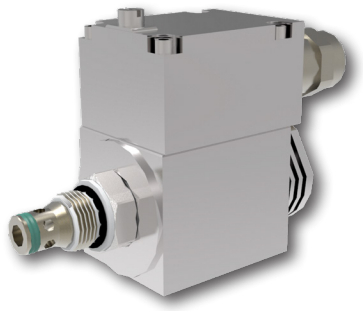
Explosion Proof 2/2 Directional Valve, Solenoid Operated, Poppet Type, Direct Acting

SD1EX-A2

3/4-16 UNF • Q_{max} 30 l/min (8 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 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
- Both 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 / A2 (C-8-2)
Max. flow		l/min (GPM)	30 (7.9)
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_N		V	110, 230 / 12, 24, 48, 110
Available nominal input power		W	10
Supply voltage fluctuations			U_N ± 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	°C (°F)	-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-A2*
	Sandwich mounted	SB-04(06)_0028	SB-*A2*
Cavity details / Form tools		SMT_0019	SMT-A2*
Spare parts		SP_8010	

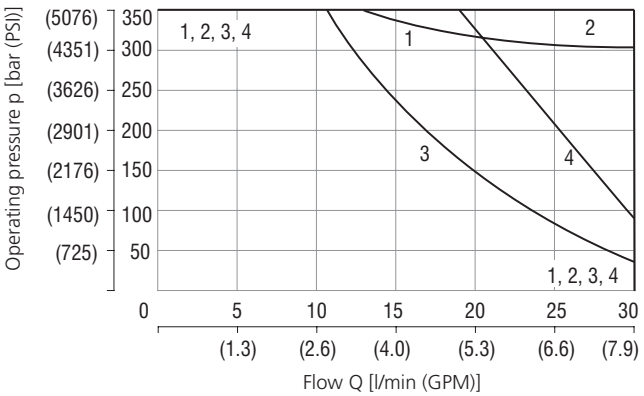
ATEX/IECEx Classification

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

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

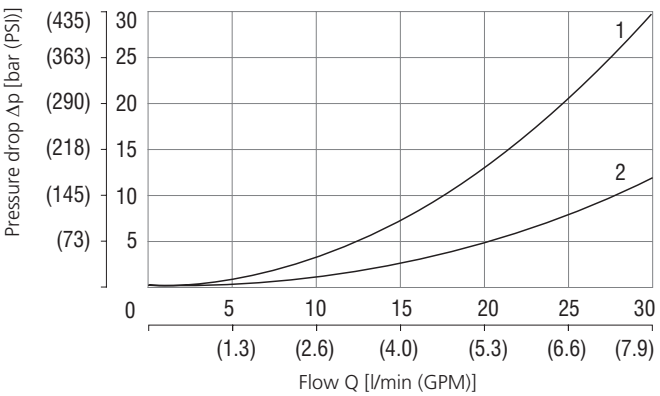
Operating limits

2S5, 2S6 Ambient temperature 70 °C (158 °F), Voltage U_n -10 % (24 V DC), Power P_n 10 W



Model		Connection	Model		Connection
2S5	1	1→2	2S6	3	1→2
	2	2→1		4	2→1

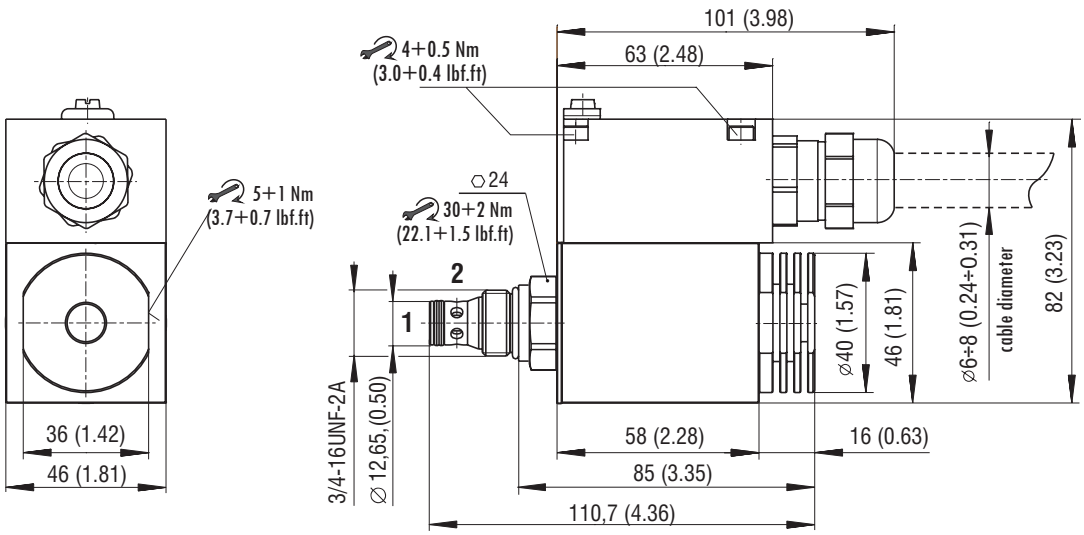
Pressure drop related to flow rate



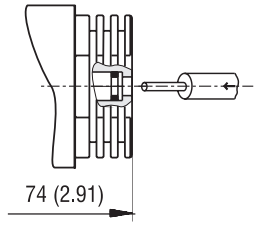
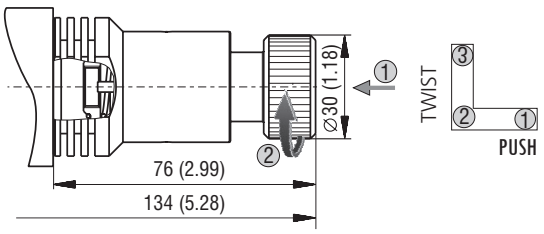
	Model	Connection
1	2S5	1→2, 2→1
2	2S6	1→2, 2→1

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

Dimensions in millimeters (inches)



Manual Override in millimeters (inches)

No designation - standard	M7 - detent assembly
	

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

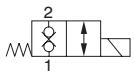
SD1EX - A2 / H ☐ / ☐ ☐ ☐ ☐ ☐ ☐ - **B** ☐

Explosion proof 2/2 directional valve, solenoid operated, poppet type, direct acting

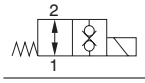
Valve cavity
3/4-16 UNF (C-8-2)

Model
High performance

Model / Symbol



2S5



2S6

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**

Temperature class - solenoid nominal input power

A4	class T4 - 10 W
A6	class T6 (T5) - 10 W

Cable length

No designation	(only for DC)	without cable
3	(AC and DC version)	3 m
8	(AC and DC version)	8 m

Manual override

No designation	standard
M7	detent assembly

Seals

No designation	NBR

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

Certifications of valve

No designation	ATEX, IECEx
A	IECEx for Australia and New Zealand
E	EAC for EAEU* States

*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 V DC R_{20} = 61,8 Ω I_G = 0,34 A P_{20} = 9,3 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 IIIC T135°C, T100°C, T85°C Db

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

external fuse $I_N \leq 3x\ I_G$

FA2020-0694/008
42140900 09/20

Marking of non-electrical part of valve

ATEX / IECEx

ARGO HYTOS 12345600
0810/1234567

SD1EX-A2/H2S5/02400A4M7-B
I M2 Ex h I Mb
II 2G Ex h IIC T4, T5, T6 Gb
II 2D Ex h IIIC T135°C...T85°C Db

-30°C ≤ Tfluid ≥ +70°C

Made in Czech Republic

EAC

ARGO HYTOS 12345600
0810/1234567

Ex SD1EX-A2/H2S5/02400A4M7-BE
I Mb c k
II Gb c k IIC T6…T4
III Db c k IIIC T85°C…T135°C

-30°C ≤ Tfluid ≥ +70°C

Made in Czech Republic

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
IIC	Equipment suitable for substances (gas) of all group
IIIC	Equipment suitable for all kinds of 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 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 not stored immediately adjecent 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 a 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 mm2 are to be used. When installing the V DC solenoid grounding an appropriate cable shoe M3 - 0.75 mm2 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: $I_n \leq 3xI_G$, 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.