PROTECTOTANK[MR]

Flame Arresters

To avoid fire transmission.

Emission control and safety equipment, for low pressure storage tanks

DESCRIPTION

Protectotank flame arresters have two designs:

Series 65 is a bidirectional deflagration type installed in low pressure atmospheric storage tanks, to avoid possible entry of fire or energy to the tank, originated by external sources of ignition or sparks.

Series 66 is a bidirectional detonation type designed to stop propagation of a flame front in a confined pipe, like gas piping systems, as well as flares open burners or gas injection to vapor recovery plants.

Series 65 / 66E is a variety, due to its eccentric design it is ideal to be installed on ground level pipes.

The flame arresters include 2 main parts:

Housing / process connections, this component makes possible connections between the tank, valve or piping, meeting ASME B16.5 standard for flange connections (FNPT and other options available). Also provides with the mechanical support to the process and the flame cell.

The flame cell is located at the center of the arrester, this is the extinguishing unit. It is constructed alternating crimped and flat 316 stainless steel or aluminum sheets, forming very small triangular shape tubes in a previously defined quantity per square inch ratio. The total formed area allows air, vapors, or gas movement through the arrester with a controlled flow enough for normal tank or pipe operation.

However, because of the small formed screen (MESG > 0.65 mm), it is not possible the transmission for flames or the required air (oxygen) for combustion with IEC group IIB (NEC group C) gas.

The flame quench is achieved by two effects: temperature attenuation, as well as the lack of the oxygen-combustible mix required for combustion.

This sheet configuration with its rhombus shape type construction allows a controlled pressure drop for a particular flow rate, not affecting the tank or pipe operation, usually a correct size selection will get less than 1" WC loss pressure. The extinguishing area regularly is twice larger than process connection size.

The available construction materials for the housing are aluminum, carbon steel or 316 stainless steel. (Other options upon request).

Standard size connections from 1” through 12” available other sizes upon request.

The regular flanged connection is flat face (FF) for aluminum and raised face (RF) for steels. (other configurations available) As an option drains and instrument ports can be added.

The manufacturing of flame arresters is in compliance with ISO 16852 and API 2210, to guarantee maximum safety and reliability of Protectotank flame arrestors , our series 65/66 has been tested with ANSI/UL525 standard protocols , for both flashback and endurance burn tests

Series 65

Flame arrester

Series 65E

Deflagration flame arrester

This model is a In-Line horizontal deflagration flame arrester designed to inhibit flame propagation in short length gas piping systems.

The design is identical on features and capacity to the standard series 65 but its eccentric design allows horizontal installation on the ground level.

It is common to use this arrester in combination with a thermal shut off valve, to complete an element commonly named flame trap.

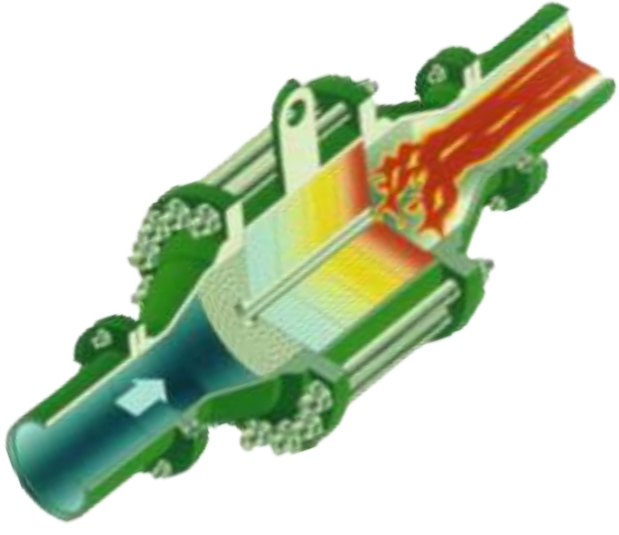
Series 66

Detonation arrester

The series 66 is a bidirectional deflagration and detonation flame arrester designed and constructed to inhibits flame propagation in long gas piping systems, In-line or end-of-line deflagrations, unstable detonations, pipe working pressures up to 15 psig.

Housings are available in carbon steel and 316 stainless steel with flame cell in 316 stainless steel. Standard configuration will have a minimum 1:2 ratio between connection and flame cell diameters to offer high flow capacity and low pressure drop.

The design allows the flame cell to be removed in-line for cleaning and maintenance. All the produced units include a pneumatic test. (special designs upon request).



To select the correct type and size arrestor, a minimum information must be provided:

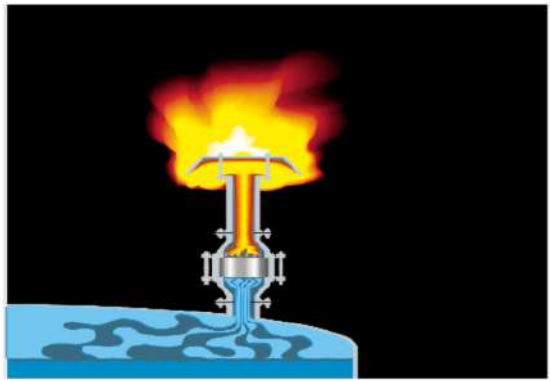
Vapor flow rate.

Fluid characteristics.

Maximum allowed drop pressure.

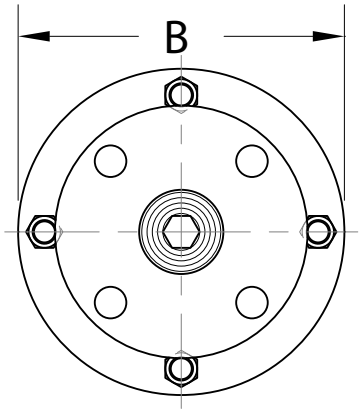
Maximum operating conditions.

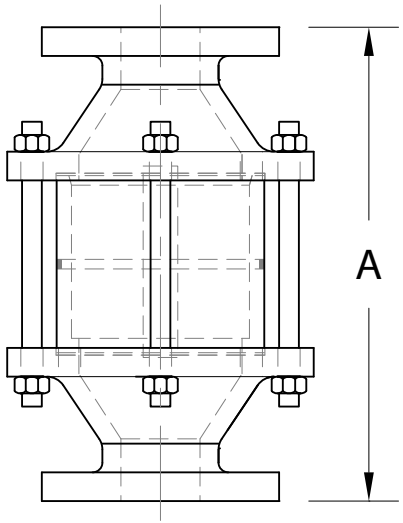
Please ask our engineers to help you with your specific requirements.



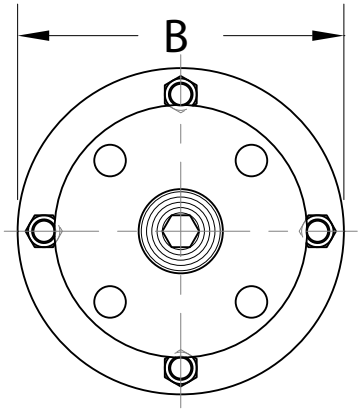
Dimensions s-65

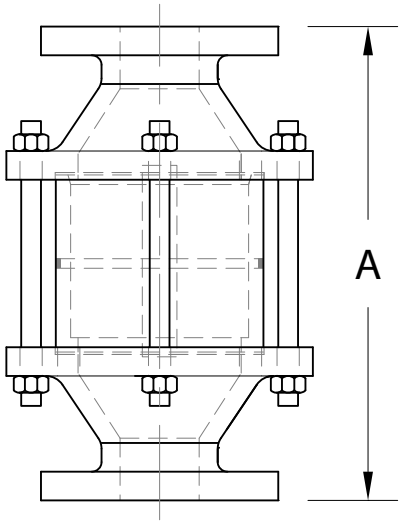
Connection Size	Dimension A	Dimension B
1" (25.4mm)	9 7/8" (250.83mm)	6 1/4" (158.75mm)
2" (50.8mm)	10 1/2" (266.7mm)	7 3/4" (196.85mm)
3" (76.2mm)	13 3/4" (349.25mm)	10" (254.00mm)
4" (101.6mm)	15 3/4" (400.05mm)	12 3/4" (323.85mm)
6" (152.4mm)	16 3/4" (425.45mm)	14 1/4" (361.95mm)
8" (203.2mm)	23 1/2" (596.9mm)	21" (533.40mm)
10" (254mm)	26 1/2" (673.1mm)	25 7/8" (657.23mm)
12" (304.8mm)	28 1/2" (723.9mm)	29 1/4" (742.95mm)





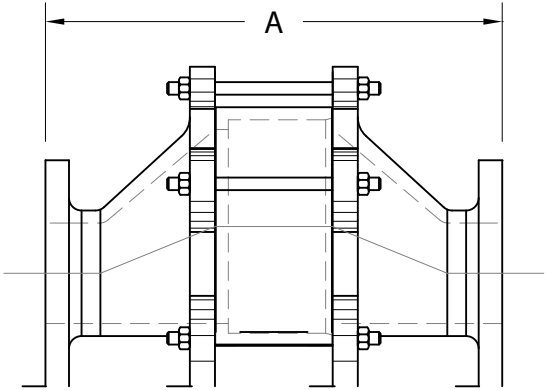
Dimensions s-66D

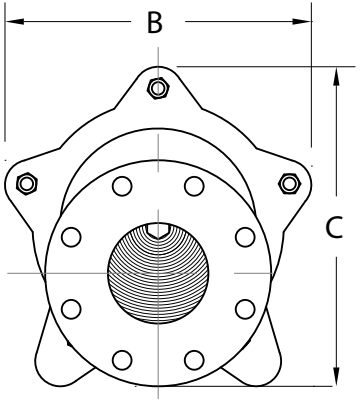




Connection Size	Dimension A	Dimension B
1" (25.4mm)	12" (304.8mm)	6 1/4" (158.75mm)
2" (50.8mm)	13 3/8" (339.72mm)	7 3/4" (196.85mm)
3" (76.2mm)	15 1/2" (293.7mm)	10" (254.00mm)
4" (101.6mm)	17 3/4" (450.85mm)	12 3/4" (323.85mm)
6" (152.4mm)	18 7/8" (479.42mm)	14 1/4" (361.95mm)
8" (203.2mm)	27 1/2" (698.5mm)	21" (533.40mm)
10" (254mm)	30 1/2" (774.7mm)	25 7/8" (657.23mm)
12" (304.8mm)	32 1/2" (825.5mm)	29 1/4" (742.95mm)

Dimensions s-65E





	Dimension			Approximate weight	
Connection Size	A	B	C	Aluminum	Steel
4” (101.6mm)	17 7/8” (454.02mm)	12 1/4” (311.15mm)	12 3/4” (323.85mm)	30 kg (66.14 lbs)	80 kg (176.37 lbs)
6” (152.4mm)	21 3/8” (542.92mm)	15 3/4” (400.05mm)	16 3/8” (415.93mm)	42 kg (92.59 lbs)	99 kg (218.26 lbs)
8” (203.2mm)	29 3/4” (755.65mm)	20 3/8” (517.53mm)	21” (533.40mm)	104 kg (229.28 lbs)	242 kg (533.52 lbs)
10” (254mm)	34 1/4” (869.95mm)	25 5/8” (650.87mm)	24” (609.6mm)	104 kg (229.28 lbs)	242 kg (533.52 lbs)
12” (304.8mm)	36 5/8” (930.27mm)	30 3/8” (771.525mm)	28 1/2” (723.9mm)	104 kg (229.28 lbs)	242 kg (533.52 lbs)

Model Selection s65

	1) Model
65	Flame Arrester

	2) Connection Size
01	1”
02	2”
03	3”
04	4”
06	6”
08	8”
10	10”
12	12”

	3) Housing Material
01	Aluminum
05	Carbon steel
09	316 Stainless Steel

	4) Internal Materials
01	Aluminum
09	316 Stainless Steel

Ordering Example:
65-02-01-09

Refers to a series 65 flame arrester 2” diameter connection, aluminum housing with 316 stainless steel flame cell.

For special options please consult factory.

Model Selection s65E

Ordering Example:
65E-02-01-09

Refers to a flame arrester series 65E deflagration type of 2" of connection size, with aluminum body and 316 stainless steel inside.

All the specifications, dimensions and characteristics subject to change without notice

	1) Model
65 E	Deflagration flame Arrester

	2) Connection Size
01	1"
02	2"
03	3"
04	4"
06	6"
08	8"
10	10"
12	12"

	3) Housing Material
01	356 type aluminum
05	Carbon steel
09	316 Stainless Steel

	4) Internal Materials
01	Aluminum
09	316 Stainless Steel

Model Selection s66

1) Model	
66 C	NEC Gas group C
66 D	NEC Gas group D

2) Connection Size	
01	1”
02	2”
03	3”
04	4”
06	6”
08	8”
10	10”
12	12”

3) Housing Material	
05	Carbon steel
09	316 Stainless Steel

4) Internal Materials	
09	316 Stainless Steel

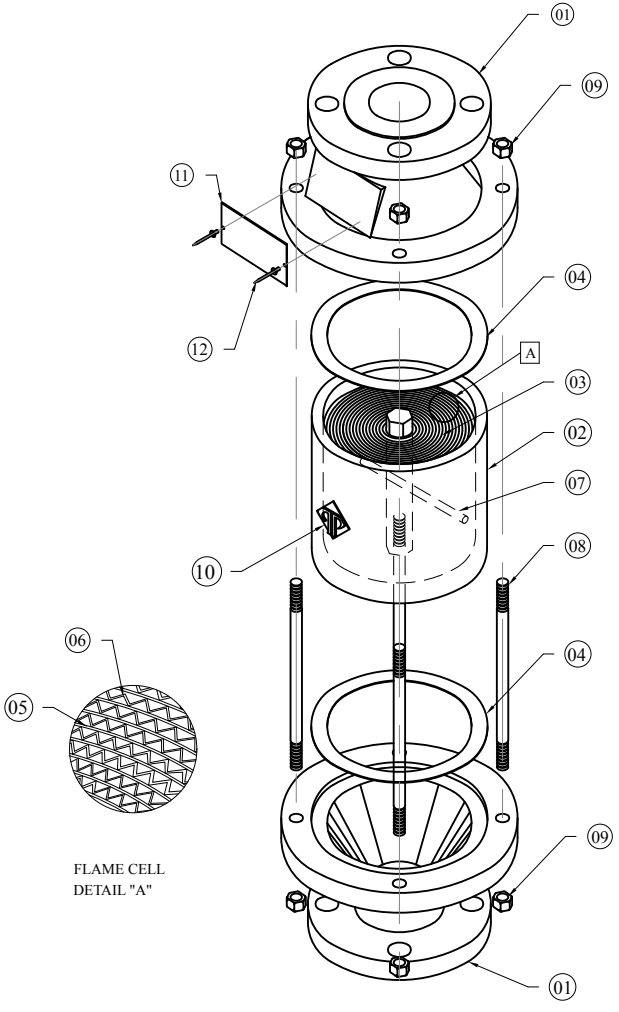
Ordering Example:
66D-02-05-09-O

Refers to a flame arresters series 66D deflagration type of 2” diameter, carbon steel body with 316 stainless steel inside, and no accessories.

Specifications, dimensions and characteristics subject to change without notice

5) Accessories	
T	1/2” H NPT ports
O	Without accessories

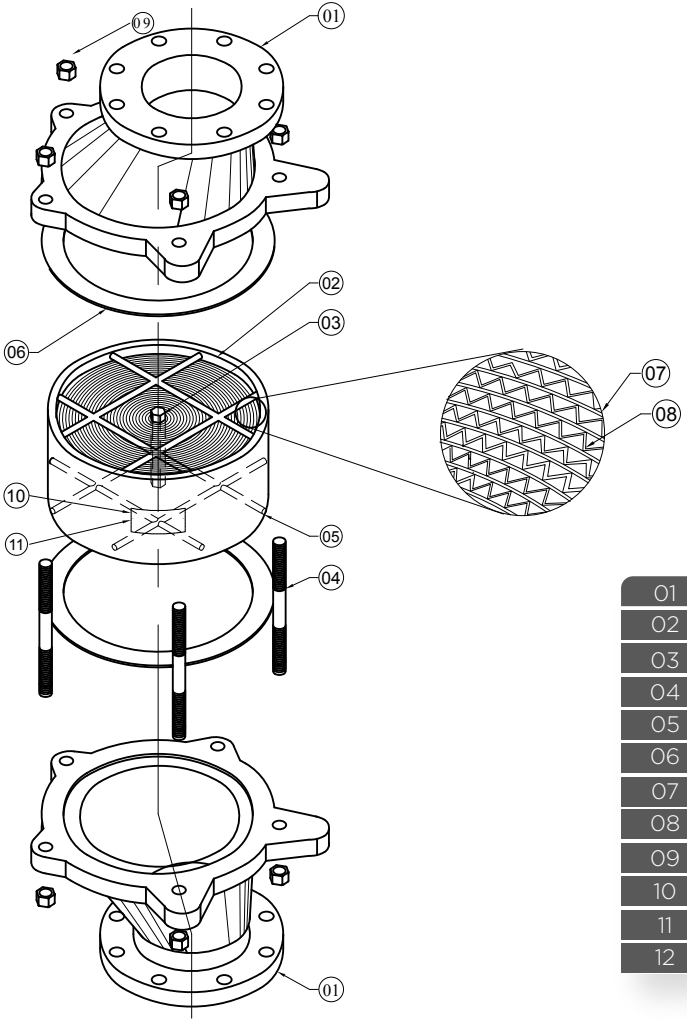
Schematic view series 65-66D



For part selection, indicate model followed by a diagonal plus the respective part number.

* Indicates parts from service kit

List of Materials		
	Quantity	Description
01	2 pieces	Housing base
02	1 piece	Housing
03	1 piece	Flame cell
04	*2 pieces	Gaskets
05	1 piece	Flat metal
06	1 piece	Crimped metal
07	1 piece	Support
08	1 lot	Studs
09	1 lot	Hex nuts
10	1 piece	Logo
11	1 piece	ID plate
12	1 lot	Pop rivets



Schematic view series 65E

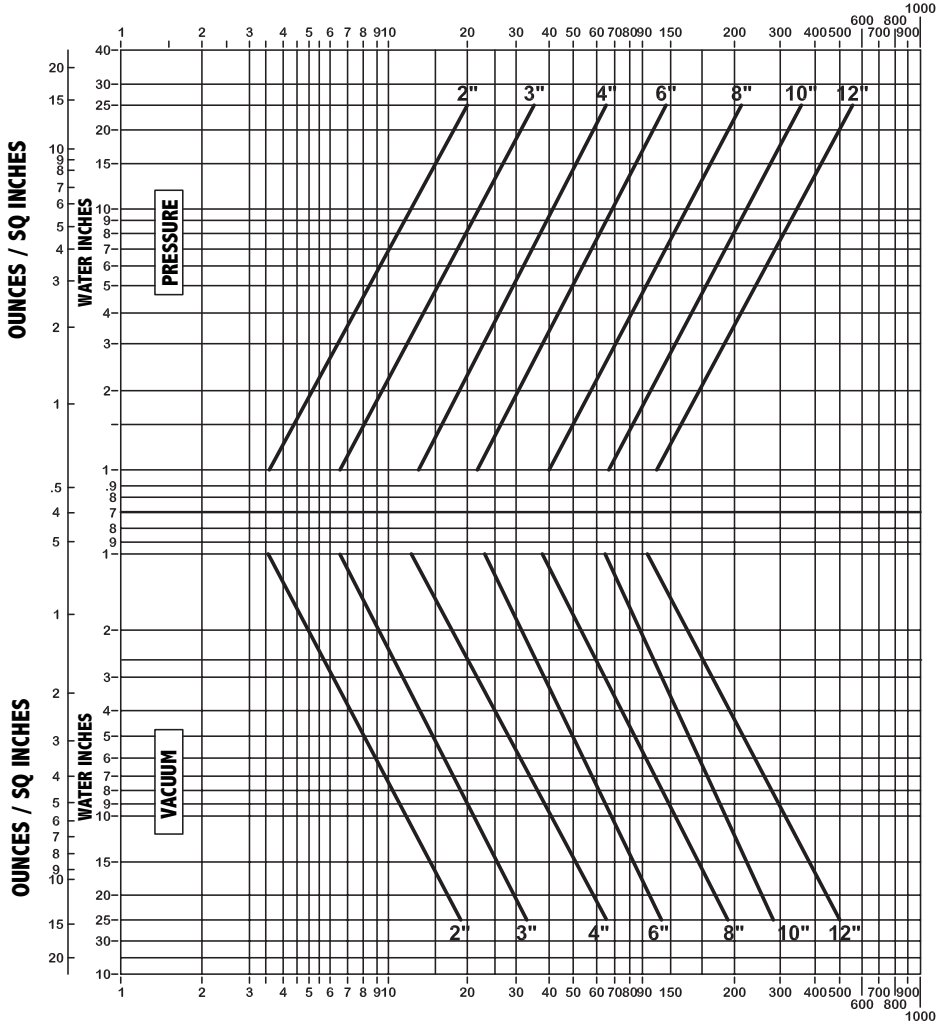
For part selection, indicate model followed by a diagonal plus the respective part number.

* Indicates parts from service kit

List of Materials		
	Quantity	Description
01	2 pieces	Housing base
02	1 piece	Housing
03	1 piece	Flame cell
04	1 lot	6 Studs
05	1 lot	6 Spacers
06	1 piece	Support
07	*1 lot	2 Gaskets
08	1 piece	Flat metal
09	1 piece	Crimped metal
10	1 lot	12 Hexagonal nuts
11	1 piece	Identification plate
12	1 lot	2 Pop rivets

Flow chart

Thousands cubic feet /hour at 60º
14.7 PSI. Air standard (scfh)

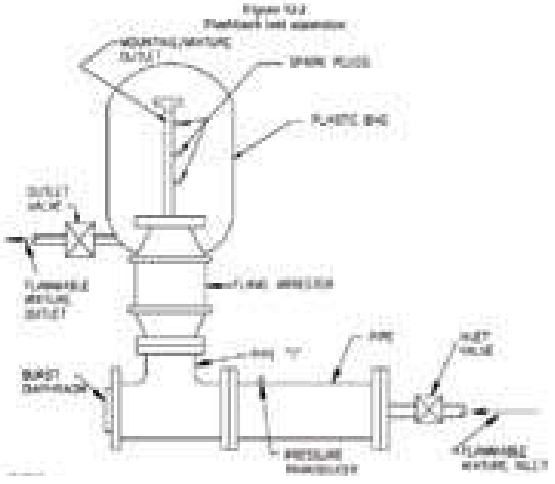


Flashback test according to ANSI/UL 525 standard, version 2008 chapter 12.3. Endurance burn and continuous flame chapter 17.2

In these tests, an arrester must prevent a flashback / propagation of a flame or combustion energy to pass through the flame cell from one side to another (or generate a structure fault) to reach the fuel source to generate an explosion.

A controlled mix of 4.2% of propane in air volume and a test tank with combustion indicator, must be observed. The test is successful if after a series of 3 explosions combustion indicator does not break.

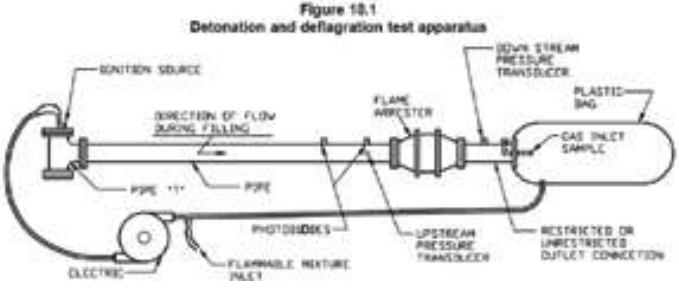
During the endurance burn and continuous flame test a stable combustion is maintained with the maximum temperature possible at constant flow at one end of the arrester exposed to atmosphere and other connected to the test tank. The gas flow shall be stopped for 15 seconds every 10 minutes without a flame flashback. This cycle is repeated several times to define the total burning time marked for that arrester.



Detonation and deflagration test according to ANSI/UL 525 standard, version 2008 chapter 18.1

This test proves the arrester´s capacity to stop a flame in a pipe installation with several lengths of upstream pipe and downstream restrictions. This test is repeated with different distances between the ignition point and the flame arrester to develop stable, unstable deflagrations and detonations.

The test shall be successful if after 5 series of 5 ignitions of the flammable mixture per each dimensional arrangement, there is no flame passing to get burn the combustion indicator (plastic bag)



Certifications

Clean Industry

SIGE

IQ Net

Central Laboratory

Mobile Laboratory

Lesser

SPECIFICATIONS

Housing materials:
Aluminum, carbon steel and 316 type stainless steel. (other option available)

Internal materials:
Aluminum and 316 type stainless steel.

Flange sizes:
2”, 3”, 4”, 6”, 8”, 10” and 12”.

Connections:
All units with ASME/ANSI 150# flanges standard. The regular flanged connection is flat face (FF) for aluminum and raised face (RF) for steels. (other flange drillings and configurations available).

Pressure range:
15 psi maximum for deflagration type arresters and up to 150 psi for detonation type arresters.

Temperature:
Normal operation temperatures -4 to 140°F (-20 to 60°C) (higher on demand) .

Installation:
Vertical and horizontal installation.

Types:
Bidirectional, concentric, and eccentric. Tapped drain and instrumentation ports available

Gaskets:
Compressed fiber non-asbestos.

Coating:
High-solids polyurethane for marine environment meets ISO 12944. Other methods upon request.

Flow Capacity Test:
Certified flow capacity by an accredited flow laboratory issued by the Mexican Accreditation Entity (ema), with international traceability recognition agreement (ILAC).

Certification:
Certified ISO 9001:2015 Quality Management System for designing, manufacturing, service and testing by international IQNet.

Our facilities meets ISO 17025 international standard “General requirements for the competence of testing and calibration laboratories” our test laboratories have been accredited by the Mexican accreditation entity (ema) for low pressure and vacuum valves pressure and flow testing , all valves we produce include a test report with legal validity through international traceability recognition agreement (ILAC).

ACCREDITED TEST LABORATORY

Maintenance, refurbish and adjustment services

Protectotank offer maintenance, refurbish and adjustment services through our rep network. there are also available service kits and technical support directly form factory.

Experience additional value

Protectotank have been developing in the market for over 25 years maintaining a constant innovation attitude, that continuously applies improvements to the products. Protectotank began to export in 2001 and having customers in all America and some other countries around the world.

The facilities include the best in class CNC machinery and automated systems, accredited test benches and certified quality systems to meet the most demanding standards and all the customer requirements.

The engineering department may offer you a customized solution for all your applications with an affordable price and delivery time.

Product warranty

Protectotank warrants that products that are manufactured by Seller are manufactured in accordance with published specifications and free from defects in materials and / or workmanship for a period of (12) twelve months. Seller, at its option, will repair or replace any products returned intact to the factory, transportation charges prepaid, which Seller, upon inspection, could determine to be defective in material and / or workmanship. The foregoing shall constitute the sole remedy for any breach of Seller's warranty.

Protectotank shall be solely responsible for the design, development, supply, production, and performance of its products hereunder, and the protection of its trade name or names, if any. It assumes no responsibility, for products modified or changed by its agent or customer, or any other third party. Any such modifications or changes to products sold by Seller hereunder shall make the product limited warranty null and void.

PROTECTOTANK[MR]

Protectotank SA de CV

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