


Technical Features

- › Valve and solenoid design prevents a surface temperature capable of igniting
- › Solenoid coil in acc. with directive ATEX 2014/34/EU for explosion-hazard zones
- › Explosion protection for gas and dust
- › Encapsulation enclosure solenoid version
- › Coil interchangeability with all Argo-Hytos ATEX/IECEx product line
- › 12 or 24 V DC coils
- › In the standard version, the valve is zinc-coated for 520 h protection acc. to ISO 9227

ATEX/IECEx Classification

The valves equipped with explosion proof solenoids are available with following certifications and protection modes:

EPS14ATEX1744 X	IECEx EPS14.0064 X
Ex I M2 Ex e mb I Mb	Ex e mb I Mb
Ex II 2G Ex e mb IIC T4 Gb	Ex e mb IIC T4 Gb
Ex II 2D Ex tb IIIC T135°C Db	Ex tb IIIC T135°C Db

Functional Description

The SD2PX-B4 valve can be used in any application when it comes to routing hydraulic fluid to and from the consumer. Typically, these are applications that require lifting or lowering of a load. Thanks to the proportional adjustability of the valve, the motion speed can be adjusted to the given demands.

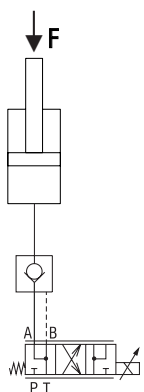
Compared to other available proportional 4/3 directional valves, the SD2PX-B4 valve is equipped with only one solenoid for both actuation directions (usually two solenoids are needed). This design provides several benefits (e.g. more compact design, fewer electric connectors);

The SD2PX-B4 is typically used in combination with a pilot-to-open check valve.

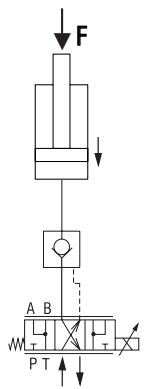
The corresponding schematic is shown in Fig A, B and C. In such circuits, the check valve serves to decouple the consumer from the rest of the hydraulic system with zero leakage. The check valve is closed as long as the proportional valve is in center position / de-energized (Fig. A). Fig. B and C show how the energized switching positions facilitate „lowering“ and „lifting“ functions.

Technical Data

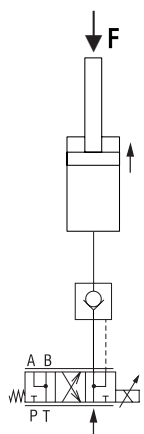
Valve size / Cartridge cavity		7/8-14 UNF-2A / B4 (C-10-4)	
Flow [$\Delta p = 10$ bar (145 PSI)]	l/min (GPM)	5 (1.3)	25 (6.6)
Max. operating pressure	bar (PSI)	250 (3630)	
Max. proof pressure in T channel	bar (PSI)	100 (1450) T channel should stay without pressure for the correct function	
Fluid temperature range (NBR)	°C (°F)	-30 ... +60 (-22 ... +140)	
Ambient temperature max.	°C (°F)	-30 ... +60 (-22 ... +140)	
Weight	kg (lbs)	2.52 (5.56)	
Technical Data - Explosion proof solenoid			
Available nominal voltages U_N		12	24
Available nominal input power		18	
Supply voltage fluctuations		$U_N \pm 10\%$	
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.			
Limit current	A	1.37	0.65
Rated resistance at 20 °C (68 °F)	Ω	7.7	32.3
	Data Sheet	Type	
General information	GI_0060	Products and operating conditions	
Operating Instructions	4090		
Valve bodies	In-line mounted	SB_0018	SB-B4*
	Sandwich mounted	SB-04(06)_0028	SB-*B4*
Cavity details / Form tools	SMT_0019	SMT-B4*	
Spare parts	SP_8010		

A


The piston lowering is blocked by closed pilot operated check valve.

B


The pilot operated check valve is opened by pressure fluid in B channel and the cylinder is relieved to the tank via A channel – the piston moves downwards by acting load F; the lowering speed can be smoothly regulated by flow throttling on the spool edge.

C


The pilot operated check valve remains open by fluid pressure in B channel. The pressure fluid is simultaneously led to the cylinder and the piston moves upwards. The lifting speed can be smoothly regulated.

Ordering Code

SD2PX - B4 / H - - - **B**

Explosion proof
4/3 proportional directional control valve, Screw-in Cartridge design

Valve cavity
7/8-14 UNF-2A (C-10-4)

Model
High performance

Spool symbol



3Y13

Nominal flow rate P → A at Δp = 10 bar (1450 PSI)

5 l/min (1.3 GPM)
25 l/min (6.6 GPM)

5
25

Nominal supply voltage / limit current

12 V DC / 1.37 A
24 V DC / 0.65 A

12
24

Certifications of valve

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

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

Seals
NBR

No designation

Manual override
standard

No designation

Cable length
without cable
3 m
8 m

No designation

3
8

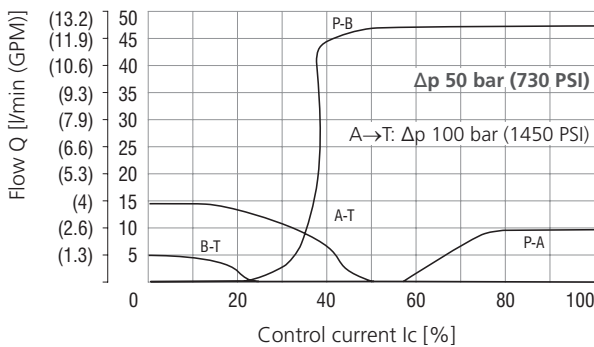
Temperature class - solenoid nominal input power
Class T4 - 18 W

B4

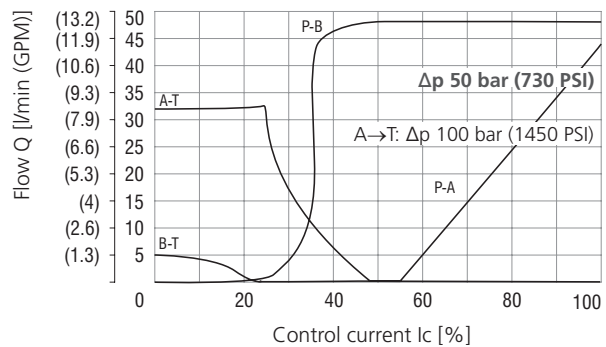
*EAEU= Eurasian Economic Union, certificate according to TR TS 012/2011 valid for the Russian Federation, Belarus, Armenia, Kazakhstan and Kyrgyzstan.

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

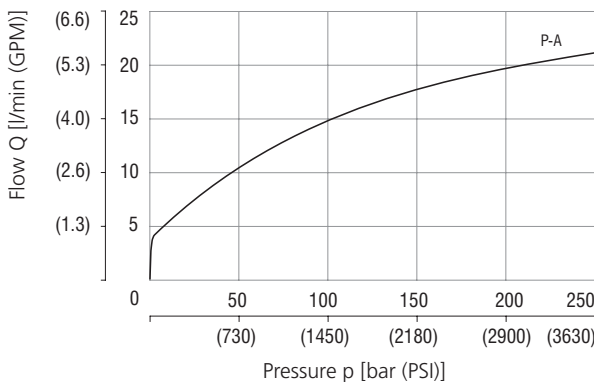
Functional diagram SD2P-B4/H3Y13-5



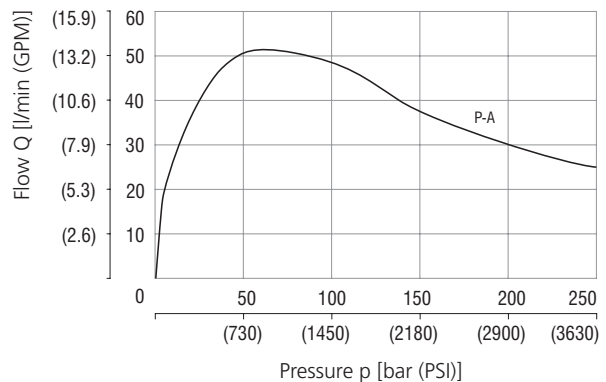
Functional diagram SD2P-B4/H3Y13-25



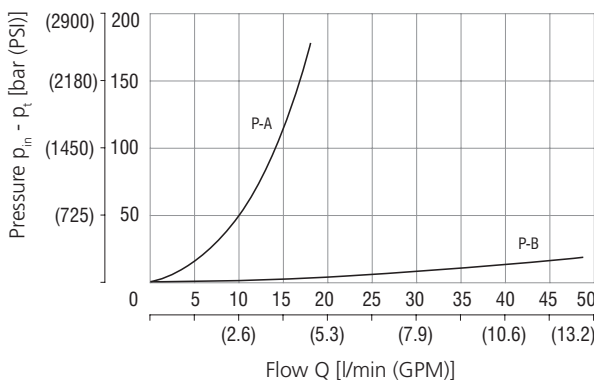
Operating limits SD2P-B4/H3Y13-5



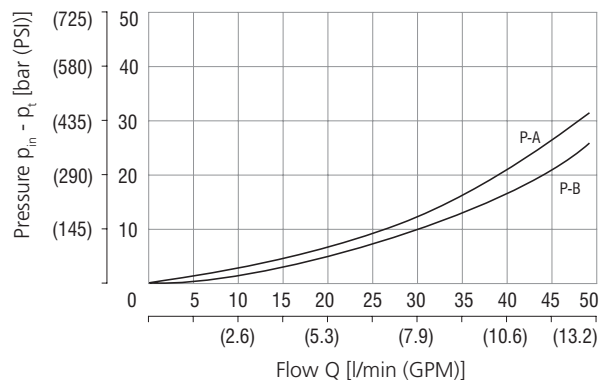
Operating limits SD2P-B4/H3Y13-25



Pressure drop SD2P-B4/H3Y13-5

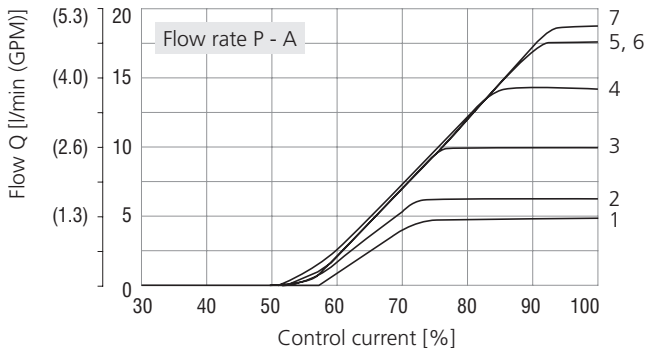


Pressure drop SD2P-B4/H3Y13-25



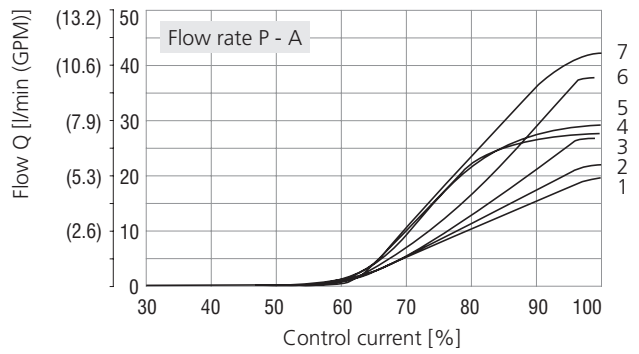
Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Flow characteristic SD2P-B4/H3Y13-5



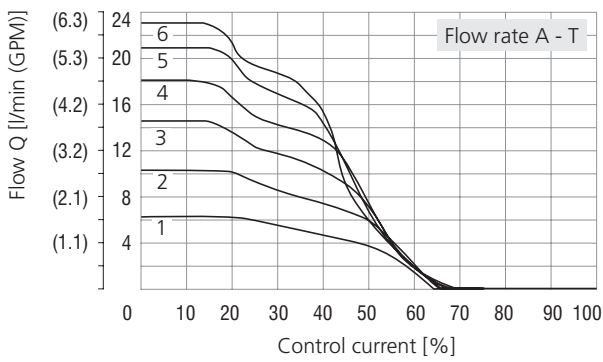
1	Δp 10 bar (145 PSI)	5	p_{in} 150 bar (2180 PSI)
2	p_{in} 20 bar (290 PSI)	6	p_{in} 250 bar (3630 PSI)
3	p_{in} 50 bar (725 PSI)	7	p_{in} 200 bar (2900 PSI)
4	p_{in} 100 bar (1450 PSI)		

Flow characteristic SD2P-B4/H3Y13-25



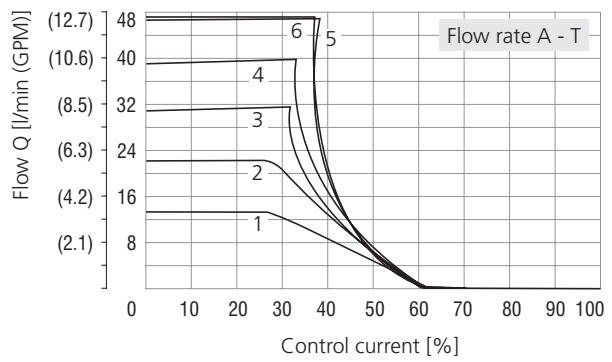
1	p_{in} 250 bar (3630 PSI)	5	p_{in} 150 bar (2180 PSI)
2	p_{in} 200 bar (2900 PSI)	6	p_{in} 100 bar (1450 PSI)
3	p_{in} 20 bar (290 PSI)	7	p_{in} 50 bar (725 PSI)
4	Δp 10 bar (145 PSI)		

Flow characteristic SD2P-B4/H3Y13-5



1	p_{in} 20 bar (290 PSI)	4	p_{in} 150 bar (2180 PSI)
2	p_{in} 50 bar (725 PSI)	5	p_{in} 200 bar (2900 PSI)
3	p_{in} 100 bar (1450 PSI)	6	p_{in} 250 bar (3630 PSI)

Flow characteristic SD2P-B4/H3Y13-25



1	p_{in} 20 bar (290 PSI)	4	p_{in} 150 bar (2180 PSI)
2	p_{in} 50 bar (725 PSI)	5	p_{in} 200 bar (2900 PSI)
3	p_{in} 100 bar (1450 PSI)	6	p_{in} 250 bar (3630 PSI)

Marking Example

Marking of solenoid 18 W

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

EX18 046 18W 24 V DC IP66 / IP68

$U_N = 24 \text{ V DC}$ $R_{20} = 32,3 \Omega$ $I_0 = 0,65 \text{ A}$ $P_{20} = 17,8 \text{ W}$

EPS 14 ATEX 1 744 X / IECEx EPS 14.0064X

I M2 Ex e mb I Mb
II 2G Ex e mb IIC T4 Gb
II 2D Ex tb IIIC T135°C Db

$-40^\circ\text{C} \leq T_{amb} \leq +60^\circ\text{C}$ 2004

external fuse $I_N \leq 3 \times I_0$

42140000 FA2020-0798/008 12/20

Group I (Mining)

- 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

- 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
- T4 Temperature class (maximum solenoid surface temperature)
- 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

Marking of non-electrical part of valve

ATEX / IECEx

12345600
0810/1234567

SD2PX-B4/H3Y13-5-12B43-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

$-30^\circ\text{C} \leq T_{fluid} \leq +70^\circ\text{C}$

Made in Czech Republic

EAC

12345600
0810/1234567

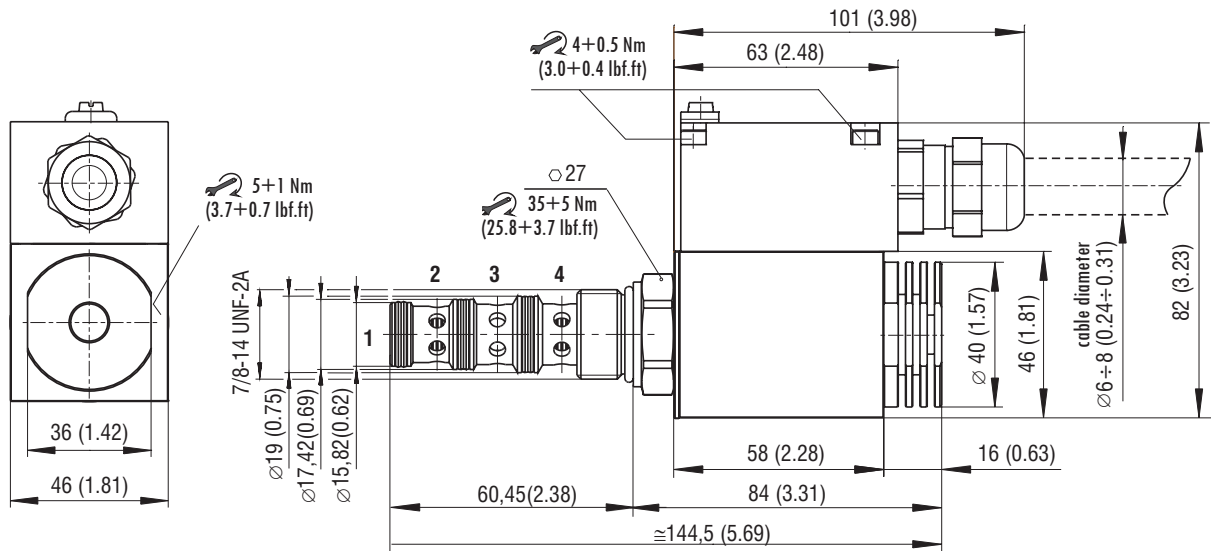
SD2PX-B4/H3Y13-5-12B43-BE

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

$-30^\circ\text{C} \leq T_{fluid} \geq +70^\circ\text{C}$

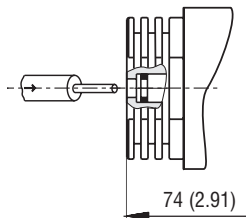
Made in Czech Republic

Dimensions in millimeters (inches)



Manual Override in millimeters (inches)

No designation
- standard



Customer Information

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 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: $I_N \leq 3I_{Gr}$, 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.

