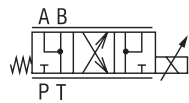


SD2PX-B4

 7/8-14 UNF • Q_{max} 25 l/min (7 GPM) • p_{max} 250 bar (3630 PSI)

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
⊕ I M2 Ex e mb I Mb	Ex e mb I Mb
⊕ II 2G Ex e mb IIB T4 Gb	Ex e mb IIB T4 Gb
⊕ 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.

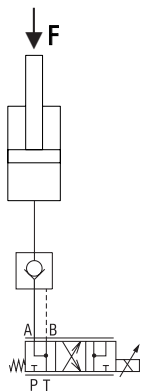
Compared to other available proportional 4/3 directional valves, the SD2PX-B4 valve is equipped with only one solenoid for both actuation directions (usually two solenoids are needed). This design provides several benefits (e.g. more compact design, fewer electric connectors);

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

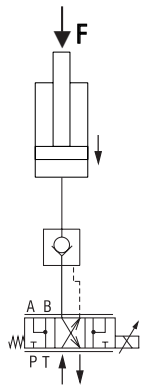
The corresponding schematic is shown in Fig A, B and C. In such circuits, the check valve serves to decouple the consumer from the rest of the hydraulic system with zero leakage. The check valve is closed as long as the proportional valve is in center position / de-energized (Fig. A). Fig. B and C show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

Technical Data

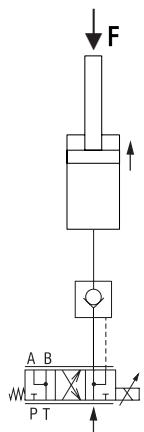
Valve size / Cartridge cavity		7/8-14 UNF-2A / B4	
Flow [$\Delta p = 10$ bar (145 PSI)]	l/min (GPM)	5 (1.3)	25 (6.6)
Max. operating pressure	bar (PSI)	250 (3630)	
Max. proof pressure in T channel	bar (PSI)	100 (1450) T channel should stay without pressure for the correct function	
Fluid temperature range (NBR)	°C (°F)	-30 ... +60 (-22 ... +140)	
Ambient temperature max.	°C (°F)	-30 ... +60 (-22 ... +140)	
Mass	kg (lbs)	2.52 (5.56)	
Technical Data - Explosion proof solenoid			
Available voltages	V DC	12	24
Available nominal power	W	18	
Supply voltage tolerance	%	±10	
Max. 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
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

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

Valve cavity
7/8-14 UNF-2A

Model
High performance

Spool symbol



3Y13

Nominal flow rate P → A at Δp = 10 bar (1450 PSI)
5 l/min (1.3 GPM) **5**
25 l/min (6.6 GPM) **25**

SD2PX-B4 / H [] - [] - [] [] [] [] [] - []

B

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

No designation

Seals
NBR

No designation

Manual override
standard

No designation

Cable length
without cable
3000 mm
8000 mm

B4

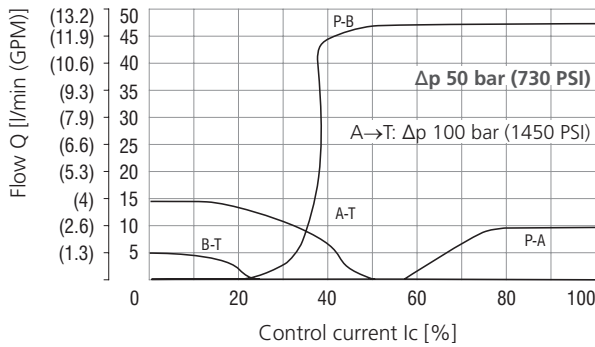
Temperature class - solenoid nominal power
Class T4 - 18 W

Nominal supply voltage / max. current
12 V DC / 1.56 A
24 V DC / 0.74 A

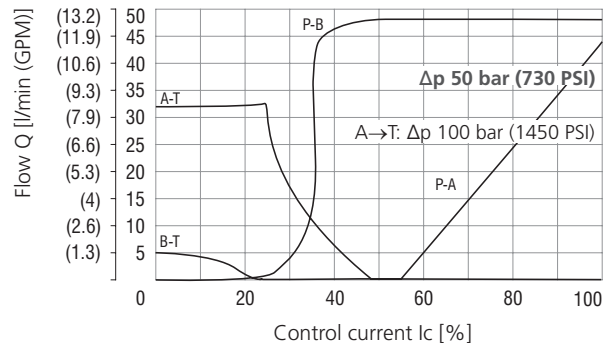
12
24

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

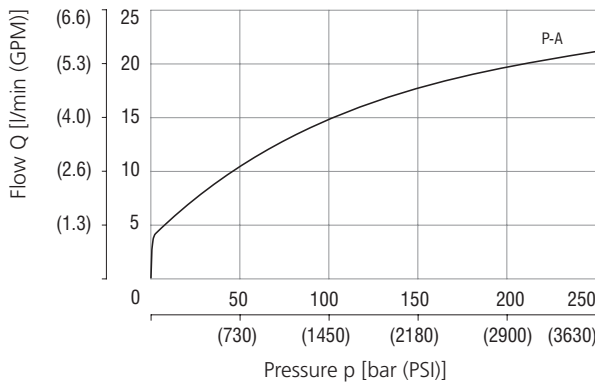
Functional diagram SD2P-B4/H3Y13-5



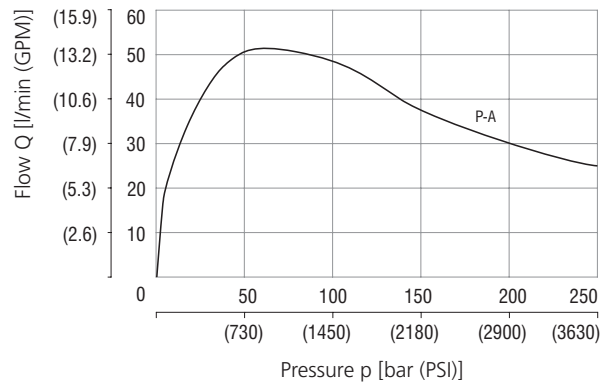
Functional diagram SD2P-B4/H3Y13-25



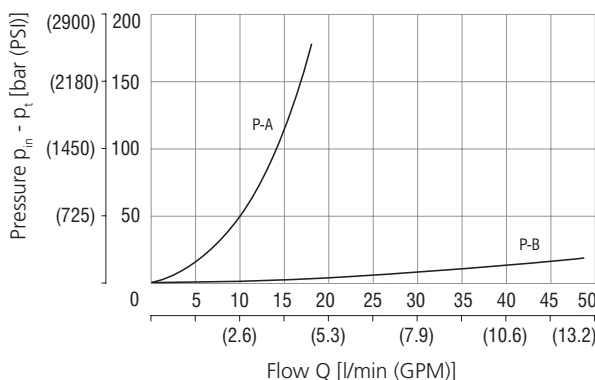
Operating limits SD2P-B4/H3Y13-5



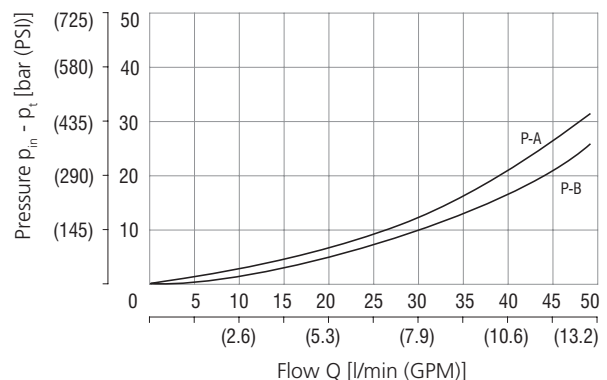
Operating limits SD2P-B4/H3Y13-25



Pressure drop SD2P-B4/H3Y13-5

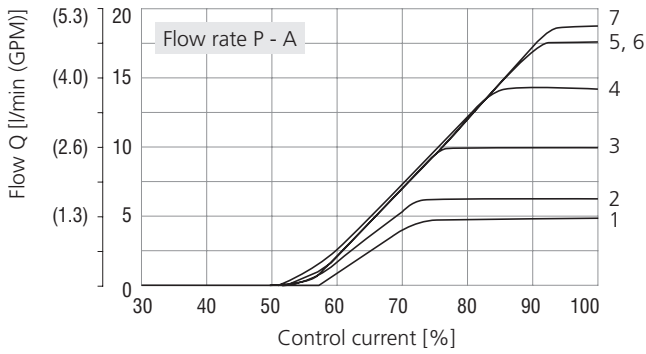


Pressure drop SD2P-B4/H3Y13-25



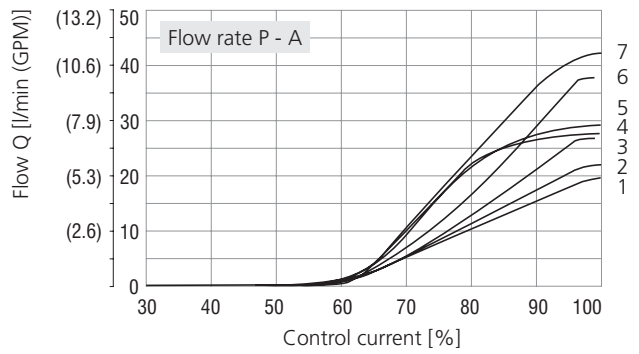
Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Flow characteristic SD2P-B4/H3Y13-5



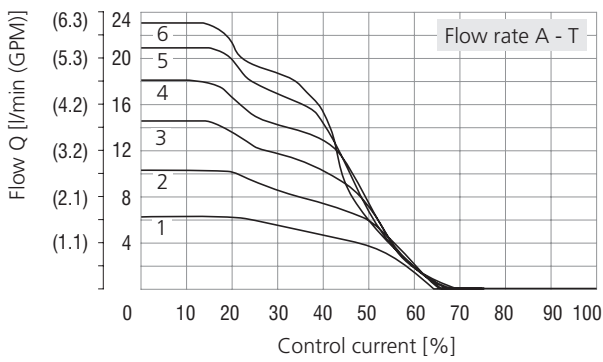
1	Δp 10 bar (145 PSI)	5	p_{in} 150 bar (2180 PSI)
2	p_{in} 20 bar (290 PSI)	6	p_{in} 250 bar (3630 PSI)
3	p_{in} 50 bar (725 PSI)	7	p_{in} 200 bar (2900 PSI)
4	p_{in} 100 bar (1450 PSI)		

Flow characteristic SD2P-B4/H3Y13-25



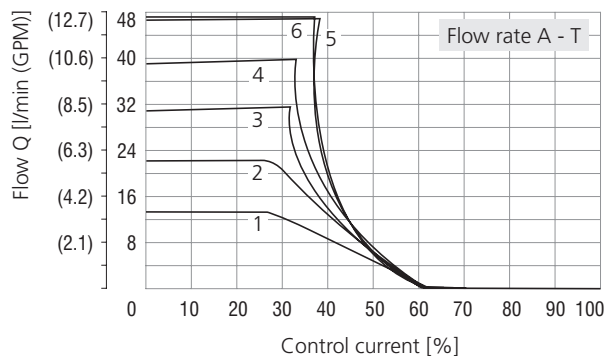
1	p_{in} 250 bar (3630 PSI)	5	p_{in} 150 bar (2180 PSI)
2	p_{in} 200 bar (2900 PSI)	6	p_{in} 100 bar (1450 PSI)
3	p_{in} 20 bar (290 PSI)	7	p_{in} 50 bar (725 PSI)
4	Δp 10 bar (145 PSI)		

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

Solenoid Marking

74EX18 046B A012
 $U_N=12\text{VDC}$ $I_g=1,37\text{A}$ $R_{20}=7,7 \Omega$
 IP65 0408

EPS14ATEX1744 X

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

-40°C ≤ Tamb ≤ +60°C

1234/01
02/14

Group I (Mining)

- I 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

74EX18 046B A024
 $U_N=24\text{VDC}$ $I_g=0,65\text{A}$ $R_{20}=32,3\Omega$
 IP65 0408

EPS14ATEX1744 X

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

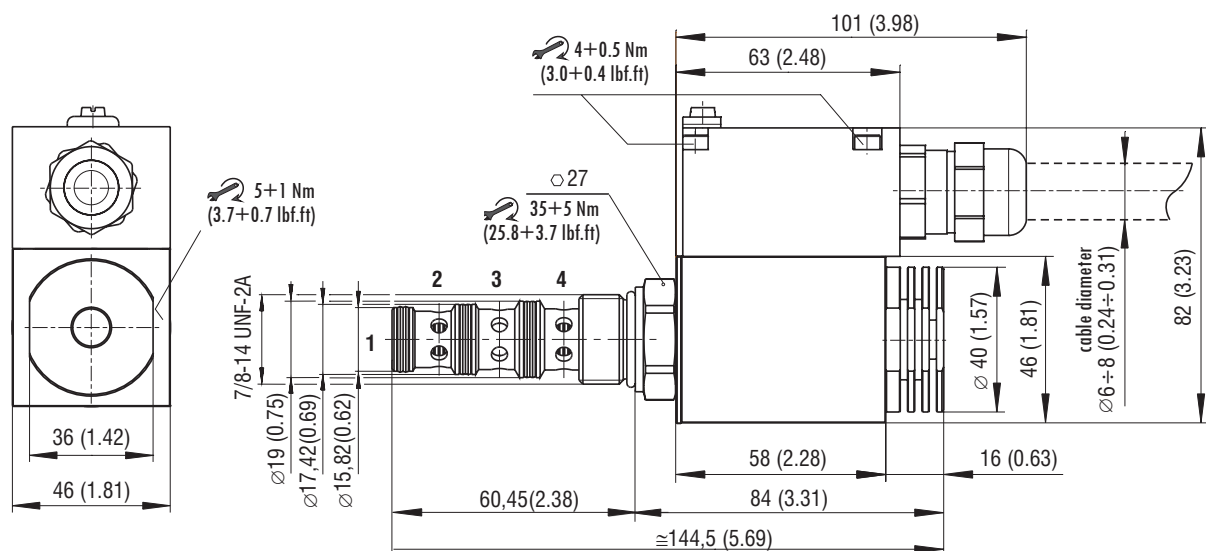
-40°C ≤ Tamb ≤ +60°C

1234/01
02/14

Group II

- 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
- 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

Dimensions in millimeters (inches)



Manual Override in millimeters (inches)

No designation - standard	

Customer Information

Initial installation

- › The ambient temperature range shall not exceed the temperatures given in chapter Technical data (page 1). The maximum temperature of the medium (generally hydraulic fluid) shall not exceed 60 °C (140 °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. 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: $I_n \leq 3xI_G$, with trigger 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 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.

