



**Hazardous Location Solutions** | for the Process Control Industry

UL • CSA • FM • ATEX • IECEx • NEPSI • INMETRO • TR CU





## Global Approvals

Fluid automation equipment must operate flawlessly in hazardous or explosive environments. Solenoid-operated valves are essential components in these challenging applications. They must comply with the strictest safety regulations while staying up and running, cycle after cycle, year after year.

ASCO offers the world's most comprehensive family of products that hold approvals from the leading global agencies — UL, CSA, FM, ATEX, and IECEx. In addition, our valves are inspected and certified to NEPSI in China, INMETRO in Brazil, and TR CU in Russia. That means users can specify highly reliable ASCO valves in their designs and be assured they are approved for use in dangerous conditions — anywhere in the world.

### ASCO's global solutions for hazardous locations include valves available in the following models:

- Standard 3-way and 4-way solenoid valves
- Direct-acting and pilot-operated solenoid valves
- Manual reset and NAMUR valves
- Rugged 316L Stainless Steel valves for harsh environments
- Low Power Intrinsically Safe and Non-Incendive Field Wiring solenoid valves
- Low temperature constructions down to -58°F (-50°C)

ASCO offers hundreds of valve constructions with various global approvals that can be exported worldwide. Our products are famous for their robust operator heads and extended service lives.

These products are ideal for the mission-critical demands of power generation, chemical processing, oil, gas, and refining applications, plus general machinery, wellhead control, mining equipment and measuring and controlling devices.

With more than 100 specialists and over 140 distributors in the U.S. alone, ASCO has the technical expertise that can rapidly solve application problems and help interpret confusing product codes and classifications. Our one-stop shopping offers time-saving convenience and rapid fulfillment. There's only one source to specify; one contact number to call; one solution to keep in inventory.

Only ASCO solenoid valves deliver the advanced designs, top-grade materials, meticulous manufacturing, and unequaled quality assurance that maximize durability and achieve unsurpassed performance in hazardous and explosive environments.

**If you cannot find the product you need or if you need more detailed specifications, visit [www.ascovalve.com](http://www.ascovalve.com) or call 800-972-2726.**

**CAUTION:** Users should consult [www.ascovalve.com](http://www.ascovalve.com) or Catalog 35 to see complete specifications for the products selected from this catalog.

**⚠WARNING:** Improper selection or use of products and related items in this catalog can cause death, serious injury, or property damage.



The majority of the items listed below are part of the ASCO Express Shipping program which includes ASCO SameDay and 5Day products:



Items qualifying for SameDay shipping are guaranteed to ship same business day if the order is received before 3 P.M. EST with a maximum quantity of 25 pieces.



Items qualifying for 5Day shipping are guaranteed to ship within 5 business days with a maximum quantity of 25 pieces.

### Hazardous Locations Product Offering



	Valve Series	Type	Pipe Size (in)	Max. Cv (Kv)	UL or FM ④	CSA	ATEX/IECEx	TR CU	INMETRO	NEPSI	Page
Explosion-proof Encapsulated Coil	EV 8314	3-Way	1/8-1/4	0.2 (.17)	●	●	● ①	-	-	-	2 & 4
	EV 8316	3-Way	1/4-3/4	12.5 (11)	●	●	● ①	-	-	-	2
	EV 8317	3-Way	1/4	0.73 (0.63)	●	●	● ①	-	-	-	2 & 4
	EV 8320	3-Way	1/4	.35 (.30)	●	●	● ①	-	-	-	3
	EV 8327	3-Way	1/4	.56 (.48)	●	●	● ①	-	-	-	4
	EV 8344	4-Way	1/4-1/2	2.2 (1.89)	●	●	● ①	-	-	-	2
	EV 8551	3-Way 4-Way	1/4	.86 (.75)	●	●	● ①	-	-	-	3 & 5
Intrinsic Safety	JPIS 8314	3-Way	1/4	.06 (.05)	●	●	● ②	-	-	●	2
	JPIS 8316	3-Way	1/4-3/4	5.5 (4.7)	●	●	● ②	-	-	●	2
	JPIS 8317	3-Way	1/4	.73 (.63)	●	●	● ②	-	-	●	2
	JPIS 8344	4-Way	1/4-3/4	5.6 (4.8)	●	●	● ②	-	-	●	2
	JPIS 8551	3-Way 4-Way	1/4	.86 (.75)	●	●	● ②	-	-	●	3
Explosion-proof Enclosure	Harsh Environment 8320	3-Way	1/4	.16 (.14)	●	●	●	-	-	-	6
	NF/WSNF 8316*	3-Way	1/4-1/2	3.9 (3.4)	-	-	● ③	●	●	●	6
	NF/WSNF 8320*	3-Way	1/4	.24 (.21)	-	-	● ③	●	●	●	6
	NF/WSNF 8327*	3-Way	1/4	.52 (.45)	-	-	● ③	●	●	●	6 & 7
	NF/WSNF 8551*	3-Way 4-Way	1/4	.87 (.75)	-	-	● ③	●	●	●	6 & 7

① II 2G Ex d mb IIC T\* Gb  
II 2D Ex mb IIIC T\*\* Db IP67 | under SIRA 14 ATEX 1192X

Ex d mb IIC T\* Gb  
Ex mb IIIC T\*\* Db | under IECEx SIR 14.0064X

② II 1 G Ex ia IIC T6 Ga under FM10ATEX0015X  
IECEx approved for: Ex ia IIC T6 Ga under IECExFMG10.0008X

③ II 2G Ex d IIC Ga T6, II2D Ex + IIIC Db

④ FM available for JPIS only

\*Designated products not included in the SameDay or 5Day program have lead times of three weeks or less.

## Low Power & Intrinsically Safe

### Low Power

- Molded one-piece solenoid with highly efficient solenoid cartridge and special low wattage coil
- Designed for use in automation of plant control systems to provide PLC compatibility and reduced battery drain

### Intrinsically Safe

- Designed solely for installation in intrinsically safe or Non-Incendive Field Wiring (NIFW) areas, with properly approved and sized limiting barriers
- Compatible with supervisory current applications

Pipe Size (in)	Orifice Size (mm)	Cv Flow Factor (Kv=m <sup>3</sup> /h)		Operating Pressure Differential psi (bar)		Max. Fluid and Ambient Temp. °F (°C)	Body	
				Air-Inert Gas			Brass Body	Stainless Steel Body
		Pressure to Cylinder	Cylinder to Exhaust	Min.	Max.		Catalog Number	Catalog Number
<b>Low Power (1.4 Watt)</b>								
<b>3/2 VALVES, UNIVERSAL OPERATION (Normally Closed or Normally Open) with NBR Disc – SIL 3 Capable, Certified by Exida ⑦ ⑧</b>								
1/4	1/16 (2)	.08 (.07)	.08 (.07)	0	150 (10)	140 (60)	EV8314G300	EV8314G301 ⑥
<b>3/2 VALVES, NORMALLY CLOSED (Closed when de-energized) with NBR Disc – SIL 3 Capable, Certified by Exida ⑦</b>								
1/4	5/16 (8)	1.5 (1.29)	1.5 (1.29)	⑤	150 (10)	140 (60)	EV8316G301 ③	EV8316G381 ⑥
3/8	5/16 (8)	1.8 (1.37)	1.8 (1.37)	⑤	150 (10)	140 (60)	EV8316G302 ③	EV8316G382 ⑥
3/8	5/8 (16)	4 (3.43)	4 (3.43)	⑤	150 (10)	140 (60)	EV8316G303 ③	-
1/2	5/8 (16)	4 (3.43)	4 (3.43)	⑤	150 (10)	140 (60)	EV8316G304 ③	EV8316G384 ⑥
<b>3/2 VALVES, UNIVERSAL (Normally Closed or Normally Open) "Quick Exhaust" with CR Diaphragm and NBR Disc</b>								
1/4	②	.08 (.07)	.73 (.63)	5 (0.3)	150 (10)	140 (60)	-	EV8317G308 ①⑥
<b>4/2 VALVES, Brass Body with NBR Disc</b>								
1/4	1/4 (6)	.80 (0.69)	1 (0.86)	10 (0.7)	150 (10)	140 (60)	EV8344G370 ①③	-
3/8	3/8 (10)	1.4 (1.20)	2.2 (1.89)	10 (0.7)	150 (10)	140 (60)	EV8344G372 ①③	-
1/2	3/8 (10)	1.4 (1.20)	2.2 (1.89)	10 (0.7)	150 (10)	140 (60)	EV8344G374 ①③	-
<b>Intrinsically Safe</b>								
<b>3/2 VALVES, UNIVERSAL OPERATION (NORMALLY CLOSED or NORMALLY OPEN) with NBR Disc – SIL 3 Capable, Certified by Exida ⑦ ⑧</b>								
1/4	1/20 (1.3)	.06 (.05)	.06 (.05)	0	130/105 (9/7) ⑥	149 (65)	JPIS8314B300	-
<b>3/2 VALVES, NORMALLY CLOSED (Closed when de-energized) with NBR Disc or FKM (Suffix V), as Listed – SIL 3 Capable, Certified by Exida ⑦</b>								
1/4	5/16 (8)	1.5 (1.3)	1.5 (1.3)	⑤	130 (9)	149 (65)	JPIS8316B301 ③	-
3/8	5/16 (8)	1.8 (1.6)	1.8 (1.6)	⑤	130 (9)	149 (65)	JPIS8316B302 ③	-
3/8	5/8 (16)	4 (3.5)	4 (3.5)	⑤	130 (9)	149 (65)	JPIS8316B303 ③	-
1/2	5/8 (16)	4 (3.5)	4 (3.5)	⑤	130 (9)	149 (65)	JPIS8316B304 ③	-
3/4	11/16 (17)	5.5 (4.7)	5.5 (4.7)	10 (0.7)	130 (9)	149 (65)	JPIS8316B374 ③	-
<b>3/2 VALVES, UNIVERSAL (NORMALLY CLOSED or NORMALLY OPEN) "Quick Exhaust" with NBR Diaphragm and NBR Disc</b>								
1/4	②	.06 (.07)	.73 (.63)	5 (0.3)	130 (9)	149 (65)	JPIS8317B307 ①	-
<b>4/2 VALVES, Brass Body with NBR Disc</b>								
1/4	1/4 (6)	.80 (.69)	1 (.86)	10 (0.7)	130 (9)	149 (65)	JPIS8344B370 ①③	-
3/8	3/8 (10)	1.5 (1.3)	2.2 (1.9)	10 (0.7)	130 (9)	149 (65)	JPIS8344B372 ①③	-
1/2	3/8 (10)	1.5 (1.3)	2.2 (1.9)	10 (0.7)	130 (9)	149 (65)	JPIS8344B374 ①③	-
3/4	3/4 (19)	5.2 (4.5)	5.6 (4.8)	10 (0.7)	130 (9)	149 (65)	JPIS8344B376 ①③	-

① There are two exhaust flows in the exhaust mode (pilot and main). The pilot exhaust must be connected to the main exhaust when the air or inert gas cannot be exhausted to atmosphere.  
 ② For "Quick Exhaust" valves, pressure port is 1/16", exhaust port is 1/4".  
 ③ **IMPORTANT:** A Minimum Operating Pressure Differential must be maintained between the pressure and exhaust ports. Supply and exhaust piping must be full area, unrestricted. ASCO flow controls and other similar components must be installed in the cylinder lines only.  
 ④ Zero minimum when valve selection gasket is in external position and proper auxiliary air pressure is applied. Minimum 15 psi (1 bar) Operating Pressure Differential when selection gasket is in the internal position.  
 ⑤ Can be used for dry natural gas service with EV prefix.  
 ⑥ Safety manual and FMEDA (Failure Modes Effects and Diagnostic Analysis) report available.  
 ⑦ SIL 3 Capable, Certified by Exida only valid when used as Normally Closed.

## Low Power & Intrinsically Safe

Body Material	Pipe Size (in)	Orifice Size in (mm)	Cv Flow Factor (Kv=m <sup>3</sup> /h)	Single Solenoid – SIL 3 Capable, Certified by Exida ⑦			
				Operating Pressure Differential psi (bar)		Max. Fluid Temp. °F (°C)	Catalog Number
				Air-Inert Gas			
				Min.	Max.		
<b>Low power - Spool Valves (1.4 Watt)</b>							
<b>3/2, 5/2 VALVES, with NBR and PUR Seals, NAMUR Mount</b>							
Aluminum 3/2, 5/2	1/4	1/4 (6)	.86 (.7)	30 (2)	150 (10)	140 (60)	EV8551G301 ①
316L Stainless Steel 3/2, 5/2	1/4	1/4 (6)	.86 (.7)	30 (2)	150 (10)	140 (60)	EV8551G309 ③⑥
<b>Intrinsically Safe - Spool Valves</b>							
<b>3/2, 5/2 VALVES, with NBR and PUR Seals, NAMUR Mount</b>							
Aluminum 3/2, 5/2	1/4	1/4 (6)	.86 (.74)	35 (2.4)	130 (9)	149 (65)	JPIS8551B301 ①
316L Stainless Steel 3/2, 5/2	1/4	1/4 (6)	.86 (.74)	35 (2.4)	130 (9)	149 (65)	JPIS8551B309

① 1/8" NPT exhaust for 1/4" aluminum and brass.  
 ③ Stainless steel construction supplied standard with EV solenoid.  
 ⑥ Can be used for dry natural gas service with EV prefix.  
 ⑦ Safety manual and FMEDA (Failure Modes Effects and Diagnostic Analysis) report available.

## 3-Way | General Service

### 8320 Series

- All NPT connections are in the valve body to allow in-line piping
- No Minimum Operating Pressure Differential required

Pipe Size (in)	Orifice Size (in)	Cv Flow Factor (Kv=m <sup>3</sup> /h)	Operating Pressure Differential psi (bar)						Max. Fluid Temp. °F (°C)		Brass Body	Stainless Steel Body	Watt Rating/Class of Coil Insulation	
			Max. AC			Max. DC			AC	DC	Catalog Number	Catalog Number	AC	DC
			Air-Inert Gas	Water ⑤	Lt. Oil @ 300 SSU	Air-Inert Gas	Water ⑤	Lt. Oil @ 300 SSU						
<b>3-Way EV 8320 Series</b>														
<b>UNIVERSAL OPERATION (Pressure at any port)</b>														
1/4	1/16 (1.6)	0.09 (0.08)	125 (9)	130 (9)	130 (9)	75 (5)	75 (5)	75 (5)	200(93)	150 (66)	EV8320G172	-	10.1/F	11.6/F
1/4	3/32 (2)	0.12 (0.10)	100 (7)	100 (7)	100 (7)	60 (4)	60 (4)	60 (4)	200(93)	150 (66)	EV8320G174	EV8320G200 ③④	17.1/F	11.6/F
1/4	1/8 (3.2)	0.25 (0.21)	50 (3)	50 (3)	50 (3)	25 (2)	25 (2)	25 (2)	200(93)	150 (66)	EV8320G176	-	17.1/F	11.6/F
1/4	11/64 (4.4)	0.35 (0.30)	20 (1)	20 (1)	20 (1)	12 (1)	12 (1)	12 (1)	200(93)	150 (66)	EV8320G178	-	10.1/F	11.6/F
<b>NORMALLY CLOSED (Closed when de-energized) – PFD<sub>AVG</sub> = 6.81 x 10<sup>-4</sup></b>														
1/4	1/16 (1.6)	0.09 (0.08)	210 (14)	225 (15)	225 (15)	160 (11)	160 (11)	160 (11)	200(93)	150 (66)	EV8320G182	-	17.1/F	11.6/F
1/4	3/32 (2)	0.12 (0.10)	150 (10)	150 (10)	150 (10)	115 (8)	115 (8)	115 (8)	200(93)	150 (66)	EV8320G184	EV8320G202 ③④	10.1/F	11.6/F
1/4	1/8 (3.2)	0.25 (0.21)	85 (6)	85 (6)	85 (6)	60 (4)	60 (4)	60 (4)	200(93)	150 (66)	-	EV8320G203 ③④	10.1/F	11.6/F
<b>NORMALLY OPEN (Open when de-energized)</b>														
1/4	1/16 (1.6)	0.09 (0.08)	235 (16)	250 (17)	250 (17)	160 (11)	160 (11)	160 (11)	200(93)	150 (66)	EV8320G192	-	17.1/F	11.6/F
1/4	3/32 (2)	0.12 (0.10)	150 (10)	140 (10)	140 (10)	100 (7)	100 (7)	100 (7)	200(93)	150 (66)	EV8320G194	-	10.1/F	11.6/F
1/4	1/8 (3.2)	0.25 (0.21)	70 (5)	70 (5)	70 (5)	55 (4)	55 (4)	55 (4)	200(93)	150 (66)	EV8320G196	-	10.1/F	11.6/F

③ Can be used for dry natural gas service with the EV prefix.  
 ④ Constructions standard rated -40°F (-40°C) ambient temperature. EVX prefix and TPL # not required.  
 ⑤ Water rating, CSA certified up to 232 psi (16 bar).

3-Way | General Service

## 8317 Series

- Designed for quick exhaust to 0 psi through the exhaust orifice
- Resilient seated poppets for tight shutoff

Pipe Size (in)	Orifice Size in (mm)		Cv Flow Factor (Kv=m <sup>3</sup> /h)		Operating Pressure Differential psi (bar)							Max. Fluid Temp. °F (°C)		Brass Body Catalog Number	Stainless Steel Body Catalog Number	Watt Rating/ Class of Coil Insulation <sup>③</sup>	
					Max. AC			Max. DC								AC	DC
	Press.	Exh.	Press.	Exh.	Min. <sup>①</sup>	Air-Inert Gas	Water	Lt. Oil <sup>①</sup> @45 SSU	Air-Inert Gas	Water	Lt. Oil <sup>①</sup> @45 SSU						
<b>3-Way EV 8317 Series</b>																	
<b>NORMALLY CLOSED (Closed when de-energized)</b>																	
1/4	3/32 (2)	1/4 (6)	.20 (.17)	.73 (.63)	5 (.3) <sup>②</sup>	150 (10)	150 (10)	95 (7)	75 (5)	55 (4)	30 (2)	180 (82)	104 (40)	EV8317G035	EV8317G036	10.1/F	11.6/F
① Rating for 8321 valves established with 300 SSU light oil. ② Minimum Operating Pressure Differential on light oil is 10 psi (0.7 bar).																	

## 8314 Series

- No minimum operating pressure required
- Simplest valve for basic 3-way piloting operation, only one spring and two moving parts

Pipe Size (in)	Orifice Size in (mm)	Cv Flow Factor (Kv=m <sup>3</sup> /h) 2-1	Cv Flow Factor (Kv=m <sup>3</sup> /h) 1-3	Operating Pressure Differential psi (bar)						Max. Fluid Temp. °F (°C) <sup>①</sup>		Brass Body Catalog Number	Stainless Steel Body Catalog Number	Watt Rating/ Class of Coil Insulation		
				Max. AC			Max. DC							AC	DC	AC
				Air-Inert Gas	Water <sup>②</sup>	Light Oil @ 45 SSU	Air-Inert Gas	Water <sup>②</sup>	Light Oil @ 45 SSU							
<b>3-Way EV 8314 Series</b>																
<b>UNIVERSAL OPERATION (Pressure at any port)</b>																
1/8	3/64 (1.2)	0.05 (0.04)	0.06 (0.05)	200 (14)	200 (14)	200 (14)	200 (14)	200 (14)	200 (14)	200 (14)	200 (93)	200 (93)	EV8314H041	-	10.1/F	11.6/F
1/4	3/64 (1.2)	0.05 (0.04)	0.06 (0.05)	200 (14)	200 (14)	200 (14)	200 (14)	200 (14)	200 (14)	200 (14)	200 (93)	200 (93)	EV8314H006	-	10.1/F	11.6/F
<b>NORMALLY CLOSED (Closed when de-energized) – PFD AVG = 4.77 x 10<sup>-4</sup></b>																
1/4	3/32 (2.4)	0.15 (0.13)	0.20 (0.17)	205 (14)	205 (14)	190 (13)	150 (10)	120 (8)	90 (6)	200 (93)	200 (93)	EV8314H035	EV8314H121	10.1/F	11.6/F	
① Maximum fluid temperature for light oil @ 45 SSU is 180°F (82°C). ② Water rating, CSA certified up to 232 psi (16 bar).																

## 8327 Series

- Designed for high flow piloting with no minimum operating pressure required
- Balanced poppet construction for high flow at minimum power levels

Pipe Size (in)	Orifice Size in (mm)	Cv Flow Factor (Kv=m <sup>3</sup> /h)		Maximum Operating Pressure Differential psi (bar)			Max. Fluid Temp. °F (°C)	Brass Body Catalog Number	316 Stainless Steel Body Catalog Number	Const. Ref.	Watt Rating/ Class of Coil Insulation	
		Ports 1-2	Ports 2-3	Air-Inert Gas	Water	Light Oil @ 300 SSU					AC	DC
<b>3-Way EV 8327 Series</b>												
<b>UNIVERSAL OPERATION (Pressure at any port)</b>												
1/4	1/4 (6)	.49 (.42)	.56 (.48)	150 (10)	150 (10)	150 (10)	176 (80)	EV8327G041	-	1	12.0/F	11.6/F
1/4	1/4 (6)	.49 (.42)	.56 (.48)	150 (10)	150 (10)	150 (10)	248 (120)	-	EV8327G042	1	12.0/F	11.6/F

**3-Way | General Service**
**8551 Series**

- Unique spool design combines hard T-seals and flexible o-rings which provides bubble-tight shutoff, resistance to dirt and sticking, and multimillion cycle life controlling air or inert gas

Body Material	Pipe Size (in)	Orifice Size in (mm)	Cv Flow Factor (Kv=m³/h)	Single Solenoid – SIL 3 Capable, Certified by Exida ①						Watt Rating/ Class of Coil Insulation			
				Operating Pressure Differential psi (bar)			Max. Fluid Temp. °F (°C)			Catalog Number	AC	DC	
				Air-Inert Gas			AC	DC	AC				DC
				Min.	Max. AC	Max. DC							
<b>3-Way EV 8551 Series - NAMUR Mount Spool Valves</b>													
316L Stainless Steel 3/2, 5/2	1/4	1/4 (6)	.86 (.75)	30 (2)	150 (10)	120 (8.2)	140 (60)	120 (48)	EV8551G409	10.1/F	11.6/F		

① Safety manual and FMEDA (Failure Modes Effects and Diagnostic Analysis) report available.

**4-Way | General Service**
**8345 Series**

- Compact 4-way valves for low flow applications

Pipe Size (in)	Orifice Size in (mm)		Cv Flow Factor (Kv=m³/h)		Operating Pressure Differential psi (bar)						Max. Fluid Temp. °F (°C)		Watt Rating/ Class of Coil Insulation			
	Press.	Exh.	Inlet	Exh.	Max. AC			Max. DC			AC	DC	Catalog Number	AC	DC	
					Min.	Air-Inert Gas	Water	Lt. Oil @ 50 SSU	Air-Inert Gas	Water						Lt. Oil @ 50 SSU
<b>4-Way EV 8345 Series</b>																
<b>SINGLE SOLENOID</b>																
1/4	1/16 (2)	3/32 (2)	.09 (.08)	.09 (.08)	10 (.07)	150 (10)	150 (10)	150 (10)	100 (7)	100 (7)	100 (7)	180 (82)	104 (40)	EV8345G001	10.1/F	11.6/F

The following valves are not part of the ASCO Express Shipping program.  
 Typical lead times are three weeks or less. Please consult the factory for specific lead times.

## Harsh Environment

- Designed for harsh, hazardous environments, including offshore applications
- Low power consumption suitable for solar panels and PLC/DCS applications

Pipe Size (in)	Orifice Size in (mm)		Cv Flow Factor (Kv=m <sup>3</sup> /h)		Operating Pressure Differential psi (bar)		Ambient Temp. °F (°C)		Stainless Steel Body  Catalog Number ②	Wattage Rating/ Coil Insulation  12 or 24 VDC
	Pressure	Exhaust	Pressure	Exhaust	Air/Natural Gas		Min.	Max.		
					Min.	Max.				
<b>NORMALLY CLOSED (Closed when de-energized)</b>										
1/4	1/16 (1.6)	3/32 (2.4)	0.08 (0.07)	0.16 (0.14)	0	150 (10) ①	-4 (-20)	122 (50)	EF8320A511	1.3/F

① Light Oil @ 300 SSU Max. Pressure 125 psi (8.6 bar). ② SIL 3 Capable, Certified by Exida

## 3 and 4-Way ATEX Pilot Valves

- Worldwide approvals for use in potentially explosive atmospheres: ATEX, IECEx, INMETRO, TR CU, and NEPSI
- Enclosure provided with a 1/2 NPT threaded entry hole for a broad range of cable glands
- IP67 ingress protection
- Operator can be rotated through 360° to select the most favorable position for cable entry

## 3-Way ATEX Pilot Valves

Pipe Size in (mm)	Orifice Size in (mm)	Cv Flow Factor (Kv=m <sup>3</sup> /h)	Operating Pressure Differential psi (bar)							Ambient Temp. °F (°C)			Brass	Stainless	Watt Rating/ Class of Coil Insulation	
			Min.	Max. AC			Max. DC			Min	Max. AC	Max. DC			AC	DC
				Air-Inert Gas	Water	Light Oil @ 300 SSU	Air-Inert Gas	Water	Light Oil @ 300 SSU							
<b>3/2 VALVES, UNIVERSAL, DIRECT ACTING, BALANCED POPPET</b>																
1/4	0.22 (5.7)	0.52 (0.45)	0 (0)	145 (10)	145 (10)	-	145 (10)	145 (10)	-	-4 (-20)	248 (120)	248 (120)	NF8327B101 ①	WSNF8327B102	3.7	3.6
1/4	0.22 (5.7)	0.52 (0.45)	0 (0)	145 (10)	145 (10)	-	145 (10)	145 (10)	-	-58 (-50)	140 (60)	140 (60)	NF8327B111 ③	WSNF8327B112	3.7	3.6
① Fluoroelastomer sealings and poppets. ③ Fluorosilicone sealings and poppets.																
<b>3/2 VALVES, DIRECT ACTING, UNIVERSAL</b>																
1/4	0.13 (3.2)	0.24 (0.21)	0 (0)	49 (3.4)	49 (3.4)	50 (3.4)	25 (1.7)	25 (1.7)	25 (1.4)	32 (0)	126 (52)	104 (40)	NF8320B176	WSNF8320A201	17.1	11.6
1/4	0.09 (2.4)	0.12 (0.1)	0 (0)	102 (7)	102 (7)	-	58 (4)	58 (4)	-	-4 (-20)	194 (90)	194 (90)	NF8320B174	WSNF8320A200	16.7	11.2
<b>3/2 VALVES, DIRECT ACTING, NORMALLY CLOSED</b>																
1/4	0.09 (2.4)	0.12 (0.1)	0 (0)	145 (10)	145 (10)	-	116 (8)	116 (8)	-	-4 (-20)	194 (90)	194 (90)	NF8320A184	WSNF8320A202	10.5	11.2
<b>3/2 VALVES, DIRECT ACTING, NORMALLY OPEN</b>																
1/4	0.09 (2.4)	0.12 (0.1)	0 (0)	73 (5)	73 (5)	-	58 (4)	58 (4)	-	-4 (-20)	194 (90)	194 (90)	NF8320A196	WSNF8320A205	10.5	11.2
1/4	0.09 (2.4)	0.12 (0.1)	0 (0)	145 (10)	145 (10)	-	102 (7)	102 (7)	-	-4 (-20)	194 (90)	194 (90)	NF8320A194	WSNF8320A204	10.5	11.2
<b>3/2 VALVES, ZERO MINIMUM, NORMALLY CLOSED</b>																
1/4	0.31 (8)	1.5 (1.3)	0 (0) ④	145 (10)	-	-	116 (8)	-	-	-4 (-20)	176 (80)	176 (80)	NF8316A001 ⑤	WSNF8316A081V ⑥	10.5	11.2
1/4	0.31 (8)	1.5 (1.3)	0 (0) ④	145 (10)	-	-	145 (10)	-	-	-4 (-20)	140 (60)	140 (60)	NF8316A301 ⑤	WSNF8316A381V ⑥	1.8	1.8
3/8	0.31 (8)	1.7 (1.5)	0 (0) ④	145 (10)	-	-	116 (8)	-	-	-4 (-20)	176 (80)	176 (80)	NF8316A002 ⑤	WSNF8316A082V ⑥	10.5	11.2
3/8	0.31 (8)	1.7 (1.5)	0 (0) ④	145 (10)	-	-	145 (10)	-	-	-4 (-20)	140 (60)	140 (60)	NF8316A302 ⑤	WSNF8316A382V ⑥	1.8	1.8
3/8	0.63 (16)	3.9 (3.4)	0 (0) ④	145 (10)	-	-	116 (8)	-	-	-4 (-20)	176 (80)	176 (80)	NF8316A003 ⑤	-	10.5	11.2
3/8	0.63 (16)	3.9 (3.4)	0 (0) ④	145 (10)	-	-	145 (10)	-	-	-4 (-20)	140 (60)	140 (60)	NF8316A303 ⑤	-	1.8	1.8
1/2	0.63 (16)	3.9 (3.4)	0 (0) ④	145 (10)	-	-	116 (8)	-	-	-4 (-20)	176 (80)	176 (80)	NF8316A004 ⑤	WSNF8316A084V ⑥	10.5	11.2
1/2	0.63 (16)	3.9 (3.4)	0 (0) ④	145 (10)	-	-	145 (10)	-	-	-4 (-20)	140 (60)	140 (60)	NF8316A304 ⑤	WSNF8316A384V ⑥	1.8	1.8
④ Zero minimum when valve selection gasket is in external position and proper auxiliary air pressure is applied. Minimum 15 psi (1 bar) operating pressure differential when selection gasket is in the internal position. ⑤ Nitrile seal materials. ⑥ Fluoroelastomer seal materials.																
<b>3/2 VALVES, PILOT OPERATED, SPOOL TYPE, NORMALLY CLOSED</b>																
1/4	0.24 (6)	0.87 (0.75)	30 (2)	145 (10)	-	-	145 (10)	-	-	-13 (-25)	140 (60)	140 (60)	NF8551B405 ⑦		10.5	11.2
1/4	0.24 (6)	0.87 (0.75)	30 (2)	145 (10)	-	-	145 (10)	-	-	-40 (-40)	176 (80)	176 (80)	-	WSNF8551A413	10.5	11.2

⑦ Aluminum body



The following valves are not part of the ASCO Express Shipping program.  
 Typical lead times are three weeks or less. Please consult the factory for specific lead times.

### 3-Way ATEX Pilot Valves | Manual Reset

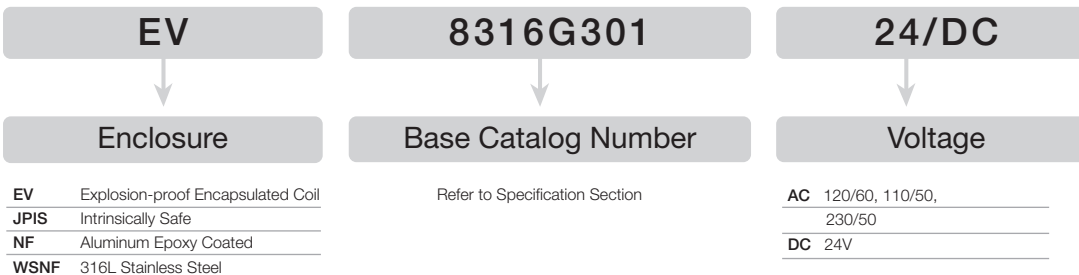
Pipe Size in (mm)	Orifice Size in (mm)	Cv Flow Factor (Kv=m <sup>3</sup> /h)	Operating Pressure Differential psi (bar)							Ambient Temp. °F (°C)			Brass	Stainless	Watt Rating/ Class of Coil Insulation	
			Min.	Max. AC			Max. DC			Min.	Max. AC	Max. DC			AC	DC
				Air-Inert Gas	Water	Light Oil @ 300 SSU	Air-Inert Gas	Water	Light Oil @ 300 SSU							
<b>3/2 VALVES, MANUAL RESET, NO VOLTAGE RELEASE</b>																
1/4	0.22 (5.7)	0.52 (0.45)	0 (0)	145 (10)	145 (10)	-	145 (10)	145 (10)	-	-4 (-20)	248 (120)	248 (120)	NF8327B121	WSNF8327B122	3.7	3.6
1/4	0.22 (5.7)	0.52 (0.45)	0 (0)	145 (10)	145 (10)	-	145 (10)	145 (10)	-	-40 (-40)	104 (40)	104 (40)	NF8327B171	WSNF8327B172	3.7	3.6

### 4-Way ATEX Pilot Valves

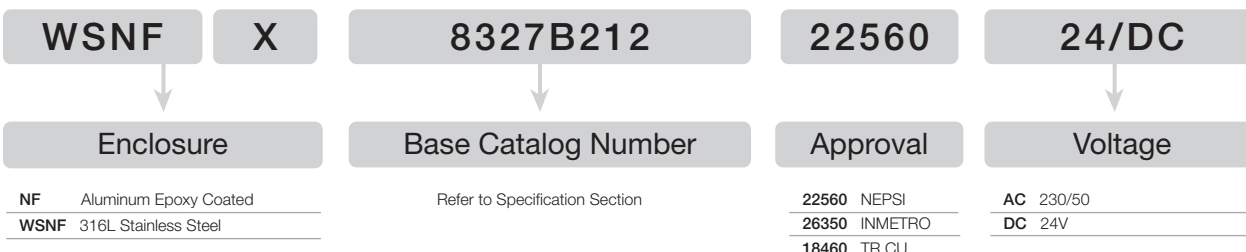
Pipe Size in (mm)	Orifice Size in (mm)	Cv Flow Factor (Kv=m <sup>3</sup> /h)	Operating Pressure Differential psi (bar)							Ambient Temp. °F (°C)			Aluminum	Stainless	Watt Rating/ Class of Coil Insulation	
			Min.	Max. AC			Max. DC			Min.	Max. AC	Max. DC			AC	DC
				Air-Inert Gas	Water	Light Oil @ 300 SSU	Air-Inert Gas	Water	Light Oil @ 300 SSU							
<b>5/2 VALVES, PILOT OPERATED, SPOOL TYPE, SINGLE SOLENOID</b>																
1/4	0.24 (6)	0.87 (0.75)	0 (0)	145 (10)	-	-	145 (10)	-	-	-13 (-25)	140 (60)	140 (60)	NF8551B417	-	10.5	11.2
1/4	0.24 (6)	0.87 (0.75)	0 (0)	145 (10)	-	-	145 (10)	-	-	-13 (-25)	140 (60)	140 (60)	NF8551B317	-	1.9	1.9
1/4	0.24 (6)	0.87 (0.75)	0 (0)	145 (10)	-	-	145 (10)	-	-	-40 (-40)	176 (80)	176 (80)	-	WSNF8551A421	10.5	11.2
1/4	0.24 (6)	0.87 (0.75)	0 (0)	145 (10)	-	-	145 (10)	-	-	-40 (-40)	176 (80)	176 (80)	-	WSNF8551A321	1.9	1.9
<b>5/2 VALVES, PILOT OPERATED, SPOOL TYPE, DUAL SOLENOID</b>																
1/4	0.24 (6)	0.87 (0.75)	0 (0)	145 (10)	-	-	145 (10)	-	-	-13 (-25)	140 (60)	140 (60)	NF8551B418	-	10.5	11.2
1/4	0.24 (6)	0.87 (0.75)	0 (0)	145 (10)	-	-	145 (10)	-	-	-40 (-40)	176 (80)	176 (80)	-	WSNF8551A422	10.5	11.2
1/4	0.24 (6)	0.87 (0.75)	0 (0)	145 (10)	-	-	145 (10)	-	-	-40 (-40)	140 (60)	140 (60)	-	WSNF8551A322	1.9	1.9
<b>5/2 VALVES, PILOT OPERATED, SPOOL TYPE, SINGLE SOLENOID, NAMUR</b>																
1/4	0.24 (6)	0.87 (0.75)	0 (0)	145 (10)	-	-	145 (10)	-	-	-13 (-25)	140 (60)	140 (60)	NF8551B401	-	10.5	11.2
1/4	0.24 (6)	0.7 (0.6)	0 (0)	145 (10)	-	-	145 (10)	-	-	-40 (-40)	176 (80)	176 (80)	-	WSNF8551A409	10.5	11.2
1/4	0.24 (6)	0.7 (0.6)	0 (0)	145 (10)	-	-	145 (10)	-	-	-40 (-40)	176 (80)	176 (80)	-	WSNF8551A309	1.9	1.9

### How to Order

#### ATEX, IECEx



#### NEPSI, INMETRO, and TR CU (ATEX, IECEx Standard)



# Reference Guide



## DEFINITION OF A LOCATION WHERE A POTENTIALLY EXPLOSIVE ATMOSPHERE MAY OCCUR

The classification of an installation into distinct zones has two objectives (according to ATEX 1999/92/EC):

- To define the categories of equipment used in the zones indicated, provided they are suitable for gases, vapours or mists and/or dusts.
- To classify hazardous places into zones to prevent ignition sources and be able to select the correct electrical and non-electrical equipment accordingly. The zones are defined on the basis of the occurrence of explosive gaseous or dusty atmospheres.

## GAS GROUPS

**Group II:** Equipment intended for use in places with an explosive gas atmosphere other than mines susceptible to firedamp.

**Group I:** Equipment intended for use in mines susceptible to firedamp.

	Zone	Category (ATEX 94/9/EC)	Presence of explosive atmospheres
<b>Group II</b>	zone 0	1 G <sup>①</sup>	Continuous, frequent or for long periods
	zone 1	2 G	Intermittent in normal operation (likely)
	zone 2	3 G	Occasional or for short periods (never in normal operation)
<b>Group I</b> (mines)		M1 <sup>①</sup>	Presence (methane, dust)
		M2	Risk of presence (methane, dust)

## DUST GROUPS (according to the fifth edition, IEC 60079-0, 2011 (EN 60079-0, 2012)<sup>②</sup>)

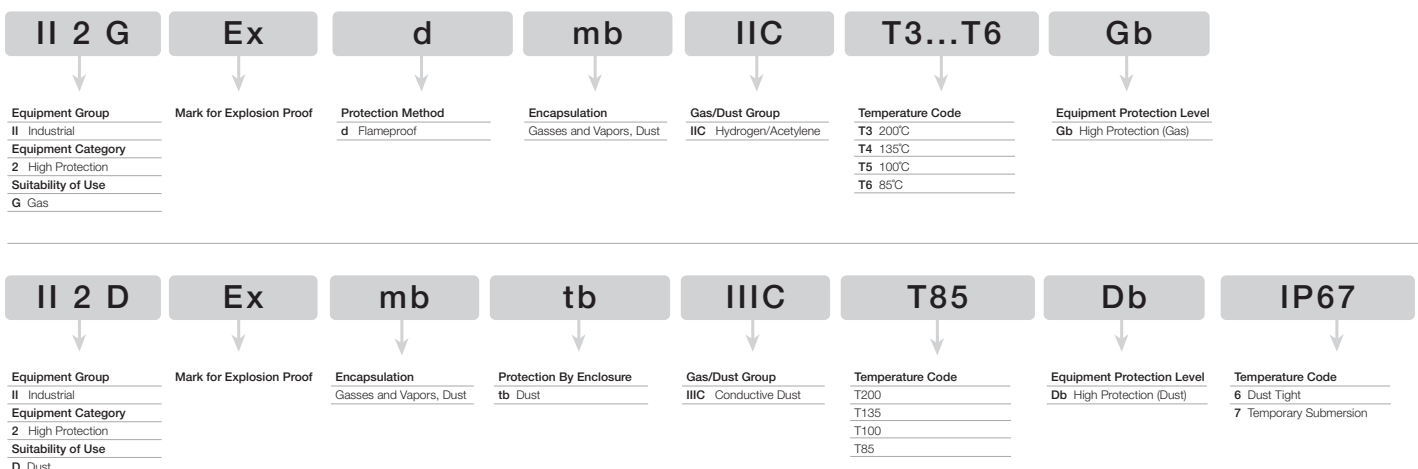
**Group III:** Equipment intended for use in places with an explosive dust atmosphere other than mines susceptible to firedamp.

	Zone	Category (ATEX 94/9/EC)	Presence of explosive atmospheres
<b>Group III</b>	zone 20	1 D <sup>①</sup>	Continuous, frequent or for long periods (air/cloud of combustible dust)
	zone 21	2 D	Intermittent in normal operation
	zone 22	3 D	Occasional or for short periods

<sup>①</sup> G = gas ; D = dust ; M = mines

<sup>②</sup> Including IEC 61241-0 (dusts)

## Safety Code Explained



## Protection Methods

Flammable / Combustible Substance	Protection Symbol	Zones			Description
		0	1	2	
Gas	d		●	●	Flameproof Enclosure
	p		●	●	Pressurised enclosure
	q		●	●	Powdery filling
	o		●	●	Immersion
	e		●	●	Increased safety
	ia/ib/ic	●	●	●	Intrinsically safety
	n			●	Non incendiaire
	ma/mb/mc	●	●	●	Encapsulation
Dust	ia	●			Intrinsically safety
	tD		●		Flameproof Enclosure
	mD		●	●	Encapsulation

## Groups, Categories, &amp; Zones (i.e. II 2 G Ex d IIC Gb T6 ... T4)

Equipment Group	Equipment Category	Equipment Protection Level (EIC)	Level of Protection	Hazard		Zone (Flammable Material Present)		
				Gas	Dust	0 - 20 (Continuously)	1 - 2 (Intermittently)	2 - 22 (Abnormally)
I	M 1	Ma	Very High	-	-	Operable in Ex atmosphere		
	M 2	Mb	High	-	-	De-energized in Ex atmosphere		
II	1	Ga	Very High	G	-	0	1	2
		Da	Very High	-	D	20	21	22
	2	Gb	High	G	-	-	1	2
		Db	High	-	D	-	21	22
	3	Gc	Normal	G	-	-	-	2
		Dc	Normal	-	D	-	-	22

## Gas &amp; Dust Groups

Typical Gas/Dust	Group
<b>Gas</b>	
Propane	IIA
Ethylene	IIB
Acetylene	IIC
<b>Dust</b>	
Combustible Fyings	IIIA
Non-Conductive Dust	IIIB
Conductive Dust	IIIC

## Ingress Protection (i.e. IP67)

Level of Protection Against Solid Objects, Materials or Dust		Level of Protection Against Water and Other Liquids	
0	No protection	0	No protection
1	Protected against solid objects down to 50 mm	1	Protection against vertically falling drops of water (e.g. condensation)
2	Protected against solid objects down to 12 mm	2	Protection against direct sprays of water up to 15 degrees from vertical
3	Protected against solid objects down to 2.5 mm	3	Protection against direct sprays of water up to 60 degrees from vertical
4	Protected against solid objects down to 1 mm	4	Protection against water sprayed from all directions - limited ingress permitted
5	Protected against dust, limited ingress (no harmful deposits)	5	Protection against low pressure jets of water from all directions - limited ingress permitted
6	Totally protected against dust	6	Protection against low pressure jets of water, limited ingress permitted (e.g. ship deck)
		7	Protected against the effect of immersion between 6 in. / 15 cm and 3 ft / 1m
		8	Protected against long periods of immersion under pressure

## CLASSIFICATION OF GASES INTO EXPLOSION GROUPS

**Group I:** Electrical equipment intended for use in the underground parts of mines, and to those parts of surface installations of such mines, likely to become endangered by firedamp and/or combustible dust.

**Group II:** Electrical equipment intended for use in other places likely to become endangered by explosive atmospheres (surface industries).

Groups	Gas	Ignition Temperature (°C) ①	Temperature Class						
			T1	T2	T3	T4	T5	T6	
<b>I</b>	methane (firedamp)								
<b>II</b>	<b>A</b>	acetone	540	•					
		acetic acide	485	•					
		ammonia	630	•					
		ethane	515	•					
		methylene chloride	556	•					
		methane (CH <sub>4</sub> )	537	•					
		carbon monoxyde	605	•					
		propane	470	•					
		n-butane	365		•				
	n-butyl	370		•					
	n-hexane	240			•				
	acetaldehyde	140				•			
	ethyl ether	160				•			
	ethyl nitrite	90					•		
	<b>B</b>	ethylene	425		•				
		ethyl oxyde	429-440		•				
		hydrogen sulfide	270			•			
	<b>C</b>	acetylene (C <sub>2</sub> H <sub>2</sub> )	305		•				
carbon disulphide (CS <sub>2</sub> )		102					•		
hydrogen (H <sub>2</sub> )		560	•						

① Temperature of a hot surface able to ignite a gas mixture.

The ignition temperature of the gas mixture must be higher than the maximum surface temperature. In practice, a 10 to 20% safety margin is observed between the ignition temperature and the rated nameplate temperature.

The ignition temperature of a cloud of dust is generally between 300 and 700°C. At 150 to 350°C, the ignition temperature of a layer of dust is far below that of a dust cloud. A burning dust layer can initiate a dust explosion if brought in contact with a combustible dust cloud, so these values must be taken into account to limit the risk.

## CLASSIFICATION OF DUSTS INTO EXPLOSION GROUPS (according to the fifth edition, IEC 60079-0, 2011)

**Group III:** Electrical equipment intended for use in places with an explosive dust atmosphere other than mines susceptible to firedamp.

Group III is subdivided into **IIIA** (combustible flyings), **IIIB** (non-conductive dust) and **IIIC** (conductive dust).

**Combustible dust:** Finely divided solid particles, 50 µm or less in nominal size, which may be suspended in air, may settle out of the atmosphere under their own weight, may burn or glow in air, and may form explosive mixtures with air at atmospheric pressure and normal temperatures.

**Non-conductive dust:** Combustible dust with electrical resistivity greater than 10<sup>3</sup> Ω.m

**Conductive dust:** Combustible dust with electrical resistivity equal to or less than 10<sup>3</sup> Ω.m

Combustible dust	Ignition Temperature (°C) ①	Self-ignition temperature of dust layers (°C) ①
Starch	440	290
Aluminium	530	280
Cotton	560	350
Cereals	420	290
Magnesium	610	410
Soybean	500	245
Sulphur	280	280
Tobacco	450	300

① The maximum surface temperature must be identified and suitable for the specified type of dust present (equipment marked for zone 21).

In order to prevent the ignition of dusty atmospheres, the maximum surface temperature needs to be limited. It must not exceed:

- 2/3 of the auto-ignition temperature of the specified cloud of dust,
- the auto-ignition temperature of a 5 mm layer of dust minus 75°C.

## TEMPERATURE CLASS

The temperature classification is based on the maximum surface temperature of equipment. That is the highest temperature any part of or the entire surface of an electrical device can reach under the most unfavorable operating conditions capable of igniting a surrounding explosive atmosphere.

**Group I:** Temperature  $\leq 150^{\circ}\text{C}$  or  $\leq 450^{\circ}\text{C}$  according to coal dust accumulation on equipment

**Group II:** Equipment must be classified and marked:

- preferably with the temperature class (T classification)
- defined by the surface temperature or, limited to the specified flammable gases or dusts for which it is approved, if necessary (and marked accordingly).

Temperature Class	Maximum Temperature ( $^{\circ}\text{C}$ )	Ignition Temperature ( $^{\circ}\text{C}$ )
T1	450	> 450
T2	300	> 300
T3	200	> 200
T4	135	> 135
T5	100	> 100
T6	85	> 85

## ATEX Wetted Parts

Valve Parts in Contact with Fluid	Valve Series						
	8262	8320	8327	8316		8551 / 8553	
Body	303 SS	BR/303 SS	BR/316 SS	BR	316 SS	AL/BR	316 SS
Core and Plugnut	430F SS	430F SS	430F SS	430F SS	430F SS	430F SS	430F SS
Core Tube	303 SS	303 SS	303 SS	303 SS	303 SS	303 SS	303 SS
Disc and Seals Sealings & Poppet (8327)	NBR	NBR	FPM/VMQ/FVMQ	NBR	NBR	NBR/PUR	VMQ/PUR
Diaphragms (8316)	-	-	-	NBR	FPM		
Disc Holder & Core Guide	-	CA	-	-	-	POM	POM
Springs	303 SS	303 SS	303 SS	303 SS	303 SS	303 SS	303 SS
Shading Coil	SILVER	Copper/Silver	-	Copper	Silver	-	-
Rider Ring	-	-	PTFE	PTFE	PTFE	PTFE	PTFE

## Materials of construction

Enclosure Type	NF	WSNF	JPIS	EV
Conduit	1/2 NPT	1/2 NPT	1/2 NPT	1/2 NPT
Solenoid Enclosure	Chromated Aluminum epoxy coated	316L Stainless steel	Aluminum	Epoxy Encapsulated
Bonnet	Steel (zinc plated)	Stainless steel (nickel plated)	430F Stainless steel	416 Stainless steel
Core, Core Tube & Plugnut	430F Stainless Steel		430F Stainless steel	430F Stainless steel
Shading coil	Copper or silver		Not Applicable	Copper or silver
Nameplate	Stainless Steel		304 Stainless steel	304 Stainless steel
Electrical Connection	Screw Terminals		Screw Terminals	Lead Wires
Fasteners and Screws	Stainless steel		316 Stainless Steel	Not Applicable

### TYPES OF PROTECTION FOR ELECTRICAL APPARATUS FOR USE IN GAS ATMOSPHERES.



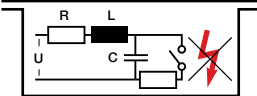
It is the comprehensive range of protective measures applied to an electrical apparatus to prevent possible ignition of the surrounding atmosphere.

Protection Symbol	Zones			Description	Drawing
	0	1	2		
d		●	●	Type of protection in which the parts which can ignite an explosive atmosphere are placed in an enclosure which can withstand the pressure developed during an internal explosion of an explosive mixture and which prevents the transmission of the explosion to the explosive atmospheres surrounding the enclosure.	
e		●	●	Type of protection in which measures are applied so as to prevent with a higher degree of safety the possibility of excessive temperatures and of the occurrence of arcs or sparks in the interior and on the external parts of electrical apparatus, which does not produce them in normal service.	
i	ia	●	●	Type of protection when no spark or any thermal effect in the circuit, produced in the test conditions prescribed in the standard (which include normal operation and specific fault conditions), is capable of causing ignition.	
	ib		●		
	ic		●		
m	ma	●	●	Type of protection in which the parts which can ignite an explosive atmosphere are enclosed in a resin sufficiently resistant to the environmental influences in such a way that this explosive atmosphere cannot be ignited by either sparking or heating which may occur within the encapsulation.	
	mb		●		
	mc		●		
n			●	Method of protection for electrical equipment designed so that it will not ignite the surrounding explosive atmosphere in normal operation and under certain fault conditions specified in the standard. There are 4 categories of equipment: nA (non-sparking), nC (enclosed break), nR (restricted breathing), nL (limited energy).	
o		●	●	Type of protection in which the electrical apparatus is immersed in oil.	
p		●	●	Type of protection in which the protective inert gas inside the enclosure is maintained at a higher pressure than that of the surrounding atmosphere.	
q		●	●	Type of protection in which the enclosure is filled with a material in a finely granulated state.	

## TYPES OF PROTECTION FOR ELECTRICAL APPARATUS FOR USE IN THE PRESENCE OF COMBUSTIBLE DUST (EN 60241-0)

Applicable to electrical apparatus for use in areas where combustible dust may be present in quantities which could lead to a fire or explosion hazard.

EN 61241-1 = tD ; EN 61241-18 = mD ; EN 61241-11 = iD

Protection symbol		Zones			Description	Drawing
		0	1	2		
tD			●	●	Electrical apparatus protected by enclosure and surface temperature limitation for use in areas where combustible dust may be present in quantities which could lead to a fire or explosion hazard. The ignition protection is based on the limitation of the maximum surface temperature of the enclosure and other surfaces which may come into contact with dust and on the restriction of dust ingress into the enclosure by the use of “dust-tight” or “dust-protected” enclosures. This standard is not applicable to electrical apparatus intended for use in underground parts of mines as well as those parts of surface installations of such mines endangered by firedamp and/or combustible dust; nor does it take account of any risk due to an emission of flammable or toxic gas from the dust.	
mD	maD	●	●	●	Electrical apparatus protected by encapsulation type of protection ‘mD’ and surface temperature limitation for use in areas where combustible dust may be present in quantities which could lead to a fire or explosion hazard. Type of protection in which the parts which can ignite an explosive atmosphere are enclosed in a resin sufficiently resistant to environmental influences in such a way that a dust cloud or layer cannot be ignited during installation or operation.	
	mbD		●	●		
iD		●	●	●	Intrinsically safe apparatus intended for use in potentially explosive dust cloud or dust layer environments and for associated apparatus that is intended for connection to intrinsically safe circuits which enter such environments. Applicable to electrical apparatus in which the electrical circuits themselves are incapable of causing an explosion in the surrounding combustible dust environment.	



## Global Contacts

**Australia** (61) 2-9-451-7077  
**Brazil** (55) 11-4208-1700  
**Canada** (1) 519-758-2700  
**China** (86) 21-3395-0000  
**Czech Republic** (420) 235-090-061  
**Dubai - UAE** (971) 4 811 8200

**France** (33) 2-37-24-42-24  
**Germany** (49) 7237-9960  
**India** (91) 44-39197300  
**Italy** (39) 02-356931  
**Japan** (81) 798-65-6361  
**Mexico** (52) 55-5809-5640

**Netherlands** (31) 33-277-7911  
**Singapore** (65) 6556-1100  
**South Korea** (82) 2-3483-1570  
**Spain** (34) 942-87-6100  
**United Kingdom** (44) 1695-713600