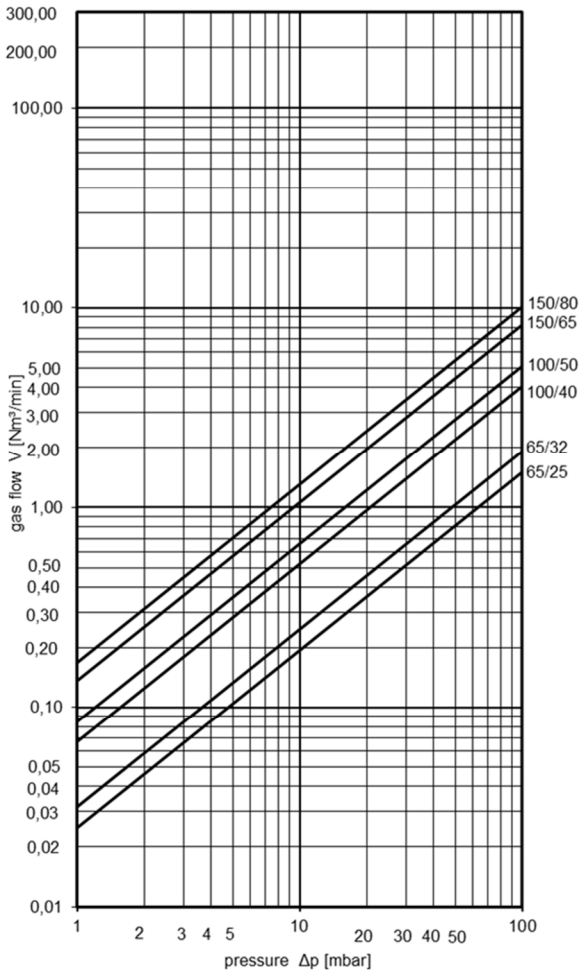
Design

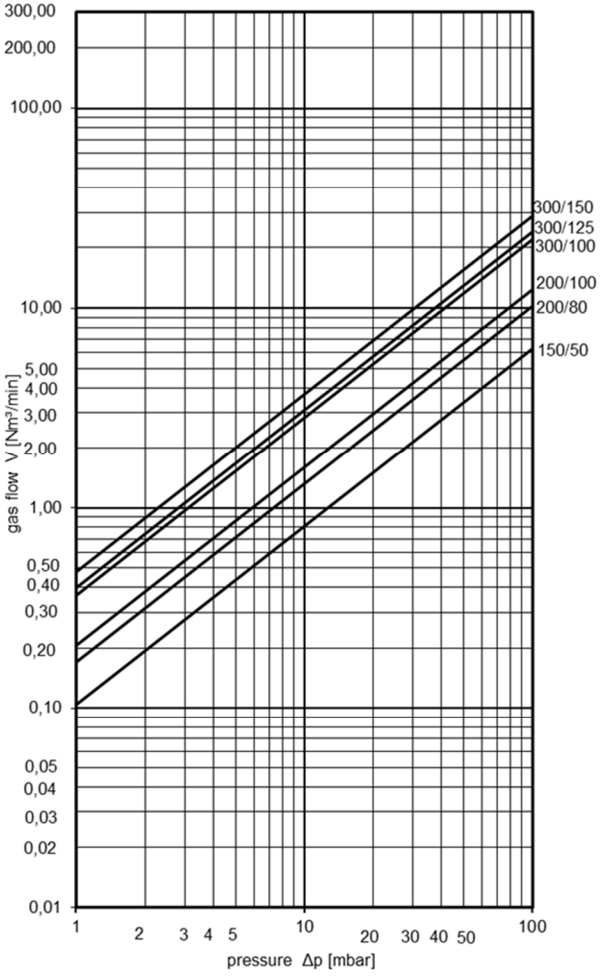
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	stainless steel mat. no. 1.4571	
KITO®-grid	stainless steel mat. no. 1.4571	
bolts / nuts	A2	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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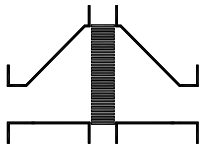
Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIB3-…/…-1.6-X16

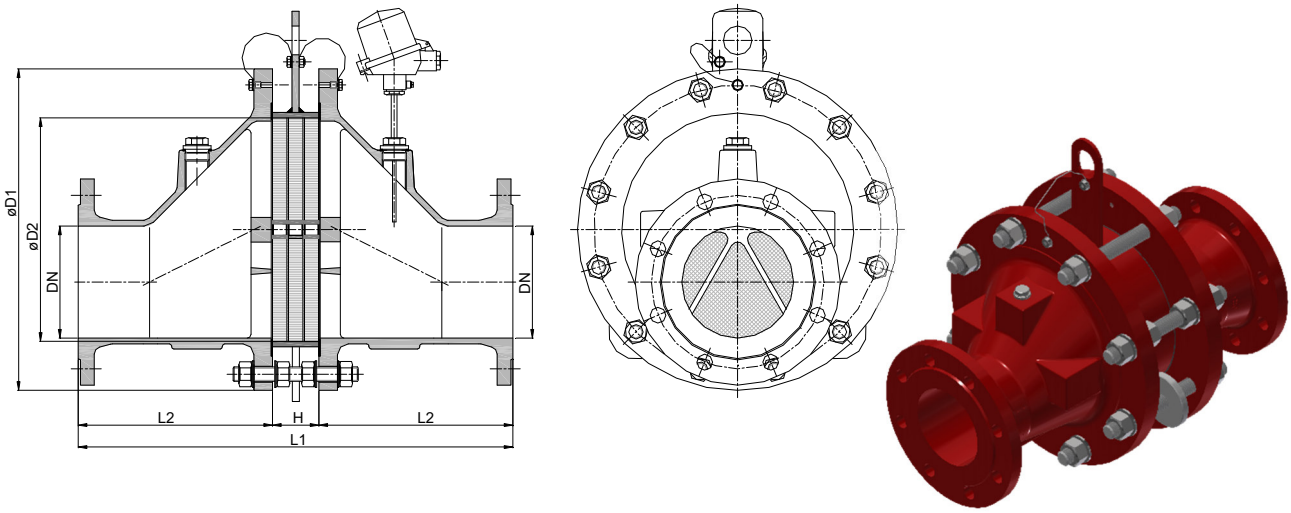
KITO® EFA-Det4-IIB3-…/…-1.6-X16-T (-TT)



Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.6 bar abs. and an operating temperature of 160 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Dimension (mm)



NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	304	64	120	12
	32 PN 40	1 ¼“						14
100	40 PN 40	1 ½“	220	106	354	64	145	25
	50 PN 16	2“						27
150	50 PN 16	2“	285	159	414	64	175	44
	65 PN 16	2 ½“						45
	80 PN 16	3“						47
200	80 PN 16	3“	340	206	486	86	200	70
	100 PN 16	4“						71
300	100 PN 16	4“	445	308	626	86	270	120
	125 PN 16	5“						126
	150 PN 16	6“						129
400	150 PN 16	6“	565	388	716	86	315	195
	200 PN 10	8“						210
500	200 PN 10	8“	670	485	846	86	380	293
	250 PN 10	10“						311

Weight refers to the standard design

Example for order

KITO® EFA-Det4-IIB3-100/40-1.6-X16-T
(design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

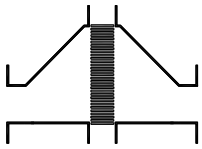
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIB3-…/…-1.6-X16

KITO® EFA-Det4-IIB3-…/…-1.6-X16-T (-TT)



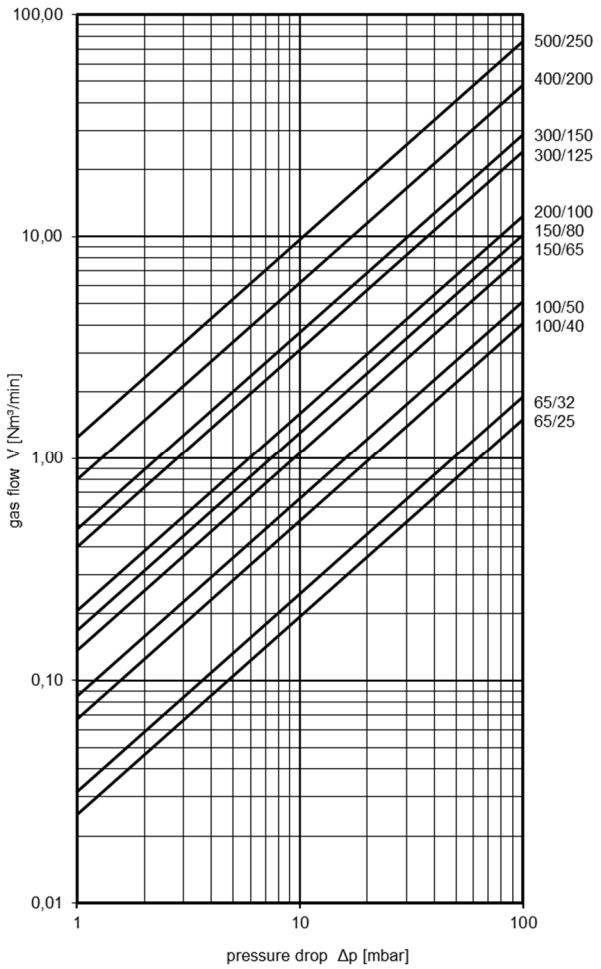
Design

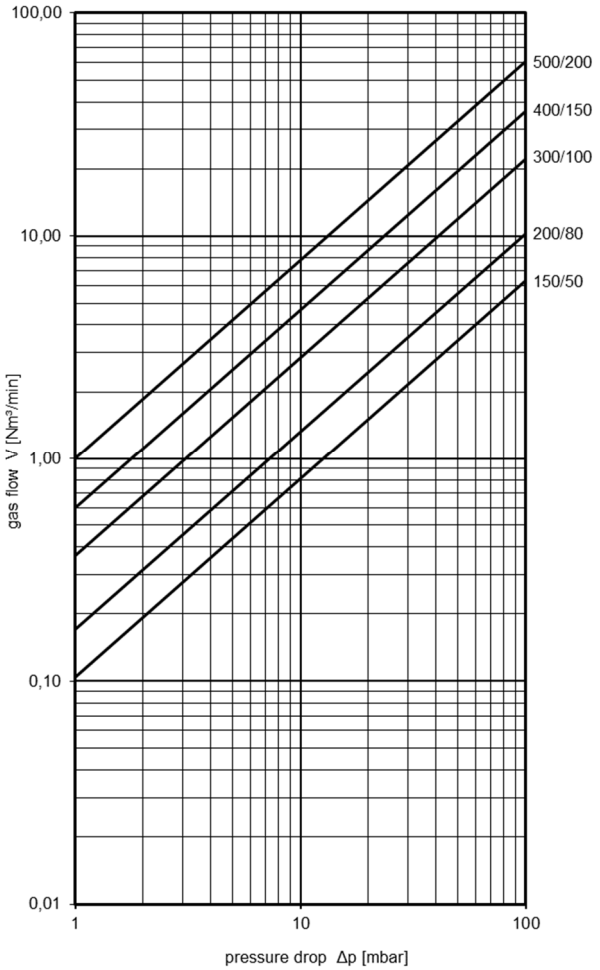
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	stainless steel mat. no. 1.4571	
KITO®-grid	stainless steel mat. no. 1.4571	
bolts / nuts	A2	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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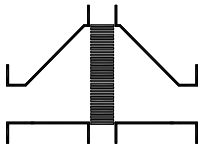
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIB3-…/…-2.5

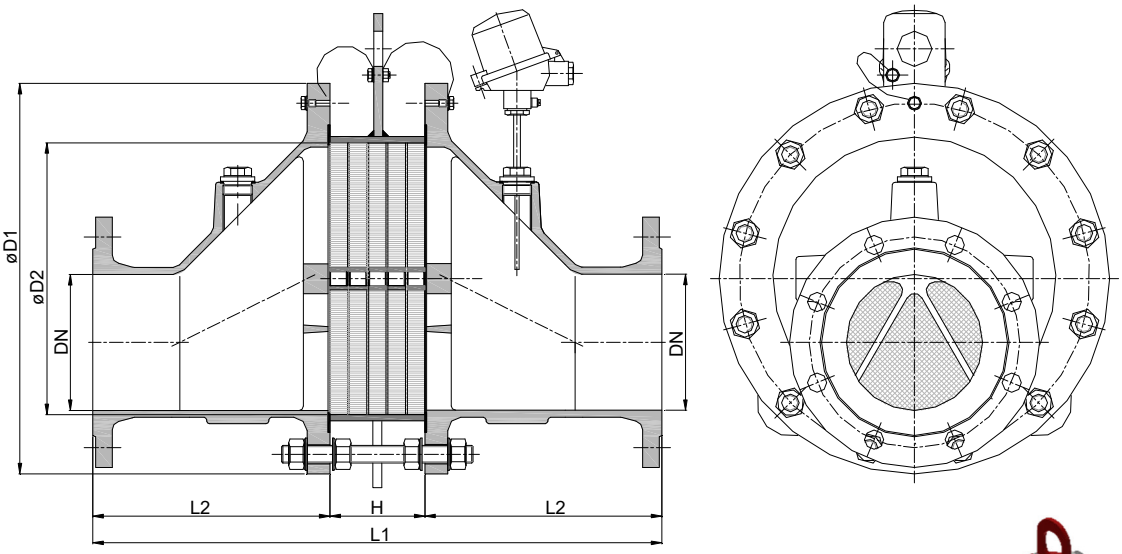
KITO® EFA-Det4-IIB3-…/…-2.5-T (-TT)



Application

For installation into pipes to the protection of vessels and components against stable detonation of flammable liquids and gases. Tested and approved as detonation flame arrester type 4. Approved for all substances of explosion groups IIA1 to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Bi-directionally working in pipes, whereby an operating pressure of 2.5 bar abs. and an operating temperature of 60 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Dimension (mm)



NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
400	150 PN 16	6“	565	388	738	108	315	209
	200 PN 10	8“						224

Weight refers to the standard design

Example for order

KITO® EFA-Det4-IIB3-400/200-2.5-T
(design NG 400 with flange connection DN 200 PN 10 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

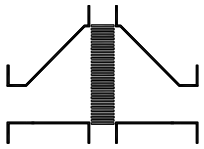
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIB3-…/…-2.5

KITO® EFA-Det4-IIB3-…/…-2.5-T (-TT)



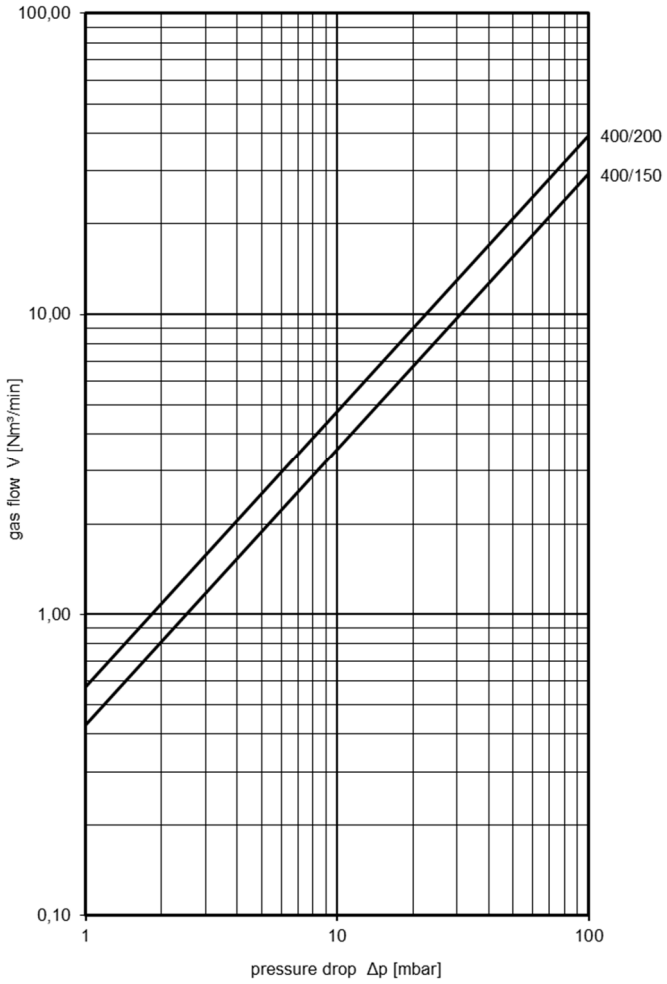
Design

	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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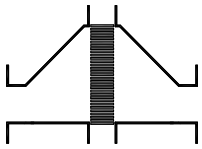
Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-HF-IIB3-…/…-1.2

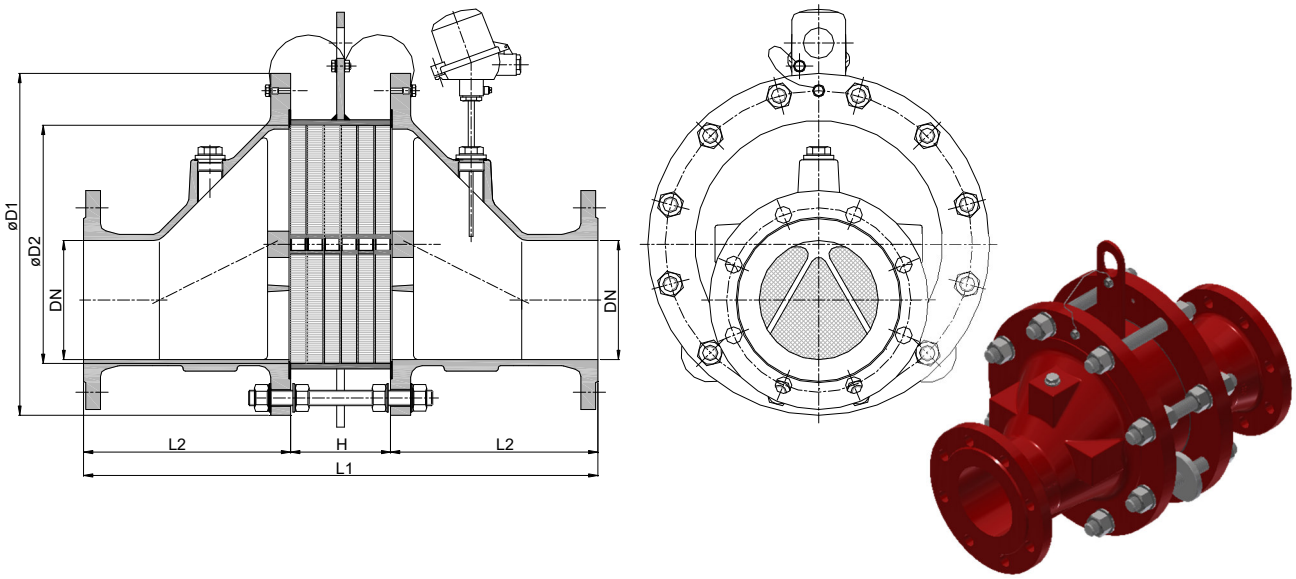
KITO® EFA-Det4-HF-IIB3-…/…-1.2-T (-TT)



Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Dimension (mm)



NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	304	64	120	12
	32 PN 40	1 ¼“						13
100	40 PN 40	1 ½“	220	106	354	64	145	26
	50 PN 16	2“						26
150	50 PN 16	2“	285	159	414	64	175	44
	65 PN 16	2 ½“						45
	80 PN 16	3“						46
200	80 PN 16	3“	340	206	490	90	200	69
	100 PN 16	4“						69
300	100 PN 16	4“	445	308	630	90	270	115
	125 PN 16	5“						121
	150 PN 16	6“						123
400	150 PN 16	6“	565	388	720	90	315	186
	200 PN 10	8“						202
500	200 PN 10	8“	670	485	850	90	380	280
	250 PN 10	10“						298

Weight refers to the standard design

Example for order

KITO® EFA-Det4-HF-IIB3-100/40-1.2-T
(design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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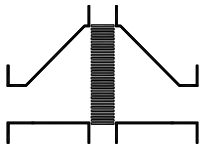
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-HF-IIB3-…/…-1.2

KITO® EFA-Det4-HF-IIB3-…/…-1.2-T (-TT)



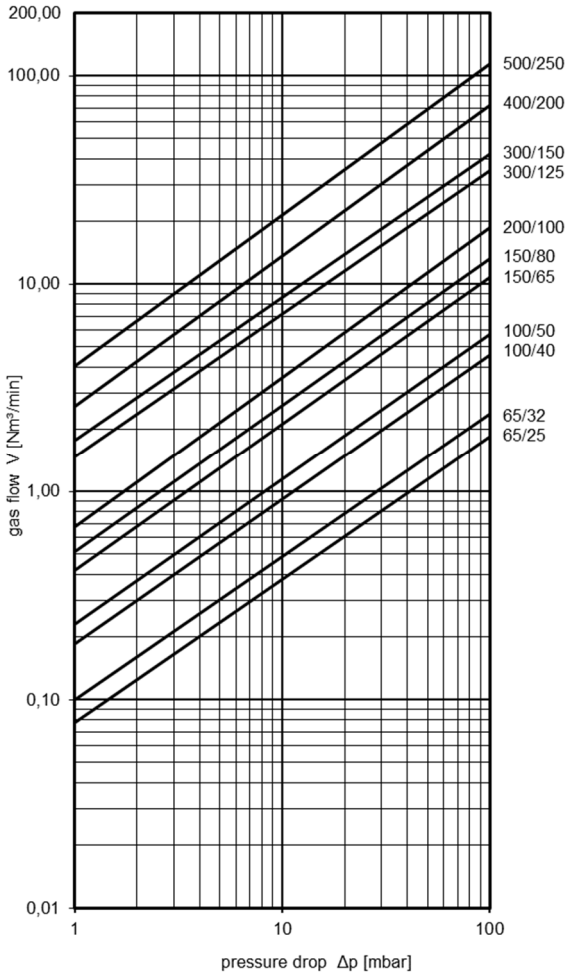
Design

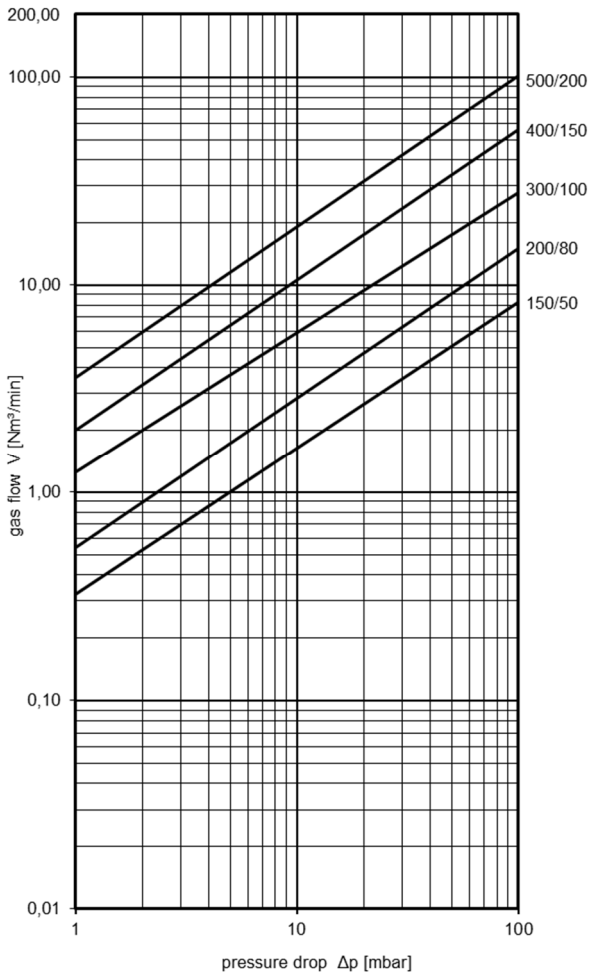
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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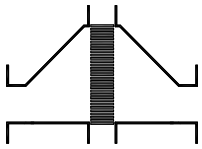
Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIB-…/…-1.2

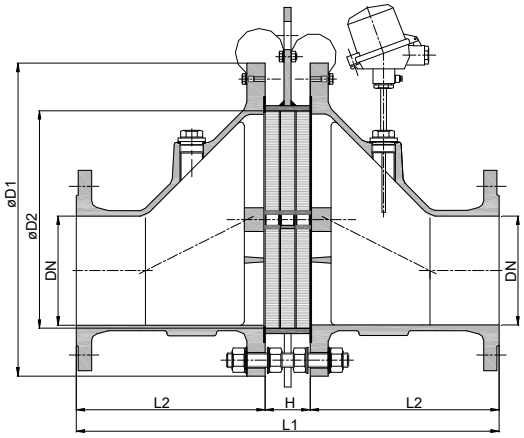
KITO® EFA-Det4-IIB-…/…-1.2-T (-TT)

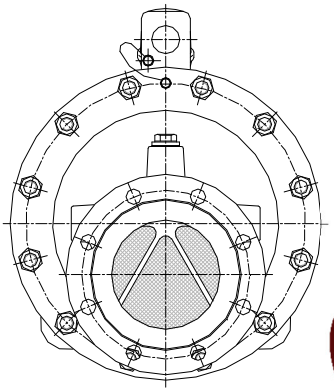


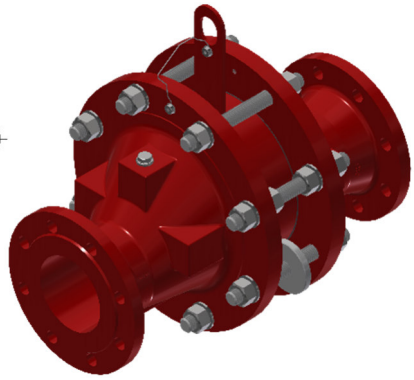
Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIB with a maximum experimental safe gap (MESG) ≥ 0.5 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	304	64	120	12
	32 PN 40	1 ¼“						14
100	40 PN 40	1 ½“	220	106	354	64	145	25
	50 PN 16	2“						27
150	50 PN 16	2“	285	159	414	64	175	44
	65 PN 16	2 ½“						45
	80 PN 16	3“						47
200	80 PN 16	3“	340	206	464	64	200	66
	100 PN 16	4“						67
300	100 PN 16	4“	445	308	626	86	270	120
	125 PN 16	5“						126
	150 PN 16	6“						129
400	150 PN 16	6“	565	388	716	86	315	195
	200 PN 10	8“						210
500	200 PN 10	8“	670	485	846	86	380	293
	250 PN 10	10“						311

Weight refers to the standard design

Example for order

KITO® EFA-Det4-IIB-100/40-1.2-T
(design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

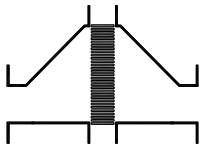
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIB-…/…-1.2

KITO® EFA-Det4-IIB-…/…-1.2-T (-TT)



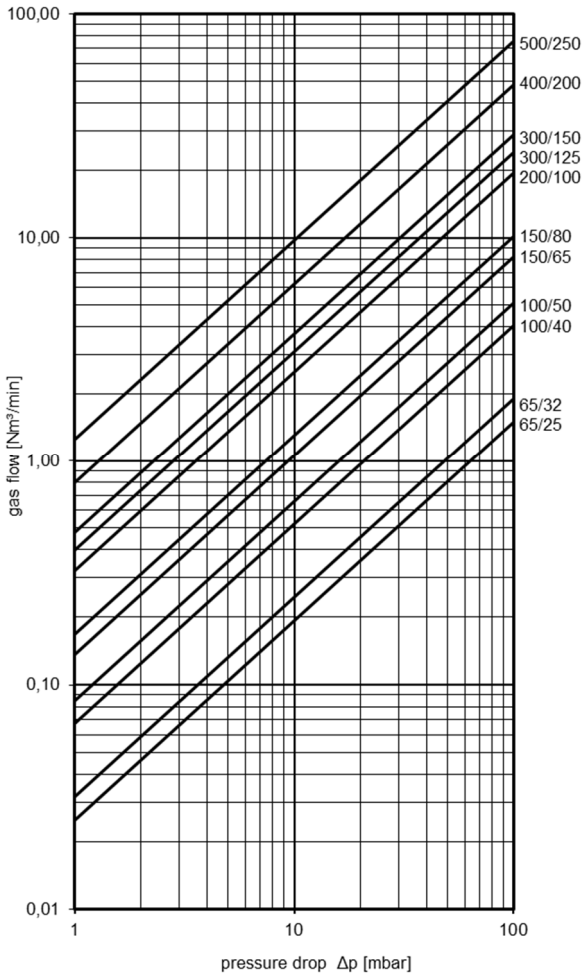
Design

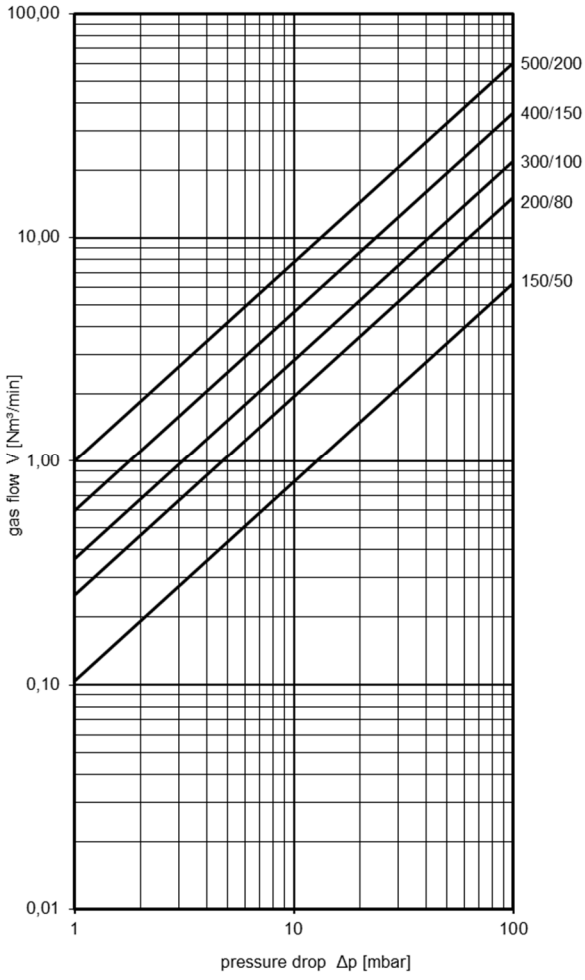
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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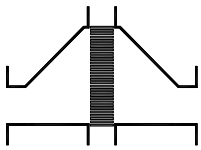
Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIC-…/…-1.2

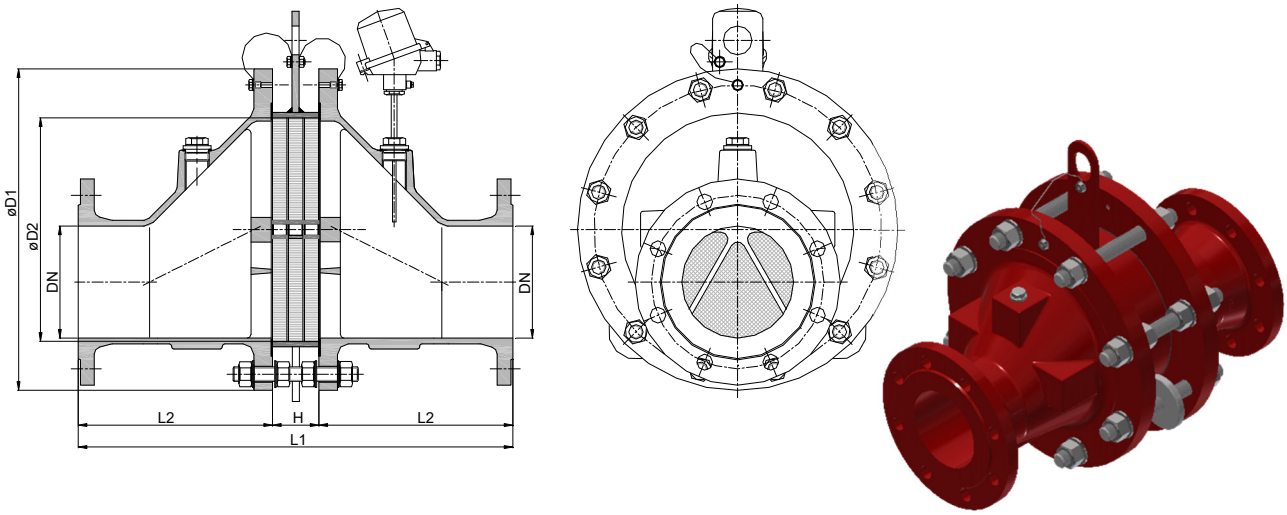
KITO® EFA-Det4-IIC-…/…-1.2-T (-TT)



Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIC with a maximum experimental safe gap (MESG) < 0.5 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Dimension (mm)



NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	304	64	120	13
	32 PN 40	1 ¼“						14
100	40 PN 40	1 ½“	220	106	354	64	145	26
	50 PN 16	2“						27
150	50 PN 16	2“	285	159	414	64	175	44
	65 PN 16	2 ½“						46
	80 PN 16	3“						48
200	80 PN 16	3“	340	206	486	86	200	72
	100 PN 16	4“						73
300	100 PN 16	4“	445	308	626	86	270	124
	125 PN 16	5“						130
	150 PN 16	6“						133
400	150 PN 16	6“	565	388	732	105	315	210
	200 PN 10	8“						226
500	200 PN 10	8“	670	485	862	102	380	315
	250 PN 10	10“						331

Weight refers to the standard design

Example for order

KITO® EFA-Det4-IIC-100/40-1.2-T
(design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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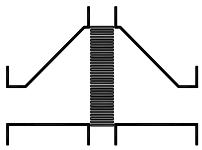
Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIC-…/…-1.2

KITO® EFA-Det4-IIC-…/…-1.2-T (-TT)



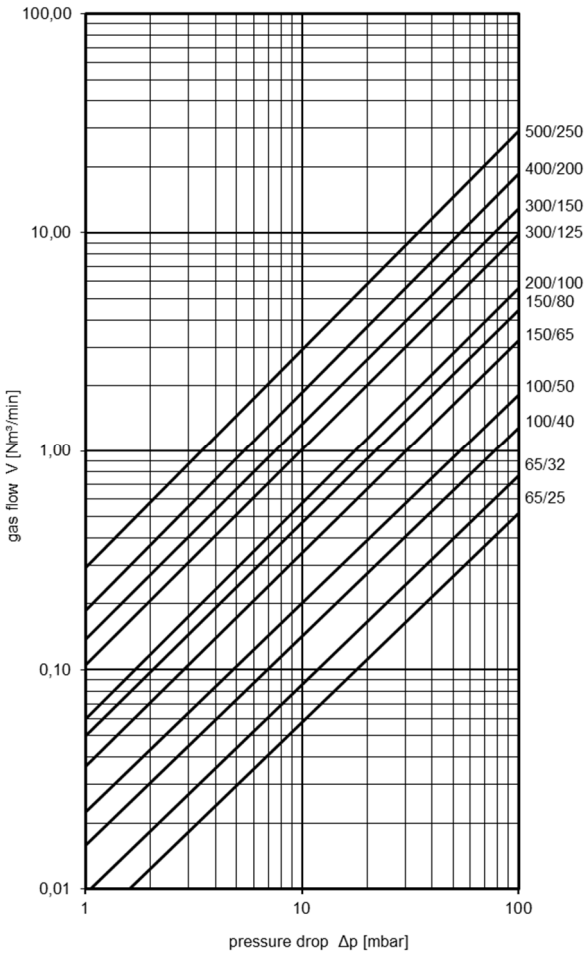
Design

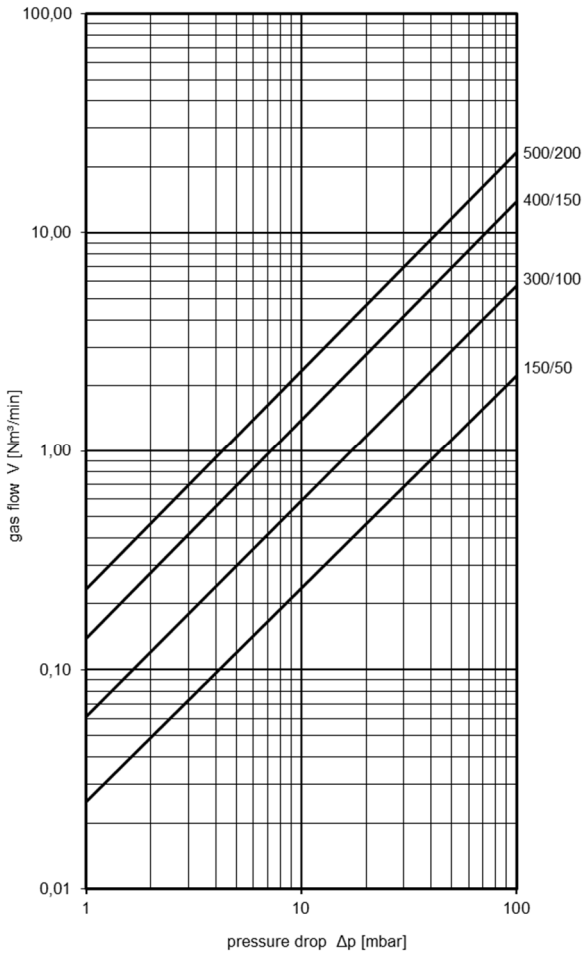
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	galvanized steel	stainless steel mat. no. 1.4571
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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Date: 07-2020
Created: Abt. Doku KITO

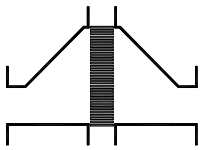
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIC-…/…-X25

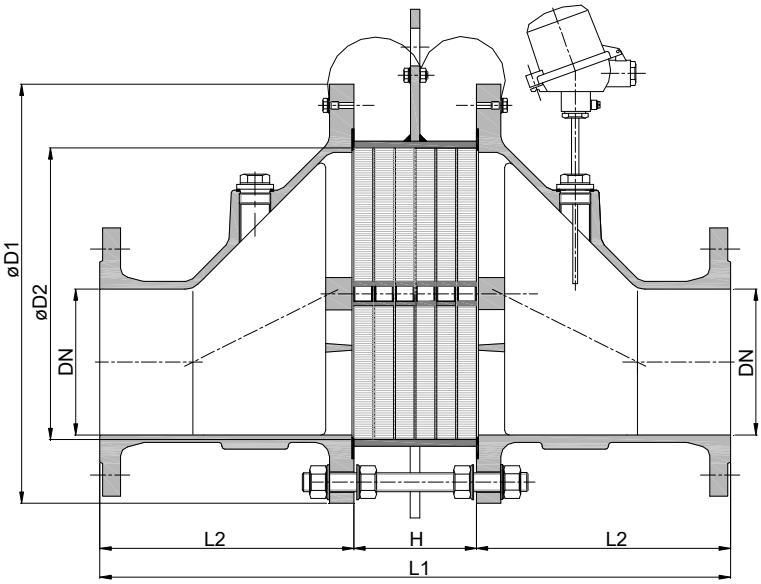
KITO® EFA-Det4-IIC-…/…-X25-T (-TT)

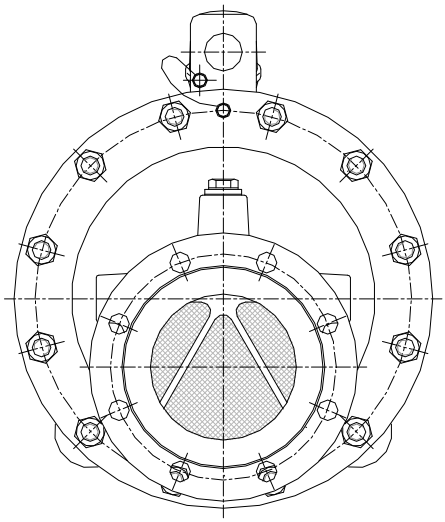


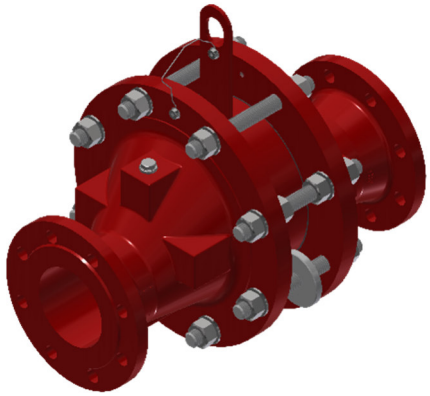
Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIC with a maximum experimental safe gap (MESG) < 0.5 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.1 bar abs. and an operating temperature of 250 °C must not be exceeded. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible. Provided with one or two temperature sensors (PT 100) the armature is certified against short time burning from one or both sides. If only one thermal sensor is attached, it must be installed into that part of the body from which a fire is expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
100	40 PN 40	1 ½“	220	106	355	65	145	25
	50 PN 16	2“						27

Weight refers to the standard design

Example for order

KITO® EFA-Det4-IIC-100/40-X25-T
(design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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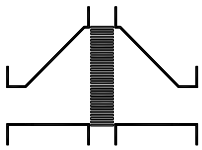
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® EFA-Det4-IIC-…/…-X25

KITO® EFA-Det4-IIC-…/…-X25-T (-TT)



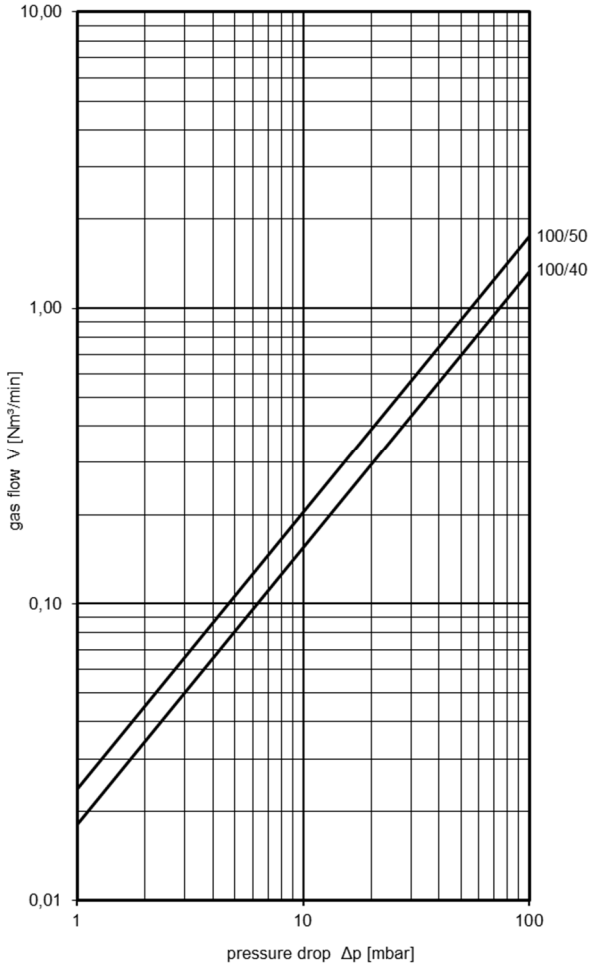
Design

	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	graphite	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	stainless steel mat. no. 1.4571	
KITO®-grid	stainless steel mat. no. 1.4571	
bolts / nuts	A2	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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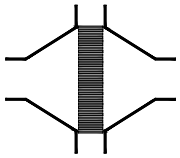
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® RG-Det4-IIA-…-1.2

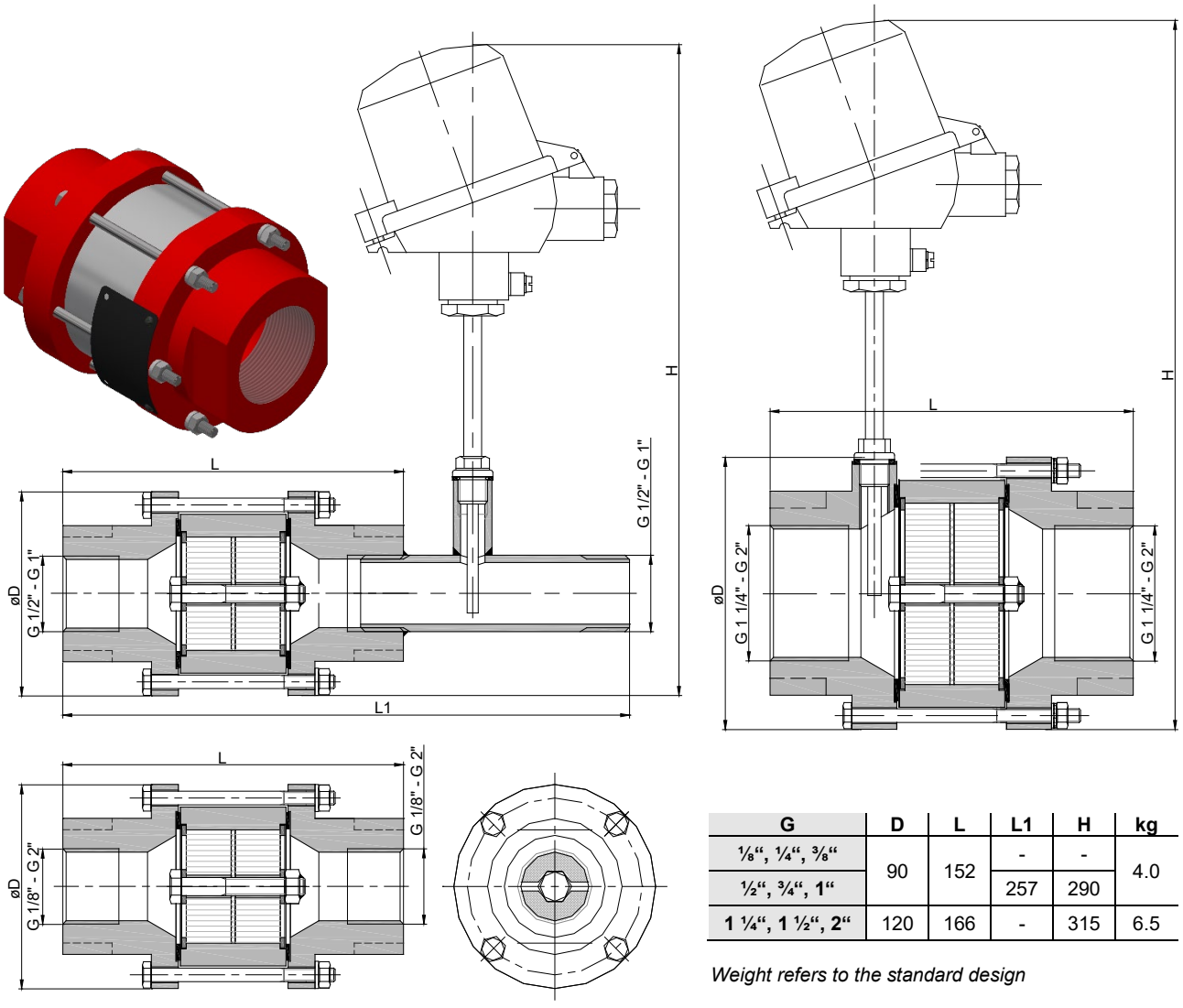
KITO® RG-Det4-IIA-…-1.2-T (-TT)



Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. All sizes are tested against “stabilized burning” and withstand this up to a max. burn time BT ≤ 30.0 min. To detect a “stabilized burning” a temperature sensor must be installed at each endangered side. Mounting is acceptable in any position, in horizontal as well as in vertical pipes.

Dimension (mm)



G	D	L	L1	H	kg
⅛“, ¼“, ⅜“	90	152	-	-	4.0
½“, ¾“, 1“			257	290	
1 ¼“, 1 ½“, 2“	120	166	-	315	6.5

Weight refers to the standard design

Example for order

KITO® RG-Det4-IIA-1 ¼”-1.2-T
(design with threaded connection G 1 ¼“ and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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G 26 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

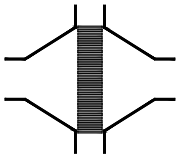
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® RG-Det4-IIA-…-1.2

KITO® RG-Det4-IIA-…-1.2-T (-TT)



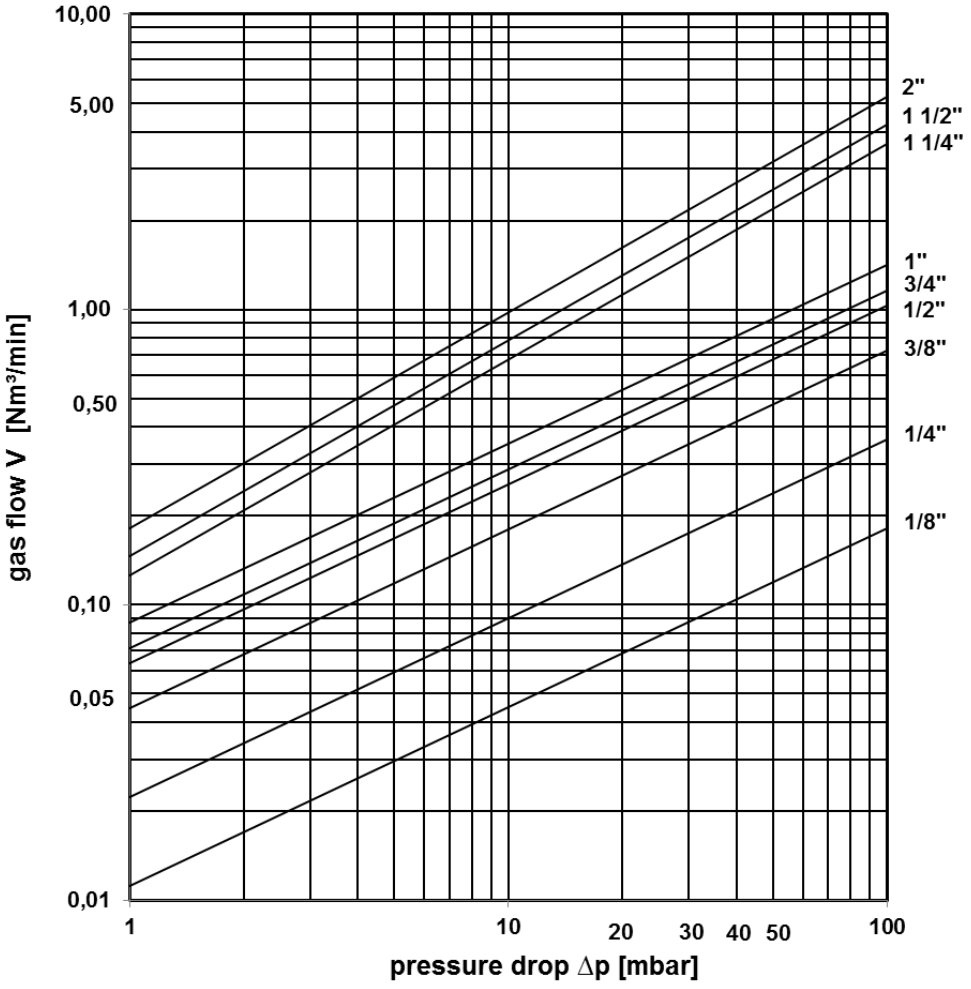
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4301 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
bolts / nuts	A2	A4
temperature sensor ***-not for connection G ⅛"- ⅜"-***		PT 100, connection ¼", 1.4571
connection	thread connection	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \qquad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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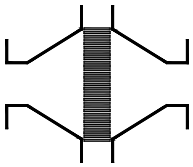
Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® RG-Det4-IIA-…-1.2

KITO® RG-Det4-IIA-…-1.2-T (-TT)

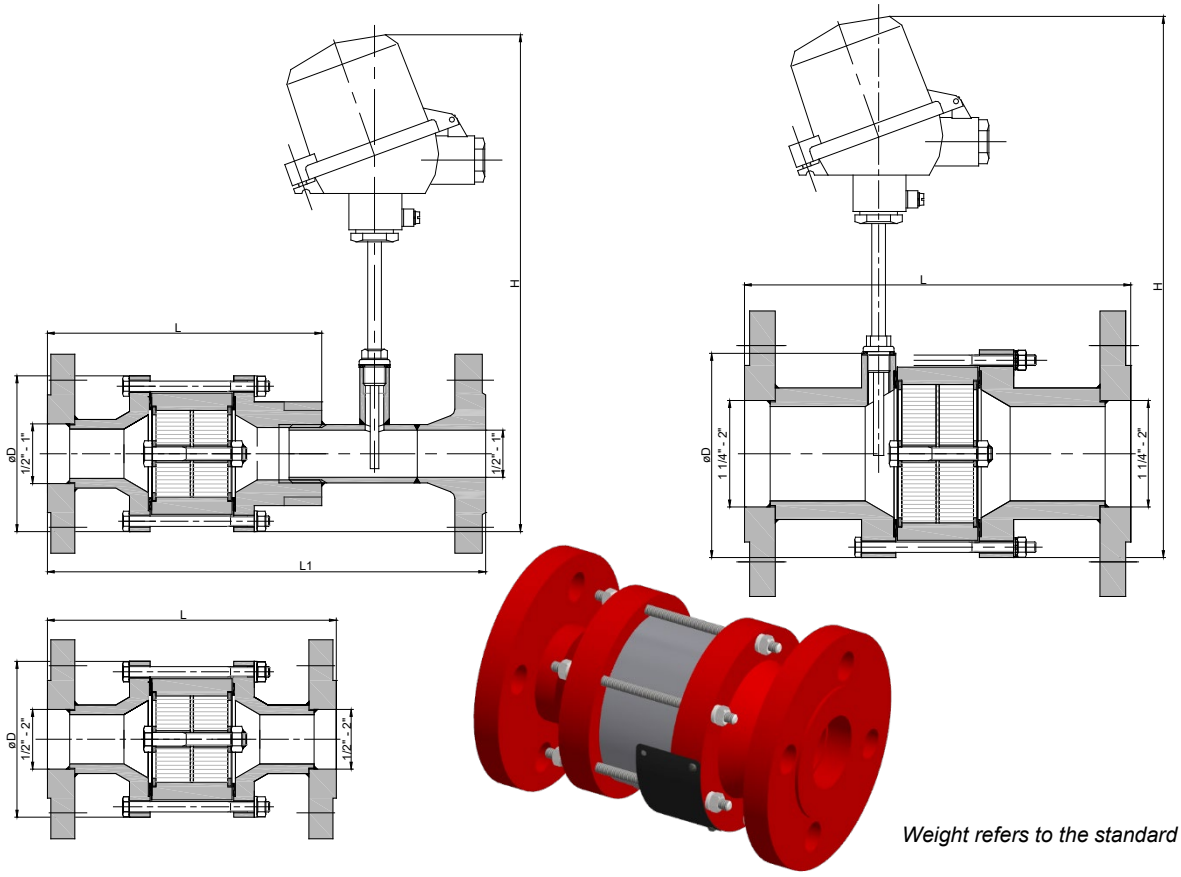
- design with flange connection-



Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. All sizes are tested against “stabilized burning” and withstand this up to a max. burn time BT ≤ 30.0 min. To detect a “stabilized burning” a temperature sensor must be installed at each endangered side. Mounting is acceptable in any position, in horizontal as well as in vertical pipes.

Dimension (mm)



Weight refers to the standard design

	DN		D	L (DIN)	L (ASME)	L1 (DIN)	L1 (ASME)	H	kg
	DIN	ASME							
½“	15 PN 40	½“	90	173	173	270	270	290	3,7
¾“	20 PN 40	¾“		169	169	266	266		4,2
1“	25 PN 40	1“		169	169	266	266		4,6
1 ¼“	32 PN 40	1 ¼“	120	196	196	-	-	315	9,3
1 ½“	40 PN 40	1 ½“		206	206				9,8
2“	50 PN 16	2“		230	230				11,5

Example for order

KITO® RG-Det4-IIA-1 ¼”-1.2-T DN 32
(design with flange connection DN 32 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 07-2024
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

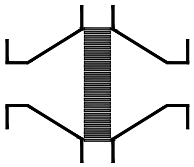
Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® RG-Det4-IIA-…-1.2

KITO® RG-Det4-IIA-…-1.2-T (-TT)

- design with flange connection-



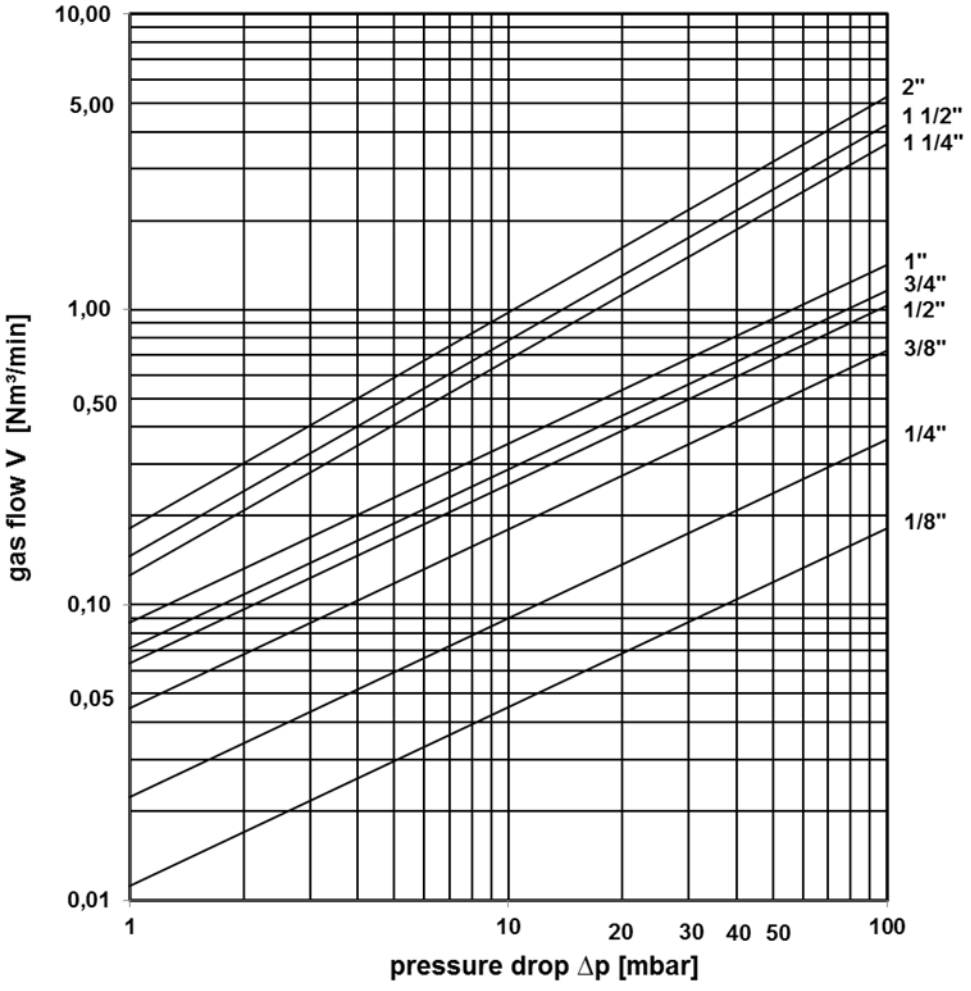
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4301 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
bolts / nuts	A2	A4
temperature sensor		PT 100, connection ¼“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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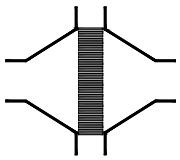
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® RG-Det4-IIA-…-4.5

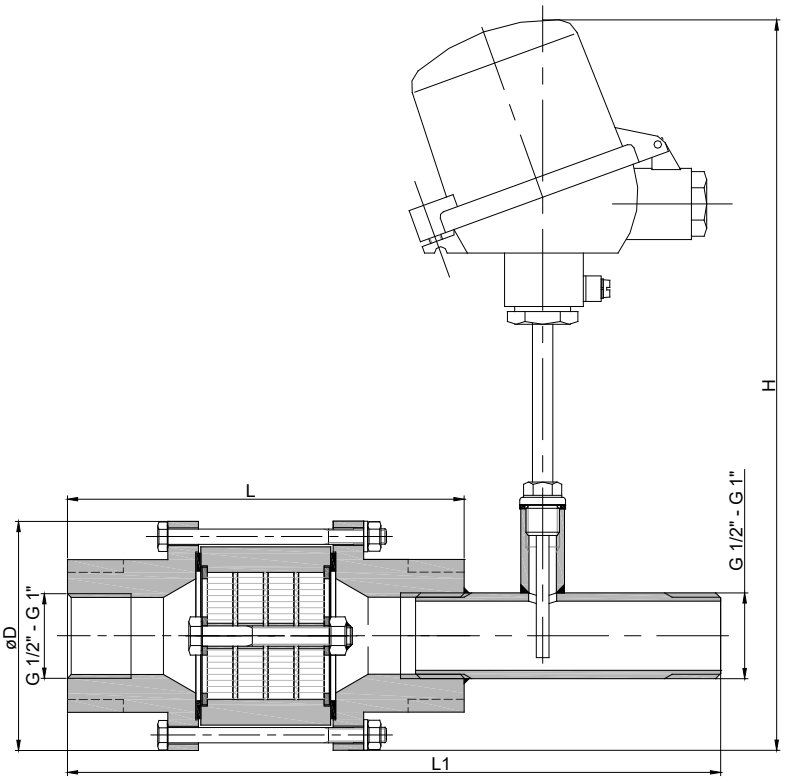
KITO® RG-Det4-IIA-…-4.5-T (-TT)

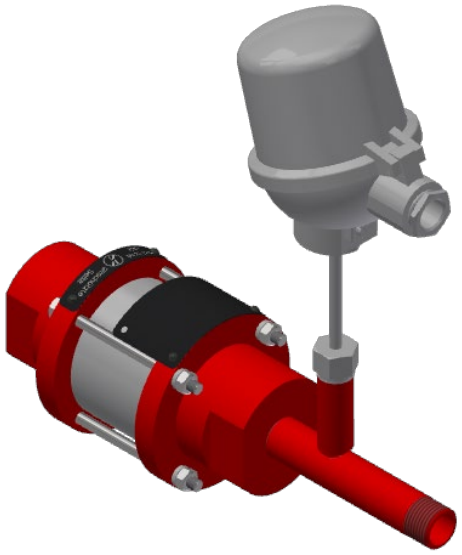


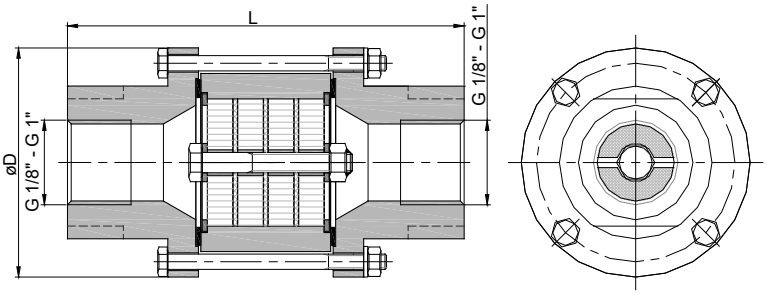
Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 4.5 bar abs. and an operating temperature of 60 °C must not be exceeded. All sizes are tested against “stabilized burning” and withstand this up to a max. burn time BT ≤ 1.0 min. To detect a “stabilized burning” a temperature sensor must be installed at each endangered side. Mounting is acceptable in any position, in horizontal as well as in vertical pipes.

Dimension (mm)







G	D	L	L1	H	kg
⅛“, ¼“, ⅜“	90	156	-	-	4.0
½“, ¾“, 1“			261	290	

Weight refers to the standard design

Example for order

KITO® RG-Det4-IIA-1”-4.5-T
(design with threaded connection G 1“ and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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G 26.2 N
Date: 11.2020
Created: Abt. Doku KITO
Design subject to change

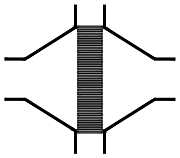
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® RG-Det4-IIA-…-4.5

KITO® RG-Det4-IIA-…-4.5-T (-TT)



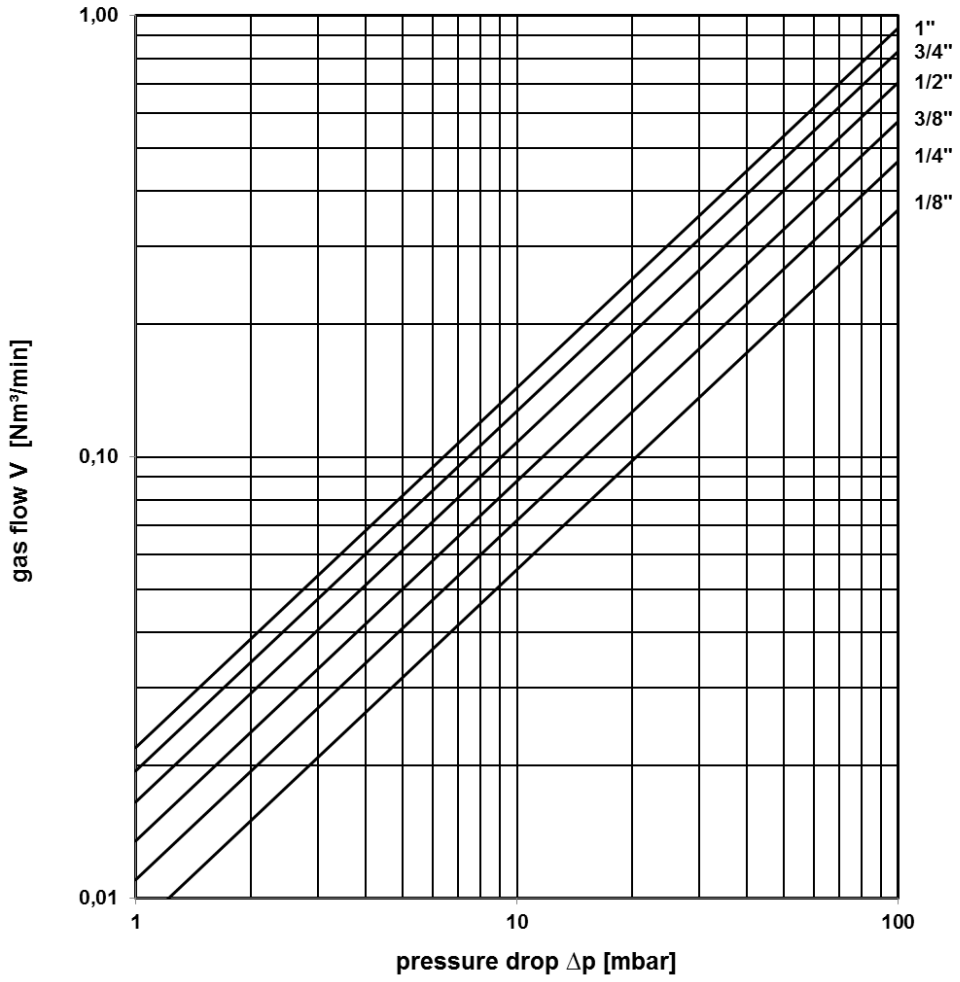
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4301 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
bolts / nuts	A2	A4
temperature sensor ***-not for connection G ⅛"- ⅜"-***		PT 100, connection ¼", 1.4571
connection	thread connection	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \qquad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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Created: Abt. Doku KITO
Design subject to change

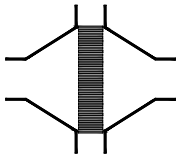
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® RG-Det4-IIB3-…-1.2

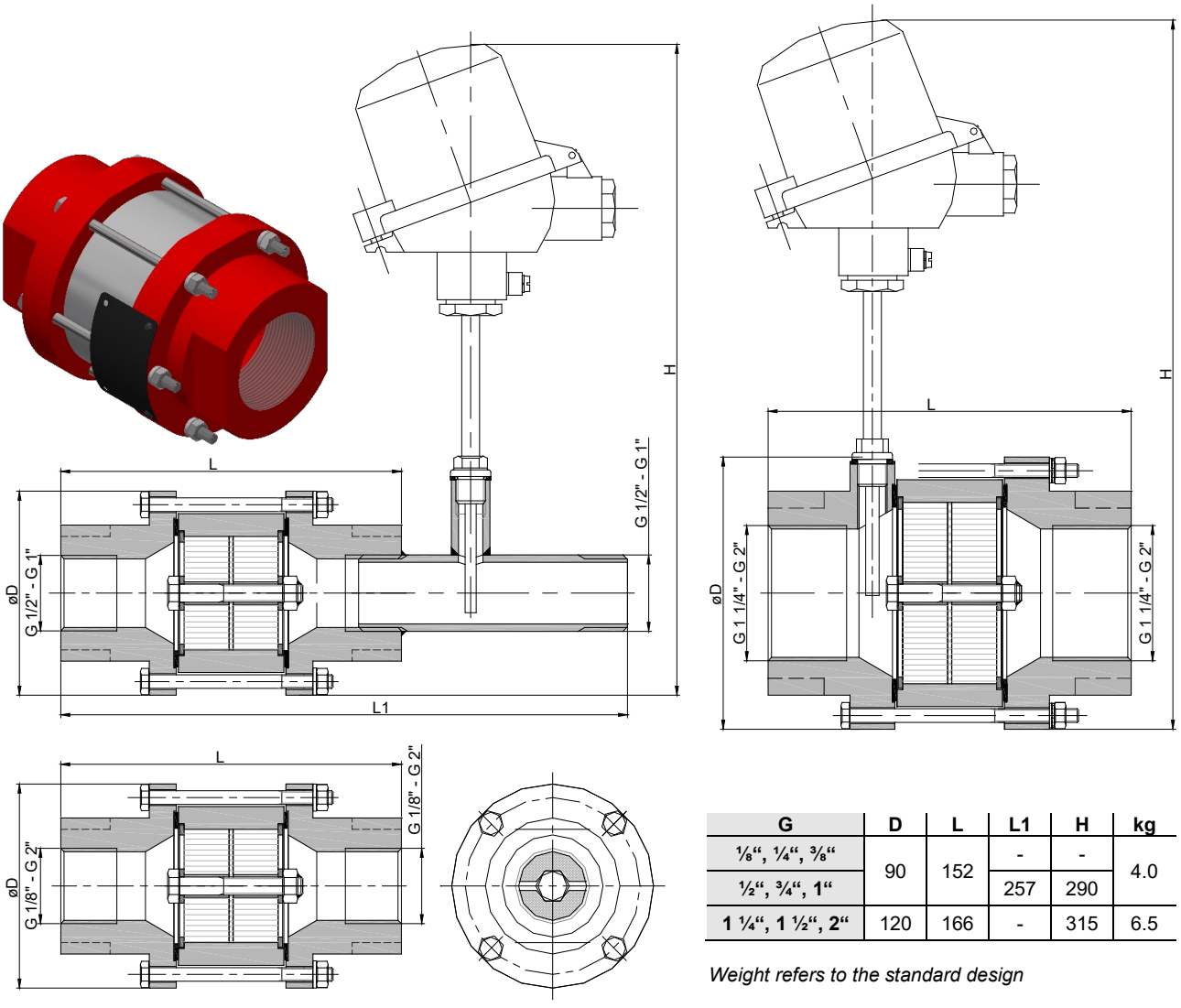
KITO® RG-Det4-IIB3-…-1.2-T (-TT)



Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. All sizes are tested against “stabilized burning” and withstand this up to a max. burn time BT ≤ 6.0 min. To detect a “stabilized burning” a temperature sensor must be installed at each endangered side. Mounting is acceptable in any position, in horizontal as well as in vertical pipes.

Dimension (mm)



G	D	L	L1	H	kg
⅛“, ¼“, ⅜“	90	152	-	-	4.0
½“, ¾“, 1“			257	290	
1 ¼“, 1 ½“, 2“	120	166	-	315	6.5

Weight refers to the standard design

Example for order

KITO® RG-Det4-IIB3-1 ¼”-1.2-T
(design with threaded connection G 1 ¼“ and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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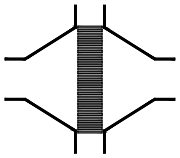
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® RG-Det4-IIB3-…-1.2

KITO® RG-Det4-IIB3-…-1.2-T (-TT)



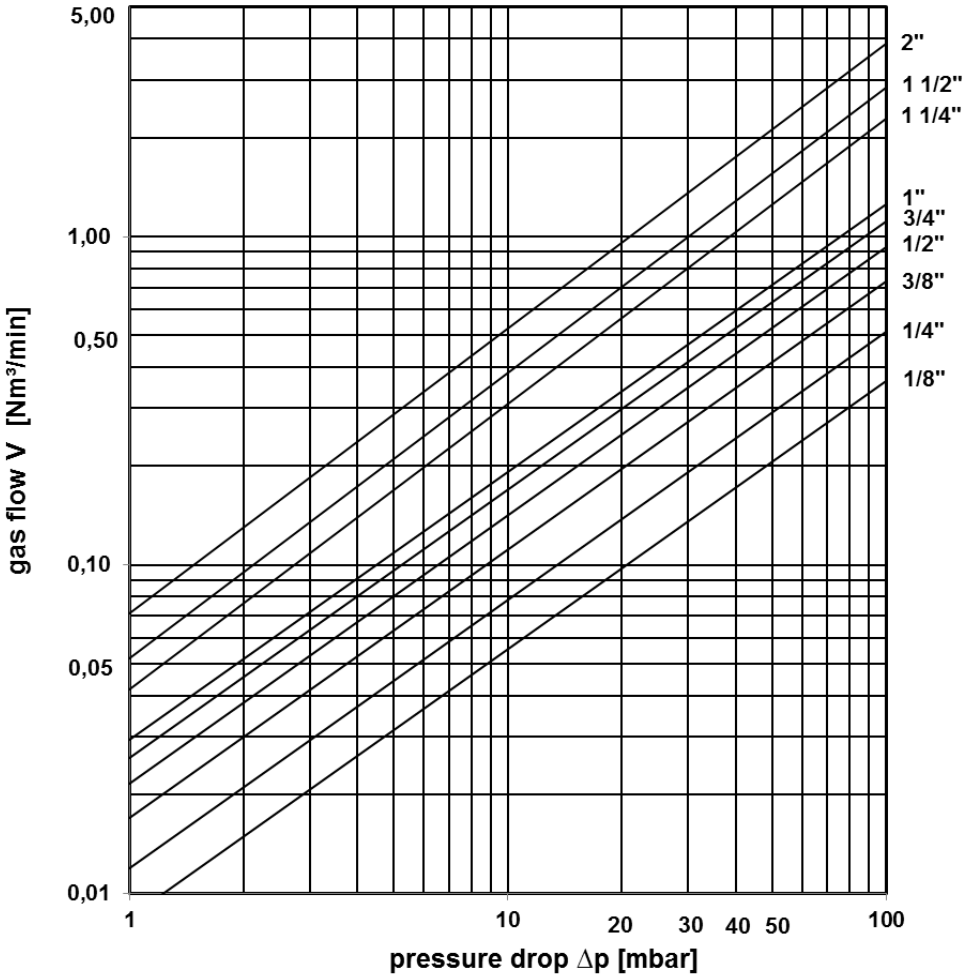
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4301 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
bolts / nuts	A2	A4
temperature sensor ***-not for connection G ⅛"- ⅜"-***		PT 100, connection ¼", 1.4571
connection	thread connection	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \qquad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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G 27 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

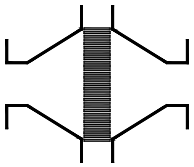
Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® RG-Det4-IIB3-…-1.2

KITO® RG-Det4-IIB3-…-1.2-T (-TT)

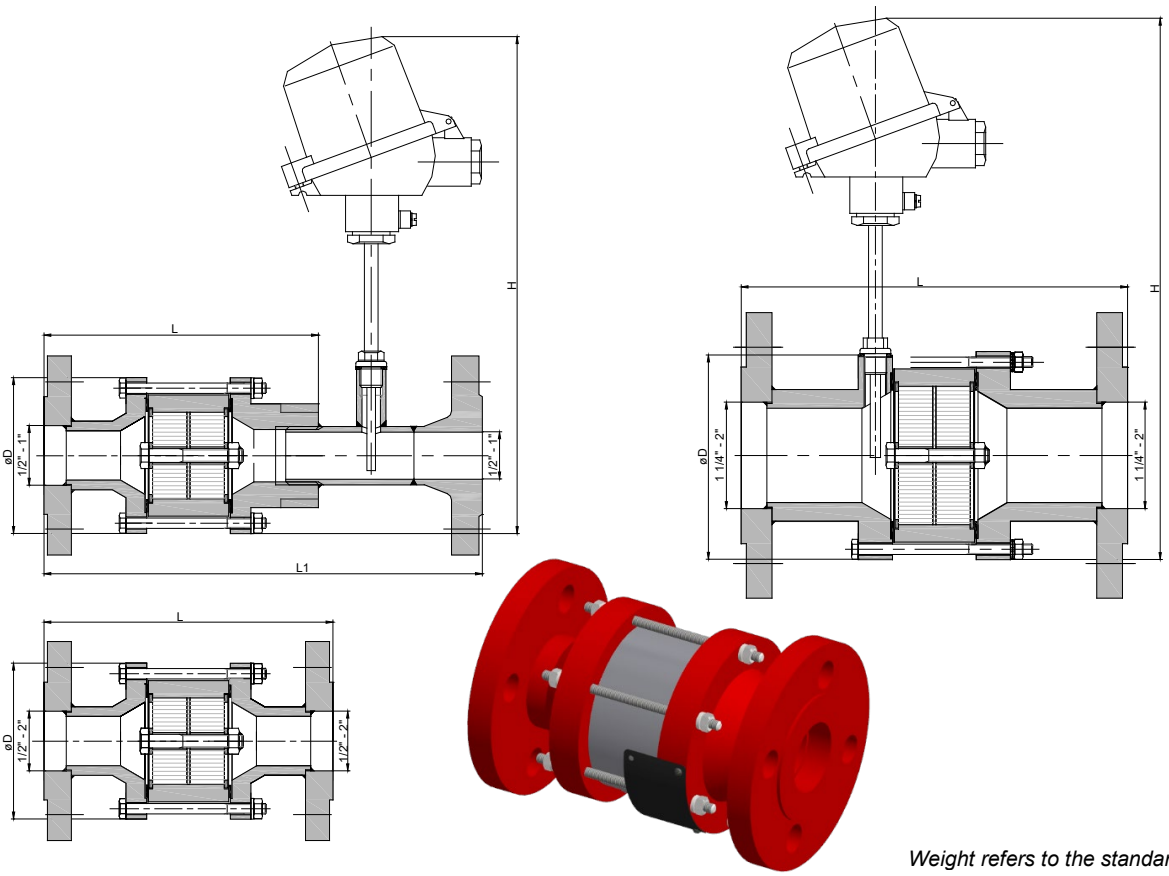
-design with flange connection-



Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. All sizes are tested against “stabilized burning” and withstand this up to a max. burn time BT ≤ 6.0 min. To detect a “stabilized burning” a thermocouple must be installed at each endangered side. Mounting is acceptable in any position, in horizontal as well as in vertical pipes.

Dimension (mm)



Weight refers to the standard design

	DN		D	L (DIN)	L (ASME)	L1 (DIN)	L1 (ASME)	H	kg
	DIN	ASME							
½“	15 PN 40	½“	90	173	173	270	270	290	3,7
¾“	20 PN 40	¾“		169	169	266	266		4,3
1“	25 PN 40	1“		169	169	266	266		4,6
1 ¼“	32 PN 40	1 ¼“	120	192	192	-	-	315	9,3
1 ½“	40 PN 40	1 ½“		202	202				9,8
2“	50 PN 16	2“		226	226				11,5

Example for order

KITO® RG-Det4-IIB3-1 ¼”-1.2-T DN 32
(design with flange connection DN 32 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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G 27.0 N
Date: 07-2024
Created: Abt. Doku KITO

KITO Armaturen GmbH

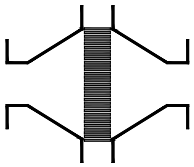
Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® RG-Det4-IIB3-…-1.2

KITO® RG-Det4-IIB3-…-1.2-T (-TT)

-design with flange connection-



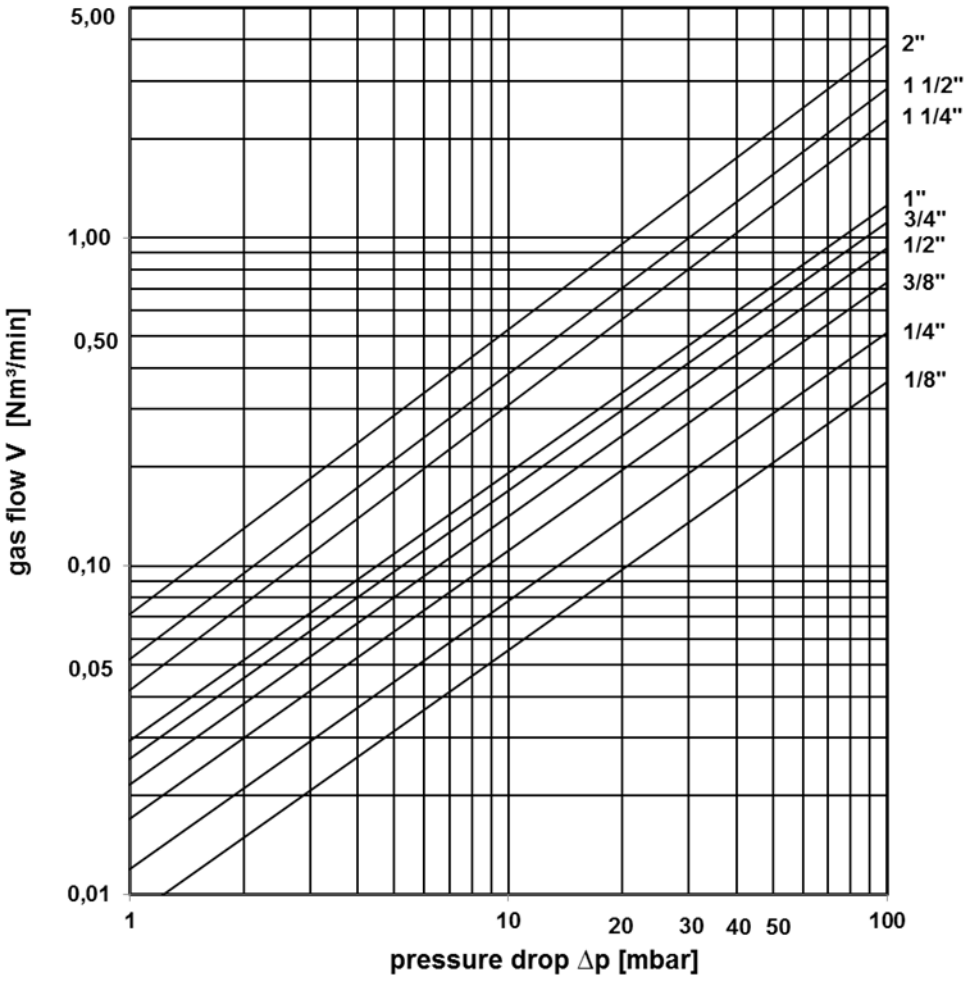
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4301 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
bolts / nuts	A2	A4
temperature sensor		PT 100, connection ¼“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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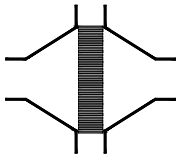
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® RG-Det4-IIC-…

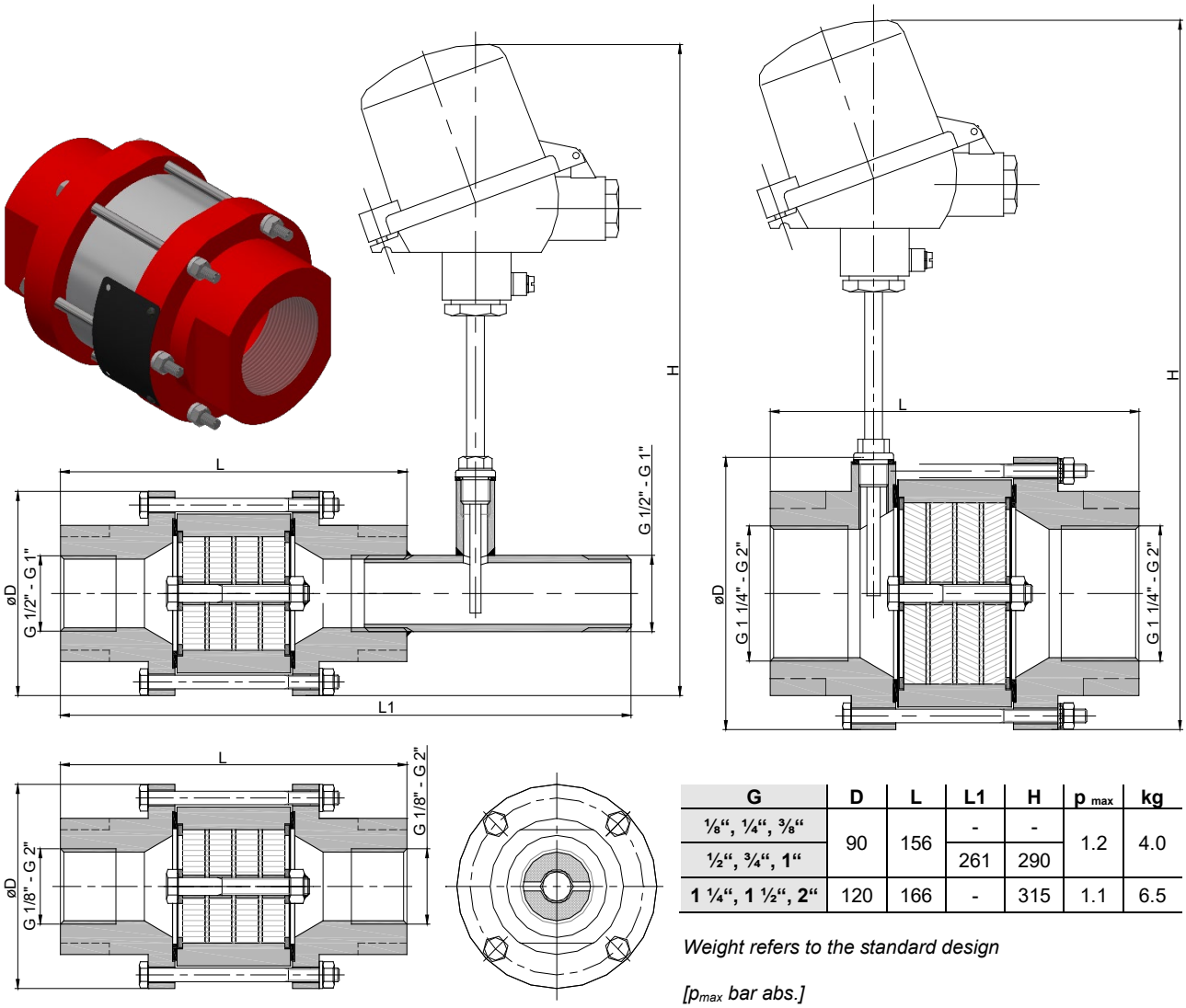
KITO® RG-Det4-IIC-…-T (-TT)



Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIC with a maximum experimental safe gap (MESG) < 0.5 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 or 1.1 bar abs. and an operating temperature of 60 °C must not be exceeded. All sizes are tested against “stabilized burning” and withstand this up to a max. burn time BT ≤ 1.0 min. To detect a “stabilized burning” a temperature sensor must be installed at each endangered side. Mounting is acceptable in any position, in horizontal as well as in vertical pipes.

Dimension (mm)



G	D	L	L1	H	p max	kg
⅛“, ¼“, ⅜“	90	156	-	-	1.2	4.0
½“, ¾“, 1“			261	290		
1 ¼“, 1 ½“, 2“	120	166	-	315	1.1	6.5

Weight refers to the standard design

[p_{max} bar abs.]

Example for order

KITO® RG-Det4-IIC-1 ¼”-1.2-T
(design with threaded connection G 1 ¼“ and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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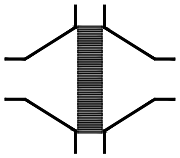
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® RG-Det4-IIC-…

KITO® RG-Det4-IIC-…-T (-TT)



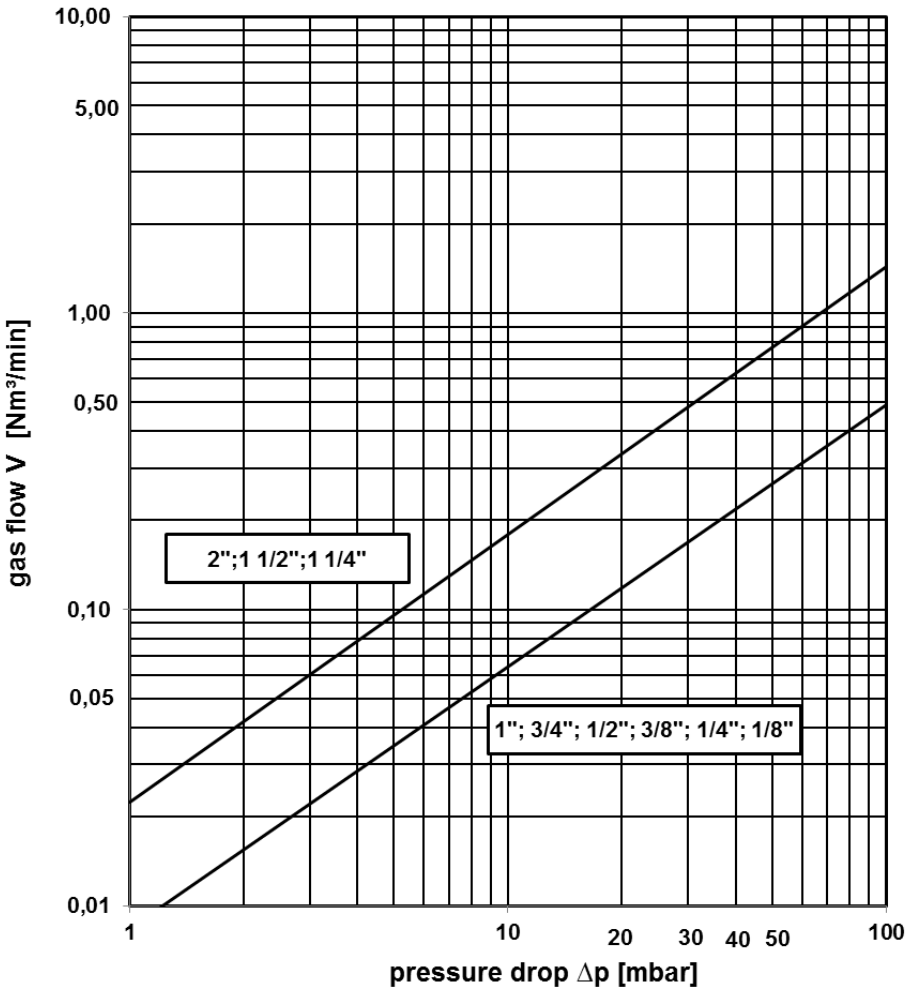
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4301 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
bolts / nuts	A2	A4
temperature sensor ***-not for connection G ⅛"- ⅜"-***		PT 100, connection ¼", 1.4571
connection	thread connection	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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KITO Armaturen GmbH

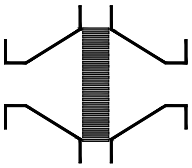
Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® RG-Det4-IIC-…

KITO® RG-Det4-IIC-…-T (-TT)

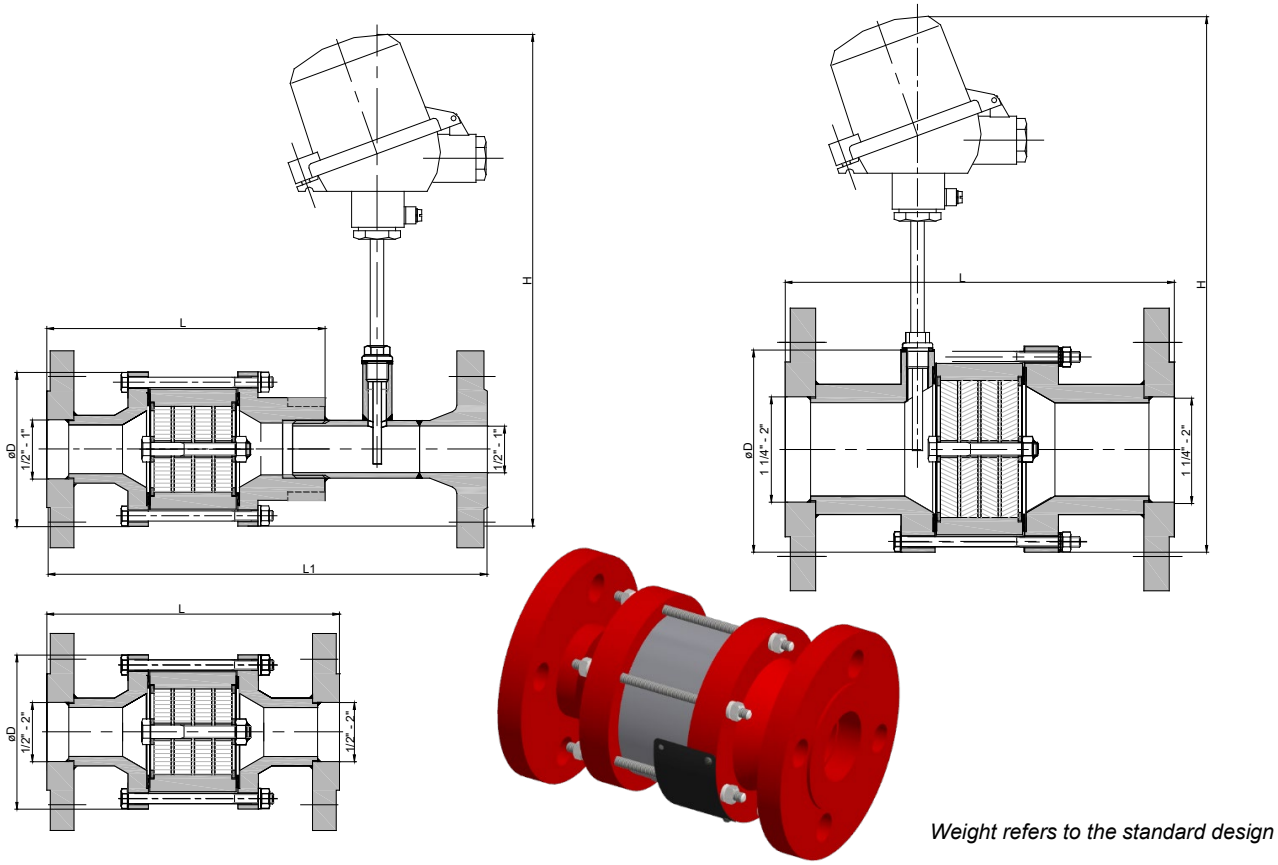
-design with flange connection -



Application

For installation into pipes to the protection of vessels and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4.** Approved for all substances of explosion groups IIA1 to IIC with a maximum experimental safe gap (MESG) < 0.5 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 or 1.1 bar abs. and an operating temperature of 60 °C must not be exceeded. All sizes are tested against “stabilized burning” and withstand this up to a max. burn time BT ≤ 1.0 min. To detect a “stabilized burning” a temperature sensor must be installed at each endangered side. Mounting is acceptable in any position, in horizontal as well as in vertical pipes.

Dimension (mm)



Weight refers to the standard design

	DN		D	L (DIN)	L (ASME)	L1 (DIN)	L1 (ASME)	H	P max (bar abs.)	kg
	DIN	ASME								
½“	15 PN 40	½“	90	177	177	272	272	290	1,2	3,9
¾“	20 PN 40	¾“		173	173	270	270			4,5
1“	25 PN 40	1“		173	173	270	270			4,8
1 ¼“	32 PN 40	1 ¼“	120	196	196	-	-	315	1,1	9,6
1 ½“	40 PN 40	1 ½“		206	206					10,1
2“	50 PN 16	2“		230	230					11,8

Example for order

KITO® RG-Det4-IIC-1 ¼”-1.2-T DN 32
(design with flange connection DN 32 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 07-2024
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

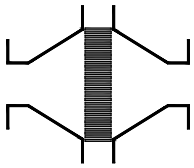
Type sheet

Bi-directional in-line detonation flame arrester, short-time burning proof

KITO® RG-Det4-IIC-…

KITO® RG-Det4-IIC-…-T (-TT)

-design with flange connection -



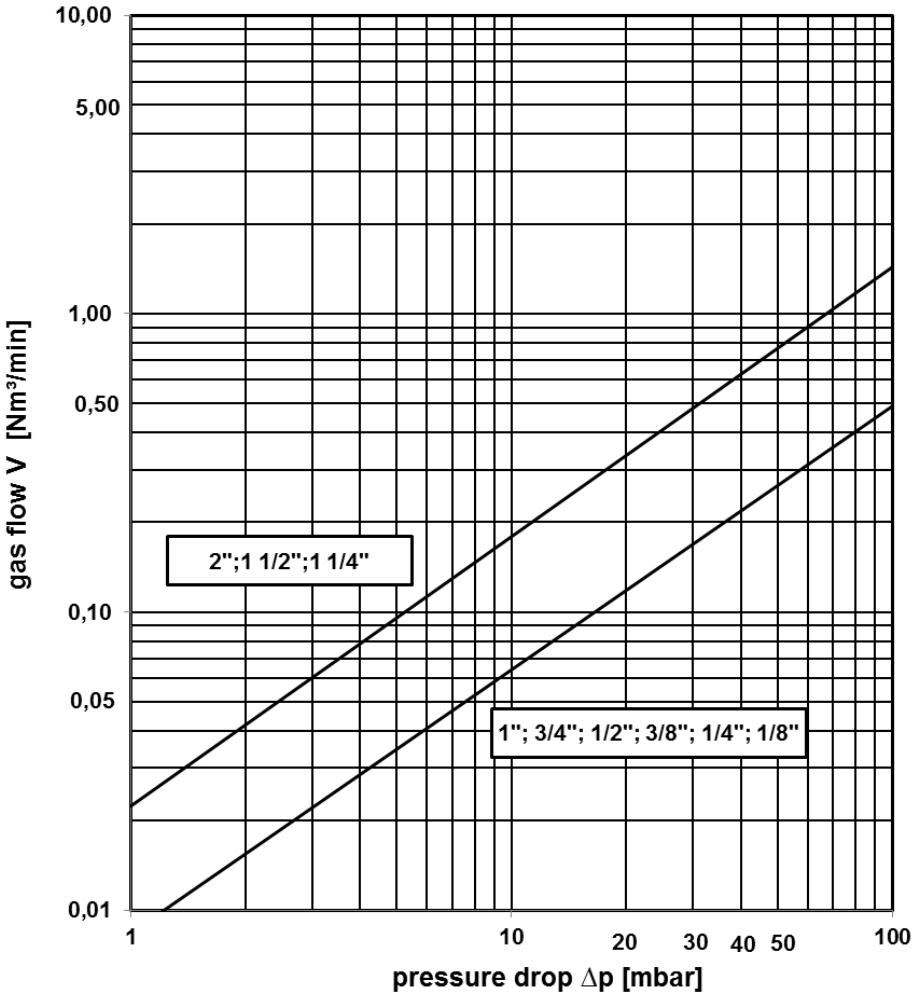
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4301 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
bolts / nuts	A2	A4
temperature sensor		PT 100, connection ¼“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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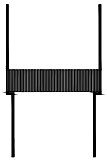
Created: Abt. Doku KITO

KITO Armaturen GmbH

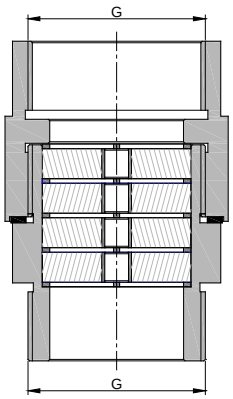
Type sheet
Bi-directional in-line detonation flame arrester
KITO® FS-Det4-IIA-…-1.2

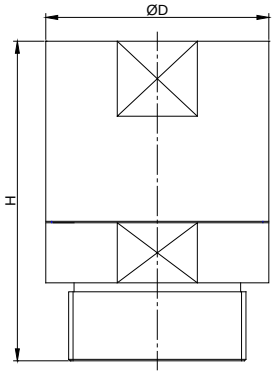


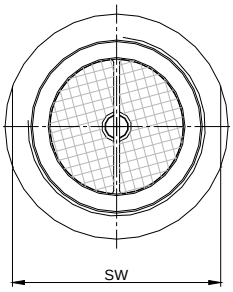
Application

Installation into pipelines as inline detonation flame arrester e. g. for the protection of ignition gas lines or measuring devices. Applicable for all materials of the explosion groups IIA1 up to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Operating from both sides, for a maximum operating pressure of 1.2 bar abs. and a maximum operating temperature of 60 °C.

Dimension (mm)







thread	D	H	SW	kg
G ½“	35	69	30	0.4
G ¾“	40	69	36	
G 1“	45	69	41	0.6
G 1 ¼“	55	107	50	
G 1 ½“	60	107	55	
G 2“	75	107	70	2.0

Weight refers to the standard design

Example for order

KITO® FS-Det4-IIA-1”-1.2
(design with threaded connection G 1“)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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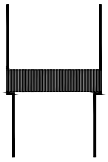
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester

KITO® FS-Det4-IIA-…-1.2



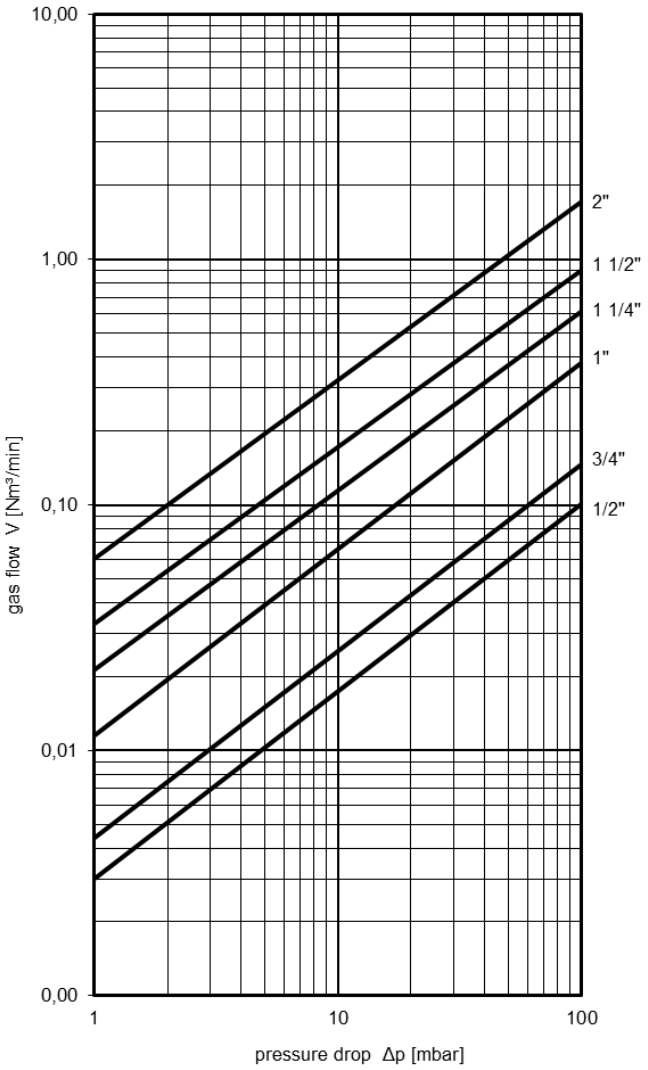
Design

	standard	optionally
housing	stainless steel mat. no. 1.4571	
gasket	PTFE	
KITO®-grid	stainless steel mat. no. 1.4571	
interlayer	stainless steel mat. no. 1.4571	
connection	thread inside and outside	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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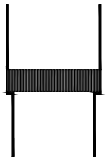
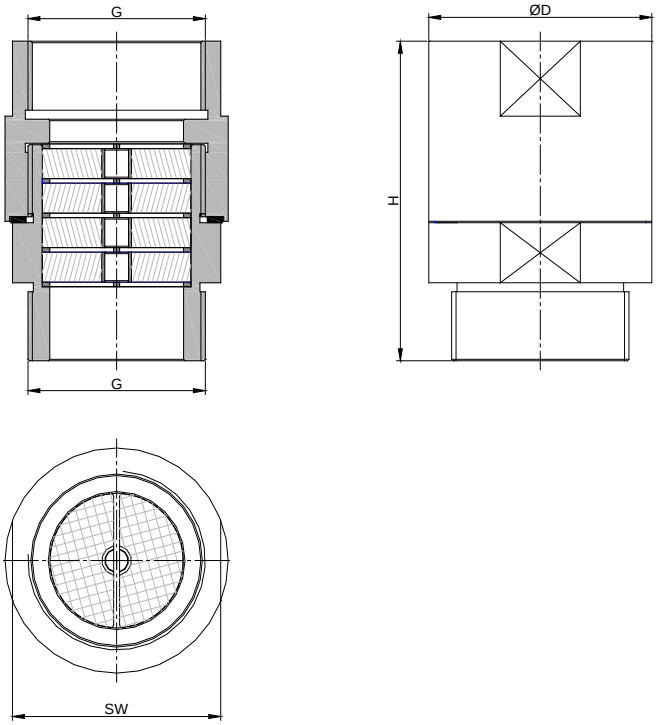
Type sheet
Bi-directional in-line detonation flame arrester
KITO® FS-Det4-IIB3-…-1.2



Application

Installation into pipelines as inline detonation flame arrester e. g. for the protection of ignition gas lines or measuring devices. Applicable for all materials of the explosion groups IIA1 up to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Operating from both sides, for a maximum operating pressure of 1.2 bar abs. and a maximum operating temperature of 60 °C.

Dimension (mm)



thread	D	H	SW	kg
G ½“	35	69	30	0.4
G ¾“	40	69	36	
G 1“	45	69	41	0.6
G 1 ¼“	55	107	50	
G 1 ½“	60	107	55	
G 2“	75	107	70	2.0

Weight refers to the standard design

Example for order

KITO® FS-Det4-IIB3-1”-1.2
(design with threaded connection G 1“)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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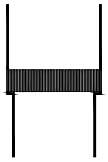
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester

KITO® FS-Det4-IIB3-…-1.2



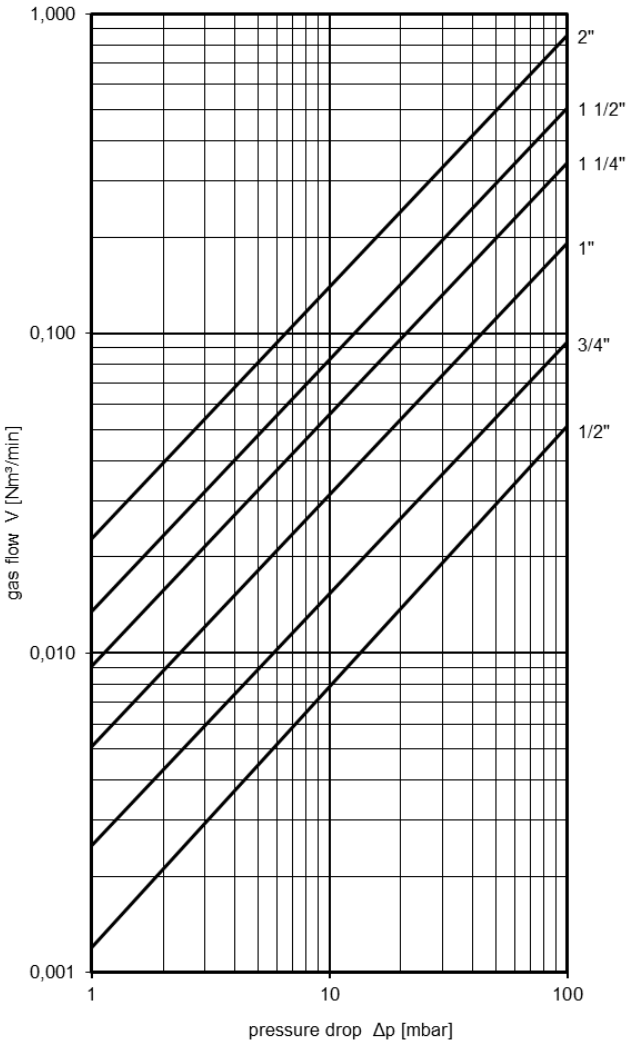
Design

	standard	optionally
housing	stainless steel mat. no. 1.4571	
gasket	PTFE	
KITO®-grid	stainless steel mat. no. 1.4571	
interlayer	stainless steel mat. no. 1.4571	
connection	thread inside and outside	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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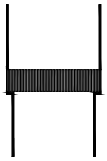
KITO Armaturen GmbH

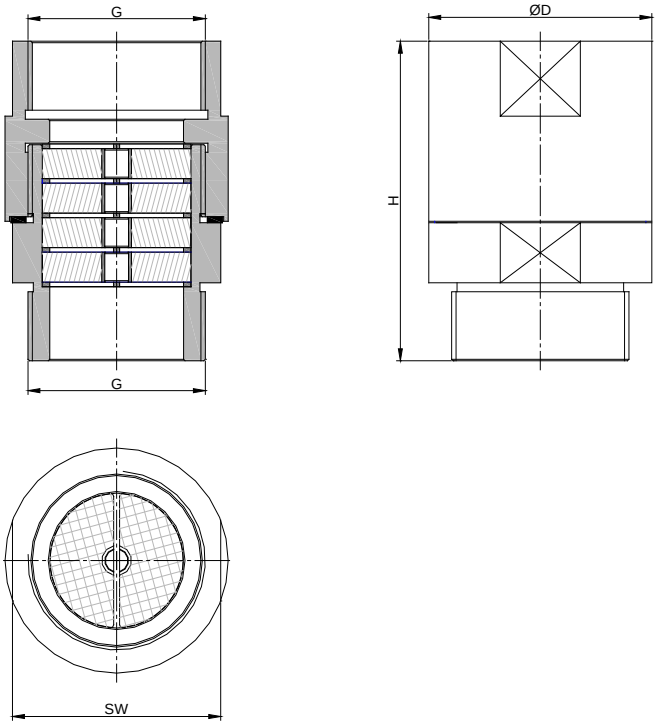
Type sheet
Bi-directional in-line detonation flame arrester
KITO® FS-Det4-IIC-…-1.2



Application

Installation into pipelines as inline detonation flame arrester e. g. for the protection of ignition gas lines or measuring devices. Applicable for all materials of the explosion groups IIA1 up to IIC with a maximum experimental safe gap (MESG) < 0.5 mm. Operating from both sides, for a maximum operating pressure of 1.2 bar abs. and a maximum operating temperature of 60 °C.

Dimension (mm)



thread	D	H	SW	kg
G ½“	35	69	30	0.4
G ¾“	40	69	36	
G 1“	45	69	41	0.6
G 1 ¼“	55	107	50	
G 1 ½“	60	107	55	
G 2“	75	107	70	2.0

Weight refers to the standard design

Example for order

KITO® FS-Det4-IIC-1”-1.2
(design with threaded connection G 1“)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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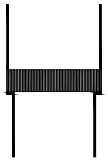
KITO Armaturen GmbH

Type sheet

Bi-directional in-line detonation flame arrester

KITO® FS-Det4-IIC-…-1.2



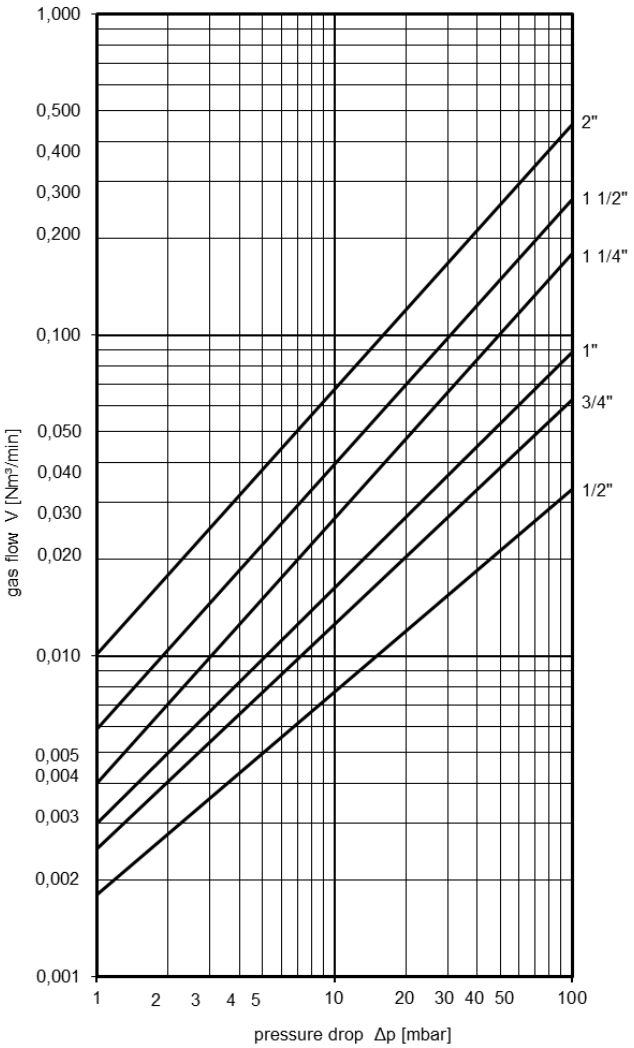
Design

	standard	optionally
housing	stainless steel mat. no. 1.4571	
gasket	PTFE	
KITO®-grid	stainless steel mat. no. 1.4571	
interlayer	stainless steel mat. no. 1.4571	
connection	thread inside and outside	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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G 32 N
Date: 05-2018
Created: Abt. Doku KITO

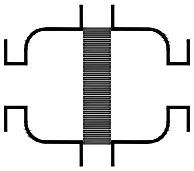
KITO Armaturen GmbH

Type sheet

Uni-directional in-line deflagration flame arrester, short-time burning proof

KITO® RV/N-IIA-…/…-1.2

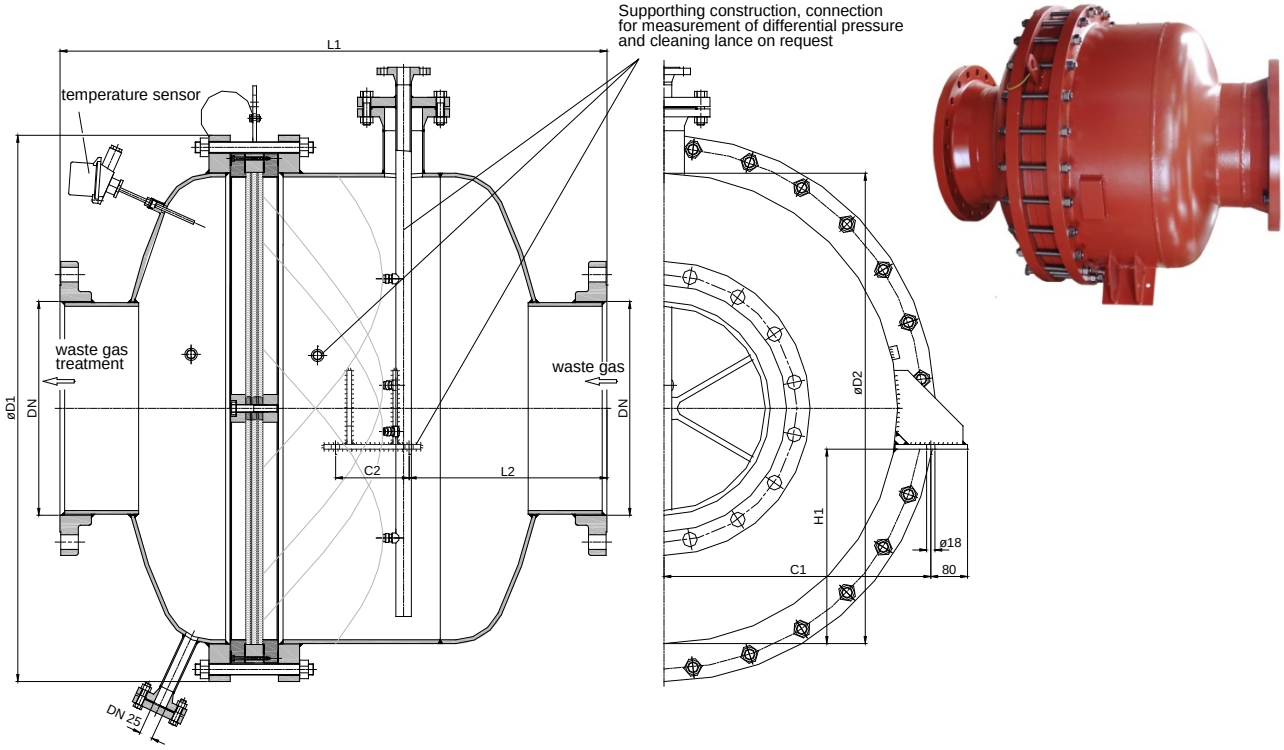
KITO® RV/N-IIA-…/…-1.2-T



Application

Intermediate armature, mainly installed as in-line deflagration flame arrester in pipes to thermal incineration plants for vapor/air and air/gas mixtures. Unilaterally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. Approved for all substances of the explosion group IIA with a MESG > 0.9 mm. The maximum length of the pipe from the KITO® flame arrester to the ignition source is limited (L/D tube length/tube diameter). It is only allowed to install the device in pipes with nominal widths ≤ than the nominal width of the armature (DN). The temperature sensors (2 pieces, arranged on one side) serves to trigger an emergency function, e.g. shutting off or inerting the gas flow if a stabilized burning occurs at the KITO® flame arrester.

Dimension (mm)



NG	DN		D1	D2	L1	L2	C1	C2	H1	max. L/D*	kg (DIN)	kg (ASME)
	DIN	ASME										
800	400	16“	1015	813	900	295	487	130	316	10	540	
	500	20“									560	
1000	400	16“	1180	1016	1190	405	580	210	420	50		
	450	18“									824	862
	500	20“									821	879
	600	24“									839	939

Weight refers to the standard design
** Ratio of pipe length to nominal pipe diameter*

Example for order

KITO® RV/N-IIA-800/400-1.2-T
(Design NG 800 with flange connection DN 400 PN 10 and two temperature sensors)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

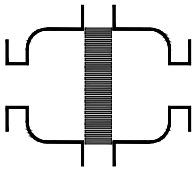
KITO Armaturen GmbH

Type sheet

Uni-directional in-line deflagration flame arrester, short-time burning proof

KITO® RV/N-IIA-…/…-1.2

KITO® RV/N-IIA-…/…-1.2-T



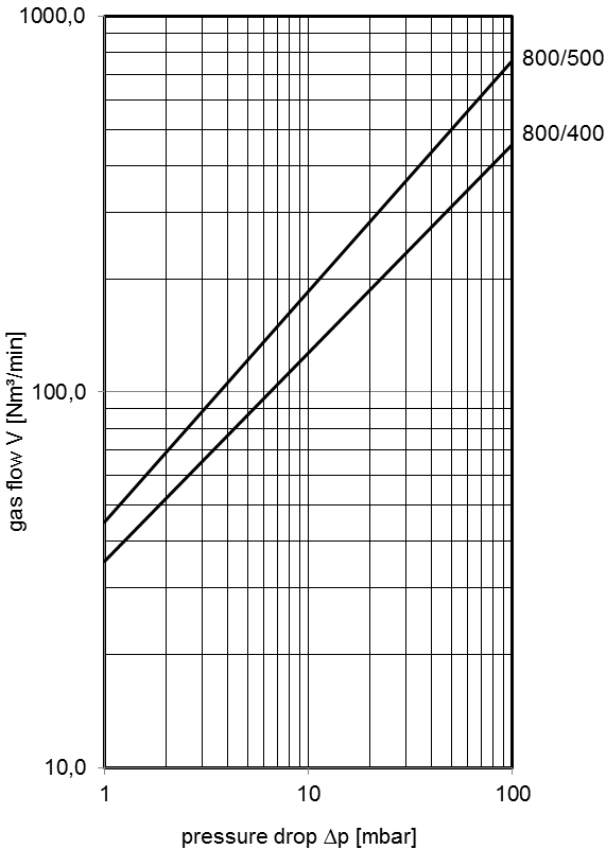
Design

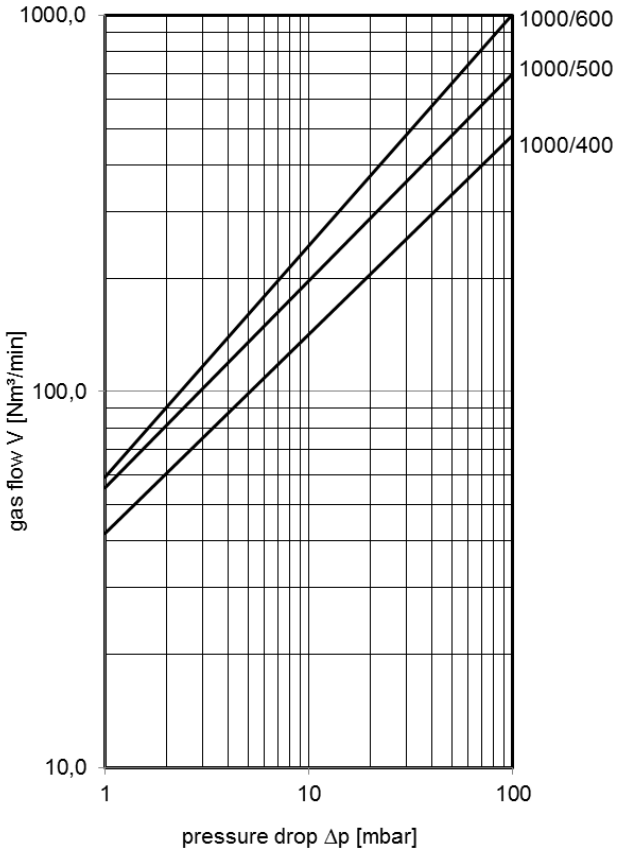
	standard	optionally
housing	steel	stainless steel mat. no. 1.4301 / 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel	stainless steel mat. no. 1.4301 / 1.4571
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
temperature sensor		2x PT 100, connection 3/8“, 1.4571
condensate drain connecting piece	blank flanged	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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Date: 05-2018
Created: Abt. Doku KITO

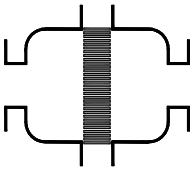
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® RV/N-1200/600-IIA-1.6

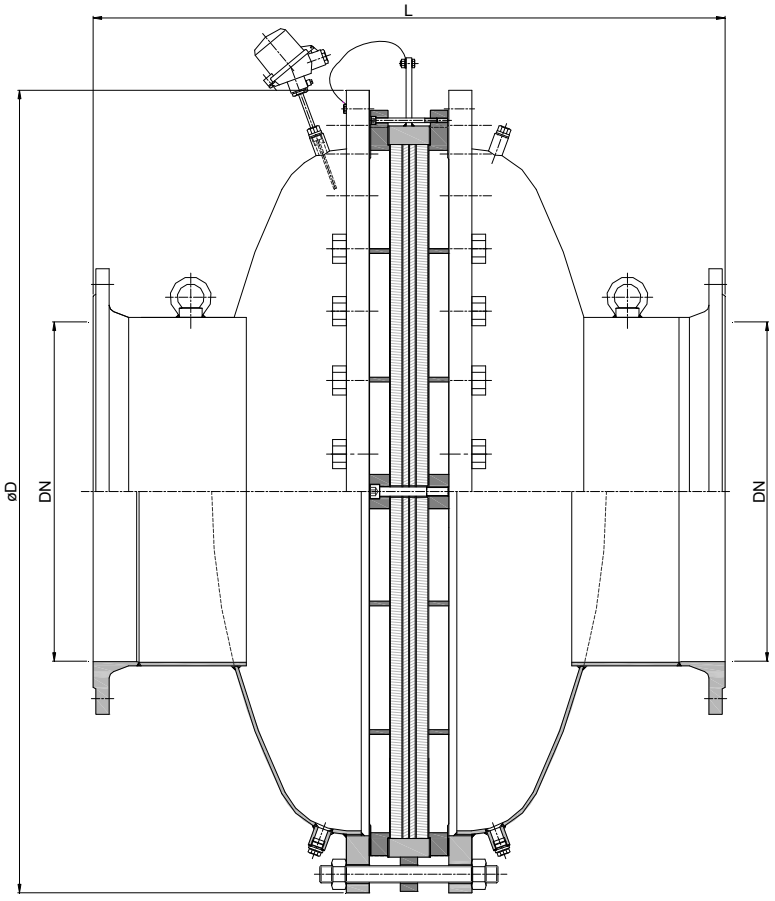
KITO® RV/N-1200/600-IIA-1.6-T (-TT)

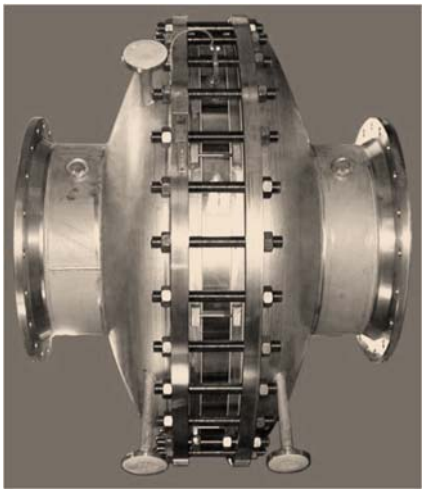


Application

Intermediate armature, mainly installed as in-line deflagration flame arrester in pipes to thermal incineration plants for vapor/air and air/gas mixtures. Bi-directionally working in pipes, whereby an operating pressure of 1.6 bar abs. and an operating temperature of 200 °C must not be exceeded. Approved for all substances of the explosion group IIA with a MESG > 0.9 mm. The maximum length of the pipe from the KITO® flame arrester to the ignition source is limited (< 50 x D). It is only allowed to install the device in pipes with nominal widths ≤ than the nominal width of the armature (DN). The thermal sensor serves to trigger an emergency function, e.g. shutting off or inerting the gas flow if a stabilized burning occurs at the KITO® flame arrester.

Dimensions (mm)





NG	DN		D	L	kg (DIN)	kg (ASME)
	DIN	ASME				
1200	**600**	**24“**	1405	1100	980	1090

Weight refers to the standard design

Example for order

KITO® RV/N-1200/600-IIA-1.6-T
(Design NG 1200 with flange connection DN 600 PN 10 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Design subject to change

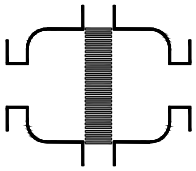
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® RV/N-1200/600-IIA-1.6

KITO® RV/N-1200/600-IIA-1.6-T (-TT)



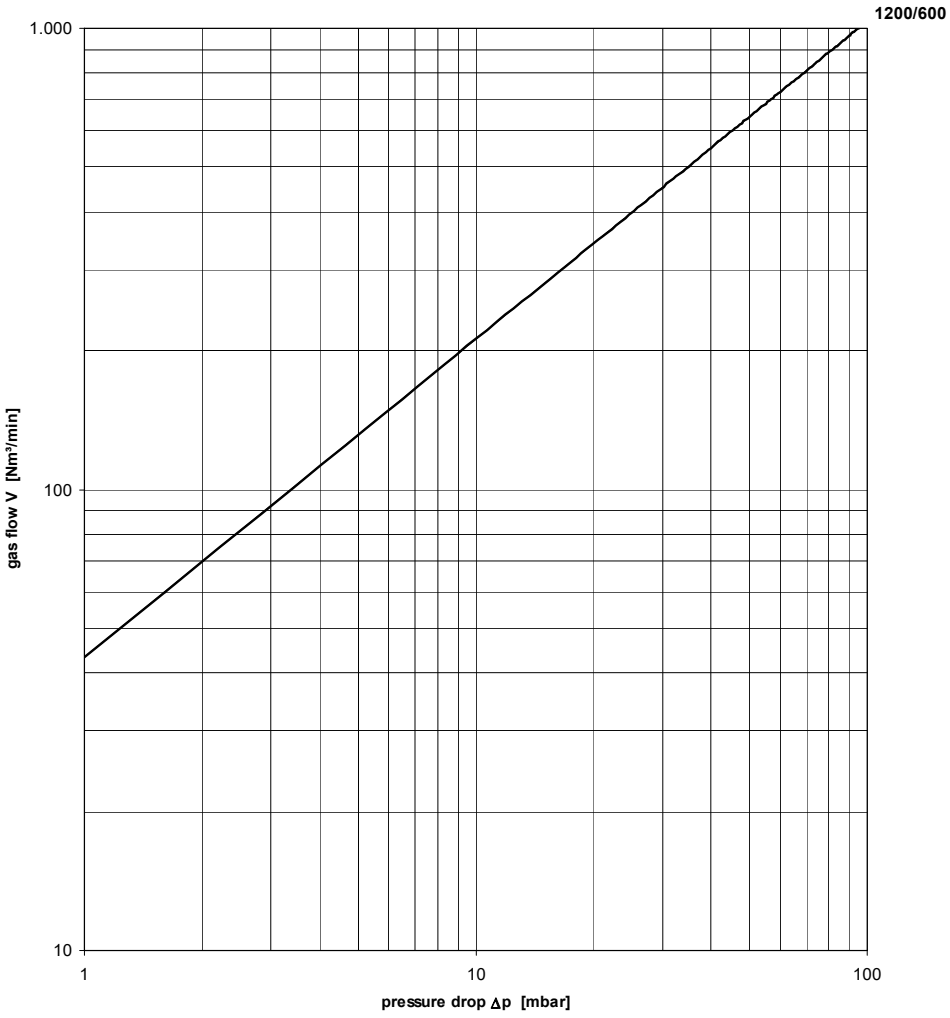
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4301 / 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel	stainless steel mat. no. 1.4301 / 1.4571
KITO®-grid	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
temperature sensor		PT 100, connection 3/8“, 1.4571
condensate drain connecting piece	G ½“	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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Created: Abt. Doku KITO
Design subject to change

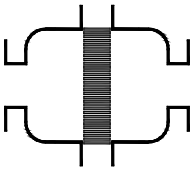
KITO Armaturen GmbH

Type sheet

Uni-directional in-line deflagration flame arrester, short-time burning proof

KITO® RV/N-IIA-1000/…-1.2-X08

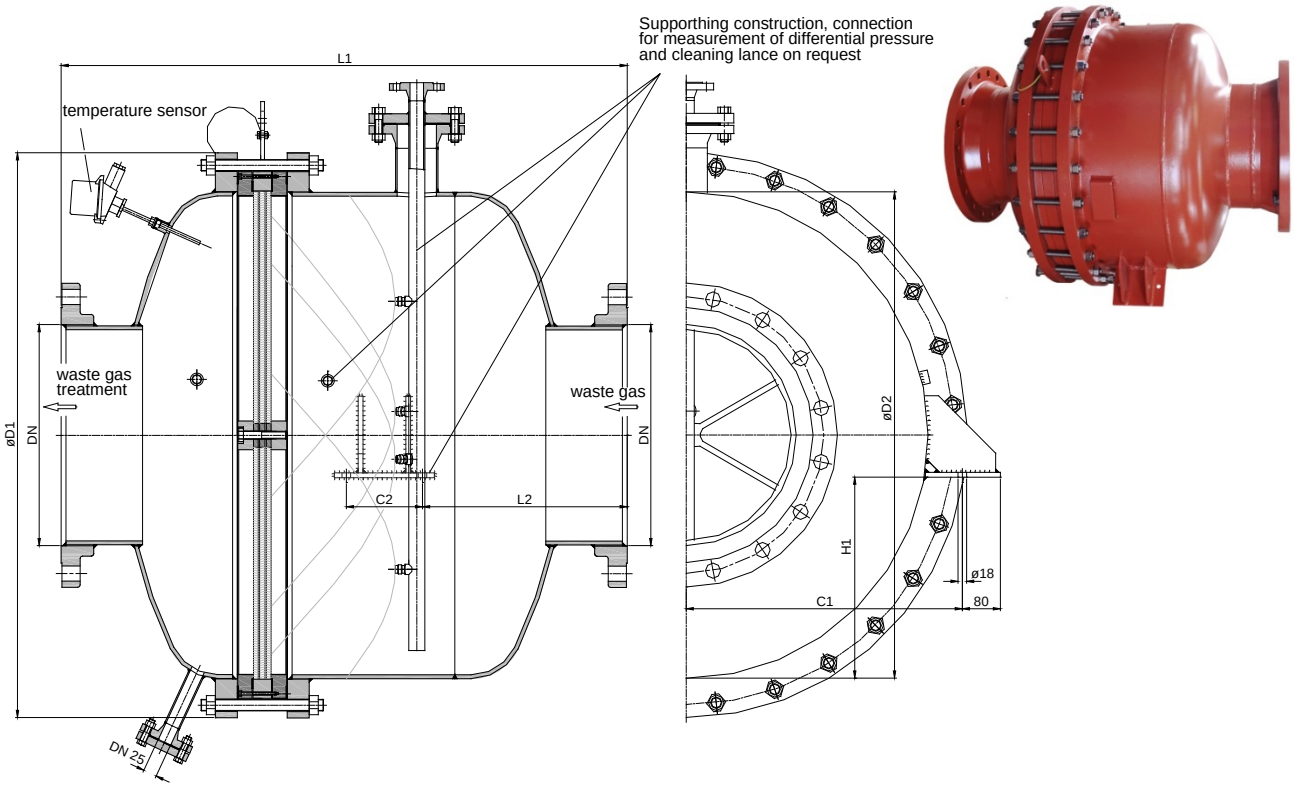
KITO® RV/N-IIA-1000/…-1.2-X08-T



Application

Intermediate armature, mainly installed as in-line deflagration flame arrester in pipes to thermal incineration plants for vapor/air and air/gas mixtures. Unilaterally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 80 °C must not be exceeded. Approved for all substances of the explosion group IIA with a MESG > 0.9 mm. The maximum length of the pipes from the KITO® flame arrester to the ignition source is limited (L/D tube length/tube diameter). It is only allowed to install the device in pipes with nominal widths ≤ than the nominal width of the armature (DN). The temperature sensors (2 pieces, arranged on one side) serves to trigger an emergency function, e.g. shutting off or inerting the gas flow if a stabilized burning occurs at the KITO® flame arrester. Proof against “stabilized burning” and withstand this up to a max. burn time BT = 1.0 min.

Dimension (mm)



NG	DN		D1	D2	L1	L2	C1	C2	H1	max. L/D*	kg (DN)	kg (ASME)
	DIN	ASME										
1000	400	16“	1180	1016	1190	405	580	210	420	50		
	450	18“									824	862
	500	20“									821	879
	600	24“									839	939

Weight refers to the standard design
** Ratio of pipe length to nominal pipe diameter*

Example for order

KITO® RV/N-IIA-1000/400-1.2-X08-T
(Design NG 1000 with flange connection DN 400 PN 10 and two temperature sensors)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

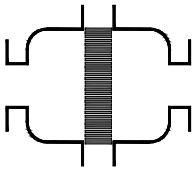
KITO Armaturen GmbH

Type sheet

Uni-directional in-line deflagration flame arrester, short-time burning proof

KITO® RV/N-IIA-1000/…-1.2-X08

KITO® RV/N-IIA-1000/…-1.2-X08-T



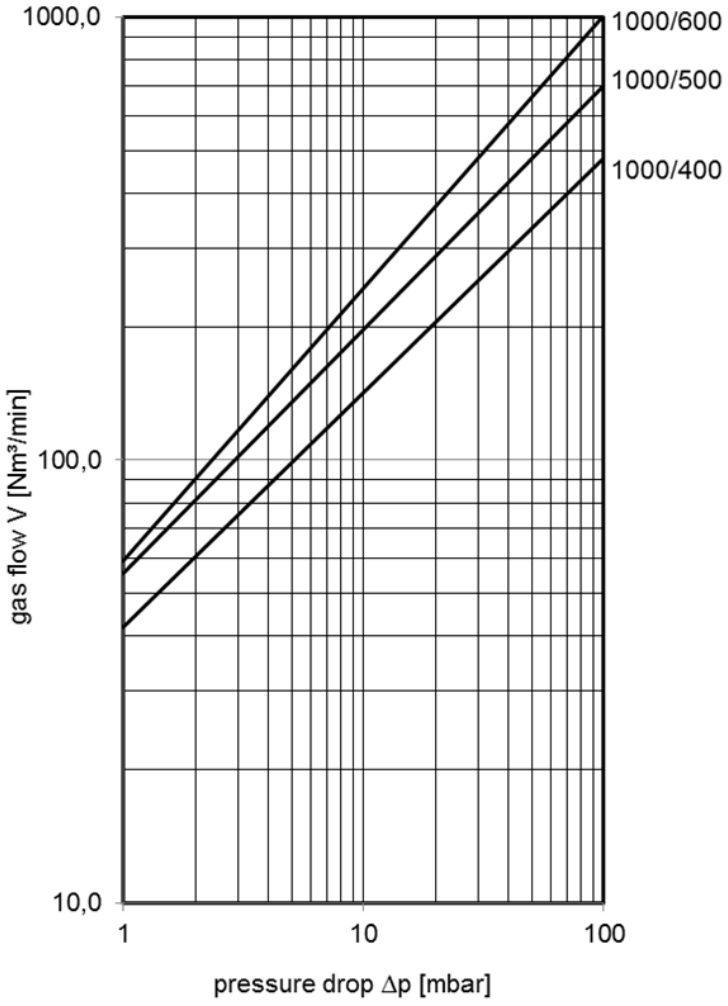
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4301 / 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel	stainless steel mat. no. 1.4301 / 1.4571
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
temperature sensor		2x PT 100, connection 3/8“, 1.4571
condensate drain connecting piece	blank flanged	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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Created: Abt. Doku KITO

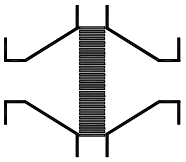
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® INE-I-…/…-1.2

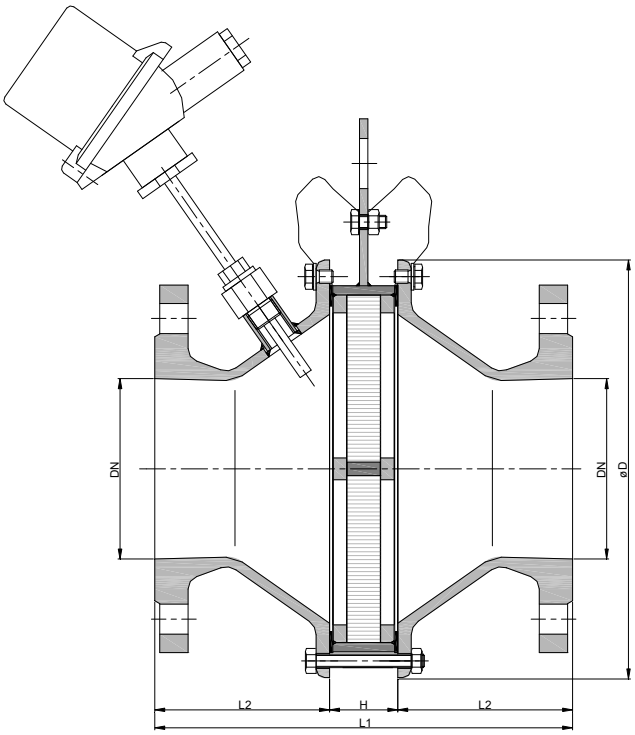
KITO® INE-I-…/…-1.2-T (-TT)



Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion group IIA1 (old: I) with a maximum experimental safe gap (MESG) ≥ 1.14 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. An installation into horizontal and vertical pipes is permissible. To detect a thermal load on the KITO® flame arrester element in operation, a temperature sensor can be implemented as an option into the flame arrester body. Proof against “stabilized burning” and withstand this up to a max. burn time BT = 1.0 min.

Dimension (mm)



NG	DN		D	L1	H	L2	kg
	DIN	ASME					
100	**50 PN 16**	**2“**	165	213	33	90	11
150	**65 PN 16**	**-**	210	239	39	100	18
	80 PN 16	**3“**					
200	**100 PN 16**	**4“**	268	249	39	105	26
250	**125 PN 16**	**-**	322	279	39	120	35
300	**150 PN 16**	**6“**	370	305	45	130	50
	200 PN 10	**8“**					58
400	**250 PN 10**	**10“**	480	345	45	150	79
	300 PN 10	**12“**		323		139	91

Weight refers to the variant I

Example for order

KITO® INE-I-150/80-1.2-T
(Design NG 150 with flange connection DN 80 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 01-2020
Created: Abt. Doku KITO
Design subject to change

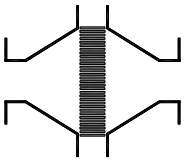
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® INE-I-…/…-1.2

KITO® INE-I-…/…-1.2-T (-TT)



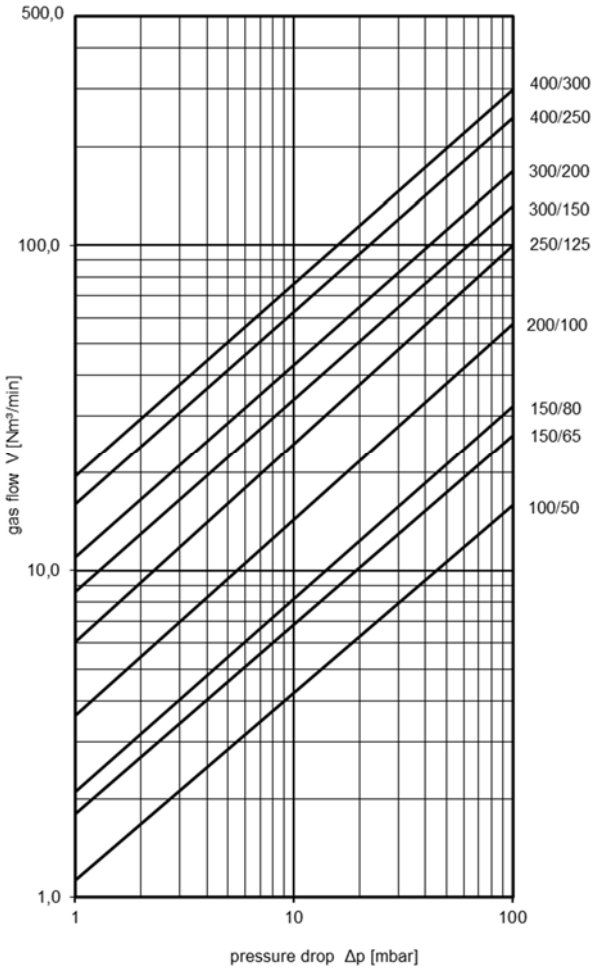
Design

	variant I	variant II	variant III
housing	cast steel 1.0619	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE	PTFE
KITO®-flame arrester element	completely interchangeable		
KITO®-casing	steel	stainless steel mat. no. 1.4571 or 1.4581	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	galvanized steel	A4
temperature sensor	PT 100 (option), connection 3/8", 1.4571		
flange connection	EN 1092-1 type B1 *optionally* ASME B16.5 Class 150 RF		

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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Date: 01-2020
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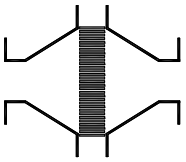
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® INE-I-…/…-1.5

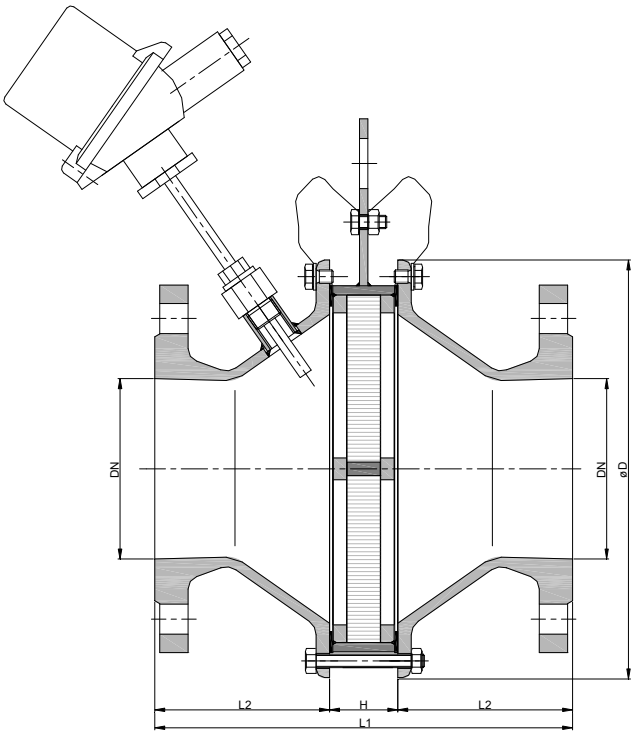
KITO® INE-I-…/…-1.5-T (-TT)



Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion group IIA1 (old: I) with a maximum experimental safe gap (MESG) ≥ 1.14 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.5 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. An installation into horizontal and vertical pipes is permissible. To detect a thermal load on the KITO® flame arrester element in operation, a temperature sensor can be implemented as an option into the flame arrester body. Proof against “stabilized burning” and withstand this up to a max. burn time BT = 1.0 min.

Dimension (mm)



NG	DN		D	L1	H	L2	kg
	DIN	ASME					
150	65 PN 16	-	210	239	39	100	19
	80 PN 16	3“					
200	100 PN 16	4“	268	249	39	105	27
250	125 PN 16	-	322	279	39	120	36
300	150 PN 16	6“	370	305	45	130	50
	200 PN 10	8“					
400	250 PN 10	10“	480	345	45	150	
	300 PN 10	12“		323		139	

Weight refers to the variant I

Example for order

KITO® INE-I-150/80-1.5-T
(Design NG 150 with flange connection DN 80 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Created: Abt. Doku KITO
Design subject to change

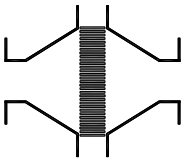
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® INE-I-…/…-1.5

KITO® INE-I-…/…-1.5-T (-TT)



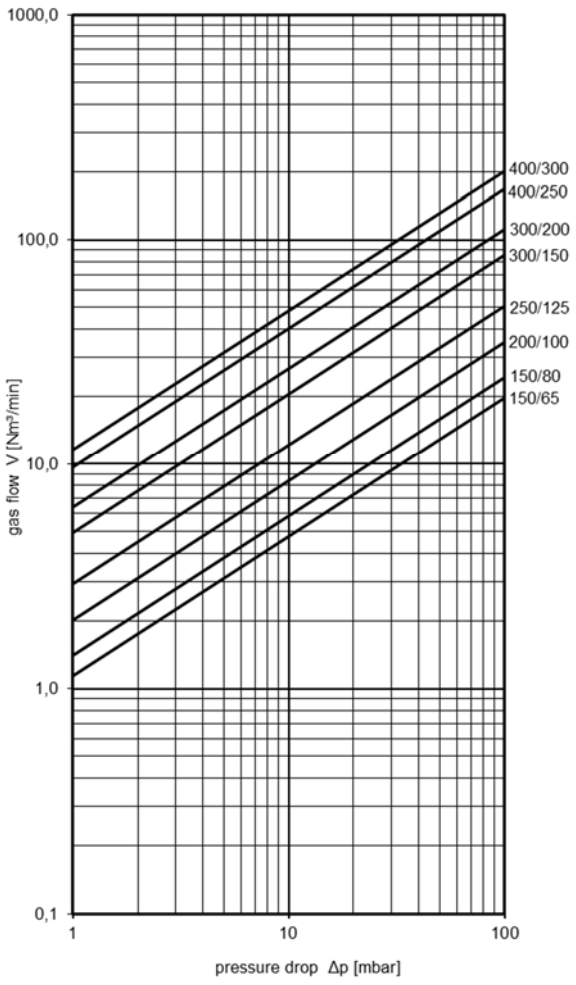
Design

	variant I	variant II	variant III
housing	cast steel 1.0619	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE	PTFE
KITO®-flame arrester element	completely interchangeable		
KITO®-casing	steel	stainless steel mat. no. 1.4571 or 1.4581	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	galvanized steel	A4
temperature sensor	PT 100 (option), connection 3/8", 1.4571		
flange connection	EN 1092-1 type B1 *optionally* ASME B16.5 Class 150 RF		

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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H 32 N
Date: 01-2020
Created: Abt. Doku KITO
Design subject to change

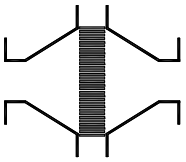
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, endurance burning proof

KITO® INE-DB-I-…/…

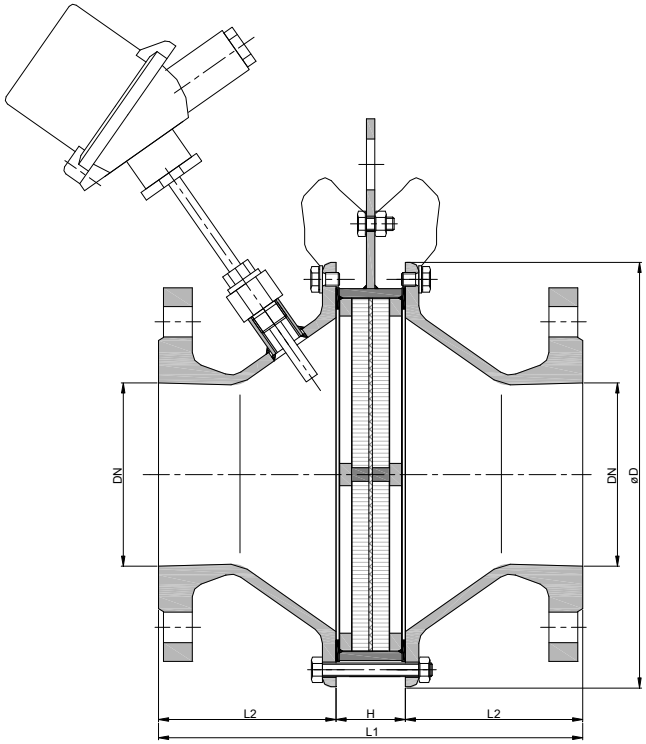
KITO® INE-DB-I-…/…-T (-TT)



Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion group IIA1 (old: I) with a maximum experimental safe gap (MESG) ≥ 1.14 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.1 bar abs. and an operating temperature of 60 °C must not be exceeded. All sizes are tested against “stabilized burning” and withstand this for indefinite time (endurance burn). The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. An installation into horizontal and vertical pipes is permissible. To detect a thermal load on the KITO® flame arrester element in operation, a temperature sensor can be implemented as an option into the flame arrester body.

Dimension (mm)



NG	DN		D	L1	H	L2	kg
	DIN	ASME					
100	**50 PN 16**	**2“**	165	215	35	90	11.6
150	**65 PN 16**	**-**	210	241	41	100	17
	80 PN 16	**3“**					19
200	**100 PN 16**	**4“**	268	251	41	105	
250	**125 PN 16**	**-**	322	281	41	120	35
300	**150 PN 16**	**6“**	370	307	47	130	
	200 PN 10	**8“**					

Weight refers to the variant I

Example for order

KITO® INE-DB-I-150/80-T
(Design NG 150 with flange connection DN 80 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 01-2020
Created: Abt. Doku KITO
Design subject to change

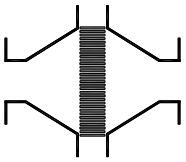
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, endurance burning proof

KITO® INE-DB-I-…/…

KITO® INE-DB-I-…/…-T (-TT)



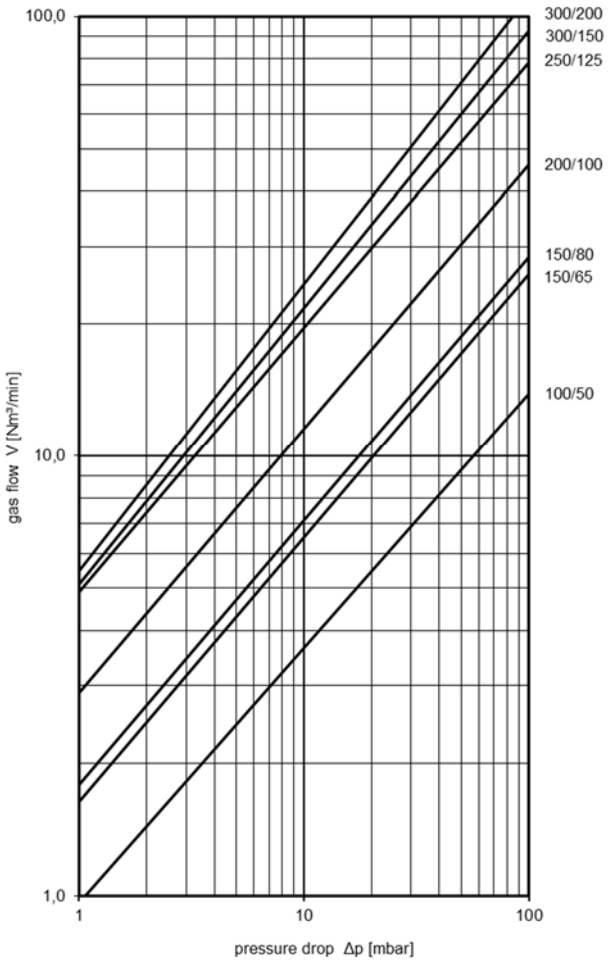
Design

	variant I	variant II	variant III
housing	cast steel 1.0619	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE	PTFE
KITO®-flame arrester element	completely interchangeable		
KITO®-casing	steel	stainless steel mat. no. 1.4571 or 1.4581	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	galvanized steel	A4
temperature sensor	PT 100 (option), connection 3/8", 1.4571		
flange connection	EN 1092-1 type B1 *optionally* ASME B16.5 Class 150 RF		

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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Date: 01-2020
Created: Abt. Doku KITO

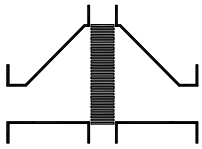
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-I-…/…-1.2

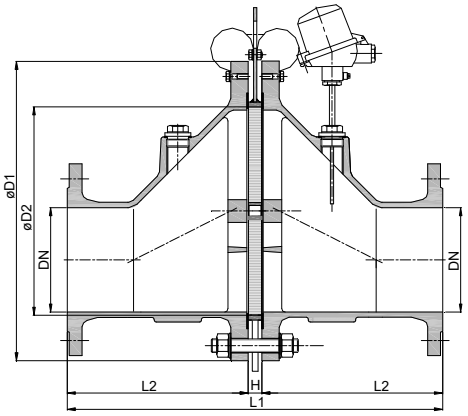
KITO® EFA-Def0-I-…/…-1.2-T (-TT)

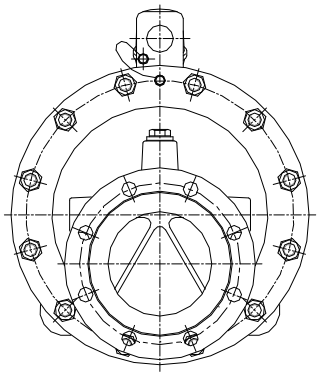


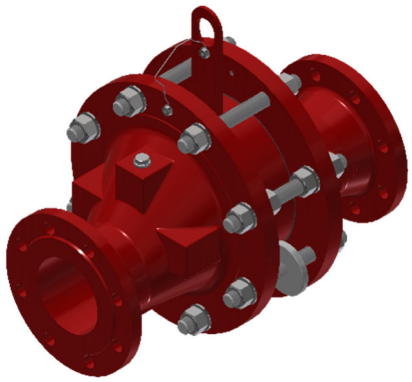
Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion group IIA1 (old: I) with a maximum experimental safe gap (MESG) ≥ 1.14 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. The installation of the deflagration flame arrester into horizontal and vertical pipes is permissible. When equipped with one or two temperature sensors, the devices are protected under atmospheric conditions against a short time burning by a burning time t_{BT} = 1.0 min. If only one temperature sensor, then it is to be placed on the device side where a burning could be expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	260	20	120	11
	32 PN 40	1 ¼“						12
100	40 PN 40	1 ½“	220	106	310	20	145	22
	50 PN 16	2“						24
150	50 PN 16	2“	285	159	370	20	175	38
	65 PN 16	2 ½“						40
	80 PN 16	3“						41
200	80 PN 16	3“	340	206	420	20	200	57
	100 PN 16	4“						58
300	100 PN 16	4“	445	308	560	20	270	91
	125 PN 16	5“						97
	150 PN 16	6“						100
400	150 PN 16	6“	565	388	650	20	315	151
	200 PN 10	8“						166
500	200 PN 10	8“	670	485	780	20	380	224
	250 PN 10	10“						242
600	250 PN 10	10“	780	584	920	20	450	316
	300 PN 10	12“						332
800	350 PN 10	14“	1015	810	1287	47	620	600
	400 PN 10	16“						

Weight refers to the standard design

Example for order

KITO® EFA-Def0-I-100/40-1.2-T
(Design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 33 N
Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

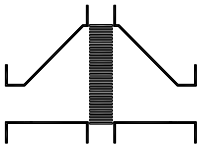
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-I-…/…-1.2

KITO® EFA-Def0-I-…/…-1.2-T (-TT)



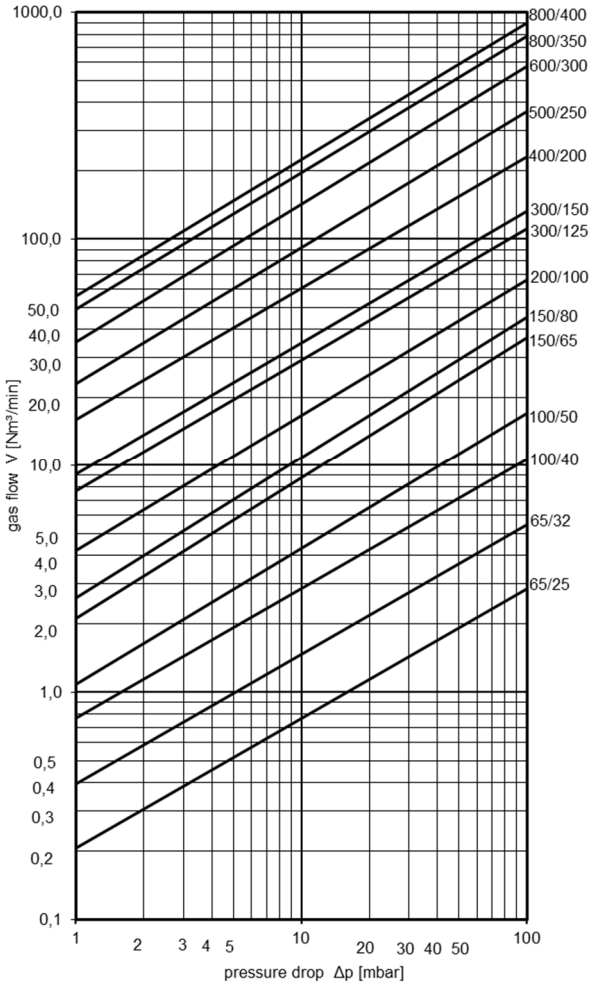
Design

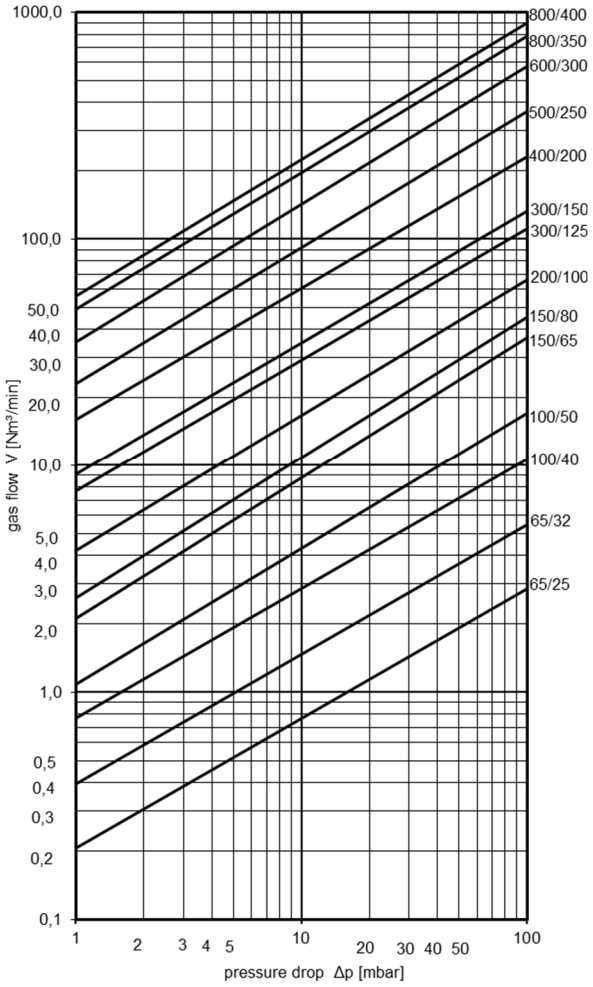
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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Date: 07-2020
Created: Abt. Doku KITO

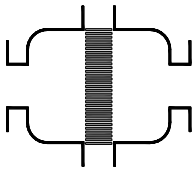
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® CFA-Def0-I-…/…-1.2

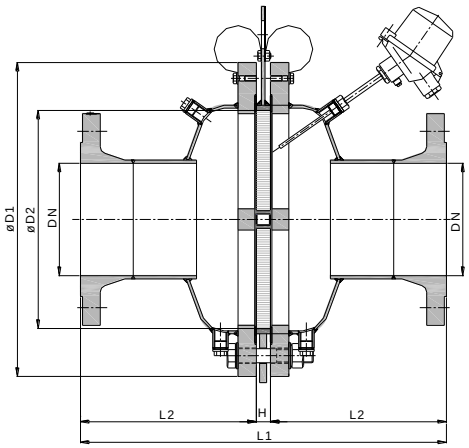
KITO® CFA-Def0-I-…/…-1.2-T (-TT)

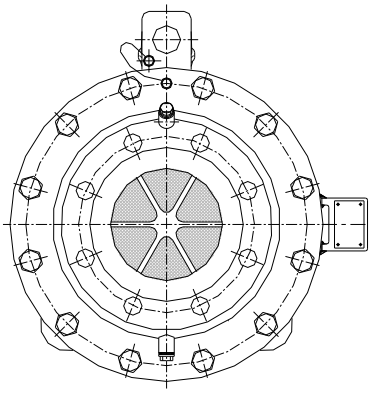


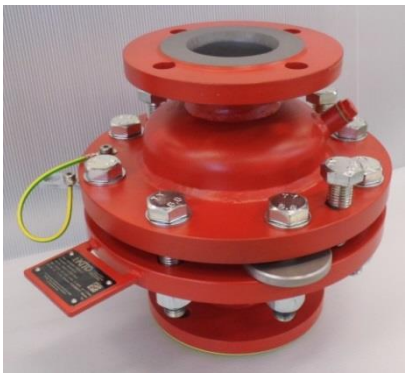
Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion group IIA1 (old: I) with a maximum experimental safe gap (MESG) ≥ 1.14 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. The installation of the deflagration flame arrester into horizontal and vertical pipes is permissible. When equipped with one or two temperature sensors, the devices are protected under atmospheric conditions against a short time burning by a burning time t_{BT} = 1.0 min. If only one temperature sensor, then it is to be placed on the device side where a burning could be expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
150	50 PN 16	2“	285	159	280	20	130	30
	65 PN 16	2 ½“						30
	80 PN 16	3“						32
200	80 PN 16	3“	340	206	330	20	155	44
	100 PN 16	4“						45
300	100 PN 16	4“	445	308	520	20	250	66
	125 PN 16	5“						73
	150 PN 16	6“						83
400	150 PN 16	6“	565	388	620	20	300	117
	200 PN 10	8“						124
500	200 PN 10	8“	670	485	780	20	380	168
	250 PN 10	10“						176
600	250 PN 10	10“	780	584	920	20	450	244
	300 PN 10	12“						249
800	350 PN 10	14“	1015	815	947	47	450	
	400 PN 10	16“						

Weight refers to the standard design

Example for order

KITO® CFA-Def0-I-150/65-1.2-T
(Design NG 150 with flange connection DN 65 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 33.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

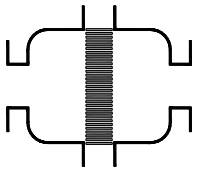
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® CFA-Def0-I-…/…-1.2

KITO® CFA-Def0-I-…/…-1.2-T (-TT)



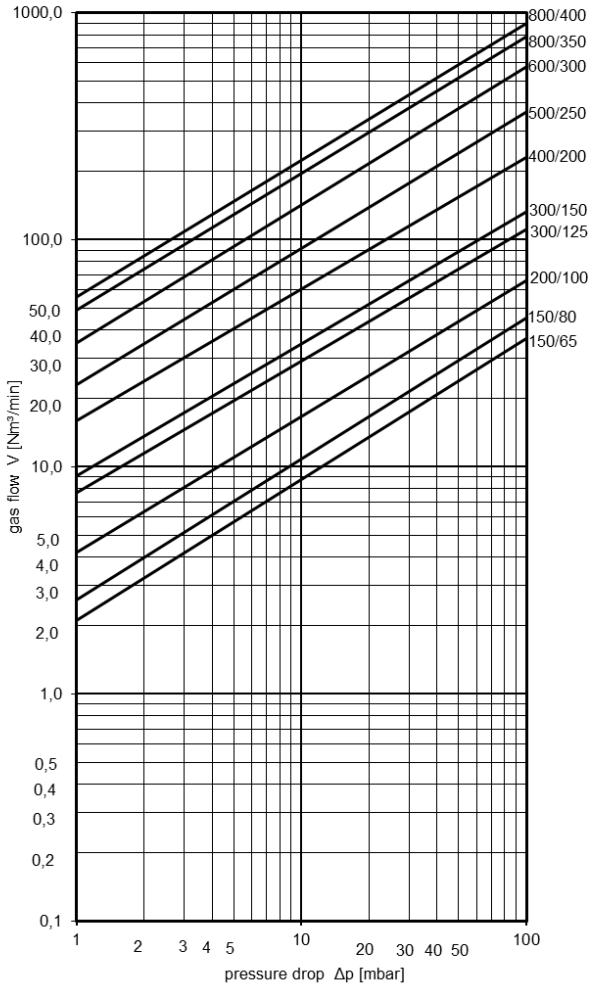
Design

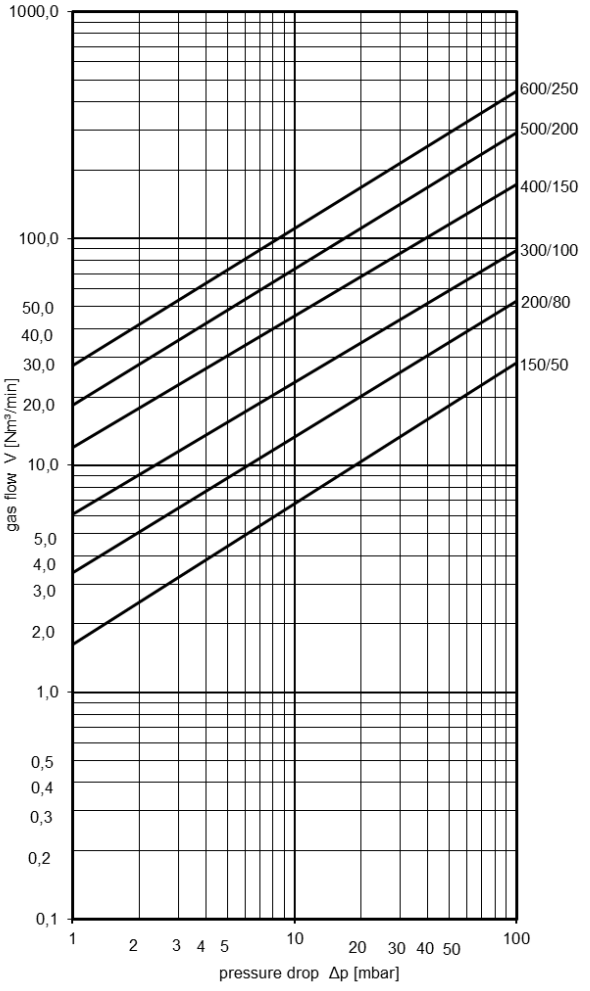
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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H 33.1 N
Date: 05-2018
Created: Abt. Doku KITO

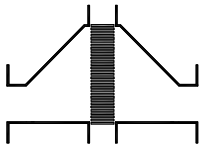
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-I-…/…-1.2-X16

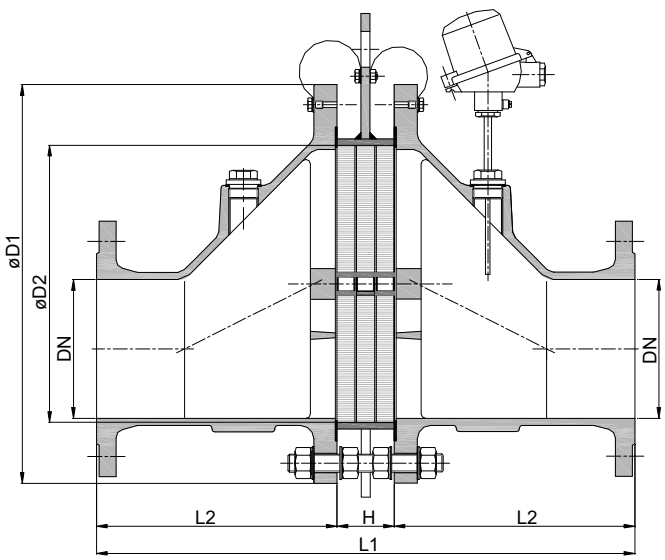
KITO® EFA-Def0-I-…/…-1.2-X16-T (-TT)

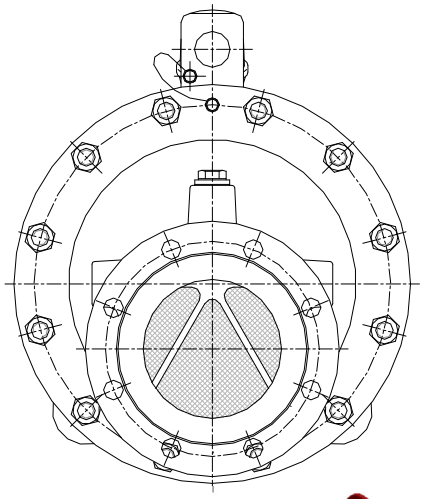


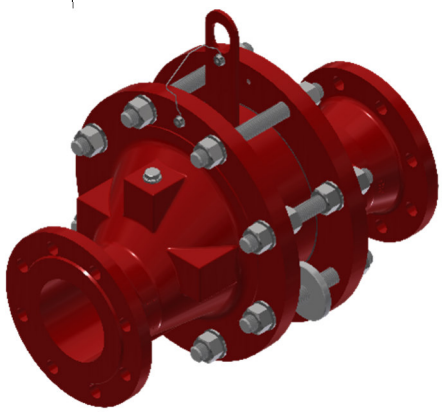
Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion group IIA1 (old: I) with a maximum experimental safe gap (MESG) ≥ 1.14 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 160 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. The installation of the deflagration flame arrester into horizontal and vertical pipes is permissible. When equipped with one or two temperature sensors, the devices are protected under atmospheric conditions against a short time burning by a burning time t_{BT} = 1.0 min. If only one temperature sensor, then it is to be placed on the device side where a burning could be expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
800	350 PN 10	14“	1015	810	1328	88	620	
	400 PN 10	16“						

Weight refers to the standard design

Example for order

KITO® EFA-Def0-I-800/400-1.2-X16-T
(Design NG 800 with flange connection DN 400 PN 10 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 33.3 N
Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

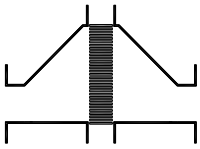
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-I-…/…-1.2-X16

KITO® EFA-Def0-I-…/…-1.2-X16-T (-TT)



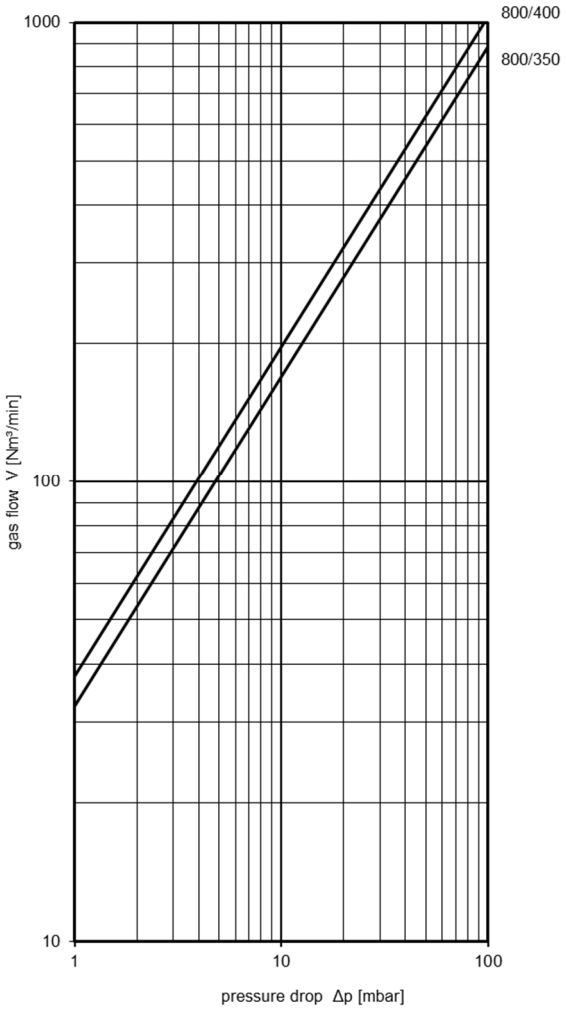
Design

	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	stainless steel mat. no. 1.4571	
KITO®-grid	stainless steel mat. no. 1.4571	
bolts / nuts	A2	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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H 33.3 N
Date: 07-2020
Created: Abt. Doku KITO

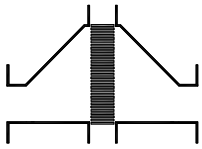
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-I-…/…-2.5

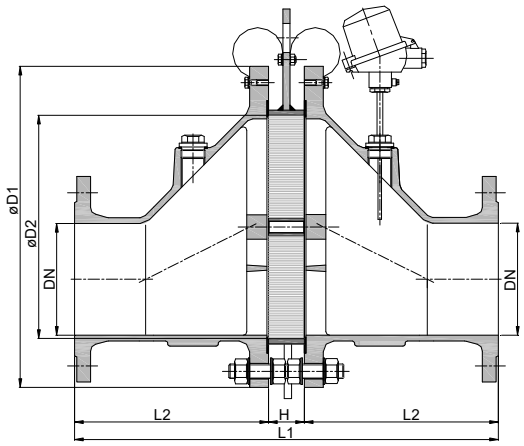
KITO® EFA-Def0-I-…/…-2.5-T (-TT)

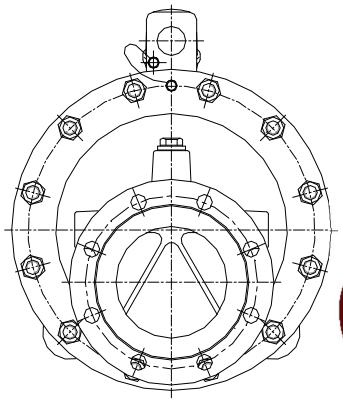


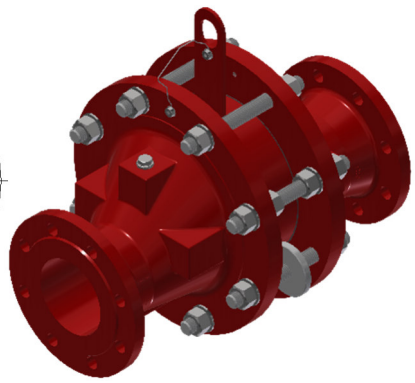
Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion group IIA1 (old: I) with a maximum experimental safe gap (MESG) ≥ 1.14 mm. Bi-directionally working in pipes, whereby an operating pressure of 2.5 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. The installation of the deflagration flame arrester into horizontal and vertical pipes is permissible. When equipped with one or two temperature sensors, the devices are protected under atmospheric conditions against a short time burning by a burning time t_{BT} = 1.0 min. If only one temperature sensor, then it is to be placed on the device side where a burning could be expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	290	50	120	12
	32 PN 40	1 ¼“						13
100	40 PN 40	1 ½“	220	106	340	50	145	24
	50 PN 16	2“						26
150	50 PN 16	2“	285	159	400	50	175	41
	65 PN 16	2 ½“						43
	80 PN 16	3“						44
200	80 PN 16	3“	340	206	450	50	200	62
	100 PN 16	4“						63
300	100 PN 16	4“	445	308	590	50	270	104
	125 PN 16	5“						110
	150 PN 16	6“						113
400	150 PN 16	6“	565	388	680	50	315	169
	200 PN 10	8“						185
500	200 PN 10	8“	670	485	810	50	380	253
	250 PN 10	10“						272
600	250 PN 10	10“	780	584	950	50	450	359
	300 PN 10	12“						375

Weight refers to the standard design

Example for order

KITO® EFA-Def0-I-100/40-2.5-T
(Design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

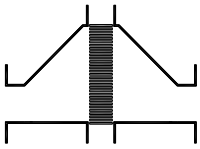
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-I-…/…-2.5

KITO® EFA-Def0-I-…/…-2.5-T (-TT)



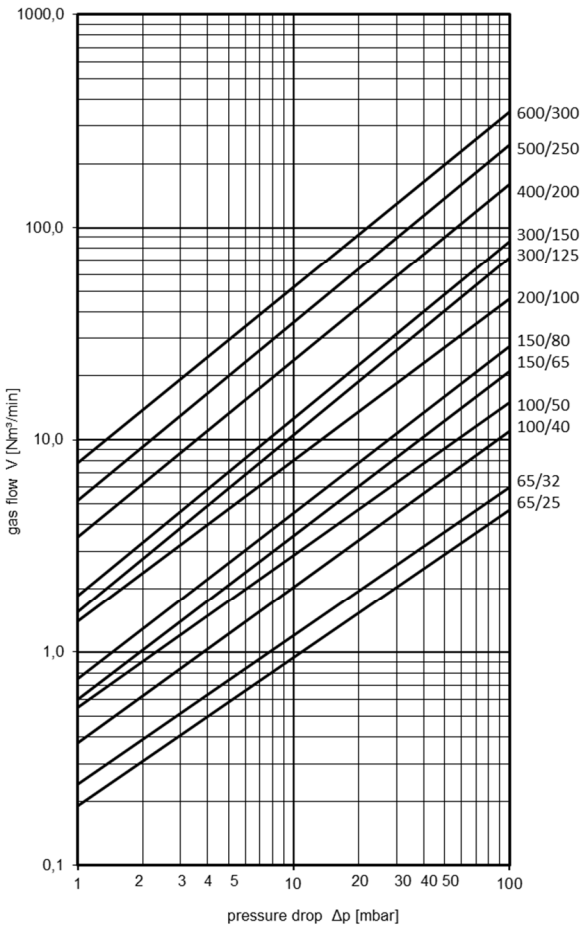
Design

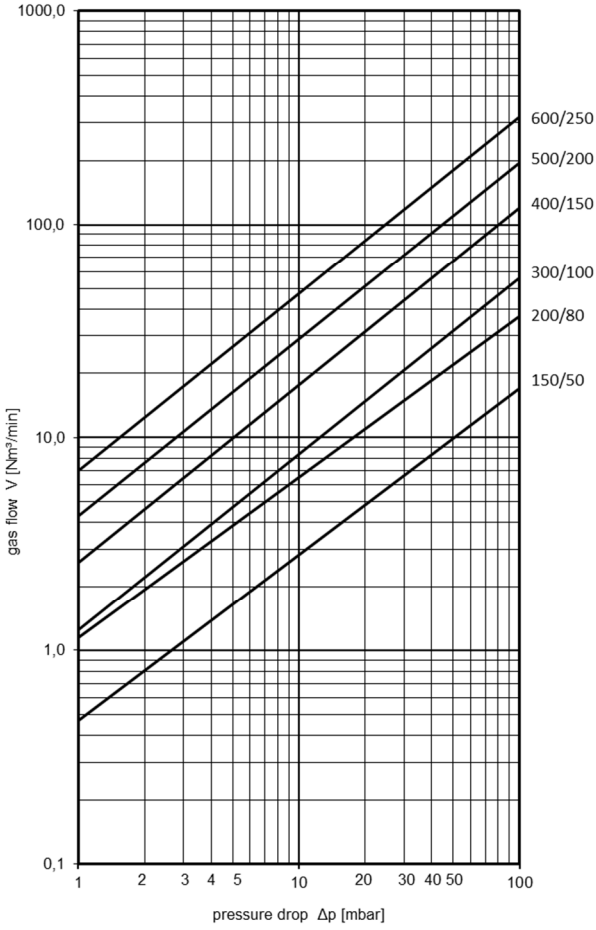
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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Date: 07-2020
Created: Abt. Doku KITO

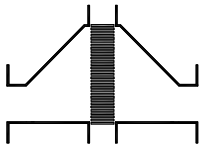
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-I-…/…-6.0

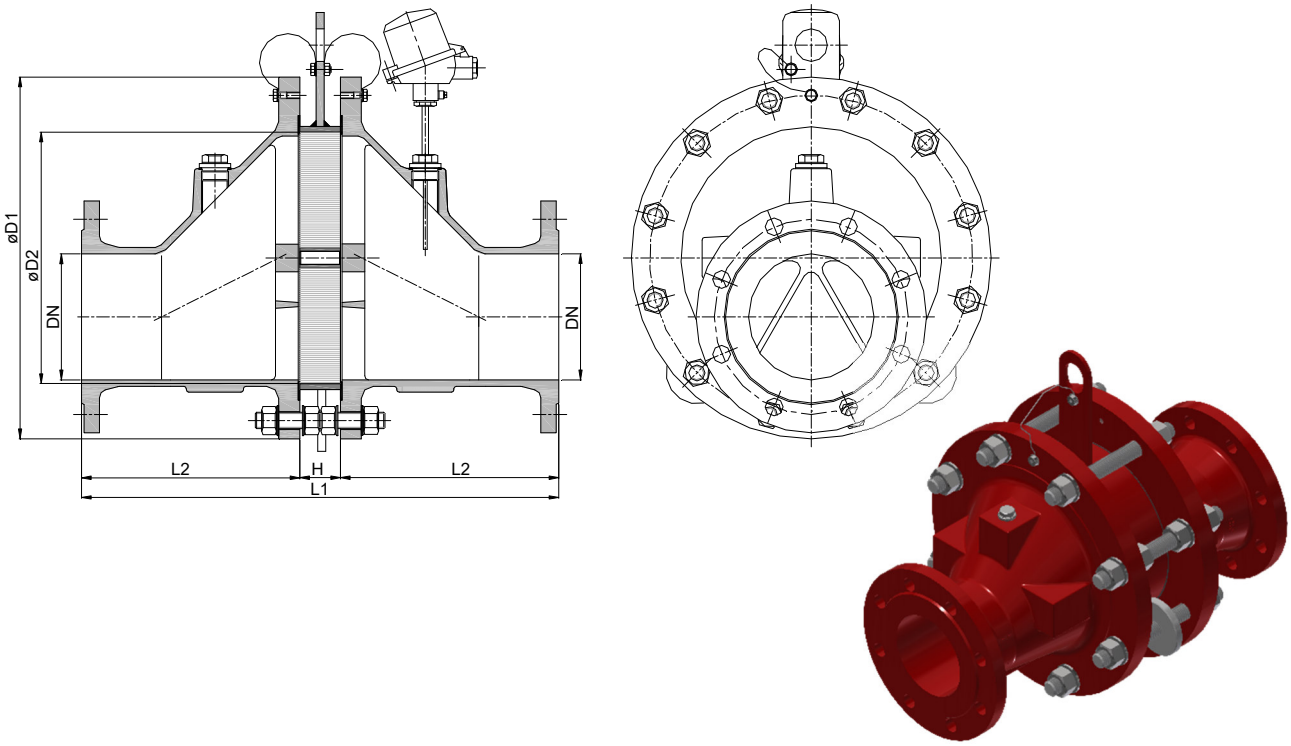
KITO® EFA-Def0-I-…/…-6.0-T (-TT)



Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion group IIA1 (old: I) with a maximum experimental safe gap (MESG) ≥ 1.14 mm. Bi-directionally working in pipes, whereby an operating pressure of 6.0 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. The installation of the deflagration flame arrester into horizontal and vertical pipes is permissible. When equipped with one or two temperature sensors, the devices are protected under atmospheric conditions against a short time burning by a burning time t_{BT} = 1.0 min. If only one temperature sensor, then it is to be placed on the device side where a burning could be expected.

Dimension (mm)



NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	290	50	120	12
150	50 PN 16	2“	285	159	400	50	175	42
	65 PN 16	2 ½“						43
	80 PN 16	3“						45

Weight refers to the standard design

Example for order

KITO® EFA-Def0-I-65/25-6.0-T
(Design NG 65 with flange connection DN 25 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 34.2 N
Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

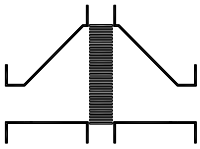
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-I-…/…-6.0

KITO® EFA-Def0-I-…/…-6.0-T (-TT)



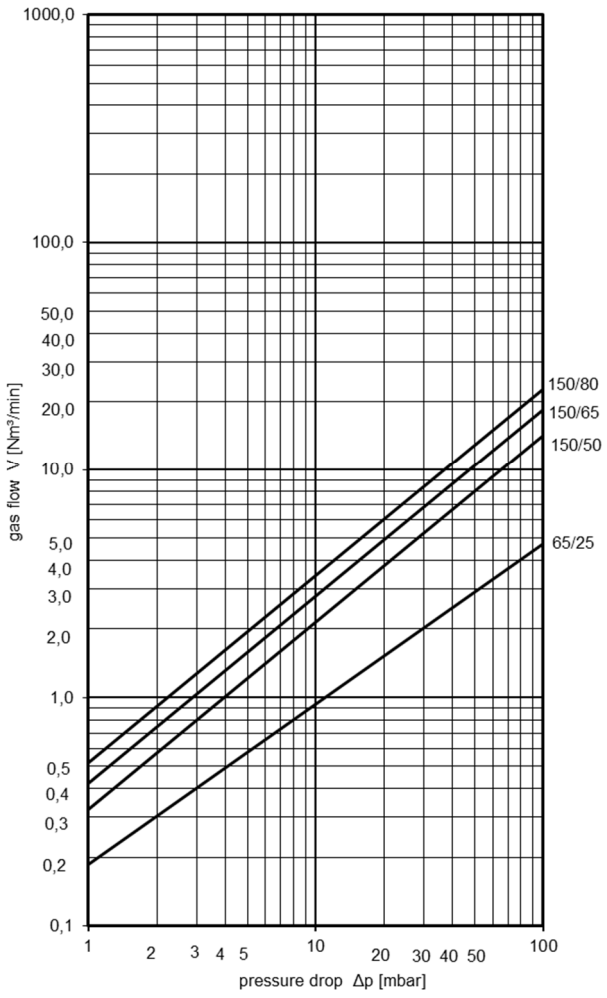
Design

	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-flame arrester element	steel	stainless steel mat. no. 1.4571
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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Created: Abt. Doku KITO

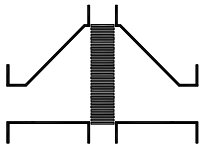
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-IIA-…/…-1.2

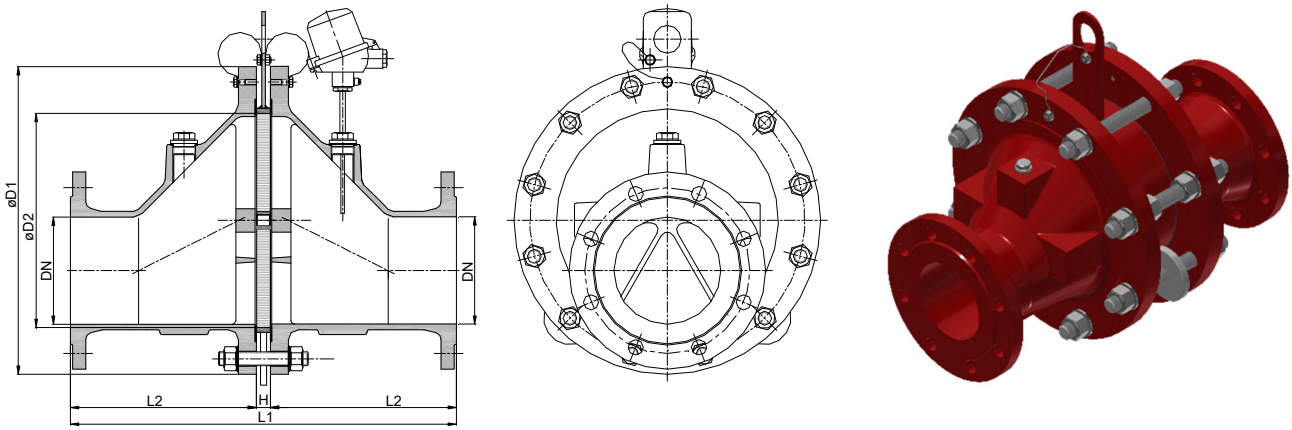
KITO® EFA-Def0-IIA-…/…-1.2-T (-TT)



Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. The installation of the deflagration flame arrester into horizontal and vertical pipes is permissible. When equipped with one or two temperature sensors, the devices are protected under atmospheric conditions against a short time burning by a burning time t_{BT} = 1.0 min. If only one temperature sensor, then it is to be placed on the device side where a burning could be expected.

Dimension (mm)



NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	260	20	120	11
	32 PN 40	1 ¼“						13
100	40 PN 40	1 ½“	220	106	310	20	145	22
	50 PN 16	2“						24
150	50 PN 16	2“	285	159	370	20	175	38
	65 PN 16	2 ½“						40
	80 PN 16	3“						41
200	80 PN 16	3“	340	206	420	20	200	57
	100 PN 16	4“						58
300	100 PN 16	4“	445	308	560	20	270	92
	125 PN 16	5“						98
	150 PN 16	6“						101
400	150 PN 16	6“	565	388	650	20	315	153
	200 PN 10	8“						168
500	200 PN 10	8“	670	485	780	20	380	227
	250 PN 10	10“						245
600	250 PN 10	10“	780	584	920	20	450	320
	300 PN 10	12“						336
800	350 PN 10	14“	1015	810	1287	47	620	
	400 PN 10	16“						

Weight refers to the standard design

Example for order

KITO® EFA-Def0-IIA-100/40-1.2-T
(Design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 35 N
Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

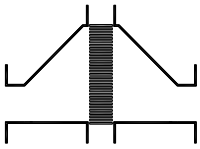
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-IIA-…/…-1.2

KITO® EFA-Def0-IIA-…/…-1.2-T (-TT)



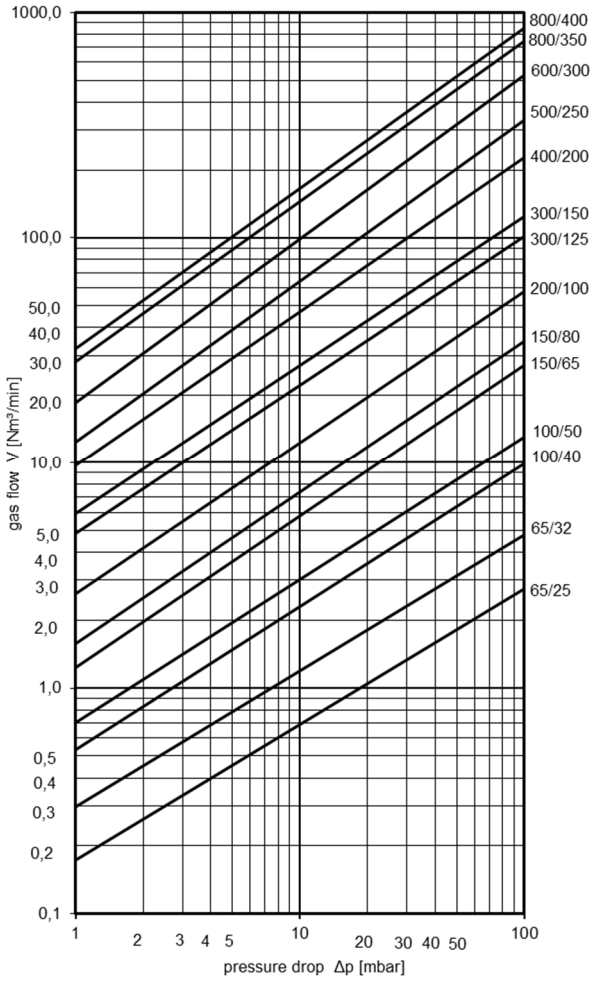
Design

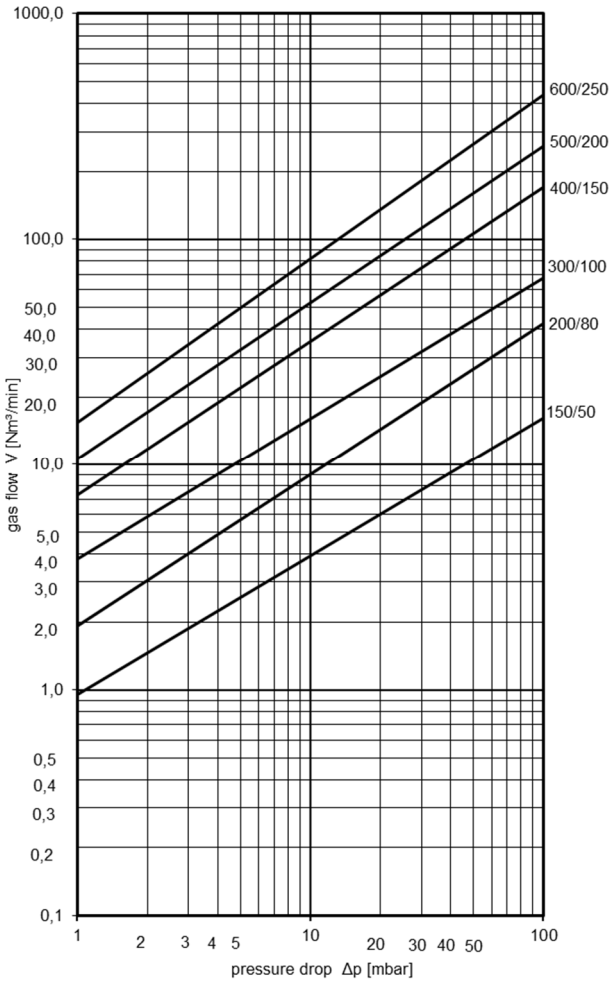
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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H 35 N
Date: 07-2020
Created: Abt. Doku KITO

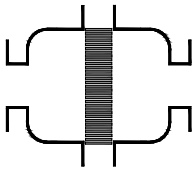
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® CFA-Def0-IIA-…/…-1.2

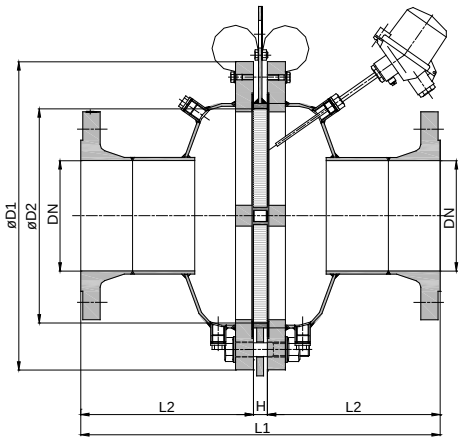
KITO® CFA-Def0-IIA-…/…-1.2-T (-TT)

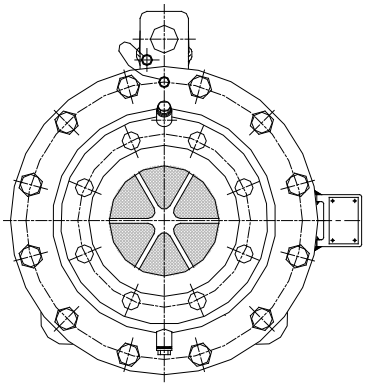


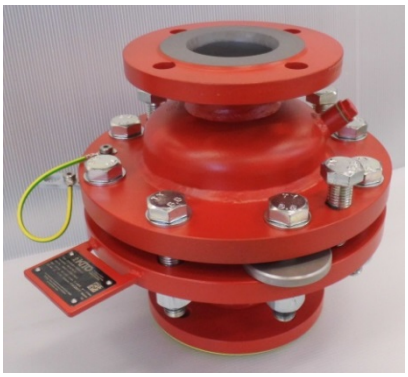
Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. The installation of the deflagration flame arrester into horizontal and vertical pipes is permissible. When equipped with one or two temperature sensors, the devices are protected under atmospheric conditions against a short time burning by a burning time t_{BT} = 1.0 min. If only one temperature sensor, then it is to be placed on the device side where a burning could be expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
150	50 PN 16	2“	285	159	280	20	130	30
	65 PN 16	2 ½“						30
	80 PN 16	3“						32
200	80 PN 16	3“	340	206	330	20	155	44
	100 PN 16	4“						46
300	100 PN 16	4“	445	308	520	20	250	67
	125 PN 16	5“						75
	150 PN 16	6“						78
400	150 PN 16	6“	565	388	620	20	300	118
	200 PN 10	8“						126
500	200 PN 10	8“	670	485	780	20	380	171
	250 PN 10	10“						180
600	250 PN 10	10“	780	584	920	20	450	249
	300 PN 10	12“						254
800	350 PN 10	14“	1015	815	947	47	450	
	400 PN 10	16“						

Weight refers to the standard design

Example for order

KITO® CFA-Def0-IIA-150/65-1.2-T
(Design NG 150 with flange connection DN 65 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 35.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

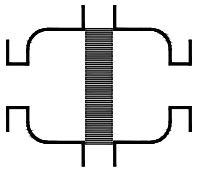
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® CFA-Def0-IIA-…/…-1.2

KITO® CFA-Def0-IIA-…/…-1.2-T (-TT)



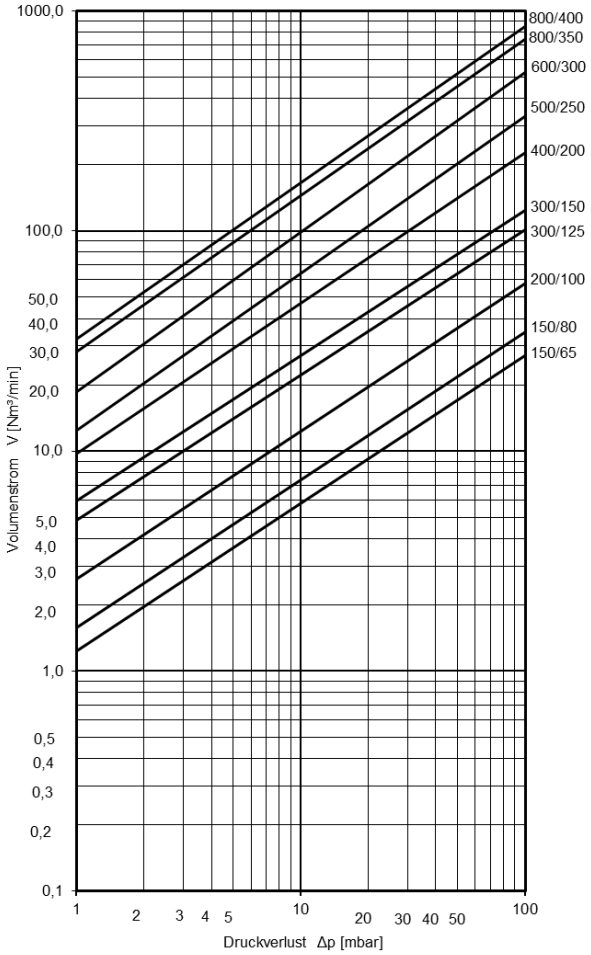
Design

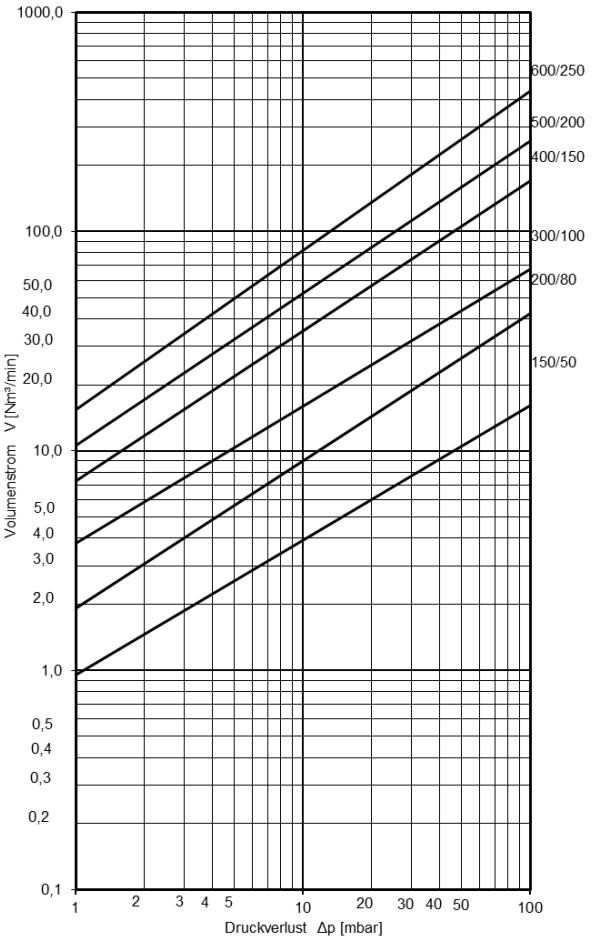
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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H 35.1 N
Date: 05-2018
Created: Abt. Doku KITO

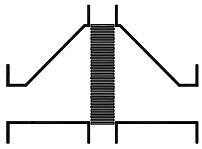
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-IIA-…/…-…-X10

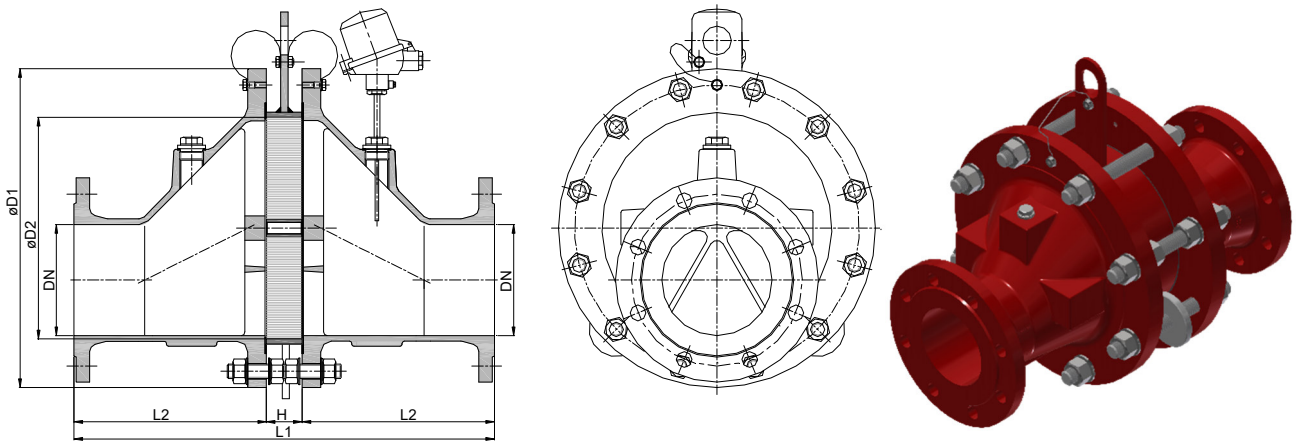
KITO® EFA-Def0-IIA-…/…-…-X10-T (-TT)



Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.5 bar abs. up to NG 65, p_{max} = 1.2 bar abs. from NG 100 and an operating temperature of 100 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. The installation of the deflagration flame arrester into horizontal and vertical pipes is permissible. When equipped with one or two temperature sensors, the devices are protected under atmospheric conditions against a short time burning by a burning time t_{BT} = 1.0 min. If only one temperature sensor, then it is to be placed on the device side where a burning could be expected.

Dimension (mm)



NG	DN		D1	D2	L1	H	L2	p max.	kg
	DIN	ASME							
65	25 PN 40	1“	155	70	290	50	120	1.5	12
	32 PN 40	1 ¼“							13
100	40 PN 40	1 ½“	220	106	340	50	145	1.2	24
	50 PN 16	2“							26
150	50 PN 16	2“	285	159	400	50	175	1.2	41
	65 PN 16	2 ½“							42
	80 PN 16	3“							44
200	80 PN 16	3“	340	206	450	50	200	1.2	61
	100 PN 16	4“							62
300	100 PN 16	4“	445	308	590	50	270	1.2	101
	125 PN 16	5“							107
	150 PN 16	6“							110
400	150 PN 16	6“	565	388	672	42	315	1.2	163
	200 PN 10	8“							179
500	200 PN 10	8“	670	485	802	42	380	1.2	243
	250 PN 10	10“							253
600	250 PN 10	10“	780	584	942	42	450	1.2	345
	300 PN 10	12“							361

Weight refers to the standard design

Example for order

KITO® EFA-Def0-IIA-100/40-1,2-X10-T
(Design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 36 N
Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

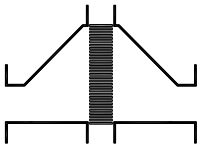
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-IIA-…/…-…-X10

KITO® EFA-Def0-IIA-…/…-…-X10-T (-TT)



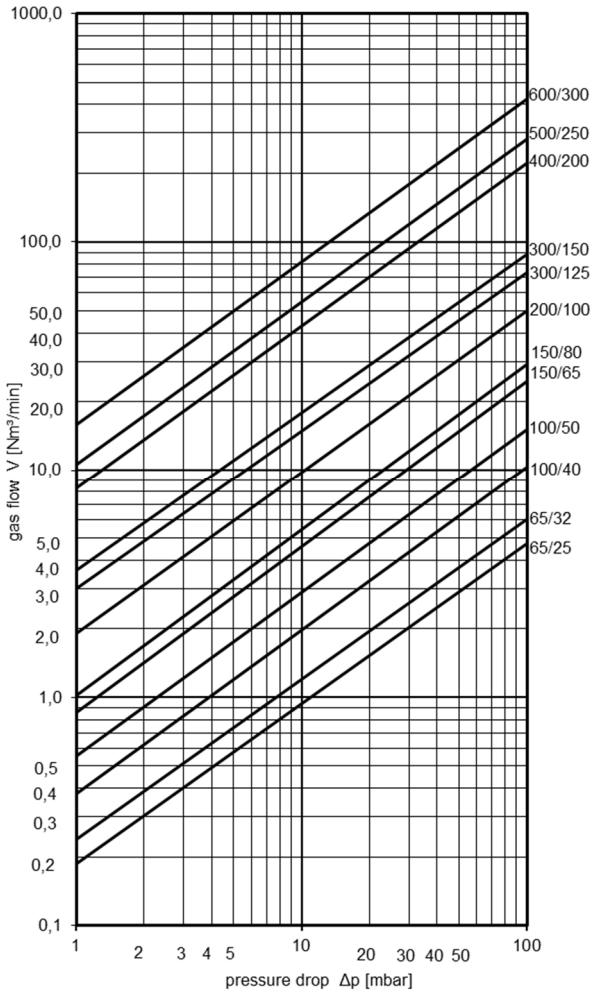
Design

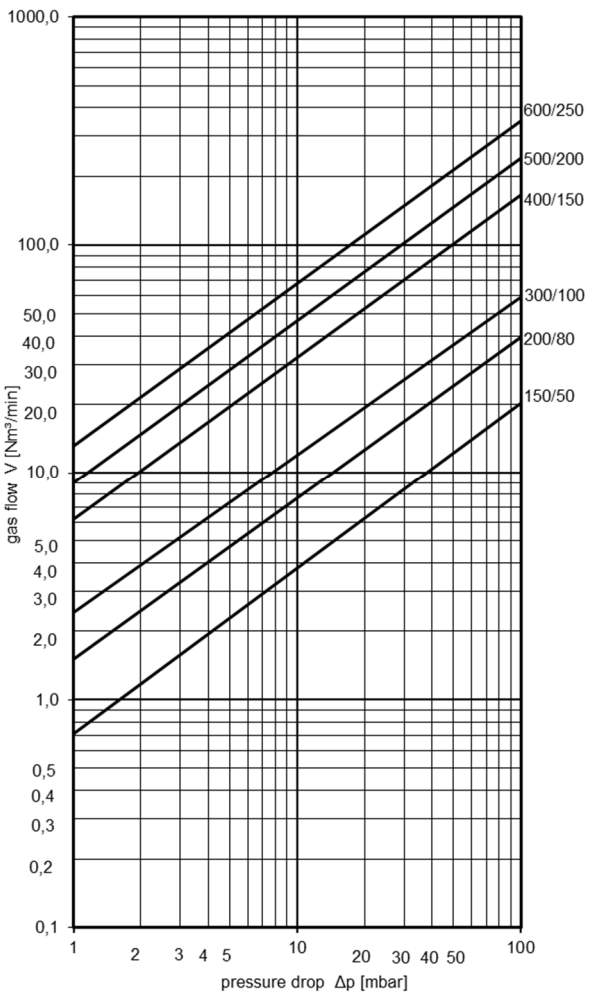
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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Date: 07-2020
Created: Abt. Doku KITO

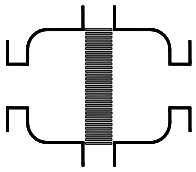
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® CFA-Def0-IIA-…/…-…-X10

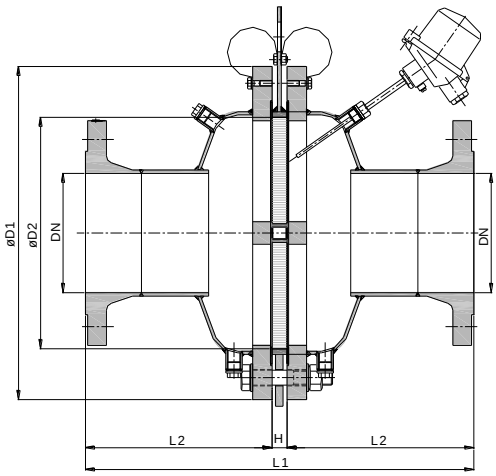
KITO® CFA-Def0-IIA-…/…-…-X10-T (-TT)

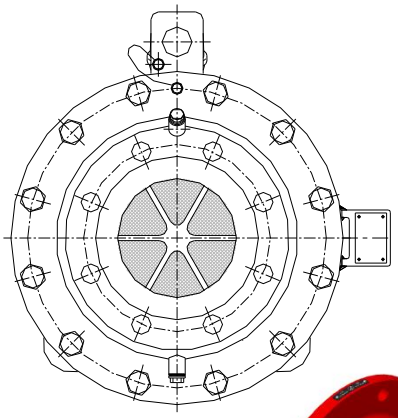


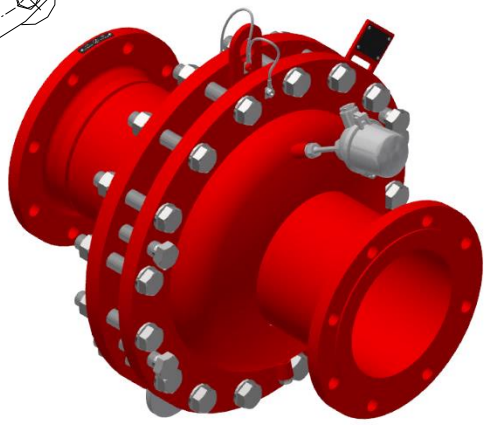
Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 100 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. The installation of the deflagration flame arrester into horizontal and vertical pipes is permissible. When equipped with one or two temperature sensors, the devices are protected under atmospheric conditions against a short time burning by a burning time t_{BT} = 1.0 min. If only one temperature sensor, then it is to be placed on the device side where a burning could be expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	p max.	kg
	DIN	ASME							
300	100 PN 16	4“	445	308	590	50	270	1.2	79
	125 PN 16	5“							82
	150 PN 16	6“							85
400	150 PN 16	6“	565	388	672	42	315	1.2	135
	200 PN 10	8“							142

Weight refers to the standard design

Example for order

KITO® CFA-Def0-IIA-300/100-1,2-X10-T
(Design NG 300 with flange connection DN 100 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 36.1 N
Date: 11-2022
Created: Abt. Doku KITO
Design subject to change

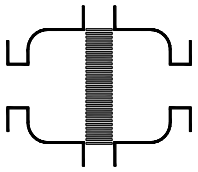
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® CFA-Def0-IIA-…/…-…-X10

KITO® CFA-Def0-IIA-…/…-…-X10-T (-TT)



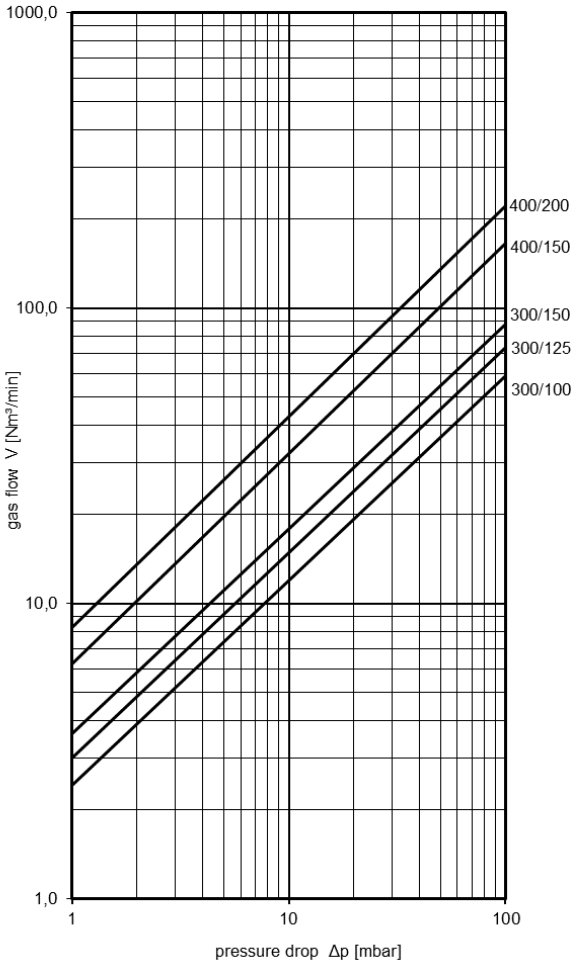
Design

	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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Date: 11-2022
Created: Abt. Doku KITO

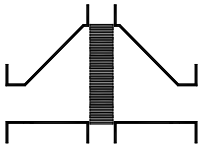
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-IIA-…/…-…-X16

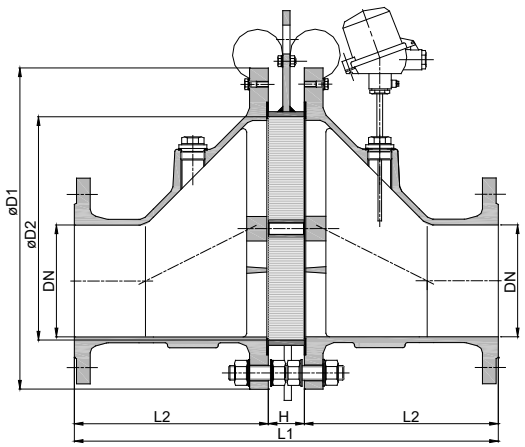
KITO® EFA-Def0-IIA-…/…-…-X16-T (-TT)

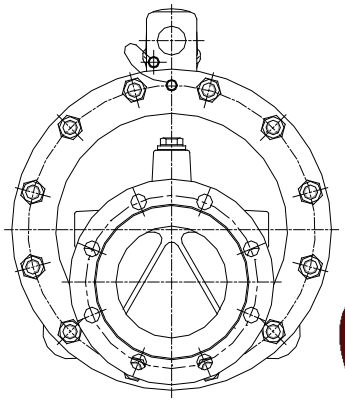


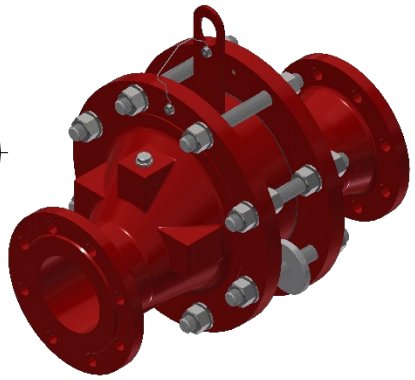
Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.1 bar abs. and an operating temperature of 160 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. The installation of the deflagration flame arrester into horizontal and vertical pipes is permissible. When equipped with one or two temperature sensors, the devices are protected under atmospheric conditions against a short time burning by a burning time t_{BT} = 1.0 min. If only one temperature sensor, then it is to be placed on the device side where a burning could be expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	290	50	120	11
	32 PN 40	1 ¼“						12
100	40 PN 40	1 ½“	220	106	340	50	145	24
	50 PN 16	2“						26,5
150	50 PN 16	2“	285	159	400	50	175	26
	65 PN 16	2 ½“						42
	80 PN 16	3“						44
200	80 PN 16	3“	340	206	450	50	200	
	100 PN 16	4“						
300	100 PN 16	4“	445	308	590	50	270	
	125 PN 16	5“						
	150 PN 16	6“						110
400	150 PN 16	6“	565	388	672	42	315	153
	200 PN 10	8“						172
500	200 PN 10	8“	670	485	802	42	380	243
	250 PN 10	10“						253
600	250 PN 10	10“	780	584	942	42	450	344
	300 PN 10	12“						360

Weight refers to the standard design

Example for order

KITO® EFA-Def0-IIA-100/40-X16-T
(Design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 37 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

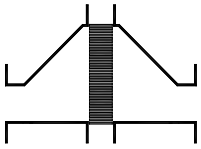
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-IIA-…/…-…-X16

KITO® EFA-Def0-IIA-…/…-…-X16-T (-TT)



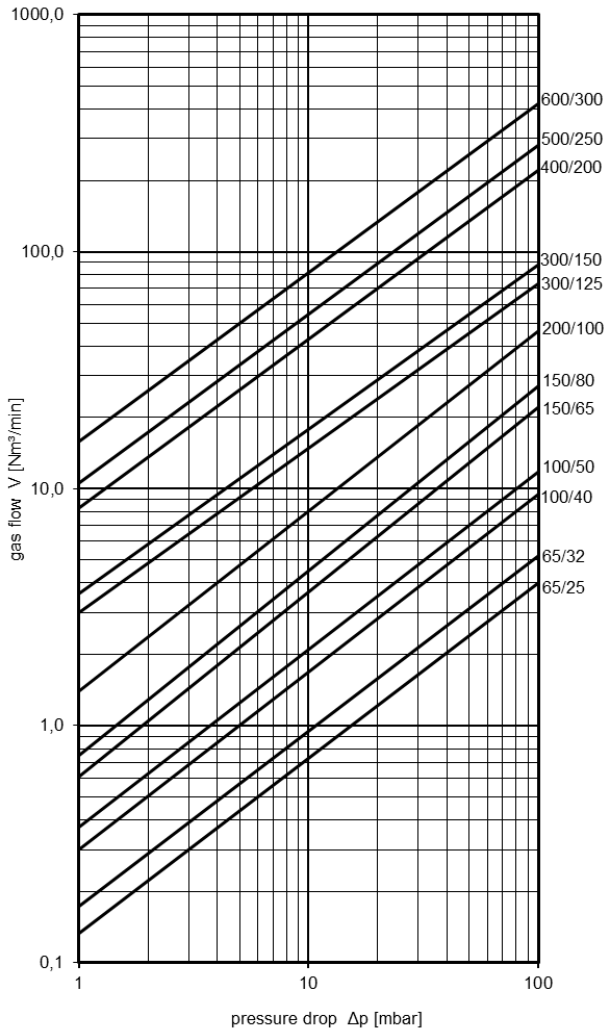
Design

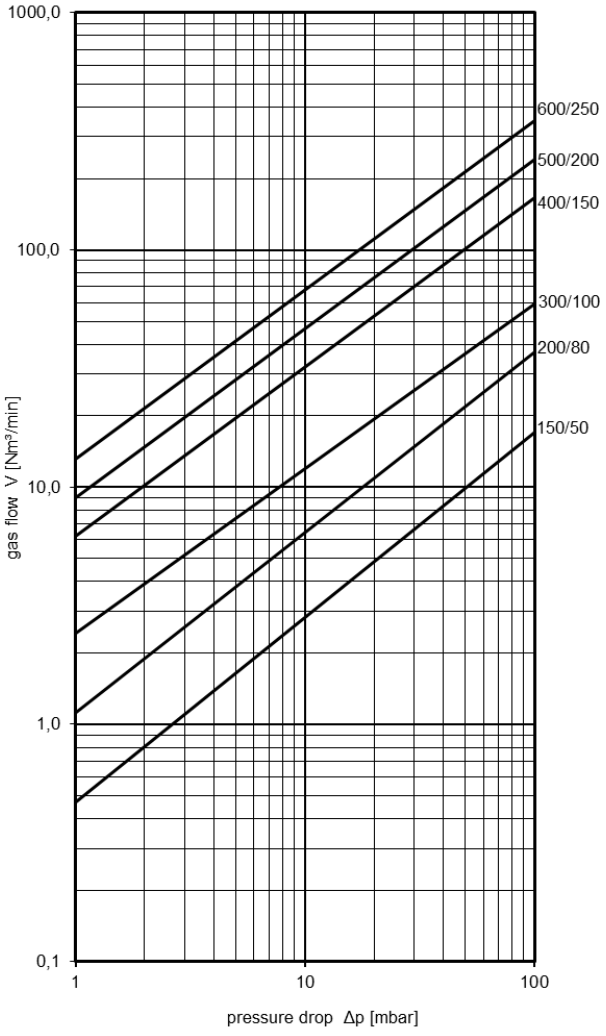
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	stainless steel mat. no. 1.4571 or 1.4581	
KITO®-grid	stainless steel mat. no. 1.4571	
bolts / nuts	A2	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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H 37 N
Date: 05-2018
Created: Abt. Doku KITO

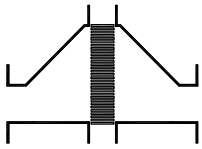
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-IIA-…/…-1.6

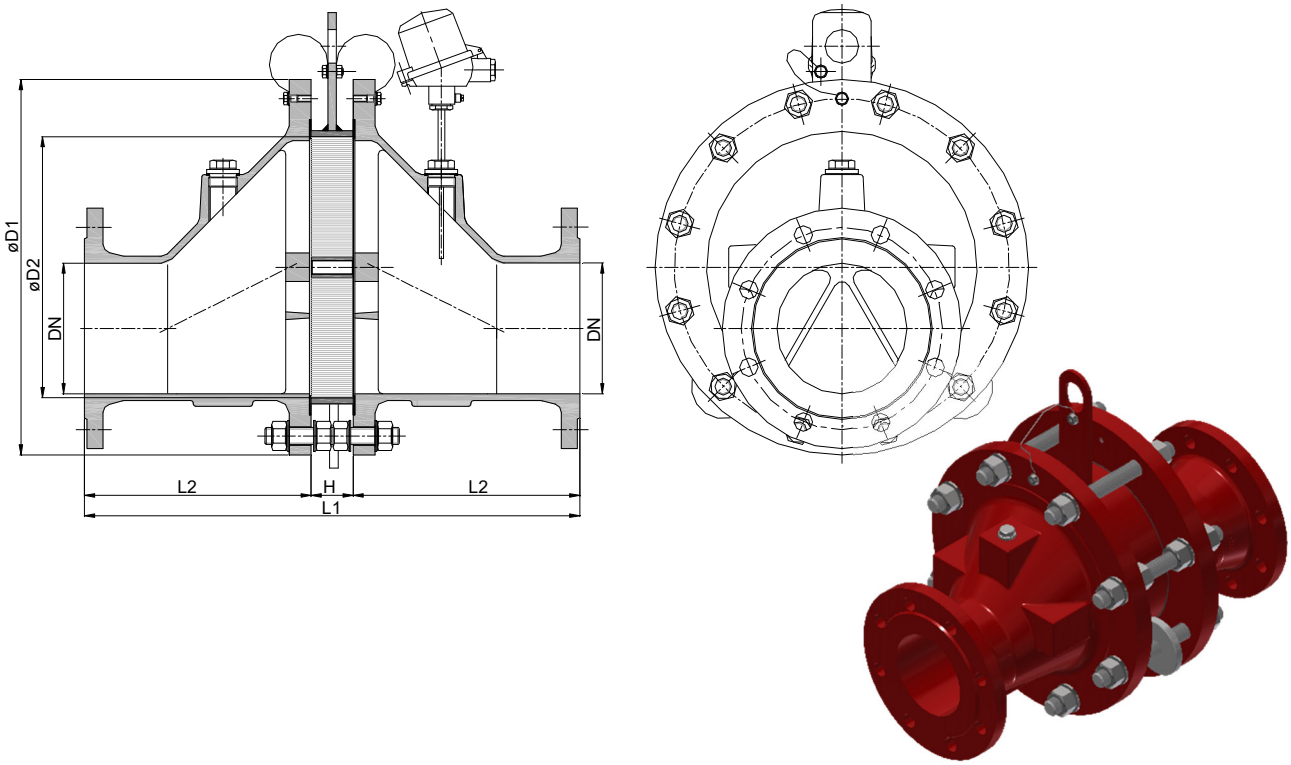
KITO® EFA-Def0-IIA-…/…-1.6-T (-TT)



Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.6 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. The installation of the deflagration flame arrester into horizontal and vertical pipes is permissible. When equipped with one or two temperature sensors, the devices are protected under atmospheric conditions against a short time burning by a burning time t_{BT} = 1.0 min. If only one temperature sensor, then it is to be placed on the device side where a burning could be expected.

Dimension (mm)



NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
100	40 PN 40	1 ½“	220	106	340	50	145	24
	50 PN 16	2“						26
150	50 PN 16	2“	285	159	400	50	175	41
	65 PN 16	2 ½“						43
	80 PN 16	3“						45
200	80 PN 16	3“	340	206	450	50	200	62
	100 PN 16	4“						63

Weight refers to the standard design

Example for order

KITO® EFA-Def0-IIA-100/40-1.6-T
(Design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 38.2 N
Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

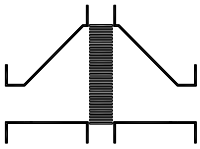
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-IIA-…/…-1.6

KITO® EFA-Def0-IIA-…/…-1.6-T (-TT)



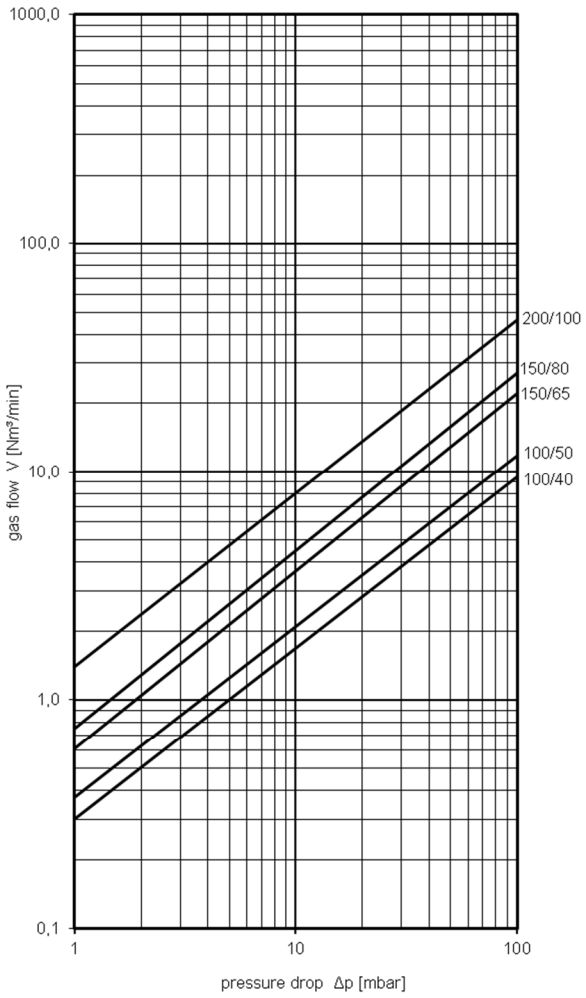
Design

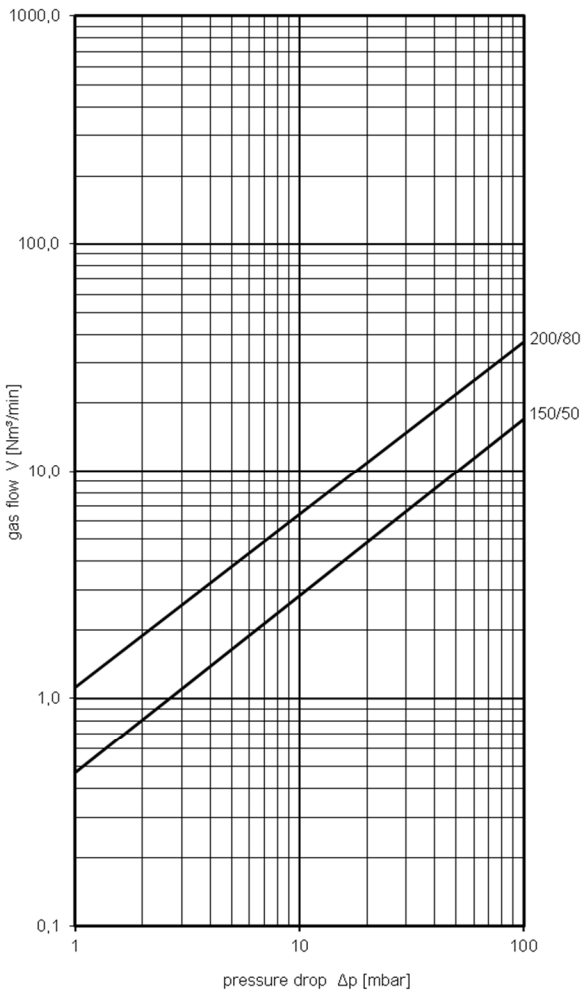
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	galvanized steel	stainless steel mat. no. 1.4571
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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H 38.2 N
Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

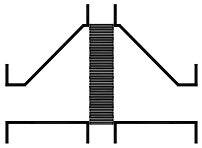
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-IIA-…/…-1,6-X18

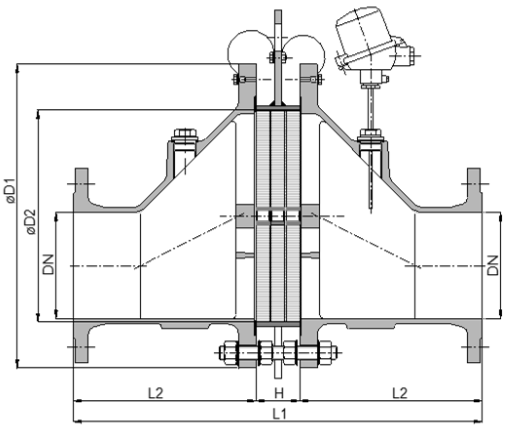
KITO® EFA-Def0-IIA-…/…-1,6-X18-T (-TT)

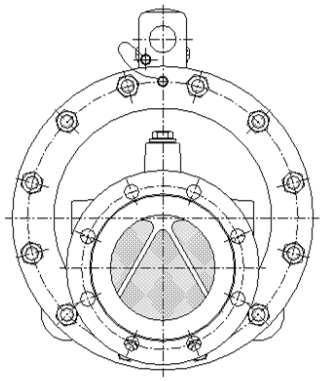


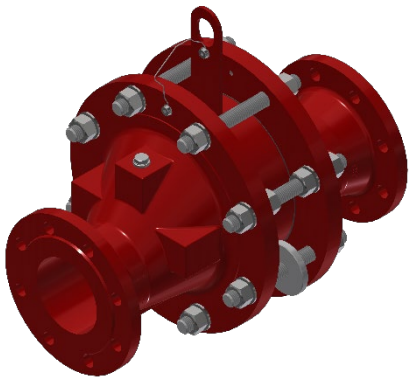
Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.6 bar abs. and an operating temperature of 180 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. The installation of the deflagration flame arrester into horizontal and vertical pipes is permissible. When equipped with one or two temperature sensors, the devices are protected under atmospheric conditions against a short time burning by a burning time t_{BT} = 1.0 min. If only one temperature sensor, then it is to be placed on the device side where a burning could be expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	282	42	120	12
	32 PN 40	1 ¼“						13
100	40 PN 40	1 ½“	220	106	332	42	145	23
	50 PN 16	2“						25
150	50 PN 16	2“	285	159	392	42	175	41
	65 PN 16	2 ½“						42
	80 PN 16	3“						44
200	80 PN 16	3“	340	206	464	64	200	64
	100 PN 16	4“						65
300	100 PN 16	4“	445	308	604	64	270	114
	125 PN 16	5“						120
	150 PN 16	6“						123

Weight refers to the standard design

Example for order

KITO® EFA-Def0-IIA-100/40-1,6-X18-T
(Design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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Date: 06-2024
Created: Abt. Doku KITO
Design subject to change

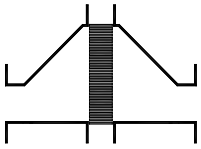
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-IIA-…/…-1,6-X18

KITO® EFA-Def0-IIA-…/…-1,6-X18-T (-TT)



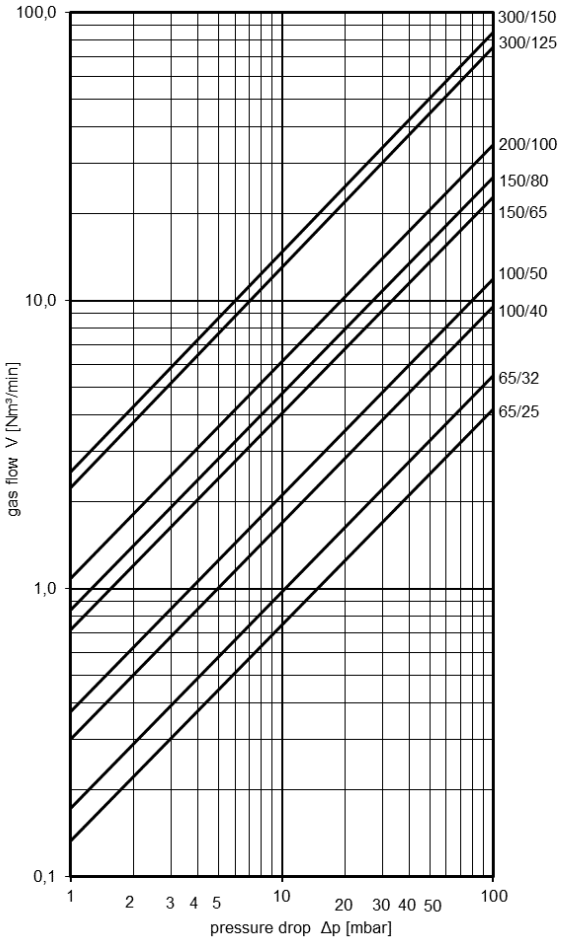
Design

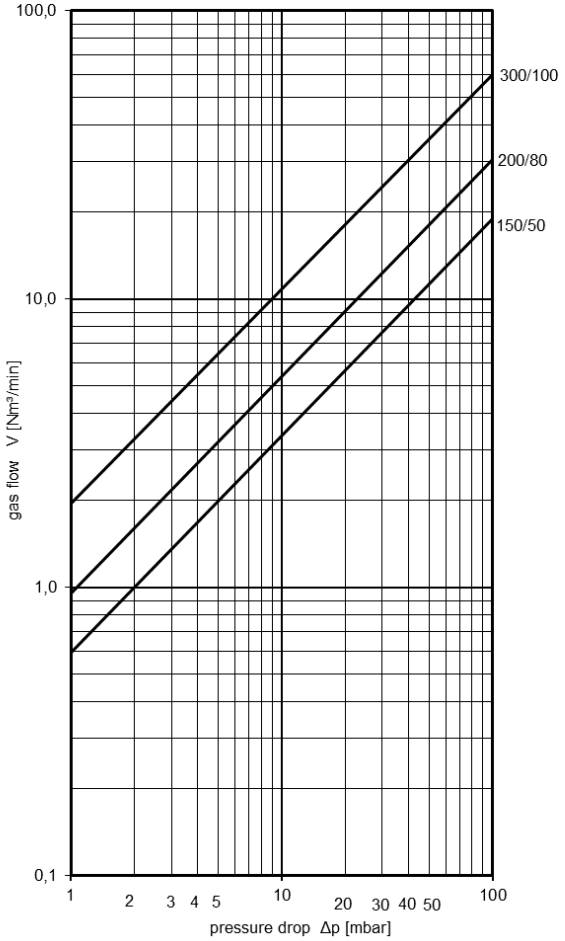
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	stainless steel mat. no. 1.4571 or 1.4581	
KITO®-grid	stainless steel mat. no. 1.4571	
bolts / nuts	A2	
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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Date: 06-2024
Created: Abt. Doku KITO
Design subject to change

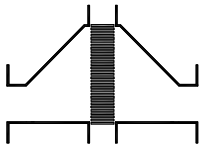
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-IIB3-…/…-1.2

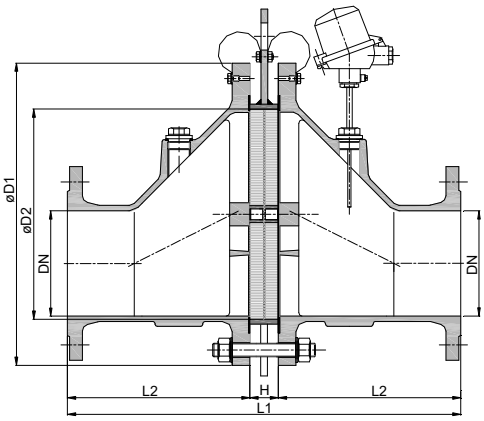
KITO® EFA-Def0-IIB3-…/…-1.2-T (-TT)

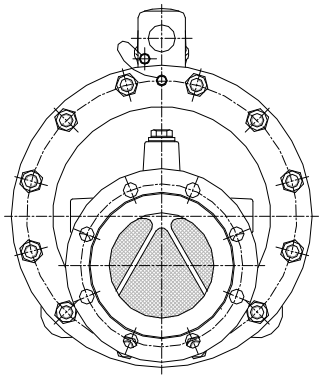


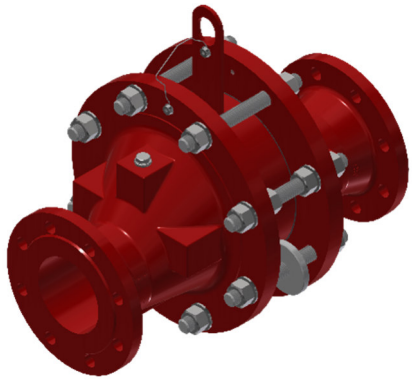
Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion groups IIA1 to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. The installation of the deflagration flame arrester into horizontal and vertical pipes is permissible. When equipped with one or two temperature sensors, the devices are protected under atmospheric conditions against a short time burning by a burning time t_{BT} = 1.0 min. If only one temperature sensor, then it is to be placed on the device side where a burning could be expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	290	50	120	12
	32 PN 40	1 ¼“						13
100	40 PN 40	1 ½“	220	106	340	50	145	24
	50 PN 16	2“						26
150	50 PN 16	2“	285	159	392	42	175	41
	65 PN 16	2 ½“						42
	80 PN 16	3“						44
200	80 PN 16	3“	340	206	442	42	200	61
	100 PN 16	4“						62
300	100 PN 16	4“	445	308	582	42	270	100
	125 PN 16	5“						106
	150 PN 16	6“						109
400	150 PN 16	6“	565	388	672	42	315	162
	200 PN 10	8“						178
500	200 PN 10	8“	670	485	802	42	380	244
	250 PN 10	10“						262
600	250 PN 10	10“	780	584	942	42	450	344
	300 PN 10	12“						360
800	350 PN 10	14“	1015	810	1350	110	620	
	400 PN 10	16“						

Weight refers to the standard design

Example for order

KITO® EFA-Def0-IIB3-100/40-1.2-T
(Design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 39 N
Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

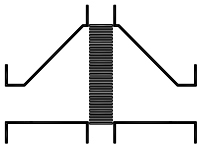
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-IIB3-…/…-1.2

KITO® EFA-Def0-IIB3-…/…-1.2-T (-TT)



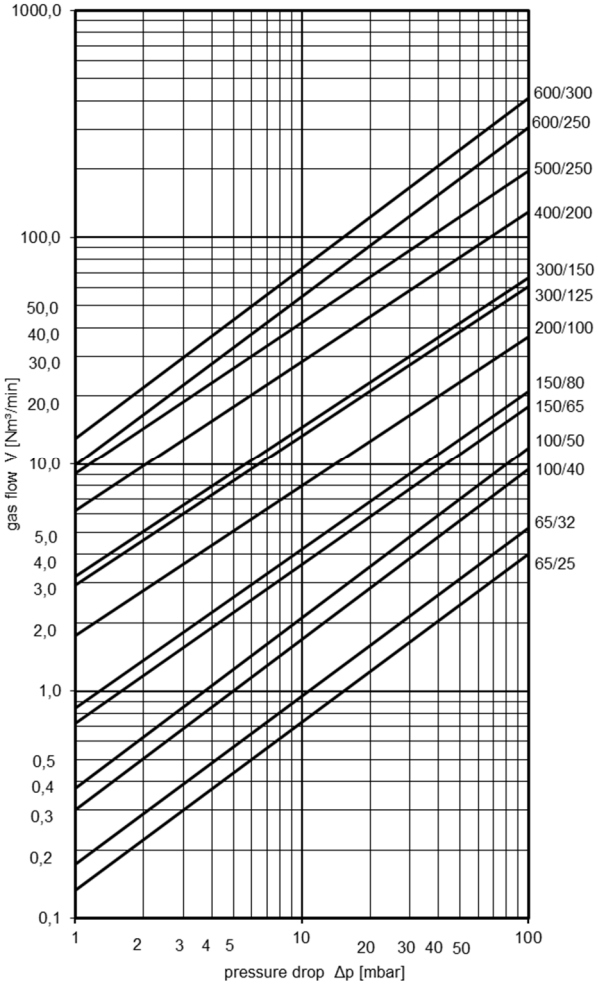
Design

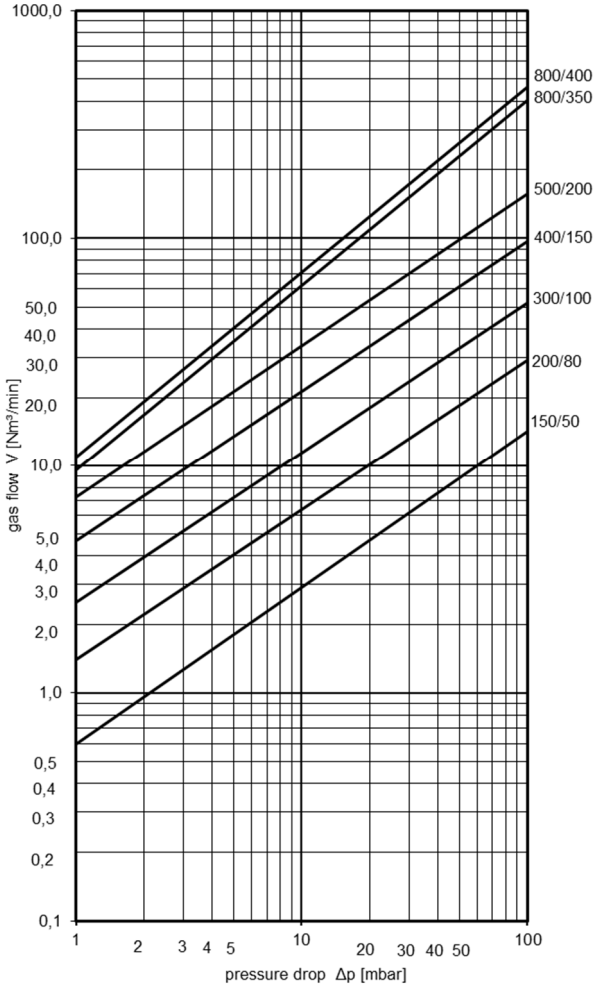
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

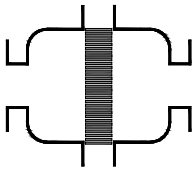
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® CFA-Def0-IIB3-…/…-1.2

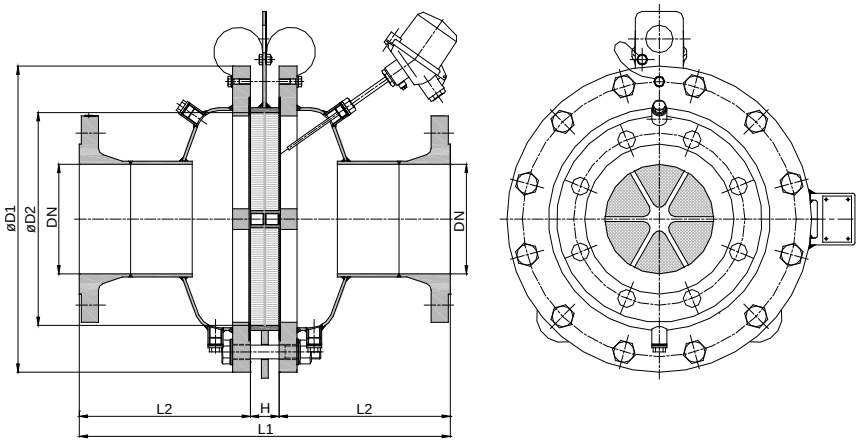
KITO® CFA-Def0-IIB3-…/…-1.2-T (-TT)

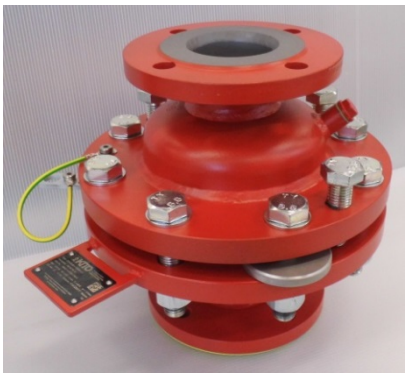


Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion groups IIA1 to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. The installation of the deflagration flame arrester into horizontal and vertical pipes is permissible. When equipped with one or two temperature sensors, the devices are protected under atmospheric conditions against a short time burning by a burning time t_{BT} = 1.0 min. If only one temperature sensor, then it is to be placed on the device side where a burning could be expected.

Dimension (mm)





NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
150	50 PN 16	2“	285	159	302	42	130	33
	65 PN 16	2 ½“						34
	80 PN 16	3“						35
200	80 PN 16	3“	340	206	352	42	155	47
	100 PN 16	4“						49
300	100 PN 16	4“	445	308	542	42	250	81
	125 PN 16	5“						88
	150 PN 16	6“						91
400	150 PN 16	6“	565	388	642	42	300	127
	200 PN 10	8“						134
500	200 PN 10	8“	670	485	802	42	380	187
	250 PN 10	10“						196
600	250 PN 10	10“	780	584	942	42	450	276
	300 PN 10	12“						281
800	350 PN 10	14“	1015	815	1010	110	450	
	400 PN 10	16“						

Weight refers to the standard design

Example for order

KITO® CFA-Def0-IIB3-150/65-1.2-T
(Design NG 150 with flange connection DN 65 PN 16 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 39.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

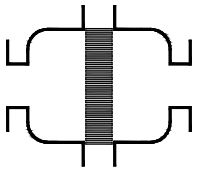
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® CFA-Def0-IIB3-…/…-1.2

KITO® CFA-Def0-IIB3-…/…-1.2-T (-TT)



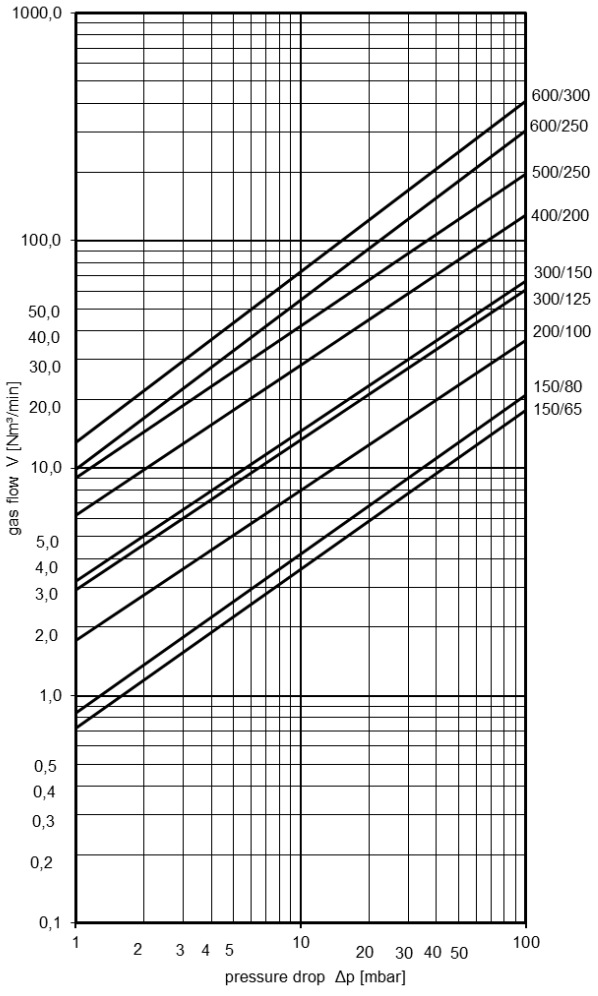
Design

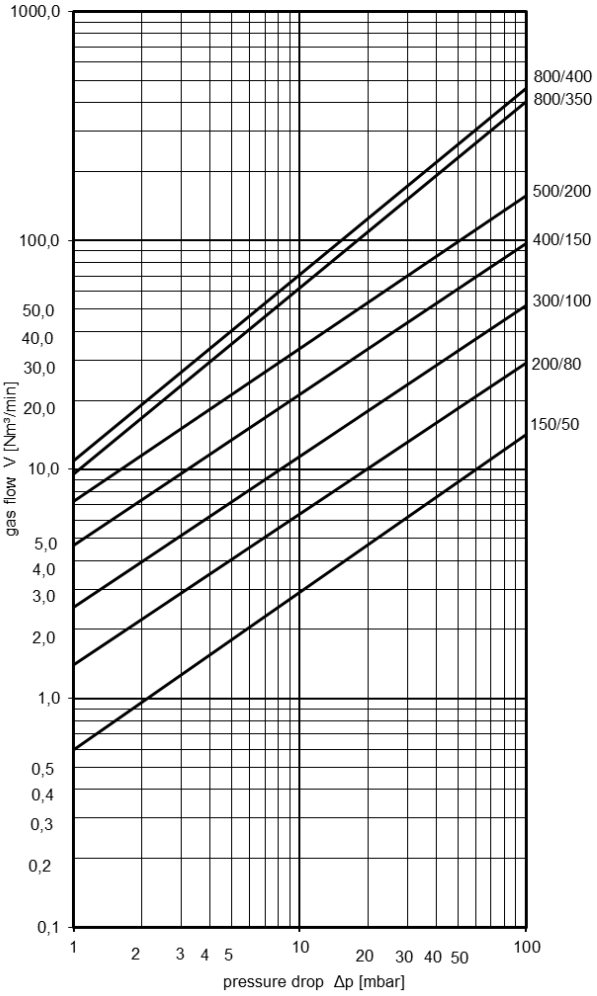
	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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H 39.1 N
Date: 05-2018
Created: Abt. Doku KITO

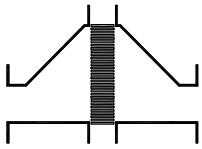
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-IIB3-…/…-1.2-X10

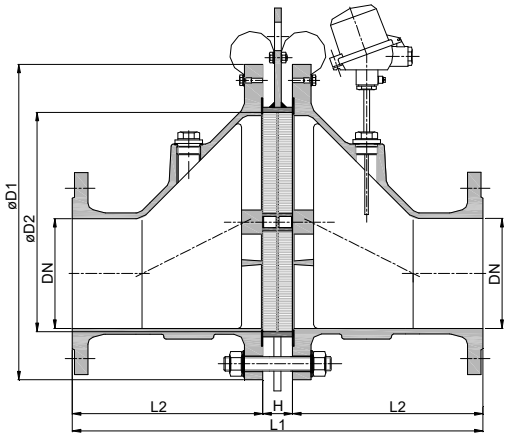
KITO® EFA-Def0-IIB3-…/…-1.2-X10-T (-TT)

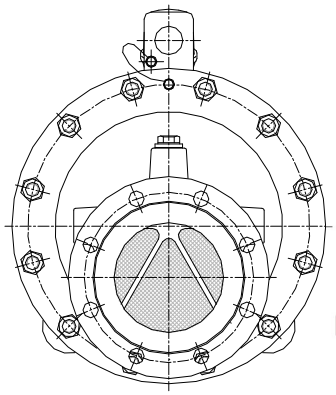


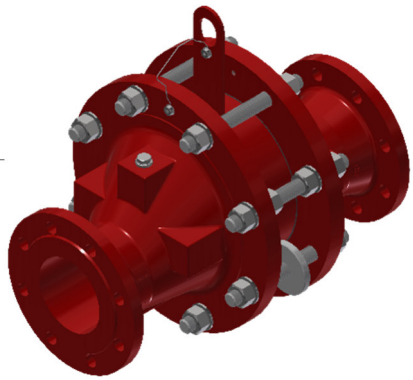
Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion groups IIA1 to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 100 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. The installation of the deflagration flame arrester into horizontal and vertical pipes is permissible. When equipped with one or two temperature sensors, the devices are protected under atmospheric conditions against a short time burning by a burning time t_{BT} = 1.0 min. If only one temperature sensor, then it is to be placed on the device side where a burning could be expected.

Dimension (mm)







NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
65	25 PN 40	1“	155	70	282	42	120	12
	32 PN 40	1 ¼“						13
100	40 PN 40	1 ½“	220	106	332	42	145	23
	50 PN 16	2“						25
150	50 PN 16	2“	285	159	392	42	175	41
	65 PN 16	2 ½“						42
	80 PN 16	3“						44
200	80 PN 16	3“	340	206	464	64	200	64
	100 PN 16	4“						65
300	100 PN 16	4“	445	308	604	64	270	107
	125 PN 16	5“						113
	150 PN 16	6“						116
400	150 PN 16	6“	565	388	716	86	315	186
	200 PN 10	8“						202
500	200 PN 10	8“	670	485	846	86	380	277
	250 PN 10	10“						296
600	250 PN 10	10“	780	584	986	86	450	393
	300 PN 10	12“						409

Weight refers to the standard design

Example for order

KITO® EFA-Def0-IIB3-100/40-1.2-X10-T
(Design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

KITO Armaturen GmbH
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H 39.2 N
Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

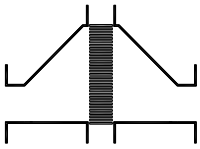
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-IIB3-…/…-1.2-X10

KITO® EFA-Def0-IIB3-…/…-1.2-X10-T (-TT)



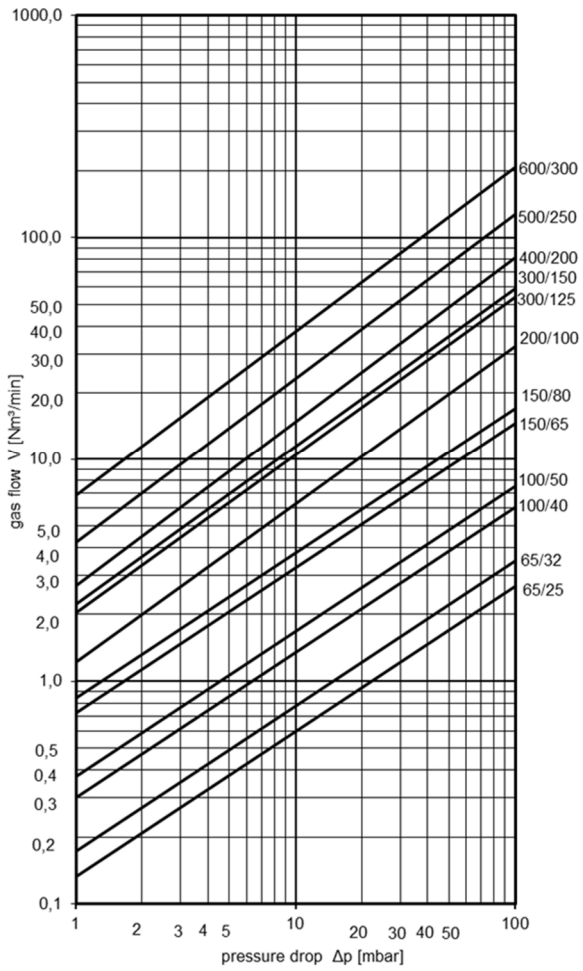
Design

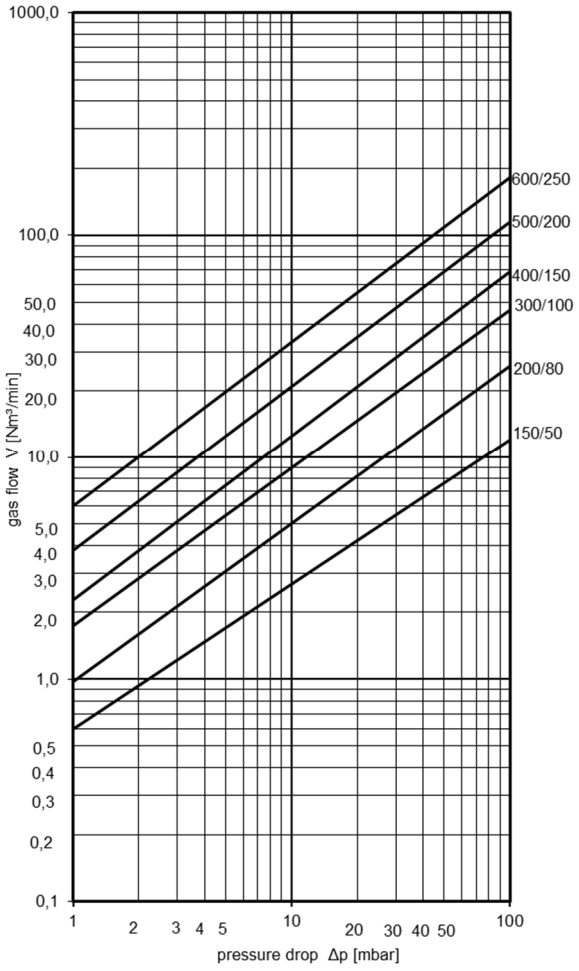
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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H 39.2 N
Date: 07-2020
Created: Abt. Doku KITO

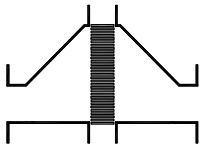
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-IIC-…/…-1.2

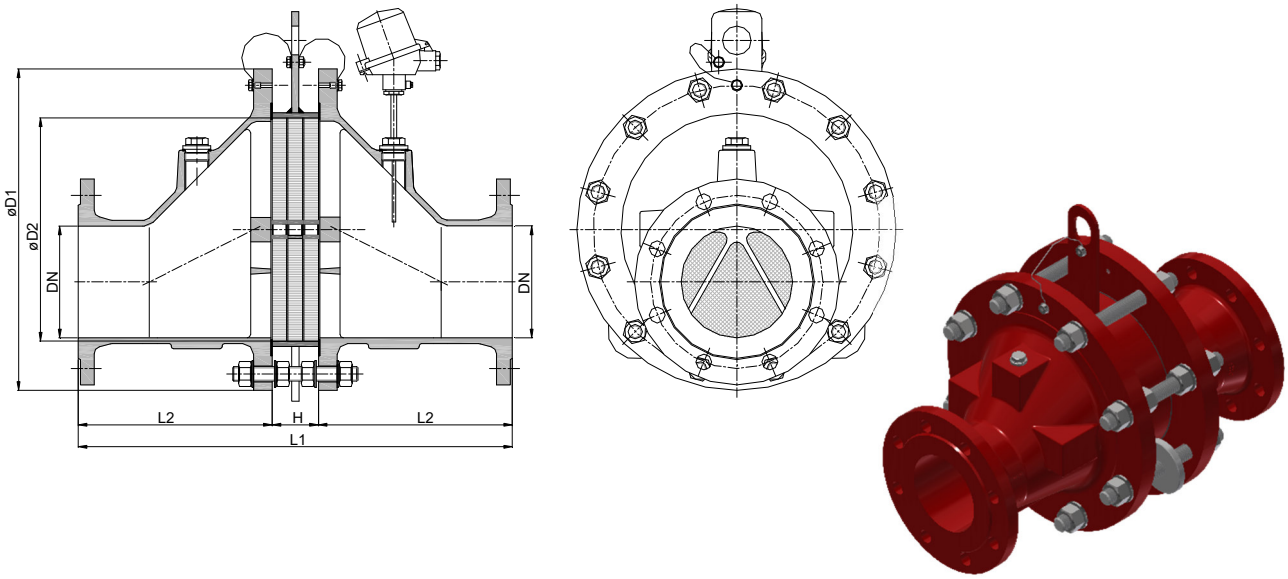
KITO® EFA-Def0-IIC-…/…-1.2-T (-TT)



Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion groups IIA1 to IIC with a maximum experimental safe gap (MESG) < 0.5 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 30 times the inner pipe diameter. The installation of the deflagration flame arrester into horizontal and vertical pipes is permissible. When equipped with one or two temperature sensors, the devices are protected under atmospheric conditions against a short time burning by a burning time t_{BT} = 1.0 min. If only one temperature sensor, then it is to be placed on the device side where a burning could be expected.

Dimension (mm)



NG	DN		D1	D2	L1	H	L2	kg
	DIN	ASME						
100	40 PN 40	1 ½“	220	106	332	42	145	24
	50 PN 16	2“						26
150	50 PN 16	2“	285	159	392	42	175	42
	65 PN 16	2 ½“						43
	80 PN 16	3“						45
200	80 PN 16	3“	340	206	464	64	200	69
	100 PN 16	4“						70
300	100 PN 16	4“	445	308	604	64	270	114
	125 PN 16	5“						120
	150 PN 16	6“						123
400	150 PN 16	6“	565	388	694	64	315	186
	200 PN 10	8“						202
500	200 PN 10	8“	670	485	824	64	380	279
	250 PN 10	10“						297

Weight refers to the standard design

Example for order

KITO® EFA-Def0-IIC-100/40-1,2-T
(Design NG 100 with flange connection DN 40 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 39.3 N
Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

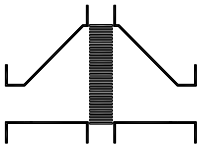
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® EFA-Def0-IIC-…/…-1.2

KITO® EFA-Def0-IIC-…/…-1.2-T (-TT)



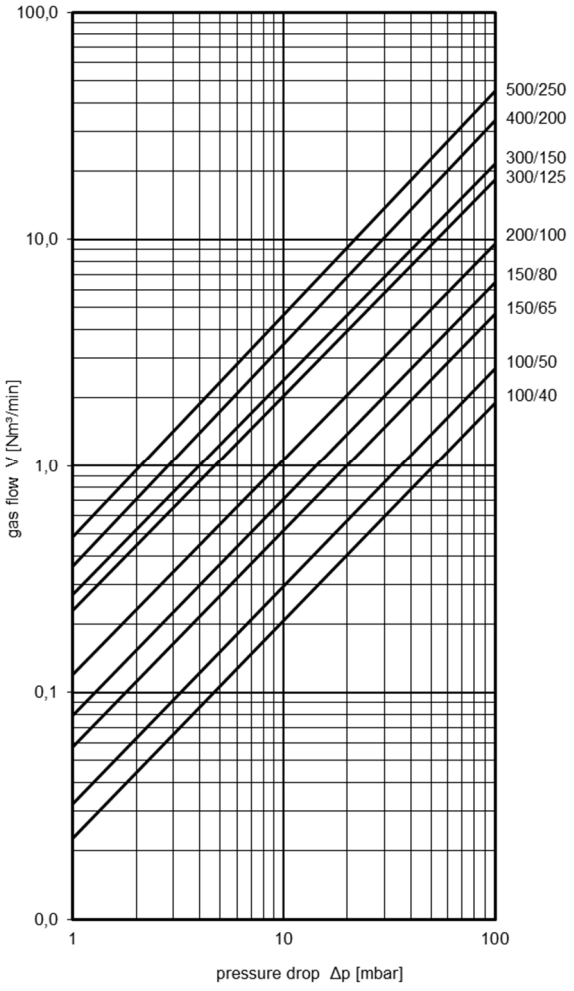
Design

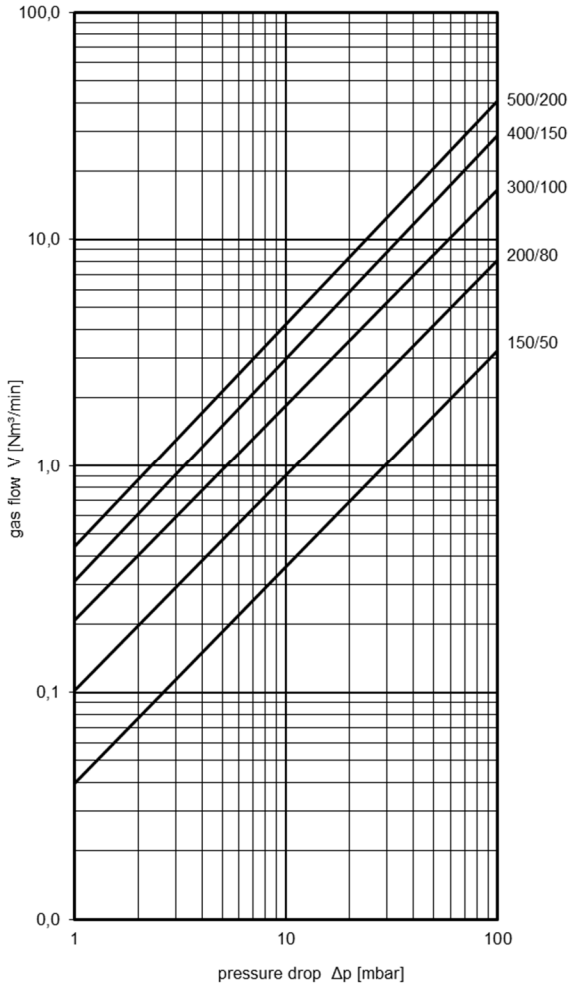
	standard	optionally
housing	cast steel 1.0619	stainless cast steel 1.4408
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing	steel (galvanized to NG 400)	stainless steel mat. no. 1.4571 or 1.4581
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
bolts / nuts	galvanized steel	A2
temperature sensor		PT 100, connection 3/8“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$





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H 39.3 N
Date: 07-2020
Created: Abt. Doku KITO
Design subject to change

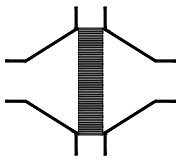
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, endurance burning proof

KITO® RG-Def-I-…-1.3

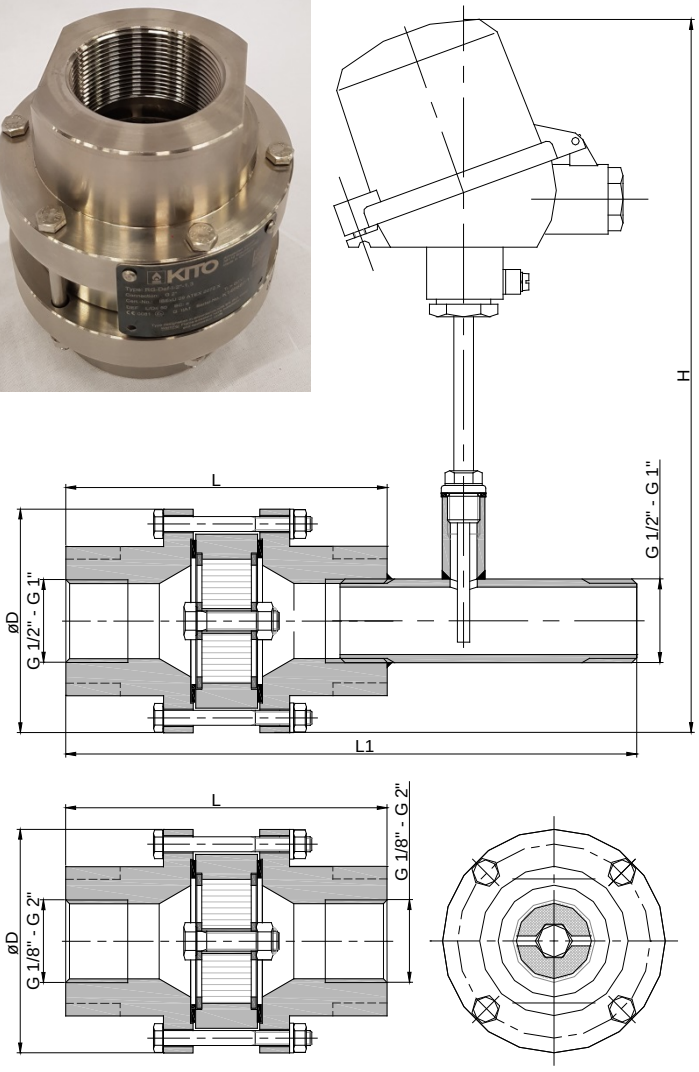
KITO® RG-Def-I-…-1.3-T (-TT)

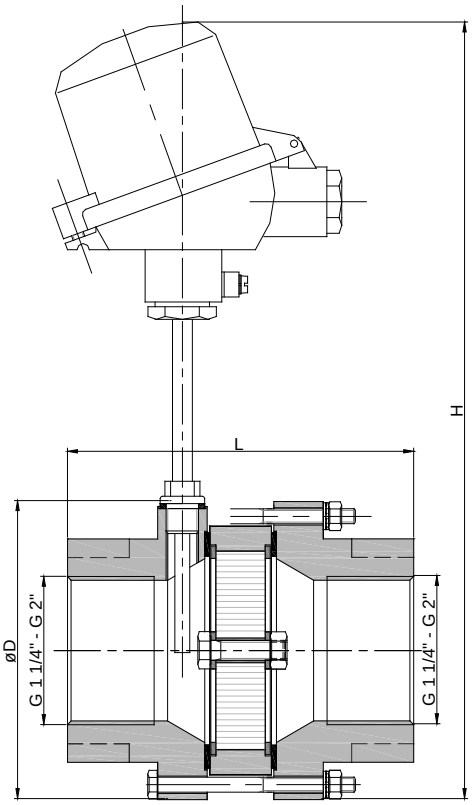


Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion group IIA1 (old: I) with a maximum experimental safe gap (MESG) ≥ 1.14 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.3 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. All sizes are tested against "stabilized burning" and withstand this for indefinite time (endurance burn). To detect a "stabilized burning" a thermocouple can be installed at each endangered side. Mounting is acceptable in any position, in horizontal as well as in vertical pipes.

Dimension (mm)





G	D	L	L1	H	kg
⅛", ¼", ⅜"	90	130	-	-	3,0
½", ¾", 1"			235	290	
1 ¼", 1 ½", 2"	120	140	-	315	4,8

Weight refers to the standard design

Example for order

KITO® RG-Def-I-1 ¼"-1.3-T
(design with threaded connection G 1 ¼" and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 40.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

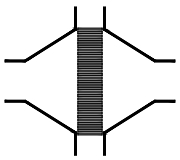
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, endurance burning proof

KITO® RG-Def-I-…-1.3

KITO® RG-Def-I-…-1.3-T (-TT)



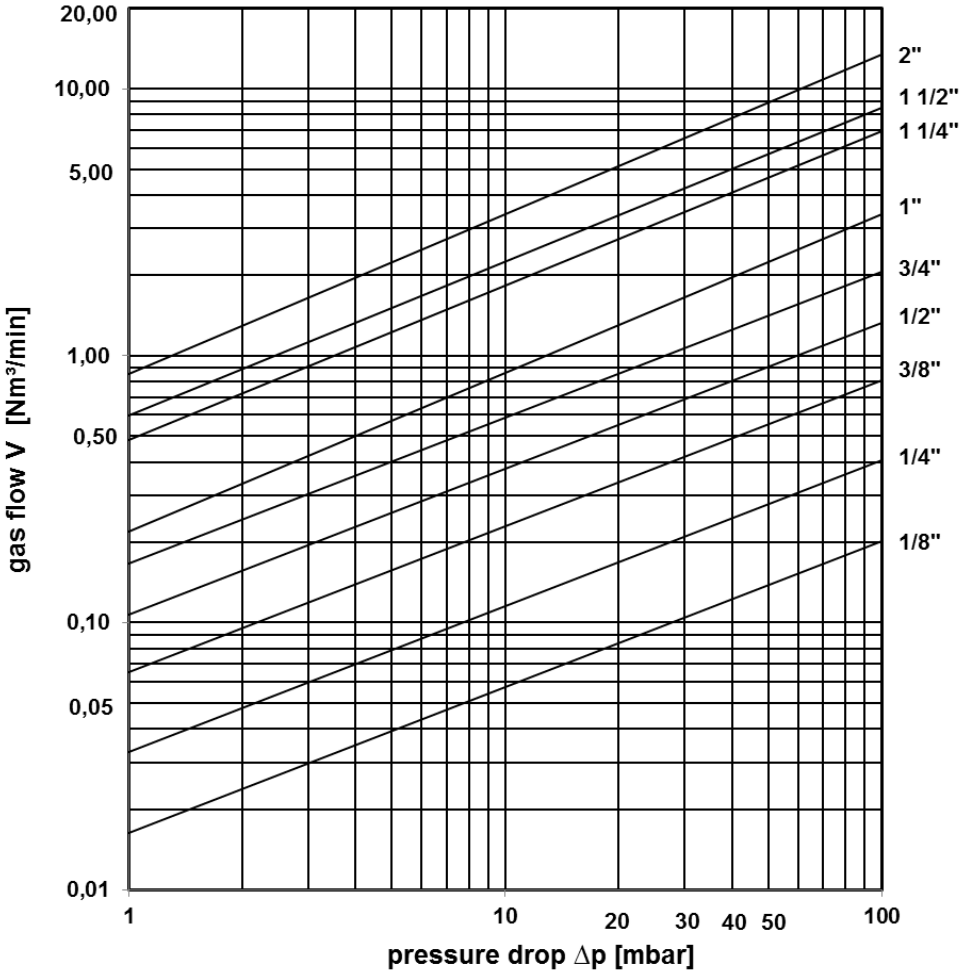
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4301 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
bolts / nuts	A2	A4
temperature sensor ***-not for connection G ⅛"- ⅜"-***		PT 100, connection ¼", 1.4571
connection	thread connection	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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H 40.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

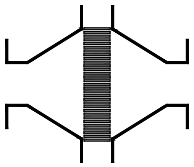
Type sheet

Bi-directional in-line deflagration flame arrester, endurance burning proof

KITO® RG-Def-I-…-1.3

KITO® RG-Def-I-…-1.3-T (-TT)

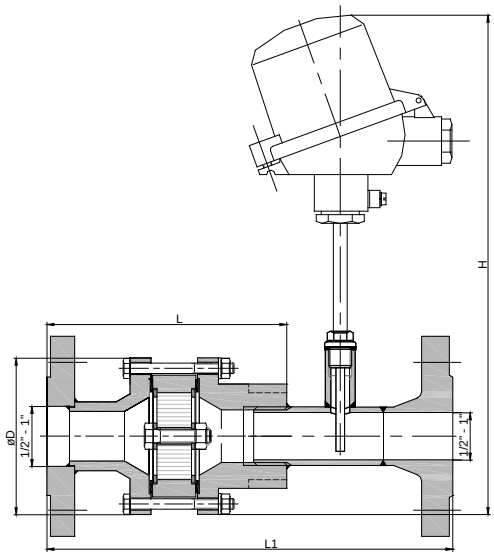
-design with flange connection -

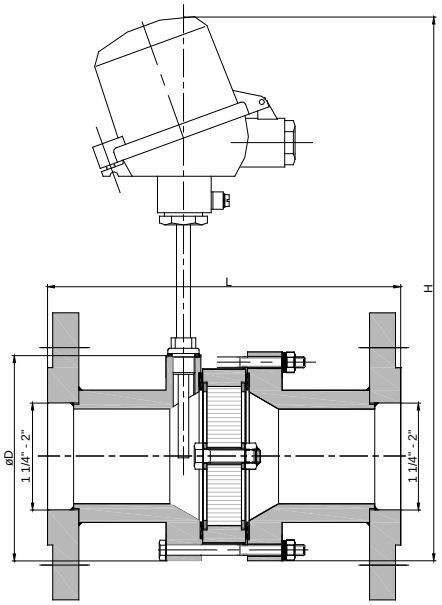


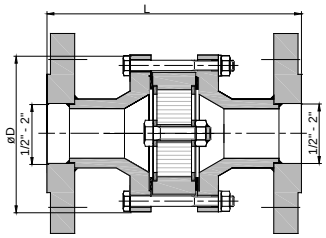
Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion group IIA1 (old: I) with a maximum experimental safe gap (MESG) ≥ 1.14 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.3 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. All sizes are tested against "stabilized burning" and withstand this for indefinite time (endurance burn). To detect a "stabilized burning" a thermocouple can be installed at each endangered side. Mounting is acceptable in any position, in horizontal as well as in vertical pipes.

Dimension (mm)







	DN		D	L (DIN)	L (ASME)	L1 (DIN)	L1 (ASME)	H	kg
	DIN	ASME							
½“	15 PN 40	½“	90	151				290	
¾“	20 PN 40	¾“		147					
1“	25 PN 40	1“		147					
1 ¼“	32 PN 40	1 ¼“	120	170		-	-	315	
1 ½“	40 PN 40	1 ½“		180					
2“	50 PN 16	2“		204	204				

Weight refers to the standard design

Example for order

KITO® RG-Def-I-1 ¼"-1.3-T DN 32
(design with flange connection DN 32 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 40.2 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

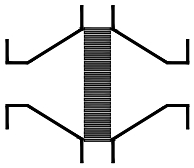
Type sheet

Bi-directional in-line deflagration flame arrester, endurance burning proof

KITO® RG-Def-I-…-1.3

KITO® RG-Def-I-…-1.3-T (-TT)

-design with flange connection -



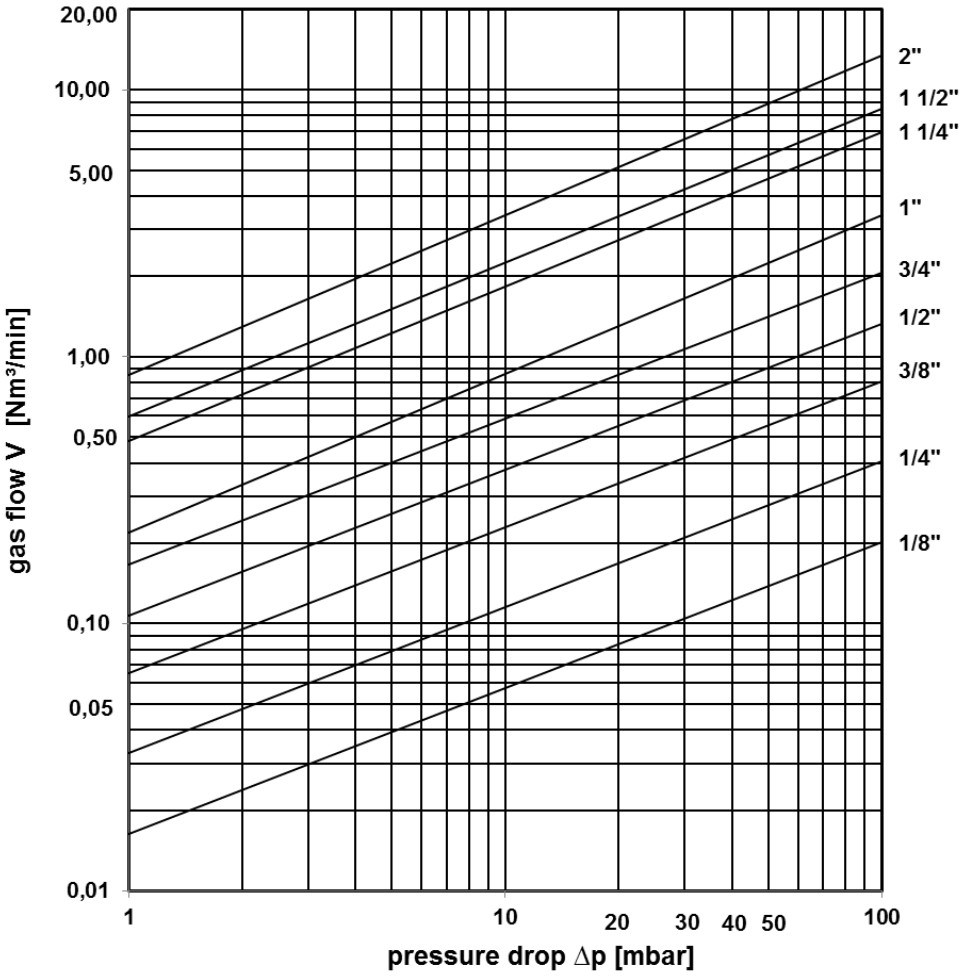
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4301 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
bolts / nuts	A2	A4
temperature sensor		PT 100, connection ¼“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \qquad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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H 40.2 N
Date: 05-2018
Created: Abt. Doku KITO

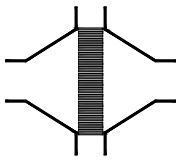
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® RG-Def-IIA-…-1.2

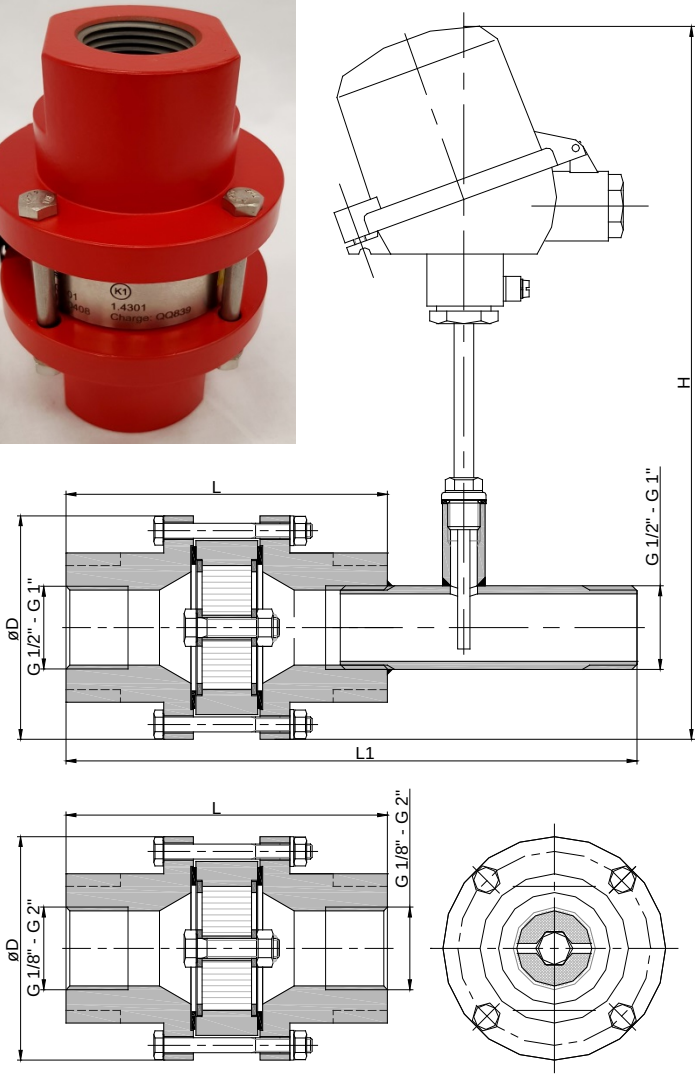
KITO® RG-Def-IIA-…-1.2-T (-TT)

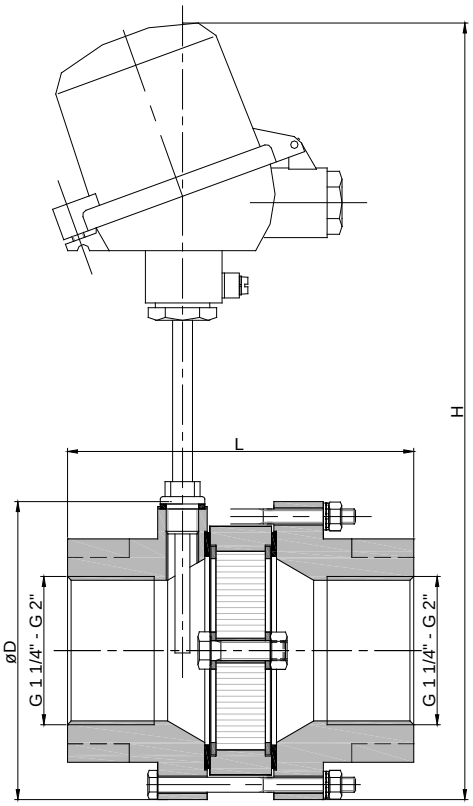


Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. All sizes are tested against “stabilized burning” and withstand this up to a max. burn time BT ≤ 30.0 min. To detect a “stabilized burning” a thermocouple must be installed at each endangered side. Mounting is acceptable in any position, in horizontal as well as in vertical pipes.

Dimension (mm)





G	D	L	L1	H	kg
⅛“, ¼“, ⅜“	90	130	-	-	3,0
½“, ¾“, 1“			235	290	
1 ¼“, 1 ½“, 2“	120	140	-	315	4,8

Weight refers to the standard design

Example for order

KITO® RG-Def-IIA-1 ¼”-1.2-T
(design with threaded connection G 1 ¼“ and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 41 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

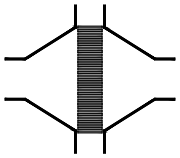
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® RG-Def-IIA-…-1.2

KITO® RG-Def-IIA-…-1.2-T (-TT)



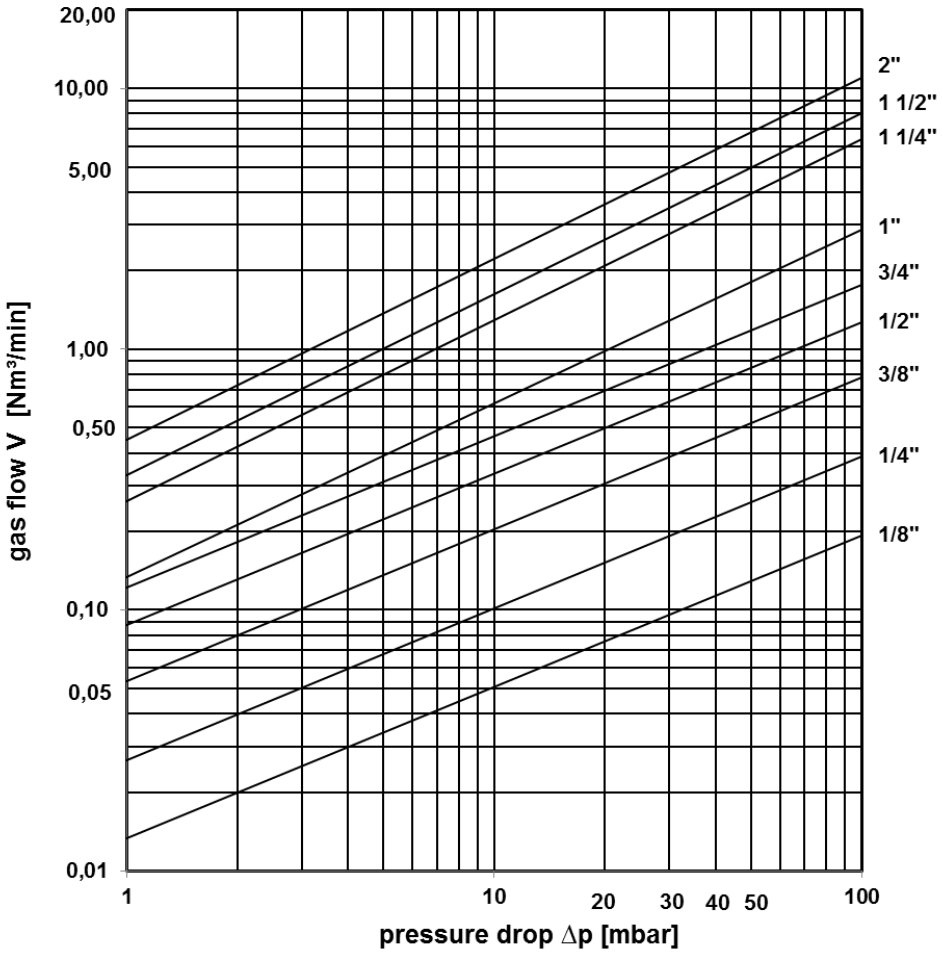
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4301 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
bolts / nuts	A2	A4
temperature sensor ***-not for connection G ⅛"- ⅜"-***		PT 100, connection ¼", 1.4571
connection	thread connection	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \qquad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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H 41 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

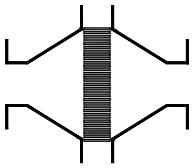
Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® RG-Def-IIA-…-1.2

KITO® RG-Def-IIA-…-1.2-T (-TT)

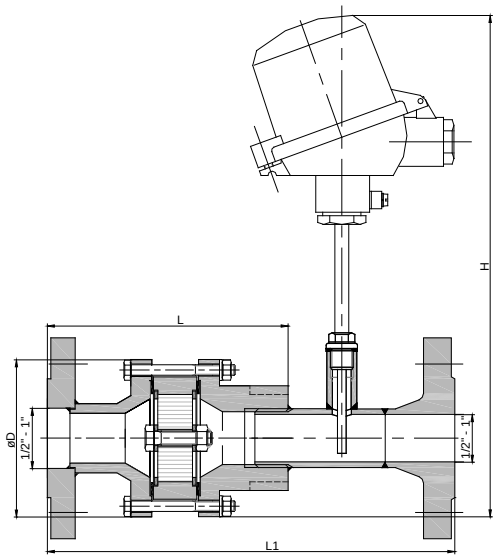
- design with flange connection -

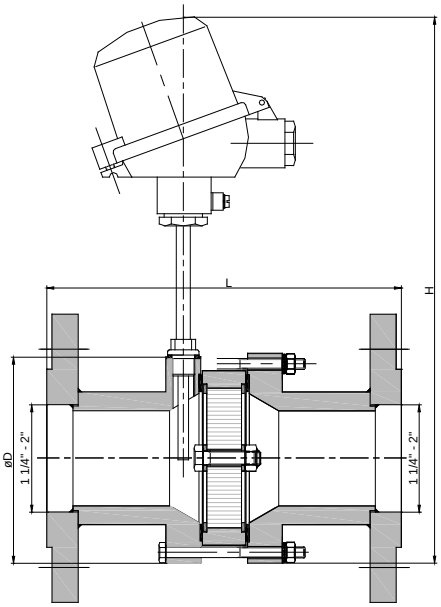


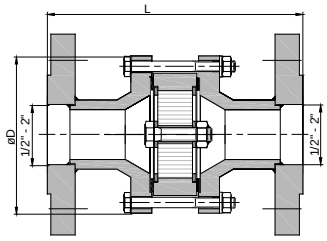
Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. All sizes are tested against "stabilized burning" and withstand this up to a max. burn time BT ≤ 30.0 min. To detect a "stabilized burning" a thermocouple must be installed at each endangered side. Mounting is acceptable in any position, in horizontal as well as in vertical pipes.

Dimension (mm)







	DN		D	L (DIN)	L (ASME)	L1 (DIN)	L1 (ASME)	H	kg
	DIN	ASME							
½“	15 PN 40	½“	90	151				290	
¾“	20 PN 40	¾“							
1“	25 PN 40	1“		147		239			
1 ¼“	32 PN 40	1 ¼“	120	170		-	-	315	
1 ½“	40 PN 40	1 ½“		180					
2“	50 PN 16	2“		204					

Weight refers to the standard design

Example for order

KITO® RG-Def-IIA-1 ¼"-1.2-T DN 32
(design with flange connection DN 32 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 41.0 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

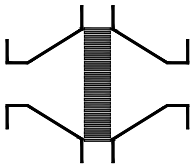
Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® RG-Def-IIA-…-1.2

KITO® RG-Def-IIA-…-1.2-T (-TT)

- design with flange connection -



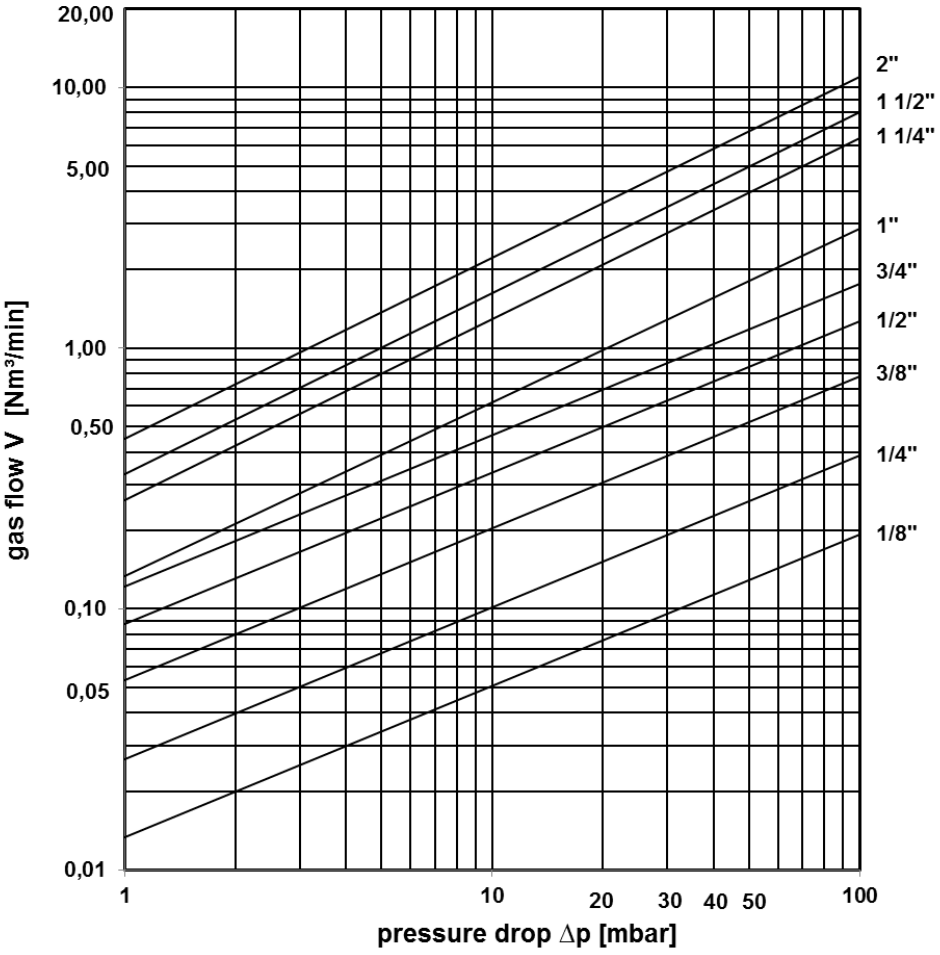
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4301 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
bolts / nuts	A2	A4
temperature sensor		PT 100, connection ¼“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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Date: 05-2018
Created: Abt. Doku KITO

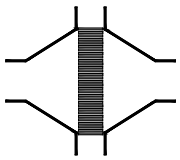
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® RG-Def-IIB3-…-1.2

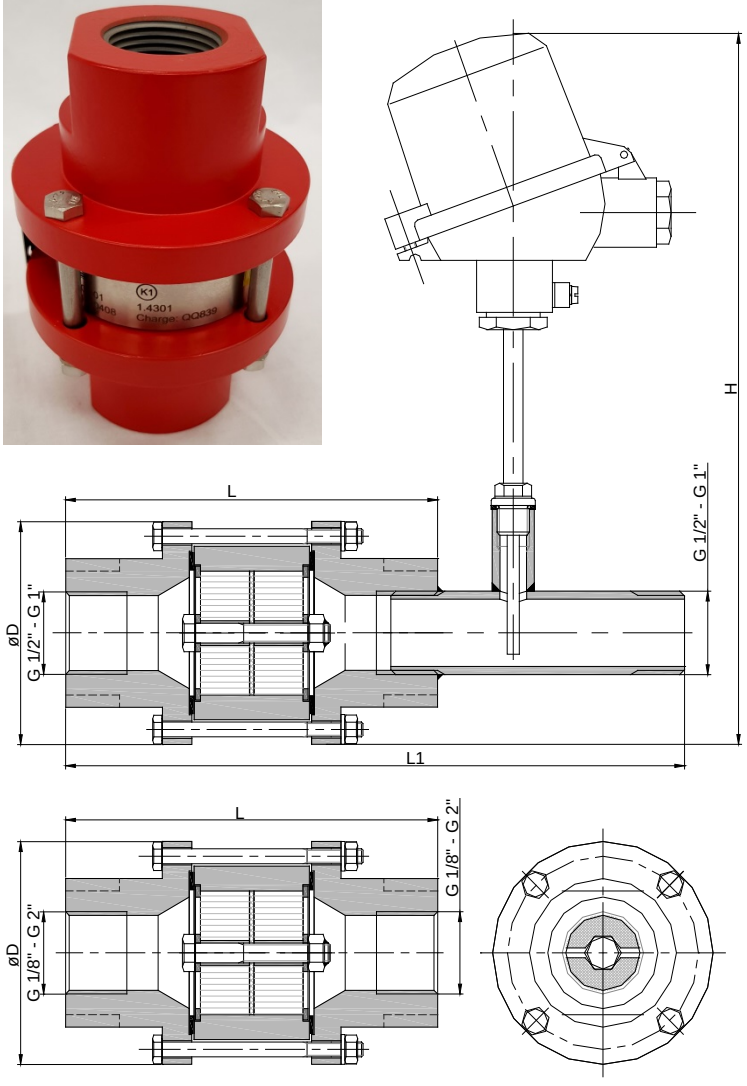
KITO® RG-Def-IIB3-…-1.2-T (-TT)

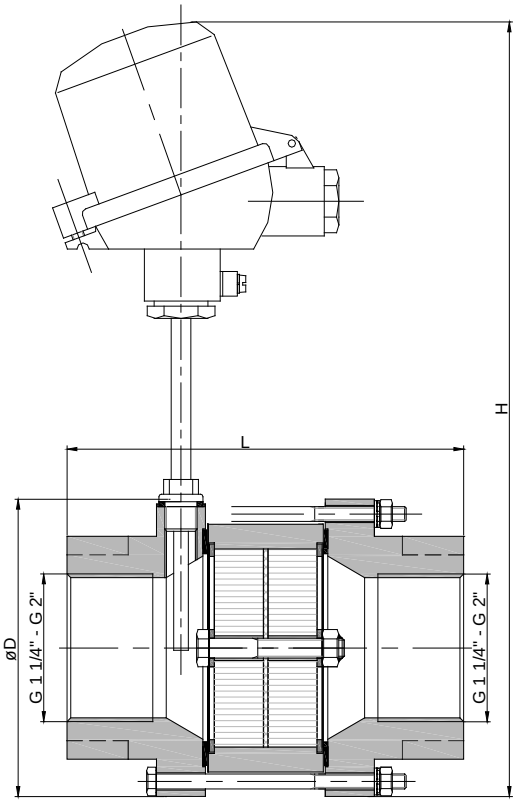


Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion groups IIA1 to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. All sizes are tested against “stabilized burning” and withstand this up to a max. burn time BT ≤ 6.0 min. To detect a “stabilized burning” a thermocouple must be installed at each endangered side. Mounting is acceptable in any position, in horizontal as well as in vertical pipes.

Dimension (mm)





G	D	L	L1	H	kg
⅛“, ¼“, ⅜“	90	152	-	-	4,0
½“, ¾“, 1“			257	290	
1 ¼“, 1 ½“, 2“	120	166	-	315	6,5

Weight refers to the standard design

Example for order

KITO® RG-Def-IIB3-1 ¼”-1.2-T
(design with threaded connection G 1 ¼“ and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 42 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

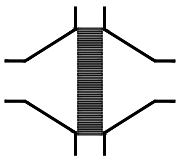
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® RG-Def-IIB3-…-1.2

KITO® RG-Def-IIB3-…-1.2-T (-TT)



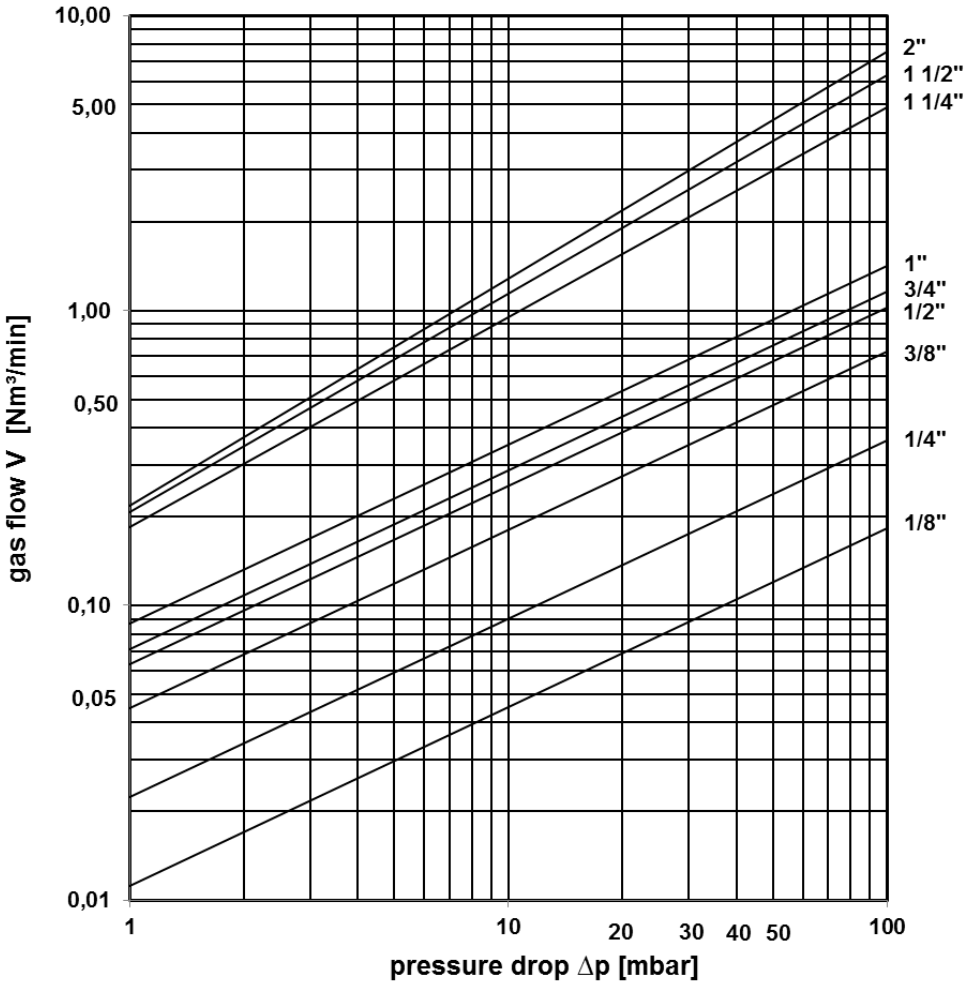
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4301 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
bolts / nuts	A2	A4
temperature sensor ***-not for connection G ⅛"- ⅜"-***		PT 100, connection ¼", 1.4571
connection	thread connection	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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Date: 05-2018
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Design subject to change

KITO Armaturen GmbH

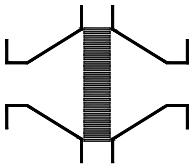
Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® RG-Def-IIB3-…-1.2

KITO® RG-Def-IIB3-…-1.2-T (-TT)

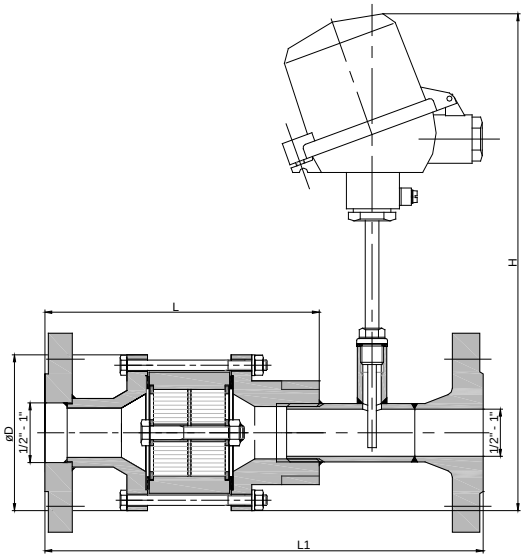
- design with flange connection -

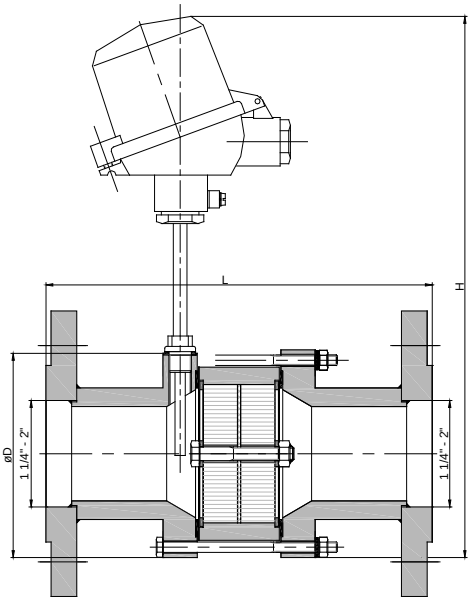


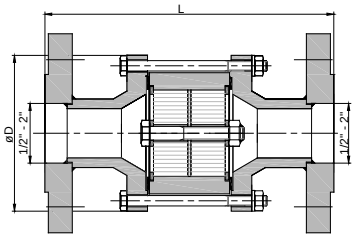
Application

For installation into pipes to the protection of vessels and components against deflagration of flammable liquids and gases. Approved for all substances of explosion groups IIA1 to IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. Bi-directionally working in pipes, whereby an operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. The distance between a potential ignition source and the flame arrester must not exceed 50 times the inner pipe diameter. All sizes are tested against "stabilized burning" and withstand this up to a max. burn time BT ≤ 6.0 min. To detect a "stabilized burning" a thermocouple must be installed at each endangered side. Mounting is acceptable in any position, in horizontal as well as in vertical pipes.

Dimension (mm)







	DN		D	L (DIN)	L (ASME)	L1 (DIN)	L1 (ASME)	H	kg
	DIN	ASME							
½“	15 PN 40	½“	90	173				290	
¾“	20 PN 40	¾“							
1“	25 PN 40	1“		169					
1 ¼“	32 PN 40	1 ¼“	120	192		-	-	315	
1 ½“	40 PN 40	1 ½“		202					
2“	50 PN 16	2“		226					

Weight refers to the standard design

Example for order

KITO® RG-Def-IIB3-1 ¼"-1.2-T DN 32
(design with flange connection DN 32 PN 40 and a temperature sensor)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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H 42.0 N
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Design subject to change

KITO Armaturen GmbH

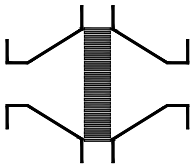
Type sheet

Bi-directional in-line deflagration flame arrester, short-time burning proof

KITO® RG-Def-IIB3-…-1.2

KITO® RG-Def-IIB3-…-1.2-T (-TT)

- design with flange connection -



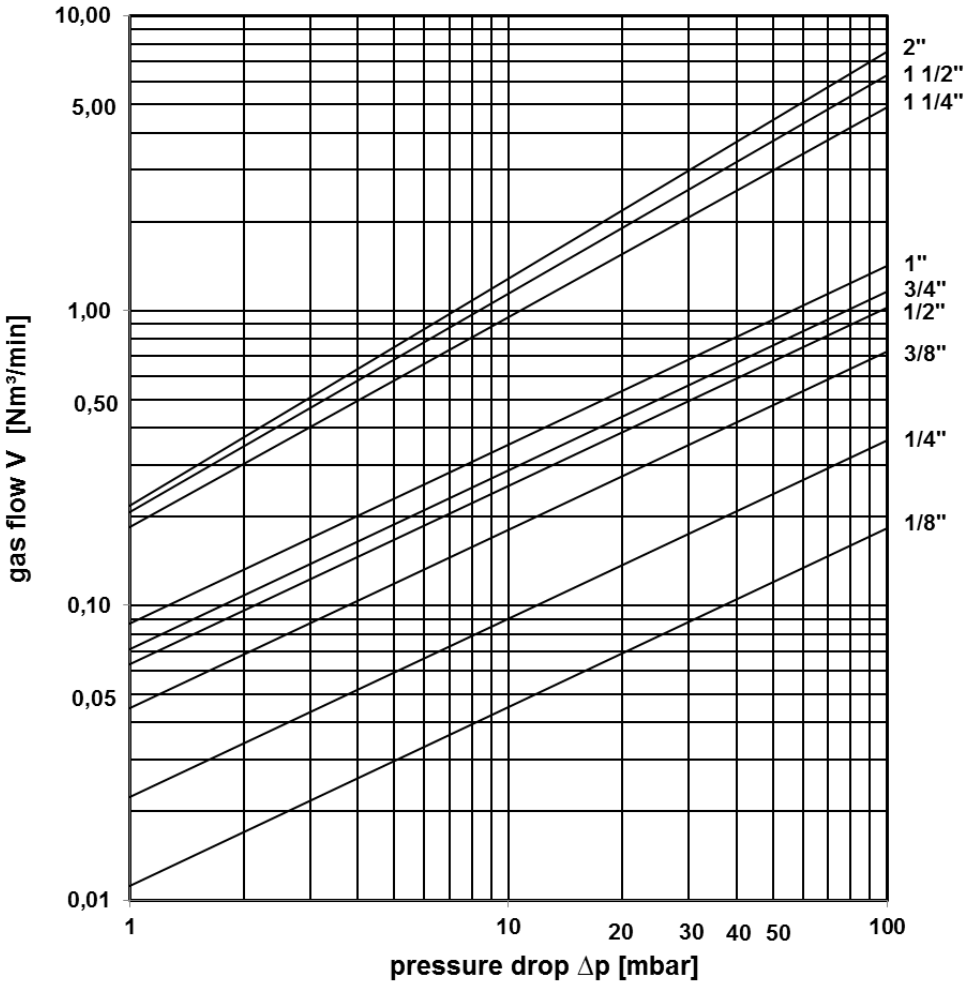
Design

	standard	optionally
housing	steel	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4301 / 1.4310	stainless steel mat. no. 1.4571 / 1.4571
bolts / nuts	A2	A4
temperature sensor		PT 100, connection ¼“, 1.4571
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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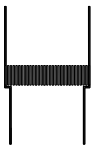
H 42.0 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

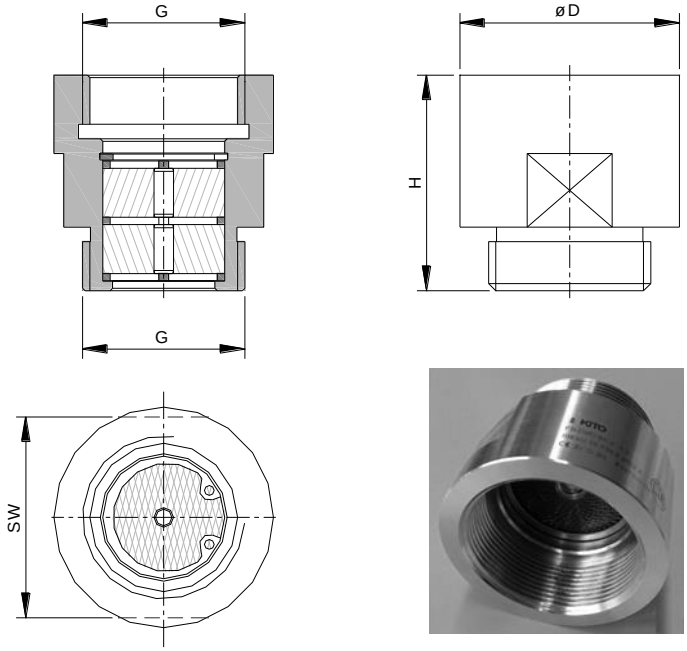
Type sheet
Bi-directional in-line deflagration flame arrester
KITO® FS-Def0-IIA-…“-1.2



Application

Installation into pipelines as inline deflagration flame arrester e. g. for the protection of ignition gas lines of gas consumption devices (flare of biogas plants). Applicable for all materials of the explosion groups IIA1 up to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. Operating from both sides, for a maximum operating pressure of 1.2 bar abs. and a maximum operating temperature of 60 °C. The distance between the ignition source and the armature may not be larger than 50 x the inside pipe diameter.

Dimension (mm)



thread	D	H	SW	kg
G ½“	30	44	24	0.15
G ¾“	35	46	30	0.2
G 1“	45	44	41	0.3
G 1 ¼“	55	65	55	0.5
G 1 ½“	60	65	55	0.6
G 2“	75	65	70	0.9

Weight refers to the standard design

Example for order

KITO® FS-Def0-IIA-1”-1.2
(design with threaded connection G 1“)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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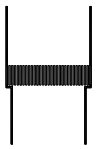
KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester

KITO® FS-Def0-IIA-…“-1.2



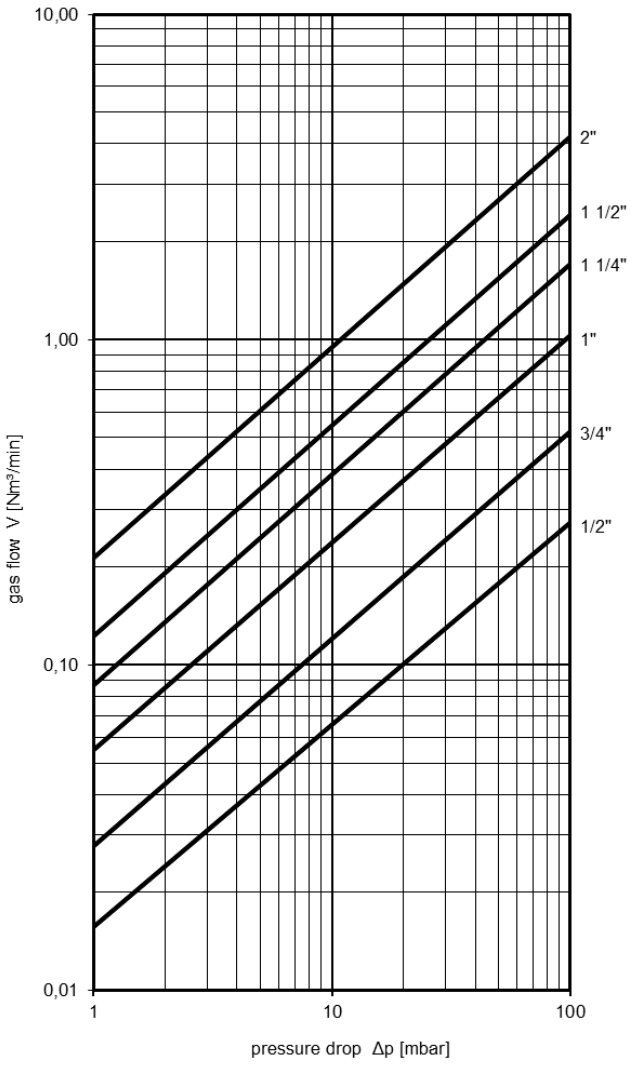
Design

	standard	optionally
housing	stainless steel mat. no. 1.4571	
KITO®-grid	stainless steel mat. no. 1.4571	
interlayer	stainless steel mat. no. 1.4571	
retaining ring	Stainless steel	
connections	thread inside and outside	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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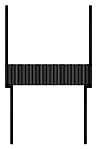
H 44.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester

KITO® FS-Def0-IIB3-…“-1.2



Application

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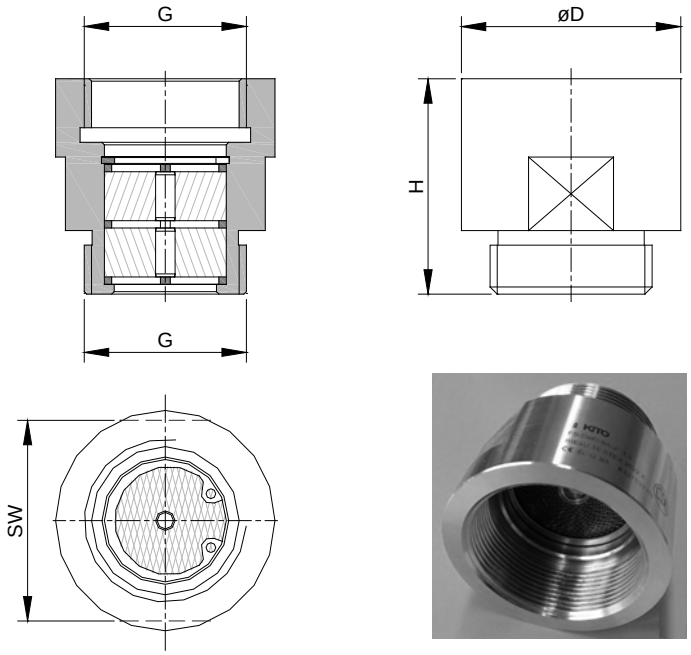
Dimension (mm)



thread	D	H	SW	kg
G ½“	30	44	24	0.15
G ¾“	35	46	30	0.2
G 1“	45	44	41	0.3
G 1 ¼“	55	65	55	0.5
G 1 ½“	60	65	55	0.6
G 2“	75	65	70	0.9

Weight refers to the standard design

Example for order

KITO® FS-Def0-IIB3-1”-1.2
(design with threaded connection G 1“)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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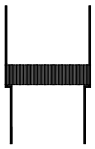
H 45.1 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester

KITO® FS-Def0-IIB3-…“-1.2



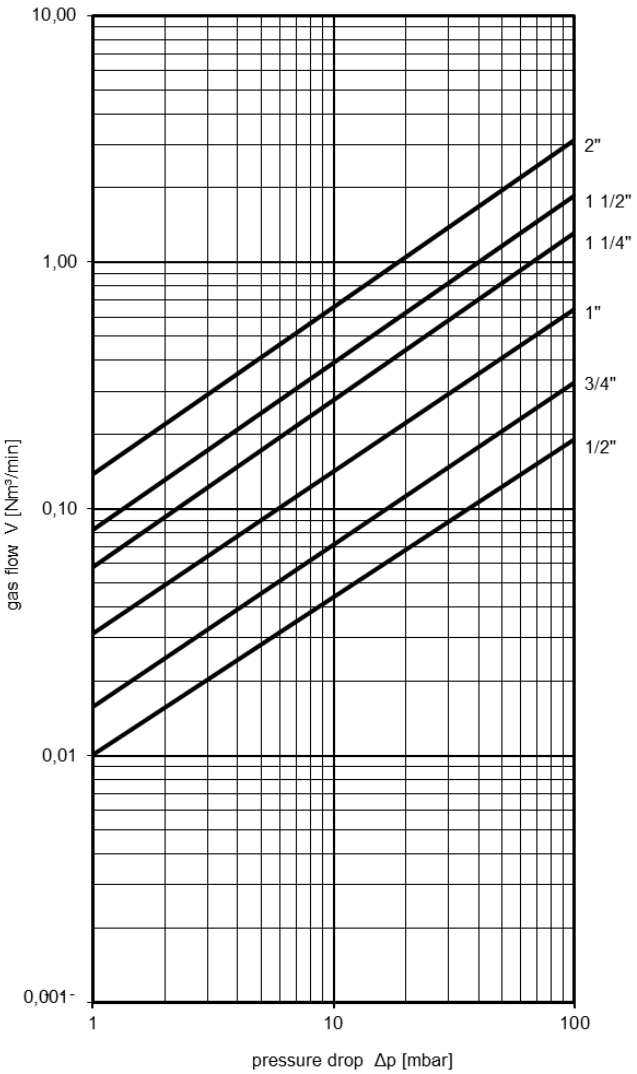
Design

	standard	optionally
housing	stainless steel mat. no. 1.4571	
KITO®-grid	stainless steel mat. no. 1.4571	
interlayer	stainless steel mat. no. 1.4571	
retaining ring	stainless steel	
connections	thread inside and outside	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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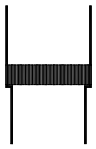
Design subject to change

KITO Armaturen GmbH

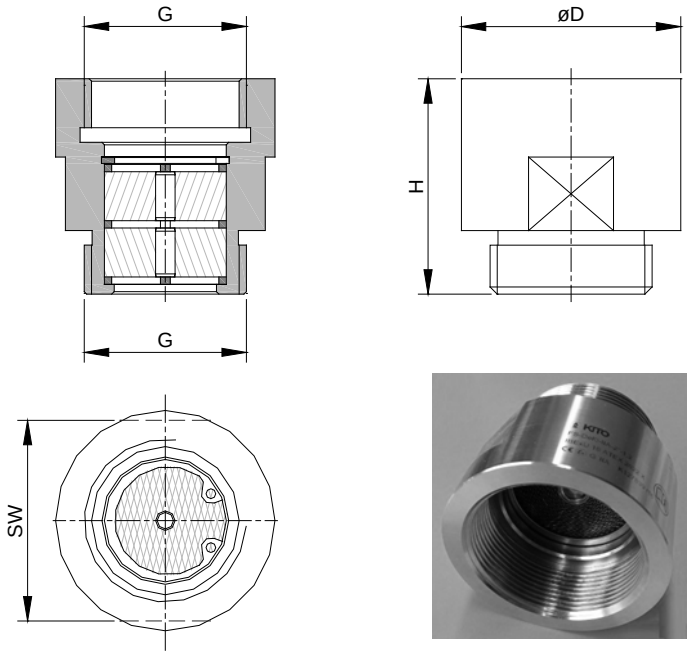
Type sheet
Bi-directional in-line deflagration flame arrester
KITO® FS-Def0-IIC-…“



Application

Installation into pipelines as inline deflagration flame arrester e. g. for the protection of ignition gas lines of gas consumption devices (flare of biogas plants). Applicable for all materials of the explosion groups IIA1 up to IIC with a maximum experimental safe gap (MESG) < 0.5 mm. Operating from both sides, for a maximum operating pressure of 1.1 bar abs. and a maximum operating temperature of 60 °C. The distance between the ignition source and the armature may not be larger than 30 x the inside pipe diameter.

Abmessungen (mm)



thread	D	H	SW	kg
G ½“	30	44	24	0,15
G ¾“	35	46	30	0,2
G 1“	45	44	41	0,3
G 1 ¼“	55	65	55	0,5
G 1 ½“	60	65	55	0,6
G 2“	75	65	70	0,9

Weight refers to the standard design

Example for order

KITO® FS-Def0-IIC-1”
(design with threaded connection G 1“)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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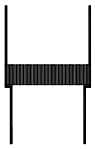
H 46.1 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Bi-directional in-line deflagration flame arrester

KITO® FS-Def0-IIC-…“



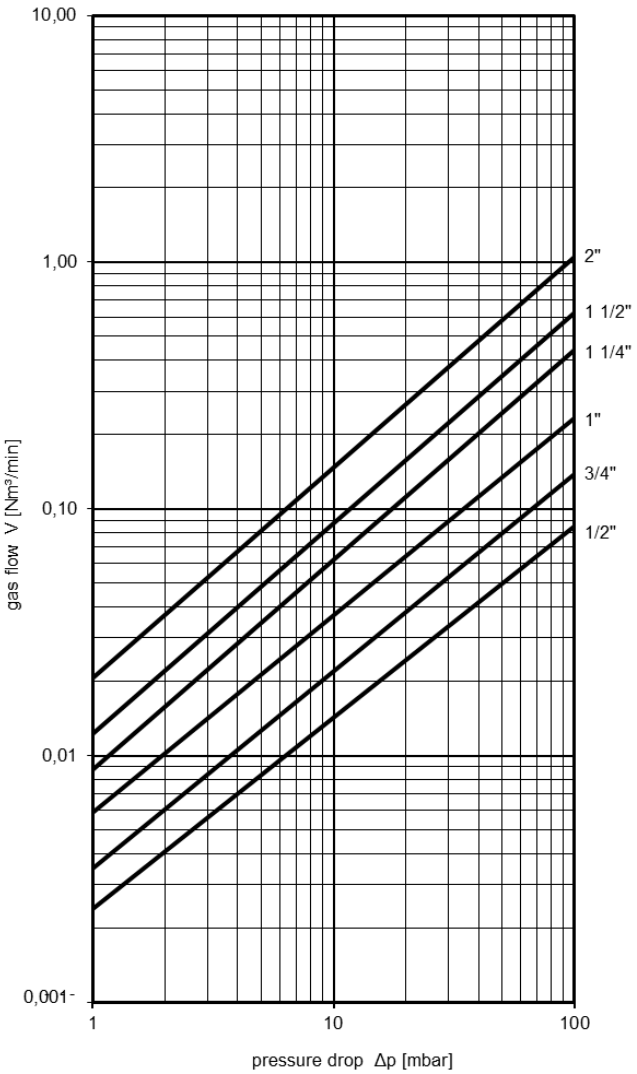
Design

	standard	optionally
housing	stainless steel mat. no. 1.4571	
KITO®-grid	stainless steel mat. no. 1.4571	
interlayer	stainless steel mat. no. 1.4571	
retaining ring	stainless steel	
connections	thread inside and outside	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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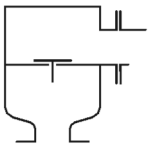
KITO Armaturen GmbH

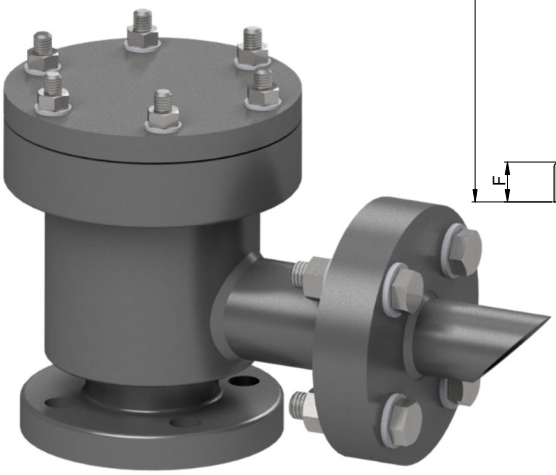
Type sheet
Pressure relief valve
KITO® DS/ScS-…

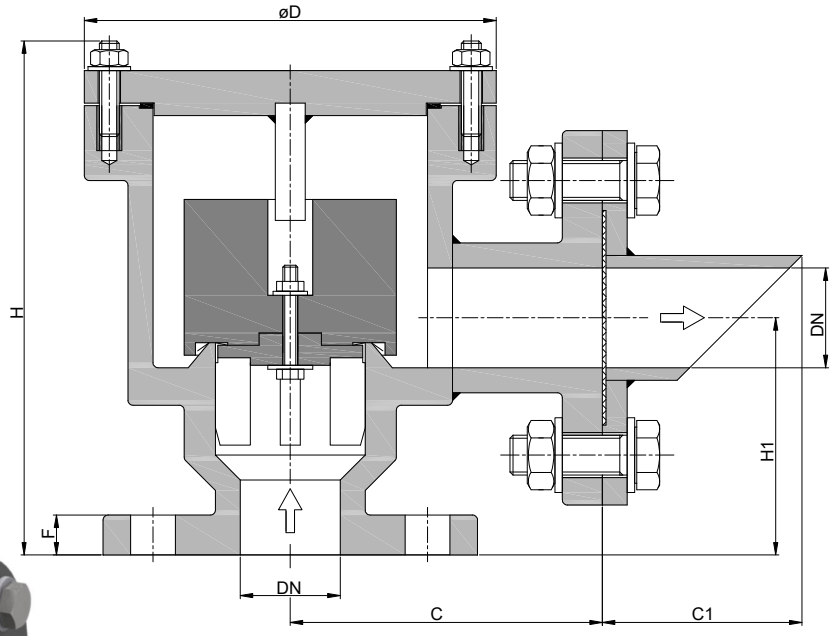


Application

Not explosion-proof valve to prevent dangerous pressures in tank installations. Valve is mounted on the tank roof, if desired by the customer, in connection with a vacuum valve.
In case of use in explosive atmospheres of gas/vapour-air mixtures ignition hazards need to be considered. Plastic material tends to electrostatic charging. The use should be completed respectively decided by a risk analysis considering country-specific rules and regulations.

Dimensions (mm) and settings (mbar)





DN		C	C1	D	H	H1	F	setting		kg
DIN	ASME							min. – max.	min. - max. *(with housing extension)*	
25 PN 40	**1“**	120	70	130	173	62	16	3.1 - 48	> 48 - 100	2.0
50 PN 16	**2“**	125	100	165	190	80	18	2.4 - 35	> 35 - 100	3.0
80 PN 16	**3“**	150	125	210	231	101	20	2.4 - 55	> 55 - 100	5.0
100 PN 16	**4“**	175	150	245	284	120	24	2.3 - 66	> 66 - 100	7.0
150 PN 16	**6“**	250	250	320	348	162	26	2.3 - 100	-	13.0
200 PN 10	**8“**	275	300	394	435	215	28	2.7 - 100	-	19.0

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® DS/SCS-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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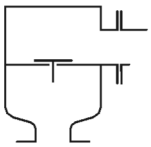
Date: 10-2020
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Pressure relief valve
KITO® DS/ScS-…



Design

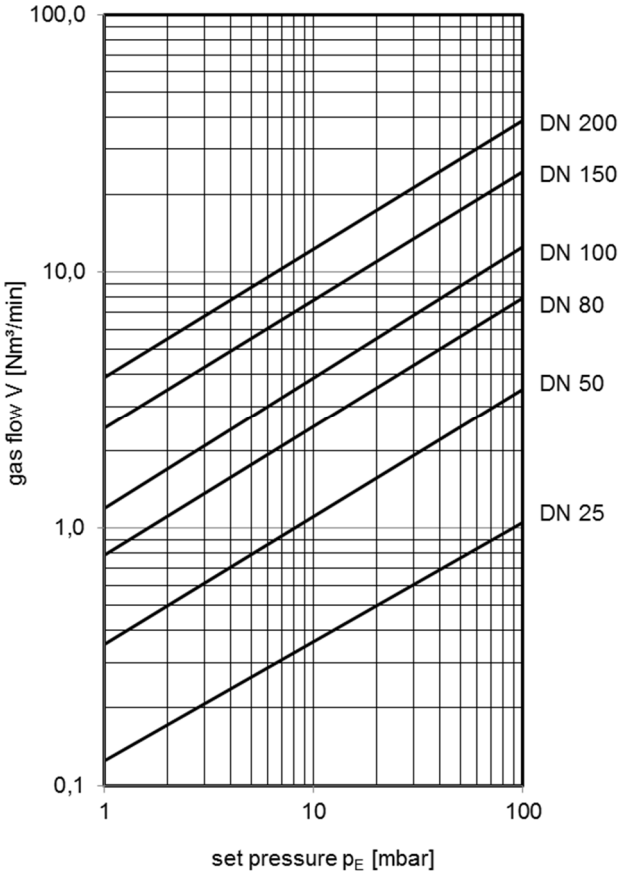
	standard	optionally
housing / cover	polyethylene (PE)	polypropylene (PP)
gasket	Gylon	
valve pallet / guidance	polyethylene (PE)	polypropylene (PP)
sealing foil	FEP	
load weight	polyethylene (PE) *(at higher settings PE/stainless steel)*	polypropylene (PP) *(at higher settings PP/stainless steel)*
bolts / nuts (inside)	PEEK	Hastelloy C4
bolts / nuts (outside)	A2	
protective screen	polyamide 6	
connection	flange EN 1092-1 type A	flange ASME B16.5 Class 150 RF, weld end

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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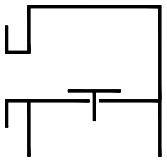
Created: Abt. Doku KITO

KITO Armaturen GmbH

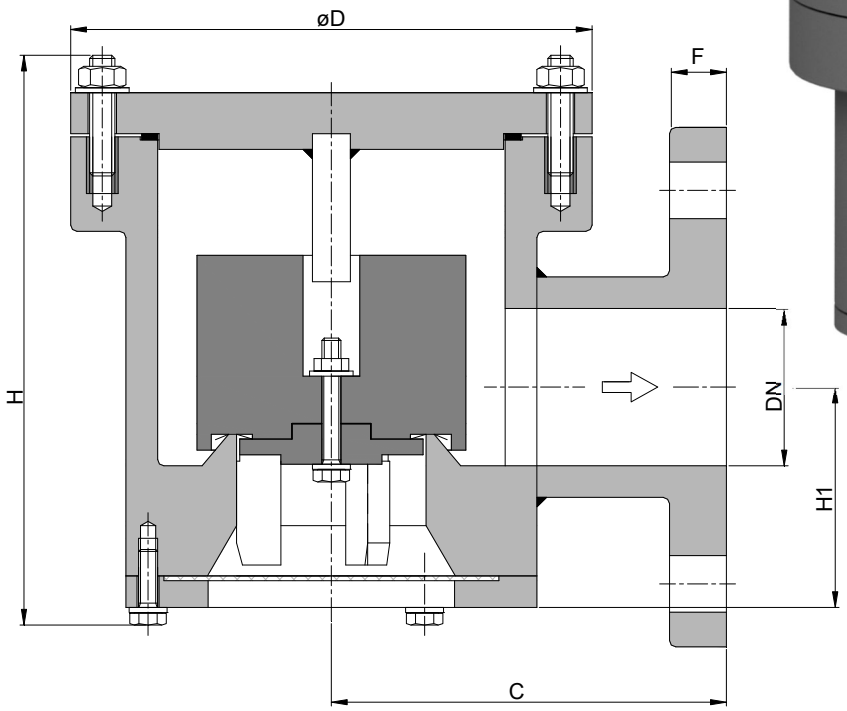
Type sheet
Vacuum relief valve
KITO® VS/ScS-…

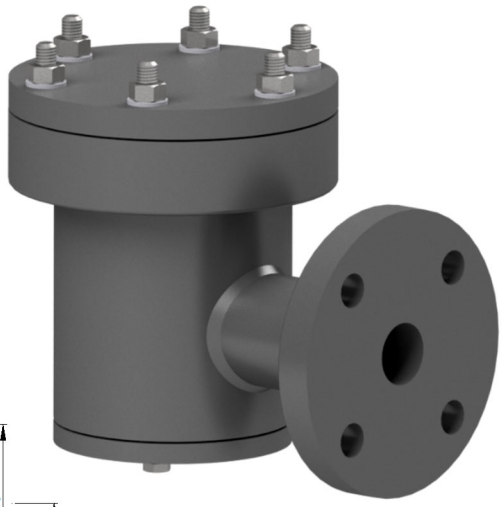


Application

Not explosion-proof valve to prevent dangerous vacuums in tank installations. For installation on tank roofs, if desired by the customer, in connection with a pressure valve.
In case of use in explosive atmospheres of gas/vapour-air mixtures ignition hazards need to be considered. Plastic material tends to electrostatic charging. The use should be completed respectively decided by a risk analysis considering country-specific rules and regulations.

Dimensions (mm) and settings (mbar)





DN DIN	DN ASME	C	D	H	H1	F	setting min.	setting max.	kg
25 PN 40	**1“**	120	130	167	50	16	3.1	30	1.5
50 PN 16	**2“**	125	165	186	70	18	2.4		2.0
80 PN 16	**3“**	150	210	234	96	20	2.4		3.5
100 PN 16	**4“**	175	245	284	115	24	2.3		5.0
150 PN 16	**6“**	250	320	350	158	26	2.3		9.5
200 PN 10	**8“**	275	394	435	210	28	2.7		17.0

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VS/SCS-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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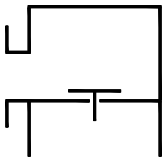
K 5 N
Date: 10-2020
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Vacuum relief valve
KITO® VS/ScS-…



Design

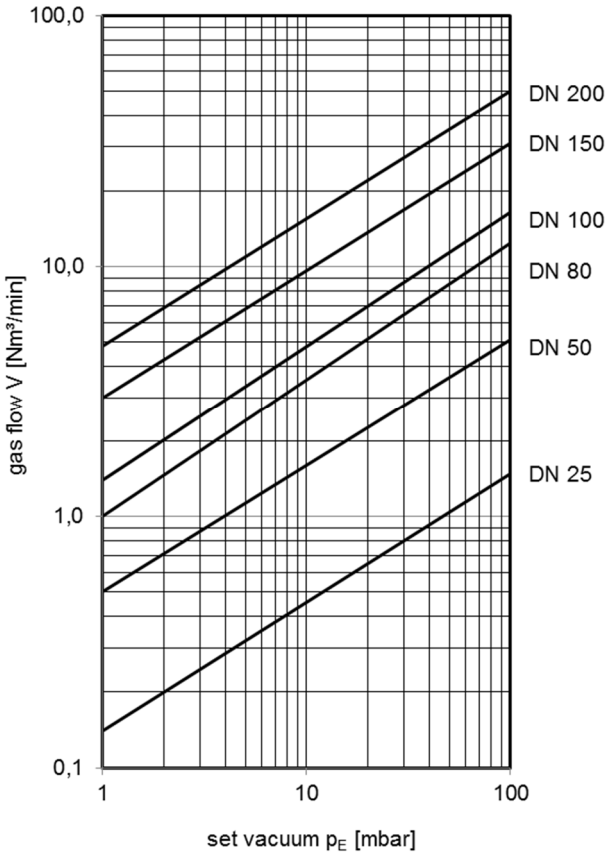
	standard	optionally
housing / cover	polyethylene (PE)	polypropylene (PP)
gasket	Gylon	
valve pallet / guidance	polyethylene (PE)	polypropylene (PP)
sealing foil	FEP	
load weight	polyethylene (PE) *(at higher settings PE/stainless steel)*	polypropylene (PP) *(at higher settings PP/stainless steel)*
bolts / nuts (inside)	PEEK	Hastelloy C4
bolts / nuts (outside)	A2	
protective screen	polyamide 6	
connection	flange EN 1092-1 type A	flange ASME B16.5 Class 150 RF, weld end

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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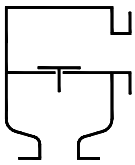
Date: 10-2020
Created: Abt. Doku KITO

KITO Armaturen GmbH

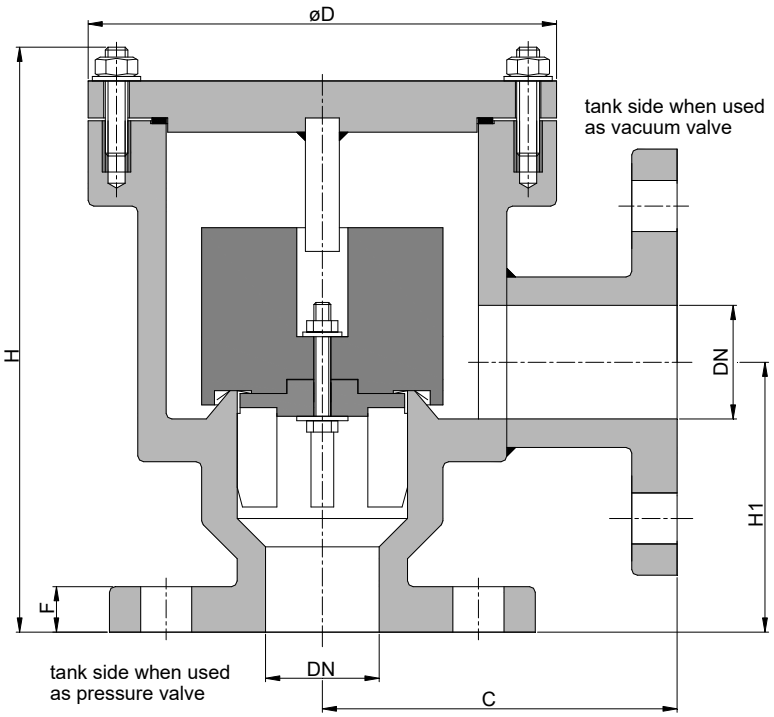
Type sheet
In-line pressure or vacuum relief valve
KITO® VD/ScS-…

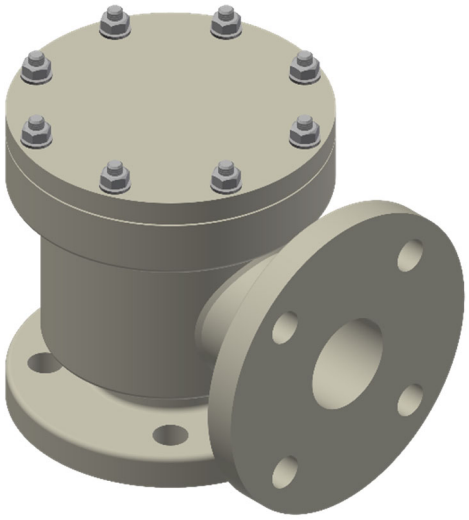


Application

Not explosion-proof intermediate armature, with venting or breathing function for containers. For installation in pipe. The armature either serves as vacuum valve or as pressure valve, this depending on the fact which flange is connected to the tank side. Also used as non-return valve or overflow valve.
In case of use in explosive atmospheres of gas/vapour-air mixtures ignition hazards need to be considered. Plastic material tends to electrostatic charging. The use should be completed respectively decided by a risk analysis considering country-specific rules and regulations.

Dimensions (mm) and settings (mbar)





DN		C	D	H	H1	F	setting		kg
DIN	ASME						min. – max.	min. - max. *(with housing extension)*	
25 PN 40	**1“**	120	130	173	62	16	3.1 - 48	> 48 - 100	1.5
50 PN 16	**2“**	125	165	190	80	18	2.4 - 35	> 35 - 100	2.0
80 PN 16	**3“**	150	210	231	101	20	2.4 - 55	> 55 - 100	3.5
100 PN 16	**4“**	175	245	293	120	24	2.3 - 66	> 66 - 100	5.5
150 PN 16	**6“**	250	320	348	162	26	2.3 - 100	-	9.0
200 PN 10	**8“**	275	394	435	215	28	2.7 - 100	-	17.0

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/SCS-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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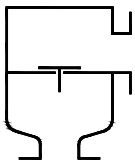
K 8 N
Date: 10-2020
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
In-line pressure or vacuum relief valve
KITO® VD/ScS-…



Design

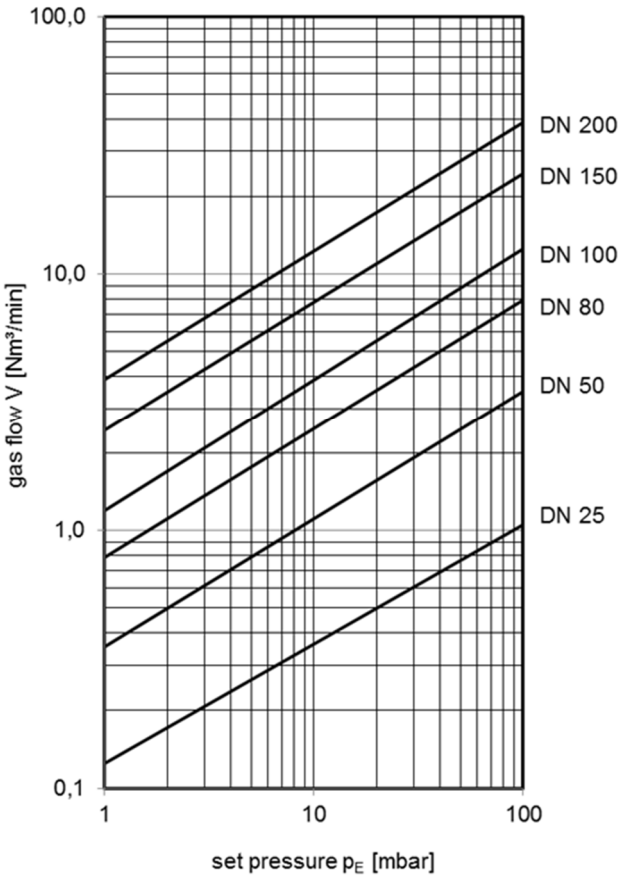
	standard	optionally
housing / cover	polyethylene (PE)	polypropylene (PP)
gasket	Gylon	
valve pallet / guidance	polyethylene (PE)	polypropylene (PP)
sealing foil	FEP	
load weight	polyethylene (PE) *(at higher settings PE/stainless steel)*	polypropylene (PP) *(at higher settings PP/stainless steel)*
bolts / nuts (inside)	PEEK	Hastelloy C4
bolts / nuts (outside)	A2	
connection	flange EN 1092-1 type A	flange ASME B16.5 Class 150 RF, weld end

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve's setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.



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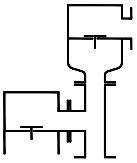
Date: 10-2020
Created: Abt. Doku KITO

KITO Armaturen GmbH

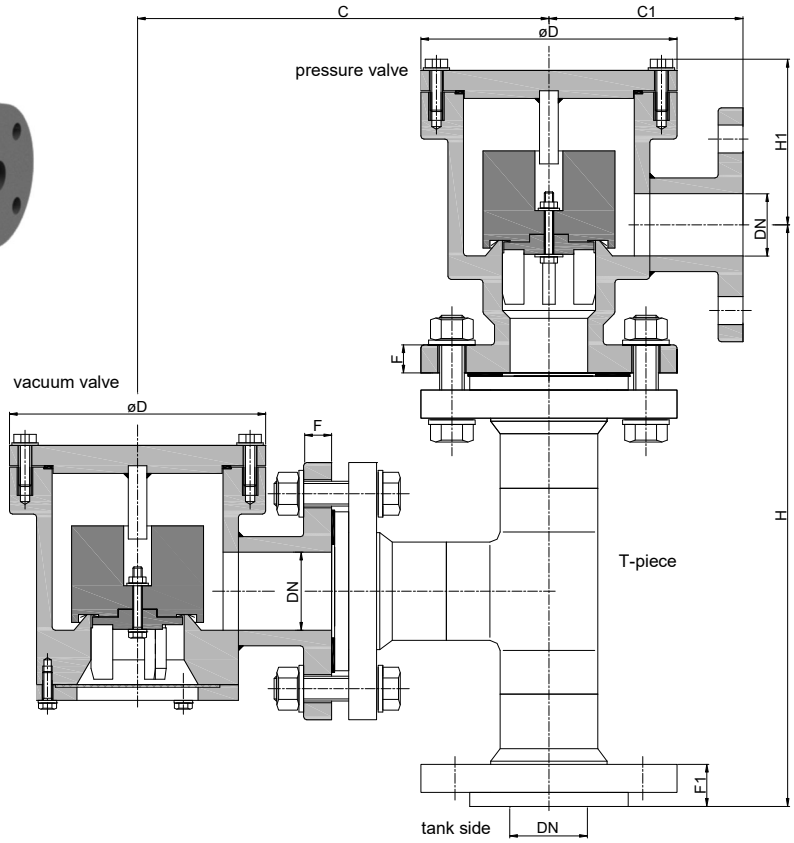
Type sheet
Pressure and vacuum relief valve
KITO® VD/oSR-…



Application

Not explosion-proof valve combination for venting and breathing of containers, in which non-combustible but aggressive media e. g. acids are stored. The pressure side is intended for connection to a pipe, in which the vapors are transported to a waste disposal installation.
In case of use in explosive atmospheres of gas/vapour-air mixtures ignition hazards need to be considered. Plastic material tends to electrostatic charging. The use should be completed respectively decided by a risk analysis considering country-specific rules and regulations.

Dimensions (mm)



DN DIN	DN ASME	C	C1	D	H	H1	F	F1	kg
25 PN 40	**1“**	220	120	130	260	110	16	28	5
50 PN 16	**2“**	244	125	165	317	110	18	34	9,5
80 PN 16	**3“**	317	150	210	433	130	20	35	16
100 PN 16	**4“**	376	175	245	520	160	24	36	24
150 PN 16	**6“**	490	250	320	647	185	26	49	42
200 PN 10	**8“**	572	275	394	807	218	28	56	

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/oSR-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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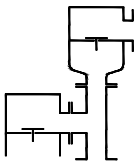
K 10 N
Date: 10-2020
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Pressure and vacuum relief valve
KITO® VD/oSR-…



Design

	standard	optionally
housing / cover	polyethylene (PE)	polypropylene (PP)
gasket	Gylon	
valve pallet / guidance	polyethylene (PE)	polypropylene (PP)
sealing foil	FEP	
load weight	polyethylene (PE) *(at higher settings PE/stainless steel)*	polypropylene (PP) *(at higher settings PP/stainless steel)*
bolts / nuts (inside)	PEEK	Hastelloy C4
bolts / nuts (outside)	A2	
protective screen	polyamide 6	
connection	flange EN 1092-1 type A	flange ASME B16.5 Class 150 RF, weld end

Settings (mbar)

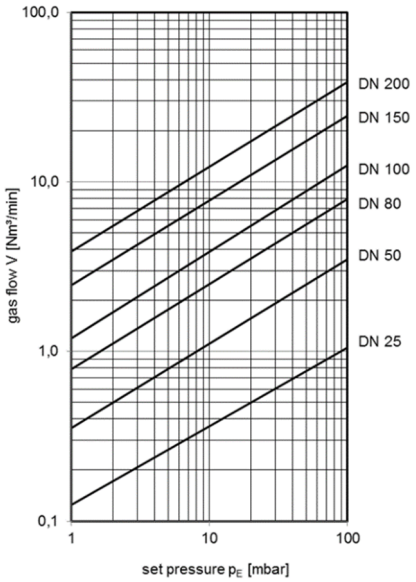
DN		vacuum	setting pressure	
DIN	ASME	min. - max.	min. - max.	min. - max. *(with housing extension)*
25 PN 40	**1“**	3.1 - 30	3.1 - 48	> 48 - 100
50 PN 16	**2“**	2.4 - 30	2.4 - 35	> 35 - 100
80 PN 16	**3“**	2.4 – 30	2.4 - 55	> 55 - 100
100 PN 16	**4“**	2.3 - 30	2.3 - 66	> 66 - 100
150 PN 16	**6“**	2.3 - 30	2.3 - 100	-
200 PN 10	**8“**	2.7 - 30	2.7 - 100	-

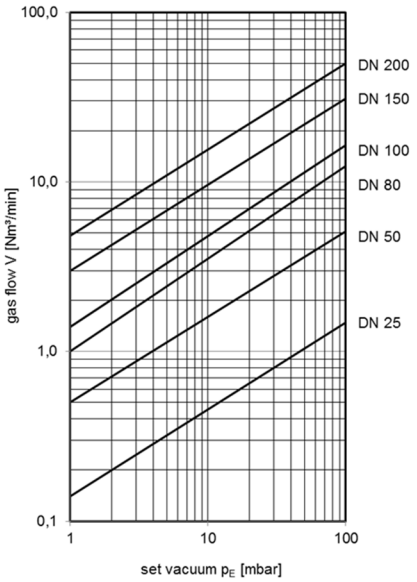
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve’s setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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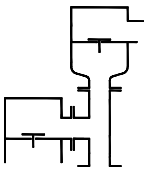
K 10 N
Date: 10-2020
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

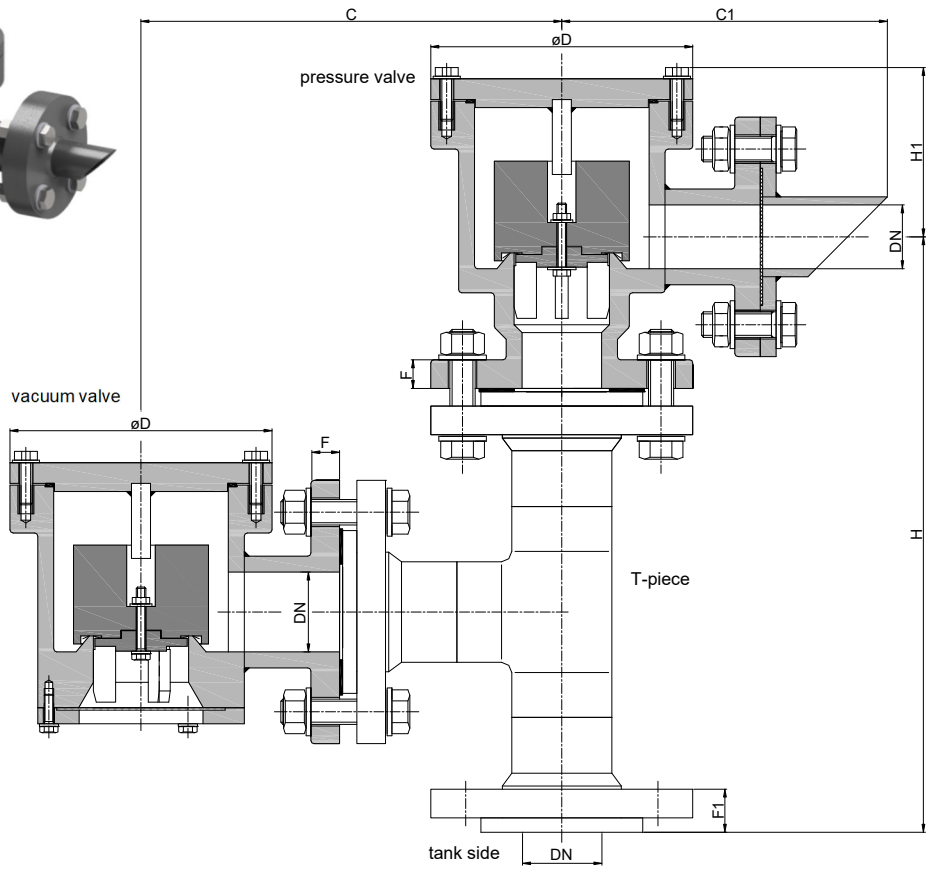
Type sheet
Pressure and vacuum relief valve
KITO® VD/oSA-…



Application

Not explosion-proof valve combination for venting and breathing of containers, in which non-combustible but aggressive media e. g. acids are stored.
In case of use in explosive atmospheres of gas/vapour-air mixtures ignition hazards need to be considered. Plastic material tends to electrostatic charging. The use should be completed respectively decided by a risk analysis considering country-specific rules and regulations.

Dimensions (mm)



DN DIN	DN ASME	C	C1	D	H	H1	F	F1	kg
25 PN 40	1“	220	190	130	260	110	16	28	
50 PN 16	2“	244	225	165	317	110	18	34	10
80 PN 16	3“	317	275	210	433	130	20	35	17.5
100 PN 16	4“	373	325	245	518	148	24	36	26
150 PN 16	6“	490	500	320	647	175	26	49	44
200 PN 10	8“	572	575	394	807	218	28	56	

Indicated weights are understood without weight load and refer to the standard design

Example for order

KITO® VD/oSA-50
(design with flange connection DN 50 PN 16)

Without EC certificate and CE-marking

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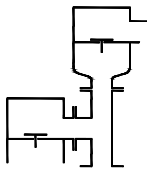
Type sheet
Pressure and vacuum relief valve
KITO® VD/oSA-…



Design

	standard	optionally
housing / cover	polyethylene (PE)	polypropylene (PP)
gasket	Gylon	
valve pallet / guidance	polyethylene (PE)	polypropylene (PP)
sealing foil	FEP	
load weight	polyethylene (PE) *(at higher settings PE/stainless steel)*	polypropylene (PP) *(at higher settings PP/stainless steel)*
bolts / nuts (inside)	PEEK	Hastelloy C4
bolts / nuts (outside)	A2	
protective screen	polyamide 6	
connection	flange EN 1092-1 type A	flange ASME B16.5 Class 150 RF, weld end

Settings (mbar)

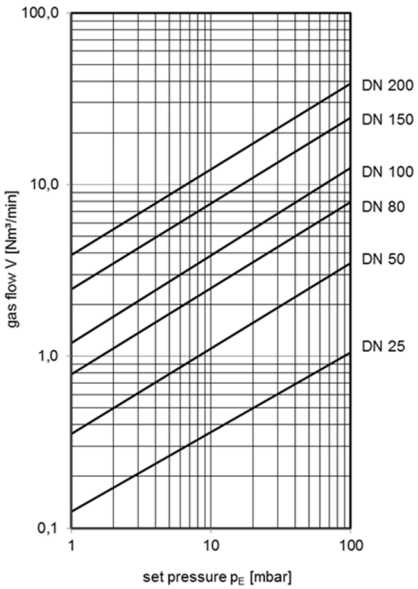
DN		setting		
		vacuum	pressure	
DIN	ASME	min. - max.	min. - max.	min. - max. *(with housing extension)*
25 PN 40	**1“**	3.1 - 30	3.1 - 48	> 48 - 100
50 PN 16	**2“**	2.4 - 30	2.4 - 35	> 35 - 100
80 PN 16	**3“**	2.4 - 30	2.4 - 55	> 55 - 100
100 PN 16	**4“**	2.3 - 30	2.3 - 66	> 66 - 100
150 PN 16	**6“**	2.3 - 30	2.3 - 100	-
200 PN 10	**8“**	2.7 - 30	2.7 - 100	-

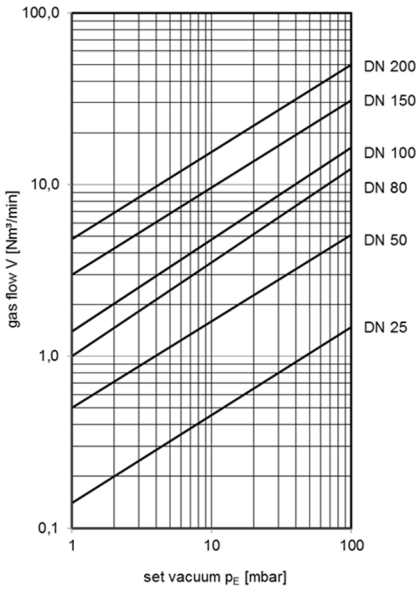
Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$

The indicated flow rates will be reached by an accumulation of 40% above valve’s setting (see DIN 4119).
If the allowable overpressure is less 40%, please consult der factory for the corrected volume flow.





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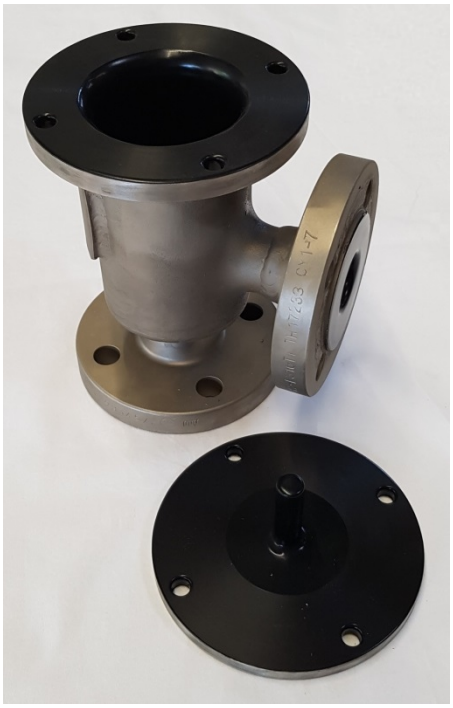
KITO Armaturen GmbH

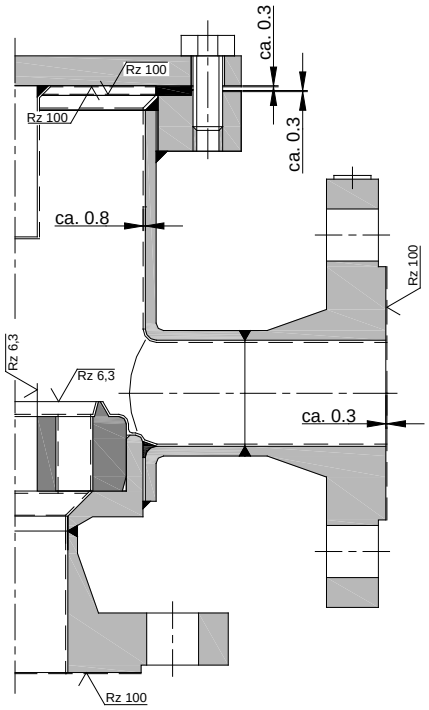
Halar® (E-CTFE) - Coating of KITO®-Armatures
(with and without KITO®-flame arrester element)

Application

Used for gases or vapors, against which cast iron, steel including Cro-Ni-Mo alloys are not resistant.

Example (KITO® VD/Sc-…)





Coating specification

- Halar® / E-CTFE are thermoplastic fluoroplastics and are applied in a powder coating procedure
- Layer thickness approx. 600-800 µ, nonporous and incombustible
- Color black, electrically conductive
- Temperature resistance -75 bis +150 °C
- Halar® is resistant to most technical acids, bases and solvents
- According to current information, it is not resistant to tetrahydrofural and tetrahydrofurane

Design

	standard	optionally
housing / cover	cast steel, steel	steel, stainless steel
E-CTFE-coating	inner surfaces of cover and housing	
valve seat, valve spindle	Hastelloy	
load weight	Hastelloy	steel, stainless steel with E-CTFE-coating *only at higher settings*
valve sealing	PTFE	
gasket	PTFE	
KITO®-casing	Hastelloy	
KITO®-grid	Hastelloy	
bolts / nuts (inside)	Hastelloy	PEEK
bolts / nuts (outside)	A4	
temperature sensor protection tube	Hastelloy	

For certain KITO® types, Halar® coating is not feasible (e.g. KITO® VD/o3, VD/T..., VL/T...) !!!

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KITO Armaturen GmbH

Heating jackets for KITO®-Pipe armatures
(with and without KITO® flame arrester)

Application

Warm-water / steam heating, as frost protection or to maintain temperatures in the armature housings. Maximum temperature of the heating medium:

KITO®-flame arresters :
Max. 25 K above the permissible operating temperature, but no more than 80% the ignition temperature

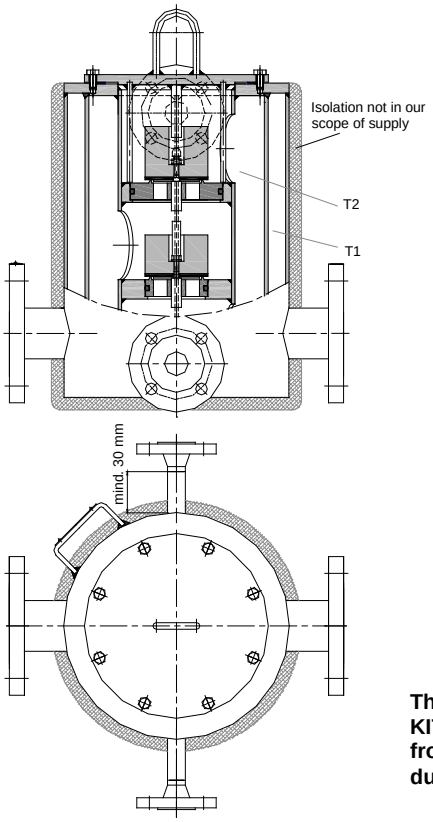
other KITO®-armatures :
- For flammable products max. 80% of the auto-ignition temperature
- For non-flammable products established in accordance with design and materials

Specification according to CEN-TR 16793, §6.7

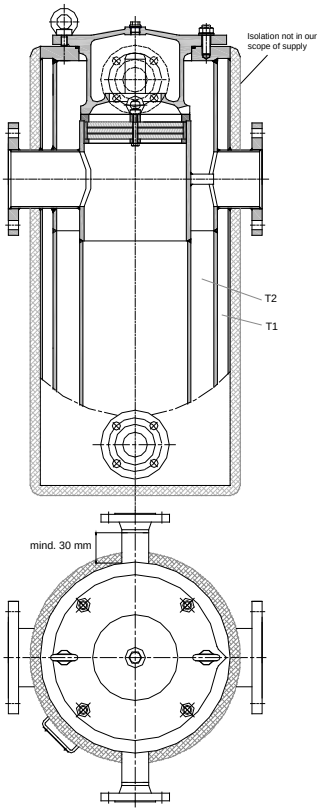
Note :
Heating jackets are usually subject to the Pressure Equipment Directive (PED) and they need CE-marking.

Example

without KITO® flame arrester (KITO® VD/TG-…)



with KITO® flame arrester (KITO® FL/E-…-IIB3)



T1 Heating room
T2 Housing interior

The dimensions of the KITO®-Armatures may differ from the original dimensions due to the design.

Design

	standard	optionally
housing / cover	cast steel, steel	stainless steel
heating jacket	steel	stainless steel
Flange connection	EN 1092-1 DN 15 PN 40 type B1	EN 1092-1 DN 25 PN 40 type B1, ½“ or 1“ ASME B16.5 Class 150 RF
test pressure	15 bar	
max. operating pressure	10 bar	

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KITO Armaturen GmbH

Heating jackets for KITO®-End-of-line armatures
(with and without KITO® flame arrester)

Application

Warm-water / steam heating, as frost protection or to maintain temperatures in the armature housings. Maximum temperature of the heating medium:

KITO®-flame arresters :
Max. 25 K above the permissible operating temperature, but no more than 80% the ignition temperature

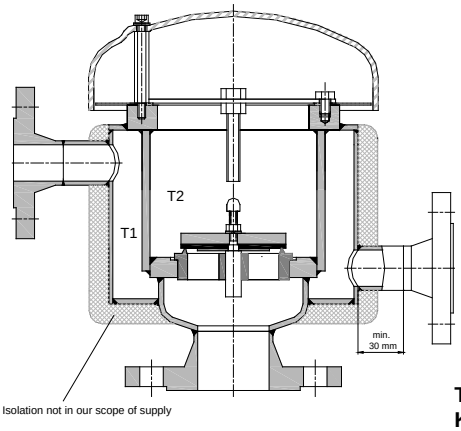
other KITO®-armatures :
- For flammable products max. 80% of the auto-ignition temperature
- For non-flammable products established in accordance with design and materials

Specification according to CEN-TR 16793, §6.7

Note :
Heating jackets are usually subject to the Pressure Equipment Directive (PED) and they need CE-marking.

Example

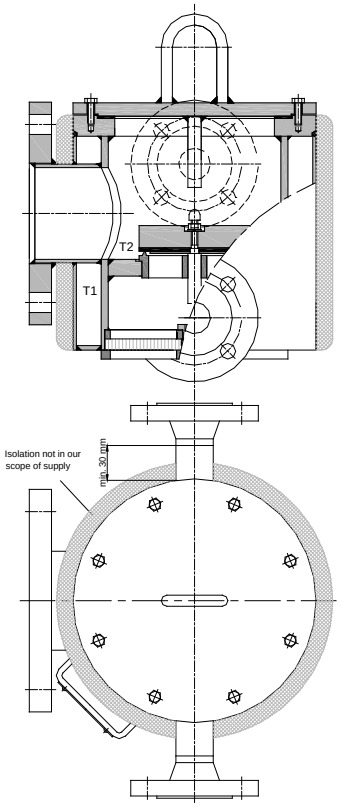
without KITO® flame arrester (KITO® DS/o-…)



T1 Heating room
T2 Housing interior

The dimensions of the KITO®-Armatures may differ from the original dimensions due to the design.

with KITO® flame arrester (KITO® VS/KS-…-IIB3)



Design

	standard	optionally
housing / cover	cast steel, steel	stainless steel
heating jacket	steel	stainless steel
Flange connection	EN 1092-1 DN 15 PN 40 type B1	EN 1092-1 DN 25 PN 40 type B1, ½“ or 1“ ASME B16.5 Class 150 RF
test pressure	15 bar	
max. operating pressure	10 bar	

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KITO Armaturen GmbH

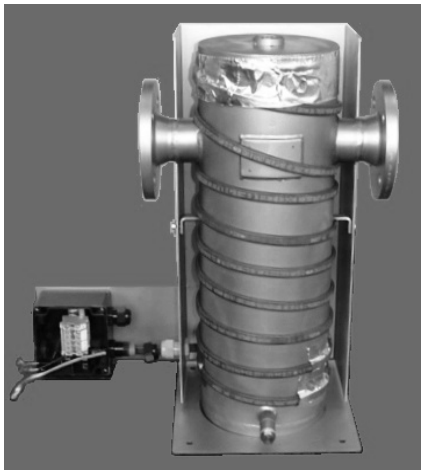
Electrical heating for KITO®-Armatures
(with and without KITO® flame arrester)

Application

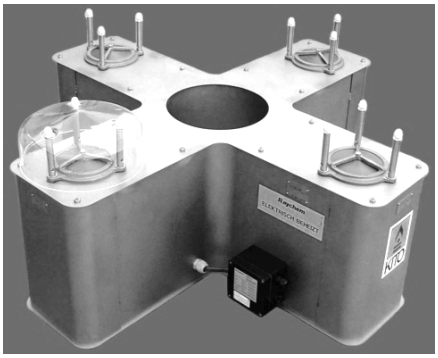
Frost protection or heating for constant temperature in the valve casings for ambient temperatures down to -20 °C. Heater cables of temperature classes T4 and T6 are used depending on the product to be heated. A constant heating is only permitted up to ambient temperatures ≤ +20 °C. An electrical fuse of at least 10 amps is required as a safety measurement. The use of a residual current circuit breaker (30 mA) is recommended.

Example

Example : KITO® FL/EO-…-IIB3



Example : KITO® DS/M-IIA-…-A



Example : KITO® VD/KL-IIA-…-A

Example : KITO® FD6-Det4-…-1.2

Design

Self-limiting heating cables with a few turns wrapped around the valve housing. Fixing the heating cable with temperature-resistant tape with a 30 mm thick mineral wool insulation and a protective sheath of stainless steel, with a connection box IP 65. Heating cables and connection box ATEX-approved and CE mark for use in Zone 1. Supply of a temperature sensor Pt100 or a temperature control is possible. Type of cable and length chosen according to the surface of the casing, the required temperature and the safety-related data of the product specifically

- Current consumption per meter heater band depending on type of heater band 16-30 W at -20 °C
- Max. heater band temperature is about 110 °C
- Operating voltage 230 V

The dimensions of the KITO®-Armatures may differ from the original dimensions due to the design.

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KITO Armaturen GmbH

Electrical heating sleeve for KITO®-Armatures
(with and without KITO® flame arrester)

Application

HORST®-Heating sleeves can be used on valve housings and serve as frost protection heating or for temperature maintenance for ambient temperatures of -40 °C to +85 °C.

Example KITO® EFA-Det4-IIA-200-100-1.2






Design

HORST®-Heating sleeves consist of heating tape HBRC / EEx - 230VAC (temperature class T6) in the appropriate length and heating power according to design (assembled ready for connection) with matching carrier material as a mounting kit. They are available in 1 or 2 parts with 1 or 2 heating circuits. The PTFE fabric foil is adapted to the surface of the fitting and is fastened with straps / buckles. The carrier unit is removable. The insulating cuff made of para-aramid fabric on the outside and synthetic rubber on the inside surrounds the entire fitting with an insulation thickness of 20 mm, is 1 piece and UV resistant. Recesses depending on the application are possible. Closure over velcro and belt.

heating power / meter	: 23 W/m at 5 °C
maximale temperature	: +85 °C continously switched-on
outside jacket	: Polyolefin
moisture sealing	: yes
connection lead, material, lenght	: Rado x 2.0 m (EPS 09 ATEX 1234X)
plug, mains	: end sleeve
CE-marking	: yes
marking	: ⟨Ex⟩ II 2G Ex mb IIC T6
certificate	: SIRA 02 ATEX 3074
approval	: EPS 09 ATEX 1234X, EN60079-0, EN60079-7, IEC62086, DIN VDE 0254
min. temperature of installation	: -40 °C

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Proximity switches for valves

(End-of-line and inline armatures with and without KITO® flame arrester)

Application

If an indication is desired or required (e. g. VdTÜV-guideline 967, §9.2.2.2), if the valve disk is in the position „closed“ or if a signal should be given if the valve opens.

Example

KITO® DS/oP-…

KITO® VD/Sc-…

For pressure valves with KITO® flame arrester element upon consultation with KITO®.

Design

	standard	optionally
installation	outside on valve body, adjustable in one or two directions, switching release by lifting movement	
funktion	inductive, non-contact	Switch type according to customer specifications
operating voltage	5-25 or 10-55 V DC	
starting function	normally closed or normally open	
type of protection	IP 67	
housing material	stainless steel	
adm. temperature	-25 bis 70 (80) °C	

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Design subject to change

KITO Armaturen GmbH

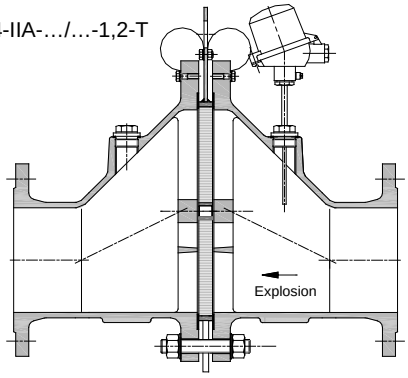
Temperature sensor
(Resistance thermometer)

Application

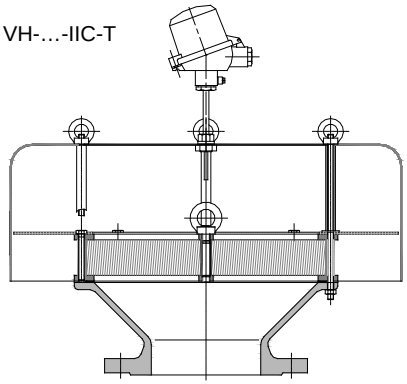
For monitoring the temperature on the flame arrester element on the unprotected side (side of ignition source), mainly where a flow of flammable mixture is present for longer time. This could be e.g. in pipes to flares, ovens, fans, recuperation or thermal recovery units. In case of a temperature rise a stabilized burn situation could be present. Then the thermometer has to give a signal which must be used to start emergency safety reactions (e.g. inerting, stoppage of flow etc.). The tripping temperature as low as possible, according to PTB recommendation ≤ 80 ° C or 20 K above max. operating temperature. Additional protective measurements as per VdTÜV-guide line 967, §10.2.5 shall be installed.

Examples: Temperature monitoring for KITO® In-line deflagration- and detonation flame arresters

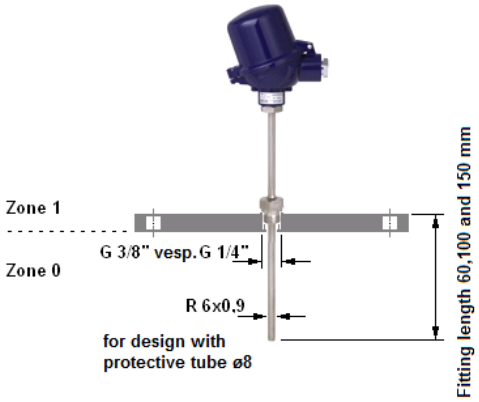
KITO® EFA-Det4-IIA-…/…-1,2-T



KITO® VH-…-IIC-T



Design



	standard	optionally
installation	screwed into armature housing ***-the required number, the installation length and the threaded connection depend on the type and nominal diameter-***	
protection	Ex-i (ATEX) Gas, according to guideline 2014/34/EC **TÜV 10 ATEX 555793X**	
type	**TR10-C [TR 201]**	
sensor	1 Pt 100, class B (IEC 60751)	
wiring configuration	4-wire circuit	
connection head	BSZ-H, aluminum, high hinged cover	stainless steel, PA
protection tube	without	stainless steel(1.4571), Hastelloy C22 (2.4602)
certificate	-	test report 2.2 for metal wetted parts
Additional equipment	-	Digital Temperature-Transmitter T32 with HART®-Protocol, output signal 4 - 20 mA, 2-wire, intrinsically safe, suitable for SIL-applications, measuring range 0…+ 300 °C, configurable via software

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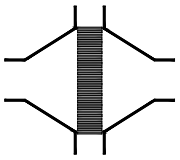
Type sheet

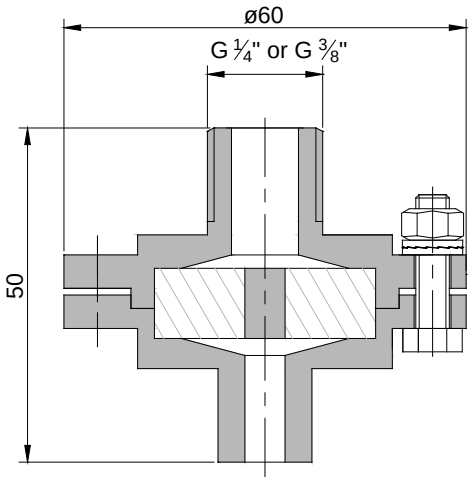
Condensate drain flame arrester -
End-of-line deflagration flame arrester endurance burning proof
KITO® SK/K-IIA-…



Application

Fittings for screwing in armature housings, of endurance-burn proof pressure valves and combined PV valves for all inflammable liquids and vapors of explosion group IIA with MESG > 0.9 mm. The condensate drain device enables draining of the condensate inside the housing to the outside and prevents flames from entering the valves

Dimensions (mm)



KITO® VD/KS-IIA-50-A with attached KITO® SK/K-IIA-1/4“

Example for order

KITO® SK/K-IIA-1/4“
(design with threaded connection G 1/4“)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

Design

	standard	optionally
housing	stainless steel mat. no. 1.4571	
KITO®-grid	stainless steel mat. no. 1.4571	
bolts / nuts	A4	
connection	thread G ¼“	thread G ⅜“

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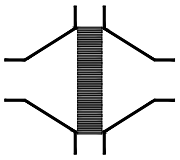
Design subject to change

KITO Armaturen GmbH

Type sheet

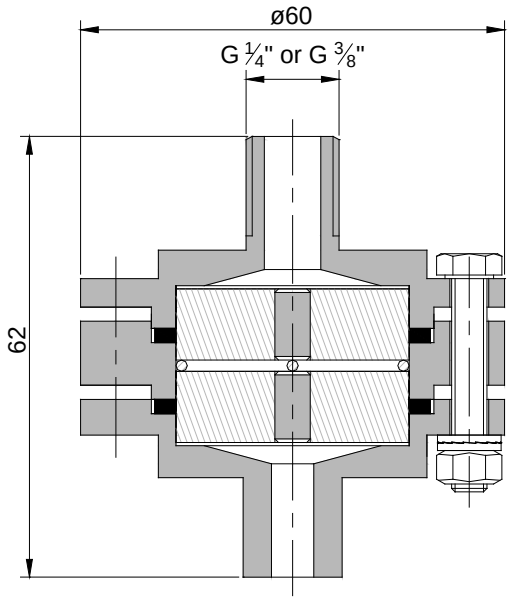
Condensate drain flame arrester -
End-of-line deflagration flame arrester endurance burning proof
KITO® SK/K-IIB1-…



Application

Fittings for screwing in armature housings, of endurance-burn proof pressure valves and combined PV valves for all inflammable liquids and vapors of explosion group IIB1 with MESG ≥ 0.85 mm. The condensate drain device enables draining of the condensate inside the housing to the outside and prevents flames from entering the valves.

Dimensions (mm)



Example for order

KITO® SK/K-IIB1-1/4“
(design with threaded connection G 1/4“)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

Design

	standard	optionally
housing	stainless steel mat. no. 1.4571	
gasket	PTFE	
KITO®-Rost	Edelstahl 1.4571	
bolts / nuts	A4	
connection	thread G ¼“	thread G ⅜“

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L 31 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

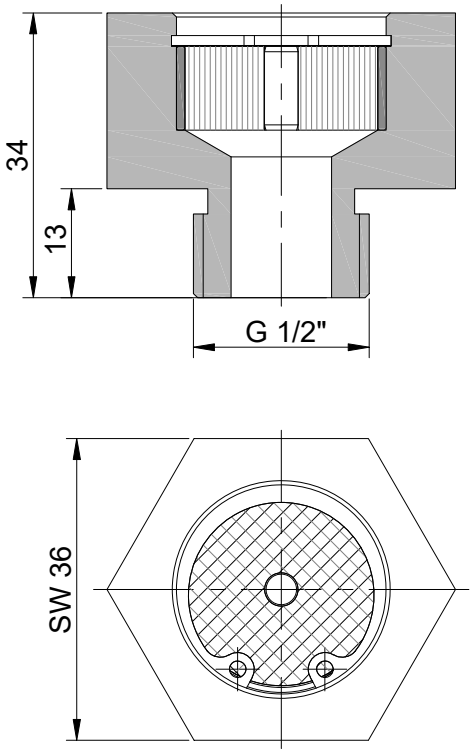
Condensate drain flame arrester - Deflagration flame arrester proof

KITO® KA-IIB3-1/2”

Application

Fittings for screwing in armature housings, of deflagration-proof pressure relief valves and combined PV valves for all inflammable liquids and vapors of explosion group IIB3 with NSW >= 0.65 mm. The condensate drain device enables draining of the condensate inside the housing to the outside and prevents flames from entering the valves

Dimensions (mm)



Example for order

KITO® KA-IIB3-1/2“
(design with threaded connection G ½“)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

Design

	standard	optionally
housing	stainless steel mat. no. 1.4571	
KITO®-grid	stainless steel mat. no. 1.4571	
retaining ring	stainless steel	
connection	thread G ½“	

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Date: 02-2019
Created: Abt. Doku KITO

KITO Armaturen GmbH

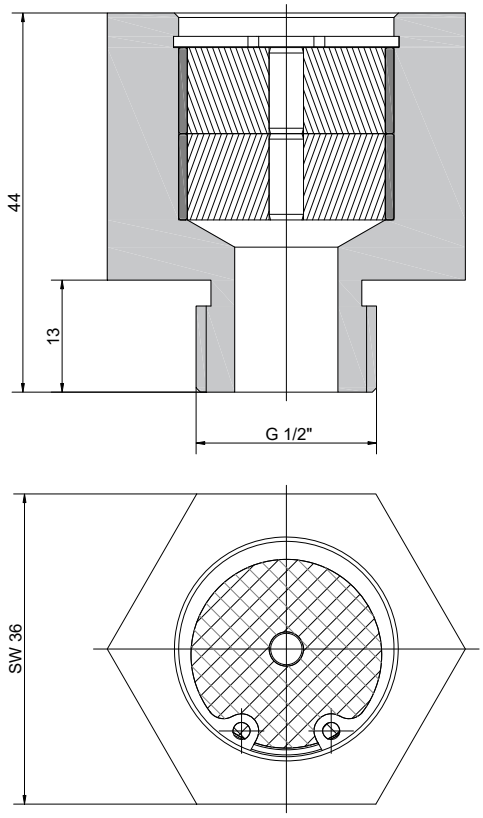
Type sheet

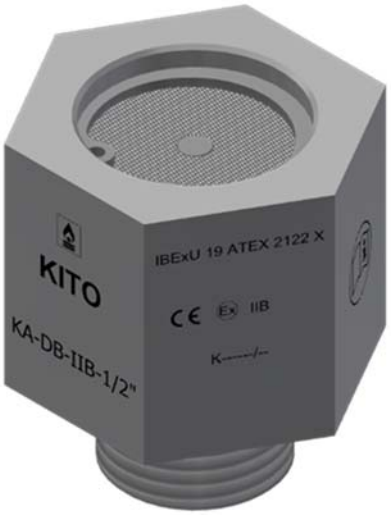
Condensate drain flame arrester -
End-of-line deflagration flame arrester endurance burning proof
KITO® KA-DB-IIB-1/2”

Application

Fittings for screwing in armature housings, of endurance-burn proof pressure valves and combined PV valves for all inflammable liquids and vapors of explosion group IIB with NSW >= 0.5 mm. The condensate drain device enables draining of the condensate inside the housing to the outside and prevents flames from entering the valves

Dimensions (mm)





Example for order

KITO® KA-DB-IIB-1/2“
(design with threaded connection G ½“)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

Design

	standard	optionally
housing	stainless steel mat. no. 1.4571	
KITO®-grid	stainless steel mat. no. 1.4571	
retaining ring	stainless steel	
connection	thread G ½“	

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Date: 10-2019
Created: Abt. Doku KITO
Design subject to change

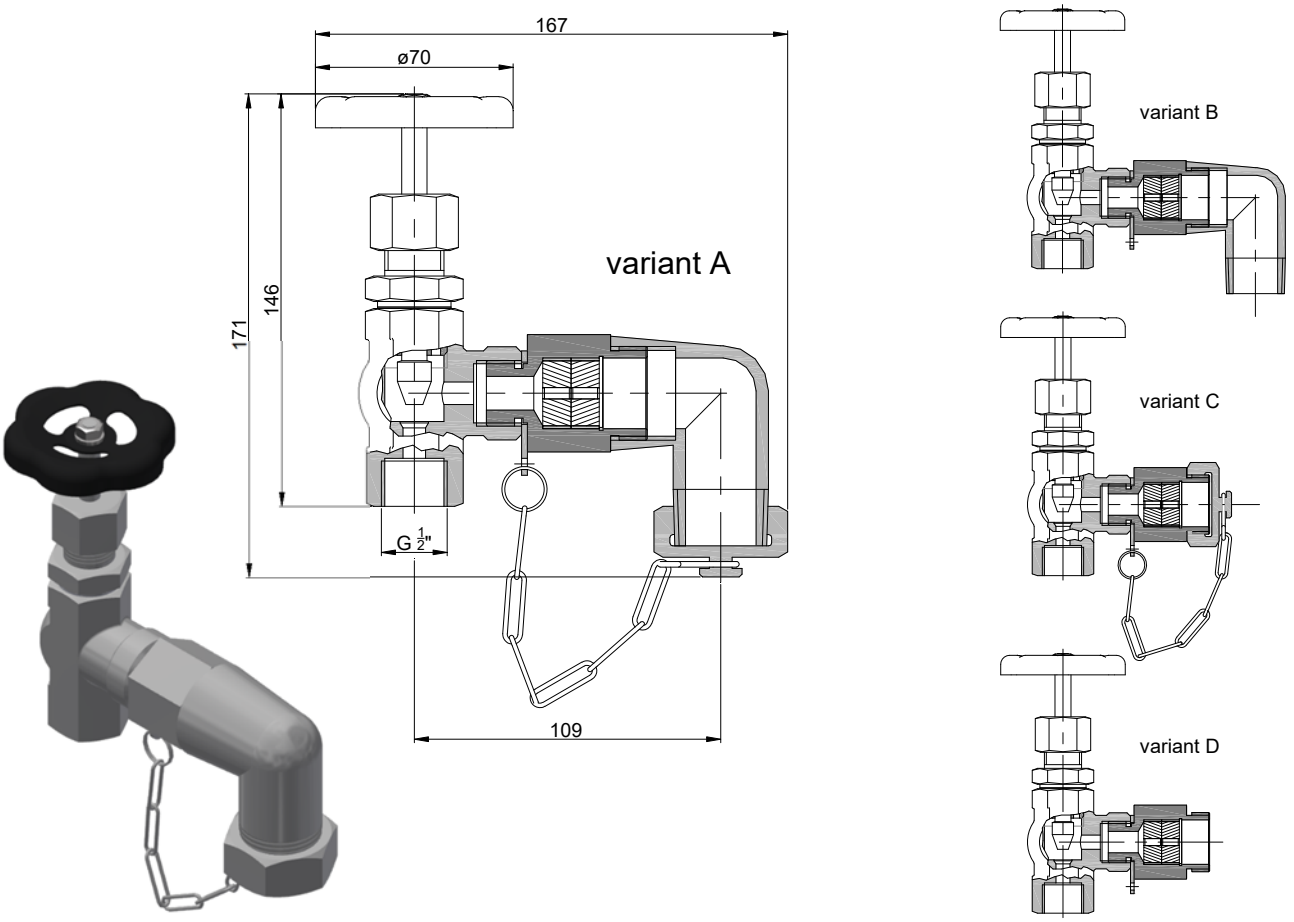
KITO Armaturen GmbH

Type sheet
Sampling device -
End-of-line deflagration flame arrester endurance burning proof
KITO® ZP/R-IIB-1/2"

Application

End-of-line deflagration flame arrester endurance burning proof, as sampling device for filling of smallest quantities from containers and pipelines in which flammable media are stored or transported. Can also be used for aeration and ventilation.
Approved for deflagrations of explosive vapour-air or gas-air mixtures of explosion group IIB with a maximum experimental safe gap (MESG) ≥ 0.50 mm. Tested and certified for a maximum operational temperature of 60°C.

Dimensions (mm)



Example for order

KITO® ZP/R-IIB-1/2" variant A
(design with threaded connection G ½“, variant A)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

Design

	standard	optionally
housing	stainless steel mat. no 1.4571 / 1.4408	
shut-off angle valve	stainless steel mat. no 1.4571 / 1.4408	
KITO®-grid	stainless steel mat. no 1.4571	
connection	thread G ½“	

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L 40 N
Date: 03-2020
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

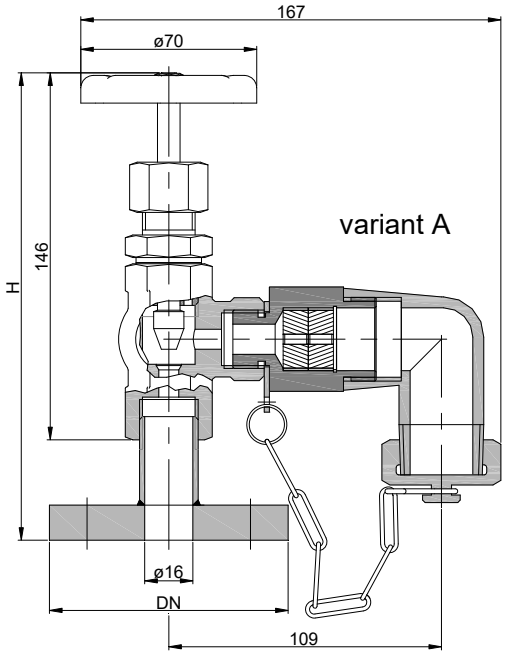
Type sheet

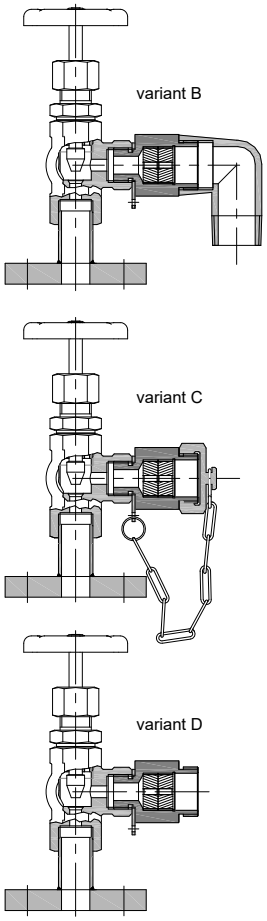
Sampling device -
End-of-line deflagration flame arrester endurance burning proof
KITO® ZP/R-IIB-1/2"
-design with flange connection-

Application

End-of-line deflagration flame arrester endurance burning proof, as sampling device for filling of smallest quantities from containers and pipelines in which flammable media are stored or transported. Can also be used for aeration and ventilation.
Approved for deflagrations of explosive vapour-air or gas-air mixtures of explosion group IIB with a maximum experimental safe gap (MESG) ≥ 0.50 mm. Tested and certified for a maximum operational temperature of 60°C.

Dimensions (mm)





DN		H
DIN	ASME	
DN 15 PN 40	½“	~190
DN 20 PN 40	¾“	
DN 25 PN 40	1“	

Example for order

KITO® ZP/R-IIB-1/2" DN 15 PN 40 variant A
(design with flange connection DN 15 PN 40, variant A)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

Design

	standard	optionally
housing	stainless steel mat. no 1.4571 / 1.4408	
shut-off angle valve	stainless steel mat. no 1.4571 / 1.4408	
KITO®-grid	stainless steel mat. no 1.4571	
flange connection	EN 1092-1 type A	ASME B 16.5 Class 150 RF

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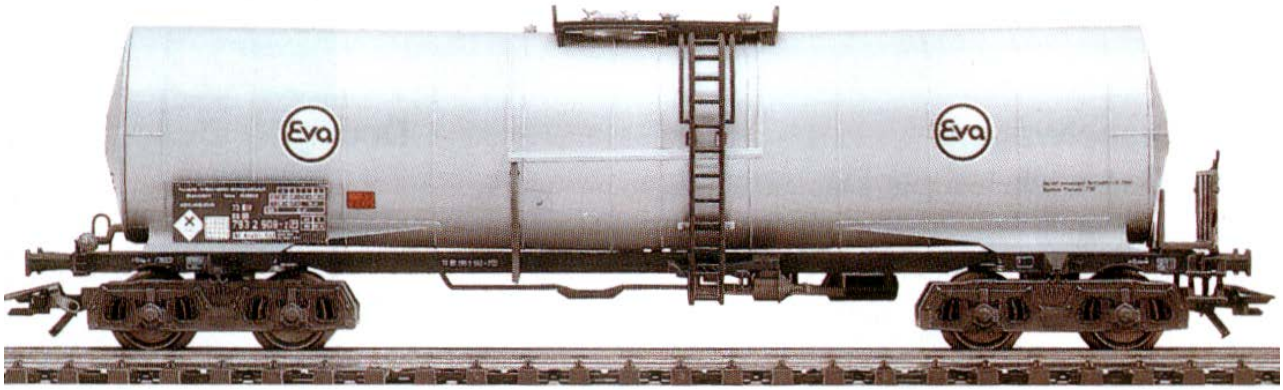
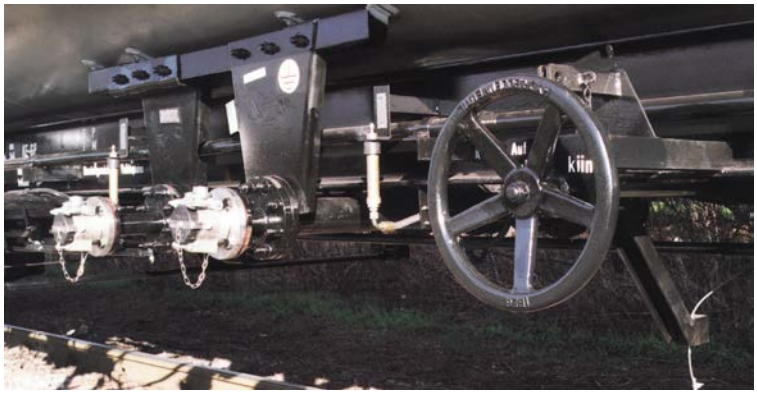
Date: 06-2020
Created: Abt. Doku KITO

KITO Armaturen GmbH

Applications of KITO® valves for rail tank cars





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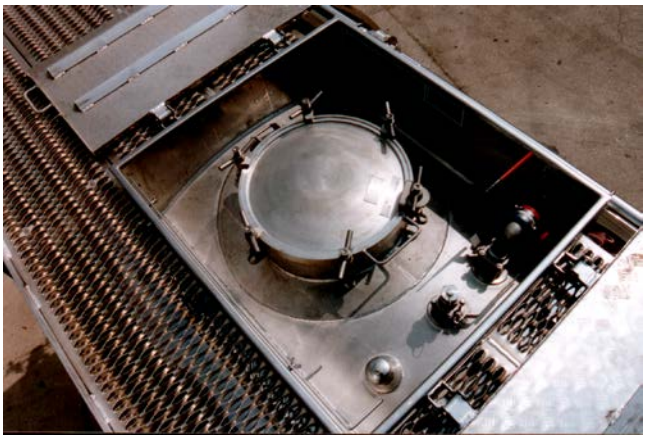
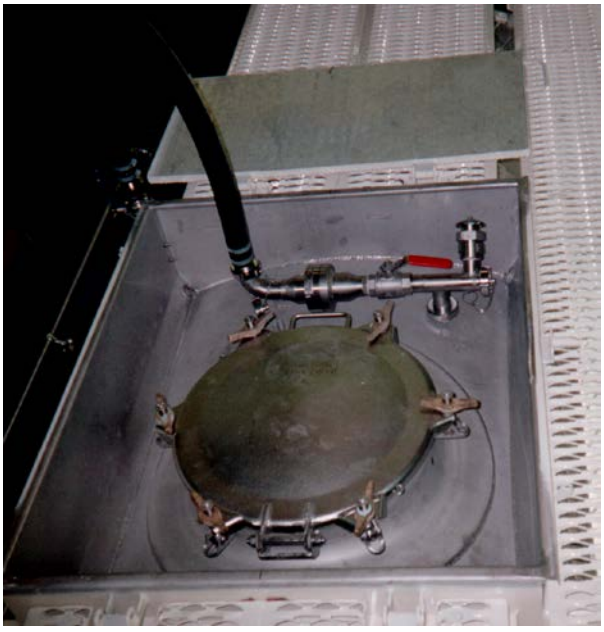
Created: Abt. Doku KITO

KITO Armaturen GmbH

Applications of KITO® valves for tank containers





factory photo FELDBINDER SPEZIALFAHRZEUGWERKE GmbH
Werk Wittenberg

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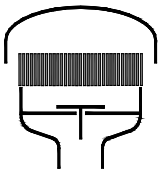
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Deflagration and endurance burning proof pressure relief valve
KITO® DS/cont. 25

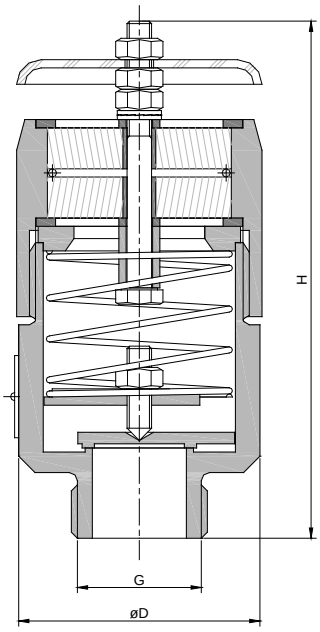


Application

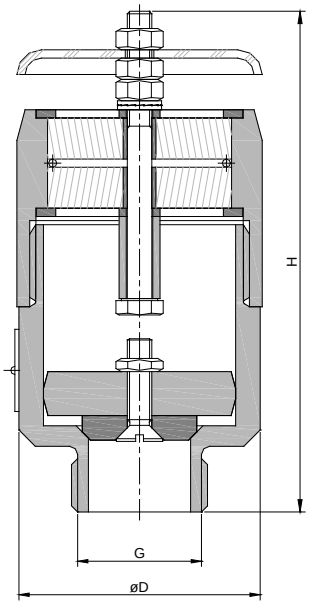
Endurance burning proof pressure relief valve for portable tanks (GGVSE/ADR, GGVSE/RID) for the transport of flammable liquids and gases with the exception of carbon disulphide. To prevent inadmissible tank pressure by warming or filling. Approved for all substances of explosion group IIB3 with a maximum experimental safe gap (MESG) ≥ 0.65 mm. An operating temperature of 60°C must not be exceeded.

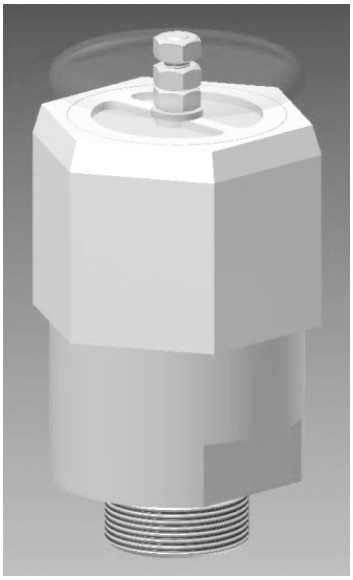
Dimensions (mm) and settings (mbar)

Design A



Design B





	G	D	H	setting	~ kg
Design A	1“	59	126	> 25 - 210	1.2
Design B			122	10 – 20	

Weight refers to the standard design

Example for order

KITO® DS/cont. 25 (20 mbar)
(design with threaded connection G 1“, Design B)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

Design

	Design A	Design B
housing	stainless steel mat. no. 1.4571	
valve pallet	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	PTFE
compression spring	stainless steel mat. no. 1.4571	-
KITO®-grid	stainless steel mat. no. 1.4571	
protective cap	PMMA	
connection	thread	

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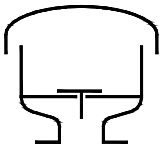
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet
Pressure relief valve
KITO® DS/o cont. 25

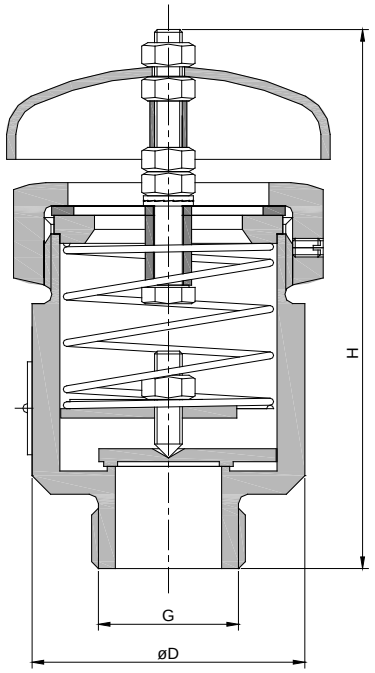


Application

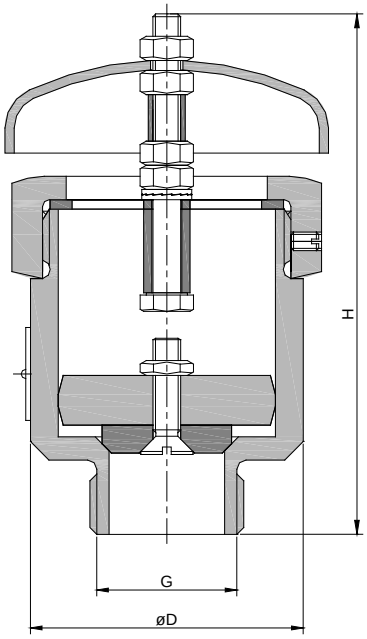
Pressure relief valve for portable tanks for the transport of non-inflammable liquids. To prevent inadmissible tank pressure by warming or filling. **Not explosion proof.**

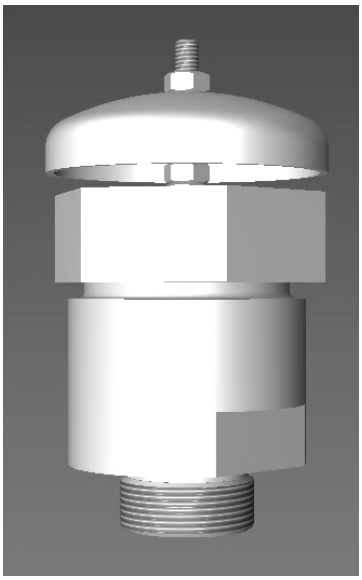
Dimensions (mm) and settings (mbar)

Design A



Design B





	G	D	H	setting	~ kg
Design A	1“	59	116	> 25 - 210	1.0
Design B			112	10 – 20	

Weight refers to the standard design

Example for order

KITO® DS/o cont. 25 (20 mbar)
(design with threaded connection G 1“, Design B)

Without EC certificate and CE-marking

Design

	Design A	Design B
housing	stainless steel mat. no. 1.4571	
valve pallet	stainless steel mat. no. 1.4571	
valve sealing	metal sealing	PTFE
compression spring	stainless steel mat. no. 1.4571	-
protective cap	stainless steel mat. no. 1.4301	
connection	thread	

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M 2 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

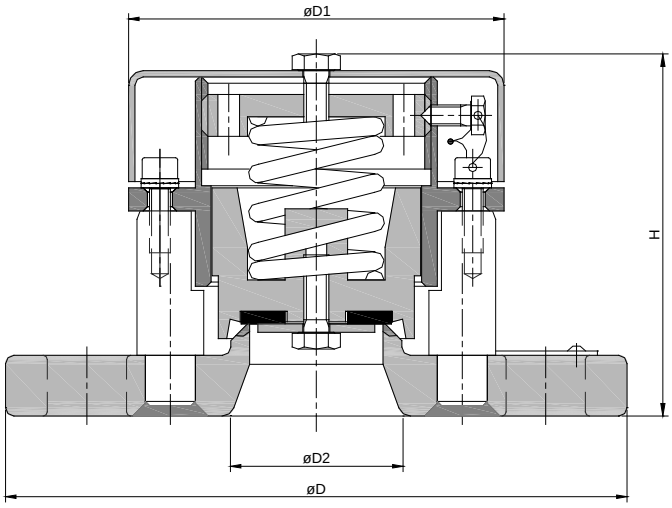
KITO Armaturen GmbH

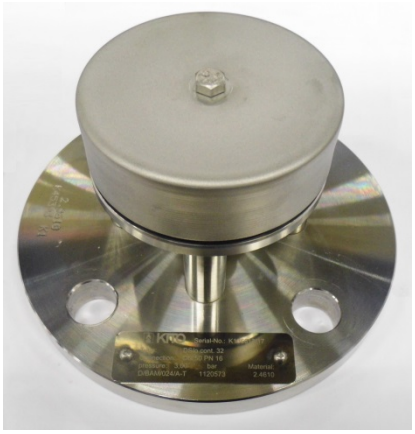
Type sheet
Pressure relief valve
KITO® DS/o cont. 32

Application

Pressure relief valve for portable tanks, especially for rail tank cars and road tank cars for the transport of sodium Hypochlorite dilution (GGVSE class 8).

Dimensions (mm) and settings (bar)





DIN	ASME	D	D1	D2	H	setting	kg
40 PN 40	**1 ½“**	149	90	45	90	3	3
50 PN 16	**2“**						

Weight refers to the standard design

Discharge flow rate:
3,3 bar (p_e + 10%) = 10,5 m³/h
3,6 bar (p_e + 20%) = 40 m³/h
3,9 bar (p_e + 30%) = 54 m³/h

Example for order

KITO® DS/o cont. 32 DN 40 PN 40
(design with flange connection DN 40 PN 40 type A)

BAM-component identification D/BAM/024/A-T, DB-registration number BZA 32/84

Design

	standard	optionally
housing with bolts	Hastelloy C4	
valve sealing	Viton	
ronde	Hastelloy C4	
valve piston	PTFE	
piston guide tube	stainless steel mat. no. 1.4571	
threaded washer	stainless steel mat. no. 1.4571	
compression spring	stainless steel mat. no. 1.4571	
protective cap	stainless steel mat. no. 1.4571	
bolt (inside)	Hastelloy C4	
bolt (outside)	A2 / A4	
setting	sealed	
flange connection	drilled to EN 1092-1 type A	drilled to ASME B16.5 Class 150 RF

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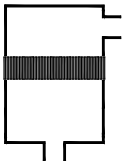
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester

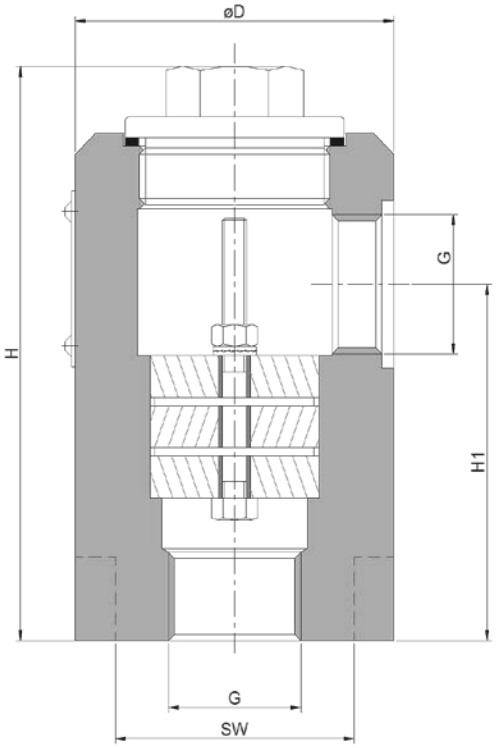
KITO® Rd/C-Det4-IIA-…-1.2



Application

Detonation flame arrester for installation into pipes to protect containers and components against **stable** detonation of flammable liquids and gases. Tested and approved as detonation flame arrester **type 4**. Approved for all substances of explosion groups IIA1 to IIA with a maximum experimental safe gap (MESG) > 0.9 mm. An operating pressure of 1.2 bar abs. and an operating temperature of 60 °C must not be exceeded. Positioning should be as close as possible to the protected object; it is only allowed to connect pipes with the same or a smaller diameter than the diameter (G) of the device. The installation of the detonation flame arrester into horizontal and vertical pipes is permissible.

Dimensions (mm)



thread	D	H	H1	SW	~kg
G 1/8“	80	137	85	60	4.5
G 1/4“					
G 3/8“					
G 1/2“					
G 3/4“					
G 1“					

Weight refers to the standard design

Example for order

KITO® Rd/C-Det4-IIA-1“-1,2
(design with threaded connections G 1“)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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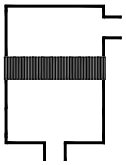
M 5 N / G 5 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Uni-directional in-line detonation flame arrester

KITO® Rd/C-Det4-IIA-…-1.2



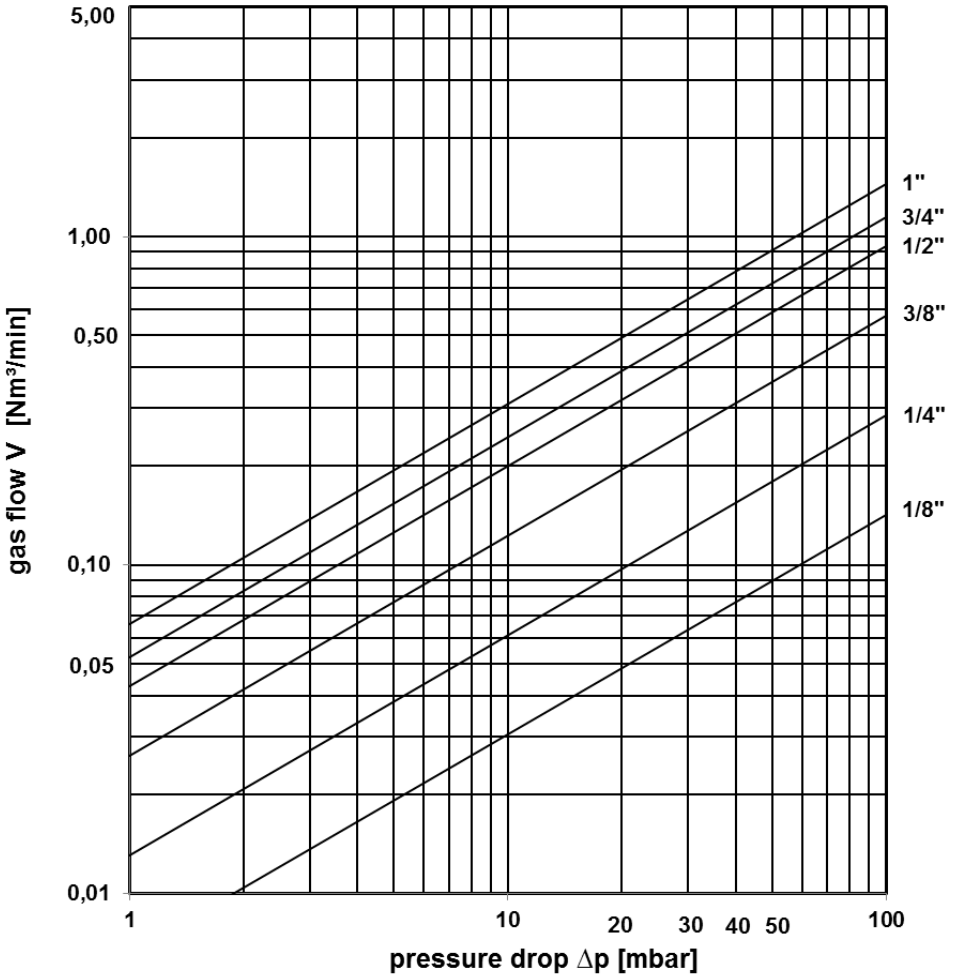
Design

	standard	optionally
housing	steel (St 52-3N)	stainless steel mat. no. 1.4571
gasket	HD 3822	PTFE
KITO®-flame arrester element	interchangeable	
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
connection	thread connection BSP	

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \quad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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M 5 N / G 5 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet

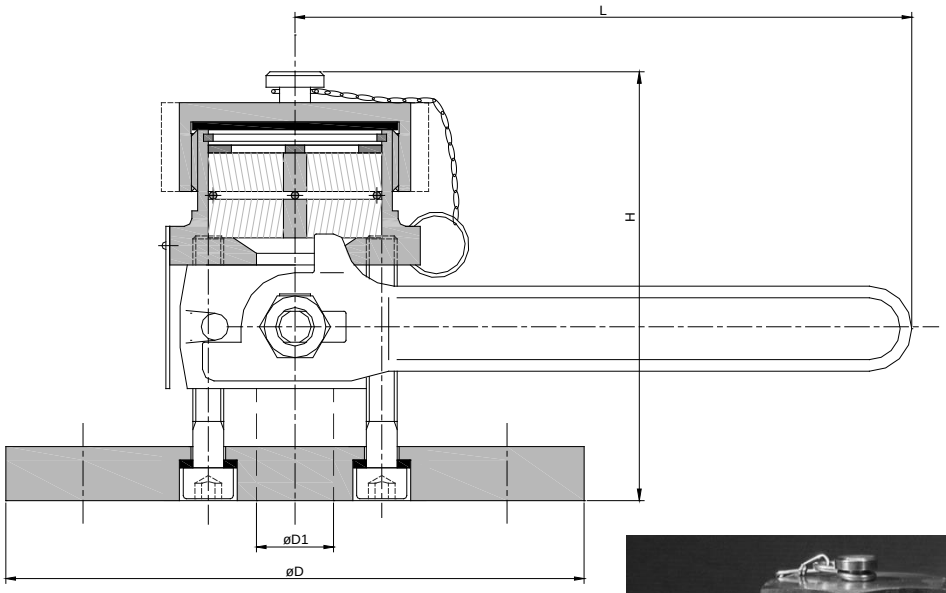
Deflagration and endurance burning proof pressure relief device

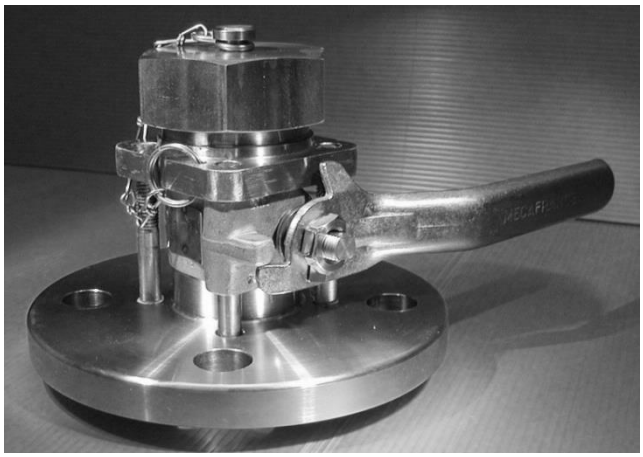
KITO® DE/cont. 20

Application

Endurance burning proof pressure relief device for portable tanks (GGVSE/ADR and GGVSE/RID) for the transport of flammable liquids and gases of explosion group IIB3 (MESG ≥ 0.65 mm) with exception of carbon disulphide. An operating temperature of 60 °C must not be exceeded. For safe tank pressure relief to the atmosphere before opening of the tank caps or connected lines. A pipe connection instead of the cap is not allowed.

Dimensions (mm)





DIN	ASME	D	D1	H	L	kg
40 PN 40	**1 ½“**	150	20	111	160	1.7

Weight refers to the standard design

Example for order

KITO® DE/cont. 20 DN 40 PN 40

(design with flange connection DN 40 PN 40 type A)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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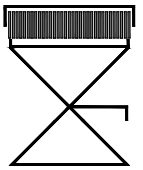
M 6 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration and endurance burning proof pressure relief device

KITO® DE/cont. 20



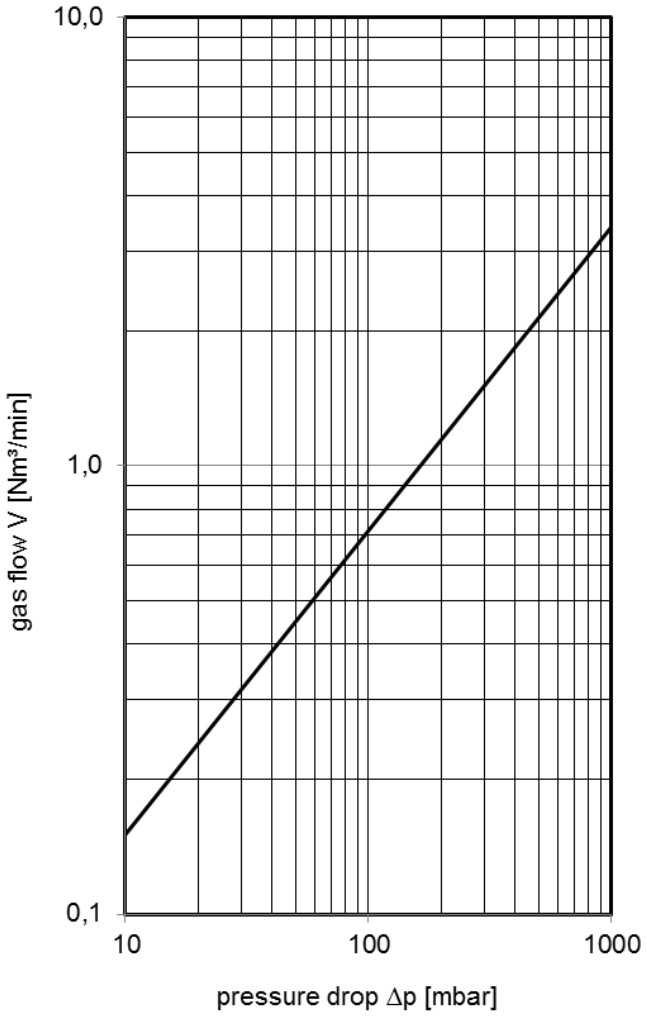
Design

	standard	optinally
ball valve	stainless steel mat. no. 1.4401	
housing	stainless steel mat. no. 1.4581	
KITO®-gridt	stainless steel mat. no. 1.4571	
gaskets	PTFE	
bolts	A4	
screw cap	stainless steel mat. no. 1.4571	
flange connection	drilled to EN 1092-1 type A	drilled to ASME B16.5 Class 150 RF

Performance curves

Flow capacity V based on air of a density ρ = 1.29 kg/m³ at T = 273 K and atmospheric pressure p = 1.013 mbar. For other gases the flow can be approximately calculated by

$$\dot{V} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \quad or \qquad \dot{V}_b = \dot{V} \cdot \sqrt{\frac{1.29}{\rho_b}}$$



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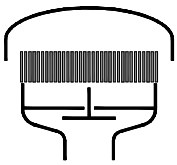
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

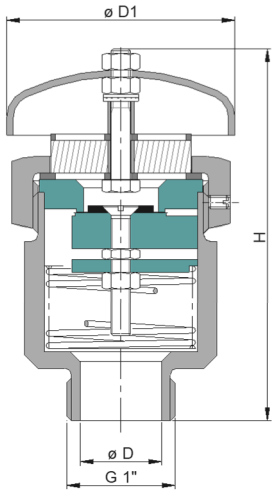
Type sheet
Deflagration proof vacuum relief valve
KITO® VS/cont. …

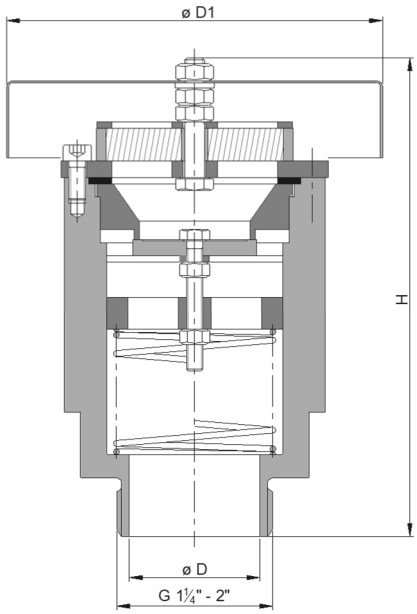


Application

Explosion proof end-of-line vacuum relief valve for storage tanks, vessels and pipes to prevent inadmissible vacuum. Approved for flammable liquids of explosion group IIB3 (MESG) ≥ 0.65 mm. An maximum operating temperature of 60 °C must not be exceeded. Suitable also for portable tanks for the transport of flammable liquids.

Dimensions (mm) and settings (mbar)





	D	D1	H	kg	setting
G 1”	**25**	70	110	1	5 - 210
G 1 ¼“	**32**	115	145	3	
G 1 ½“	**40**				
G 2”					

Weight refers to the standard design

Design

	size G 1“	size G 1 ¼“, G 1 ½“ , G 2“
housing	stainless steel mat. no. 1.4571	
KITO®-flame arrester element	completely interchangeable	
KITO®-casing / KITO®-grid	stainless steel mat. no. 1.4571	
valve seat / valve pallet	PTFE	stainless steel mat. no. 1.4571
sealing	FEP	PTFE
compression spring	stainless steel mat. no. 1.4571	
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
connection	threaded format	

Example for order

KITO® VS/cont. 2”
(design with threaded connection G 2“)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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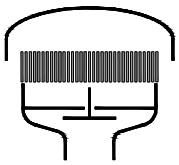
M 8 N / D 8 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

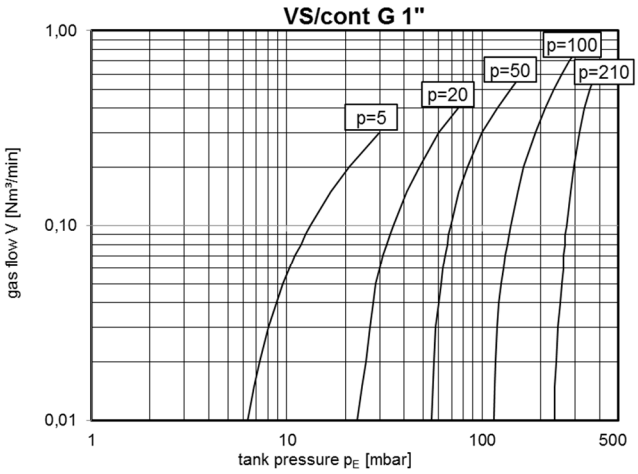
Type sheet
Deflagration proof vacuum relief valve
KITO® VS/cont. …

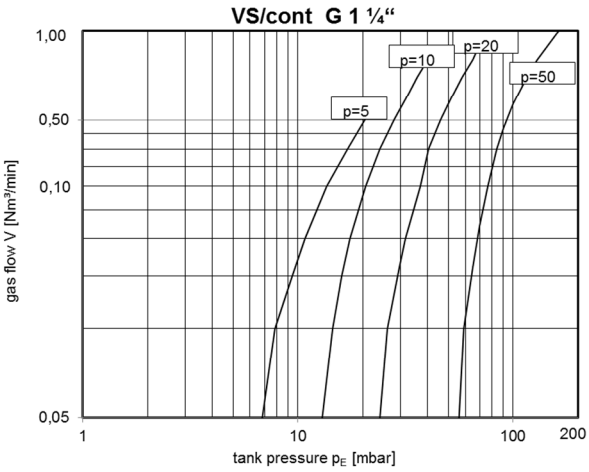


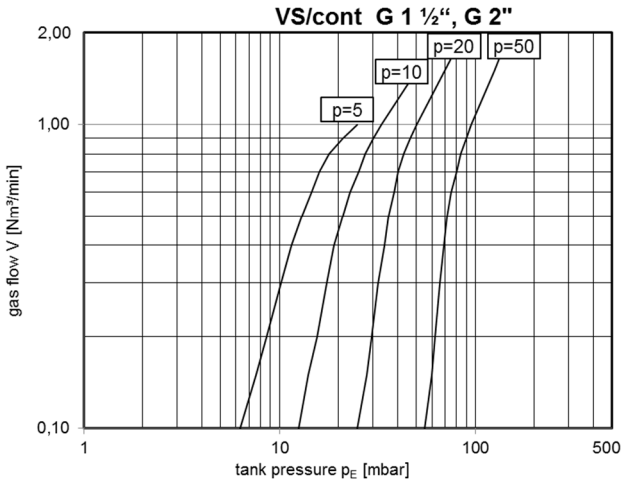
Performance curves

The flow capacity V refers to a density of air with ρ = 1.29 kg/m³. The flow capacity for gases with different densities can be calculated sufficiently accurate by the following approximation equation:

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$







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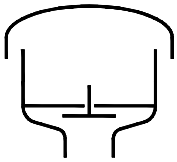
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

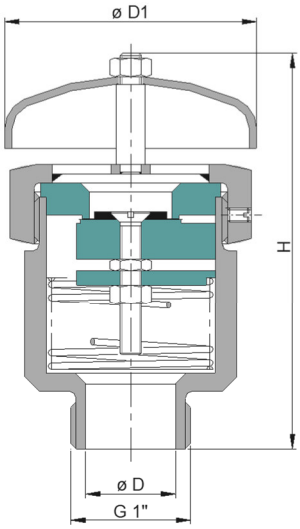
Type sheet
Vacuum relief valve
KITO® VS/o cont. …

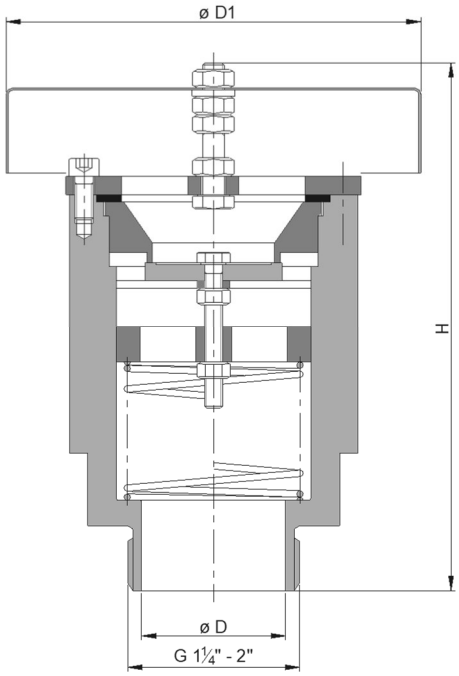


Application

As end-of-line device, for venting of tank installations for ventilation and to prevent inadmissible vacuum. Usually installed on top of a tank, if applicable in conjunction with a pressure relief valve on a common connecting pipe. Valve is not explosion-proof, thus cannot be used for flammable media.

Dimensions (mm) and settings (mbar)





size	D	D1	H	kg	setting
G 1”	**25**	70	110	1	5 - 210
G 1 ¼“	**32**	115	145	3	
G 1 ½“	**40**				
G 2”					

Weight refers to the standard design

Design

	size G 1“	**size G 1 ¼“, G 1 ½“ , G 2“**
housing	stainless steel mat. no. 1.4571	
valve seat / valve pallet	PTFE	stainless steel mat. no. 1.4571
sealing	FEP	PTFE
compression spring	stainless steel mat. no. 1.4571	
weather hood	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
connection	threaded format	

Example for order

KITO® VS/o cont. 2”
(design with threaded connection G 2“)

Without EC certificate and CE-marking

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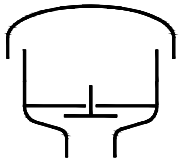
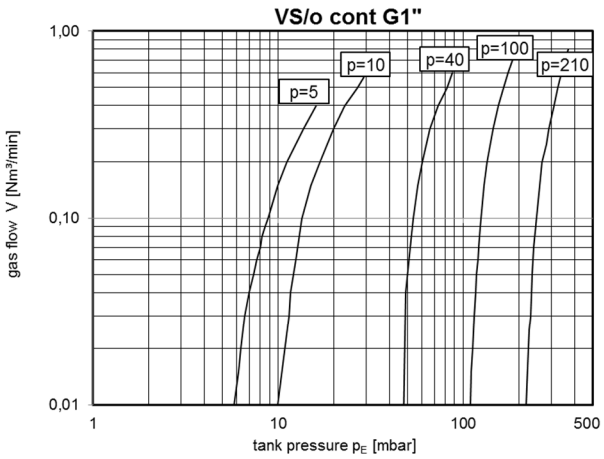
Type sheet
Vacuum relief valve
KITO® VS/o cont. …

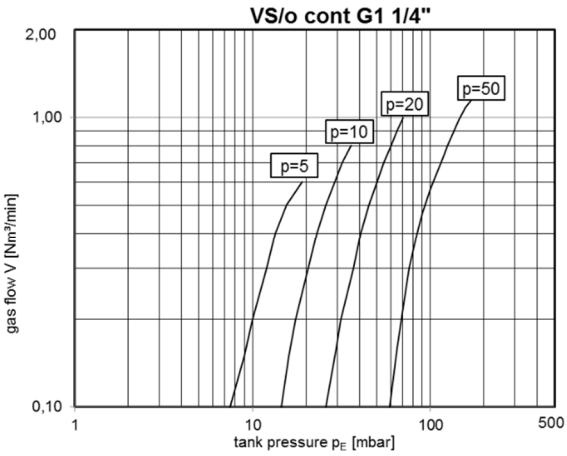


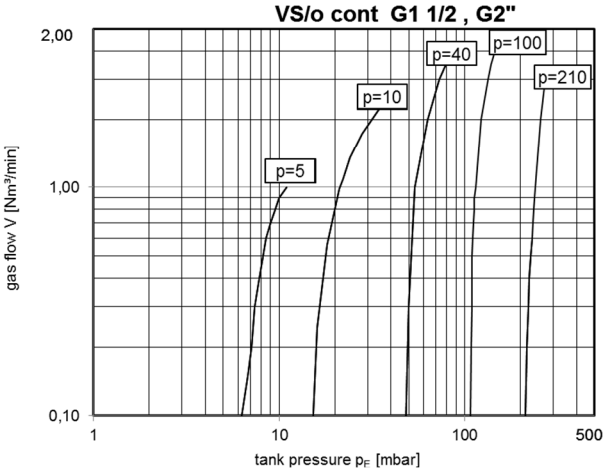
Performance curves

The flow capacity V refers to a density of air with ρ = 1.29 kg/m³. The flow capacity for gases with different densities can be calculated sufficiently accurate by the following approximation equation:

$$\dot{V}_{40\%} = \dot{V}_b \cdot \sqrt{\frac{\rho_b}{1.29}} \qquad or \qquad \dot{V}_b = \dot{V}_{40\%} \cdot \sqrt{\frac{1.29}{\rho_b}}$$







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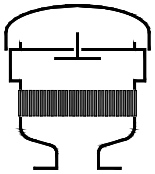
M 9 N / D 9 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

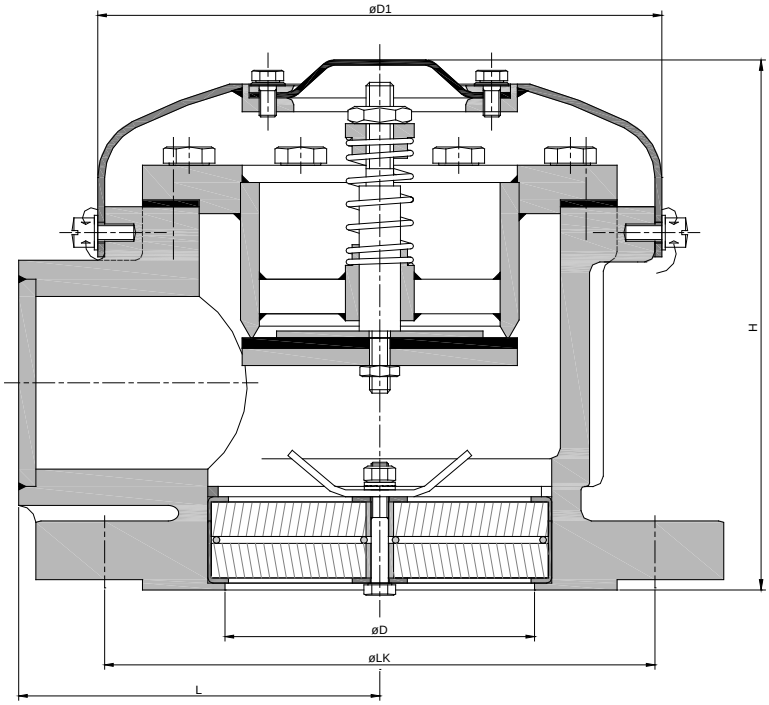
Type sheet
Deflagration proof vacuum relief valve
KITO® K/VG

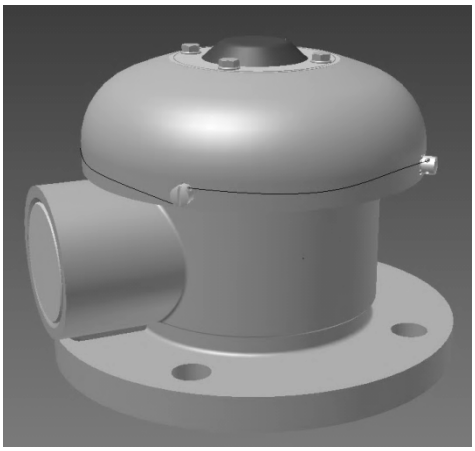


Application

Explosion proof end-of-line vacuum relief valve to prevent inadmissible vacuum. Approved for flammable liquids and gases of explosion group IIA with a maximum experimental safe gap (MESG) > 0.9 mm. An operating temperature of 60 °C must not be exceeded. Low height of construction, for portable tanks, preferably for rail tank cars and tank containers. Equipped with a function control equipment for the valve pallet. Upon request available without KITO® flame arrester element.

Dimensions (mm) and settings (mbar)





D	D1	H	L	LK	setting	kg
90	164	158	105	160 ***(4 holes ø18)***	10 - 40	9,3

Weight refers to the standard design

Different settings on request

Example for order

KITO® KV/G
(Design with flange connection, drilled to DN 80 PN 16 type B1)

Without EC certificate and CE-marking

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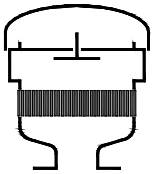
M 10 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet
Deflagration proof vacuum relief valve
KITO® K/VG

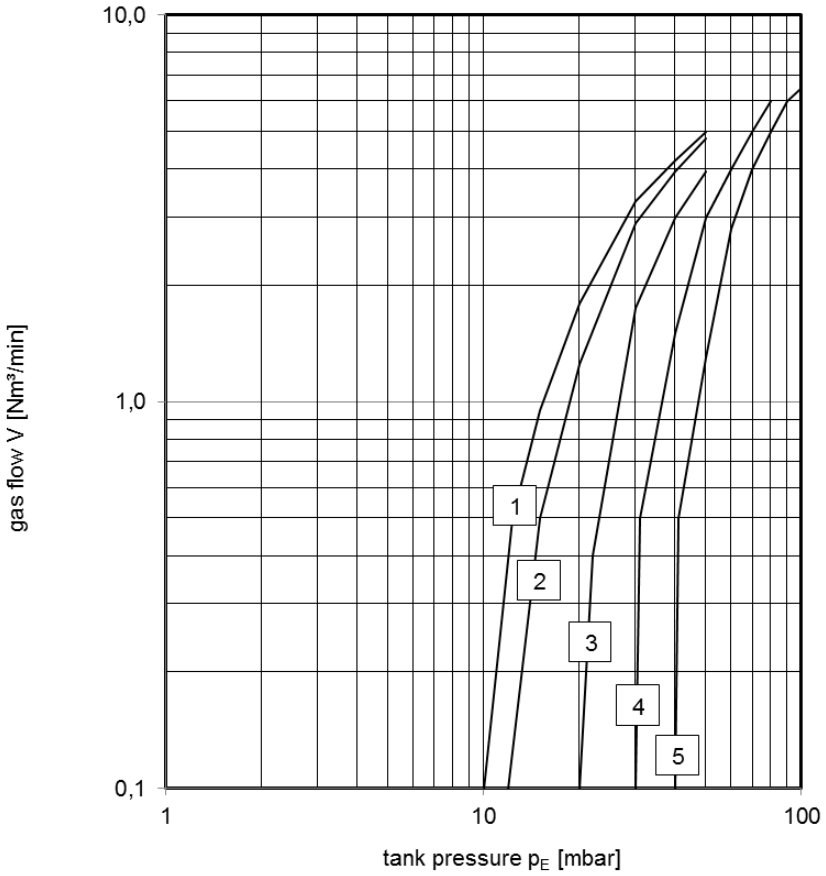


Design

	standard	optionally
housing	cast steel mat. no. 1.5638	stainless steel mat. no. 1.4408
gasket	HD 3822	PTFE, Gylon
valve seat / valve spindle	stainless steel mat. no. 1.4571	
valve pallet	stainless steel mat. no. 1.4571	
valve sealing	Viton	
compression spring	stainless steel mat. no. 1.4310	
KITO®-flame arrester element	interchangeable	
KITO®-casing	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
weather hood	stainless steel mat. no. 1.0333	stainless steel mat. no. 1.4301
membrane	NBR	
setting	sealed	
flange connection	drilled to EN 1092-1 type B1 ***(4 holes)***	

Performance curves

1 = p_e 10 mbar
2 = p_e 12 mbar
3 = p_e 20 mbar
4 = p_e 30 mbar
5 = p_e 40 mbar



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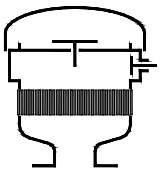
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet

Deflagration proof pressure and vacuum relief valve

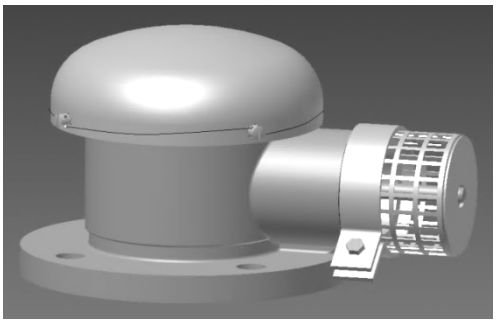
KITO® K/DVE-IIB3-80

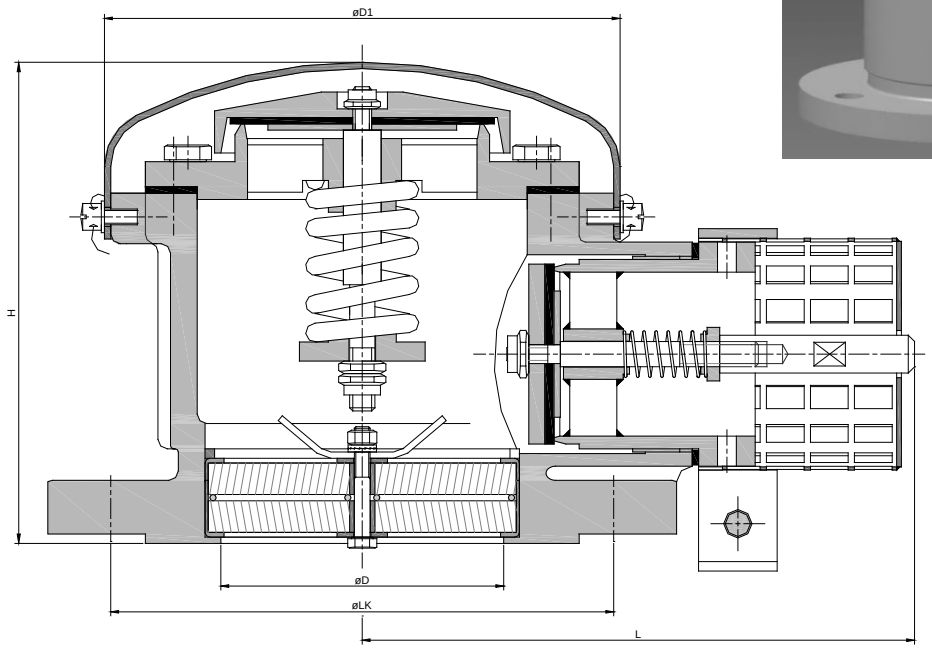


Application

Explosion proof combined pressure/vacuum relief valve to prevent excessive pressure and vacuum. Approved for flammable liquids and gases of explosion group IIB3 with a maximum experimental safe gap (MESG) > 0.65 mm. An operating temperature of 60 °C must not be exceeded. Low height of construction, for portable tanks, preferably for rail tank cars and tank containers. Upon request without KITO® flame arrester element available.

Dimensions (mm) and settings





D	D1	H	L	LK	setting vacuum (mbar)	setting pressure (bar)	kg
90	164	158	160	160 ***(4 holes ø18)***	10 - 40	1.5 – 3.0	11

Weight refers to the standard design

Different settings on request

Example for order

KITO® K/DVE-IIB3-80
(Design with flange connection, drilled to DN 80 PN 16 type B1)

Type examination certificate to EN ISO 16852 and CE-marking in accordance to ATEX-Directive 2014/34/EU

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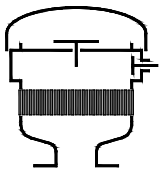
M 11 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

Type sheet

Deflagration proof pressure and vacuum relief valve

KITO® K/DVE-IIB3-80



Design

	standard	optionally
housing	cast steel mat. no. 1.5638	stainless steel mat. no. 1.4408
gasket	HD 3822	PTFE, Gylon
valve seat / valve spindle	stainless steel mat. no. 1.4571	
valve pallet	stainless steel mat. no. 1.4571	
valve sealing	Viton (at 3 bar pressure with an additional foil from Gylon)	
compression spring	stainless steel mat. no. 1.4310	
KITO®-flame arrester element	interchangeable	
KITO®-casing	stainless steel mat. no. 1.4301	stainless steel mat. no. 1.4571
KITO®-grid	stainless steel mat. no. 1.4310	stainless steel mat. no. 1.4571
weather hood	stainless steel mat. no. 1.0333	stainless steel mat. no. 1.4301
setting	sealed	
flange connection	drilled to EN 1092-1 type B1 ***(4 holes)***	

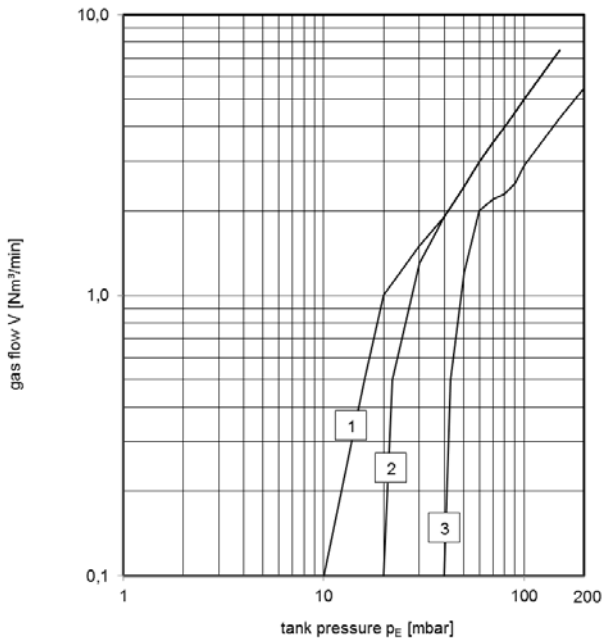
Performance curves

Flow rate in case of pressure:

setting p_e	discharge capacity	gas flow with and without KITO®-flame arrester element	
1.5 bar	1.65 bar	80 m^3/h	194 m_n^3/h
	1.9 bar	428 m^3/h	1132 m_n^3/h
1.75 bar	1.925 bar	86 m^3/h	230 m_n^3/h
3 bar	3.3 bar	135 m^3/h	530 m_n^3/h
	3.6 bar	428 m^3/h	1788 m_n^3/h
	4 bar	428 m^3/h	1943 m_n^3/h

closing pressure > 95% of p_e

Flow rate in case of vacuum:



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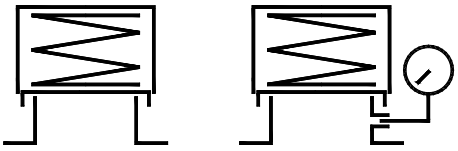
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

KITO Armaturen GmbH

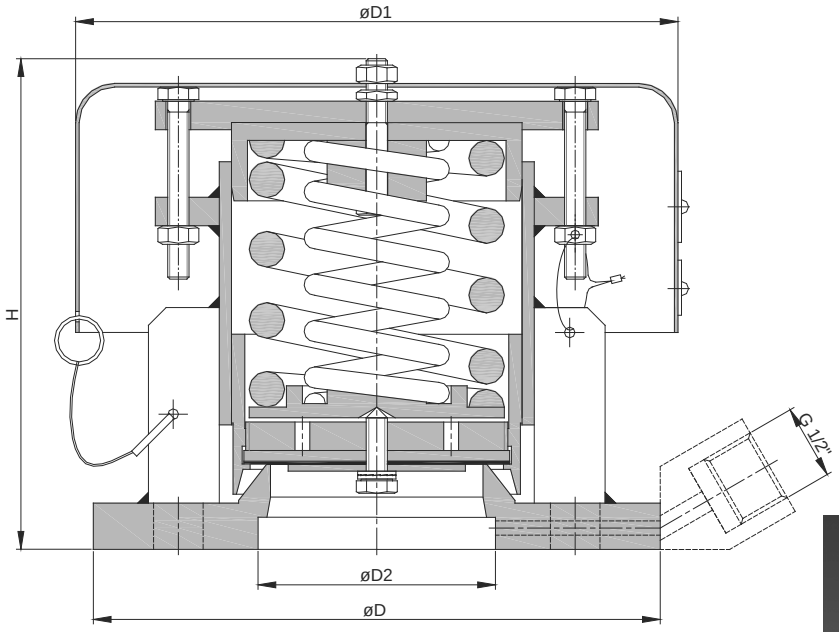
Type sheet
Pressure relief valve
KITO® K/DO-…

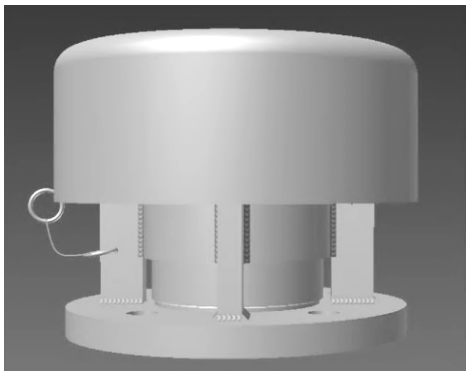


Application

Pressure relief valve against excessive pressure in rail tank cars (RTC) for the transport of dangerous goods of cl. 3, 5.1, 5.2, 6.1 and 8 with special regulations (RID/GGVSE, dangerous goods V sea). If used in combination with a rupture disc broken disc will be indicated by a pressure gauge which is fitted to the ½" threaded connection between rupture disc and valve pallet.

Dimensions (mm) and settings (bar)





DIN	ASME	D (DIN)	D (ASME)	D1	D2	H	~ kg	setting
40 PN 40	**1 ½"**	150	127.0	170	67	138	5.5	0.5 – 4.4
50 PN 16	**2"**	165	152.4					
65 PN 16	**2 ½"**	185	177.8					
80 PN 16	**3"**	200	190.5					

Weight refers to the standard design

different settings on request

Example for order

KITO® K/DO-40
(design with flange connection DN 40 PN 40 type A)

BAM-component identification D/BAM/028/A-T

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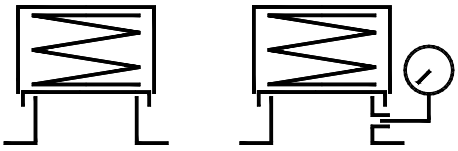
www.kito.de
info@kito.de

M 12 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

Type sheet
Pressure relief valve
KITO® K/DO-…



Design

	standard	optionally
housing / valve seat rim	stainless steel mat. no. 1.4571	
valve pallet / spring plate	stainless steel mat. no. 1.4571	
valve sealing	Viton / Gylon	
compression spring	stainless steel mat. no. 1.4310	
weather hood	stainless steel mat. no. 1.4301	
bolts (outside)	A2	
bolts (inside)	A4	
setting	sealed	
flange connection	EN 1092-1 type A	ASME B16.5 Class 150 RF

Additional surface treatment resp. changes of materials :

Foreseen product	
organic peroxide (cl. 5.2) and hydrogen peroxide (cl.5.1 and 8)	metallic parts pickled and passivated
ammonium nitrate (cl. 5.1)	metallic parts with a coating of PTFE where in contact with the product
sodium hypochlorite (cl. 8)	housing with valve seat rim, valve pallet, bolt for valve pallet and ronde from Hastelloy C-4

Performance

setting p_e	Relief capacity in m^3/h at p_e x 1,2		liquids
	DN 40	DN 50 - 80	
0.5 bar	185	>185	Kl. 5.1, 8
1.5 bar	1500	2100	Kl. 3
2.2 bar		3150	Kl. 5.2
3.0 bar	2900	3800	Kl. 3, 6.1, 8
3.3 bar		4000	Kl. 3, 6.1
3.75 bar		4150	Kl. 3, 6.1
4.4 bar		4300	Kl. 3, 6.1

KITO Armaturen GmbH
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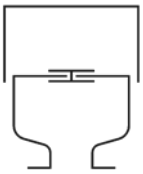
M 12 N
Date: 05-2018
Created: Abt. Doku KITO

KITO Armaturen GmbH

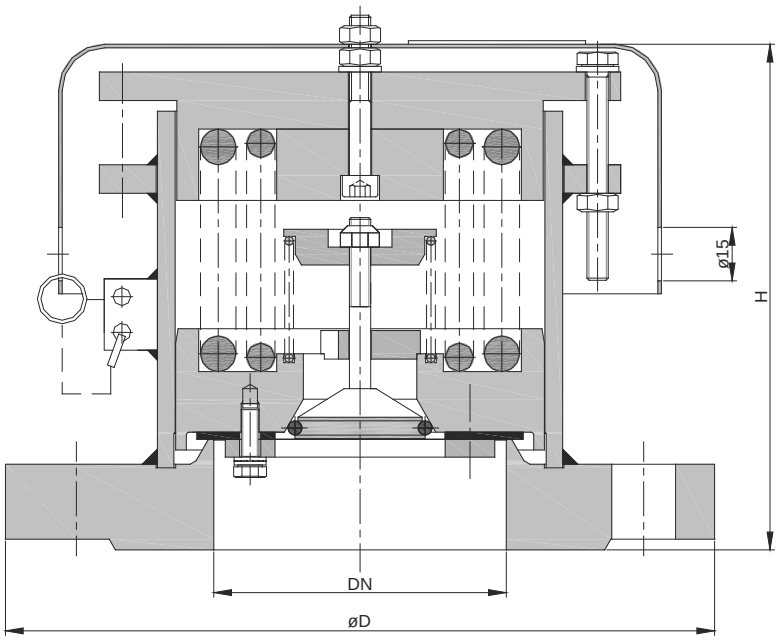
Type sheet
Pressure and vacuum relief valve
KITO® K/CVO-80



Application

Combined pressure / vacuum relief valve to prevent excessive pressure and vacuum in rail tank cars, low height of construction, for portable tanks, preferably for rail tank cars and tank containers.

Dimensions (mm) and settings



DIN	D	H	setting		kg
			vacuum (mbar)	pressure (bar)	
DN 80 PN 40	200	142	200 - 400	0.5 – 3.0	11

Weight refers to the standard design

Different settings on request

Example for order

KITO® K/CVO-80
(Design with flange connection DN 80 PN 40 type B1)

Without EC certificate and CE-marking

Design

	standard	optionally
housing / valve seat rim	stainless steel mat. no. 1.4571	
valve pallet / spring plate	stainless steel mat. no. 1.4571	
valve sealing	PTFE	
o-ring	Silcoflon	
compression spring	stainless steel mat. no. 1.4310	
weather hood	stainless steel mat. no. 1.4301	
setting	sealed	
flange connection	EN 1092-1 type B1	ASME B16.5 Class 150 RF

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M 13 N
Date: 05-2018
Created: Abt. Doku KITO
Design subject to change

CERTIFICATE

Quality management system
welding manufacturer
according to Directive 2014/68/EU, Annex I, point 3.1

Certificate no.: 07/203/1044/HZ/0597/19

Name and address of manufacturer:	**KITO Armaturen GmbH** **Grotrian-Steinweg-Str. 1c** **D-38112 Braunschweig**

This is to certify that the manufacturer applies a quality management system with relation to the welding technology. The manufacturer has demonstrated that the welding requirements for the manufacturing of pressure equipment are fulfilled.

Verified:	**According to Directive 2014/68/EU, Annex I, point 3.1 and EN ISO 3834 part 2**
Audit report no.:	**1044WR00319**
Scope:	**Pressure vessel (AD 2000 HP0, DIN EN 13445) valve acc. to AD 2000, DIN EN 13445**
This certificate is valid until:	**02.05.2022**

Göttingen,

TÜV NORD

Digital unterschrieben von Wiedemann Rainer
Datum: 2019.09.13 09:31:34 +02'00'

Profit Center: MT-S.-O.-Nds.

Phone +49-(0) 551 3855-128
Fax +49-(0) 551 3855-121
E-Mail imgoettingen@tuev-nord.de

Dipl.-Ing. (FH) Rainer Wiedemann
TÜV NORD Systems GmbH & Co. KG
Große Bahnstraße 31, D-22525 Hamburg

TÜV NORD

CERTIFICATE

Management system as per
DIN EN ISO 9001 : 2015

The Certification Body TÜV NORD CERT GmbH hereby confirms as a result of the audit, assessment and certification decision according to ISO/IEC 17021-1:2015, that the organization

KITO Armaturen GmbH
Grotrian-Steinweg-Straße 1c
38112 Braunschweig
Germany

operates a management system in accordance with the requirements of ISO 9001 : 2015 and will be assessed for conformity within the 3 year term of validity of the certificate.

Scope

Development, manufacturing and maintenance of armatures

Certificate Registration No. 44 100 121337
Audit Report No. 3530 8332

Valid from 2022-11-23
Valid until 2025-11-22
Initial certification 1998

Certification Body
at TÜV NORD CERT GmbH

Essen, 2022-06-29

Validity can be verified at https://www.tuev-nord.de/de/unternehmen/zertifizierung/zertifikatsdatenbank.

TÜV NORD CERT GmbH Am TÜV 1 45307 Essen www.tuev-nord-cert.com

IAF MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT

DAkkS Deutsche Akkreditierungsstelle D-ZM-12007-01-00

NOTIFICATION D'ASSURANCE QUALITE DE PRODUCTION

PRODUCTION QUALITY ASSURANCE NOTIFICATION

1 **Version : 05**

LCIE 15 ATEX Q 4006

Issue : 05

Directive 2014/34/UE | **Directive 2014/34/EU**

2 Appareils ou Systèmes de Protection ou Composants listés dans l'annexe incluse à cette notification.

Equipment or Protective Systems or Components as listed in the schedule attached to this notification.

3 Fabricant :

Manufacturer :

KITO Armaturen GmbH

4 Adresse :

Address :

Grotrian-Steinweg-Str. 1c
38112 Braunschweig
Allemagne

5 Lieu(x) de fabrication listé(s) dans l'annexe incluse à cette notification.

Manufacturing location(s) as listed in the schedule attached to this notification.

6 Le LCIE, Organisme Notifié sous la référence 0081 conformément à l'article 17 de la directive 2014/34/UE du Parlement européen et du Conseil du 26 février 2014, notifie au fabricant que le système qualité de production satisfait à l'Annexe IV de la directive.
Ce système qualité conforme à l'Annexe IV de la Directive, satisfait de plus aux exigences de l'Annexe VII, Assurance Qualité du Produit, et de la norme EN ISO/IEC 80079-34:2020.
Accréditation Cofrac Certification de Produits et Services, n°5-0014. Portée disponible sur www.cofrac.fr.

LCIE, Notified Body number 0081 in accordance with article 17 of the Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014 notifies to the manufacturer has that the production quality system complies with annex IV of the Directive.
This quality system in compliance with Annex IV of the Directive also meets the requirements of Annex VII, Product Quality Assurance, and EN ISO/IEC 80079-34:2020.
Cofrac Accreditation Product and Services Certification n°5-0014. Scope available on www.cofrac.fr.

7 Cette notification est fondée sur le(s) rapport(s) d'audit :

This notification is based on audit report(s):

21TH0090 (160229-733635)

Cette notification peut être retirée si le fabricant ne satisfait plus aux prescriptions de l'Annexe IV.
Le maintien de cette notification est subordonné aux résultats des évaluations périodiques annuelles.

This notification can be withdrawn if the manufacturer no longer satisfies to the requirements of Annex IV.
Results of periodical re-assessment of the quality system are a part of this notification.

8 Ce document est valable jusqu'au :

This document is valid until :

2024/06/28

Cette notification peut être retirée si le fabricant ne satisfait pas à la surveillance de l'assurance qualité de production.

This notification can be withdrawn if the manufacturer does not satisfy the production quality assurance surveillance.

9 Conformément à l'article 16.3 de la directive 2014/34/UE le marquage CE doit être suivi numéro d'identification 0081 du LCIE identifiant l'organisme notifié qui intervient dans les phases de contrôle de la production.

According to Article 16.3 of the Directive 2014/34/EU the CE mark shall be followed by the LCIE identification Number 0081 identifying the notified body involved in the production control stage.

Fontenay-aux-Roses, le 7 septembre 2021

Responsable de Certification
Certification Officer
Julien Gauthier

LABORATOIRE CENTRAL DES INDUSTRIES ELECTRIQUES
S.A.S au capital de 15.745.984 €
RCS Nanterre B 408 363 174
33 avenue du Général Leclerc
F - 92266 FONTENAY AUX ROSES

LCIE
Laboratoire Central des Industries Electriques
Une société de Bureau Veritas

33 Avenue du Général Leclerc
92260 Fontenay-aux-Roses
FRANCE

WWW.LCIE.FR

1 **Version : 05** **LCIE 15 ATEX Q 4006** **Issue : 05**

10 **LISTE DES ATTESTATIONS D'EXAMEN CE / UE DE TYPE COUVERTES**

Systèmes de protection :
Arrêt de flamme, Capot d'aération, Joint hydraulique, Soupapes, Clapets, Purges.

Modes de protection :
II G IIA, G I, G IIB3, G IIC, G IIB1, G IIA, G IIA1, IIB3, G IIB,1/2 G c IIB

LIST OF EC / EU TYPE EXAMINATION CERTIFICATES COVERED

Protection systems :
Flame arresters, ventilation cap, hydraulique seal, relief valve, valve

Protection modes :
II G IIA, G I, G IIB3, G IIC, G IIB1, G IIA, G IIA1, IIB3, G IIB,1/2 G c IIB

11 **LIEU(X) DE FABRICATION** / **MANUFACTURING LOCATION(S)**

Item	Nom *Name*	Adresse *Address*
A	**KITO Armaturen GmbH**	Grotrian-Steinweg-Str. 1c , 38112 Braunschweig, Allemagne

12 **DETAILS DES MODIFICATIONS** / **DETAILS OF CHANGES**

Version 05 : Audit de renouvellement

Issue 05 : Renewal audit

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