

Explosion Proof 4/2 Directional Valve, Solenoid Operated, Spool Type, Direct Acting

SD2EX-B4

7/8-14 UNF • Q_{max} 50 l/min (13 GPM) • p_{max} 350 bar (5100 PSI)



Technical Features

- › Valve and solenoid design prevents a surface temperature capable of igniting
- › Solenoid coil in acc. with directive 2014/34/EU (ATEX) for explosion-hazard zones
- › Explosion protection for gas, dust, and mining; solutions for all zones
- › Solenoid with encapsulated enclosure
- › Hardened precision parts
- › High flow capacity and high transmitted hydraulic power
- › All ports may be fully pressurised
- › Wide range of manual overrides available
- › Coils interchangeable within Argo-Hytos ATEX/IECEx product line
- › In the standard version, the valve is zinc-coated for 520 h protection acc. to ISO 9227

Technical Data

Valve size / Cartridge cavity		7/8-14 UNF-2A / B4	
Max. flow	l/min (GPM)	50 (13.2)	
Max. operating pressure	bar (PSI)	350 (5080)	
Fluid temperature range	°C (°F)	-30 ... +70 (-22 ... +158)	
Max. switching frequency	1/h	15 000	
Mass with coil	kg (lbs)	1.62 (3.57)	
Technical Data - Explosion-proof Solenoid			
Voltage type		AC 50 / 60 HZ	DC
Available voltages	V	110, 230	12, 24, 48, 110
Available nominal power	W	10	
Supply voltage tolerance	%	AC, DC ± 10	
Duty cycle		S1 (100 % ED)	
Enclosure type acc. to EN 60529		IP 65	
Mass (solenoid only)	kg (lbs)	1.3 (2.87)	
Ambient temperature range			
Temperature class / Nominal power		T4 / 10 W	-30 ... +70 (-22 ... +158)
		T5 / 10 W	-30 ... +55 (-22 ... +131)
		T6 / 10 W	-30 ... +45 (-22 ... +113)

ATEX/IECEx Classification

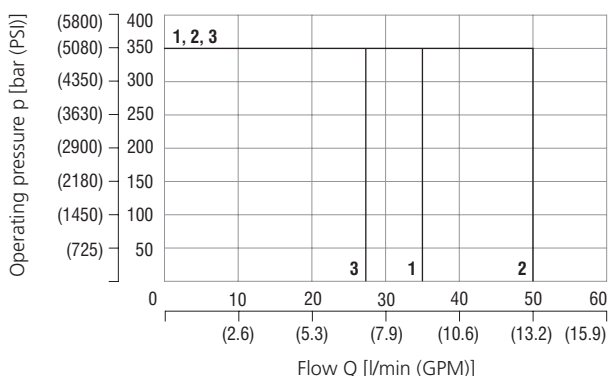
	EPS14ATEX1744 X
AC	Ex I M2 Ex mb I Mb
	Ex II 2G Ex mb IIB T4, T5, T6 Gb
	Ex II 2D Ex mb IIIC T135°C, T100°C, T85°C Db
DC	Ex I M2 Ex e mb I Mb
	Ex II 2G Ex e mb IIB T4, T5, T6 Gb
	Ex II 2D Ex tb IIIC T135°C, T100°C, T85°C Db
	IECEx EPS14.0064 X
AC	Ex mb I Mb
	Ex mb IIB T4, T5, T6 Gb
	Ex mb IIIC T135°C, T100°C, T85°C Db
DC	Ex e mb I Mb
	Ex e mb IIB T4, T5, T6 Gb
	Ex tb IIIC T135°C, T100°C, T85°C Db

	Datasheet	Type
General information	GI_0060	Products and operating conditions
Coil types	C_8007	74 EX 18
Valve bodies	In-line mounted	SB_0018
	Sandwich mounted	SB-04(06)_0028
Cavity details / Form tools	SMT_0019	SMT-B4*
Spare parts	SP_8010	

Characteristics measured at v = 32 mm²/s (156 SUS)

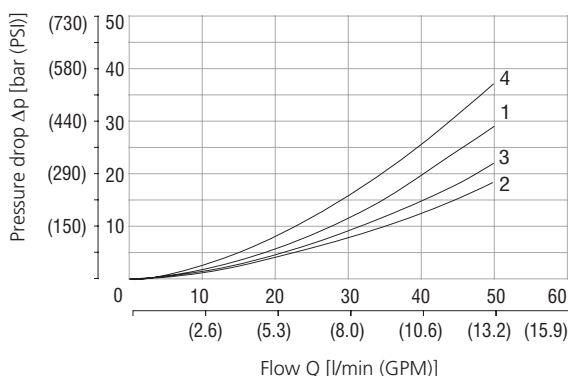
Operating limits (p-Q)

Ambient temperature 70 °C (158 °F), Voltage U_n -10 % (24 V DC), Power P_n 10 W



	Model	Direction	Model	Direction
1	2Z11	3→2, 4→1	2X21	3→4, 2→1
1	2Z51	3→4, 2→1	3X21	3→2, 4→1

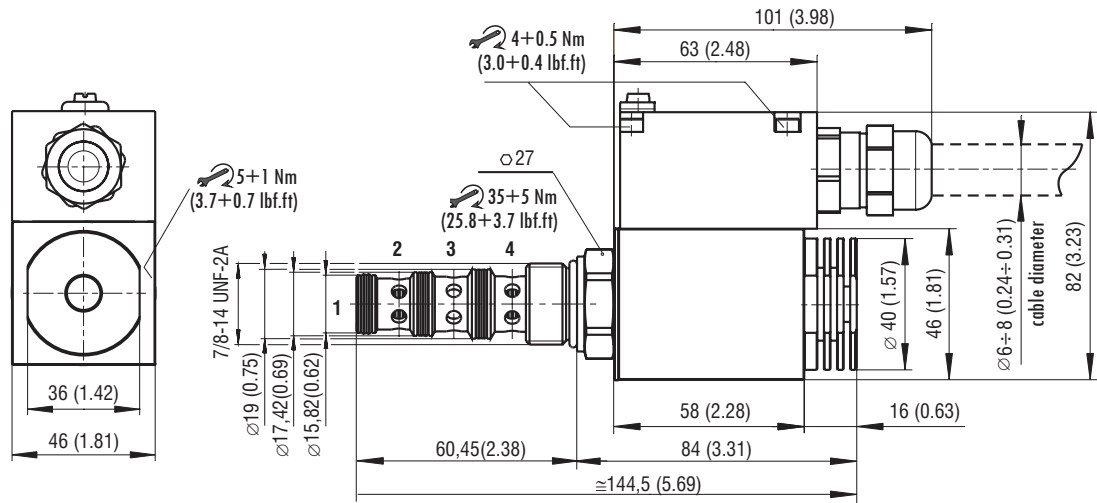
Pressure drop related to flow rate (Δp-Q)



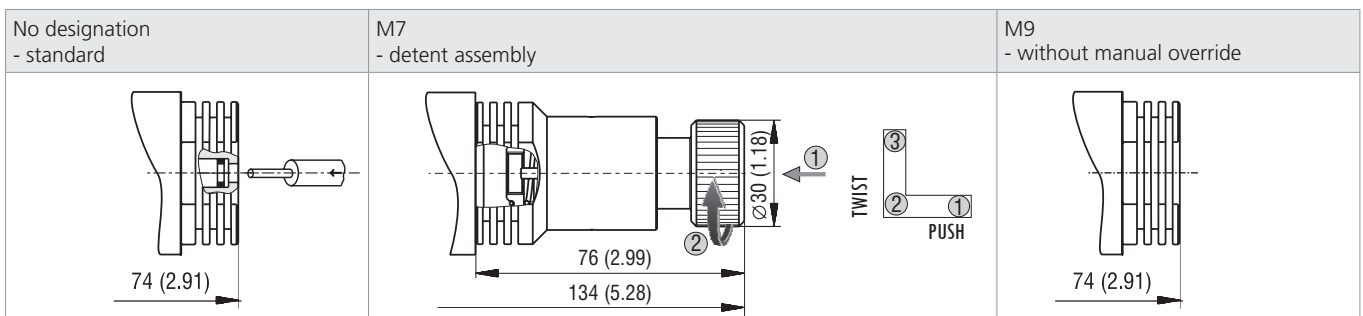
	Model	Direction	Model	Direction
1	2Z11	3→2	2X21	3→2
1	2Z11	4→1	4X21	4→1
2	2Z51	3→4	3X21	3→4
3	2Z51	2→1	2X21	2→1

For operating limits under conditions other than shown contact the technical support.

Dimensions in millimeters (inches)



Manual Override in millimeters (inches)



In case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override. For alternative manual overrides contact our technical support.

Ordering Code

SD2EX-B4 / [] [] / [] [] [] [] [] [] - []

Explosion proof 4/2 directional valve, solenoid operated, spool type, direct acting 7/8-14 UNF

High performance **H**

Model / Symbol

		2211
		2251
		2X21

DC voltage connection box + cable gland

12 V DC / 0.75 A	01200
24 V DC / 0.39 A	02400
48 V DC / 0.19 A	04800
110 V DC / 0.094 A	11000

AC voltage 50/60 Hz, fix installed cable

110 V AC / 0.112 A	11050
230 V AC / 0.052 A	23050

Surface treatment
B zinc-coated (ZnNi), ISO 9227 (520 h)

Seals
No designation
NBR

Manual override
No designation
M7
M9
standard
detent assembly
without manual override

Cable length
No designation (only for DC)
3 (AC and DC version)
8 (AC and DC version)
without cable
3000 mm
8000 mm

Temperature class - solenoid nominal power
A4
A6
class T4 - 10 W
class T6 (T5) - 10 W

Besides the shown, commonly used valve versions other special models are available. Contact our technical support for their identification, feasibility and operating limits.

Marking Example

Solenoid Marking

74 EX18 046A A024	
UN=24VDC Ig=0,34A R20=61,8Ω	
IP65	CE 0408
EPS14ATEX1744 X	
⊕ Ex I M2 Ex e mb I Mb	1234/01
⊕ Ex II 2G Ex e mb IIB T4 Gb	
⊕ Ex II 2D Ex tb IIIC T135°C Db	
IECEX EPS14.0064 X	
Ex e mb I Mb	02/14
Ex e mb IIB T4 Gb	
Ex tb IIIC T135°C Db	
-40°C ≤ Tamb ≤ +70°C	

74 EX18 046A A024	
UN=24VDC Ig=0,34A R20=61,8Ω	
IP65	CE 0408
EPS14ATEX1744 X	
⊕ Ex I M2 Ex e mb I Mb	1234/01
⊕ Ex II 2G Ex e mb IIB T6 Gb	
⊕ Ex II 2D Ex tb IIIC T85°C Db	
IECEX EPS14.0064 X	
Ex e mb I Mb	02/14
Ex e mb IIB T6 Gb	
Ex tb IIIC T85°C Db	
-40°C ≤ Tamb ≤ +45°C	

Group I (Mining)

⊕ Ex	ATEX mark of conformity to the 2014/34/EU directive and to the applicable technical norms
I	Group I for mines
M2	High protection - equipment category
Ex e mb	Type of protection: e - increased safety, mb - encapsulated
I	Gas group (methane)
Mb	Equipment protection level - high level protection for explosive atmosphere

Group II

⊕ Ex	ATEX mark of conformity to the 2014/34/EU directive and to the applicable technical norms
II 2G	Solenoid for surface plants with gas and vapors environment for zones 1 and 2
II 2D	Solenoid for surface plants with dust environment for zones 21 and 22
Ex e mb	Type of protection: e - increased safety, mb - encapsulated
Ex tb	Type of protection: tb - protection by enclosure
IIB	Equipment suitable for substances (gas) of group IIB
IIIC	Equipment suitable for conductive dust
T6/T4	Temperature class (maximum solenoid surface temperature)
T85/T135	Maximum solenoid surface temperature
Gb	Equipment protection level - high level protection for explosive gas atmosphere
Db	Equipment protection level - high level protection for explosive dust atmosphere

Initial installation

- › The ambient temperature range shall not exceed the temperatures given in chapter 2. The maximum temperature of the medium (generally hydraulic fluid) shall not exceed 70 °C (158 °F).
- › It is the user's duty to ensure free and unhindered heat emission during operation. This means that the solenoid shall neither be covered nor stored immediately adjacent to heat sources (e.g. fan heaters) during operation.
- › The solenoid shall not be subjected to direct sunlight during operation.

Installation notice - installation, mounting, demounting

- › Using the V DC type for temperature class T4 requires a cable with an operating temperature limit of at least +105 °C (221 °F), e.g. LAPP FD Robust. T5 and T6 require a cable with an operating temperature limit of at least +90 °C (194 °F). The fastening torque on the cable gland depends of the used cable and is to be determined by the installing user.
- › When installing the V DC solenoid, the fastening torque of the screws shall be [4 Nm (2.95 lbf.ft)] and for the BARTEC connection box [0.4 Nm (0.30 lbf.ft)].
- › When installing the V DC solenoid, an appropriate cable shoe of size M3 with a crosssectional area of 0.75 mm² with an operating temperature limit of at least +105 °C (221 °F) is to be used.
- › The user has to safeguard each solenoid with a fuse: $I_n \leq 3I_n$, with trigger characteristic "slow blow". (I_n values see Operating Instructions HA 4090 - Table 2). The breaking capacity of the fuse link has to be stronger than the maximum short circuit current at the user's operating area.
- › EX-secured components must be used during mounting in case the fuse and/or the interface are within the EX-range.

Safety notice - Please read carefully

- › In case the solenoid shows any signs of a defect, malfunctioning or external damage (including corrosion), the device must immediately be taken out of operation.
- › Any deposits on the surface of the device shall not obstruct heat emission.
- › To maintain legibility of the data plate, the solenoid must not be coated.

**Caution**

- › Always disconnect the solenoid from the power supply before any maintenance or other work on it.
- › Always exchange the complete solenoid. Do not try to repair the solenoid.
- › Under no circumstances shall any changes be made to the solenoid or the connecting cable.
- › Never operate the solenoid when disconnected from the valve body.
- › Demount the solenoid only in secure areas (not in EX-areas). If this is not possible, the solenoid must cool off for at least 10 minutes.