

Explosion Proof 3/2 Directional Valve, Solenoid Operated, Poppet Type, Direct Acting

**SD1EX-A3**

3/4-16 UNF • Q<sub>max</sub> 40 l/min (11 GPM) • p<sub>max</sub> 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, transmitted hydraulic power and leak-free closing up to 3 drops/min
- › 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		3/4-16 UNF-2A / A3 (C-8-3)	
Max. flow	l/min (GPM)	40 (10.6)	
Max. operating pressure	bar (PSI)	350 (5080)	
Fluid temperature range	°C (°F)	-30 ... +70 (-22 ... +158)	
Max. switching frequency	1/h	15 000	
Weight with coil	kg (lbs)	1.51 (3.33)	
Technical Data - Explosion proof solenoid			
Voltage type		AC 50 / 60 Hz	DC
Available nominal voltages U <sub>N</sub>	V	110, 230	12, 24, 48, 110
Available nominal input power	W	10	
Supply voltage fluctuations		U <sub>N</sub> ± 10%	
Duty cycle		S1 (100 % ED)	
Enclosure type acc. to EN 60529		IP66 / IP68*	
*Test procedure IP68: Pressure 1 m under water, test duration 24 h. The indicated IP protection level is only achieved if the cable is properly mounted.			
Weight (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)	
		Datasheet	Type
General information		GI_0060	Products and operating conditions
Operating Instructions		4090	
Coil types		C_8007	74 EX 18
Valve bodies	In-line mounted	SB_0018	SB-A3*
	Sandwich mounted	SB-04(06)_0028	SB-*A3*
Cavity details / Form tools		SMT_0019	SMT-A3*
Spare parts		SP_8010	

**ATEX/IECEx Classification**

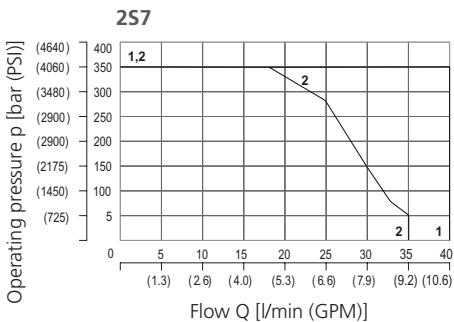
	EPS14ATEX1744 X
AC	Ex I M2 Ex mb I Mb
	Ex II 2G Ex mb IIC T4, T5, T6 Gb
	Ex II 2D Ex mb IIC T135°C, T100°C, T85°C Db
DC	Ex I M2 Ex e mb I Mb
	Ex II 2G Ex e mb IIC T4, T5, T6 Gb
	Ex II 2D Ex tb IIC T135°C, T100°C, T85°C Db
	IECEx EPS14.0064 X
AC	Ex mb I Mb
	Ex mb IIC T4, T5, T6 Gb
	Ex mb IIC T135°C, T100°C,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

**Characteristics** measured at v = 32 mm<sup>2</sup>/s (156 SUS)

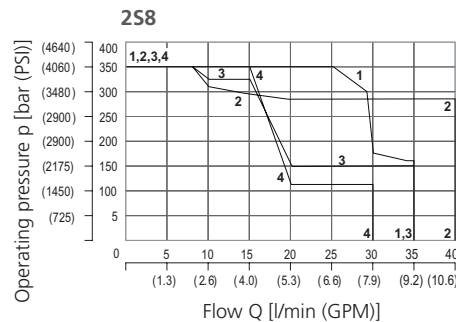
**Operating limits**

Ambient temperature 70 °C (158 °F), Voltage U<sub>N</sub> -10 % (24 VDC), Power P<sub>N</sub> 10 W

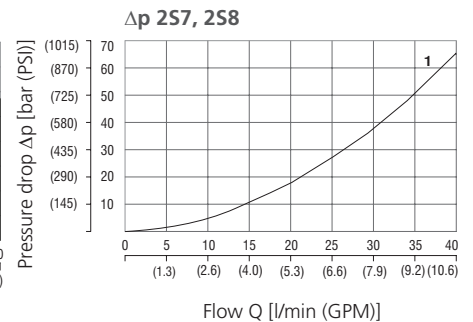
**Pressure drop related to flow rate**



Direct.	2→3	3→2	2→1	1→2
2S7	1	2	2	2



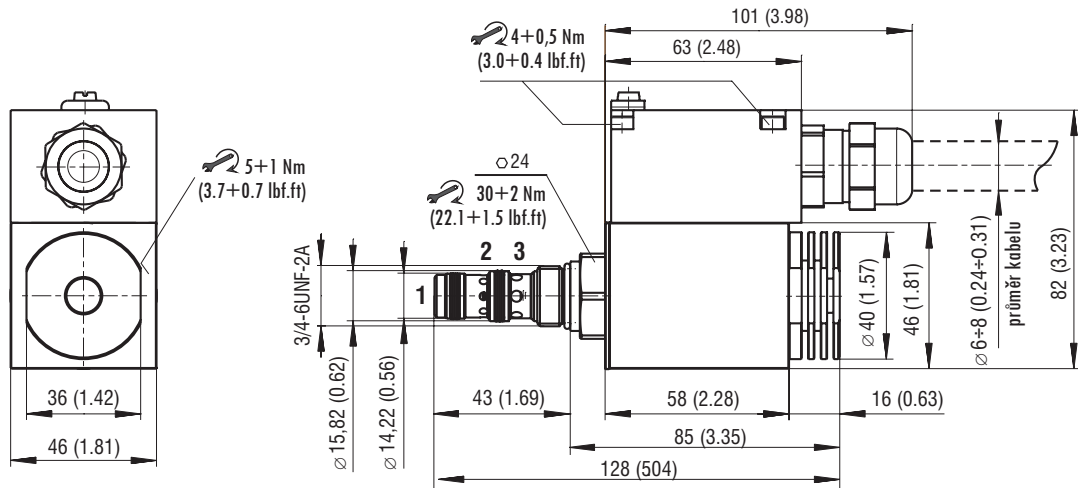
Direct.	2→3	3→2	2→1	1→2
2S8	2	4	3	1



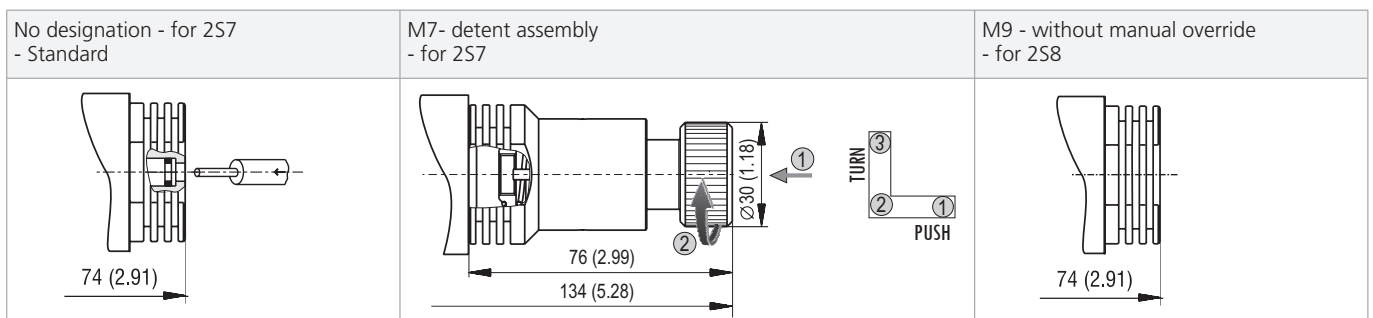
Connect.	Direction
1	2S7, 2S8
	1→2, 2→1, 2→3, 3→2

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**

**SD1EX - A3 / H** [ ] / [ ] [ ] [ ] [ ] [ ] - **B** [ ]

<p><b>Explosion proof 3/2 directional valve, solenoid operated, poppet type, direct acting</b></p>		<p><b>Certifications of valve</b> No designation ATEX, IECEx A IECEx for Australia and New Zealand E EAC for EAEU* States</p>
<p><b>Valve cavity</b> 3/4-16 UNF (C-8-3)</p>		<p><b>Surface treatment</b> zinc-coated (ZnNi), ISO 9227 (520 h)</p>
<p><b>Model</b> High performance</p>		<p><b>Seals</b> No designation NBR</p>
<p><b>Spool symbols</b></p>	<p>2S7 2S8</p>	<p><b>Manual override</b> No designation standard (2S7) M7 detent assembly (2S7) M9 without manual override (2S8)</p>
<p><b>DC voltage connection box + cable gland</b> 12 V DC / 0.75 A 24 V DC / 0.39 A 48 V DC / 0.19 A 110 V DC / 0.094 A</p>	<p>01200 02400 04800 11000</p>	<p><b>Cable length</b> without cable 3 3 m 8 8 m</p>
<p><b>AC voltage 50/60 Hz, fix installed cable</b> 110 V AC / 0.112 A 230 V AC / 0.052 A</p>	<p>11050 23050</p>	<p><b>Temperature class - solenoid nominal input power</b> class T4 - 10 W class T6 (T5) - 10 W</p>

A4  
A6

\*EAEU = Eurasian Economic Union, certificate according to TR TS 012/2011 valid for the Russian Federation, Belarus, Armenia, Kazakhstan and Kyrgyzstan.

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**

**Marking of solenoid**


10 W


Schienle Magnettechnik und Elektronik GmbH.  
In Oberwiesen 3, D-88682 Salem, www.schienle.de

EX18 046 10W 24 V DC IP66 / IP68

$U_N = 24 \text{ V DC}$   $R_{20} = 61,8 \Omega$   $I_G = 0,34 \text{ A}$   $P_{20} = 9,3 \text{ W}$

EPS 14 ATEX 1 744 X / IECEx EPS 14.0064X

 I M2 Ex e mb I Mb  
II 2G Ex e mb IIC T4, T5, T6 Gb  
II 2D Ex tb IIC T135°C, T100°C, T85°C Db


T4 (T135°C) -40°C ≤ Tamb ≤ +70°C  2004  
T5 (T100°C) -40°C ≤ Tamb ≤ +55°C  
T6 (T85 °C) -40°C ≤ Tamb ≤ +45°C


external fuse  $I_N \leq 3 \times I_G$


42140900 FA2020-0694/008  
09/20

**Marking of non-electrical part of valve**

ATEX / IECEx

 12345600  
0810/1234567

 SD1EX-A3/H2S7/01200A4-B

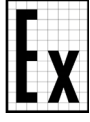
 I M2 Ex h I Mb  
II 2G Ex h IIC T4, T5, T6 Gb  
II 2D Ex h IIC T135°C...T85°C Db

-30°C ≤ Tfluid ≥ +70°C

Made in Czech Republic

EAC

 12345600  
0810/1234567



 SD1EX-A3/H2S7/01200A4-BE

I Mb c k  
II Gb c k IIC T6...T4  
III Db c k IIC T85°C...T135°C


-30°C ≤ Tfluid ≥ +70°C

Made in Czech Republic

**Group I (Mining)**

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

**Group II**

- II 2G ATEX mark of conformity to the 2014/34/EU directive and to the applicable technical norms
- II 2D Solenoid for surface plants with gas and vapors environment for zones 1 and 2
- Ex e mb Solenoid for surface plants with dust environment for zones 21 and 22
- Ex tb Type of protection: e - increased safety, mb - encapsulated
-  Type of protection: tb - protection by enclosure
- IIC Equipment suitable for substances (gas) of all group
- T6/T4 Equipment suitable for all kinds of dust
- 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 overstep the temperatures given in the chapter Technical Data - Explosion proof solenoid (page 1). The maximum temperature of the medium (generally hydraulic fluid) shall not exceed 70 °C (158 °F).
- › It is the users 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.
- › Care is to be given that the solenoid is not subjected to direct sunlight during operation.

**Installation notice - installation, mounting, demounting**

- › Installing the type V DC for temperature class T4 a cable with an ambient operating temperature of at least +105 °C (+221 °F) is to be used. For T5 and T6 a cable with an ambient operating temperature of at least +90 °C (+194 °F) is sufficient. The fastening torque on the cable gland depends of the used cable and is to be determined by installing user.
- › When installing the V DC solenoid type, please note the fastening torque of the screws (4 Nm or 2.95 lbf.ft) and of the Connection box (0.4 Nm or 0.30 lbf.ft).
- › When installing the V DC solenoid connection box an appropriate wires max. 2.0 mm<sup>2</sup> are to be used. When installing the V DC solenoid grounding an appropriate cable shoe M3 - 0.75 mm<sup>2</sup> with an ambient operating temperature of at least +125 °C or +257 °F) is to be used.
- › The cable shoe fix by grounding screw next to the connection box under the cover of the solenoid.
- › The user has to safeguard each solenoid with a fuse:  $I_N \leq 3 \times I_{Gr}$  with tigger characteristic "slow blow". ( $I_G$  values see Operating Instructions HA 4090 - Table 2). The breaking capacity of the fuse link has to be stronger than the max short circuit current at the users operating area.
- › EX-secured components must be used during mounting in case the fuse and/or the interface are within the EX-range.
- › In addition, the solenoid may be connected to ground via the purpose-built ground clamp an the connector casing.

**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 date 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.
- › In no case shall any changes be made to the solenoid or the connecting cable.
- › Demount the solenoid only in secure areas (not in EX-areas). If this is not possible, the solenoid must cool for 10 minutes minimum.

