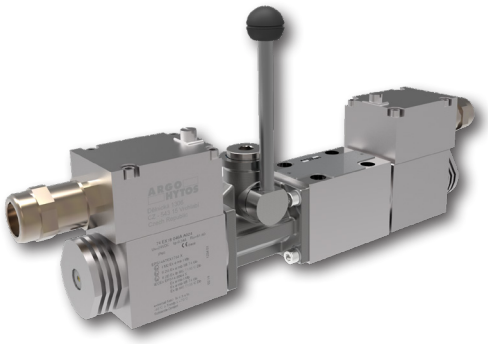
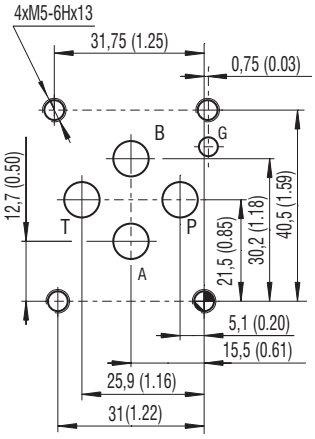
Explosion proof, directional control valve, solenoid operated, with lever override

RPERX3-06

Size 06 (D03) • Q_{max} 60 l/min (16 GPM) • p_{max} 350 bar (5100 PSI)



ISO 4401-03-02-0-05



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

Technical Features

- Hydraulic, spool-type directional control valve with cast iron body and connection pattern according to ISO 4401 and DIN 24340 (CETOP 03)
- Maximum operating pressure 350 bar (P, A, B ports) / 100 bar (T port)
- The hand lever enables an override of the valve spool up to pressure of 100 bar in T-channel
- Certification of solenoid coil ATEX (Directive 2014/34/EU) and IECEx, valid for mines and environments with potentially explosive atmospheres consisting of gases or dust
- Coil protection by encapsulation "m" for gases and by flameproof enclosure "t" for dust
- Robust design resistant to mechanical damage
- Protection against static discharge by grounding the valve surface
- Valves applicable for temperature classes T4 (135 °C), T5 (100 °C) and T6 (85 °C) depending on the coil input power and maximum ambient temperature
- Optional coil supply voltage and spool type
- 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

Direct-acting, spool-type directional control valve operated by solenoids. The valve is designed to control the direction of movement of the appliance output component (direction of piston feed in the cylinder, direction of rotation of the hydraulic motor shaft) or its stop. The manual lever allows the valve spool to be adjusted up to a pressure of 100 bar in the T-channel. The valve is certified for use in potentially explosive atmospheres of gases, vapors, dust and flammable particles with high protection level EPL = b.

Use of the valve in potentially explosive atmospheres

	EPS14ATEX1744 X	IECEx EPS14.0064 X
AC	Ex I M2 Ex mb I Mb	Ex mb I Mb
AC	Ex II 2G Ex mb IIC T4, T5, T6 Gb	Ex mb IIC T4, T5, T6 Gb
AC	Ex II 2D Ex mb IIIC T135°C, T100°C, T85°C Db	Ex mb IIIC T135°C, T100°C, T85°C Db
DC	Ex I M2 Ex eb mb I Mb	Ex eb mb I Mb
DC	Ex II 2G Ex eb mb IIC T4, T5, T6 Gb	Ex eb mb IIC T4, T5, T6 Gb
DC	Ex II 2D Ex tb IIIC T135°C, T100°C, T85°C Db	Ex tb IIIC T135°C, T100°C, T85°C Db

Ordering Code

RPERX3-06 ☐ ☐ / ☐ ☐ ☐ ☐ / ☐ - **B** ☐

Explosion proof, directional control valve, solenoid operated, with lever override

Valve size

Number of spool positions
two positions **2**
three positions **3**

Spool symbols
see the table "Spool Symbols"

Rated supply voltage of solenoids
DC voltage (I_N of coil 10 W)
(connection box + cable gland)
12 V DC / 0.75 A **01200**
24 V DC / 0.39 A **02400**
48 V DC / 0.19 A **04800**
110 V DC / 0.094 A **11000**
AC voltage 50/60 Hz (I_N of coil 10 W)
(fix installed cable)
110 V AC / 0.112 A **11050**
230 V AC / 0.052 A **23050**

Temperature class - solenoid nominal input power
A4 Class T4 - 10 W
A6 Class T6 (T5) - 10 W

Cable length
No designation (only for DC) without cable
3 (AC and DC version) 3 m
8 (AC and DC version) 8 m

Seals
No designation NBR

Manual lever and position of override actuating section***
A19 standard, lever on side A, upward
B19 standard, lever on side B, upward

Surface treatment
520 h salt spray test (ISO 9227)

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

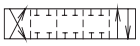
- For directional valves with two solenoids, one solenoid must be de-energized before the other solenoid can be charged.
- The solenoids must be switched off when the valve is operated by hand lever.

*CCC certification (China Compulsory Certification) for the People's Republic of China does not apply to the equipment group Iintended for use in mines.
**EAEU=Eurasian Economic Union, certificate according to TR TS 012/2011 valid for the Russian Federation, Belarus, Armenia, Kazakhstan and Kyrgyzstan.
***For valves with one solenoid: the lever is placed always between valve housing and solenoid.

Technical Data

Valve size			06 (D03)	
Max. flow		l/min (GPM)	60 (15.9)	
Max. operating pressure at ports P, A, B		bar (PSI)	350 (5080)	
Max. operating pressure at port T		bar (PSI)	100 (1450)	
Pressure drop		bar (PSI)	see Δp-Q characteristics	
Fluid temperature range (NBR)		°C (°F)	-30 ... +70 (-22 ... +158)	
Max. switching frequency		1/h	15 000	
Switching time ON at ν=32 mm²/s (156 SUS)		ms	AC: 30 ... 40	DC: 30 ... 50
Switching time OFF at ν=32 mm²/s (156 SUS)		ms	AC: 30 ... 70	DC: 10 ... 50
Technical Data - Lever				
Total stroke angle		deg	±20	
Working stroke angle			± 12 ... 20	
Lever override length		mm (in)	102 (4.01)	
Operating force		N (lbf)	40 (29.5)	
Lever device weight		kg (lbs)	0.59 (1.30)	
Weigh including the lever	valve with 1 solenoid		3.11 (6.86)	
	valve with 2 solenoids		4.56 (10.05)	
Technical Data - Explosion Proof Solenoid				
Voltage type			AC 50 / 60 Hz	DC
Available nominal voltages U_N		V	110, 230	12, 24, 48, 110
Available nominal input power		W	10	
Supply voltage fluctuations			U_N ± 10 %	
Duty cycle			100 % ED	
Enclosure type of the Solenoid 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		°C (°F)		
Temperature class / Nominal input power	T4-10 W		-30 ... +70 (-22 ... +158)	
	T5-10 W		-30 ... +55 (-22 ... +131)	
	T6-10 W		-30 ... +45 (-22 ... +113)	
		Datasheet	Type	
General information		GI_0060	products and operating conditions	
Operating instructions		14095		
Mounting surface		SMT_0019	Size 06	
Subplates		DP*_0002		
Spare parts		SP_8010		

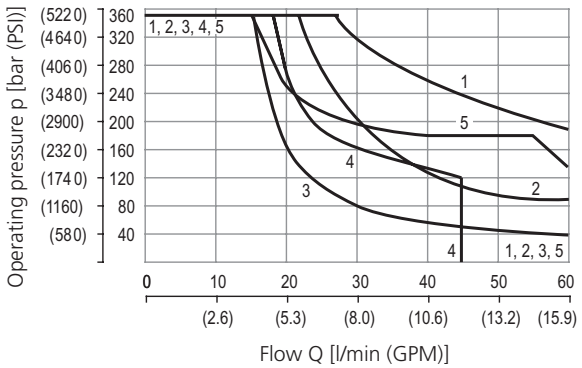
Spool Symbols

Type	Symbol	Interposition	Type	Symbol	Interposition
Z11			R11		
C11			H51		
H11					
Y11					

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

Operating limits (p-Q)

Ambient temperature 70 °C (158 °F), Voltage U_n -10 % (24 V DC), Power P_n 10 W

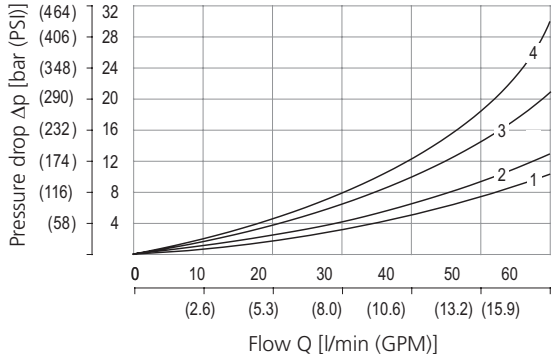


1	Z11
2	Y11
3	H11
4	C11
5	H11, H51

Operating limits of other than shown versions consult with our technical department.

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

Pressure drop related to flow rate (Δp-Q)



	P→A	P→B	A→T	B→T	P→T
Z11	1	1	2	2	
Y11	1	1	1	1	
C11	3	3	3	4	2
H11	1	1	1	2	2
2H11	1	1	1	2	2
2H51		1	2		

Dimensions in millimeters (inches)

The lever operator should never be used when any solenoid is energized.

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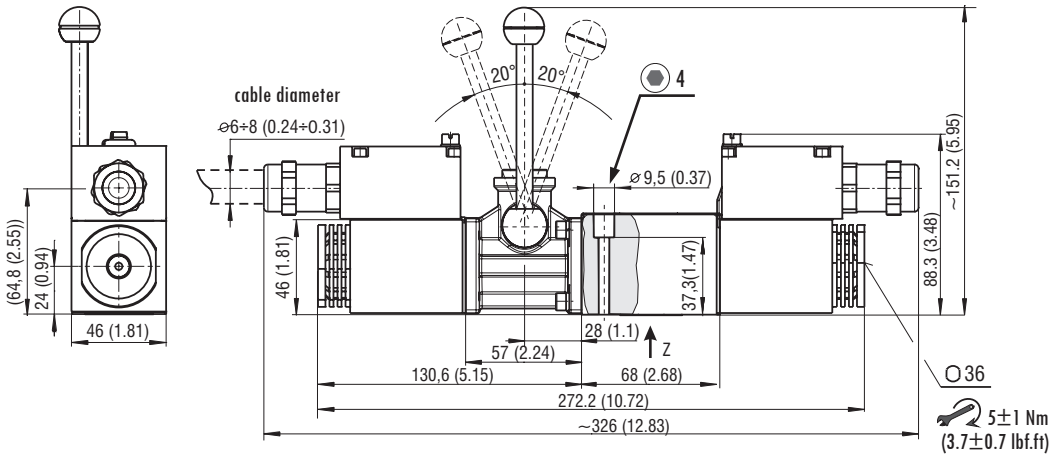

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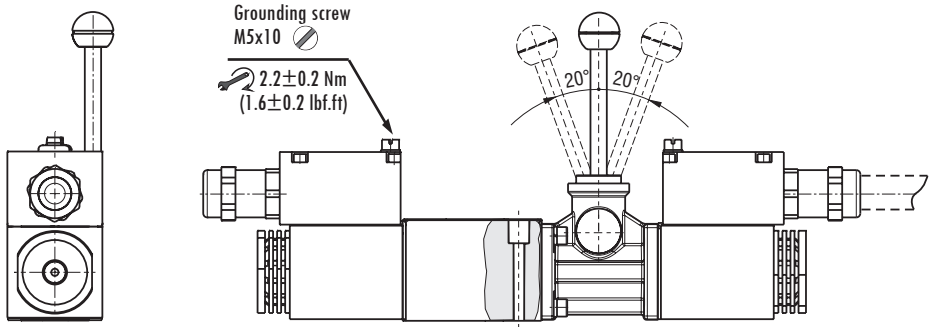

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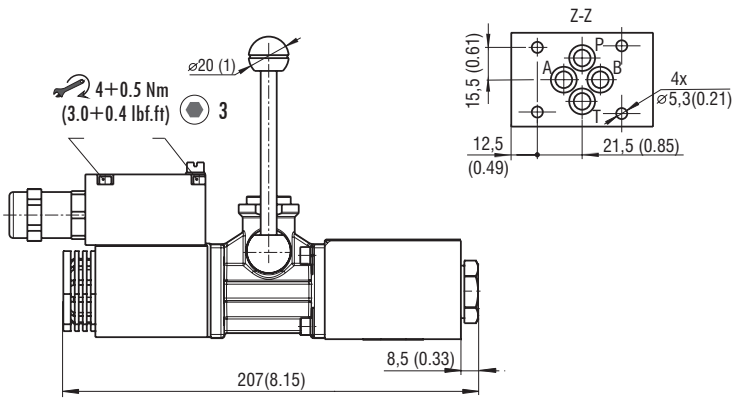
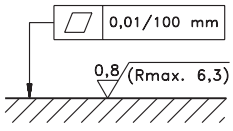


Mounting screws 8.9±1 Nm (7±0.7 lbf.ft)
M5x45 DIN 912-10.9 4

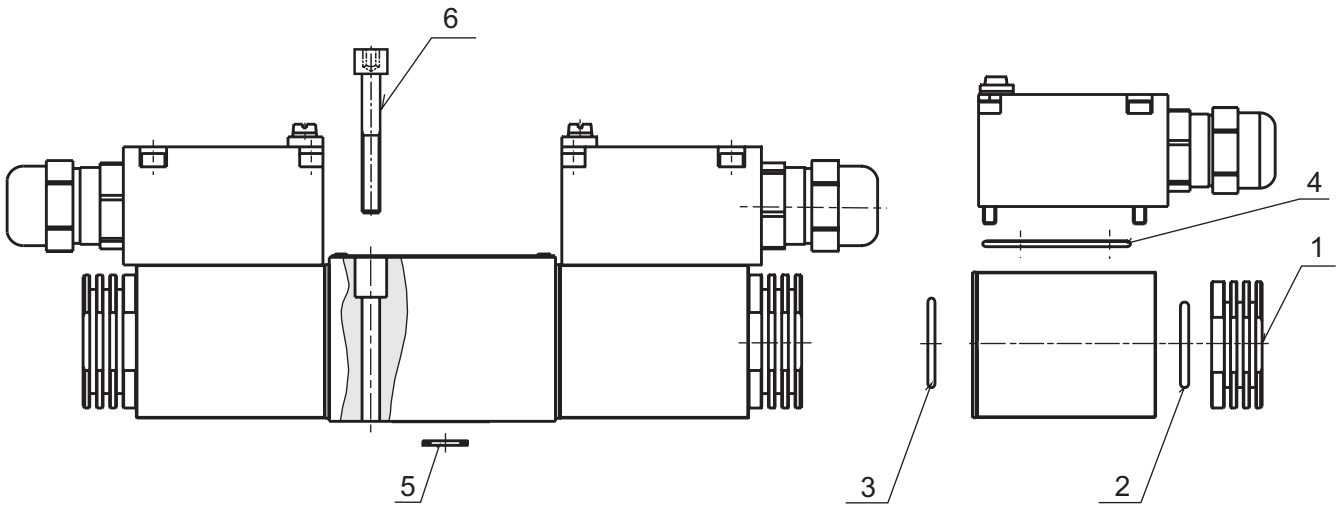


Required surface quality of the counterpart

Manual lever and actuating section is shown in the standard supplied position which is the most frequently used.
Both elements can be rotated to various positions 90° apart.
For other positions of lever and actuating section consult our technical department for their identification.

SPARE PARTS

Position		Component name	Description	Ordering number
1	Set	Coil nut	Nut	45904300
2		Nut sealing	O-ring 21.89x2.62 VMQ 70 (silicone)	
3		Sealing ring actuating system-coil	O-ring 22x1.5 VMQ 50 (silicone)	
4		Sealing ring of terminal box cover	O-ring 46x2 VMQ (silicone)	34950700
5		Set of seals	4x Square ring 9.25x1.68 NBR	15845200
6		Valve mounting screws	4x M5x45 DIN 912 10.9	15845100



Information for Customers

› 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)		IIIB (non-conductive dust)
		IIC (hydrogen)		IIIC (conductive dust)

› For use in the temperature class, the maximum ambient temperature (see technical data table) must be observed for the coil input (10 W) the maximum working fluid temperature of 70 °C and the nominal coil supply voltage.

› 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.

› A certified cable of temperature insulation class corresponding to the application temperature class must be used to the electrical connection of coil with DC supplying.

› The rectifier and terminal block of coils with AC supplying are protected with encapsulation. Therefore, these coils are only supplied with mounted cable. No modification to the connected cable are allowed except for shortening the cable to a suitable length and fitting a connector to the free end.

› The valve surface must be grounded using the screw on the terminal box cover of coil to prevent electrostatic discharge.

› 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 gets hot during operation. There is a risk of skin burns if touched.