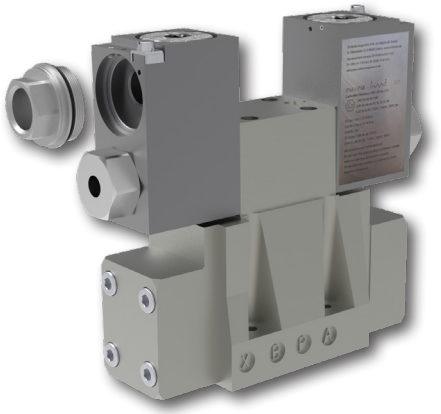
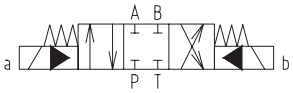
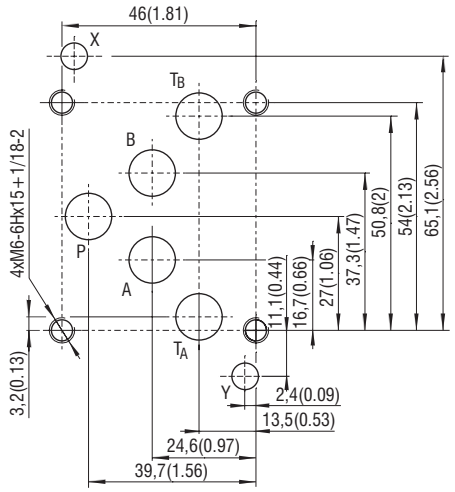
RNE2XH1-10

Size 10 (D05) • Q_{max} 150 l/min (40 GPM) • p_{max} 320 bar (4600 PSI) / 420 bar (6100 PSI)



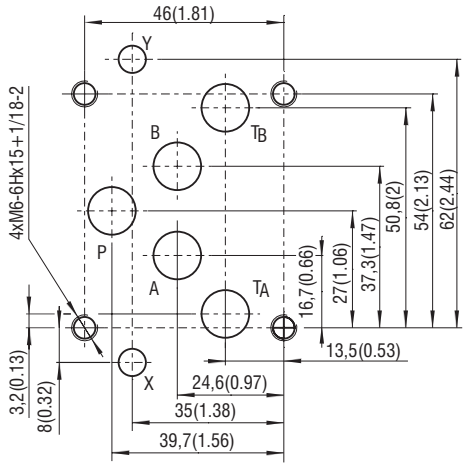


CETOP 4.2-4 P05-320 STANDARD PATTERN



Ports P, A, B, T - max.- ∅11.2 mm (0.44 in)
X,Y - max. ∅ 6.3 mm (0.25 in)

ISO 4401-05-05-0-05 CETOP 4.2-4 R05-320



Ports P, A, B, T - max.- ∅11.2 mm (0.44 in)
X,Y - max. ∅ 6.3 mm (0.25 in)

Technical Features

- Hydraulic, pilot-operated, spool-type directional control valve with cast iron body with connection pattern as standard according to CETOP 4.2-4 P05-320, optionally according to ISO 4401-05-05-0-05 (Size 10)
- Maximum operating pressure 320 bar / 420 bar (high pressure version)
- Internal or external power supply of the pilot valve RPE2X3-06 controlled by solenoids
- Solenoid coil certification ATEX (Directive 2014/34/EU) and IECEx, valid for mines and environments with potentially explosive atmospheres consisting of gases or dust
- "FM APPROVED" coil certification valid for the 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 for temperature classes T4 (135 °C), T5 (100 °C) and T6 (85 °C) depending on the coil input power and maximum ambient temperature
- Easily interchangeable direction of power cable entry (axial/radial) into the coil
- Optional spool type, Optional coil supply voltage and type of manual override
- Optional spool speed control to prevent pressure surges in the circuit and adjustable stops for flow restriction
- 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

Hydraulic, pilot operated, spool-type, directional control valve with pilot valve RPE2X3-06. The main valve spool is hydraulically controlled by a solenoid operated pilot valve. The design of the valve allows the control of a large volumetric flow. The valve is designed to control the direction of movement of the appliance outlet component or to stop it. The valve is certified for use in potentially explosive atmospheres of gases, vapors, dusts and flammable particles with high protection level EPL = b.

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 T6, T5, T4 Gb	Zones 1, 2	"d" (EN /IEC 60079-1)
Ex II 2D Ex tb IIIC T85°C, T100°C, 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 T6 ... T4 Class II / III Division 1 Group E, F, G T6 ... T4

NEC 505, 506 (USA)
CL I Zone 1, AEx db IIB+H2, T6 ... T4 Gb
Zone 21, AEx tb IIIC T85°C ... T135°C Db

CEC Section 18 (Canada)
Ex db IIB+H2 T6 ... T4 Gb
Ex tb IIIC T85°C ... T135°C Db

Technical Data

Valve type			RNE2XH1-10	RNE2XH1H-10
Valve size			10 (D05)	
Max. flow		l/min (GPM)	150 (37)	
Max. operating pressure at ports P, A, B		bar (PSI)	320 (4640)	420 (6090)
- at port T (external drain)		bar (PSI)	210 (3050)	350 (5080)
- at port T (internal drain)		bar (PSI)	210 (3050)	
Minimum pilot pressure		bar (PSI)	12 (174)	
Maximum pilot pressure		bar (PSI)	210 (3050)*	350 (5080)*
Fluid temperature range (NBR)		°C (°F)	-30 ... +70 (-22 ... +158)	
Ambient temperature range				
Temperature class / Nominal input power	T4-10 W/18 W	°C (°F)	-30 ... +70/60 (-22 ... +158/140)	
	T5-10 W	°C (°F)	-30 ... +55 (-22 ... +131)	
	T6-10 W	°C (°F)	-30 ... +40 (-22 ... +104)	
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, 18	
Supply voltage fluctuations			U_N ± 10 %	
Max. switching frequency		1/h	10 000	
Enclosure type acc.to EN 60529			IP66 / IP68***	
Switching time at ν=32 mm²/s (156 SUS)	ON	ms	AC: 45 ... 60**	DC: 55 ... 75**
	OFF	ms	AC: 60 ... 90**	DC: 60 ... 90**
Weight	RNE2XH1-102	kg (lbs)	7.34 (16.18)	
	RNE2XH1-103		8.89 (19.60)	
		Datasheet	Type	
General information		GI_0060	products and operating conditions	
Operating instructions		15316		
Mounting surface		SMT_0019	Size 10	
Spare parts		SP_8010		

*For higher system pressure use option „Z“
**The values indicated refer to a solenoid valve working with a pilot pressure of 100 bar (mineral oil, temperature = 50 °C, viscosity = 36 mm²/s, P - A and B - T connected).
***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.

Ordering Code

RNE2XH [ ] - [ ] [ ] [ ] / [ ] [ ] [ ] / [ ] [ ] [ ] [ ] [ ] - **B** [ ]

Explosion proof 4/2 and 4/3 directional control valve, internally and externally pilot operated

Design series
standard 320 bar **1**
high pressure 420 bar **1H**
(not available for C11 spools)

Valve size
standard pattern **10**
ISO 4401-05-05-0-05 **10R**

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

Spool symbols
see the table “Spool Symbols”

Control options
without additional features **No designation**
main spool stroke limiter **C**
main spool shifting speed control **D**
shifting speed control, with orifice (0.8 mm) in port P of solenoid pilot valve **PF**

Piloting
internal (from P-channel of the controlled valve) **No designation**
internal with installed pressure reducing valve, fixed 30 bar setting **Z**
external **E**

Drain
external **No designation**
internal **I**

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

Surface treatment
520 h salt spray test (ISO 9227)

Seals
No designation NBR

Manual override
No designation standard
N7 detent assembly
N9 without manual override

Temperature class - solenoid nominal input power
A6 Class T4, T5, T6 - 10 W
B4 Class T4 - 18 W*

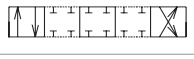
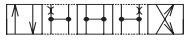
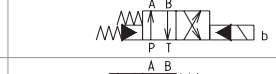
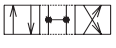
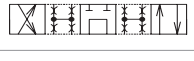
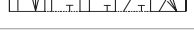
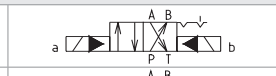
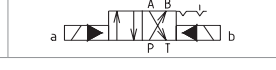
*Coil B4 (18 W) available only in combination with spools J17 and J27

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

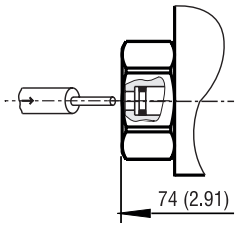
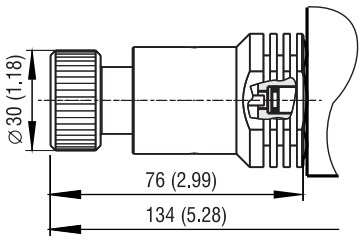
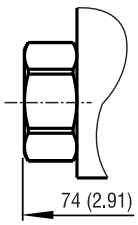
Rated supply voltage of solenoids
DC voltage (I_N of coil 10 W)
01200 12 V DC / 0.75 A
02400 24 V DC / 0.39 A
04800 48 V DC / 0.19 A
11000 110 V DC / 0.086 A

AC voltage 50/60 Hz (I_N of coil 10 W)
11050 110 V AC / 0.084 A
23050 230 V AC / 0.046 A

Spool Symbols

Three positions with centering spring			Two positions with return spring		
Z11			R51		
H11			R52		
Y11			X51		
C11			X52		
P11			Two positions with mechanical detent on pilot valve		
			J17		
			J27		

Manual Override of the pilot valve RPE2X3-06 measured in millimeters (in)

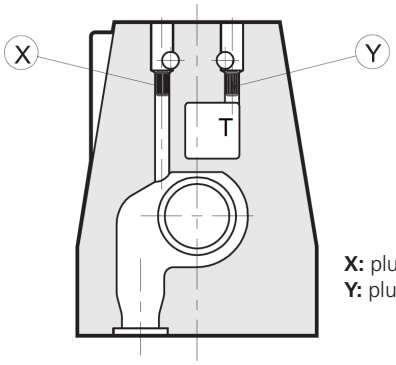
No designation - standard	N7 - detent assembly	N9 - without manual override
		

In case of solenoid malfunction or power failure, the valve spool can be shifted by manual override under the condition that the pressure in the back line does not exceed 25 bar (363 PSI).

Pilot and Drain RPE2X3-06

The internal supply of the pilot valve is ensured by connection to the P channel of the main valve, the internal drain is ensured by connection to the T channel. In case of external supply (X channel) and drain (Y channel) of the pilot valve, the connection is closed by a glued threaded plug.

Type of valve		Plug assembly	
		X	Y
RNE2XH1-10**/*	internal pilot and external drain	NO	YES
RNE2XH1-10**/*I	internal pilot and internal drain	NO	NO
RNE2XH1-10**/*E	external pilot and external drain	YES	YES
RNE2XH1-10**/*EI	external pilot and internal drain	YES	NO



X: plug M5x6 for external pilot
Y: plug M5x6 for external drain

Actuation RNE2XH1-10

For detail information on the pilot valve RPE2X3-06 refer to datasheet No. 5310.

The minimum control pressure to operate the spool of the main valve is 5 to 12 bar depending on the volume flow rate.
If the inlet pressure of the main valve is higher than 350 bar, an external supply to the pilot directional control valve must be used. Another option is to install a pressure reducing valve in the size 06 modular plate between the main and pilot valves (version „Z“). The reduced pressure is set to 30 bar.

When using the main valve spool, which in some position connects the P-T channels (H11, C11, R52, X52, J27), the minimum pressure required for control by external power supply of the pilot valve must be ensured.
When the solenoids are off, the position of the spool with lock (J17, J27) is not defined.

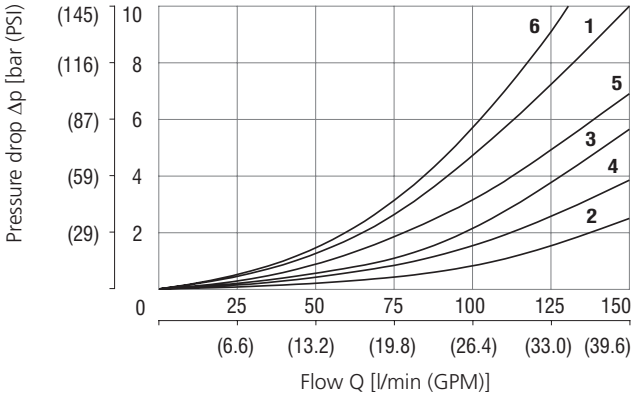
Characteristics measured at ν = 32 mm²/s (156 SUS)

Operating limits

Operating limits for maximum hydraulic power at rated temperature and supplied with voltage equal to 90% of the nominal value.

Maximum flow rates in l/min (GPM)	at pressure	
	210 bar (3050 PSI)	320 bar (4640 PSI)
Spool type C11	500 (133)	450 (119)
All other spools	600 (159)	500 (133)

Pressure drop related to flow rate



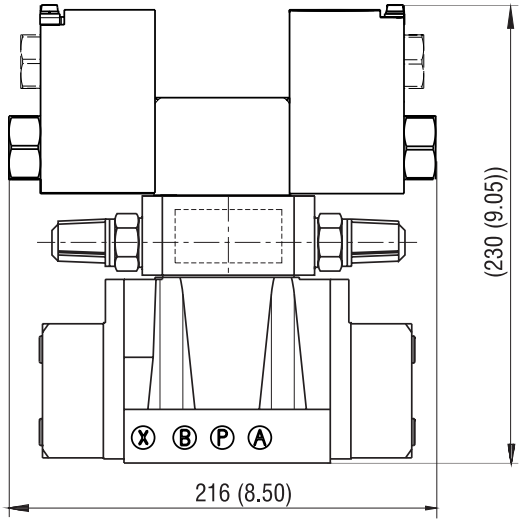
	Spool position	P-A	P-B	A-T	B-T	P-T		Spool position	P-A	P-B	A-T	B-T	P-T
Z11	Energized	1	1	2	3		J17, J27	Energized	1	1	4	3	
H11	De-energized					6*	R51, R52, X51, X52	De-energized	1			3	
	Energized	5	5	2	4			Energized		1	4		
Y11	De-energized			1**	1***		P11	De-energized					6***
	Energized	1	1	2	4			Energized	6	6	3	5	
C11	De-energized					6							
	Energized	6	6	3	5								

*A-B blocked **B blocked ***A blocked

Control Options - Special Features

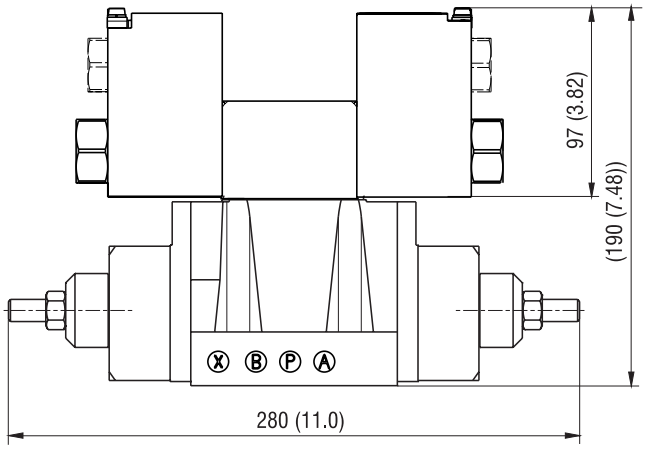
Control of the main spool shifting speed

By installing a double throttle valve in the size 06 modular plate between the main and pilot valve (version "D"), the spool speed of the main valve can be adjusted independently in both directions.
This can reduce pressure peaks in the circuit. With a nozzle of D = 0.8 mm in the inlet channel of the pilot valve (version "PF"), the speed of the adjustment is the same in both directions and is determined by the nozzle diameter.



Volume flow limit setting

When using side flanges of the main valve with adjustable stops (version "C"), the end position of the valve spool can be adjusted and thus the maximum volume flow rate at a given pressure gradient independently in both directions.

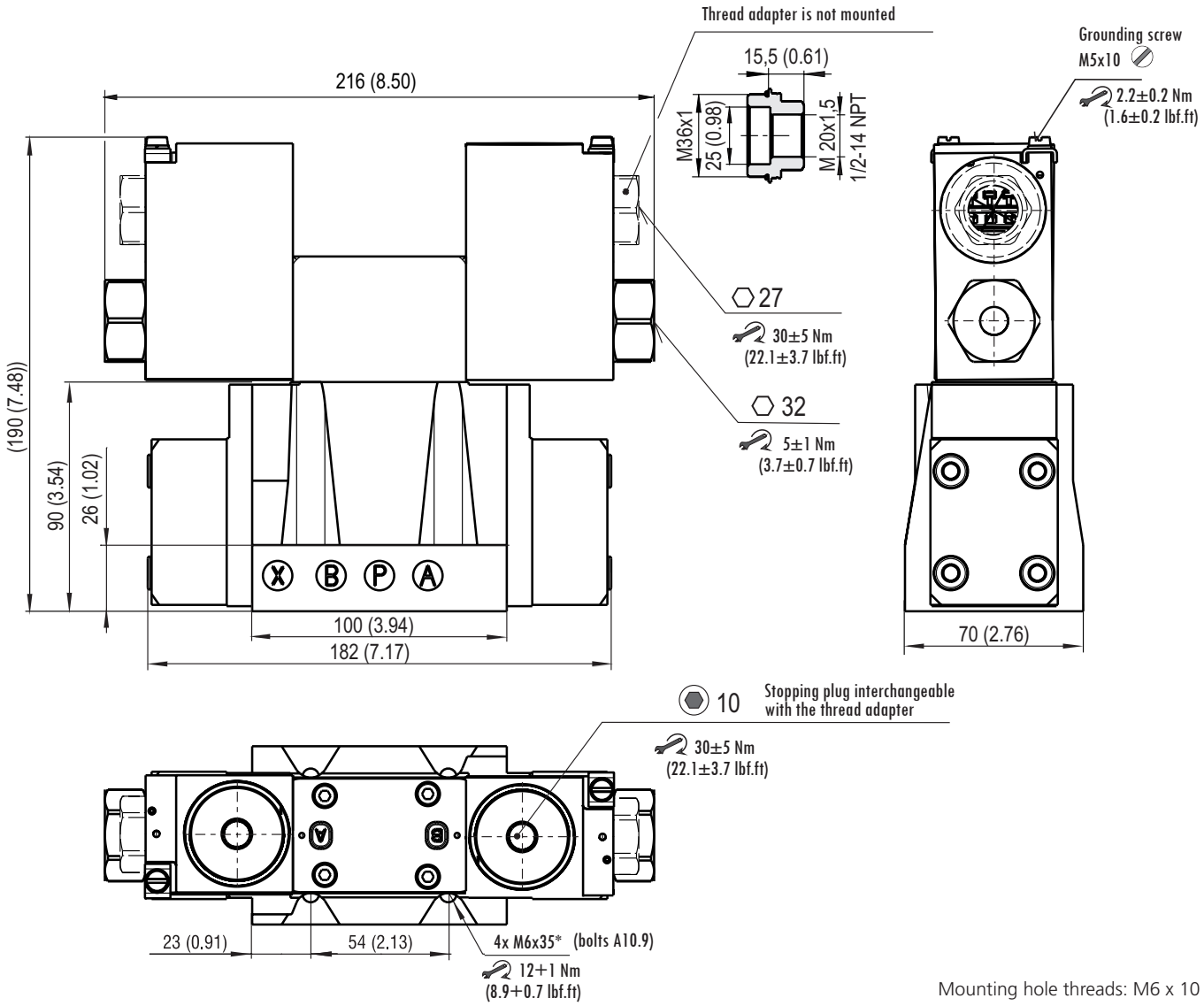


Using the H11 spool in the pilot valve

This configuration allows the main spool control channels to be relieved by connecting to the T-channel when the pilot valve spool is in the base position. An external power supply to the pilot valve must be used.

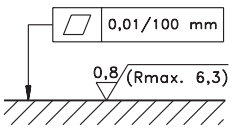
Dimensions in millimeters (in)

RNE2XH1-103



Mounting hole threads: M6 x 10

*bolts not supplied.



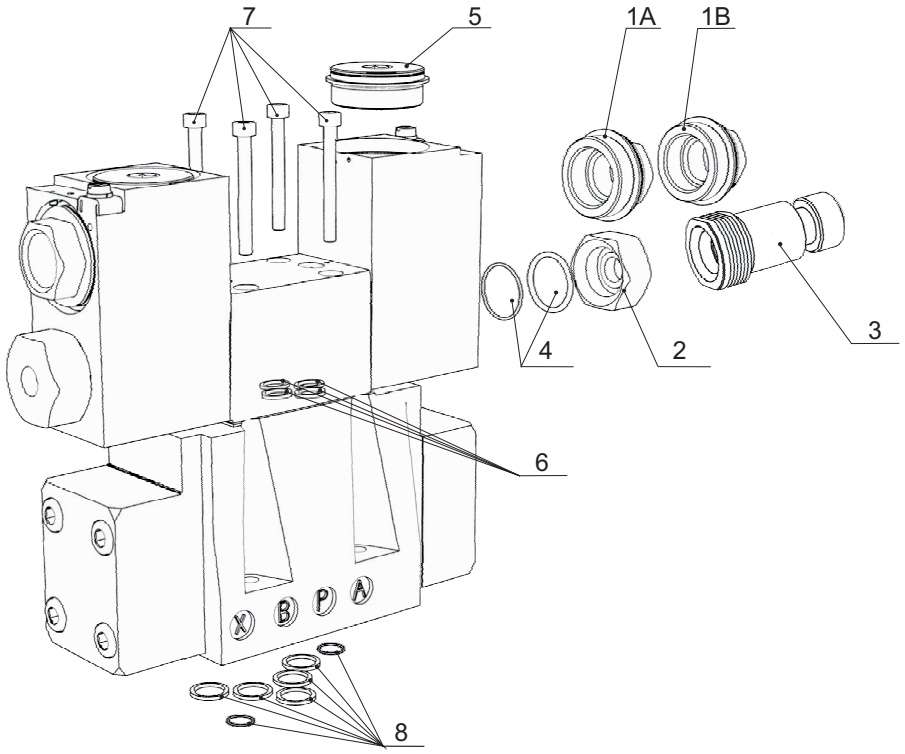
Required surface quality of the counterpart

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
Spare parts for pilot valve RPE2X3-06				
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
4		Sealing ring actuating system-coil	O-ring 22x1.5 VMQ 50 (silicone)	
		Nut sealing	O-ring 21.89x2.62 VMQ 70 (silicone)	
3	Set	Coil nut with manual override N7	Nut	45904200
4		Sealing ring actuating system-coil	O-ring 22x1.5 VMQ 50 (silicone)	
		Nut sealing	O-ring 21.89x2.62 VMQ 70 (silicone)	
5		Stopping plug	Set with the sealing ring 36x2 VQM (silicone)	44923800
6		Set of seals	4x Square ring 9.25x1.68 NBR	15845200
7	Set	Valve mounting screws	4x M5x45 DIN 912 10.9	15845100
Spare parts for main valve				
8	Set	Set of seals	5x O-ring 12.42x1.78 NBR 2x O-ring 9.25x1.78 NBR	40075900



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) + 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 (10/18 W), the maximum working fluid temperature of 70 °C and the nominal coil supply voltage. The 18 W coil valve may only be used in temperature class T4 (135 °C).

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