

Flame Arrester Technical Data

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PROTECTOSEAL®
Safety Without Compromise

An introduction to The Protectoseal Company

Protectoseal is the international leader in flame and explosion prevention systems for use in some of the world's most challenging industrial environments.

This manual details the specifications of our Flame Arresters, as well as the Speciality Valves and Fittings that go with them. All data on tolerable temperatures, appropriate explosion gas groups, standards compliance, dimensions, and housing materials can be found here.

Please contact us for more information on any of the products outlined in this manual.

The Protectoseal Company

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End-of-Line Deflagration Flame Arresters



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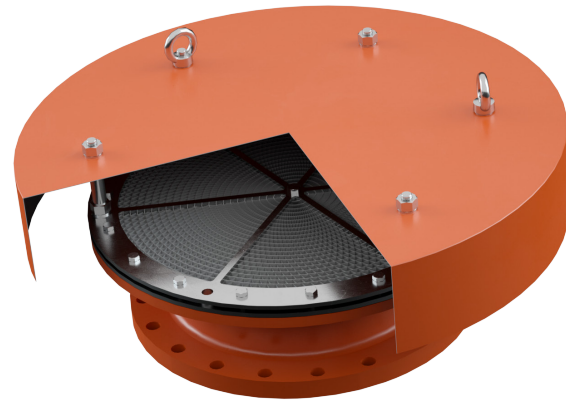
EVA Series

End-of-Line Deflagration Flame Arresters



With Replaceable Element for NEC Explosion Gas Group D

The Protectoseal EVA Series offers the highest level of protection against atmospheric deflagration when the ignition source is external to the piping system.



Principle of Operation

The EVA Series features Protectoseal's E-Flow® (Enhanced Crimped Ribbon Technology), which guarantees the best flow vs pressure drop characteristics in the industry.

During deflagration, heat dissipation cools the combustion products at the element surface, preventing the fire from spreading past the EVA and into the protected vent line.

Operating Conditions

The Protectoseal EVA Series is ATEX-approved for a maximum operating temperature of **+140°F** or **60°C**.

Explosion Gas Groups

The Protectoseal EVA Series is certified for gases in **NEC Group D** and **IEC Group IIA**.

Standards Compliance

Protectoseal's EVA Series of End-of-line Deflagration Flame Arresters has been type-tested to **EN ISO 16852** and approved according to **ATEX Directive 2014/34/EU**.

Each EVA that passes through Protectoseal's facilities undergoes a rigorous inspection and verification of its safety and performance features.

Protectoseal Expertise

Protectoseal offers industry leading technical leadership with its renowned flame and explosion protection for the most diverse and challenging of industrial applications. By utilizing a range of testing facilities, advanced algorithms and computational fluid dynamics (CFD), our research and development team is constantly looking for new ways to challenge the status quo, thus providing best-in-class innovation.

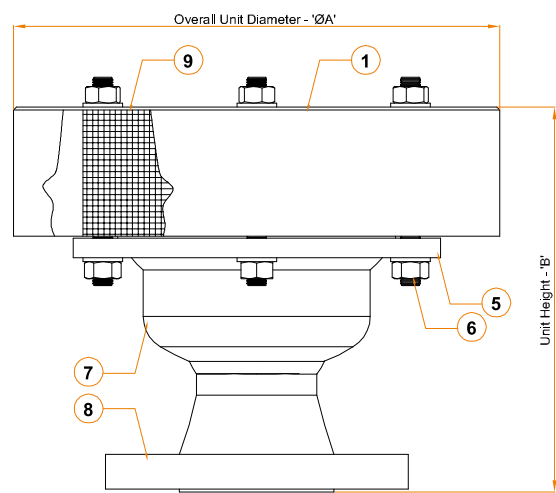
With over 95 years in the business, we have an established sales and service team to support clients with their initial specifications and throughout the product's life cycle.

Features and Benefits

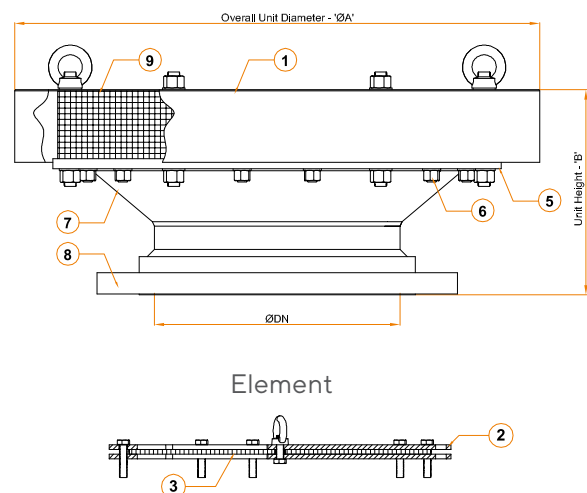
- Outstanding flow capacity with minimal pressure drop
 - Elements feature replaceable, easy-to-clean crimped-ribbon
 - Unique element design is less prone to fouling and clogging
 - Sizes and materials to accommodate a vast array of applications
- Options for end connections include flanged or threaded
 - Lightweight for installation convenience
 - Bird screen installed as standard

General Arrangements:

EVA Flame Arresters: 0.5 - 1.5 inches



EVA Flame Arresters: 2 - 24 inches



Ref	Description	Carbon Steel Models	Stainless Steel Models
1	Weatherhood	316 Stainless Steel	316 Stainless Steel
2	Element Support Ring	Carbon Steel	316 Stainless Steel
3	Element Core	316 Stainless Steel	316 Stainless Steel
4*	Gasket	PTFE	PTFE
5	Element Flange	Carbon Steel	316 Stainless Steel
6	Fasteners	316 Stainless Steel	316 Stainless Steel
7	Reducer	Carbon Steel	316 Stainless Steel
8	Fixing Flange	Carbon Steel	316 Stainless Steel
9	Bird Screen	316 Stainless Steel	316 Stainless Steel

* Not shown in General Arrangement drawings above.

Selection Key

Positions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Example	E	V	A	-	0	5	0	A	T	-	1	0	0	T	S	-	N	1	.	0	0	-	N	/	0	0	0	W	0
Table	a	b	c	-	d		e	f	-	g			h	j	-	k	l				-	m	/	n	o	p	q	r	
Model No.	E	V	A	-				A		-	X	X	X		S	-	N	1	.	0	0	-	N	/	0		0	W	0

Standard Options		
a	Flame Arrester Type	End-of-Line Deflagration
b	Model Variation	Standard
c	Gas Group	D, IIA
d	Size	Refer to Table 1
e	Pipe Connection Type	ANSI 150lb. RF
f	Flame Arrester Housing Material	Refer to Table 2
g	Element Size	XXX <i>(Place Holder - your local Protectoseal representative will fill out this section for you)</i>
h	Element Housing Material	Refer to Table 3
j	Element Core Material	316/316L Stainless Steel
k	Temp Rating	Standard (140°F, 60°C)
l	Operating Pressure Rating	Atmospheric Pressure (14.7 psia, 1.01 bara)
m	Short-Time Burn Capability	Factory Reserved <i>(Refer to ESA Series for short-time burn Flame Arresters)</i>

Non-Standard Options		
n	Body Modification	Standard - No Alterations
o	Finish/Paint	Refer to Table 4
p	Gasket/Seal	PTFE
q	Fasteners	316 Stainless Steel
r	Ports/Taps	Standard - No Ports/Taps

Table 1: Sizes

d	Size	ØA	B	f	h	Approx Weight
015	0.5", 15mm	9.65", 245mm	7.17", 182mm	C or S	D or T	15lbs, 6.6kg
020	0.75", 20mm	9.65", 245mm	7.36", 187mm	C or S	D or T	15lbs, 6.8kg
025	1", 25mm	9.65", 245mm	7.44", 189mm	D or T	D or T	16lbs, 7.1kg
040	1.5", 40mm	9.65", 245mm	7.68", 195mm	D or T	D or T	17lbs, 7.8kg
050	2", 50mm	9.65", 245mm	7.28", 185mm	D or T	D or T	18lbs, 8.2kg
080	3", 80mm	11.81", 300mm	8.66", 220mm	D or T	D or T	32lbs, 14.5kg
100	4", 100mm	14.17", 360mm	13.50", 343mm	D or T	D or T	42lbs, 19.1kg
150	6", 150mm	19.69", 500mm	12.40", 315mm	D or T	D or T	86lbs, 39.2kg
200	8", 200mm	19.69", 500mm	12.40", 315mm	C or S	D or T	97lbs, 44.0kg
250	10", 250mm	23.62", 600mm	18.98", 482mm	C or S	C or S	169lbs, 76.6kg
300	12", 300mm	25.98", 660mm	20.39", 518mm	C or S	C or S	219lbs, 99.4kg
350	14", 350mm	31.10", 790mm	13.07", 332mm	C or S	C or S	240lbs, 108.5kg
400	16", 400mm	33.07", 870mm	13.39", 340mm	C or S	C or S	284lbs, 128.6kg
450	18", 450mm	37.40", 950mm	14.96", 380mm	C or S	C or S	331lbs, 150.0kg
500	20", 500mm	40.55", 1030mm	15.47", 393mm	C or S	C or S	382lbs, 173.60kg
600	24", 600mm	47.24", 1200mm	17.76", 451mm	C or S	C or S	483lbs, 219.0kg

Note: Larger element configurations are available for higher flow applications.

Table 2: Flame Arrester Housing Materials

f	Flame Arrester Housing (Body) Material	o
C	Fabricated Carbon Steel	O
D	Cast Carbon Steel	O
S	Fabricated 316/316L Stainless Steel	F
T	Cast 316 Stainless Steel	F

Table 3: Element Housing Materials

h	Element Housing (Body) Material
C	Fabricated Carbon Steel
D	Cast Carbon Steel
S	Fabricated 316/316L Stainless Steel
T	Cast 316 Stainless Steel

Table 4: Finish/Paint

°	Finish/Paint
O	Primer & Top Coat Orange
F	Natural, Unpainted

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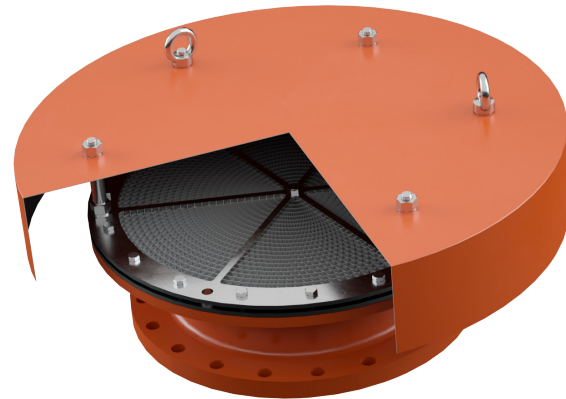
EVB Series

End-of-Line Deflagration Flame Arresters



With Replaceable Element for NEC Explosion Gas Group C

The Protectoseal EVB Series offers the highest level of protection against atmospheric deflagration when the ignition source is external to the piping system.



Principle of Operation

The EVB Series features Protectoseal's E-Flow® (Enhanced Crimped Ribbon Technology), which guarantees the best flow vs pressure drop characteristics in the industry.

During deflagration, heat dissipation cools the combustion products at the element surface, preventing the fire from spreading past the EVB and into the protected vent line.

Operating Conditions

The Protectoseal EVB Series is ATEX-approved for a maximum operating temperature of **+140°F** or **60°C**.

Explosion Gas Groups

The Protectoseal EVB Series is certified for gases in **NEC Group C** and **IEC Explosion Group IIB3**.

Standards Compliance

Protectoseal's EVB Series of End-of-line Deflagration Flame Arresters has been type-tested to **EN ISO 16852** and approved according to **ATEX Directive 2014/34/EU**.

Each EVB that passes through Protectoseal's facilities undergoes a rigorous inspection and verification of its safety and performance features.

Protectoseal Expertise

Protectoseal offers industry leading technical leadership with its renowned flame and explosion protection for the most diverse and challenging of industrial applications. By utilizing a range of testing facilities, advanced algorithms and computational fluid dynamics (CFD), our research and development team is constantly looking for new ways to challenge the status quo, thus providing best-in-class innovation.

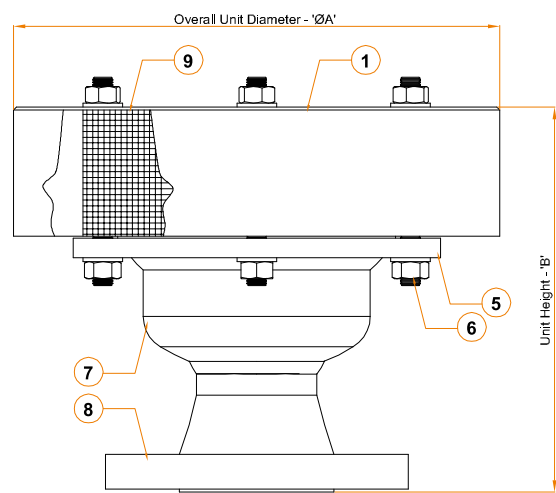
With over 95 years in the business, we have an established sales and service team to support clients with their initial specifications and throughout the product's life cycle.

Features and Benefits

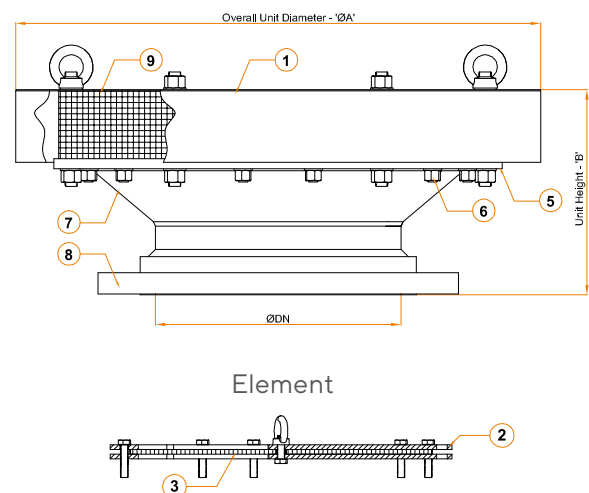
- Outstanding flow capacity with minimal pressure drop
 - Elements feature replaceable, easy-to-clean crimped-ribbon
 - Unique element design is less prone to fouling and clogging
 - Sizes and materials to accommodate a vast array of applications
- Options for end connections include flanged or threaded
 - Lightweight for installation convenience
 - Bird screen installed as standard

General Arrangements:

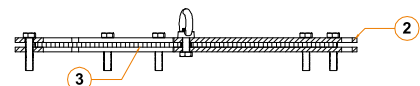
EVB Flame Arresters: 0.5 - 1.5 inches



EVB Flame Arresters: 2 - 24 inches



Element



Ref	Description	Carbon Steel Models	Stainless Steel Models
1	Weatherhood	316 Stainless Steel	316 Stainless Steel
2	Element Support Ring	Carbon Steel	316 Stainless Steel
3	Element Core	316 Stainless Steel	316 Stainless Steel
4*	Gasket	PTFE	PTFE
5	Element Flange	Carbon Steel	316 Stainless Steel
6	Fasteners	316 Stainless Steel	316 Stainless Steel
7	Reducer	Carbon Steel	316 Stainless Steel
8	Fixing Flange	Carbon Steel	316 Stainless Steel
9	Bird Screen	316 Stainless Steel	316 Stainless Steel

* Not shown in General Arrangement drawings above.

Selection Key

Positions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Example	E	V	B	-	0	5	0	A	T	-	1	0	0	T	S	-	N	1	.	0	0	-	N	/	0	0	0	W	0
Table	a	b	c	-	d		e	f	-	g			h	j	-	k	l				-	m	/	n	o	p	q	r	
Model No.	E	V	B	-				A		-	X	X	X		S	-	N	1	.	0	0	-	N	/	0		0	W	0

Standard Options		
a	Flame Arrester Type	End-of-Line Deflagration
b	Model Variation	Standard
c	Gas Group	C, IIB3
d	Size	Refer to Table 1
e	Pipe Connection Type	ANSI 150lb. RF
f	Flame Arrester Housing Material	Refer to Table 2
g	Element Size	XXX (Place Holder - your local Protectoseal representative will fill out this section for you)
h	Element Housing Material	Refer to Table 3
j	Element Core Material	316/316L Stainless Steel
k	Temp Rating	Standard (140°F, 60°C)
l	Operating Pressure Rating	Atmospheric Pressure (14.7 psia, 1.01 bara)
m	Short-Time Burn Capability	Factory Reserved (Refer to ESA Series for short-time burn Flame Arresters)

Non-Standard Options		
n	Body Modification	Standard - No Alterations
o	Finish/Paint	Refer to Table 4
p	Gasket/Seal	PTFE
q	Fasteners	316SS
r	Ports/Taps	Standard - No Ports/Taps

Table 1: Sizes

d	Size	ØA	B	f	h	Approx Weight
015	0.5", 15mm	9.65", 245mm	7.56", 192mm	C or S	D or T	15lbs, 7.0kg
020	0.75", 20mm	9.65", 245mm	7.76", 197mm	C or S	D or T	16lbs, 7.2kg
025	1", 25mm	9.65", 245mm	7.83", 199mm	D or T	D or T	17lbs, 7.5kg
040	1.5", 40mm	9.65", 245mm	8.07", 205mm	D or T	D or T	18lbs, 8.2kg
050	2", 50mm	9.65", 245mm	7.68", 195mm	D or T	D or T	19lbs, 8.6kg
080	3", 80mm	11.81", 300mm	9.06", 230mm	D or T	D or T	34lbs, 15.2kg
100	4", 100mm	14.17", 360mm	9.69", 246mm	D or T	D or T	45lbs, 20.2kg
150	6", 150mm	19.69", 500mm	12.80", 325mm	D or T	D or T	91lbs, 41.2kg
200	8", 200mm	19.69", 500mm	12.80", 325mm	C or S	D or T	101lbs, 46.0kg
250	10", 250mm	23.62", 600mm	19.37", 492mm	C or S	C or S	175lbs, 79.6kg
300	12", 300mm	25.98", 660mm	20.79", 528mm	C or S	C or S	228lbs, 103.2kg
350	14", 350mm	31.10", 790mm	13.46", 342mm	C or S	C or S	241lbs, 113.9kg
400	16", 400mm	33.07", 870mm	13.78", 350mm	C or S	C or S	297lbs, 134.9kg
450	18", 450mm	37.40", 950mm	15.35", 390mm	C or S	C or S	347lbs, 157.3kg
500	20", 500mm	40.55", 1030mm	15.87", 403mm	C or S	C or S	401lbs, 182.0kg
600	24", 600mm	47.24", 1200mm	18.15", 461mm	C or S	C or S	507lbs, 230.0kg

Note: Larger element configurations are available for higher flow applications.

Table 2: Flame Arrester Housing Materials

f	Flame Arrester Housing (Body) Material	o
C	Fabricated Carbon Steel	O
D	Cast Carbon Steel	O
S	Fabricated 316/316L Stainless Steel	F
T	Cast Stainless Steel	F

Table 3: Element Housing Materials

h	Element Housing (Body) Material
C	Fabricated Carbon Steel
D	Cast Carbon Steel
S	Fabricated 316/316L Stainless Steel
T	Cast Stainless Steel

Table 4: Finish/Paint

°	Finish/Paint
O	Primer & Top Coat Orange
F	Natural, Unpainted

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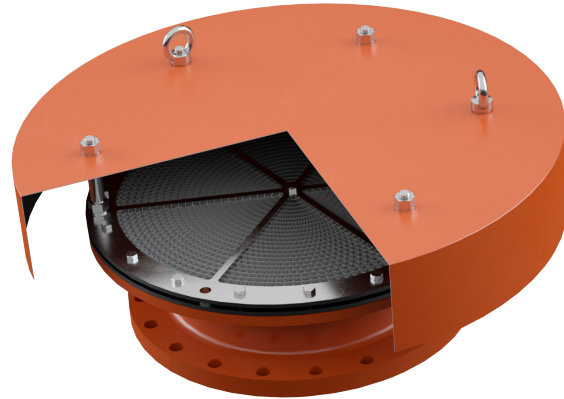
EHB Series

End-of-Line Deflagration Flame Arresters



With Replaceable Element for High Temperature Applications in NEC Explosion Gas Group C

The Protectoseal EHB Series offer the highest level of protection against atmospheric deflagration when the ignition source is external to the piping system.



Principle of Operation

The EHB Series features Protectoseal's E-Flow® (Enhanced Crimped Ribbon Technology), which guarantees the best flow vs pressure drop characteristics in the industry.

During deflagration, heat dissipation cools the combustion products at the element surface, preventing the fire from spreading past the EHB and into the protected vent line.

Operating Conditions

The Protectoseal EHB Series is ATEX-approved for a maximum operating temperature of **302°F** or **150°C**.

Explosion Gas Groups

The Protectoseal EHB Series is certified for gases in **NEC Group C** and **IEC Group IIB3**.

Standards Compliance

Protectoseal's EHB Series of End-of-line Deflagration Flame Arresters has been type-tested to **EN ISO 16852** and approved according to **ATEX Directive 2014/34/EU**.

Each EHB that passes through Protectoseal's facilities undergoes a rigorous inspection and verification of its safety and performance features.

Protectoseal Expertise

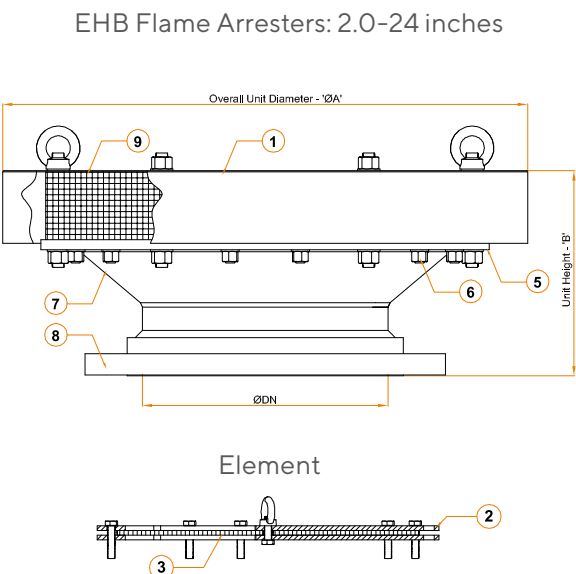
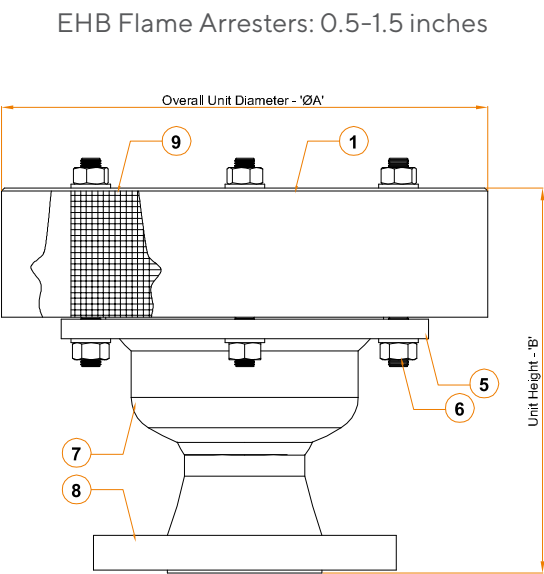
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With over 95 years in the business, we have an established sales and service team to support clients with their initial specifications and throughout the product's life cycle.

Features and Benefits

- Extended maximum operating temperature limit
 - Outstanding flow capacity with minimal pressure drop
 - Elements feature replaceable, easy-to-clean crimped-ribbon
 - Sizes and materials to accommodate a vast array of applications
- Unique element design is less prone to fouling and clogging
 - Options for end connections include flanged or threaded
 - Lightweight for installation convenience
 - Bird screen fitted as standard

General Arrangements:



Ref	Description	Carbon Steel Models	Stainless Steel Models
1	Weatherhood	316 Stainless Steel	316 Stainless Steel
2	Element Support Ring	Carbon Steel	316 Stainless Steel
3	Element Core	316 Stainless Steel	316 Stainless Steel
4*	Gasket	PTFE	PTFE
5	Element Flange	Carbon Steel	316 Stainless Steel
6	Fasteners	Carbon Steel BZP	316 Stainless Steel
7	Reducer	Carbon Steel	316 Stainless Steel
8	Fixing Flange	Carbon Steel	316 Stainless Steel
9	Bird Screen	316 Stainless Steel	316 Stainless Steel

* Not shown in General Arrangement drawings above.

Selection Key

Positions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Example	E	H	B	-	0	5	0	A	T	-	1	0	0	T	S	-	E	1	.	0	0	-	N	/	0	0	0	W	0
Table	a	b	c	-	d		e	f	-	g			h	j	-	k	l				-	m	/	n	o	p	q	r	
Model No.	E	H	B	-				A		-	X	X	X		S	-	E	1	.	0	0	-	N	/	0		0	W	0

Standard Options		
a	Flame Arrester Type	End-of-Line Deflagration
b	Model Variation	Standard
c	Gas Group	C, IIB3
d	Size	Refer to Table 1
e	Pipe Connection Type	ANSI 150lb. RF
f	Flame Arrester Housing Material	Refer to Table 2
g	Element Size	XXX <i>(Place Holder - your local Protectoseal representative will fill out this section for you)</i>
h	Element Housing Material	Refer to Table 3
j	Element Core Material	316/316L Stainless Steel
k	Temp Rating	Max Elevated Temperature (302°F, 150°C)
l	Operating Pressure Rating	Atmospheric Pressure (14.7 psia, 1.01 bara)
m	Short-Time Burn Capability	Factory Reserved <i>(Refer to ESA Series for short-time burn Flame Arresters)</i>

Non-Standard Options		
n	Body Modification	Standard - No Alterations
o	Finish/Paint	Refer to Table 4
p	Gasket/Seal	PTFE
q	Fasteners	316 Stainless Steel
r	Ports/Taps	Standard - No Ports/Taps

Table 1: Sizes

d	Size	ØA	B	f	h	Approx Weight
015	1/2", 0.5", 15mm	9.65", 245mm	7.56", 192mm	C or S	D or T	15lbs, 7.0kg
020	3/4", 0.75", 20mm	9.65", 245mm	7.76", 197mm	C or S	D or T	16lbs, 7.2kg
025	1", 25mm	9.65", 245mm	7.83", 199mm	D or T	D or T	17lbs, 7.5kg
040	1.5", 40mm	9.65", 245mm	8.07", 205mm	D or T	D or T	18lbs, 8.2kg
050	2", 50mm	9.65", 245mm	7.68", 195mm	D or T	D or T	19lbs, 8.6kg
080	3", 80mm	11.81", 300mm	9.06", 230mm	D or T	D or T	34lbs, 15.2kg
100	4", 100mm	14.17", 360mm	9.69", 246mm	D or T	D or T	45lbs, 20.2kg
150	6", 150mm	19.69", 500mm	12.80", 325mm	D or T	D or T	91lbs, 41.2kg
200	8", 200mm	19.69", 500mm	12.80", 325mm	C or S	D or T	101lbs, 46.0kg
250	10", 250mm	23.62", 600mm	19.37", 492mm	C or S	C or S	175lbs, 79.6kg
300	12", 300mm	25.98", 660mm	20.79", 528mm	C or S	C or S	228lbs, 103.2kg
350	14", 350mm	31.10", 790mm	13.46", 342mm	C or S	C or S	251lbs, 113.9kg
400	16", 400mm	33.07", 870mm	13.78", 350mm	C or S	C or S	297lbs, 134.9kg
450	18", 450mm	37.40", 950mm	15.35", 390mm	C or S	C or S	347lbs, 157.3kg
500	20", 500mm	40.55", 1030mm	15.87", 403mm	C or S	C or S	401lbs, 182.0kg
600	24", 600mm	47.24", 1200mm	18.15", 461mm	C or S	C or S	501lbs, 230.0kg

Note: Some arresters are available with differently sized elements for enhanced flow capabilities.

Table 2: Flame Arrester Housing Materials

f	Flame Arrester Housing (Body) Material	o
C	Fabricated Carbon Steel	O
D	Cast Carbon Steel	O
S	Fabricated 316/316L Stainless Steel	F
T	Cast 316 Stainless Steel	F

Table 3: Element Housing Materials

h	Element Housing (Body) Material
C	Fabricated Carbon Steel
D	Cast Carbon Steel
S	Fabricated 316/316L Stainless Steel
T	Cast 316 Stainless Steel

Table 4: Finish/Paint

°	Finish/Paint
O	Primer & Top Coat Orange
F	Natural, Unpainted

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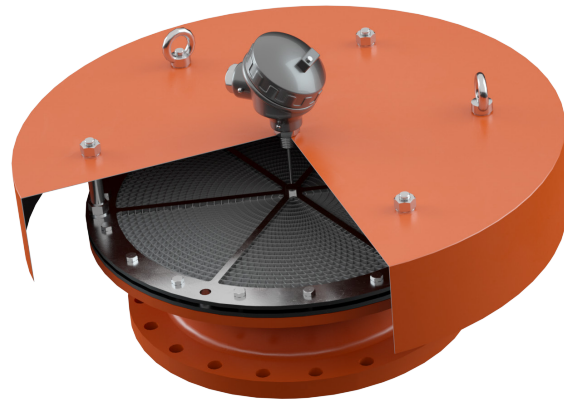
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End-of-Line Deflagration Flame Arresters



With Replaceable Element for High Temperature and Short-Time Burn Applications in NEC Explosion Gas Group D

The Protectoseal ESA Series offers the highest level of protection against atmospheric deflagration when the ignition source is external to the piping system.



Principle of Operation

In the event that a flame stabilizes on the element of the ESA Series, a control/monitoring system detects the sudden increase in temperature and implements secondary protection measures (inerting and shut-off valves).

During deflagration, heat dissipation cools the combustion products at the element surface, preventing the fire from spreading past the ESA and into the protected vent line.

Operating Conditions

The Protectoseal ESA Series is ATEX-approved for a maximum operating temperature of **302°F** or **150°C**.

Explosion Gas Groups

The Protectoseal ESA Series is certified for gases in **NEC Group D** and **IEC Group IIA**.

Standards Compliance

Protectoseal's ESA Series of End-of-line Deflagration Flame Arresters has been type-tested to **EN ISO 16852** and approved according to **ATEX Directive 2014/34/EU**.

Each ESA that passes through Protectoseal's facilities undergoes a rigorous inspection and verification of its safety and performance features.

Protectoseal Expertise

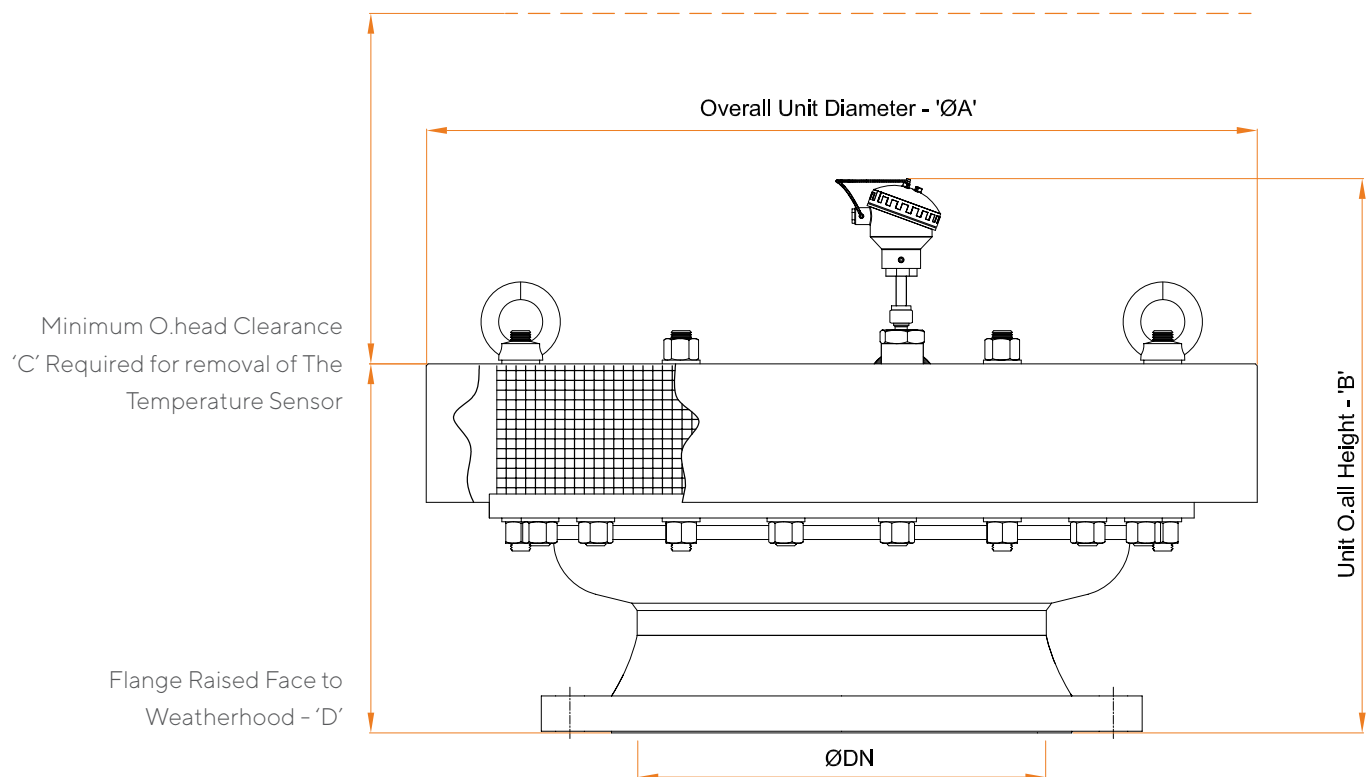
Protectoseal offers industry leading technical leadership with its renowned flame and explosion protection for the most diverse and challenging of industrial applications. By utilizing a range of testing facilities, advanced algorithms and computational fluid dynamics (CFD), our research and development team is constantly looking for new ways to challenge the status quo, thus providing best-in-class innovation.

With over 95 years in the business, we have an established sales and service team to support clients with their initial specifications and throughout the product's life cycle.

Features and Benefits

- Short-time burn rating for early detection of a stabilized flame
- Extended maximum operating temperature limit
- Outstanding flow capacity with minimal pressure drop
- Sizes and materials to accommodate a vast array of applications
- Elements feature replaceable, easy-to-clean crimped-ribbon
- Unique element design is less prone to fouling and clogging
- Options for end connections include flanged or threaded
- Lightweight for installation convenience

General Arrangements:



Selection Key

Positions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Example	E	S	A	-	0	5	0	A	T	-	1	0	0	T	S	-	E	1	.	0	0	-	S	/	0	0	0	W	0
Table	a	b	c	-	d		e	f	-	g			h	j	-	k	l			-	m	/	n	o	p	q	r		
Model No.	E	S	A	-				A		-	X	X	X		S	-	E	1	.	0	0	-	S	/	0		0	W	0

Standard Options		
a	Flame Arrester Type	End-of-Line Deflagration
b	Model Variation	Short-Time Burn
c	Gas Group	D, IIA
d	Size	Refer to Table 1
e	Pipe Connection Type	ANSI 150lb. RF
f	Flame Arrester Housing Material	Refer to Table 2
g	Element Size	XXX (Place Holder - your local Protectoseal representative will fill out this section for you)
h	Element Housing Material	Refer to Table 3
j	Element Core Material	316/316L Stainless Steel
k	Temp Rating	Max Elevated Temperature (302°F, 150°C)
l	Operating Pressure Rating	Atmospheric Pressure (14.7 psia, 1.01 bara)
m	Endurance Burn Capability	Factory Reserved (Refer to EVA, EVB & EHB Series for endurance burn Flame Arresters)

Non-Standard Options		
n	Body Modification	Standard - No Alterations
o	Finish/Paint	Refer to Table 4
p	Gasket/Seal	PTFE
q	Fasteners	316 Stainless Steel
r	Ports/Taps	Standard - No Ports/Taps

Table 1: Sizes

d	Size	ØA	Max B	Min C	D	f	h
015	1/2", 0.5", 15mm	9.65", 245mm	15.35", 390mm	10.63", 270mm	7.56", 192mm	C or S	D or T
020	3/4", 0.75", 20mm	9.65", 245mm	15.55", 395mm	10.63", 270mm	7.76", 197mm	C or S	D or T
025	1", 25mm	9.65", 245mm	15.55", 395mm	10.63", 270mm	7.83", 199mm	D or T	D or T
040	1.5", 40mm	9.65", 245mm	15.75", 400mm	10.63", 270mm	8.07", 205mm	D or T	D or T
050	2", 50mm	9.65", 245mm	15.35", 390mm	10.63", 270mm	7.68", 195mm	D or T	D or T
080	3", 80mm	11.81", 300mm	16.73", 425mm	10.63", 270mm	9.06", 230mm	D or T	D or T
100	4", 100mm	14.17", 360mm	17.32", 440mm	10.63", 270mm	9.69", 246mm	D or T	D or T
150	6", 150mm	19.69", 500mm	20.47", 520mm	11.42", 290mm	12.80", 325mm	D or T	D or T
200	8", 200mm	19.69", 500mm	20.47", 520mm	11.42", 290mm	12.80", 325mm	C or S	D or T
250	10", 250mm	23.62", 600mm	27.17", 690mm	11.42", 290mm	19.37", 492mm	C or S	C or S
300	12", 300mm	25.98", 660mm	28.54", 725mm	11.42", 290mm	20.79", 528mm	C or S	C or S
350	14", 350mm	31.10", 790mm	21.26", 540mm	11.42", 290mm	13.46", 342mm	C or S	C or S
400	16", 400mm	33.07", 870mm	21.46", 545mm	11.42", 290mm	13.78", 350mm	C or S	C or S
450	18", 450mm	37.40", 950mm	23.03", 585mm	13.39", 340mm	15.35", 390mm	C or S	C or S
500	20", 500mm	40.55", 1030mm	23.62", 600mm	13.39", 340mm	15.87", 403mm	C or S	C or S
600	24", 600mm	47.24", 1200mm	25.79", 655mm	13.39", 340mm	18.15", 461mm	C or S	C or S

Note: Some arresters are available with differently sized elements for enhanced flow capabilities.

Table 2: Flame Arrester Housing Materials

f	Flame Arrester Housing (Body) Material	o
C	Fabricated Carbon Steel	O
D	Cast Carbon Steel	O
S	Fabricated 316/316L Stainless Steel	F
T	Cast 316 Stainless Steel	F

Table 3: Element Housing Materials

h	Element Housing (Body) Material
C	Fabricated Carbon Steel
D	Cast Carbon Steel
S	Fabricated 316/316L Stainless Steel
T	Cast 316 Stainless Steel

Table 4: Finish/Paint

°	Finish/Paint
O	Primer & Top Coat Orange
F	Natural, Unpainted

Customer Support

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225 Foster Avenue Bensenville, IL 60106 U.S.A



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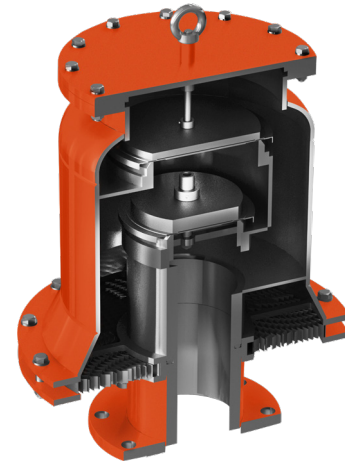
FAB Valve® Series

End-of-Line Deflagration Flame Arresters



Deflagration Flame Arrester for NEC Explosion Gas Group C & D with integral Pressure and Vacuum Conservation Vent

The Protectoseal FAB Valve® Series integrates a RE-Flow® Deflagration Flame Arrester with a Pressure and Vacuum Conservation Vent.



Principle of Operation

The FAB Valve® Series serves as both a Pressure and Vacuum Conservation Vent and a Deflagration Flame Arrester.

Pressure Conservation Vent: prevents vapor loss up to the set pressure and provides dependable protection against excessive pressure.

Vacuum Conservation Vent: prevents air ingress up to the set vacuum pressure and provides reliable protection against excessive vacuums.

Flame Arrester: provides additional protection against atmospheric deflagrations.

Operating Conditions

The Protectoseal FAB Valve® Series is ATEX-approved for a maximum operating temperature of **140°F** or **60°C**. For high-temperature models, the maximum operating temperature is increased to **302°F** or **150°C**.

Explosion Gas Groups

The Protectoseal FAB Valve® Series is certified for gases in **NEC Groups C and D** and **IEC Groups IIA1, IIA, IIB1, IIB2 and IIB3**.

Standards Compliance

Protectoseal's FAB Valve® has been type-tested to **EN ISO 16852** and approved according to **ATEX Directive 2014/34/EU**.

Each FAB Valve® that passes through Protectoseal's facilities undergoes a rigorous inspection and verification of its safety and performance features.

Protectoseal Expertise

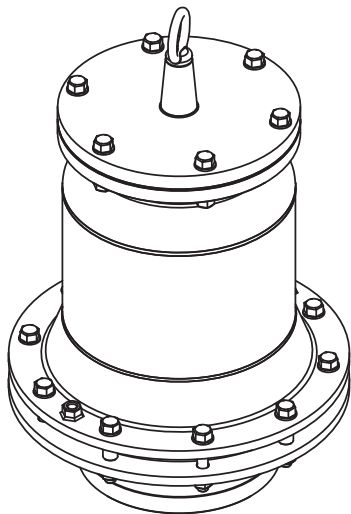
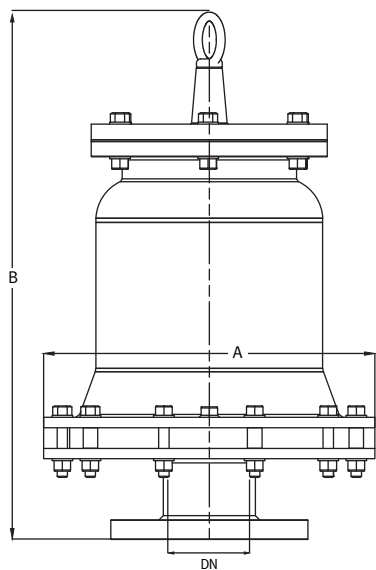
Protectoseal offers industry leading technical leadership with its renowned flame and explosion protection for the most diverse and challenging of industrial applications. By utilizing a range of testing facilities, advanced algorithms and computational fluid dynamics (CFD), our research and development team is constantly looking for new ways to challenge the status quo, thus providing best-in-class innovation.

With over 95 years in the business, we have an established sales and service team to support clients with their initial specifications and throughout the product's life cycle.

Features and Benefits

- Outstanding flow capacity with minimal pressure drop
 - Compact, light, and simple to install
 - Elements feature replaceable, easy-to-clean crimped-ribbon
 - Financial savings due to reduced product loss
 - Low-leakage
- Easy in-situ inspection and maintenance
 - Self-draining element prevents fouling and clogging
 - Optimized pallet design and sealing to reduce chattering
 - Innovative valve design offers complete weather protection
 - Meets API Std 2000 and ISO 28300 regulations

General Arrangements:



Specifications:

- Pressure:**
- 0.05 psi to 0.51 psi
3.5 mbarg to 35 mbarg
- Vacuum:**
- 0.03 psi to -0.29 psi
-2.0 mbarg to -20 mbarg
- Sealing:** FEP, PTFE
- Weight:** Lead, Stainless Steel
- Connection Size:** 2" to 12"

Selection Key

Positions	1	2	3	4	5	6	7	8	9
Example	F	A	B	-	0	5	0	A	S
Table	a	b	c	-	d			e	f
Model No.	F	A	B	-				A	

Options		
a	Flame Arrester Type	Flame Arrester Breather
b	Model Variation	-
c	Gas Group	C, D, IIA1, IIA, IIB1, IIB2, IIB3
d	Size	Refer to Table 1
e	Pipe Connection Type	ANSI 150lb. RF
f	Flame Arrester Housing Material	Refer to Table 2

Table 1: Sizes

d	Size	A	B	f
050	2", 50mm	12.60", 320mm	17.91", 455mm	D or T
080	3", 80mm	12.60", 320mm	17.91", 455mm	D or T
100	4", 100mm	15.94", 405mm	22.05", 560mm	C or S
150	6", 150mm	17.80", 452mm	29.72", 755mm	C or S
200	8", 200mm	21.85", 555mm	34.45", 875mm	C or S
250	10", 200mm	24.02", 610mm	36.42", 925mm	C or S
300	12", 300mm	25.39", 645mm	37.80", 960mm	C or S

Table 2: Flame Arrester Housing Materials

f	Flame Arrester Housing (Body) Material
C	Fabricated Carbon Steel
D	Cast Carbon Steel
S	Fabricated 316/316L Stainless Steel
T	Cast 316 Stainless Steel

Customer Support

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AVC Series

End-of-Line Deflagration Flame Arresters



With Replaceable Element for NEC Explosion Gas Group B

The Protectoseal AVC Series offers the highest level of protection against atmospheric deflagration when the ignition source is external to the piping system.



Principle of Operation

The AVC Series employs a small-apertured element that allows gas or vapor to pass safely. The flame arrester element cools the combustion products down. The AVC uses a specialized technology called sintered gauze to do this and consequently extinguish a flame.

Operating Conditions

The Protectoseal AVC Series is ATEX-approved for a maximum operating temperature of **140°F** or **60°C**.

Explosion Gas Groups

The Protectoseal AVC Series is certified for gases in **NEC Group B** and **IEC Group IIC**. These are the most volatile gas groups, which necessitate a more robust element, such as those found in the AVC Series, to withstand the atmospheric explosion.

Standards Compliance

Protectoseal's AVC Series of End-of-line Deflagration Flame Arresters has been type-tested to **EN ISO 16852** and approved according to **ATEX Directive 2014/34/EU**.

Each AVC that passes through Protectoseal's facilities undergoes a rigorous inspection and verification of its safety and performance features.

Protectoseal Expertise

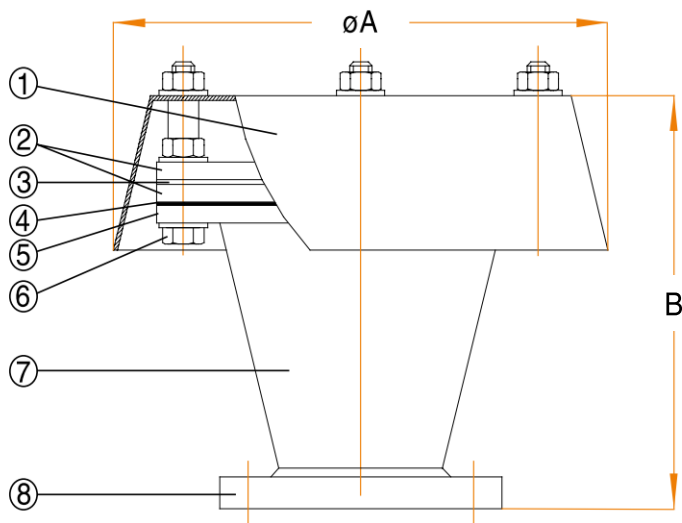
Protectoseal offers industry leading technical leadership with its renowned flame and explosion protection for the most diverse and challenging of industrial applications. By utilizing a range of testing facilities, advanced algorithms and computational fluid dynamics (CFD), our research and development team is constantly looking for new ways to challenge the status quo, thus providing best-in-class innovation.

With over 95 years in the business, we have an established sales and service team to support clients with their initial specifications and throughout the product's life cycle.

Features and Benefits

- Replaceable elements
 - Variants available for sour operating conditions
 - Available with an optional weatherhood
- Sizes and materials to accommodate a vast array of applications
 - Lightweight for installation convenience

General Arrangements:



Ref	Description	Carbon Steel Models	Low Temperature Carbon Steel Models	Stainless Steel Models	Hastelloy Models
1	Weatherhood	Stainless Steel or Mild Steel	Stainless Steel	Stainless Steel	Hastelloy
2	Element Housing	Carbon Steel	Low Temp Carbon Steel	Stainless Steel	Hastelloy
3	Element Core	Stainless Steel	Stainless Steel	Stainless Steel	Hastelloy
4	Gaskets	Klingsersil C4400	Klingsersil C4400	Klingsersil C4400	Klingsersil C4400
5	Body Ring	Carbon Steel	Low Temp Carbon Steel	Stainless Steel	Hastelloy
6	Fasteners	Carbon Steel	Stainless Steel	Stainless Steel	Hastelloy
7	Reducer	Carbon Steel	Low Temp Carbon Steel	Stainless Steel	Hastelloy
8	Fixing Flange	Carbon Steel	Low Temp Carbon Steel	Stainless Steel	Hastelloy

Selection Key

Positions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Example	A	V	C	-	0	5	0	A	T	-	1	0	0	T	S	-	N	1	.	0	0	-	N	/	0	0	0	0	0
Table	a	b	c	-	d		e	f	-	g			h	j	-	k	l				-	m	/	n	o	p	q	r	
Model No.	A	V	C	-				A		-	X	X	X		S	-	N	1	.	0	0	-	N	/	0		0	0	0

Standard Options		
a	Flame Arrester Type	End-of-Line Deflagration
b	Model Variation	Standard
c	Gas Group	B, IIC
d	Size	Refer to Table 1
e	Pipe Connection Type	ANSI 150lb. RF
f	Flame Arrester Housing Material	Refer to Table 2
g	Element Size	XXX <i>(Place Holder - your local Protectoseal representative will fill out this section for you)</i>
h	Element Housing Material	Refer to Table 3
j	Element Core Material	316/316L Stainless Steel
k	Temp Rating	Standard (140°F, 60°C)
l	Operating Pressure Rating	Atmospheric Pressure (14.7 psia, 1.01 bara)
m	Short-Time Burn Capability	Factory Reserved <i>(Refer to ESA Series for short-time burn Flame Arresters)</i>

Non-Standard Options		
n	Body Modification	Standard - No Alterations
o	Finish/Paint	Refer to Table 4
p	Gasket/Seal	PTFE
q	Fasteners	316 Stainless Steel
r	Ports/Taps	Standard - No Ports/Taps

Table 1: Sizes

d	Size	Ø Element	øA	B	f	h	Approx Weight
025	1", 25mm	2", 50mm	7.01", 178mm	5.31", 135mm	C or S	C or S	8lbs, 3.5kg
040	1.5", 40mm	3", 80mm	8.78", 223mm	6.22", 158mm	C or S	C or S	11lbs, 5.0kg
050	2", 50mm	4", 100mm	10.04", 255mm	6.97", 177mm	C or S	C or S	15lbs, 6.6kg
080	3", 80mm	6", 150mm	11.81", 300mm	8.86", 225mm	C or S	C or S	33lbs, 15kg
100	4", 100mm	8", 200mm	14.57", 370mm	10.28", 261mm	C or S	C or S	51lbs, 23kg
150	6", 150mm	8", 200mm	20.08", 510mm	13.35", 339mm	C or S	C or S	95lbs, 43kg
200	8", 200mm	12", 300mm	20.08", 510mm	13.43", 341mm	C or S	C or S	101lbs, 45.7kg
250	10", 250mm	16", 400mm	25.59", 650mm	22.95", 583mm	C or S	C or S	233lbs, 105.5kg
300	12", 300mm	18", 450mm	29.53", 750mm	22.91", 582mm	C or S	C or S	286lbs, 129.6kg
350	14", 350mm	20", 500mm	31.50", 800mm	28.50", 724mm	C or S	C or S	358lbs, 162.6kg
400	16", 400mm	24", 600mm	37.40", 950mm	30.31", 770mm	C or S	C or S	468lbs, 212.1kg

Table 2: Flame Arrester Housing Materials

f	Flame Arrester Housing (Body) Material	o
C	Fabricated Carbon Steel	O
S	Fabricated 316/316L Stainless Steel	F

Table 3: Element Housing Materials

h	Element Housing (Body) Material
C	Fabricated Carbon Steel
S	Fabricated 316/316L Stainless Steel

Table 4: Finish/Paint

°	Finish/Paint
O	Primer & Top Coat Orange
F	Natural, Unpainted

Customer Support

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Fax: 1.630.595.8059
225 Foster Avenue Bensenville, IL 60106 U.S.A



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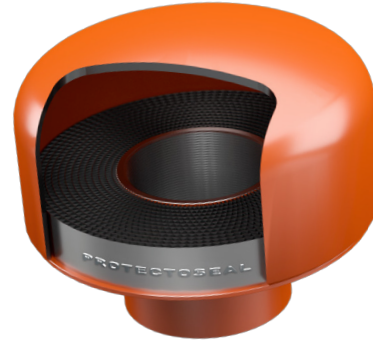
ERB Series

End-of-Line Deflagration Flame Arresters



Utilizing industry-leading RE-Flow® technology

The Protectoseal ERB Series prevents atmospheric deflagrations from entering a gas piping system, a vapor piping system, or a storage tank.



Principle of Operation

The ERB Series flame arresting elements feature Protectoseal's E-Flow® (Enhanced Crimped Ribbon Technology). The optimized channel dimensions of the element offer unmatched deflagration protection, while maximizing flow performance and minimizing maintenance.

During deflagration, heat dissipation cools the combustion products at the element surface, preventing the fire from spreading past the ERB Series and into the protected vent line.

The ERB Series permits downward venting (RE-Flow®) as well as self-draining of the arrester element. This guarantees minimal element clogging or plugging under normal operating conditions.

Operating Conditions

The Protectoseal ERB Series is ATEX-approved for operating temperatures between **140°F** or **60°C**.

Explosion Gas Groups

The Protectoseal ERB Series is certified for gases in **NEC Group C** and **IEC Group IIB3**.

Standards Compliance

Protectoseal's ERB Series of End-of-line Deflagration Flame Arresters has been type-tested to **EN ISO 16852** and approved according to **ATEX Directive 2014/34/EU**.

Each ERB that passes through Protectoseal's facilities undergoes a rigorous inspection and verification of its safety and performance features.

Protectoseal Expertise

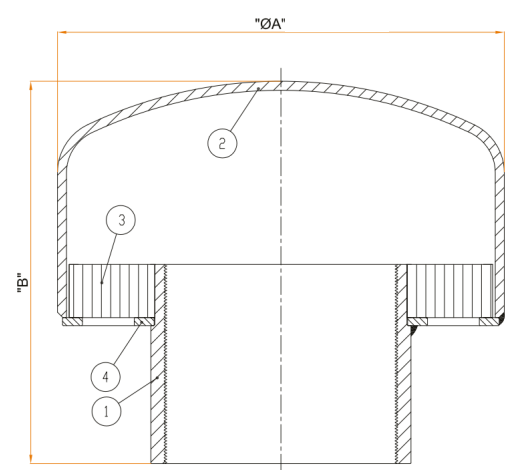
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With over 95 years in the business, we have an established sales and service team to support clients with their initial specifications and throughout the product's life cycle.

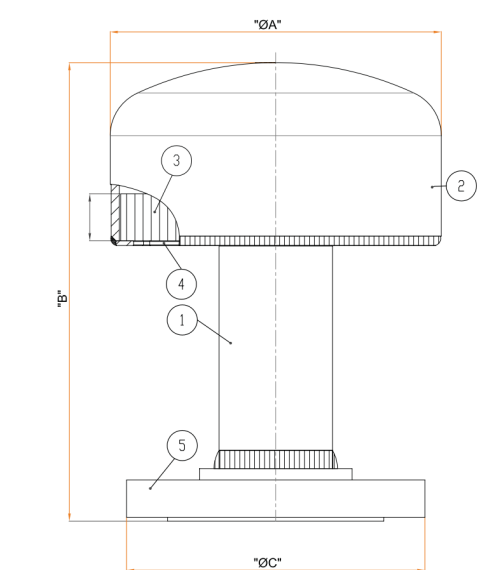
Features and Benefits

- Simple, compact, sturdy, and lightweight
 - Up to five times lighter than conventional flanged arresters
 - Self-draining element prevents the entry of foreign matter
 - Sizes and materials to accommodate a vast array of applications
- E-Flow® element maximizes flow performance
 - Options for end connections include flanged or threaded
 - Easy visual inspection of the element in situ

General Arrangements:



Ref	Description	Material	
1	Female Socket	Stainless Steel	
2	End Cap	Stainless Steel	
3	Crimped Ribbon Element	Stainless Steel	
4	Element Ring	Stainless Steel	
Dimensions			
d	ØA	B	Approx Weight
25	3.50", 89mm	3.23", 82mm	2lbs, 0.7kg
40	5.55", 141mm	4.21", 107mm	4lbs, 1.9kg
50	5.55", 141mm	4.57", 116mm	4lbs, 1.9kg
80	6.61", 168mm	5.67", 144mm	7lbs, 3.0kg



Ref	Description	Material		
1	Pipe	Stainless Steel		
2	End Cap	Stainless Steel		
3	Crimped Ribbon Element	Stainless Steel		
4	Element Ring	Stainless Steel		
5	Connection Flange	Stainless Steel		
Dimensions				
d	ØA	B	ØC	Approx Weight
25	3.50", 89mm	6.50", 165mm	4.53", 115mm	4lbs, 1.7kg
40	5.55", 141mm	7.68", 195mm	5.91", 150mm	8lbs, 3.5kg
50	5.55", 141mm	7.68", 195mm	6.50", 165mm	10lbs, 4.4kg
80	6.61", 168mm	8.46", 215mm	7.87", 200mm	16lbs, 7.4kg

Selection Key

Positions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Example	E	R	B	-	O	5	O	A	T	-	1	O	O	S	S	-	N	1	.	O	O	-	N	/	W	F	N	O	O
Table	a	b	c	-	d			e	f	-	g			h	j	-	k	l				-	m	/	n	o	p	q	r
Model No.	E	R	B	-					S	-	X	X	X	S	S	-	N	1	.	O	O	-	N	/	W	F	N	O	O

Standard Options		
a	Flame Arrester Type	End-of-Line Deflagration
b	Model Variation	Reverse Flow
c	Gas Group	C, IIB3
d	Size	Refer to Table 1
e	Pipe Connection Type	Refer to Table 2
f	Flame Arrester Housing Material	316/316L Stainless Steel
g	Element Size	XXX <i>(Place Holder - your local Protectoseal representative will fill out this section for you)</i>
h	Element Housing Material	316/316L Stainless Steel
j	Element Core Material	316/316L Stainless Steel
k	Temp Rating	Standard (140°F, 60°C)
l	Operating Pressure Rating	Atmospheric Pressure (14.7 psia, 1.01 bara)
m	Short-Time Burn Capability	Factory Reserved <i>(Refer to ESA Series for short-time burn Flame Arresters)</i>

Non-Standard Options		
n	Body Modification	Butt Weld End Cap Weather Hood
o	Finish/Paint	Natural, Unpainted
p	Gasket/Seal	Not Applicable - None Required
q	Fasteners	Not Applicable - None Required
r	Ports/Taps	Not Applicable - None Required

Table 1: Sizes

d	Size
025	1", 25 mm
040	1.5", 40 mm
050	2", 50 mm
080	3", 80 mm

Note: Refer to general arrangement drawings for dimensions.

Table 2: Pipe Connection Type

o	Type
A	B16.5 ASME CL150 Raised Face Slip-On (RFSO)
F	BS EN10241 CL150 NPT Female Screw Thread (Ref. BS1740)

Customer Support

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SV Series

End-of-Line Deflagration Flame Arresters



Light Duty With Fixed Elements

The Protectoseal SV Series is suitable for installation at the end of a pipeline or on atmospheric vents from vessels that may contain flammable gases or vapors.

In circumstances where a simple, lightweight product is required, the SV Series offers a cost-effective solution. Typical applications include equipment gas purging, sample lines, and instrumentation lines.



Principle of Operation

The SV Series includes elements with small apertures that permit the passage of gases or vapors.

During deflagration, heat dissipation cools the combustion products at the element surface, preventing the fire from spreading past the SV Series and into the protected vent line.

Explosion Gas Groups

The Protectoseal SV Series is certified for gases in **NEC Group C** and **IEC Group IIB3**.

Standards Compliance

Protectoseal's SV Series of End-of-line Deflagration Flame Arresters has been type-tested to **EN ISO 16852** and approved according to **ATEX Directive 2014/34/EU**.

Each SV that passes through Protectoseal's facilities undergoes a rigorous inspection and verification of its safety and performance features.

Protectoseal Expertise

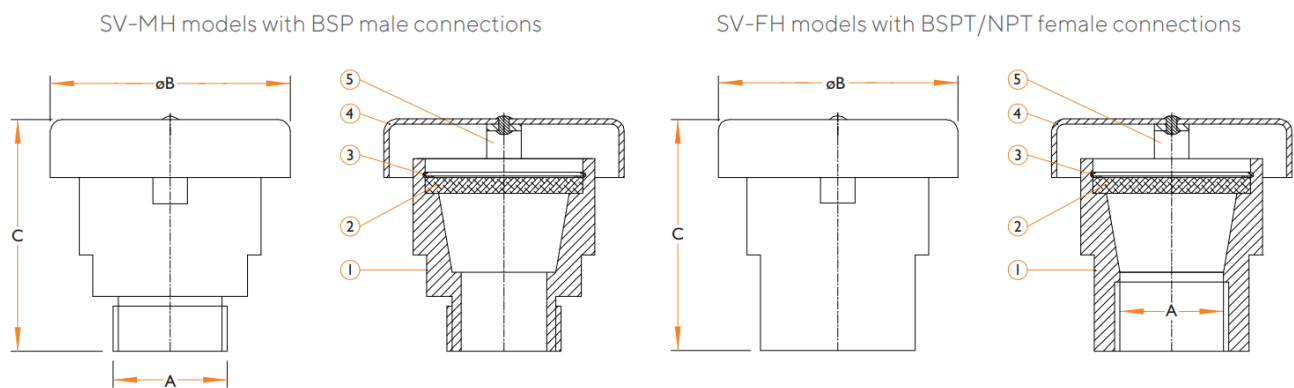
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With over 95 years in the business, we have an established sales and service team to support clients with their initial specifications and throughout the product's life cycle.

Features and Benefits

- Lightweight and compact
- Cost effective design utilising economical materials
- Threaded fitting
- Sizes and materials to accommodate a vast array of applications
- Lightweight for installation convenience
- Weatherhood for enhanced protection

General Arrangements:



Ref	Description	Materials
1	Body	Mazak 3/LM6 Aluminium
2	Element Core	Stainless Steel
3	Element Core Retaining Ring	Aluminium
4	Weatherhood	Aluminium
5	Hood Support Clip	Spring Steel

Selection Key

Positions	1	2	3	4	5	6	7	8
Example	S	V	-	0	1	5	F	H
Table	a	b	-	d			e	f
Model No.	S	V	-					H

Standard Options		
a	Flame Arrester Type	Safety
b	Model Variation	Valve
d	Size	Refer to Table 1
e	Pipe Connection Type	Refer to Table 2
f	Flame Arrester Housing Type	Hastelloy

Table 1: Sizes

d	Size	Dimensions				Ø Element	Weight
		A (male)	A (female)*	ØB	C		
015	1/2", 0.5", 15mm	1/2" BSP	1/2" BSPT/NPT	1.61", 41mm	2.29", 58mm	0.98", 25mm	0.3lbs, 0.15kg
020	3/4", 0.75", 20mm	3/4" BSP	3/4" BSPT/NPT	2.76", 70mm	2.64", 67mm	1.73", 44mm	0.3lbs, 0.3kg
025	1", 25 mm	1" BSP	1" BSPT/NPT	2.76", 70mm	2.64", 67mm	1.73", 44mm	0.3lbs, 0.3kg
050	2", 50 mm	2" BSP	2" BSPT/NPT	4.41", 112mm	3.03", 77mm	3.11", 79mm	1lb, 0.5kg

* BSPT/NPT female connection dimensions are approximate.

Table 2: Pipe Connection Type

e	Pipe Connection Type
F	BS EN10241 CL.150 NPT Female Screw Thread (Ref. BS1740)
M	BS EN 1092-1 PN10 Raised Face Slip-On (RFSO) - Type 12

Customer Support

Tel: 1.630.595.0800

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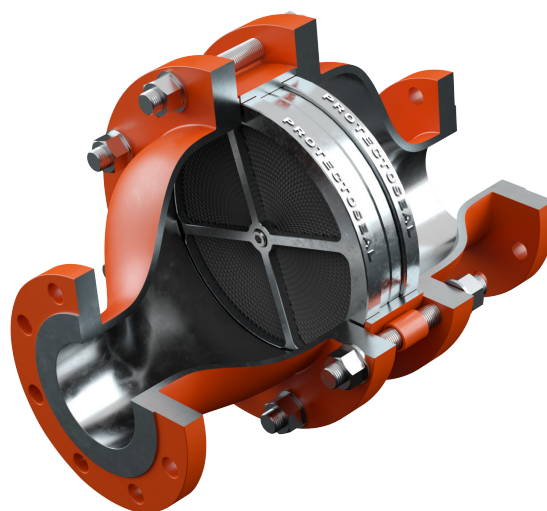
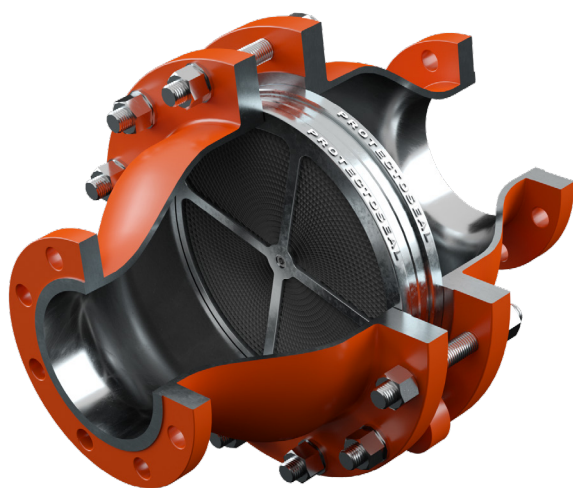
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225 Foster Avenue Bensenville, IL 60106 U.S.A



All specifications are correct at time of print, are for guidance purposes only and subject to change without prior notice.

In-Line Deflagration Flame Arresters



Customer Support

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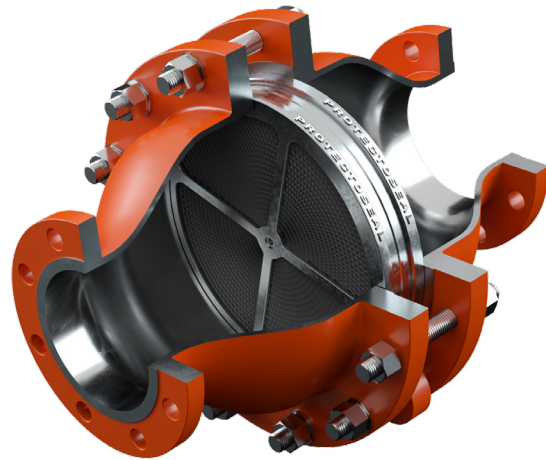
LCA Series

In-Line Deflagration Flame Arresters



With Replaceable Element for NEC Explosion Gas Group D

The Protectoseal LCA Series prevents the spread of fire within piping systems. By installing an LCA Series in close proximity to the potential source of ignition, flames (or an explosion) are restricted to the immediate region.



Principle of Operation

The LCA Series cools the combustion products at the element surface during a deflagration without a stable flame. This technique prevents the combustion process from continuing through the LCA Series and into the protected line.

In the case that a flame stabilizes on the element surface of the LCA Series, a monitoring system will detect a fast increase in temperature and activate secondary protective measures to stop the flow of the flammable mixture.

Operating Conditions

The Protectoseal LCA Series is ATEX-approved for a maximum operating temperature of **140°F** or **60°C**. For high-temperature models, the maximum operating temperature is increased to **320°F** or **160°C**.

Explosion Gas Groups

The Protectoseal LCA Series is certified for gases in **NEC Group D** and **IEC Groups IIA1 and IIA**.

Standards Compliance

Protectoseal's LCA Series of In-Line Deflagration Flame Arresters has been type-tested to **EN ISO 16852** and approved according to **ATEX Directive 2014/34/EU**.

Each LCA that passes through Protectoseal's facilities undergoes a rigorous inspection and verification of its safety and performance features.

Protectoseal Expertise

Protectoseal offers industry leading technical leadership with its renowned flame and explosion protection for the most diverse and challenging of industrial applications. By utilizing a range of testing facilities, advanced algorithms and computational fluid dynamics (CFD), our research and development team is constantly looking for new ways to challenge the status quo, thus providing best-in-class innovation.

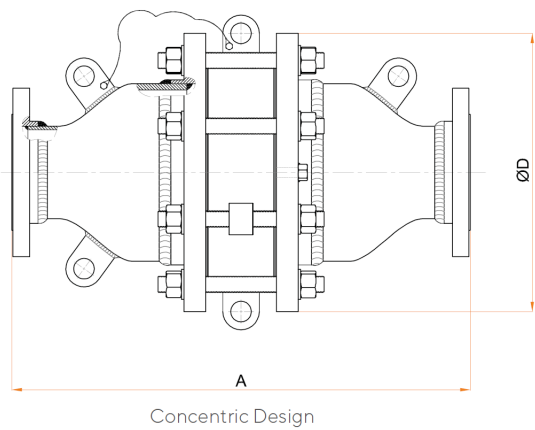
With over 95 years in the business, we have an established sales and service team to support clients with their initial specifications and throughout the product's life cycle.

Features and Benefits

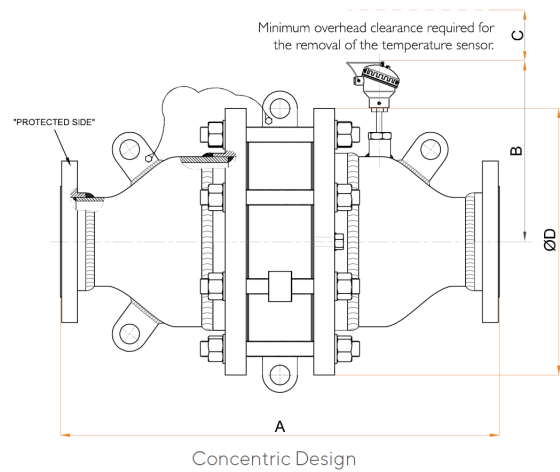
- Outstanding flow capacity with minimal pressure drop
- Short-time burning proof capabilities
- The highest degree of bi-directional safety
- Elements feature replaceable, easy-to-clean crimped-ribbon
- Available with elevated operating temperature and pressure
- Sizes and materials to accommodate a vast array of applications
- Options for end connections include flanged or threaded

General Arrangements:

LCA Flame Arresters (inc. High Temperature)



LCA Short-Time Burn Flame Arresters



Ref	Description
A	Overall Length
B	Centre to Top of Temperature Probe (short-time burn models)
C	Minimum Clearance (short-time burn models)
D	Ø Diameter

Selection Key

Positions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Example	L	C	A	-	0	5	0	A	T	-	1	0	0	T	S	-	N	1	.	2	0	-	N	/	0	0	0	W	0
Table	a	b	c	-	d		e	f	-	g			h	j	-	k	l			-	m	/	n	o	p	q	r		
Model No.	L	C	A	-				A		-	X	X	X		S	-		1	.			-		/	0	0	0		0

Standard Options		
a	Flame Arrester Type	In-Line Deflagration
b	Model Variation	Concentric
c	Gas Group	D, IIA
d	Size	Refer to Table 1
e	Pipe Connection Type	ANSI 150lb. RF
f	Flame Arrester Housing Material	Refer to Table 2
g	Element Size	XXX (Place Holder - your local Protectoseal representative will fill out this section for you)
h	Element Housing Material	Refer to Table 3
j	Element Core Material	316/316L Stainless Steel
k	Temp Rating	Refer to Table 4
l	Operating Pressure Rating	Refer to Table 5
m	Short-Time Burn Capability	Refer to Table 6

Non-Standard Options		
n	Body Modification	Standard - No Alterations
o	Finish/Paint	Refer to Table 7
p	Gasket/Seal	CNAF
q	Fasteners	Refer to Table 8
r	Ports/Taps	Standard - No Ports/Taps

Table 1: Sizes

1.1 LCA With Standard Reducer

d	Size	Overall Length A	ØD	f	h	Approx Weight
040	1.5", 40mm	12.48", 317mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
050	2", 50mm	12.72", 323mm	9.02", 229mm	D or T	D or T	53lbs, 24kg
080	3", 80mm	16.26", 413mm	10.98", 279mm	D or T	D or T	88lbs, 40kg
100	4", 100mm	17.99", 457mm	13.50", 343mm	D or T	D or T	139lbs, 63kg
150	6", 150mm	22.72", 577mm	19.02", 483mm	D or T	D or T	269lbs, 122kg
200	8", 200mm	35.55", 903mm	23.50", 597mm	D or T	D or T	474lbs, 215kg
250	10", 250mm	48.07", 1221mm	27.48", 698mm	D or T	D or T	703lbs, 310kg
300	12", 300mm	48.78", 1239mm	32.01", 813mm	D or T	D or T	917lbs, 416kg

1.2 LCA With Dish-End Reducer

d	Size	Overall Length A	ØD	f	h	Approx Weight
015	1/2", 0.5", 15mm	12.48", 317mm	9.02", 229mm	C or S	D or T	46lbs, 21kg
020	3/4", 0.75", 20mm	12.48", 317mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
025	1", 25mm	13.27", 337mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
040	1.5", 40mm	13.27", 337mm	9.02", 229mm	C or S	D or T	51lbs, 23kg
050	2", 50mm	13.27", 337mm	9.02", 229mm	D or T	D or T	55lbs, 25kg
080	3", 80mm	16.02", 407mm	10.98", 279mm	D or T	D or T	93lbs, 42kg
100	4", 100mm	18.15", 461mm	13.50", 343mm	D or T	D or T	141lbs, 64kg
150	6", 150mm	23.50", 597mm	19.02", 483mm	D or T	D or T	282lbs, 128kg
200	8", 200mm	27.20", 691mm	23.50", 597mm	D or T	D or T	450lbs, 204kg
250	10", 250mm	31.69", 805mm	27.48", 698mm	D or T	D or T	661lbs, 300kg
300	12", 300mm	36.18", 919mm	32.01", 813mm	D or T	D or T	915lbs, 415kg

Note: Dish-End models are available with larger elements for enhanced flow capabilities. Dimensions presented above are for 12bara operating pressure models.

1.3 LCA High Temperature With Standard Reducer

d	Size	Overall Length A	ØD	f	h	Approx Weight (kg)
015	1/2", 0.5", 15mm	12.87", 327mm	9.02", 229mm	C or S	D or T	46lbs, 21kg
020	3/4", 0.75", 20mm	12.87", 327mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
025	1", 25mm	13.66", 347mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
040	1.5", 40mm	12.87", 327mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
050	2", 50mm	13.11", 333mm	9.02", 229mm	D or T	D or T	53lbs, 24kg
080	3", 80mm	16.65", 423mm	10.98", 279mm	D or T	D or T	93lbs, 42kg
100	4", 100mm	18.39", 467mm	13.50", 343mm	D or T	D or T	146lbs, 66kg
150	6", 150mm	23.11", 587mm	19.02", 483mm	D or T	D or T	276lbs, 125kg
200	8", 200mm	35.94", 913mm	23.50", 597mm	D or T	D or T	487lbs, 221kg
250	10", 250mm	48.46", 1231mm	27.48", 698mm	D or T	D or T	701lbs, 318kg
300	12", 300mm	49.17", 1249mm	32.01", 813mm	D or T	D or T	941lbs, 427kg

1.4 LCA High Temperature With Dish-End Reducer

d	Size	Overall Length A	ØD	f	h	Approx Weight
015	1/2", 0.5", 15mm	12.87", 327mm	9.02", 229mm	C or S	D or T	46lbs, 21kg
020	3/4", 0.75", 20mm	12.87", 327mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
025	1", 25mm	13.66", 347mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
040	1.5", 40mm	13.66", 347mm	9.02", 229mm	C or S	D or T	51lbs, 23kg
050	2", 50mm	13.66", 347mm	9.02", 229mm	C or S	D or T	55lbs, 25kg
080	3", 80mm	16.42", 417mm	10.98", 279mm	C or S	D or T	95lbs, 43kg
100	4", 100mm	18.54", 471mm	13.50", 343mm	C or S	D or T	148lbs, 67kg
150	6", 150mm	23.90", 607mm	19.02", 483mm	C or S	D or T	280lbs, 127kg
200	8", 200mm	27.60", 701mm	23.50", 597mm	C or S	D or T	463lbs, 210kg
250	10", 250mm	32.09", 815mm	27.48", 698mm	C or S	D or T	680lbs, 308kg
300	12", 300mm	36.57", 929mm	32.01", 813mm	C or S	D or T	939lbs, 426kg

Note: Dish-End models are available with larger elements for enhanced flow capabilities.

1.5 LCA Short-Time Burn With Standard Reducer

d	Size	Overall Length A	Centre to Top of Temperature Probe	Min C	ØD	f	h	Approx Weight
040	1.5", 40mm	12.48", 317mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	C or S	D or T	51lbs, 23kg
050	2", 50mm	12.72", 323mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	D or T	D or T	55lbs, 25kg
080	3", 80mm	17.99", 457mm	13.39", 340mm	2.95", 75mm	13.50", 343mm	D or T	D or T	141lbs, 64kg
100	4", 100mm	17.99", 457mm	13.39", 340mm	2.95", 75mm	13.50", 343mm	D or T	D or T	141lbs, 64kg
150	6", 150mm	22.72", 577mm	15.75", 400mm	5.31", 135mm	19.02", 483mm	D or T	D or T	271lbs, 123kg
200	8", 200mm	35.55", 903mm	17.13", 435mm	5.31", 135mm	23.50", 597mm	D or T	D or T	476lbs, 216kg
250	10", 250mm	48.07", 1221mm	19.09", 485mm	7.68", 195mm	27.48", 698mm	D or T	D or T	686lbs, 311kg
300	12", 300mm	48.78", 1239mm	21.06", 535mm	7.68", 195mm	32.01", 813mm	D or T	D or T	919lbs, 417kg

1.6 LCA Short-Time Burn With Dish-End Reducer

d	Size	Overall Length A	Centre to Top of Temperature Probe	Min C	ØD	f	h	Approx Weight
015	1/2", 0.5", 15mm	12.48", 317mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	C or S	D or T	46lbs, 21kg
020	3/4", 0.75", 20mm	12.48", 317mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
025	1", 25mm	13.27", 337mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
040	1.5", 40mm	13.27", 337mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	C or S	D or T	51lbs, 23kg
050	2", 50mm	13.27", 337mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	D or T	D or T	55lbs, 25kg
080	3", 80mm	16.02", 407mm	8.86", 225mm	2.36", 60mm	9.02", 229mm	D or T	D or T	93lbs, 42kg
100	4", 100mm	18.15", 461mm	9.45", 240mm	2.36", 60mm	13.50", 343mm	D or T	D or T	141lbs, 64kg
150	6", 150mm	23.50", 597mm	11.02", 280mm	3.94", 100mm	19.02", 483mm	D or T	D or T	282lbs, 128kg
200	8", 200mm	27.20", 691mm	17.13", 435mm	5.31", 135mm	23.50", 597mm	D or T	D or T	450lbs, 204kg
250	10", 250mm	31.69", 805mm	19.09", 485mm	7.68", 195mm	27.48", 698mm	D or T	D or T	661lbs, 300kg
300	12", 300mm	36.18", 919mm	21.06", 535mm	7.68", 195mm	32.01", 813mm	D or T	D or T	915lbs, 415kg

Note: Dish-End models are available with larger elements for enhanced flow capabilities. Dimensions presented above are for 12bara operating pressure models.

Table 2: Flame Arrester Housing Materials

f	Flame Arrester Housing (Body) Material	o	q
C	Fabricated Carbon Steel	O	C
D	Cast Carbon Steel	O	C
S	Fabricated 316/316L Stainless Steel	F	W
T	Cast 316 Stainless Steel	F	W

Table 3: Element Housing Materials

h	Element Housing (Body) Material
C	Fabricated Carbon Steel
D	Cast Carbon Steel
S	Fabricated 316/316L Stainless Steel
T	Cast 316 Stainless Steel

Table 4: Temperature Rating

k	Temperature Rating
N	Standard (140°F, 60°C)
E	Max Elevated Temperature (320°F, 160°C)

Table 5: Operating Pressure Rating

l	Operating Pressure Rating
1.20	17.4 psia, 1.20 bara
1.45	21 psia, 1.45 bara

Table 6: Short-Time Burn Capability

m	Short-Time Burn Capability
N	No Capability
S	Short Time Burn Single Sensor
T	Short Time Burn Double Sensor (Bi-Directional)

Table 7: Finish/Paint

o	Finish/Paint
O	Primer & Top Coat Orange
F	Natural, Unpainted

Table 8: Fasteners

o	Finish/Paint
C	Zinc Plated Steel
W	316 Stainless Steel

Customer Support

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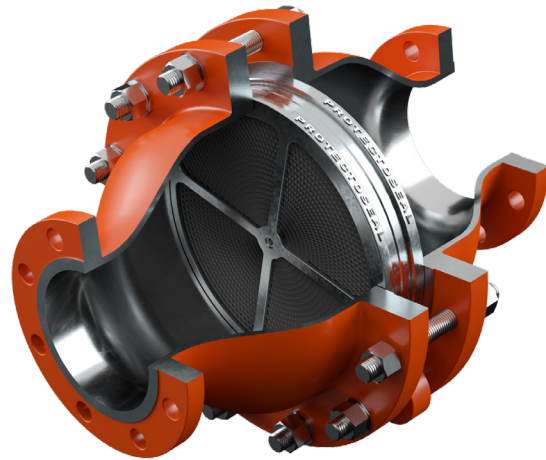
LCB Series

In-Line Deflagration Flame Arresters



With Replaceable Element for NEC Explosion Gas Group C

The Protectoseal LCB Series prevents the spread of fire within piping systems. By installing an LCB Series in close proximity to the probable source of ignition, flames (or an explosion) are restricted to the immediate region.



Principle of Operation

The LCB Series cools the combustion products at the element surface during a deflagration without a stable flame. This technique prevents the combustion process from continuing through the LCB Series and into the protected line.

In the case that a flame stabilizes on the element surface of the LCB Series, a monitoring system will detect a fast increase in temperature and activate secondary protective measures to stop the flow of the flammable mixture.

Operating Conditions

The Protectoseal LCB Series is ATEX-approved for a maximum operating temperature of **140°F** or **60°C**. For high-temperature models, the maximum operating temperature is increased to **302°F** or **150°C**.

Explosion Gas Groups

The Protectoseal LCB Series is certified for gases in **NEC Group C** and **IEC Group IIB3**.

Standards Compliance

Protectoseal's LCB Series of In-Line Deflagration Flame Arresters has been type-tested to **EN ISO 16852** and approved according to **ATEX Directive 2014/34/EU**.

Each LCB that passes through Protectoseal's facilities undergoes a rigorous inspection and verification of its safety and performance features.

Protectoseal Expertise

Protectoseal offers industry leading technical leadership with its renowned flame and explosion protection for the most diverse and challenging of industrial applications. By utilizing a range of testing facilities, advanced algorithms and computational fluid dynamics (CFD), our research and development team is constantly looking for new ways to challenge the status quo, thus providing best-in-class innovation.

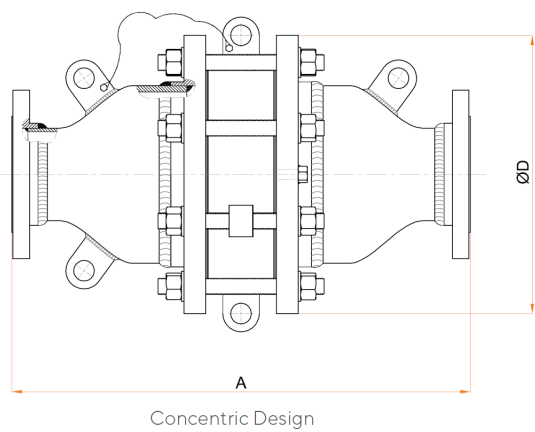
With over 95 years in the business, we have an established sales and service team to support clients with their initial specifications and throughout the product's life cycle.

Features and Benefits

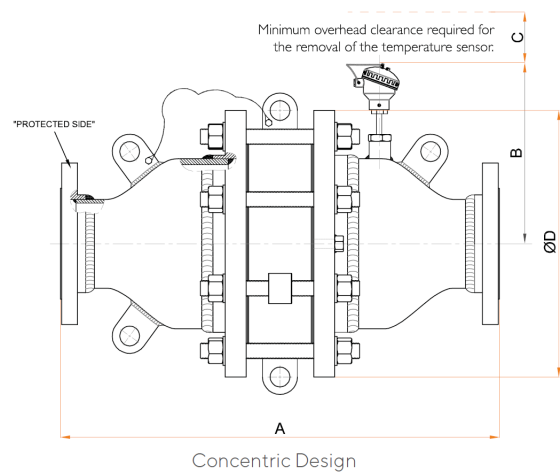
- Outstanding flow capacity with minimal pressure drop
- Short-time burning proof capabilities
- The highest degree of bi-directional safety
- Elements feature replaceable, easy-to-clean crimped-ribbon
- Available with elevated operating temperature and pressure
- Sizes and materials to accommodate a vast array of applications
- Options for end connections include flanged or threaded

General Arrangements:

LCB Flame Arresters (inc. High Temperature)



LCB Short-Time Burn Flame Arresters



Ref	Description
A	Overall Length
B	Centre to Top of Temperature Probe (short-time burn models)
C	Minimum Clearance (short-time burn models)
D	Ø Diameter

Selection Key

Positions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Example	L	C	B	-	0	5	0	A	T	-	1	0	0	T	S	-	N	1	.	1	0	-	T	/	0	0	0	W	0
Table	a	b	c	-	d			e	f	-	g			h	j	-	k	l			-	m	/	n	o	p	q	r	
Model No.	L	C	B	-				A		-	X	X	X		S	-		1	.			-		/	0	0	0		0

Standard Options		
a	Flame Arrester Type	In-Line Deflagration
b	Model Variation	Concentric
c	Gas Group	D,C, IIB3
d	Size	Refer to Table 1
e	Pipe Connection Type	ANSI 150lb. RF
f	Flame Arrester Housing Material	Refer to Table 2
g	Element Size	XXX (Place Holder - your local Protectoseal representative will fill out this section for you)
h	Element Housing Material	Refer to Table 3
j	Element Core Material	316/316L Stainless Steel
k	Temp Rating	Refer to Table 4
l	Operating Pressure Rating	Refer to Table 5
m	Short-Time Burn Capability	Refer to Table 6

Non-Standard Options		
n	Body Modification	Standard - No Alterations
o	Finish/Paint	Refer to Table 7
p	Gasket/Seal	CNAF
q	Fasteners	Refer to Table 8
r	Ports/Taps	Standard - No Ports/Taps

Table 1: Sizes

1.1 Standard LCB

d	Size	Overall Length A	ØD	f	h	Approx Weight
015	1/2", 0.5", 15mm	12.48", 317mm	9.02", 229mm	C or S	D or T	46lbs, 21kg
020	3/4", 0.75", 20mm	12.48", 317mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
025	1", 25mm	13.27", 337mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
040	1.5", 40mm	12.48", 317mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
050	2", 50mm	12.72", 323mm	9.02", 229mm	D or T	D or T	53lbs, 24kg
080	3", 80mm	16.26", 413mm	10.98", 279mm	D or T	D or T	88lbs, 40kg
100	4", 100mm	17.99", 457mm	13.50", 343mm	D or T	D or T	139lbs, 63kg
150	6", 150mm	22.72", 577mm	19.02", 483mm	D or T	D or T	269lbs, 122kg
200	8", 200mm	35.55", 903mm	23.50", 597mm	D or T	D or T	474lbs, 215kg
250	10", 250mm	48.07", 1221mm	27.48", 698mm	D or T	D or T	703lbs, 310kg
300	12", 300mm	48.78", 1239mm	32.01", 813mm	D or T	D or T	917lbs, 416kg

Note: End-Cap models are available with larger flame arrester elements for enhanced flow capabilities.

1.2 Short-Time Burn LCB

d	Size	Overall Length A	Max B	Min C	ØD	f	h	Approx Weight
015	1/2", 0.5", 15mm	12.48", 317mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
020	3/4", 0.75", 20mm	12.48", 317mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	C or S	D or T	51lbs, 23kg
025	1", 25mm	13.27", 337mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	C or S	D or T	51lbs, 23kg
040	1.5", 40mm	12.48", 317mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	C or S	D or T	51lbs, 23kg
050	2", 50mm	12.72", 323mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	D or T	D or T	55lbs, 25kg
080	3", 80mm	16.26", 413mm	11.22", 285mm	2.95", 75mm	10.98", 279mm	D or T	D or T	90lbs, 41kg
100	4", 100mm	17.99", 457mm	13.39", 340mm	2.95", 75mm	13.50", 343mm	D or T	D or T	141lbs, 64kg
150	6", 150mm	22.72", 577mm	15.75", 400mm	5.31", 135mm	19.02", 483mm	D or T	D or T	271lbs, 123kg
200	8", 200mm	35.55", 903mm	17.13", 435mm	5.31", 135mm	23.50", 597mm	D or T	D or T	476lbs, 216kg
250	10", 250mm	48.07", 1221mm	19.09", 485mm	7.68", 195mm	27.48", 698mm	D or T	D or T	686lbs, 311kg
300	12", 300mm	48.78", 1239mm	21.06", 535mm	7.68", 195mm	32.01", 813mm	D or T	D or T	919lbs, 417kg

Note: Dimensions presented above are for 1.10bara operating pressure models. End-Cap models are available with larger flame arrester elements for enhanced flow capabilities.

1.3 High-Temperature LCB

d	Size	Overall Length A	ØD	f	h	Approx Weight
015	1/2", 0.5", 15mm	12.87", 327mm	9.02", 229mm	C or S	D or T	46lbs, 21kg
020	3/4", 0.75", 20mm	12.87", 327mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
025	1", 25mm	13.66", 347mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
040	1.5", 40mm	12.87", 327mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
050	2", 50mm	13.11", 333mm	9.02", 229mm	D or T	D or T	53lbs, 24kg
080	3", 80mm	16.65", 423mm	10.98", 279mm	D or T	D or T	93lbs, 42kg
100	4", 100mm	18.39", 467mm	13.50", 343mm	D or T	D or T	146lbs, 66kg
150	6", 150mm	23.11", 587mm	19.02", 483mm	D or T	D or T	276lbs, 125kg
200	8", 200mm	35.94", 913mm	23.50", 597mm	D or T	D or T	487lbs, 221kg
250	10", 250mm	48.46", 1231mm	27.48", 698mm	D or T	D or T	701lbs, 318kg
300	12", 300mm	49.17", 1249mm	32.01", 813mm	D or T	D or T	941lbs, 427kg

Note: End-Cap models are available with larger flame arrester elements for enhanced flow capabilities.

Table 2: Flame Arrester Housing Materials

f	Flame Arrester Housing (Body) Material	o	q
C	Fabricated Carbon Steel	O	C
D	Cast Carbon Steel	O	C
S	Fabricated 316/316L Stainless Steel	F	W
T	Cast 316 Stainless Steel	F	W

Table 3: Element Housing Materials

h	Element Housing (Body) Material
D	Cast Carbon Steel
T	Cast 316 Stainless Steel

Table 4: Temperature Rating

k	Temperature Rating
N	Standard (140°F, 60°C)
E	Max Elevated Temperature (302°F, 150°C)

Table 5: Operating Pressure Rating

l	Operating Pressure Rating
1.10	16 psia, 1.10 bara
1.40	20 psia, 1.40 bara
1.50	22 psia, 1.50 bara

Table 6: Short-Time Burn Capability

m	Short-Time Burn Capability
N	No Capability
S	Short Time Burn Single Sensor
T	Short Time Burn Double Sensor (Bi-Directional)

Table 7: Finish/Paint

o	Finish/Paint
O	Primer & Top Coat Orange
F	Natural, Unpainted

Table 8: Fasteners

o	Finish/Paint
C	Zinc Plated Steel
W	316 Stainless Steel

Customer Support

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All specifications are correct at time of print, are for guidance purposes only and subject to change without prior notice.

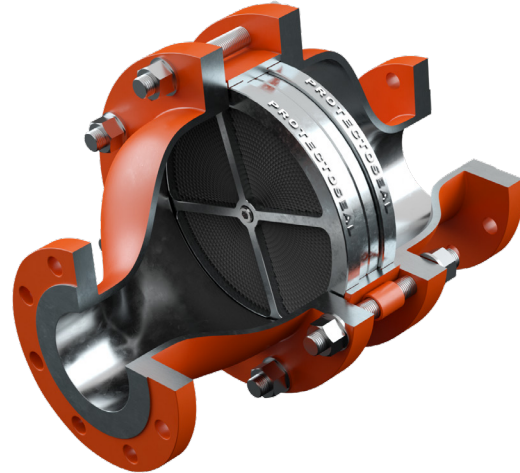
LEA Series

In-Line Deflagration Flame Arresters



With Eccentric Body and Replaceable Element for NEC Explosion Gas Group D

The Protectoseal LEA Series prevents the spread of fire when a horizontal installation is required or when the pipe system is very close to other objects or a wall and an eccentric design is a better fit. The design is built with this contoured shape to avoid condensation build up in and around the element, ensuring maximum life and optimal performance. By installing an LEA Series in close proximity to the potential source of ignition, flames (or an explosion) are restricted to the immediate area.



Principle of Operation

The LEA Series cools the combustion products at the element surface during a deflagration without a stable flame. This technique prevents the combustion process from continuing through the LEA Series and into the protected line.

In the case that a flame stabilizes on the element surface of the LEA Series, a monitoring system will detect a fast increase in temperature and activate secondary protective measures to stop the flow of the flammable mixture.

Operating Conditions

The Protectoseal LEA Series is ATEX-approved for a maximum operating temperature of **140°F** or **60°C**. For high-temperature models, the maximum operating temperature is increased to **320°F** or **160°C**.

Explosion Gas Groups

The Protectoseal LEA Series is certified for gases in **NEC Group D** and **IEC Group IIA**.

Standards Compliance

Protectoseal's LEA Series of In-Line Deflagration Flame Arresters has been type-tested to **EN ISO 16852** and approved according to **ATEX Directive 2014/34/EU**.

Each LEA that passes through Protectoseal's facilities undergoes a rigorous inspection and verification of its safety and performance features.

Protectoseal Expertise

Protectoseal offers industry leading technical leadership with its renowned flame and explosion protection for the most diverse and challenging of industrial applications. By utilizing a range of testing facilities, advanced algorithms and computational fluid dynamics (CFD), our research and development team is constantly looking for new ways to challenge the status quo, thus providing best-in-class innovation.

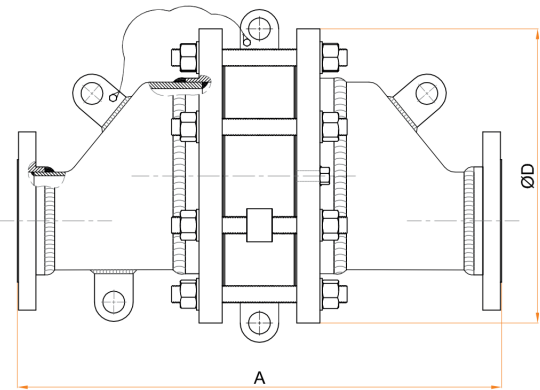
With over 95 years in the business, we have an established sales and service team to support clients with their initial specifications and throughout the product's life cycle.

Features and Benefits

- Outstanding flow capacity with minimal pressure drop
- Prevents condensation buildup for horizontal installations
- Short-time burning proof capabilities
- The highest degree of bi-directional safety
- Available with elevated operating temperature and pressure
- Elements feature replaceable, easy-to-clean crimped-ribbon
- Available with elevated operating temperature and pressure
- Sizes and materials to accommodate a vast array of applications
- Options for end connections include flanged or threaded

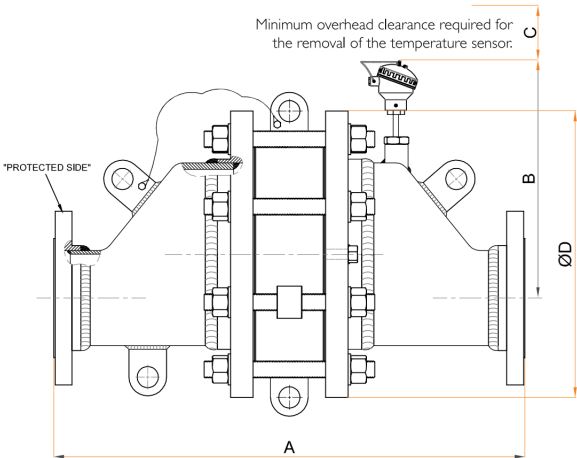
General Arrangements:

LEA Flame Arresters (inc. High Temperature)



Eccentric Design

LEA Short-Time Burn Flame Arresters



Eccentric Design

Selection Key

Positions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Example	L	E	A	-	0	5	0	A	T	-	1	0	0	T	S	-	N	1	.	2	0	-	N	/	0	0	0	W	0
Table	a	b	c	-		d		e	f	-		g		h	j	-	k		l			-	m	/	n	o	p	q	r
Model No.	L	E	A	-				A		-	X	X	X		S	-		1	.			-		/	0		0		0

Standard Options		
a	Flame Arrester Type	In-Line Deflagration
b	Model Variation	Eccentric
c	Gas Group	D, IIA
d	Size	Refer to Table 1
e	Pipe Connection Type	ANSI 150lb. RF
f	Flame Arrester Housing Material	Refer to Table 2
g	Element Size	XXX (Place Holder - your local Protectoseal representative will fill out this section for you)
h	Element Housing Material	Refer to Table 3
j	Element Core Material	316/316L Stainless Steel
k	Temp Rating	Refer to Table 4
l	Operating Pressure Rating	Refer to Table 5
m	Short-Time Burn Capability	Refer to Table 6

Non-Standard Options		
n	Body Modification	Standard - No Alterations
o	Finish/Paint	Refer to Table 7
p	Gasket/Seal	CNAF
q	Fasteners	Refer to Table 8
r	Ports/Taps	Standard - No Ports/Taps

Table 1: Sizes

1.1 Standard LEA

d	Size	Overall Length A	ØD	f	h	Approx Weight
015	1/2", 0.5", 15mm	12.48", 317mm	9.02", 229mm	C or S	D or T	46lbs, 21kg
020	3/4", 0.75", 20mm	12.48", 317mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
025	1", 25 mm	13.27", 337mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
040	1.5", 40 mm	12.48", 317mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
050	2", 50 mm	12.72", 323mm	9.02", 229mm	C or S	D or T	53lbs, 24kg
080	3", 80 mm	16.26", 413mm	10.98", 279mm	C or S	D or T	88lbs, 40kg
100	4", 100 mm	17.99", 457mm	13.50", 343mm	C or S	D or T	139lbs, 63kg
150	6", 150 mm	22.72", 577mm	19.02", 483mm	C or S	D or T	269lbs, 122kg
200	8", 200 mm	35.55", 903mm	23.50", 597mm	C or S	D or T	474lbs, 215kg
250	10", 250 mm	48.07", 1221mm	27.48", 698mm	C or S	D or T	683lbs, 310kg
300	12", 300 mm	48.78", 1239mm	32.01", 813mm	C or S	D or T	917lbs, 416kg

1.2 Short-Time Burn LEA

d	Size	Overall Length A	Max B	Min C	ØD	f	h	Approx Weight
015	1/2", 0.5", 15mm	12.48", 317mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
020	3/4", 0.75", 20mm	12.48", 317mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	C or S	D or T	51lbs, 23kg
025	1", 25 mm	13.27", 337mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	C or S	D or T	51lbs, 23kg
040	1.5", 40 mm	12.48", 317mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	C or S	D or T	51lbs, 23kg
050	2", 50 mm	12.72", 323mm	11.22", 285mm	2.95", 75mm	9.02", 229mm	C or S	D or T	55lbs, 25kg
080	3", 80 mm	16.26", 413mm	11.22", 285mm	2.95", 75mm	10.98", 279mm	C or S	D or T	90lbs, 41kg
100	4", 100 mm	17.99", 457mm	13.39", 340mm	2.95", 75mm	13.50", 343mm	C or S	D or T	141lbs, 64kg
150	6", 150 mm	22.72", 577mm	15.75", 400mm	5.31", 135mm	19.02", 483mm	C or S	D or T	271lbs, 123kg
200	8", 200 mm	35.55", 903mm	17.13", 435mm	5.31", 135mm	23.50", 597mm	C or S	D or T	476lbs, 216kg
250	10", 250 mm	48.07", 1221mm	19.09", 485mm	7.68", 195mm	27.48", 698mm	C or S	D or T	686lbs, 311kg
300	12", 300 mm	48.78", 1239mm	21.06", 535mm	7.68", 195mm	32.01", 813mm	C or S	D or T	919lbs, 417kg

Note: Dish-End models are available with larger elements for enhanced flow capabilities. Dimensions presented above are for 1.2bara operating pressure models.

1.3 High-Temperature LEA

d	Size	Overall Length A	ØD	f	h	Approx Weight
015	1/2", 0.5", 15mm	12.87", 327mm	9.02", 229mm	C or S	D or T	46lbs, 21kg
020	3/4", 0.75", 20mm	12.87", 327mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
025	1", 25 mm	13.66", 347mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
040	1.5", 40 mm	12.87", 327mm	9.02", 229mm	C or S	D or T	49lbs, 22kg
050	2", 50 mm	13.11", 333mm	9.02", 229mm	C or S	D or T	53lbs, 24kg
080	3", 80 mm	16.65", 423mm	10.98", 279mm	C or S	D or T	93lbs, 42kg
100	4", 100 mm	18.39", 467mm	13.50", 343mm	C or S	D or T	146lbs, 66kg
150	6", 150 mm	23.11", 587mm	19.02", 483mm	C or S	D or T	276lbs, 125kg
200	8", 200 mm	35.94", 913mm	23.50", 597mm	C or S	D or T	487lbs, 221kg
250	10", 250 mm	48.46", 1231mm	27.48", 698mm	C or S	D or T	701lbs, 318kg
300	12", 300 mm	49.17", 1249mm	32.01", 813mm	C or S	D or T	941lbs, 427kg

Note: Dish-End models are available with larger elements for enhanced flow capabilities.

Table 2: Flame Arrester Housing Materials

f	Flame Arrester Housing (Body) Material	o	q
C	Fabricated Carbon Steel	O	C
S	Fabricated 316/316L Stainless Steel	F	W

Table 3: Element Housing Materials

h	Element Housing (Body) Material
D	Cast Carbon Steel
T	Cast 316/316L Stainless Steel

Table 4: Temperature Rating

k	Temperature Rating
N	Standard (140°F, 60°C)
E	Max Elevated Temperature (320°F, 160°C)

Table 5: Operating Pressure Rating

l	Operating Pressure Rating
1.20	17.4 psia, 1.20 bara
1.45	21 psia, 1.45 bara

Table 6: Short-Time Burn Capability

m	Short-Time Burn Capability
N	No Capability
S	Short Time Burn Single Sensor
T	Short Time Burn Double Sensor (Bi-Directional)

Table 7: Finish/Paint

o	Finish/Paint
O	Primer & Top Coat Orange
F	Natural, Unpainted

Table 8: Fasteners

o	Finish/Paint
C	Zinc Plated Steel
W	316 Stainless Steel

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In-Line Detonation Flame Arresters



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UCA Series

In-Line Detonation Flame Arresters



With Concentric Body and Replaceable Element for NEC Explosion Gas Group D

The Protectoseal UCA Series prevents the propagation of gas or vapor explosions in pipelines under the harshest conditions, including unstable detonation, stable detonation, and deflagration.



Principle of Operation

The UCA Series combines Protectoseal's HEDS® (High Energy Dissipation System) and E-Flow® (Enhanced Crimped Ribbon Technology) to mitigate the effects of an explosion by preventing its spread.

The UCA Series utilises a crimped ribbon element that allows gas or vapor to pass through with minimal pressure loss.

The UCA Series conforms to Protectoseal's long-term strategy for the protection of both plant and personnel, while maintaining market-leading flow versus pressure drop performance.

Operating Conditions

The Protectoseal UCA Series is ATEX-approved for a maximum operating temperature of **140°F** or **60°C**. For high-temperature models, the maximum operating temperature is increased to **302°F** or **150°C**.

Explosion Gas Groups

The Protectoseal UCA Series is certified for gases in **NEC Group D** and **IEC Group IIA**.

Standards Compliance

Protectoseal's UCA Series of In-Line Detonation Flame Arresters has been type-tested to **EN ISO 16852** and approved according to **ATEX Directive 2014/34/EU**.

Each UCA that passes through Protectoseal's facilities undergoes a rigorous inspection and verification of its safety and performance features.

Protectoseal Expertise

Protectoseal offers industry leading technical leadership with its renowned flame and explosion protection for the most diverse and challenging of industrial applications. By utilizing a range of testing facilities, advanced algorithms and computational fluid dynamics (CFD), our research and development team is constantly looking for new ways to challenge the status quo, thus providing best-in-class innovation.

With over 95 years in the business, we have an established sales and service team to support clients with their initial specifications and throughout the product's life cycle.

Features and Benefits

- Outstanding flow capacity with minimal pressure drop
- Short-time burn capabilities
- Bi-directional protection
- Elements feature replaceable, easy-to-clean crimped-ribbon
- Superior performance reduces ongoing expenses
- Unique element design is less prone to fouling and clogging
- No placement restrictions or additional protection required
- Sizes and materials to accommodate a vast array of applications
- Options for end connections include flanged or threaded
- Lightweight for installation convenience

Lightweight element design

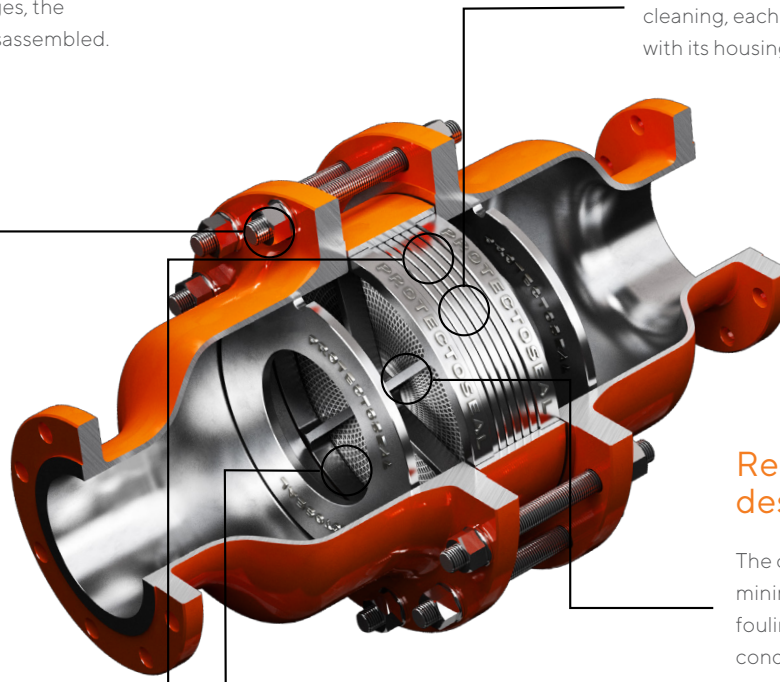
By removing the fasteners that hold the element between the internal flanges, the element housing can be quickly disassembled.

Labelled element banks*

To ensure proper realignment after cleaning, each element is clearly labelled with its housing position.

Separate elements for complete access

Once the element housing has been disengaged, the central bolt (not shown) can be removed to facilitate the cleaning of individual element banks.



Reduced fouling design

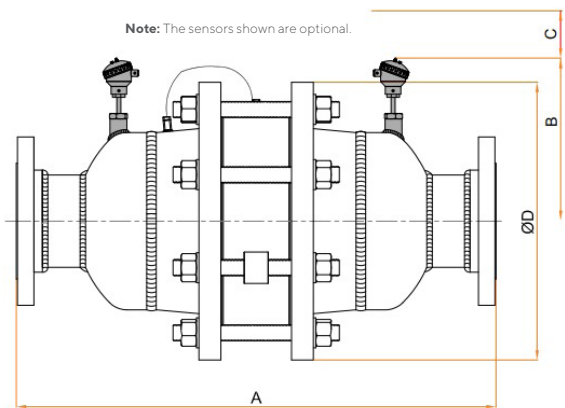
The optimized element banks minimize flow resistance, reduce fouling and clogging, and permit condensate drainage.

HEDS® (High Energy Dissipation System)

Protectoseal's innovative HEDS® technology functions as both a shock-attenuation system and an energy baffle, extending the UCA Series' ability to contain an explosion and enhancing the arrester's effectiveness. Additionally, the design protects the element from debris, thereby extending the maintenance interval.

* When removing, cleaning, and replacing element banks, it is vital that the installation, operation, and maintenance instructions (IOMs) provided by the manufacturer are strictly adhered to.

General Arrangements:



Selection Key

Positions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Example	U	C	A	-	0	5	0	A	T	-	1	0	0	T	S	-	N	1	.	2	0	-	N	/	0	0	0	W	0
Table	a	b	c	-	d			e	f	-	g			h	j	-	k	l			-	m	/	n	o	p	q	r	
Model No.	U	C	A	-				A		-	X	X	X		S	-		1	.			-		/	0		0		0

Standard Options		
a	Flame Arrester Type	Unstable In-Line Detonation
b	Model Variation	Concentric
c	Gas Group	D, IIA
d	Size	Refer to Table 1
e	Pipe Connection Type	ANSI 150lb. RF
f	Flame Arrester Housing Material	Refer to Table 2
g	Element Size	XXX (Place Holder - your local Protectoseal representative will fill out this section for you)
h	Element Housing Material	Refer to Table 3
j	Element Core Material	316/316L Stainless Steel
k	Temp Rating	Refer to Table 4
l	Operating Pressure Rating	Refer to Table 5
m	Short-Time Burn Capability	Refer to Table 6

Non-Standard Options		
n	Body Modification	Standard - No Alterations
o	Finish/Paint	Refer to Table 7
p	Gasket/Seal	CNAF
q	Fasteners	Refer to Table 8
r	Ports/Taps	Standard - No Ports/Taps

Table 1: Sizes

d	Size	Max Operating Pressure	Max Operating Temperature	Overall Length A	ØD	B (Short-Time Burn Models)	Min C	f	h	Approx Weight
025	1", 25 mm	17.4psia, 1.20bara	140°F, 60°C	17.76", 451mm	9.02", 229mm	11.22", 285mm	3.00", 75mm	C or S	D or T	62lbs, 28kg
		20.3psia, 1.40bara	302°F, 150°C	18.54", 471mm						
		23.2psia, 1.60bara	140°F, 60°C	18.54", 471mm						
040	1.5", 40 mm	17.4psia, 1.20bara	140°F, 60°C	17.76", 451mm	9.02", 229mm	11.22", 285mm	3.00", 75mm	C or S	D or T	62lbs, 28kg
		20.3psia, 1.40bara	302°F, 150°C	18.54", 471mm						
		23.2psia, 1.60bara	140°F, 60°C	18.54", 471mm						
050	2", 50 mm	17.4psia, 1.20bara	140°F, 60°C	17.76", 451mm	9.02", 229mm	11.22", 285mm	3.00", 75mm	D or T	D or T	62lbs, 28kg
		20.3psia, 1.40bara	302°F, 150°C	18.54", 471mm						
		23.2psia, 1.60bara	140°F, 60°C	18.54", 471mm						
080	3", 80 mm	17.4psia, 1.20bara	140°F, 60°C	22.87", 581mm	10.98", 279mm	12.40", 315mm	3.00", 75mm	D or T	D or T	119lbs, 54kg
		20.3psia, 1.40bara	302°F, 150°C	23.27", 591mm						
		21.76psia, 1.50bara	140°F, 60°C	23.27", 591mm						
100	4", 100 mm	17.4psia, 1.20bara	140°F, 60°C	25.16", 639mm	13.50", 343mm	13.39", 340mm	3.00", 75mm	D or T	D or T	181lbs, 82kg
		20.3psia, 1.40bara	302°F, 150°C	25.55", 649mm						
		21.76psia, 1.50bara	140°F, 60°C	25.55", 649mm						
150	6", 150 mm	16psia, 1.10bara 19psia, 1.30bara	140°F, 60°C 302°F, 150°C	25.24", 641mm 26.02", 661mm	19.02", 483mm	11.02", 280mm	3.94", 100mm	D or T	D or T	335lbs, 152kg
200	8", 200 mm	16psia, 1.10bara	140°F, 60°C	29.49", 749mm	23.50", 597mm	17.13", 435mm	5.31", 135mm	D or T	D or T	602lbs, 273kg
250	10", 250 mm	17.4psia, 1.20bara	140°F, 60°C	35.47", 901mm	27.48", 698mm	19.09", 485mm	7.68", 195mm	D or T	D or T	926lbs, 420kg
300	12", 300 mm	17.4psia, 1.20bara	140°F, 60°C	40.75", 1035mm	32.01", 813mm	21.06", 535mm	7.68", 195mm	D or T	D or T	1387lbs, 629kg
350	14", 350 mm	16psia, 1.10bara	140°F, 60°C	51.57", 1310mm	36.50", 927mm	23.03", 585mm	7.68", 195mm	C or S	C or S	2154lbs, 977kg
		16psia, 1.10bara	302°F, 150°C	51.97", 1320mm						
400	16", 400 mm	16psia, 1.10bara	140°F, 60°C	54.13", 1375mm	41.73", 1060mm	25.00", 635mm	7.68", 195mm	C or S	C or S	3012lbs, 1366kg
		16psia, 1.10bara	302°F, 150°C	54.53", 1385mm						
450	18", 450mm	16psia, 1.10bara	140°F, 60°C	58.11", 1476mm	45.98", 1168mm	27.05", 687mm	8.46", 215mm	C or S	C or S	3649lbs, 1655kg
500	20", 500mm	16psia, 1.10bara	140°F, 60°C	70.31", 1786mm	59.49", 1511mm	33.07", 840mm	14.76", 375mm	C or S	C or S	7066lbs, 3205kg
600	24", 600mm	16psia, 1.10bara	140°F, 60°C	70.31", 1786mm	59.49", 1511mm	33.07", 840mm	14.76", 375mm	C or S	C or S	7172lbs, 3253kg

Note: Alternative flange configuration options available on request. The weights are expressed in standard units (short time burn, high temperature and high pressure variants may vary).

Table 2: Flame Arrester Housing Materials

f	Flame Arrester Housing (Body) Material	o	q
C	Fabricated Carbon Steel	O	C
D	Cast Carbon Steel	O	C
S	Fabricated 316/316L Stainless Steel	F	W
T	Cast 316 Stainless Steel	F	W

Table 3: Element Housing Materials

h	Element Housing (Body) Material
C	Fabricated Carbon Steel
D	Cast Carbon Steel
S	Fabricated 316/316L Stainless Steel
T	Cast 316 Stainless Steel

Table 4: Temperature Rating

k	Temperature Rating
N	Standard (140°F, 60°C)
E	Max Elevated Temperature (302°F, 150°C)

Table 5: Operating Pressure Rating

l	Operating Pressure Rating
1.10	16 psia, 1.10 bara
1.20	17.4 psia, 1.20 bara
1.40	20.3 psia, 1.40 bara
1.50	21.76 psia, 1.50 bara
1.60	23.2 psia, 1.60 bara

Table 6: Short-Time Burn Capability

m	Short-Time Burn Capability
N	No Capability
S	Short-Time Burn Single Sensor
T	Short Time Burn Double Sensor (Bi-directional)

Table 7: Finish/Paint

o	Finish/Paint
O	Primer & Top Coat Orange
F	Natural, Unpainted

Table 8: Fasteners

q	Fasteners
C	Zinc Plated Steel
W	316 Stainless Steel

Customer Support

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UCB Series

In-Line Detonation Flame Arresters



With Concentric Body and Replaceable Element for NEC Explosion Gas Group C

The Protectoseal UCB Series prevents the propagation of gas or vapor explosions in pipelines under the harshest conditions, including unstable detonation, stable detonation, and deflagration.



Principle of Operation

The UCB Series combines Protectoseal's HEDS® (High Energy Dissipation System) and E-Flow® (Enhanced Crimped Ribbon Technology) to mitigate the effects of an explosion by preventing its spread.

The UCB Series utilises a crimped ribbon element that allows gas or vapor to pass through with minimal pressure loss.

The UCB Series conforms to Protectoseal's long-term strategy for the protection of both plant and personnel, while maintaining market-leading flow versus pressure drop performance.

Operating Conditions

The Protectoseal UCA Series is ATEX-approved for a maximum operating temperature of **140°F** or **60°C**. For high-temperature models, the maximum operating temperature is increased to **302°F** or **150°C**.

Explosion Gas Groups

The Protectoseal UCB Series is certified for gases in **NEC Group C** and **IEC Group IIB3**.

Standards Compliance

Protectoseal's UCB Series of In-Line Detonation Flame Arresters has been type-tested to **EN ISO 16852** and approved according to **ATEX Directive 2014/34/EU**.

Each UCB that passes through Protectoseal's facilities undergoes a rigorous inspection and verification of its safety and performance features.

Protectoseal Expertise

Protectoseal offers industry leading technical leadership with its renowned flame and explosion protection for the most diverse and challenging of industrial applications. By utilizing a range of testing facilities, advanced algorithms and computational fluid dynamics (CFD), our research and development team is constantly looking for new ways to challenge the status quo, thus providing best-in-class innovation.

With over 95 years in the business, we have an established sales and service team to support clients with their initial specifications and throughout the product's life cycle.

Features and Benefits

- Outstanding flow capacity with minimal pressure drop
- Short-time burn capabilities
- Bi-directional protection
- Elements feature replaceable, easy-to-clean crimped-ribbon
- Superior performance reduces ongoing expenses
- Unique element design is less prone to fouling and clogging
- No placement restrictions or additional protection required
- Sizes and materials to accommodate a vast array of applications
- Options for end connections include flanged or threaded
- Lightweight for installation convenience

Lightweight element design

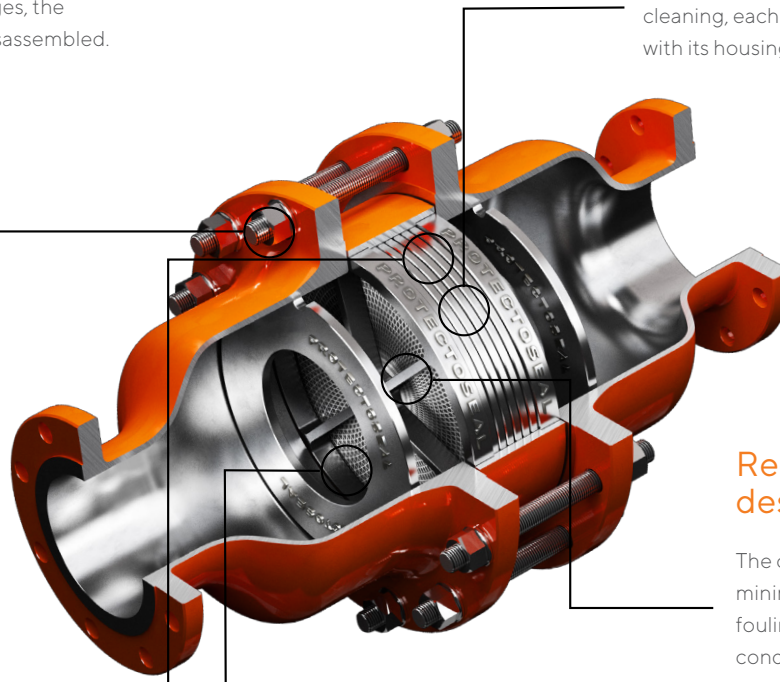
By removing the fasteners that hold the element between the internal flanges, the element housing can be quickly disassembled.

Labelled element banks*

To ensure proper realignment after cleaning, each element is clearly labelled with its housing position.

Separate elements for complete access

Once the element housing has been disengaged, the central bolt (not shown) can be removed to facilitate the cleaning of individual element banks.



Reduced fouling design

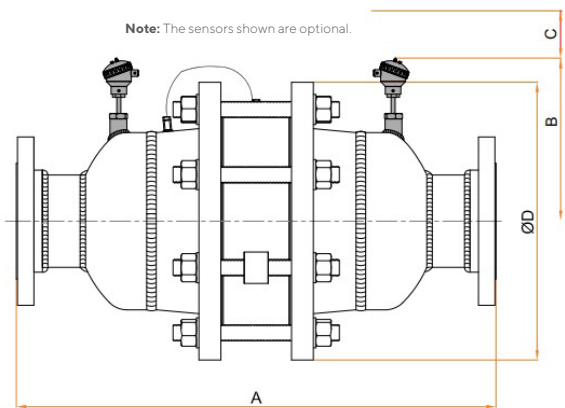
The optimized element banks minimize flow resistance, reduce fouling and clogging, and permit condensate drainage.

HEDS® (High Energy Dissipation System)

Protectoseal's innovative HEDS® technology functions as both a shock-attenuation system and an energy baffle, extending the UCB Series' ability to contain an explosion and enhancing the arrester's effectiveness. Additionally, the design protects the element from debris, thereby extending the maintenance interval.

* When removing, cleaning, and replacing element banks, it is vital that the installation, operation, and maintenance instructions (IOMs) provided by the manufacturer are strictly adhered to.

General Arrangements:



Selection Key

Positions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Example	U	C	B	-	0	5	0	A	T	-	1	0	0	T	S	-	N	1	.	1	0	-	T	/	0	0	0	W	0
Table	a	b	c	-	d			e	f	-	g			h	j	-	k	l			-	m	/	n	o	p	q	r	
Model No.	U	C	B	-				A		-	X	X	X		S	-		1	.			-		/	0		0		0

Standard Options		
a	Flame Arrester Type	Unstable In-Line Detonation
b	Model Variation	Concentric
c	Gas Group	C, IIB3
d	Size	Refer to Table 1
e	Pipe Connection Type	ANSI 150lb. RF
f	Flame Arrester Housing Material	Refer to Table 2
g	Element Size	XXX (Place Holder - your local Protectoseal representative will fill out this section for you)
h	Element Housing Material	Refer to Table 3
j	Element Core Material	316/316L Stainless Steel
k	Temp Rating	Refer to Table 4
l	Operating Pressure Rating	Refer to Table 5
m	Short-Time Burn Capability	Refer to Table 6

Non-Standard Options		
n	Body Modification	Standard - No Alterations
o	Finish/Paint	Refer to Table 7
p	Gasket/Seal	CNAF
q	Fasteners	Refer to Table 8
r	Ports/Taps	Standard - No Ports/Taps

Table 1: Sizes

d	Size	Max Operating Pressure	Max Operating Temperature	Overall Length A	ØD	B (Short-Time Burn Models)	Min C	f	h	Approx Weight
025	1", 25 mm	16psia, 1.10bara	140°F, 60°C	18.54", 471mm	9.02", 229mm	11.22", 285mm	2.95", 75mm	C or S	D or T	56lbs, 27kg
040	1.5", 40 mm	16psia, 1.10bara	140°F, 60°C	18.54", 471mm	9.02", 229mm	11.22", 285mm	2.95", 75mm	C or S	D or T	56lbs, 27kg
050	2", 50 mm	16psia, 1.10bara	140°F, 60°C	18.54", 471mm	9.02", 229mm	11.22", 285mm	2.95", 75mm	D or T	D or T	56lbs, 27kg
080	3", 80 mm	16psia, 1.10bara	140°F, 60°C	23.27", 591mm	10.98", 279mm	12.40", 315mm	2.95", 75mm	D or T	D or T	121lbs, 55kg
100	4", 100 mm	16psia, 1.10bara 17.4psia, 1.20bara 21.76psia, 1.50bara	140°F, 60°C 302°F, 150°C 140°F, 60°C	25.55", 649mm 25.94", 659mm 25.94", 659mm	13.50", 343mm	13.39", 340mm	2.95", 75mm	D or T	D or T	183lbs, 83kg
150	6", 150 mm	16psia, 1.10bara	140°F, 60°C	25.63", 651mm	19.02", 483mm	11.02", 280mm	3.94", 100mm	D or T	D or T	340lbs, 154kg
200	8", 200 mm	16psia, 1.10bara	140°F, 60°C	18.54", 471mm	29.88", 759mm	17.13", 435mm	5.31", 135mm	D or T	D or T	611lbs, 277kg
250	10", 250 mm	16psia, 1.10bara	140°F, 60°C	35.87", 911mm	27.48", 698mm	19.09", 485mm	7.68", 195mm	D or T	D or T	939lbs, 426kg
300	12", 300 mm	16psia, 1.10bara	140°F, 60°C	40.75", 1035mm	32.01", 813mm	21.06", 535mm	7.68", 195mm	D or T	D or T	1387lbs, 629kg

Note: Alternative flange configuration options available on request. The weights are expressed in standard units (short time burn, high temperature and high pressure variants may vary).

Table 2: Flame Arrester Housing Materials

f	Flame Arrester Housing (Body) Material	o	q
C	Fabricated Carbon Steel	O	C
D	Cast Carbon Steel	O	C
S	Fabricated 316/316L Stainless Steel	F	W
T	Cast 316 Stainless Steel	F	W

Table 3: Element Housing Materials

h	Element Housing (Body) Material
D	Cast Carbon Steel
T	Cast 316 Stainless Steel

Table 4: Temperature Rating

k	Temperature Rating
N	Standard (140°F, 60°C)
E	Max Elevated Temperature (302°F, 150°C)

Table 5: Operating Pressure Rating

l	Operating Pressure Rating
1.10	16 psia, 1.10 bara
1.20	17.4 psia, 1.20 bara

Table 6: Short-Time Burn Capability

m	Short-Time Burn Capability
N	No Capability
S	Short-Time Burn Single Sensor
T	Short Time Burn Double Sensor (Bi-directional)

Table 7: Finish/Paint

o	Finish/Paint
O	Primer & Top Coat Orange
F	Natural, Unpainted

Table 8: Fasteners

q	Fasteners
C	Zinc Plated Steel
W	316 Stainless Steel

Customer Support

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225 Foster Avenue Bensenville, IL 60106 U.S.A



All specifications are correct at time of print, are for guidance purposes only and subject to change without prior notice.

UEA Series

In-Line Detonation Flame Arresters



With Eccentric Body and Replaceable Element for NEC Explosion Gas Group D

The Protectoseal UEA Series prevents the spread of gas or vapor explosions in pipelines, when a horizontal installation is required or when the pipe system is very close to other objects or a wall and an eccentric design is a better fit. It does it under the harshest conditions, including unstable detonation, stable detonation and deflagration. It's eccentric housing design avoids condensation build up in and around the element, ensuring maximum life and optimal performance.



Principle of Operation

The UEA Series combines Protectoseal's HEDS® (High Energy Dissipation System) and E-Flow® (Enhanced Crimped Ribbon Technology) to mitigate the effects of an explosion by preventing its spread.

The UEA Series utilises a crimped ribbon element that allows gas or vapor to pass through with minimal pressure loss.

The UEA Series conforms to Protectoseal's long-term strategy for the protection of both plant and personnel, while maintaining market-leading flow versus pressure drop performance.

Operating Conditions

The Protectoseal UEA Series is ATEX-approved for a maximum operating temperature of **140°F** or **60°C**.

Explosion Gas Groups

The Protectoseal UEA Series is certified for gases in **NEC Group D** and **IEC Group IIA**.

Standards Compliance

Protectoseal's UEA Series of In-Line Detonation Flame Arresters has been type-tested to **EN ISO 16852** and approved according to **ATEX Directive 2014/34/EU**.

Each UEA that passes through Protectoseal's facilities undergoes a rigorous inspection and verification of its safety and performance features.

Protectoseal Expertise

Protectoseal offers industry leading technical leadership with its renowned flame and explosion protection for the most diverse and challenging of industrial applications. By utilizing a range of testing facilities, advanced algorithms and computational fluid dynamics (CFD), our research and development team is constantly looking for new ways to challenge the status quo, thus providing best-in-class innovation.

With over 95 years in the business, we have an established sales and service team to support clients with their initial specifications and throughout the product's life cycle.

Features and Benefits

- Outstanding flow capacity with minimal pressure drop
- Prevents condensation buildup for horizontal installations
- Short-time burn capabilities
- Bi-directional protection
- Elements feature replaceable, easy-to-clean crimped-ribbon
- Superior performance reduces ongoing expenses
- Unique element design is less prone to fouling and clogging
- No placement restrictions or additional protection required
- Sizes and materials to accommodate a vast array of applications
- Options for end connections include flanged or threaded
- Lightweight for installation convenience

Lightweight element design

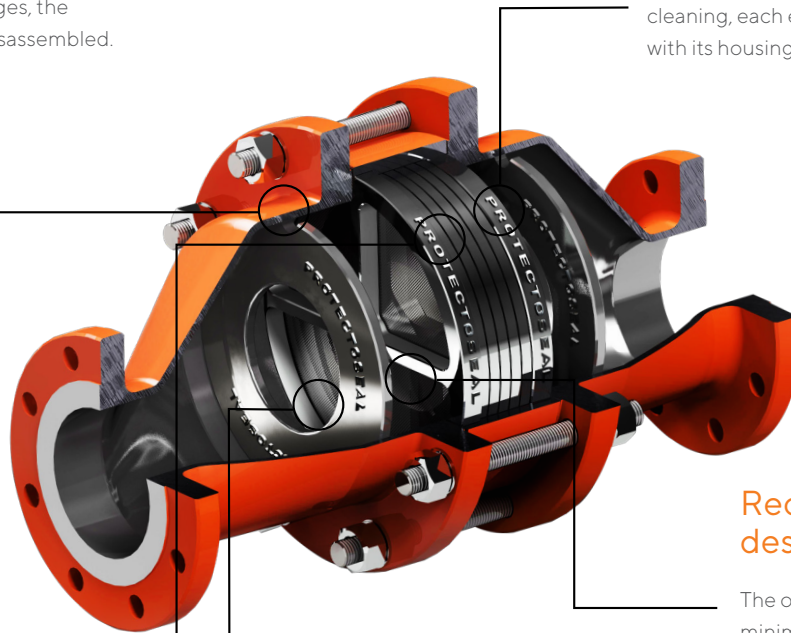
By removing the fasteners that hold the element between the internal flanges, the element housing can be quickly disassembled.

Labelled element banks*

To ensure proper realignment after cleaning, each element is clearly labelled with its housing position.

Separate elements for complete access

Once the element housing has been disengaged, the central bolt (not shown) can be removed to facilitate the cleaning of individual element banks.



Reduced fouling design

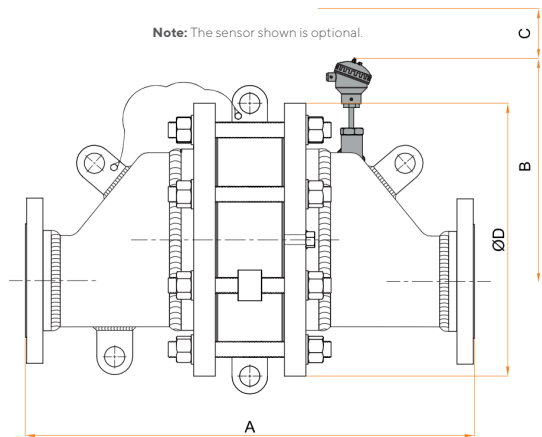
The optimized element banks minimize flow resistance, reduce fouling and clogging, and permit condensate drainage.

HEDS® (High Energy Dissipation System)

Protectoseal's innovative HEDS® technology functions as both a shock-attenuation system and an energy baffle, extending the UEA Series' ability to contain an explosion and enhancing the arrester's effectiveness. Additionally, the design protects the element from debris, thereby extending the maintenance interval.

* When removing, cleaning, and replacing element banks, it is vital that the installation, operation, and maintenance instructions (IOMs) provided by the manufacturer are strictly adhered to.

General Arrangements:



Selection Key

Positions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Example	U	E	A	-	0	5	0	A	T	-	1	0	0	T	S	-	N	1	.	2	0	-	N	/	0	0	0	W	0
Table	a	b	c	-	d			e	f	-	g			h	j	-	k	l			-	m	/	n	o	p	q	r	
Model No.	U	E	A	-				A		-	X	X	X		S	-	N	1	.			-		/	0		0		0

Standard Options		
a	Flame Arrester Type	Unstable In-Line Detonation
b	Model Variation	Eccentric
c	Gas Group	D, IIA
d	Size	Refer to Table 1
e	Pipe Connection Type	ANSI 150lb. RF
f	Flame Arrester Housing Material	Refer to Table 2
g	Element Size	XXX (Place Holder - your local Protectoseal representative will fill out this section for you)
h	Element Housing Material	Refer to Table 3
j	Element Core Material	316/316L Stainless Steel
k	Temp Rating	Standard (140°F, 60°C)
l	Operating Pressure Rating	Refer to Table 5
m	Short-Time Burn Capability	Refer to Table 6

Non-Standard Options		
n	Body Modification	Standard - No Alterations
o	Finish/Paint	Refer to Table 7
p	Gasket/Seal	CNAF
q	Fasteners	Refer to Table 8
r	Ports/Taps	Standard - No Ports/Taps

Table 1: Sizes

d	Size	Max Operating Pressure	Max Operating Temperature	Overall Length A	ØD	B (Short-Time Burn Models)	Min C	f	h	Approx Weight
025	1", 25 mm	17.4psia, 1.20bara	140°F, 60°C	17.76", 451mm	9.02", 229mm	12.40", 315mm	2.95", 75mm	C or S	D or T	55lbs, 25kg
040	1.5", 40 mm	17.4psia, 1.20bara	140°F, 60°C	17.76", 451mm	9.02", 229mm	12.40", 315mm	2.95", 75mm	C or S	D or T	55lbs, 25kg
050	2", 50 mm	17.4psia, 1.20bara	140°F, 60°C	17.76", 451mm	9.02", 229mm	12.40", 315mm	2.95", 75mm	C or S	D or T	55lbs, 25kg
080	3", 80 mm	17.4psia, 1.20bara	140°F, 60°C	22.87", 581mm	10.98", 279mm	13.98", 355mm	2.95", 75mm	C or S	D or T	119lbs, 54kg
100	4", 100 mm	17.4psia, 1.20bara	140°F, 60°C	25.16", 639mm	13.50", 343mm	15.35", 390mm	2.95", 75mm	C or S	D or T	181lbs, 82kg
150	6", 150 mm	16psia, 1.10bara	140°F, 60°C	25.24", 641mm	19.02", 483mm	17.91", 455mm	3.78", 96mm	C or S	D or T	335lbs, 152kg
200	8", 200 mm	16psia, 1.10bara	140°F, 60°C	29.49", 749mm	23.50", 597mm	20.08", 510mm	3.78", 96mm	C or S	D or T	602lbs, 273kg
250	10", 250 mm	16psia, 1.10bara	140°F, 60°C	35.47", 901mm	27.48", 698mm	23.03", 585mm	7.28", 185mm	C or S	D or T	959lbs, 435kg
300	12", 300 mm	17.4psia, 1.20bara	140°F, 60°C	40.75", 1035mm	32.01", 813mm	26.18", 665mm	7.28", 185mm	C or S	D or T	1398lbs, 634kg
350	14", 350 mm	16psia, 1.10bara	140°F, 60°C	53.35", 1355mm	36.50", 927mm	28.15", 715mm	7.28", 185mm	C or S	C or S	2130lbs, 966kg
400	16", 400 mm	16psia, 1.10bara	140°F, 60°C	55.35", 1406mm	41.73", 1060mm	31.80", 810mm	7.28", 185mm	C or S	C or S	2956lbs, 1341lg

Note: Alternative flange configuration options available on request. The weights are expressed in standard units (short time burn, high temperature and high pressure variants may vary).

Table 2: Flame Arrester Housing Materials

f	Flame Arrester Housing (Body) Material	o	q
C	Fabricated Carbon Steel	O	C
D	Cast Carbon Steel	O	C
S	Fabricated 316/316L Stainless Steel	F	W
T	Cast 316 Stainless Steel	F	W

Table 3: Element Housing Materials

h	Element Housing (Body) Material
C	Fabricated Carbon Steel
D	Cast Carbon Steel
S	Fabricated 316/316L Stainless Steel
T	Cast 316 Stainless Steel

Table 4: Operating Pressure Rating

I	Operating Pressure Rating
1.10	16 psia, 1.10 bara
1.20	17.4 psia, 1.20 bara

Table 5: Short-Time Burn Capability

m	Short-Time Burn Capability
N	No Capability
S	Short-Time Burn Single Sensor
T	Short Time Burn Double Sensor (Bi-directional)

Table 6: Finish/Paint

o	Finish/Paint
O	Primer & Top Coat Orange
F	Natural, Unpainted

Table 7: Fasteners

q	Fasteners
C	Zinc Plated Steel
W	316 Stainless Steel

Customer Support

Tel: 1.630.595.0800

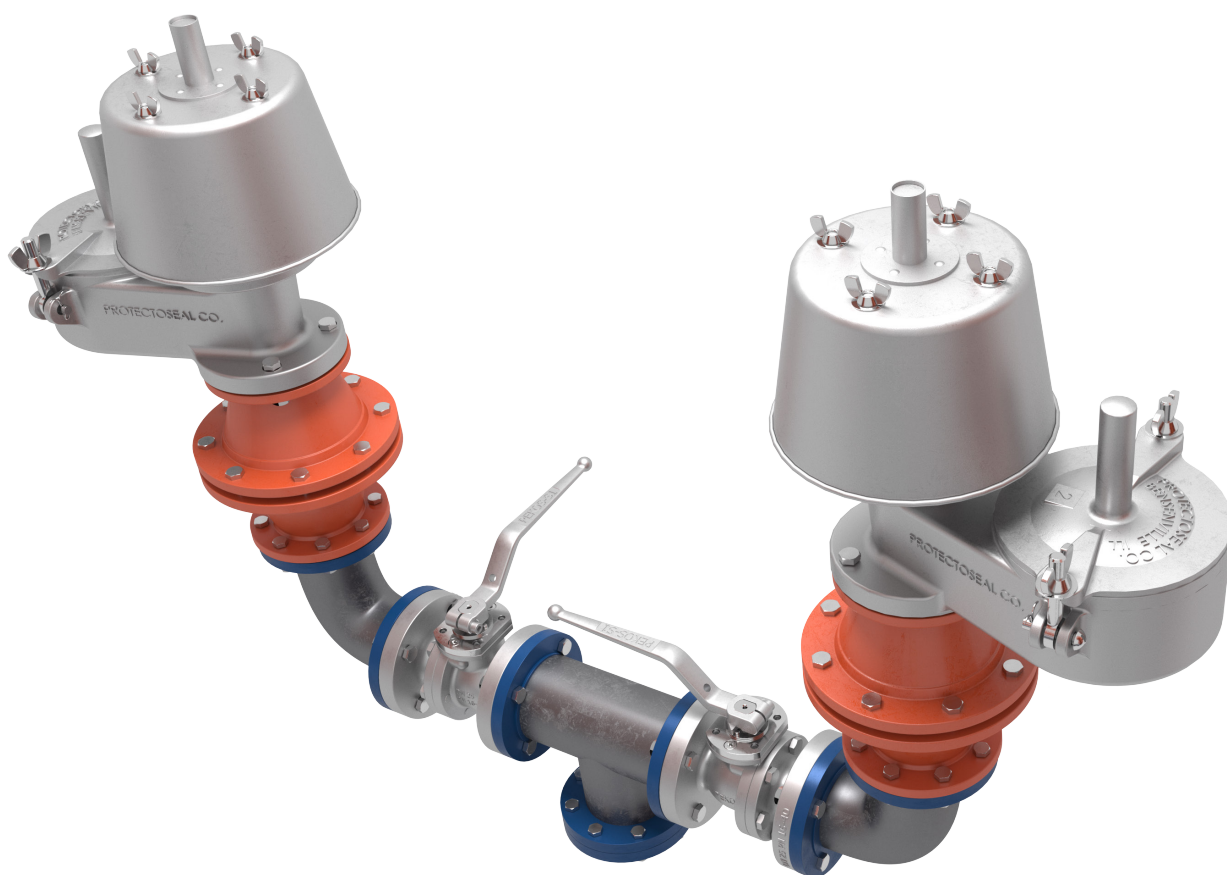
Email: info@protectoseal.com

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Speciality Valves and Fittings



Customer Support

Tel: 1.630.595.0800

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Fax: 1.630.595.8059

225 Foster Avenue, Bensenville, IL 60106 USA



Cowhorn Arrangement



Twin Flame Arrester and Pressure and Vacuum Conservation Venting System

The Protectoseal Cowhorn Arrangement affixes a pair of Flame Arresters, as well as Pressure and Vacuum Conservation Vents. These devices are essential for biogas production, as they provide superior explosion and pressure protection to anaerobic digestion plants.



Principle of Operation

The Cowhorn Arrangement attaches a pair of Flame Arresters and Pressure and Vacuum Conservation Vents to a 3-way valve, allowing the operator to switch between sets when operational or maintenance needs require.

Protectoseal's world-class Flame Arresters safeguard the anaerobic digester against fire and explosion while permitting normal gas or vapor flow. The Pressure and Vacuum Conservation Vents simultaneously protect the digester from overpressure and limit product loss.

The practical duty plus standby arrangement of the Cowhorn Arrangement allows continuous operation with zero downtime and minimum disruption to biogas production.

The Cowhorn Arrangement is also compatible with the Protectoseal Foaming Relief Vent for relieving excessive pressure during a process-critical digester foaming event.

Explosion Gas Groups

The Cowhorn Arrangement is certified for gases in **NEC Groups D and C** and **IEC Groups IIA1 and IIA**.

Standards Compliance

Protectoseal's Cowhorn Arrangement has been type-tested to **EN ISO 16852** and approved according to **ATEX Directive 2014/34/EU**.

Each Cowhorn Arrangement that passes through Protectoseal's facilities undergoes a rigorous inspection and verification of its safety and performance features.

Protectoseal Expertise

Protectoseal offers industry leading technical leadership with its renowned flame and explosion protection for the most diverse and challenging of industrial applications. By utilizing a range of testing facilities, advanced algorithms and computational fluid dynamics (CFD), our research and development team is constantly looking for new ways to challenge the status quo, thus providing best-in-class innovation.

With over 95 years in the business, we have an established sales and service team to support clients with their initial specifications and throughout the product's life cycle.

Features and Benefits

- Specified for biogas applications (anaerobic digesters)
- Outstanding flow capacity with minimal pressure drop
- Superior explosion and pressure protection
- Continuous operation with zero downtime
- Practical duty plus standby arrangement

Item	Options
Sizes	DN50 or 50 mm to DN300 or 300 mm
Process Connection	ANSI 150# PN10/PN16 Special (on request)
Material	Stainless Steel (standard) Other materials available on request
Ancillary Equipment	Proximity Switches Pipework Pressure Transducers Temperature Sensors (on request)

Customer Support

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Learn more at
www.protectoseal.com

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