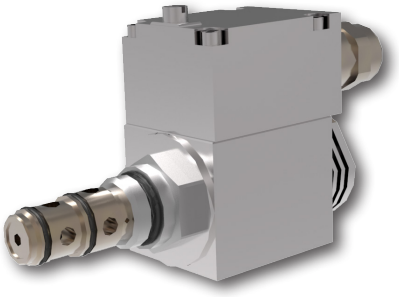
Explosion Proof Proportional Pressure Control Valve, Reducing - Relieving, Direct-Acting

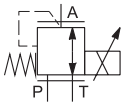
PVRMX3-103

M24 x 1.5 • Q_{max} 40 l/min (11 GPM) • p_{max} 90 bar (1300 PSI)



Technical Features

- Valve and solenoid design prevents a surface temperature capable of igniting
- Solenoid coil in acc. with directive ATEX 2014/34/EC for explosion-hazard zones
- Explosion protection for gas and dust
- Encapsulation enclosure solenoid version
- Excellent stability throughout flow range with rapid response to proportional current input change
- Low hysteresis, accurate pressure control and low pressure drop through CFD optimized flow paths
- Precise pressure control vs current and excellent repeatability
- Integrated relief function for protection against pressure peaks
- 12 or 24 V DC coils
- Coil interchangeability with all Argo-Hytos ATEX/IECEx product line
- In the standard version, the valve is zinc coated for 520 h protection acc. to ISO 9227

Symbol


ATEX/IECEx Classification

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

Certificate IECEx EPS14.0064 X
Ex e mb I Mb
Ex e mb IIC T4 Gb
Ex tb IIIC T135°C Db

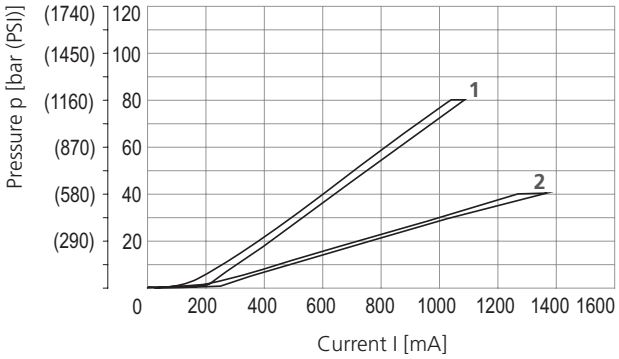
Technical Data

Valve size / Cartridge cavity		M24 x 1.5 / QJ3	
Max. operating pressure (port P)	bar (PSI)	50 (730)	90 (1300)
Max. reduced pressure (port A)	bar (PSI)	30 (440)	80 (1160)
Max. flow rate P-A	l/min (GPM)	40 (11)	
Fluid temperature range	°C (°F)	-30 ... +60 (-22 ... +140)	
Ambient temperature range	°C (°F)	-30 ... +60 (-22 ... +140)	
Response time at 100 % signal	ms	< 50	
Technical Data - Explosion proof solenoid			
Available nominal voltages U_N	V	12 DC	24 DC
Available nominal input power	W	18	
Supply voltage fluctuations		U_N ± 10 %	
Limit current	A	1.37	0.65
Rated resistance at 20 °C (68 °F)	Ω	7.7	32.3
Duty cycle		S1 (100 % ED)	
Optimal PWM frequency	Hz	150	
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.			
Ambient temperature range T4/18 W Temperature class / Nominal power	°C (°F)	-30 ... +60 (-22 ... +140)	
Weight with coil	kg (lbs)	1.5 (3.31)	
	Data Sheet	Type	
General information	GI_0060	Products and operating conditions	
Operating Instructions	4090		
Cavity details / Form tools	SMT_0019	SMT-QJ3*	
Spare parts	SP_8010		

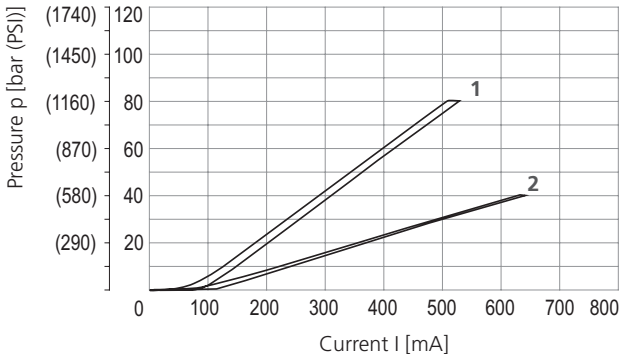
Characteristics measured at ν = 32 mm²/s (156 SUS)

Reduced pressure in port A related to a control signal with zero flow through the valve (Q = 0 l/min)

Uc = 12 V, PWM = 150 Hz



Uc = 24 V, PWM = 150 Hz

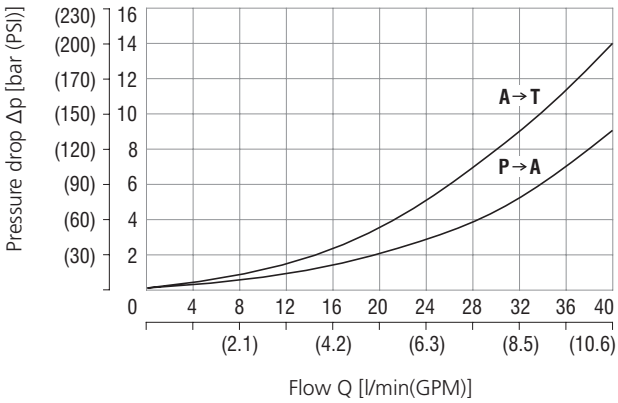


	Pressure level	Input pressure (P port)
1	80 bar (1160 PSI)	90 bar (1300 PSI)
2	30 bar (440 PSI)	50 bar (730 PSI)

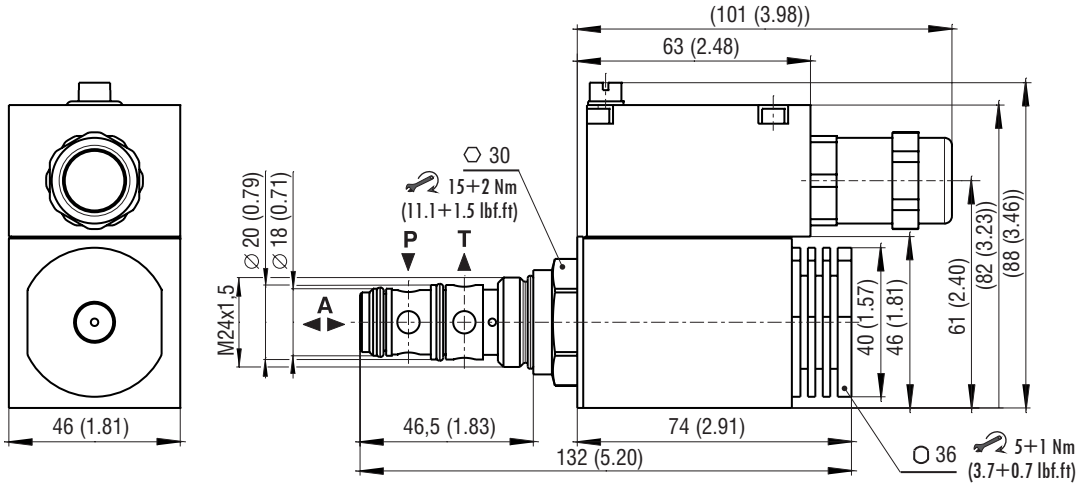
Characteristics measured at ν = 32 mm²/s (156 SUS)

Pressure drop related to flow rate

A-T, Valve coil de-energized (relieving function)
P-A, Valve coil energized (reducing function)



Dimensions in millimeters (inches)



Ordering Code

PVRMX3 - 103 / S - □ - □ B4 □ □ - B □

Explosion proof Proportional pressure control valve, reducing - relieving, direct-acting

Valve cavity
M24 x 1.5 / QJ3

Model
screw-in cartridge

Max. reduced pressure

30 bar (440 PSI)	**30**
80 bar (1160 PSI)	**80**

Supply voltage / limit current

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

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

Cable length

No designation	without cable
3	3 m
8	8 m

Seals

No designation	NBR

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

Certifications of valve

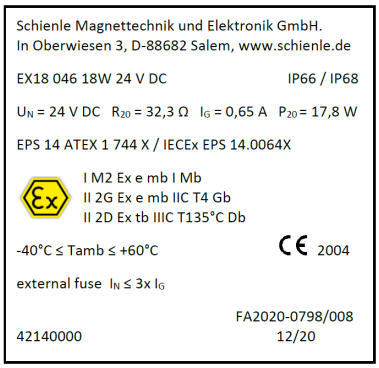
No designation	ATEX, IECEx
A	IECEx for Australia and New Zealand
E	EAC for EAEU* States

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

Marking Example

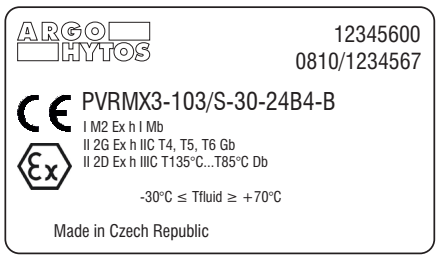
Marking of solenoid

18 W

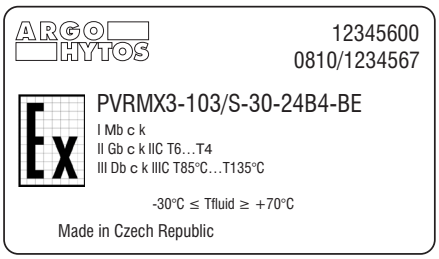


Marking of non-electrical part of valve

ATEX / IECEx



EAC



Group I (Mining)

Ex	ATEX mark of conformity to the 2014/34/EC 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/EC 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

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 mm^2 are to be used. When installing the V DC solenoid grounding an appropriate cable shoe M3 - 0.75 mm^2 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.