



# FLAME ARRESTERS

DEFLAGRATION // ATEX CERTIFIED

## SAFETY DEVICES THAT PROTECT EQUIPMENT, LIVES & THE ENVIRONMENT

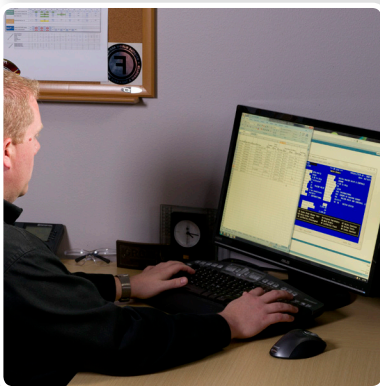


## Groth Corporation

Groth Corporation, formerly Groth Equipment Corporation, was founded by Edward Groth on August 1, 1960 and incorporated on September 7th that same year. Groth began as a manufacturers' representative, distributor, and re-manufacturer of pressure relief valves sold to the refining and petrochemical industries. In 1999, Groth Corporation joined Continental Disc Corporation and moved to its current Stafford, Texas manufacturing site in 2002. These two events strengthened Groth's position as a global leader in low pressure safety solutions.

Today, Groth is a global leader in low pressure safety equipment with representatives around the world, providing engineered solutions with uncompromising commitment to customer satisfaction.

Groth industrial products are comprised of independent product lines, classified as: Pressure/Vacuum Relief Valves, Blanket Gas Regulators and Flame Arresters.



### OUR EXPERTISE & DEVOTION

When choosing a solution from Groth Corporation, you can be assured that our expertise and devotion to quality will translate into efficiency and safety, and that our every effort will demonstrate our commitment to provide innovative solutions, quality products, and comprehensive service.

We pride ourselves in providing expertise to the following industries:

- > Biogas Processing
- > Chemical
- > Equipment
- > Food & Beverage
- > OEM
- > Oil & Gas
- > Pharmaceutical
- > Transportation
- > Utilities
- > Wastewater

as well as many others.



## Flame Arrester Overview

Deflagration Flame Arresters are fire safety devices used to protect stored or process media from deflagrations. A deflagration flame arrester can be used on the top of a tank or as an in-line safety device where combustible gases are transported through low pressure pipe lines.

Flame arresters are designed to inhibit flame propagation in gas piping systems and to protect low pressure tanks containing flammable liquids. Arresters protect low flash point liquids from external sources of heat and ignition, increasing fire protection and safety.

## End-of-Line and In-Line Explanation

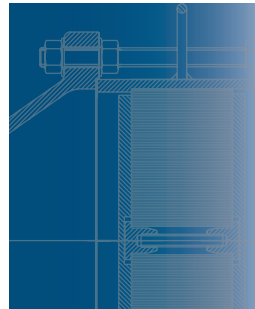
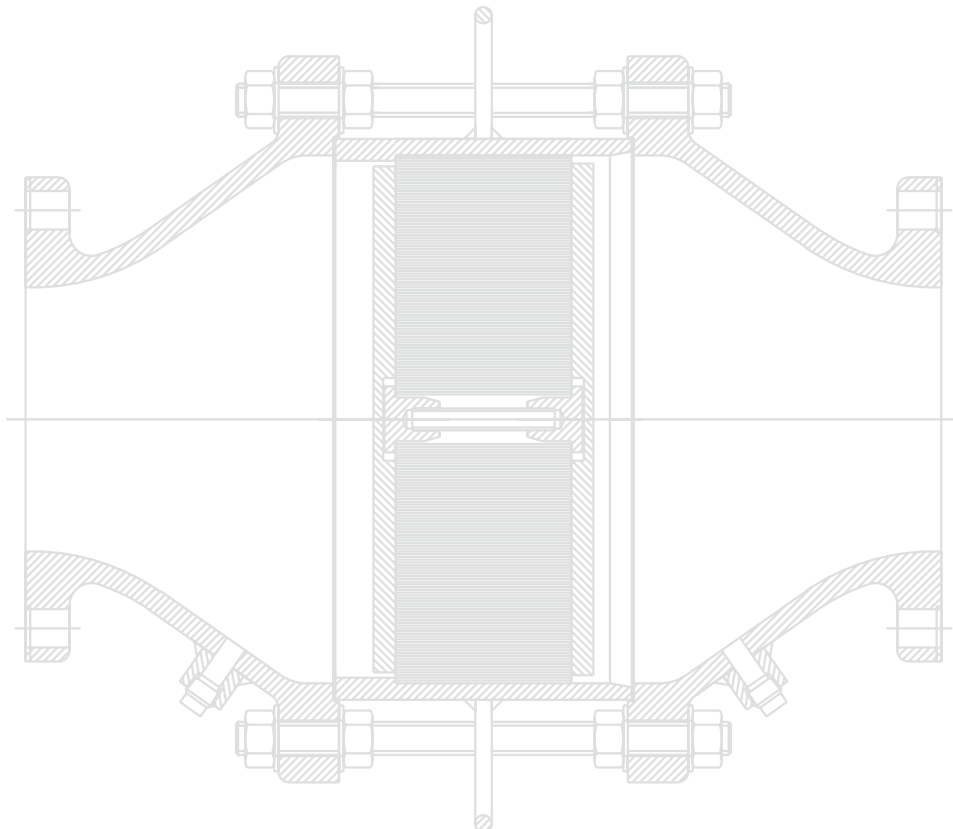
Below is an explanation of the differences between End-of-Line and In-Line Flame Arrester products.

### ISO 16852 section 3.21 End-of-Line Flame Arrester

*Flame arrester that is fitted with one pipe connection only*

### ISO 16852 section 3.22 In-Line Flame Arrester

*Flame arrester that is fitted with two pipe connections, one on each side of the flame arrester*



# ATEX Flame Arrester Application Questionnaire

Below is an example of the information required in order for us to help you choose the appropriate flame arrester model for your application. The illustration shows how to use the charts and graphs on the following pages to locate that information. Find the number icon on this page and its corresponding number on page 5.

<b>PROCESS</b>	Gas Group (choose one): <b>1</b>			
	<b>NEC</b> <input type="checkbox"/> METHANE <input type="checkbox"/> D <input type="checkbox"/> C	<b>IEC</b> <input checked="" type="checkbox"/> IIA1 <input type="checkbox"/> IIA		
	Operational Pressure <b>2</b>	<u>1.05 bara</u>		
	Operational Temperature <b>3</b>	<u>22° C</u>		
	Maximum Pressure Drop <b>4</b>	<u>8 mbar</u>		
	Required Flow <b>5</b>	<u>300 Nm<sup>3</sup>/H Air</u>		
<b>INSTALLATION</b>	Run-Up Length (L)	<u>1.5 m</u>		
	Flange Size (D)	<u>80 mm</u>		
	Run-Up Length Ratio (L/D) <b>6</b>	$\frac{1500 \text{ mm}}{80 \text{ mm}} = 18.75$		
	Orientation (choose one): <b>7</b>	<input checked="" type="checkbox"/> Vertical <input type="checkbox"/> Horizontal		
	Mounting (choose one): <b>8</b>	<input checked="" type="checkbox"/> In-Line <input type="checkbox"/> End-of-Line		
Refer to ISO 16852, Section 7.4 Limits for use, for more information on the application limits of flame arresters.				

## Definitions:

- Run-Up Length (L): pipe length on the unprotected side of the flame arrester (see diagram - tested with straight pipe)
- Run-Up Length Ratio (L/D): run-up length divided by pipe diameter

A blank downloadable version of this ATEX Flame Arrester Application Questionnaire is available for your use at [grothcorp.com](http://grothcorp.com).

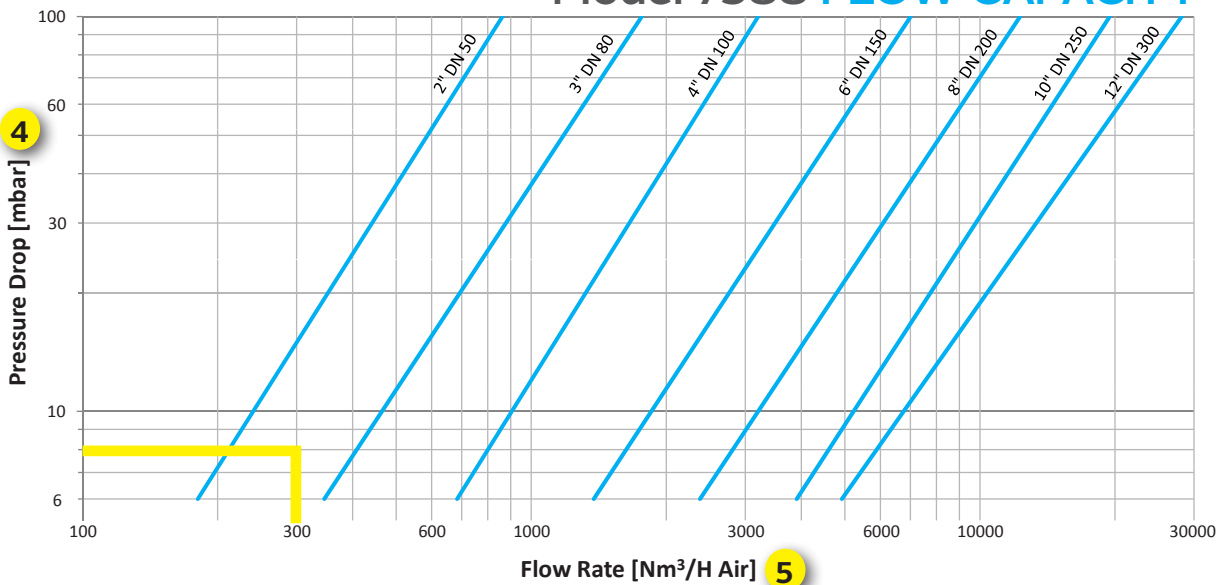
# How to Use the Charts & Graphs on the Following Pages

## Model 7588 (In-Line//Vertical) SPECIFICATIONS

Nominal Size	A Width	B Height	* Maximum Operational Pressure	* Maximum Run Up (L/D)	* Gas Group	Approx. Ship. Wt. (Aluminum Body)	Approx. Ship. Wt. (Carbon or SS Body)	Operational Temperature Range	* Burn Time $t_{BT}$
	in (mm)	in (mm)	psia (bara)			Lbs (kg)	Lbs (kg)	°F (°C)	minutes
2" DN 50	8-3/4" (222)	14" (356)	15.7 (1.08)	50	IIA1	18 (8)	40 (18)	-4 to 140 (-20 to 60)	5
3" DN 80	9-1/2" (241)	16" (406)	15.7 (1.08)	20	IIA1	27 (12)	60 (27)	-4 to 140 (-20 to 60)	5
4" DN 100	11-1/2" (292)	18-1/4" (464)	15.7 (1.08)	10	IIA1	42 (19)	91 (41)	-4 to 140 (-20 to 60)	5
6" DN 150	16-1/2" (419)	21" (533)	15.7 (1.08)	10	IIA1	92 (42)	184 (83)	-4 to 140 (-20 to 60)	5
8" DN 200	21" (533)	25" (635)	15.7 (1.08)	10	IIA1	146 (66)	309 (140)	-4 to 140 (-20 to 60)	5
10" DN 250	24-3/4" (629)	30" (762)	15.7 (1.08)	10	IIA1	237 (108)	498 (226)	-4 to 140 (-20 to 60)	5
12" DN 300	28-5/8" (727)	32-1/2" (826)	15.7 (1.08)	10	IIA1	306 (139)	694 (314)	-4 to 140 (-20 to 60)	5

\* Testing parameters based on ISO 16852

## Model 7588 FLOW CAPACITY



### Application Analysis

- > Model 7588 specifications satisfy requirements: 1, 2, 3, 6, 7, and 8
- > The pressure drop and flow requirements are checked on the Flow Capacity graph and confirm the 80mm size will satisfy the requirements





# Model 7588

## IEC IIA1



### FLAME ARRESTER

#### PRODUCT TYPE

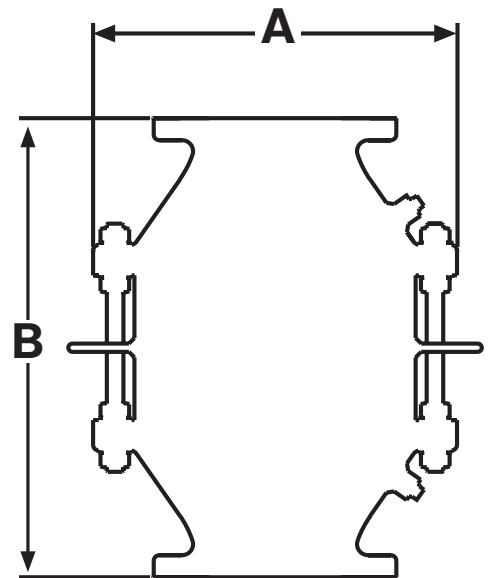
#### IN-LINE VERTICAL DEFLAGRATION ARRESTERS

#### INDUSTRIES

Oil & Gas  
Chemical  
Liquid Storage  
Food & Beverage  
Wastewater

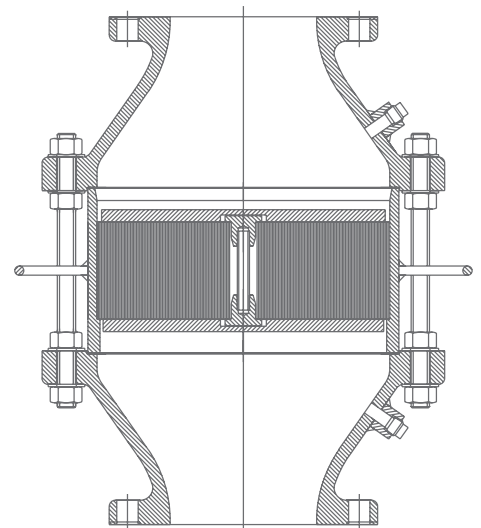
#### FEATURES & BENEFITS

- Flame arrester element geometry maximizes flame quenching capability while minimizing pressure drop
- Proven spiral-wound, crimped ribbon, flame element provides reliable flame protection
- Modular design allows easy and cost-effective flame bank maintenance
- Drains and instrument ports available upon request
- Thermocouple is required for ATEX
- Exterior painting or coating available
- DIN or ASME/ANSI drilling available



#### TECHNICAL DETAILS

- Sizes 2" through 12"
- Housing standard material: carbon steel (WCB/CS), stainless steel (CF8M/316), aluminum (356/6061)
- Flame element standard material: 316L stainless steel
- Other materials available upon request
- Good for IEC gas group IIA1 (MESG  $\geq$  1.14 mm)
- Certified to ATEX Directive 94/9/EC in compliance with EN ISO 16852:2010 Certificate #: **IBExU12ATEX2018 X**

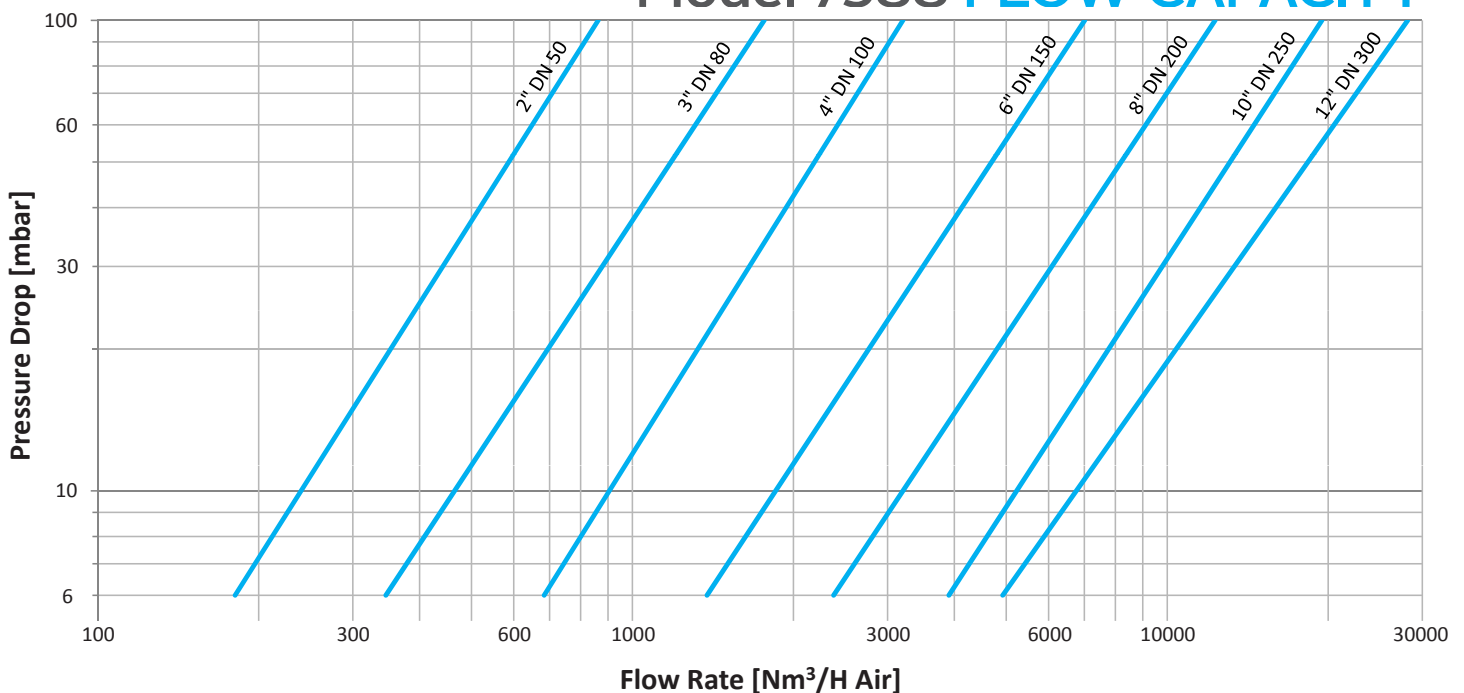


## Model 7588 (In-Line//Vertical) SPECIFICATIONS

Nominal Size	A Width	B Height	* Maximum Operational Pressure	* Maximum Run Up (L/D)	* Gas Group	Approx. Ship. Wt. (Aluminum Body)	Approx. Ship. Wt. (Carbon or SS Body)	Operational Temperature Range	* Burn Time $t_{BT}$
	in (mm)	in (mm)	psia (bara)			Lbs (kg)	Lbs (kg)	°F (°C)	minutes
2" DN 50	8-3/4" (222)	14" (356)	15.7 (1.08)	50	IIA1	18 (8)	40 (18)	-4 to 140 (-20 to 60)	5
3" DN 80	9-1/2" (241)	16" (406)	15.7 (1.08)	20	IIA1	27 (12)	60 (27)	-4 to 140 (-20 to 60)	5
4" DN 100	11-1/2" (292)	18-1/4" (464)	15.7 (1.08)	10	IIA1	42 (19)	91 (41)	-4 to 140 (-20 to 60)	5
6" DN 150	16-1/2" (419)	21" (533)	15.7 (1.08)	10	IIA1	92 (42)	184 (83)	-4 to 140 (-20 to 60)	5
8" DN 200	21" (533)	25" (635)	15.7 (1.08)	10	IIA1	146 (66)	309 (140)	-4 to 140 (-20 to 60)	5
10" DN 250	24-3/4" (629)	30" (762)	15.7 (1.08)	10	IIA1	237 (108)	498 (226)	-4 to 140 (-20 to 60)	5
12" DN 300	28-5/8" (727)	32-1/2" (826)	15.7 (1.08)	10	IIA1	306 (139)	694 (314)	-4 to 140 (-20 to 60)	5

\* Testing parameters based on ISO 16852

## Model 7588 FLOW CAPACITY







# Model 7598

## IEC IIA1



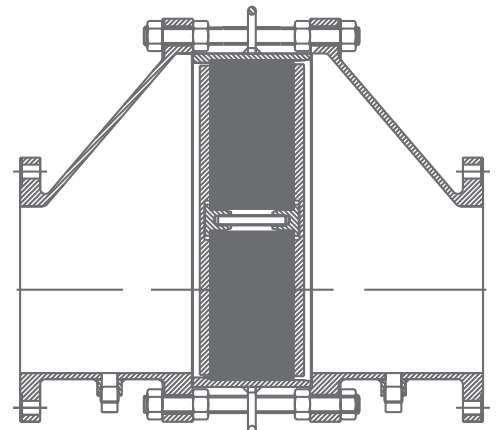
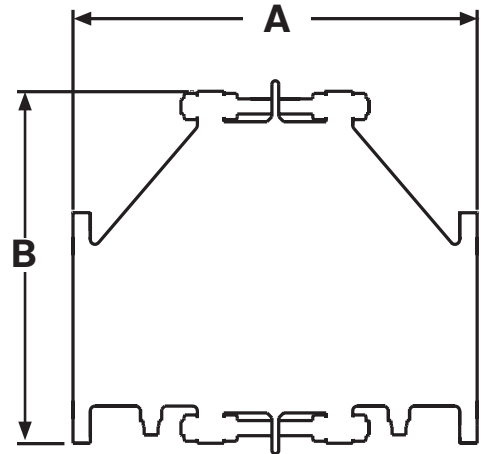
### FLAME ARRESTER

#### IN-LINE HORIZONTAL DEFLAGRATION ARRESTERS

Oil & Gas  
 Chemical  
 Liquid Storage  
 Food & Beverage  
 Wastewater

- Flame arrester element geometry maximizes flame quenching capability while minimizing pressure drop
- Proven spiral-wound, crimped ribbon, flame element provides reliable flame protection
- Modular design allows easy and cost-effective flame bank maintenance
- Drains and instrument ports available upon request
- Thermocouple is required for ATEX
- Exterior painting or coating available
- DIN or ASME/ANSI drilling available
- Eccentric design allows for horizontal installation by preventing liquid accumulation

- Sizes 2" through 12"
- Housing standard material: carbon steel (WCB/CS), stainless steel (CF8M/316), aluminum (356/6061)
- Flame element standard material: 316L stainless steel
- Other materials available upon request
- Good for IEC gas group IIA1 (MESG  $\geq$  1.14 mm)
- Certified to ATEX Directive 94/9/EC in compliance with EN ISO 16852:2010 Certificate #: **IBExU12ATEX2017 X**



#### PRODUCT TYPE

#### INDUSTRIES

#### FEATURES & BENEFITS

#### TECHNICAL DETAILS

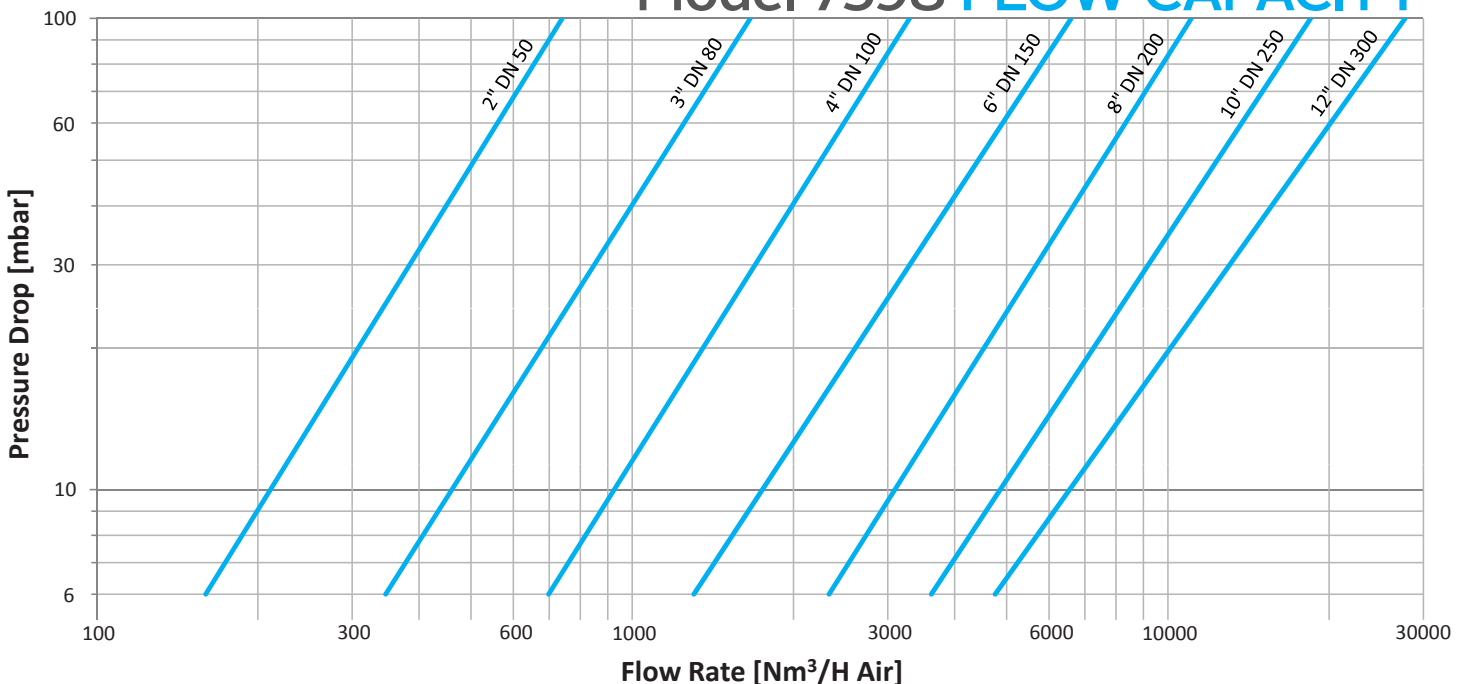


## Model 7598 (In-Line//Horizontal) SPECIFICATIONS

Nominal Size	A Width	B Height	* Maximum Operational Pressure	* Maximum Run Up (L/D)	* Gas Group	Approx. Ship. Wt. (Aluminum Body)	Approx. Ship. Wt. (Carbon or SS Body)	Operational Temperature Range	* Burn Time $t_{BT}$
	in (mm)	in (mm)	psia (bara)			Lbs (kg)	Lbs (kg)	°F (°C)	minutes
2" DN 50	13-3/4" (349)	9-1/2" (241)	15.7 (1.08)	50	IIA1	31 (14)	69 (31)	-4 to 140 (-20 to 60)	5
3" DN 80	15-3/4" (400)	11" (279)	15.7 (1.08)	20	IIA1	40 (18)	85 (38)	-4 to 140 (-20 to 60)	5
4" DN 100	18" (457)	12-1/2" (318)	15.7 (1.08)	10	IIA1	53 (24)	112 (51)	-4 to 140 (-20 to 60)	5
6" DN 150	21" (533)	16-1/2" (419)	15.7 (1.08)	10	IIA1	111 (50)	216 (98)	-4 to 140 (-20 to 60)	5
8" DN 200	25" (635)	20-1/2" (521)	15.7 (1.08)	10	IIA1	213 (97)	413 (187)	-4 to 140 (-20 to 60)	5
10" DN 250	30" (762)	24-1/2" (622)	15.7 (1.08)	10	IIA1	306 (139)	622 (282)	-4 to 140 (-20 to 60)	5
12" DN 300	32-1/2" (826)	28-1/2" (724)	15.7 (1.08)	10	IIA1	378 (171)	693 (314)	-4 to 140 (-20 to 60)	5

\* Testing parameters based on ISO 16852

## Model 7598 FLOW CAPACITY





# Model 7688

## IEC IIA



### FLAME ARRESTER

#### PRODUCT TYPE

#### IN-LINE VERTICAL DEFLAGRATION ARRESTERS

#### INDUSTRIES

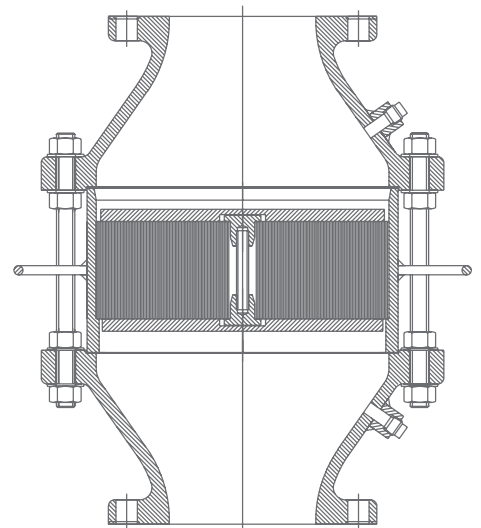
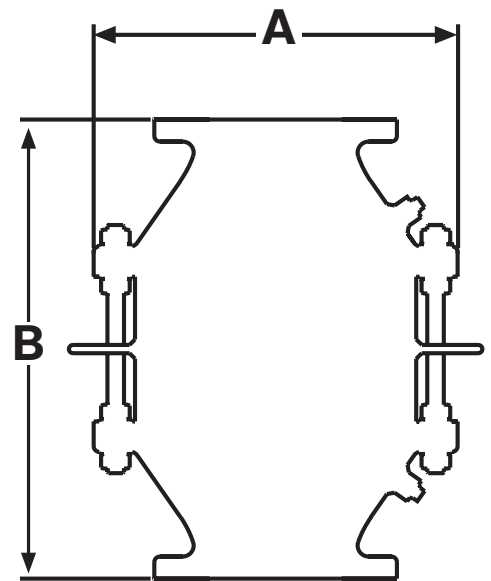
Oil & Gas  
 Chemical  
 Liquid Storage  
 Food & Beverage  
 Wastewater

#### FEATURES & BENEFITS

- Flame arrester element geometry maximizes flame quenching capability while minimizing pressure drop
- Proven spiral-wound, crimped ribbon, flame element provides reliable flame protection
- Modular design allows easy and cost-effective flame bank maintenance
- Drains and instrument ports available upon request
- Thermocouple is required for ATEX
- Exterior painting or coating available
- DIN or ASME/ANSI drilling available

#### TECHNICAL DETAILS

- Sizes 2" through 12"
- Housing standard material: carbon steel (WCB/CS), stainless steel (CF8M/316), aluminum (356/6061)
- Flame element standard material: 316L stainless steel
- Other materials available upon request
- Good for IEC gas group IIA (MESG > 0.90 mm)
- Certified to ATEX Directive 94/9/EC in compliance with EN ISO 16852:2010  
 Certificate #: **IBExU12ATEX2016 X**

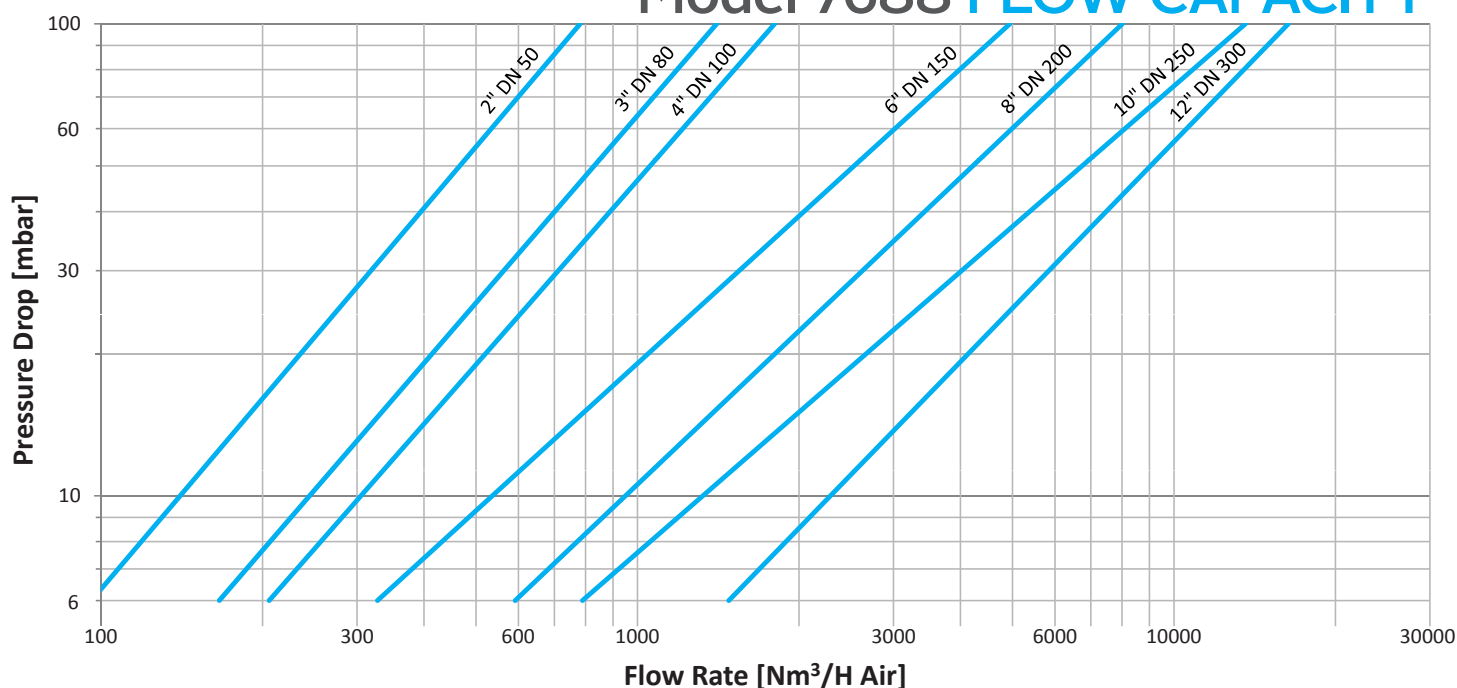


## Model 7688 (In-Line//Vertical) SPECIFICATIONS

Nominal Size	A Width	B Height	* Maximum Operational Pressure	* Maximum Run Up (L/D)	* Gas Group	Approx. Ship. Wt. (Aluminum Body)	Approx. Ship. Wt. (Carbon or SS Body)	Operational Temperature Range	* Burn Time $t_{BT}$
	in (mm)	in (mm)	psia (bara)			Lbs (kg)	Lbs (kg)	°F (°C)	minutes
2" DN 50	8-3/4" (222)	14" (356)	23.2 (1.60)	50	IIA	19 (9)	41 (18)	-4 to 140 (-20 to 60)	10
3" DN 80	9-1/2" (241)	16" (406)	23.2 (1.60)	50	IIA	28 (13)	61 (28)	-4 to 140 (-20 to 60)	10
4" DN 100	11-1/2" (292)	18-1/4" (464)	17.4 (1.20)	50	IIA	44 (20)	93 (42)	-4 to 140 (-20 to 60)	10
6" DN 150	16-1/2" (419)	21" (533)	17.4 (1.20)	50	IIA	98 (44)	189 (86)	-4 to 140 (-20 to 60)	10
8" DN 200	21" (533)	25" (635)	17.4 (1.20)	50	IIA	155 (70)	317 (144)	-4 to 140 (-20 to 60)	2
10" DN 250	24-3/4" (629)	30" (762)	17.4 (1.20)	50	IIA	250 (113)	512 (232)	-4 to 140 (-20 to 60)	2
12" DN 300	28-5/8" (727)	32-1/2" (826)	17.4 (1.20)	50	IIA	324 (147)	712 (323)	-4 to 140 (-20 to 60)	2

\* Testing parameters based on ISO 16852

## Model 7688 FLOW CAPACITY







# Model 7698

## IEC IIA



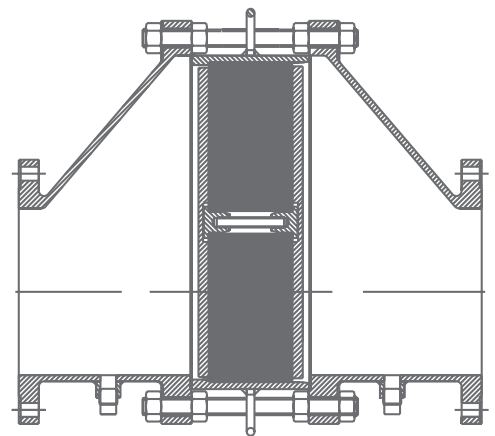
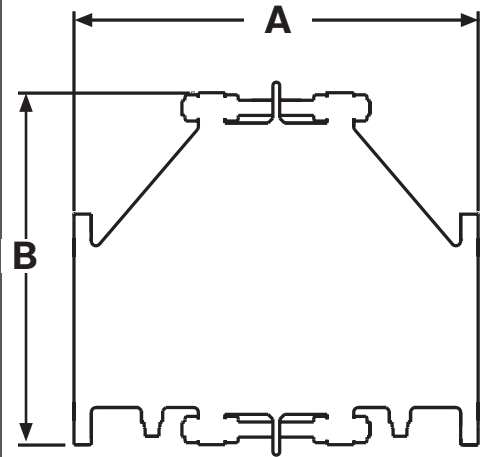
### FLAME ARRESTER

#### IN-LINE HORIZONTAL DEFLAGRATION ARRESTERS

Oil & Gas  
 Chemical  
 Liquid Storage  
 Food & Beverage  
 Wastewater

- Flame arrester element geometry maximizes flame quenching capability while minimizing pressure drop
- Proven spiral-wound, crimped ribbon, flame element provides reliable flame protection
- Modular design allows easy and cost-effective flame bank maintenance
- Drains and instrument ports available upon request
- Thermocouple is required for ATEX
- Exterior painting or coating available
- DIN or ASME/ANSI drilling available
- Eccentric design allows for horizontal installation by preventing liquid accumulation

- Sizes 2" through 12"
- Housing standard material: carbon steel (WCB/CS), stainless steel (CF8M/316), aluminum (356/6061)
- Flame element standard material: 316L stainless steel
- Other materials available upon request
- Good for IEC gas group IIA (MESG > 0.90 mm)
- Certified to ATEX Directive 94/9/EC in compliance with EN ISO 16852:2010 Certificate #: **IBExU12ATEX2015 X**



#### PRODUCT TYPE

#### INDUSTRIES

#### FEATURES & BENEFITS

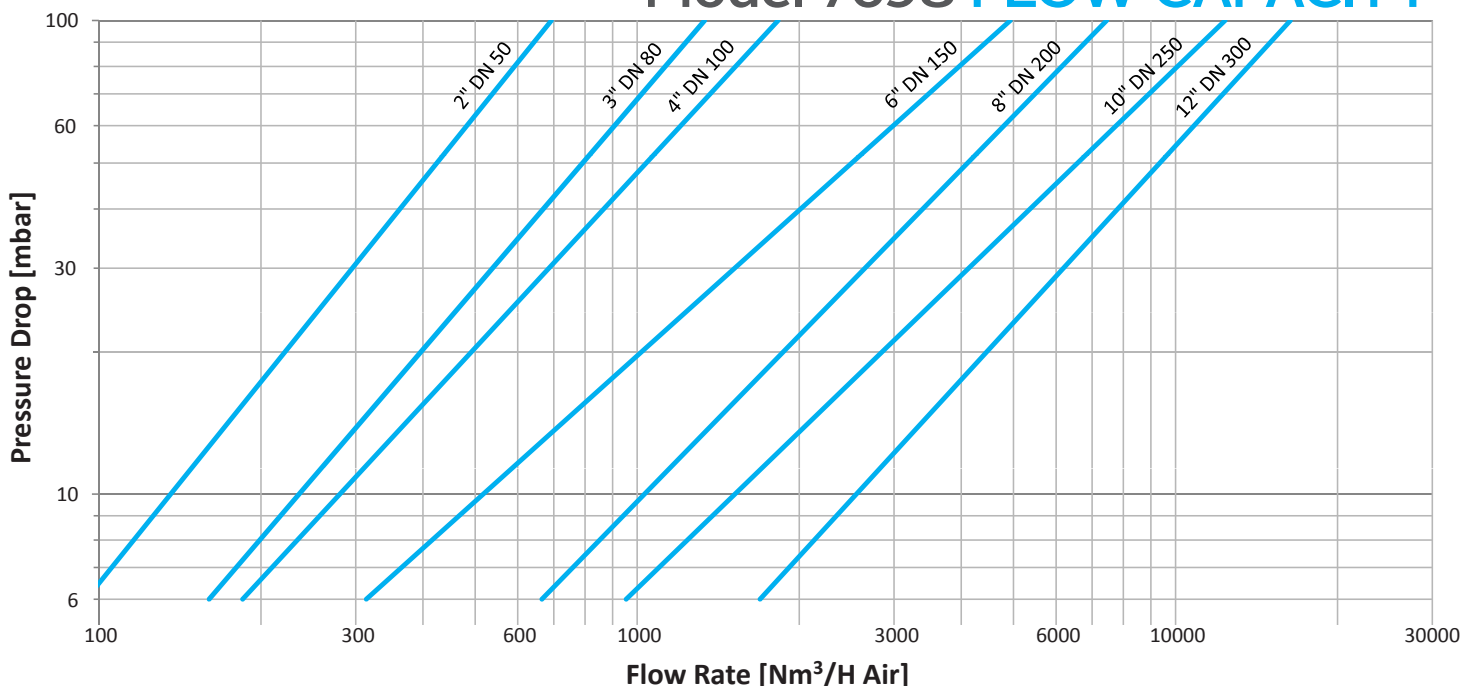
#### TECHNICAL DETAILS

## Model 7698 (In-Line//Horizontal) SPECIFICATIONS

Nominal Size	A Width	B Height	* Maximum Operational Pressure	* Maximum Run Up (L/D)	* Gas Group	Approx. Ship. Wt. (Aluminum Body)	Approx. Ship. Wt. (Carbon or SS Body)	Operational Temperature Range	* Burn Time $t_{BT}$
	in (mm)	in (mm)	psia (bara)			Lbs (kg)	Lbs (kg)	°F (°C)	minutes
2" DN 50	13-3/4" (349)	9-1/2" (241)	23.2 (1.60)	50	IIA	32 (14)	70 (32)	-4 to 140 (-20 to 60)	10
3" DN 80	15-3/4" (400)	11" (279)	23.2 (1.60)	50	IIA	41 (19)	86 (39)	-4 to 140 (-20 to 60)	10
4" DN 100	18" (457)	12-1/2" (318)	17.4 (1.20)	20	IIA	55 (25)	114 (52)	-4 to 140 (-20 to 60)	10
6" DN 150	21" (533)	16-1/2" (419)	17.4 (1.20)	20	IIA	116 (53)	222 (101)	-4 to 140 (-20 to 60)	10
8" DN 200	25" (635)	20-1/2" (521)	17.4 (1.20)	20	IIA	221 (100)	422 (191)	-4 to 140 (-20 to 60)	2
10" DN 250	30" (762)	24-1/2" (622)	17.4 (1.20)	20	IIA	320 (145)	635 (288)	-4 to 140 (-20 to 60)	2
12" DN 300	32-1/2" (826)	28-1/2" (724)	17.4 (1.20)	20	IIA	397 (180)	836 (379)	-4 to 140 (-20 to 60)	2

\* Testing parameters based on ISO 16852

## Model 7698 FLOW CAPACITY





# Model 7678

## IEC IIA



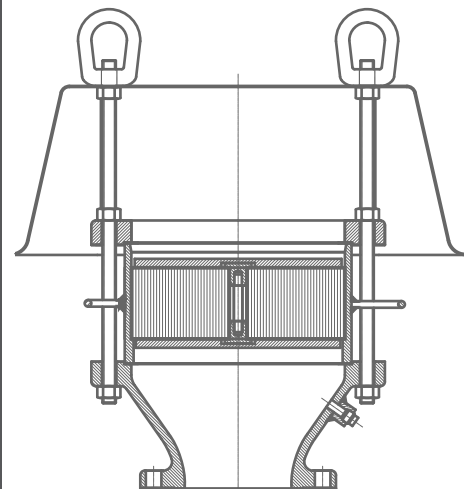
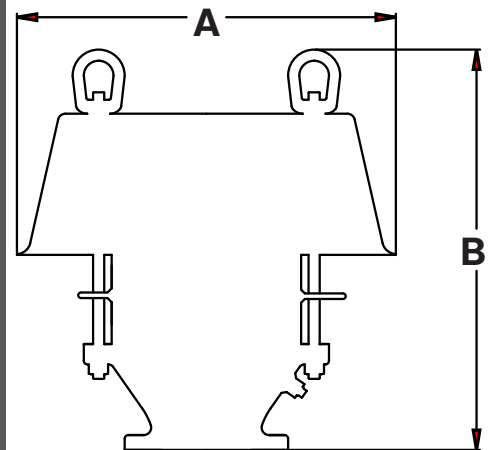
### FLAME ARRESTER

#### END-OF-LINE VERTICAL DEFLAGRATION ARRESTERS

Oil & Gas  
 Chemical  
 Liquid Storage  
 Food & Beverage  
 Wastewater

- Flame arrester element geometry maximizes flame quenching capability while minimizing pressure drop
- Proven spiral-wound, crimped ribbon, flame element provides reliable flame protection
- Modular design allows easy and cost-effective flame bank maintenance
- Drains and instrument ports available upon request
- Thermocouple is required for ATEX
- Exterior painting or coating available
- DIN or ASME/ANSI drilling available

- Sizes 2" through 12"
- Housing standard material: carbon steel (WCB/CS), stainless steel (CF8M/316), aluminum (356/6061)
- Flame element standard material: 316L stainless steel
- Other materials available upon request
- Good for IEC gas group IIA (MESG > 0.90 mm)
- Certified to ATEX Directive 94/9/EC in compliance with EN ISO 16852:2010  
 Certificate #: **IBExU12ATEX2019 X**



#### PRODUCT TYPE

#### INDUSTRIES

#### FEATURES & BENEFITS

#### TECHNICAL DETAILS

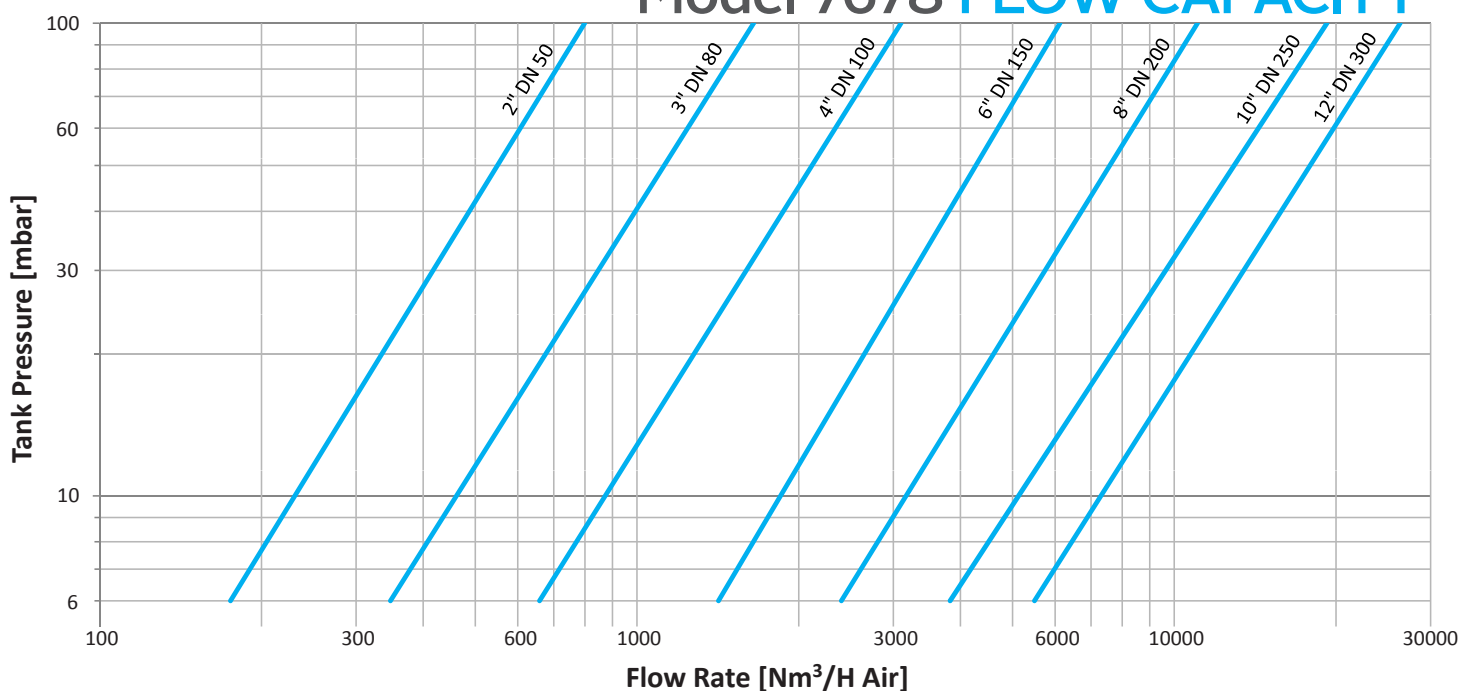


## Model 7678 (End-Of-Line//Vertical) SPECIFICATIONS

Nominal Size	A	B	* Gas Group	Approx. Ship. Wt. (Aluminum Body)	Approx. Ship. Wt. (Carbon or SS Body)	Operational Temperature Range	* Burn Time $t_{BT}$
	Width	Height		Lbs (kg)	Lbs (kg)		
	in (mm)	in (mm)				°F (°C)	minutes
2" DN 50	13 (5.90)	18 (8.16)	IIA	22 (10)	37 (17)	-4 to 140 (-20 to 60)	2
3" DN 80	15 (6.80)	16 (7.3)	IIA	35 (16)	65 (29)	-4 to 140 (-20 to 60)	2
4" DN 100	19.5 (8.85)	21.1 (9.6)	IIA	49 (22)	90 (41)	-4 to 140 (-20 to 60)	2
6" DN 150	23.5 (10.7)	24.2 (11)	IIA	105 (48)	168 (76)	-4 to 140 (-20 to 60)	2
8" DN 200	28.3 (12.8)	32 (14.5)	IIA	160 (73)	280 (127)	-4 to 140 (-20 to 60)	2
10" DN 250	30 (13.6)	34 (15.4)	IIA	244 (111)	417 (189)	-4 to 140 (-20 to 60)	2
12" DN 300	40 (18.1)	38 (17.2)	IIA	314 (142)	567 (257)	-4 to 140 (-20 to 60)	2

\* Testing parameters based on ISO 16852

## Model 7678 FLOW CAPACITY





# Assentech Limited

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S M A R T   R E L I E F . . . S A F E   S O L U T I O N S <sup>SM</sup>



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