

VENTEX® (ESI TYPE 6) – PASSIVE EXPLOSION ISOLATION VALVE

DESCRIPTION

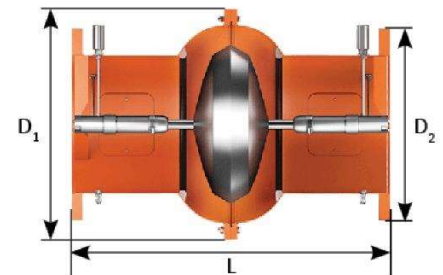
The Ventex® passive explosion isolation valve is an isolation valve that prevents flame and pressure propagation through interconnected pipelines. The valve poppet is closed by the pressure of the primary vessel explosion. No control and detection is required. The valve can be used to stop the explosion in either one or both directions.



DIMENSIONS FOR VENTEX® TYPE ESI-E, ESI-D & ESI-C


Size - in (DN)	L - in (mm)	D ₁ - in (mm)	D ₂ - in (mm)	Weight – lbs (kg)
4" (DN100)	13.8 (350) 15.7 ¹ (400)	8.5 (215)	8.7 (220)	66 (30)
6" (DN150)	19.7 (500)	12.4 (315)	11.2 (285)	77 (35)
8" (DN200)	24.0 (610)	16.4 (417)	13.3 (340)	117 (53)
12" (DN300)	30.7 (780)	21.7 (550)	17.6 (445)	185 (84)
16" (DN400)	37.0 (940)	26.9 (682)	22.2 (565)	293 (133)
20" (DN500)	51.2 (1300)	32.0 (814)	26.4 (670)	470 (213)
24" (DN600)	55.9 (1420)	36.6 (929)	30.7 (780)	672 (305)

(1) for type ESI-D.





SPECIFICATIONS

Operation types	ESI-E Single Acting Explosion Isolation Valve ESI-D Double Acting Explosion Isolation Valve ESI-C Explosion Isolation Check Valve with locking device			
Sizes	4" (DN 100) 6" (DN150) 8" (DN200) 12" (DN300) 16" (DN400) 20" (DN500) 24" (DN600)			
Installation direction	Horizontal / vertical			
Explosion hazard	$(K_{st} \text{ (Dust hazard)} \leq 400 \text{ bar.m/s (DN500 25m/s } K_{st} \leq 300)$ $K_g \text{ (Gas hazard)} \leq 100 \text{ bar.m/s}$ $K_H \text{ (Hybrid)} \leq 400 \text{ bar.m/s (DN500 25m/s not certified)}$ $K_{st} \text{ (Metallic dust)} \leq 400 \text{ (DN100), 450 (DN150-300),}$ $\text{DN400 not certified, 300 (DN500-600)}$ P_{max} : see tables below			
Materials of Construction	Material type	A	C	E
	Housing	Mild steel/carbon steel	1.4301 (304)	1.4404 (316L)
	Internal parts	1.4301 (304) or higher graded	1.4301 (304) or higher graded	1.4404 or higher graded (316L)
	Surface treatment	Mild steel: EPDM and silicone gaskets: powder-coated orange RAL2004 VITON gaskets: wet painted water based orange RAL2004 Stainless steel 1.4301 and 1.4404: pickled and passivated		
Max. Operating Pressure	14.5038 PSI (1 barg) 29.0076 PSI (2 barg) (gastight)			
Operating Temperature Range	Minimum	+41°F (+5°C), no icing allowed		
	Maximum	EPDM Gaskets (FDA) T_{max} 248°F (120°C) Silicone Gaskets (FDA) T_{max} 302°F (150°C) VITON Gaskets T_{max} 302°F (150°C)		
Ambient Temperature Range	Max. 60°C (possible process temperature up to 572°F (300°C) depending on the gasket)			
Process Connections	DIN EN 1092-1			
Maximum Flow Velocity	$V_{max} = 20 \text{ m/s}$, optional 25 m/s			
Dust Load	Dust / Air Concentration $\leq 50 \text{ g/m}^3$, ESI-C no dust load allowed Min. Flow Velocity $\geq 12 \text{ m/s}$ Particle Size $\leq 0.5 \text{ mm}$ Dry Air, no condensation allowed			
Certification	Zone inside: Certificate CE ₀₀₈₁ Ex II 1GD IIB / Zone 0, 1, 2, 20, 21, 22 The outside zone is depending on the execution of the mounted parts (e.g. Switch) Protective system GD IIB 			
Options	Flange ASME B16.5 Class 150 – ANSI Material Stainless Steel (1.4404/AISI 316L) Surfaces Special Treatment (hot-dip galvanized up to 392°F (200°C), Epoxy) Gasket Ceramic Fiber 572°F (300°C) (DN300-DN500) High Temperature Silicone T_{max} 482°F (250°C) Position indicator (valve open / valve closed) ¹ : Namur or Inductive CIP version, polished surfaces Switch cover, condensate drain Gastight 29.0076 PSI (2 barg) Food grade: EC1935/2004 (just for 1.4301/1.4404 and silicone gaskets) 3.1/2.2 Certificate			

(1) Also available for use in Ex classified areas.



EXPLOSION PRESSURE VENTEX® TYPE ESI-E, ESI-D & ESI-C (AT 68°F - 20°C)

Size – in (DN)			4" (DN100)		6" (DN150)		8" (DN200)		12" (DN300)		16" (DN400)		20" (DN500)		24" (DN600)
Air speed		m/s	20	25	20	25	20	25	20	25	20	25	20	25	25
Explosion Pressure	Minimum	PSIG (barg)	0.7252 (0.05)	0.7252 (0.05)	0.7252 (0.05)	0.7252 (0.05)	0.7252 (0.05)	0.7252 (0.05)	0.7252 (0.05)	0.7252 (0.05)	0.7252 (0.05)	1.7405 (0.12)	0.7252 (0.05)	0.8702 (0.06)	2.9008 (0.2)
	Maximum	PSIG (barg)	203.0528 (14)	203.0528 (14)	203.0528 (14)	203.0528 (14)	203.0528 (14)	203.0528 (14)	203.0528 (14)	203.0528 (14)	203.0528 (14)	203.0528 (14)	203.0528 (14)	203.0528 (14)	188.5491 (13)

MAXIMUM EXPLOSION PRESSURE WITH DIFFERENT PROCESS TEMPERATURES

Size – in (DN)	4" (DN100)	6" (DN150)	8" (DN200)	12" (DN300)	16" (DN400)	20" (DN500)	24" (DN600)
P_{max} - PSIG (bar abs)	188.5491 (14)	188.5491 (14)	188.5491 (14)	188.5491 (14)	188.5491 (14)	188.5491 (14)	174.0453 (13)
P_{max} 248°F/120°C – PSIG (barg)	159.5415 (11)	159.5415 (11)	159.5415 (11)	159.5415 (11)	159.5415 (11)	159.5415 (11)	147.9385 (10.2)
P_{max} 302°F/150°C – PSIG (barg)	152.2896 (10.5)	152.2896 (10.5)	152.2896 (10.5)	152.2896 (10.5)	152.2896 (10.5)	152.2896 (10.5)	140.6866 (9.7)
P_{max} 482°F/250°C – PSIG (barg)	124.7325 (8.6)	124.7325 (8.6)	124.7325 (8.6)	124.7325 (8.6)	124.7325 (8.6)	124.7325 (8.6)	114.5798 (7.9)
P_{max} 572°F/300°C – PSIG (barg)	110.2287 (7.6)	110.2287 (7.6)	110.2287 (7.6)	110.2287 (7.6)	110.2287 (7.6)	110.2287 (7.6)	116.0302 (8)



PRESSURE DROP FOR HORIZONTAL INSTALLATION FOR VENTEX® (EXECUTION 20 M/S)

Size – in (DN)	ESI-E				ESI-D		ESI-C	
	Pressure Drop – PSIG (mbarg)				Pressure Drop – PSIG (mbarg)		Pressure Drop – PSIG (mbarg)	
	at 15 m/s		at 20 m/s		at 15 m/s	at 20 m/s	at 15 m/s	at 20 m/s
	A ¹	B ²	A ¹	B ²				
4" (DN100)	0.0616 (4.25)	0.1001 (6.90)	0.1095 (7.55)	0.1774 (12.23)	0.0616 (4.25)	0.1095 (7.55)	0.1001 (6.90)	0.1774 (12.23)
6" (DN150)	0.0625 (4.31)	0.0811 (5.59)	0.1272 (8.77)	0.1434 (9.89)	0.0625 (4.31)	0.1272 (8.77)	0.0811 (5.59)	0.1434 (9.89)
8" (DN200)	0.0336 (2.32)	0.0541 (3.73)	0.0558 (3.85)	0.0938 (6.47)	0.0336 (2.32)	0.0558 (3.85)	0.0541 (3.73)	0.0938 (6.47)
12" (DN300)	0.0360 (2.48)	0.0542 (3.74)	0.0643 (4.43)	0.0941 (6.49)	0.0360 (2.48)	0.0643 (4.43)	0.0534 (3.68)	0.0908 (6.26)
16" (DN400)	0.0609 (4.20)	0.0806 (5.56)	0.1182 (8.15)	0.1389 (9.58)	0.0661 (4.56)	0.1121 (7.73)	0.0783 (5.40)	0.1185 (8.17)
20" (DN500)	0.0651 (4.49)	0.0789 (5.44)	0.1220 (8.41)	0.1417 (9.77)	0.0632 (4.36)	0.1166 (8.04)	0.0789 (5.44)	0.1417 (9.77)
24" (DN600)	0.0618 (4.26)	0.0789 (5.44)	0.1098 (7.57)	0.1379 (9.51)	0.0618 (4.26)	0.1098 (7.57)	0.0793 (5.47)	0.1384 (9.54)

(1) A: with explosion
(2) B: against explosion flow



PRESSURE DROP FOR VERTICAL INSTALLATION FOR VENTEX® (EXECUTION 20 M/S)

Size – in (DN)	ESI-E				ESI-D				ESI-C			
	Pressure Drop – PSIG (mbarg)				Pressure Drop – PSIG (mbarg)				Pressure Drop – PSIG (mbarg)			
	Explosion from top		Explosion from bottom		Explosion from top		Explosion from bottom		Explosion from top		Explosion from bottom	
	at 10 m/s	at 15 m/s	at 10 m/s	at 15 m/s	at 10 m/s	at 15 m/s	at 10 m/s	at 15 m/s	at 10 m/s	at 15 m/s	at 10 m/s	at 15 m/s
4" (DN100)	0.0274 (1.89)	0.0616 (4.25)	0.0276 (1.90)	0.0658 (4.54)	0.0274 (1.89)	0.0616 (4.25)	0.0276 (1.90)	0.0658 (4.54)	0.0447 (3.08)	0.1001 (6.90)	0.0447 (3.08)	0.1001 (6.90)
6" (DN150)	0.0228 (1.57)	0.0625 (4.31)	0.0228 (1.57)	0.0625 (4.31)	0.0228 (1.57)	0.0625 (4.31)	0.0228 (1.57)	0.0625 (4.31)	0.0363 (2.50)	0.0811 (5.59)	0.0363 (2.50)	0.0811 (5.59)
8" (DN200)	0.0149 (1.03)	0.0471 (3.25)	0.0165 (1.14)	0.0336 (2.32)	0.0149 (1.03)	0.0471 (3.25)	0.0165 (1.14)	0.0336 (2.32)	0.0248 (1.71)	0.0541 (3.73)	0.0248 (1.71)	0.0541 (3.73)
12" (DN300)	0.0225 (1.55)	0.0492 (3.39)	0.0177 (1.22)	0.0445 (3.07)	0.0267 (1.84)	0.0551 (3.80)	0.0168 (1.16)	0.0437 (3.01)	0.0638 (4.40)	0.0876 (6.04)	0.0389 (2.68)	0.0686 (4.73)
16" (DN400)	0.0299 (2.06)	0.0672 (4.63)	0.0239 (1.65)	0.0609 (4.20)	0.0299 (2.06)	0.0672 (4.63)	0.0239 (1.65)	0.0609 (4.20)	0.0374 (2.58)	0.0806 (5.56)	0.0374 (2.58)	0.0806 (5.56)
20" (DN500)	0.0268 (1.85)	0.0651 (4.49)	0.0332 (2.29)	0.0766 (5.28)	0.0268 (1.85)	0.0651 (4.49)	0.0332 (2.29)	0.0766 (5.28)	0.0347 (2.39)	0.0789 (5.44)	0.0347 (2.39)	0.0789 (5.44)
24" (DN600)	0.0274 (1.89)	0.0618 (4.26)	0.0274 (1.89)	0.0618 (4.26)	0.0274 (1.89)	0.0618 (4.26)	0.0274 (1.89)	0.0618 (4.26)	0.0358 (2.47)	0.0789 (5.44)	0.0358 (2.47)	0.0789 (5.44)