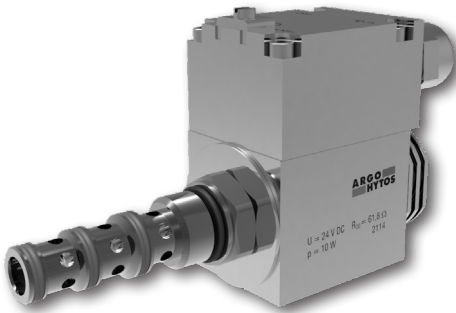


# SD2EX-B4

 7/8-14 UNF • Q<sub>max</sub> 50 l/min (13 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 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 (C-10-4) |
| 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                      |
| Weigh with coil               | kg (lbs)    | 1.62 (3.57)                 |

### 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) |                 |

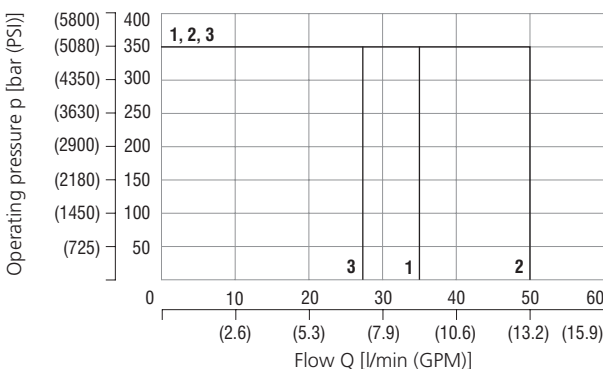
## ATEX/IECEx Classification

|    |  |
|----|--|
|    | 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 IIIC 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 IIIC 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 IIIC T135°C, T100°C, T85°C Db          |
| DC | Ex e mb I Mb                                 |
|    | Ex e mb IIC T4, T5, T6 Gb                    |
|    | Ex tb IIIC T135°C, T100°C, T85°C Db          |

|                             | 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                           |
|                             | Sandwich mounted | SB-04(06)_0028                    |
| Cavity details / Form tools | SMT_0019         | SMT-B4*                           |
| Spare parts                 | SP_8010          |                                   |

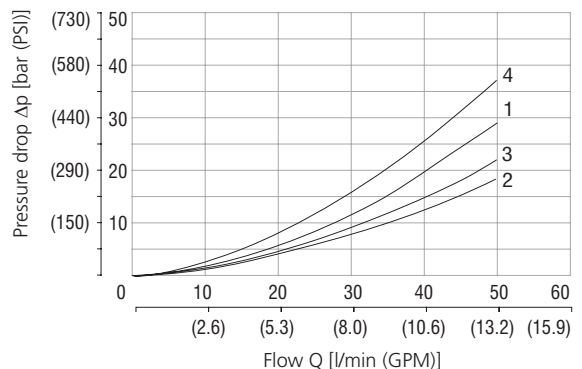
## Characteristics measured at v = 32 mm<sup>2</sup>/s (156 SUS)

### Operating limits (p-Q)

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


|   | Model | Direction | Model | Direction |
|---|-------|-----------|-------|-----------|
| 1 | Z211  | 3→2, 4→1  | 2     | 2X21      |
| 1 | Z251  | 3→4, 2→1  | 3     | 2X21      |

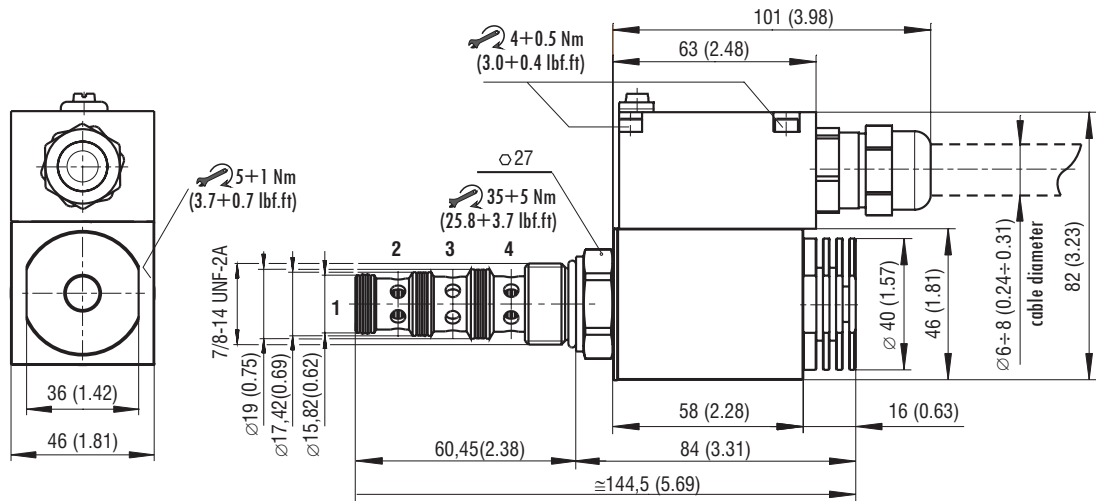
### Pressure drop related to flow rate (Δp-Q)



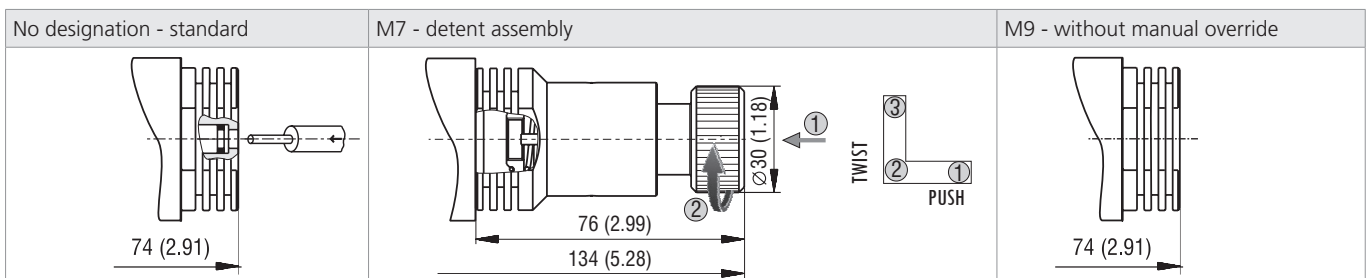
|   | Model | Direction | Model | Direction |
|---|-------|-----------|-------|-----------|
| 1 | Z211  | 3→2       | 3     | 2X21      |
| 1 | Z211  | 4→1       | 4     | 2X21      |
| 2 | Z251  | 3→4       | 3     | 2X21      |
| 3 | Z251  | 2→1       | 2     | 2X21      |

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 / H** [ ] / [ ] [ ] [ ] [ ] [ ] [ ] - **B** [ ]

|   |  |
|---|--|
| <p><b>Explosion proof 4/2 directional valve, solenoid operated, spool type, direct acting</b></p> <p><b>Valve cavity</b><br/>7/8-14 UNF (C-10-4)</p> <p><b>Model</b><br/>High performance</p> <p><b>Model / Symbol</b></p> <p><b>DC voltage connection box + cable gland</b></p> <p>12 V DC / 0.75 A      <b>01200</b><br/>                 24 V DC / 0.39 A      <b>02400</b><br/>                 48 V DC / 0.19 A      <b>04800</b><br/>                 110 V DC / 0.094 A      <b>11000</b></p> <p><b>AC voltage 50/60 Hz, fix installed cable</b></p> <p>110 V AC / 0.112 A      <b>11050</b><br/>                 230 V AC / 0.052 A      <b>23050</b></p> | <p><b>Certifikace ventilu</b></p> <p><b>No designation</b>      ATEX, IECEx<br/> <b>A</b>      IECEx for Australia and New Zealand<br/> <b>E</b>      EAC for EAEU* States</p> <p><b>Surface treatment</b><br/>zinc-coated (ZnNi), ISO 9227 (520 h)</p> <p><b>Seals</b><br/>NBR</p> <p><b>Manual override</b><br/>standard<br/>detent assembly<br/>without manual override</p> <p><b>Cable length</b><br/>without cable<br/>3 m<br/>8 m</p> <p><b>Temperature class - solenoid nominal input power</b><br/>class T4 - 10 W<br/>class T6 (T5) - 10 W</p> <p><b>A4</b><br/><b>A6</b></p> <p><b>No designation</b><br/><b>M7</b><br/><b>M9</b></p> <p><b>No designation (only for DC)</b><br/>3 (AC and DC version)<br/>8 (AC and DC version)</p> |
|---|--|

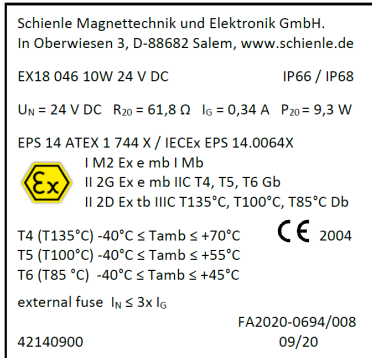
\*EAEU= Eurasian Economic Union, certificate according to TR TS 012/2011 valid for the Russian Federation, Belarus, Armenia, Kazakhstan and Kyrgyzstan.

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



### Marking of non-electrical part of valve

ATEX / IECEx



EAC



### 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  |
| 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 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:  $I_n \leq 3I_G$ , 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.

