

## DUAL-FLAP ISOLATION (DFI™) VALVE

### DESCRIPTION

The DFI valve is designed in accordance with the requirements of NFPA 69 and EN16477 to prevent the propagation of dust deflagration flame and pressure through interconnecting pipes, ducts, or conveying lines to additional process equipment or operating locations. The valve mounts to the inlet duct upstream from the protected equipment (e.g., dust collector) using DIN flanges.

The primary valve components include a heavy-duty steel spool weldment, two isolation flaps, removable inspection hatches, flap latch assemblies, and latched position indicator sensors for process shutdown.

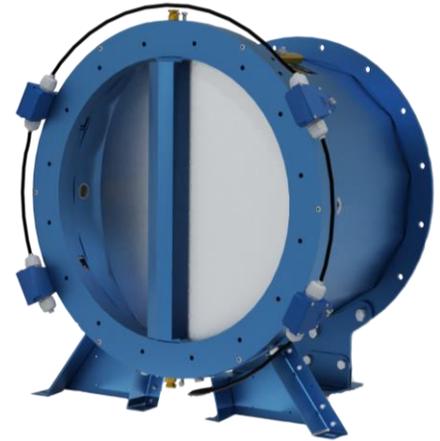
Optional components that can be ordered includes:

- Flange install kit
- Air-Pulse Cleaning Valve (APCV). Refer to data sheet X.1.105.01.
- Dust Layer Accumulation (DLA) sensor. Refer to data sheet X.1.106.01.
- DFI valve Interface Module. Refer to data sheet X.1.104.01.

### OPERATION

The DFI valve's operation is passive (flow actuated), meaning that no external energy is required to close the valve flaps when a deflagration occurs. When the process air is flowing during regular operation, the air pulls or pushes the valve flaps open, allowing air to flow from the process to the protected equipment. If a deflagration occurs in the protected equipment, the explosion pressure created causes the process air to reverse flow, closing the valve flaps, and preventing the deflagration flame front from proceeding upstream past the valve.

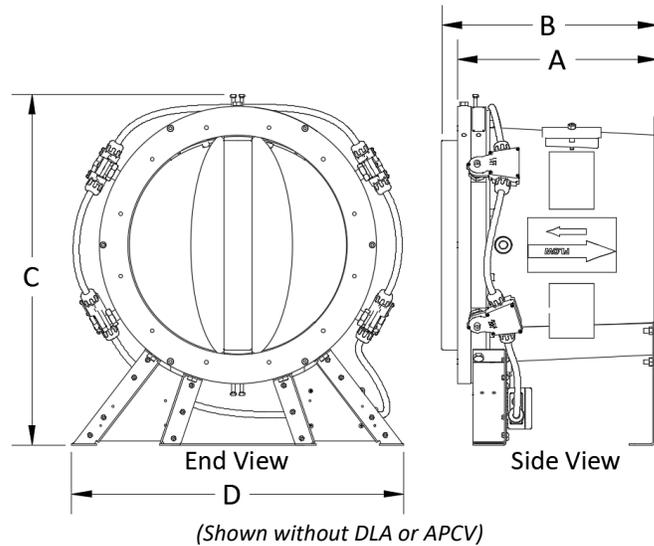
The DFI valve flaps are held closed by the valve's latching assemblies and will remain closed until manually reset. The valve's electrical Latched Position Indicators (LPI) monitor the position of the latching assemblies. When the valve flaps are in the latched (closed) position, a signal is initiated by the LPI electrical circuit indicating valve closure. The LPI circuit can be monitored by the facilities Programmable Logic Controller or other monitoring entity in order to initiate process shutdown upon valve closure.



*Approvals Pending*



## DIMENSIONS, BOLTS, AND MASS



Size	Dimensions, mm (in)				Bolts			Mass kg (lbs)
	A	B	C	D	Size mm	Qty	Torque N-m (ft-lb)	
DN100*	255.3 (10.05)	272.1 (10.71)	348.4 (13.72)	385.1 (15.16)	M8	4	20 (15)	20.4 (45)
DN150*	280.2 (11.03)	297.0 (11.69)	397.2 (15.64)	444.1 (17.48)	M10	8	40 (30)	29.5 (65)
DN200*	305.5 (12.03)	322.4 (12.69)	464.4 (18.28)	475.2 (18.71)	M10	8	40 (30)	38.6 (85)
DN250*	330.2 (13.00)	347.1 (13.66)	509.4 (20.05)	505.7 (19.91)	M10	8	40 (30)	45.4 (100)
DN300*	355.4 (13.99)	372.3 (14.66)	545.6 (21.48)	522.7 (20.58)	M10	8	40 (30)	59.0 (130)
DN355*	382.9 (15.08)	399.8 (15.74)	607.7 (23.93)	575.5 (22.66)	M10	8	40 (30)	68.0 (150)
DN400*	405.1 (15.95)	422.0 (16.61)	708.2 (27.88)	719.3 (28.32)	M10	12	40 (30)	81.6 (180)
DN450	430.4 (16.94)	466.3 (18.36)	752.5 (29.63)	726.3 (28.59)	M10	12	40 (30)	99.8 (220)
DN500	455.3 (17.93)	491.3 (19.34)	797.9 (31.41)	755.3 (29.73)	M10	12	40 (30)	108.9 (240)
DN560	485.3 (19.11)	521.3 (20.52)	859.6 (33.84)	803.9 (31.65)	M12	16	40 (30)	136.1 (300)
DN600	505.1 (19.89)	541.0 (21.30)	896.5 (35.29)	828.9 (32.63)	M12	16	40 (30)	147.4 (325)
DN630	521.0 (20.51)	55.69 (21.93)	922.5 (36.32)	846.5 (33.33)	M12	16	40 (30)	156.5 (345)
DN710	560.3 (22.06)	596.2 (23.47)	994.2 (39.14)	895.3 (35.25)	M12	16	40 (30)	176.9 (390)
DN800	605.1 (23.82)	641.0 (25.24)	1074.9 (42.32)	948.9 (37.36)	M12	24	40 (30)	201.8 (445)

\*Not yet for sale. Coming soon."

All sizes listed conform with NFPA 69 and EN16447.

All sizes listed utilize DIN 24154-R2, T2 flanges for process mounting.

## SPECIFICATIONS

<b>Dual-Flap Isolation Valve</b>	
Approvals Pending	ATEX –  II D, according to EN16447
Process Connection	DIN 24154-RII flanges
Installation Orientation	Horizontal or Vertical (flaps down)
Body Material	Coated carbon steel, A1011 [1.0044]
Wetted Parts	A1011 [1.0044], 17-4 PH SST [1.4548], 316 SST [1.4401], EPDM
Explosion Hazard	$K_{st} \leq 348$ bar m/s (DN100 – DN600)
	$K_{st} \leq 278$ bar m/s (DN630 – DN800)
	$P_{max} \leq 10$ bar (145 psig)
$P_{red,max}$	1.5 bar (21.75 psig) DN100-400
	1.0 bar (14.5 psig) DN450-600
	0.6 bar (8.7 psig) DN630-800
Minimum Approved Vessel Volume	0.34m <sup>3</sup> for DN100-400
	1.0m <sup>3</sup> for DN450-600
	5.1m <sup>3</sup> for DN630-800
Explosion Pressure Resistance	3.0 bar (21.75 psig) DN100-400
	2.0 bar (14.5 psig) DN450-600
	1.5 bar (10.88) DN630-800
Operating Temperature Range <sup>[1]</sup>	-20C to 120C (-4F to 248F)
Environmental Temperature Range <sup>[1]</sup>	-40C to 70C (-40F to 160F)
Fuel MIE / MIT Limits	MIE $\geq 1.4$ mJ / 450°C MAIT
Fuel Type	Organic and metal dusts, including light metal dusts such as Aluminum
Maximum Experimental Safe Gap (MESG)	$\geq 1.25$ mm
Operating Pressure	$\pm 0.5$ bar ( $\pm 7.3$ psig); Approved for PUSH or PULL SYSTEMS
Pressure Drop	[DN/mbar]@20m/s process velocity = [450/3.44], [500/3.25], [560/3.06], [600/2.94], [630/2.87], [710/2.69], [800/2.52] <sup>[2]</sup>
<b>Locked Position Indicator (P/N 02-13579-1)</b>	
Sensing Range	12 mm, flush mount
Approvals <sup>[3]</sup>	IEC/IECEX – CSA
Electrical Design	Connected to Ex-NAMUR rated intrinsically safe circuits
Maximum Switching Voltage	175 Vdc
Maximum Switching Current	0.25 A dc
Typical Resistance	0.2 $\Omega$
Nominal Switching Voltage	8.2 Vdc
Ambient Temperature	-40°C to 105°C (-40°F to 221°F)
Wiring	Two conductors, 24 AWG 7/32 PVC cable 105°C, 1000 mm, tinned leads
Housing	SS M8 dia x 1.25 mm pitch thread, 36 mm body, two retaining nuts

<sup>[1]</sup> Temperature limits provided for the base valve. See optional component limits.

<sup>[2]</sup> Consult Factory for pressure drops of other size and velocity combinations.

<sup>[3]</sup> This is a simple device that is not covered by the ATEX product directive 2014/34/EG. When installed in an ATEX zoned area, indicators can only be applied in circuits of type protection “I.”

## ORDERING

Part Number	Description
E30-067-A-B-C-D-E	Dual-flap isolation valve assembly
A (valve DN size):	0100 <sup>[1]</sup> 0250 <sup>[1]</sup> 0400 <sup>[1]</sup> 0560    0710 0150 <sup>[1]</sup> 0300 <sup>[1]</sup> 0450    0600    0800 0200 <sup>[1]</sup> 0355 <sup>[1]</sup> 0500    0630
B (material/coating):	CS = Carbon steel, ISO 12944 C3 coating C5M = Carbon steel, ISO 12944 C5M coating <sup>[1]</sup> SST = Stainless steel (SST) <sup>[1]</sup>
C (install kit):	0 = None 1 = Carbon Steel (CS) Flanges <sup>[2]</sup> 2 = Stainless Steel (SST) Flanges <sup>[2]</sup>
D (DLA):	0 = None 1 = Dust layer accumulation sensor included (refer to data sheet X.1.106.01) <sup>[3]</sup>
E (APCV):	0 = None 1 = Air pulse cleaning valve included, ATEX/IECEX (refer to data sheet X.1.105.01) <sup>[3]</sup> 2 = Air pulse cleaning valve included, CSA/IECEX (refer to data sheet X.1.105.01) <sup>[3]</sup>
02-15293	Dual-channel intrinsic safety barrier <sup>[4]</sup>
E10-080-X-X-X-X	Interface Module (refer to data sheet X.1.104.01) <sup>[5]</sup>

<sup>1</sup>Not yet for sale. Coming soon.

<sup>2</sup>Kit includes companion mounting flanges, gaskets, and mounting hardware.

<sup>3</sup>Component is field installed to the isolation valve.

<sup>4</sup>Required for connection of the valve's latched position indicator circuit and optional dust layer accumulation sensor to the facilities programmable logic controller (PLC) when installed in a hazardous area. The barrier is ordered separately. An ISB is not required if the optional Interface Module is used.

<sup>5</sup>Optional item that can be installed to provide localized monitoring of the isolation valve.

### Example:

**E30-067-0200-C5M-1-1-1** = DN200 valve with ISO 12944 C5M coating, CS flange install kit, optional dust accumulation sensor included, and optional air pulse cleaning valve (ATEX) included.