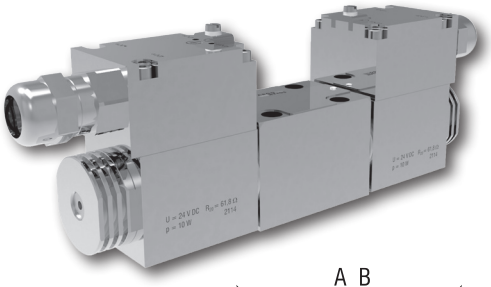
Explosion Proof Proportional Directional Control Valve

PRMX2-06

Size 06 (D03) • Q_{max} 28 l/min (7.4 GPM) • p_{max} 350 bar (5100 PSI)



Technical Features

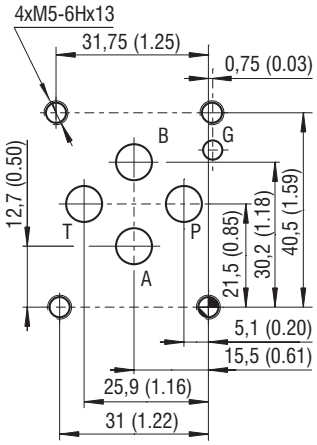
- Valve and solenoid design prevents a surface temperature capable of igniting
- Solenoid coil in acc. with directive ATEX 2014/34/EU for explosion-hazard zones
- Explosion protection for gas and dust
- Encapsulation enclosure solenoid version
- Direct acting, proportional control valve
- The valve opening and resulting flow rate can be modulated continuously in proportion to the reference signal
- Five chamber housing design with reduced hydraulic power dependence on fluid viscosity
- Coil interchangeability with all Argo-Hytos ATEX/IECEx product line
- 12 or 24 V DC coils, the coil can be rotated by 90°
- In the standard version, the valve housing 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

ISO 4401-03-02-0-05

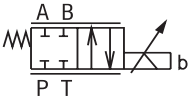
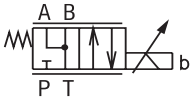
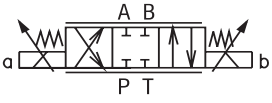


Ports P, A, B, T - max. ∅7.5 mm (0.29 in)

Technical Data

Valve size			06 (D03)	
Max. operating pressure at ports P, A, B		bar (PSI)	350 (5080)	
Maximal flow at Δp=10 bar (145 PSI)		l/min (GPM)	10 (2.6), 20 (5.3), 28 (7.4)	
Maximum operating pressure at port T		bar (PSI)	210 (3050)	
Fluid temperature range (NBR)		°C (°F)	-30 ... +60 (-22 ... +140)	
Ambient temperature max.		°C (°F)	-30 ... +60 (-22 ... +140)	
Hysteresis		%	< 6	
Weight	valve with 1 solenoid	kg (lbs)	2.52 (5.56)	
	valve with 2 solenoids		3.97 (8.75)	
Technical Data - Explosion proof solenoid				
Available nominal voltages U_N		V DC	12	24
Available nominal input power		W	18	
Supply voltage fluctuations			U_N ± 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		
Mounting surface		SMT_0019	Size 06	
Spare parts		SP_8010		

Spool Symbols

Type	Symbol	Type	Symbol
2Z51		2Y51	
2Z11		2Y11	
3Z11		3Y11	

Ordering Code

PRMX2-06 ☐ / ☐ - ☐ **B4** ☐ ☐ ☐ - **B** ☐

Explosion proof Proportional Directional Control Valve

Valve size

Spool symbols
see the table „Spool Symbols“

Nominal flow rate at Δp = 10 bar (145 PSI)

10 l/min (2.6 GPM)	**10**
20 l/min (5.3 GPM)	**20**
28 l/min (7.4 GPM)	**28**

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

Manual override

No designation	standard
N7	detent assembly

Seals

No designation	NBR

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

Certifications of valve

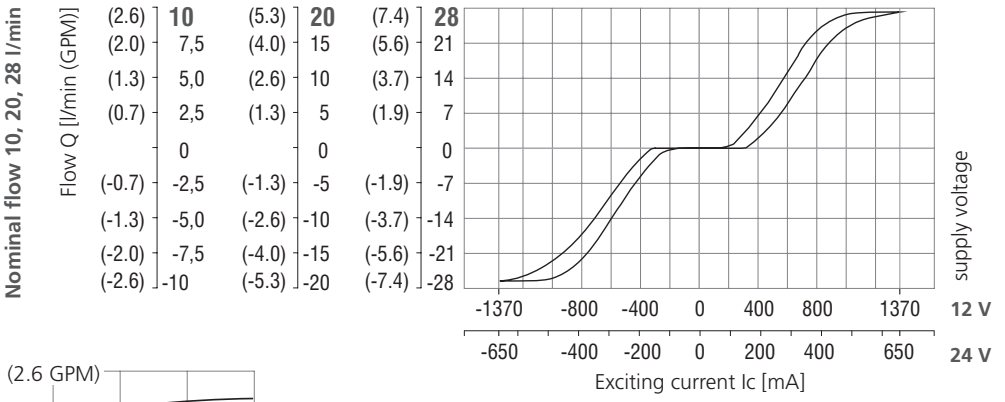
No designation	ATEX, IECEx
A	IIECEx for Australia and New Zealand
E	EAC for EAEU* States

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

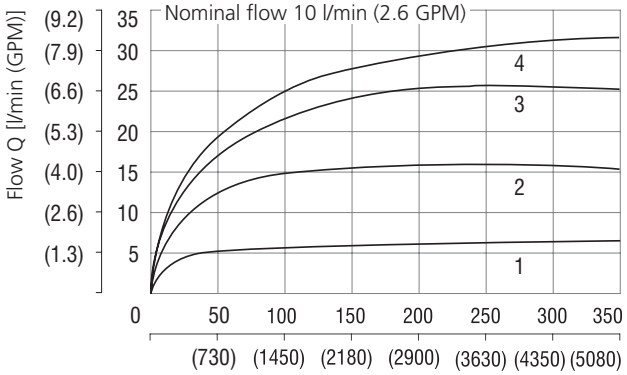
- For proportional valves with two solenoids, one solenoid must be de-energized before the other solenoid can be charged.
- Mounting bolts M5 x 45 ISO 4762 or studs must be ordered separately. Tightening torque is 8.9+1 Nm (6.56+0.7 lbf.ft).
- Besides the shown widely used valve versions other special models are available.
  Contact our technical support for their identification, feasibility and operating limits.

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

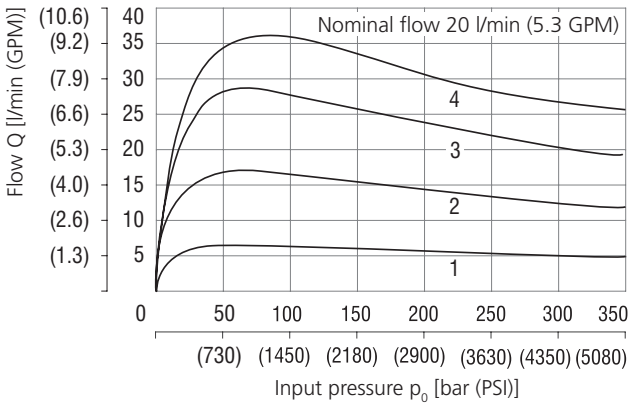
Flow characteristic:
Δp = 10 bar (145 PSI)
Flow direction:
P → A / B → T or P → B / A → T

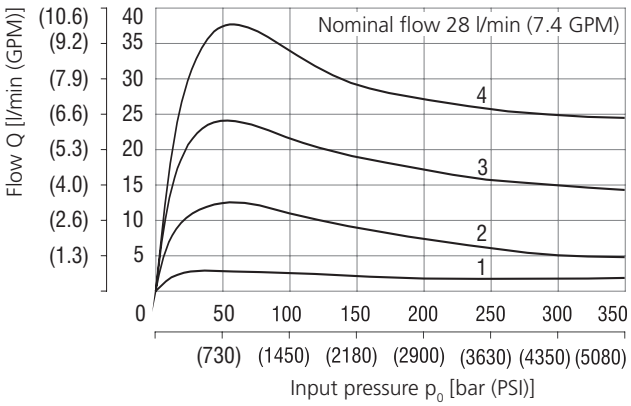


Operating limits:



Solenoid current:	
1	40 %
2	60 %
3	80 %
4	100 %





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 V DC R_{20} = 32,3 Ω I_G = 0,65 A P_{20} = 17,8 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

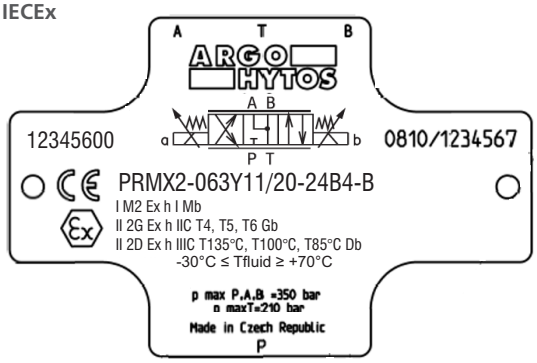
-40°C ≤ Tamb ≤ +60°C CE 2004

external fuse $I_N \leq 3x\ I_G$

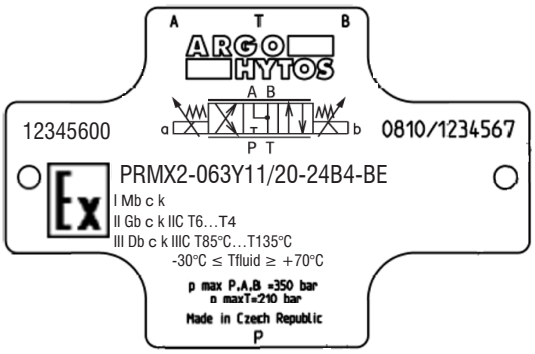
FA2020-0798/008
42140000 12/20

Marking of non-electrical part of valve

ATEX / IECEx



EAC



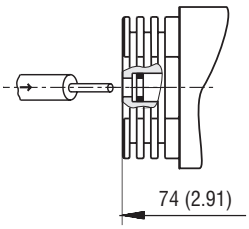
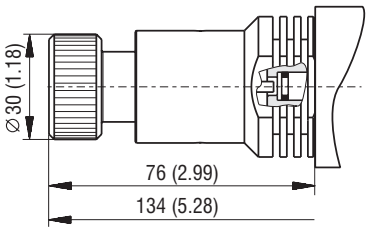
Group I (Mining)

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

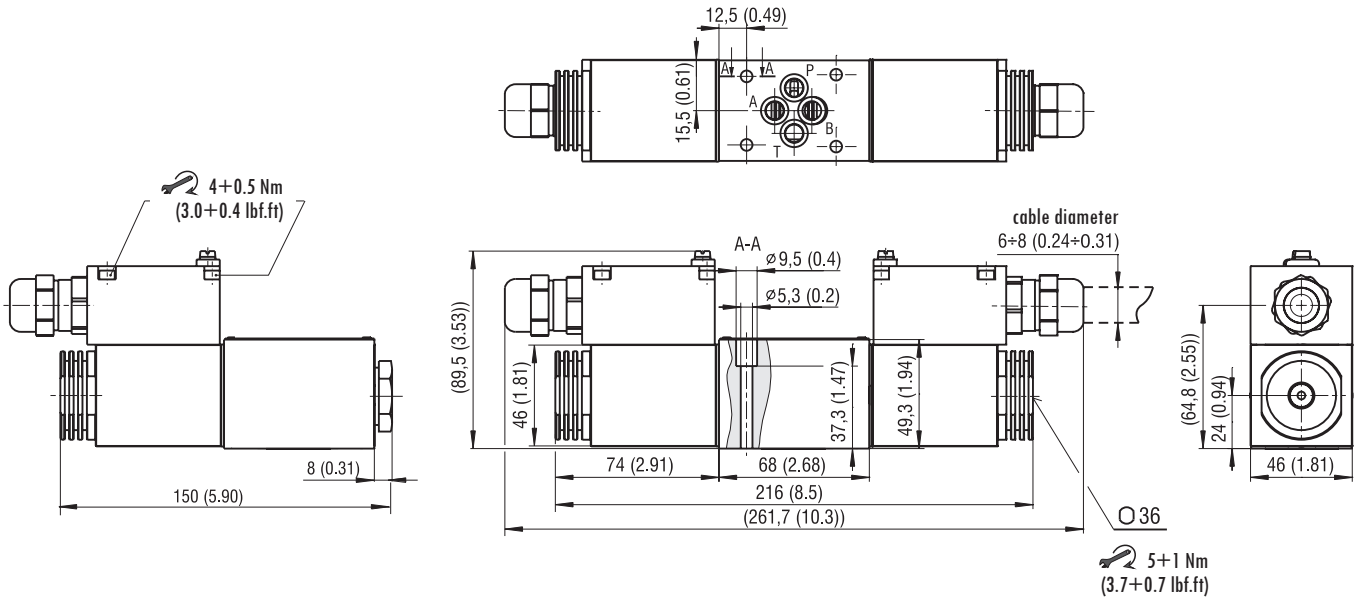
Group II

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
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

Manual Override in millimeters (inches)

No designation - standard	N7 - detent assembly
	

Dimensions in millimeters (inches)



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 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.