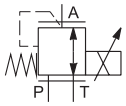
Explosion Proof Proportional Pressure Control Valve, Reducing - Relieving, Direct-Acting

PVRM2X3-103

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

Symbol



Technical Features

- Screw-in cartridge proportional pressure reducing valve with connection thread M24x1.5
- Maximum inlet pressure (P) 90 bar, maximum reduced pressure (A) 80 bar
- Solenoid coil certification ATEX (Directive 2014/34/EU) and IECEx, valid for mines and environments with potentially explosive atmospheres consisting of gases or dust
- Coil certification "FM APPROVED" valid for USA and Canada
- Coil protection by flameproof enclosure "d" / "t" (for dust)
- Robust design resistant to mechanical damage
- Protection against static discharge by grounding the valve surface
- Valves applicable to temperature class T4 (135 °C) depending on maximum ambient temperature
- Easily interchangeable direction of power cable entry (axial/radial) into the coil
- Optional coil supply voltage (12 / 24 V DC)
- The valve is zinc coated for 520 h corrosion protection in NSS acc. to ISO 9227 and as protection against ignition spark in the event of mechanical impact

Product Description

Screw-in cartridge proportional pressure reducing valve, direct-operated by solenoid. When flowing towards the appliance (channel A), the valve reduces the value of the input pressure from the source-pump (channel P) to the set value of the output pressure and keeps it constant. The value of the reduced pressure is proportional to the electrical control signal. When the appliance is overloaded, e.g. by excessive external load, the valve closes the pressure input from the pump and relieves the appliance branch by connecting it to the tank (T-channel)
The valve is certified for use in potentially explosive atmospheres of gases, vapors, dusts and flammable particles with a high protection level EPL = b. A suitable electronic control unit (not included) should be used to control the valve, which must meet the required protection level or be located outside the explosive atmosphere.

Use of the valve in potentially explosive atmospheres

12 V / 24 V / 48 V / 110 V DC 110 V / 230 V AC 50 / 60 Hz	Zones	Type of protection – flameproof enclosure
Ex I M2 Ex db I Mb	Category Mb	"d" (EN /IEC 60079-1)
Ex II 2G Ex db IIB+H2 T4 Gb	Zones 1, 2	"d" (EN /IEC 60079-1)
Ex II 2D Ex tb IIIC T135°C Db	Zones 21, 22	"t" (EN/IEC 60079-31)

NEC 500 (USA), Annex J (Canada)
Class I Division 1 Group B, C, D T4 Class II / III Division 1 Group E, F, G T4

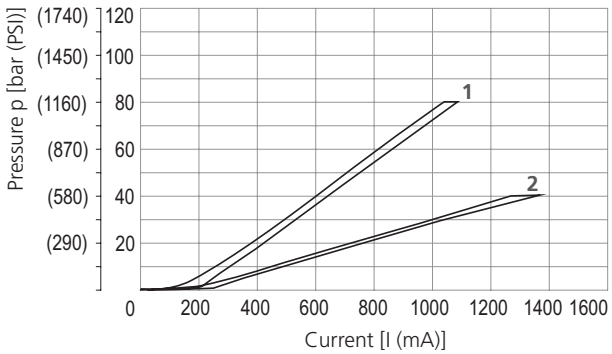
NEC 505, 506 (USA)
CL I Zone 1, AEx db IIB+H2, T4 Gb
Zone 21, AEx tb IIIC T135°C Db

CEC Section 18 (Canada)
Ex db IIB+H2 T4 Gb
Ex tb IIIC T135°C Db

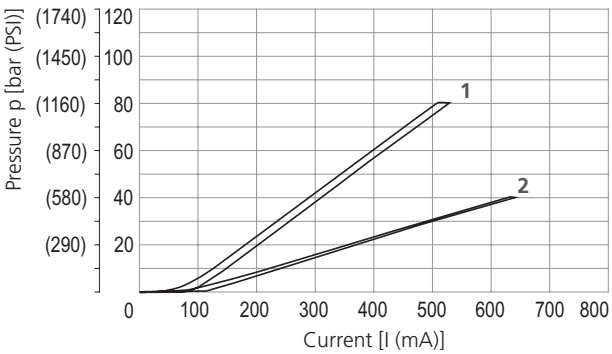
Characteristics measured at ν = 32 mm²/s (156 SUS)

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

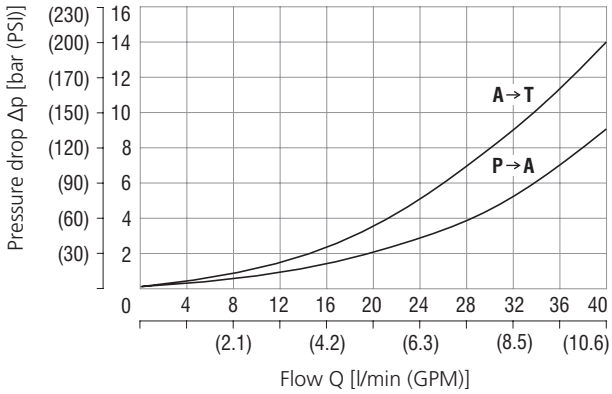


	Pressure level	Input pressure (P port)
1	80 bar (1160 PSI)	90 bar (1300 PSI)
2	30 bar (440 PSI)	50 bar (730 PSI)

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)



Ordering Code

PVRM2X3 - 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 (I_G)
12 V DC / 1.32 A **12**
24 V DC / 0.64 A **24**

Threaded adapter with thread
M M20x1.5
NPT ½ NPT ANSI

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

Seals
No designation NBR

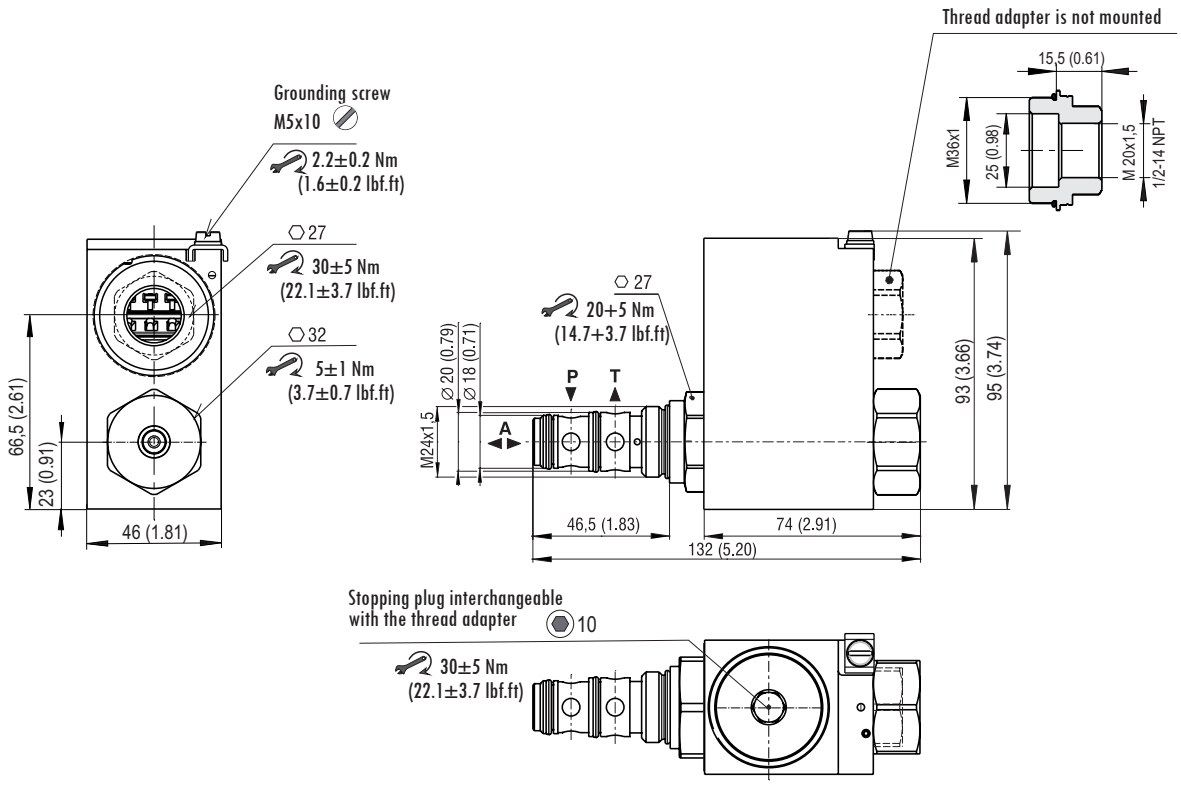
Surface treatment
520 h salt spray test (ISO 9227)

Certifications of valve
No designation ATEX, IECEx, UKCA, FM APPROVED

Technical Data

Valve size / Cartridge cavity		M24 x 1.5 / QJ3	
Max. operating pressure P	bar (PSI)	50 (730)	90 (1300)
Max. reduced pressure A	bar (PSI)	30 (440)	80 (1160)
Max. flow rate P-A	l/min (GPM)	40 (11)	
Fluid temperature range (NBR)	°C (°F)	-30 ... +70 (-22 ... +158)	
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	1.32	0.64
Rated resistance at 20 °C (68 °F)	Ω	7.6	31.2
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)	1.54 (3.40)	
	Datasheet	Type	
General information	GI_0060	products and operating conditions	
Operating instructions	15315		
Cavity details / Form tools	SMT_0019	SMT-QJ3*	
Spare parts	SP_8010		

Dimensions in millimetersd (in)

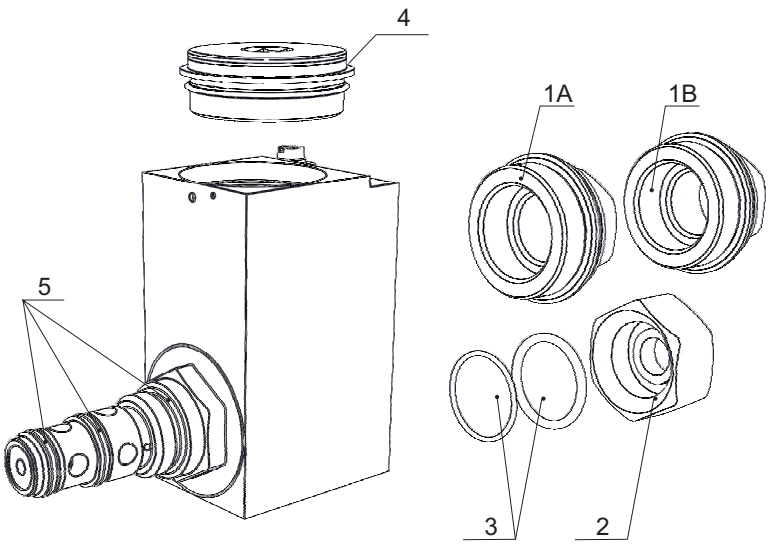


Ordering

The access to the terminal is covered by a steel plug with a seal, mounted on the upper surface of the coil casing. A second hole in the casing is provided for a thread adapter with an optional M20x1.5 (M key) or ½ NPT ANSI (NPT key) thread. The thread adapter with a seal is included because the design of the coil casing allows the axial input of the power cable to be easily changed to vertical by interchanging the plug and thread adapter.

SPARE PARTS

Position		Component name	Description	Ordering number
1A		Thread adapter with the thread M20x1.5	Set with the sealing ring 36x2 VQM (silicone)	44915100
1B		Thread adapter with the tapered thread ½ NPT ANSI	Set with the sealing ring 36x2 VQM (silicone)	44915000
2	Set	Coil nut	Nut	44915200
3	Set	Sealing ring actuating system-coil	O-ring 22x1.5 VMQ 50 (silicone)	44915200
		Nut sealing	O-ring 21.89x2.62 VMQ 70 (silicone)	44915200
4		Stopping plug	Set with the sealing ring 36x2 VQM (silicone)	44923800
5	Set	Bush sealing	O-ring 20.3x2.4 NBR O-ring 17x1.8 NBR O-ring 15x1.8 NBR	44461000



› Before installing the product, please read the Product Instructions for Use, which is available in full on the manufacturer's website (www.argo-hytos.com) near the data sheet. Please also pay attention to the chapter describing the target user group, their professional qualifications and medical fitness to install, use and repair the product.

› The product may only be used in the zones indicated, otherwise there is a risk of initiating an explosion

Area of application

Equipment - group I – MINES	**Equipment - group II (IIG) - GAS**		**Equipment - group III (IID) - DUST**	
Category M1 – **NO**	Zone 0 - **NO**		Zone 20 - **NO**	
Category M2 (the device remains switched off)	Zone 1 Zone 2	IIA (propane)	Zone 21 Zone 22	IIIA (combustible particles)
		IIB (ethylene) + H2		IIIB (non-conductive dust)
				IIIC (conductive dust)

Note: The valve may be used in potentially explosive hydrogen atmospheres belonging to Group IIC. However, it cannot be used for other Group IIC gases, e.g. acetylene

› For use in the temperature class, the maximum ambient temperature (see technical data table) must be observed for the coil input (18 W), the maximum temperature of the of the working fluid 70 °C and the nominal voltage of the coil supply.

› The user must ensure free heat dissipation from the valve surface. The surface must not be covered, exposed to a heat source or direct sunlight. When mounting the valves in groups, observe the minimum distances specified in the Instructions for Use.

› Use a certified cable and a cable gland with protection "d" to prevent the penetration of hot gases into the surrounding environment when an explosion is initiated in the interior of the flameproof enclosure. The insulation must match the temperature class.

› It is forbidden to install, dismantle or repair the product in an explosive atmosphere. Repairs to the product shall be carried out by the manufacturer, except for repairs permitted by the user under the conditions specified in the Instructions for Use.

› Attention! The surface of the coil and the valve heats up during operation. There is a risk of skin burns if touched.