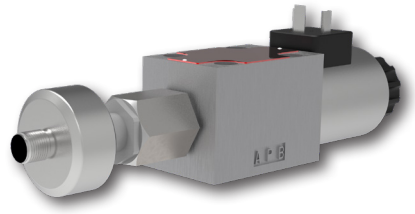
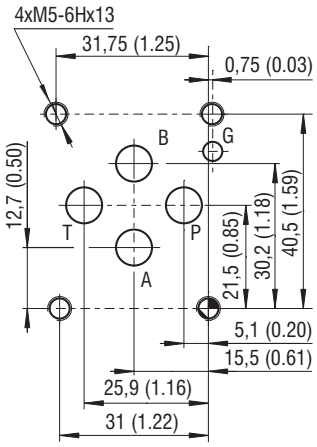
RPE3-062x/xS3

Size 06 (D03) • Q_{max} 80 l/min (21 GPM) • p_{max} 350 bar (5100 PSI)

FUNCTIONAL SAFETY
SIL 3 ČSN EN 61508
PL d ČSN EN ISO 13849



ISO 4401-03-02-0-05



Ports P, A, B, T - max. ∅7,5 mm (0.29 in)

Technical Features

- Direct acting solenoid operated spool valve with subplate mounting interface acc. to standards ISO 4401, DIN 24340 (CETOP 03)
- Contactless inductive spool position sensor with dual output signal for safe operation (e.g. of presses or forming machines)
- Certified level of functional safety: SIL 3, PL d
- High transmitted hydraulic power and low pressure drop
- Wide range of supply voltages and solenoid electrical connections
- Various spool types (special on request)
- In the standard version, the valve housing is phosphated for basic surface corrosion protection and as preparation for painting. Steel parts are zinc-coated for 240 h salt spray protection acc. to ISO 9227
- Enhanced surface protection for mobile sector available for the valve housing and steel parts (ISO 9227, 520 h salt spray)

Technical Data

Valve size		06 (D03)	
Max. flow	l/min (GPM)	80 (21.1)	
Max. operating pressure at ports P, A and B	bar (PSI)	350 (5080)	
Max. operating pressure at port T	bar (PSI)	210 (3050)	
Fluid temperature range (NBR, FPM)	°C (°F)	-20 ... +80 (-4 ... +176)	
Ambient temperature range	°C (°F)	-20 ... +50 (-4 ... +122)	
Ingress protection acc. to EN 60529		IP65	
Supply voltage tolerance	%	AC: ±10	DC: ±10
Max. switching frequency	1/h	15 000	
Switching time at ν=32 mm²/s (156 SUS) ON	ms	AC: 30 ... 40	DC: 30 ... 50
Switching time at ν=32 mm²/s (156 SUS) OFF	ms	AC: 30 ... 70	DC: 10 ... 50
Weight	kg (lbs)	1.9 (4.2)	
	Datasheet	Type	
General information	GI_0060	Products and operating conditions	
Coil types / connectors	C_8007 / K_8008	C22B* / K*	
Mounting interface	SMT_0019	Size 06	
Spare parts	SP_8010		

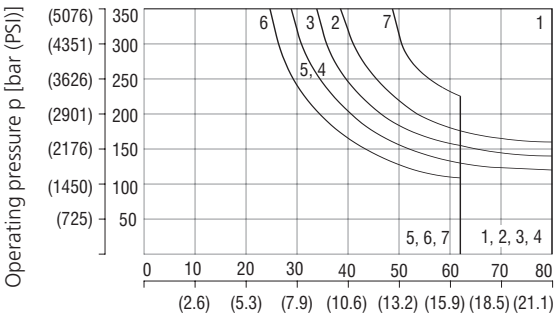
Functional Description

The **4/2 RPE3-06x/xS3 valve** is a direct acting solenoid operated spool valve. The actual position of the spool is indicated by an inductive contactless sensor. The product is designed to control the movement direction of the output component of the consumer. **The valve with certified functional safety SIL 3, PL d**, acc. to standards ISO 4401, DIN 24340 (CETOP 03) is designed for usage in systems with increased reliability and safety requirements, e.g. hydraulic presses, plastic injection molding machines, forming machines or construction machinery.

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

Operating limits

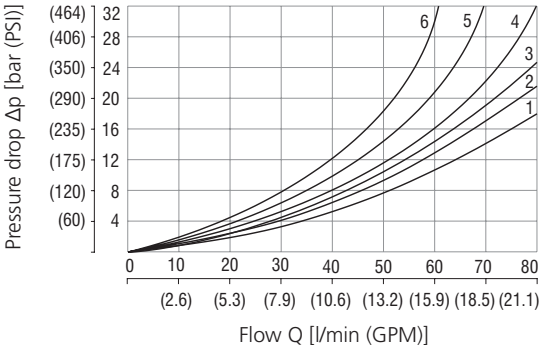
Operating limits for maximum hydraulic power at rated temperature and supply voltage equal to 90 % nominal.



Spool symbol														
Z11	C11	H11	R11	R21	C51	Z51	R31	H51	X11	K11	X32	V51	R30	X30
1	5	4	2	3	5	1	4	4	2	6	3	3	7	7

For operating limits under conditions and flow directions other than shown contact our technical support. Admissible operating limits may be considerably lower with only one direction of flow (A or B plugged, or without flow.)

Pressure drop related to flow rate



Spool symbol	P-A	P-B	A-T	B-T	P-T
Z11,R1,R21,X11,X32	1	1	2	2	
C11	5	5	5	6	2
H11	1	1	1	2	2
Z51,H51		1	2		
C51	1			2	4
R31	1			2	
K11		1	2		
R30	3	1	1	2	
X30	1	1	2	3	
V51	3	3			

Ordering Code

RPE3 - 06 2 ☐/☐☐ N1 ☐ S3 - ☐

4/2 Solenoid operated directional control valve

Valve size

Number of spool positions

Spool symbols
see the table "Spool Symbols"

Rated supply voltage of solenoids
(at the coil terminals)

12 V DC / 2.72 A	**01200**
24 V DC / 1.29 A	**02400**
27 V DC / 1.07 A	**02700**
205 V DC / 0.15 A	**20500**
24 V AC / 1.56 A / 50 (60 Hz)	**02450**
120 V AC / 0.26 A / 60 Hz	**12060**
230 V AC / 0.15 A / 50 (60) Hz	**23050**

Surface treatment

No designation	standard
A	zinc-coated (ZnCr-3), ISO 9227 (240 h)
B	zinc-coated (ZnNi), ISO 9227 (520 h)

Spool monitoring
axial sensor with two outputs

Seals

No designation	NBR
V	FPM (Viton)

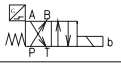
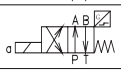
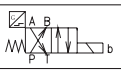
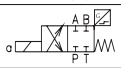
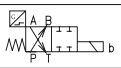
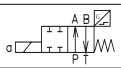
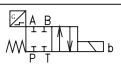
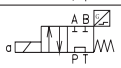
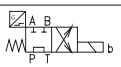
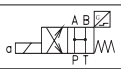
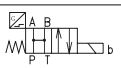
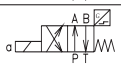
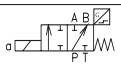
Manual override
cap nut covered

Connector

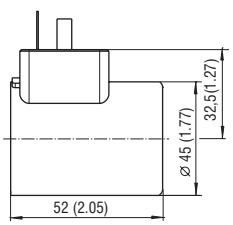
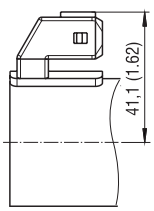
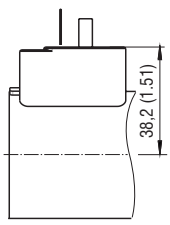
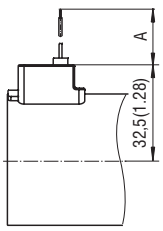
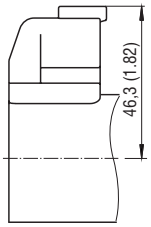
E1	EN 175301-803-A
E2	E1 with quenching diode
E3A	AMP Junior Timer - axial direction (2 pins; male)
E4A	E3A with quenching diode
E5	EN 175301-803-A with integrated rectifier
E8	Loose conductors (two insulated wires)
E9	E8 with quenching diode
E12A	Deutsch DT04-2P - axial direction (2 pins; male)
E13A	E12A with quenching diode

- For AC voltage supply use coils with connector type E5.
- For other solenoid voltage supply options see data sheet C_8007.
- The solenoid operated valves are delivered without connectors. For available connectors see data sheet K_8008.
- Mounting bolts M5 x 45 DIN 912-10.9 or studs must be ordered separately. Tightening torque is 8.9+1 Nm (7+0.7 lbf.ft).
- Besides the commonly used valve versions there are other special models available. Contact our technical support for their identification, feasibility and operating limits.

Spool Symbols

Type	Symbol	Interposition	Type	Symbol	Interposition
R11			X11		
R30			X30		
Z51			K11		
R31			Z11		
C51			C11		
H51			H11		
R21			X32		
V51					

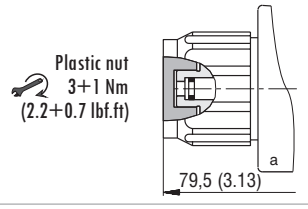
Solenoid Coil in millimeters (inches)

E1, E2 Ingress protection IP65	E3A, E4A Ingress protection IP67	E5 Ingress protection IP65	E8, E9	E12A, E13A Ingress protection IP67 / IP69K
			 Note: A = Standard 300 mm (11.8 in) other lengths on demand	

The indicated IP protection level is only achieved if the connector is properly mounted.

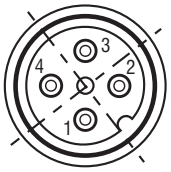
Manual Override in millimeters (inches)

Designation N1
- cap nut covered



In case of solenoid or power failure, the spool of the valve can be shifted by manual override as long as the pressure in port T does not exceed 25 bar (363 PSI). For alternative manual overrides contact our technical support.

Spool Position Sensor

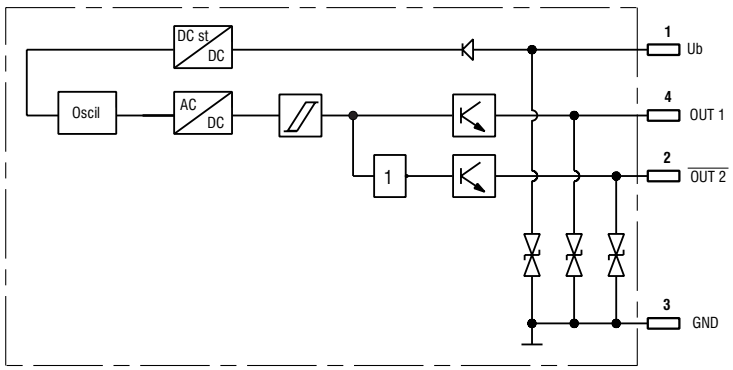


4-pin connector with the thread M12

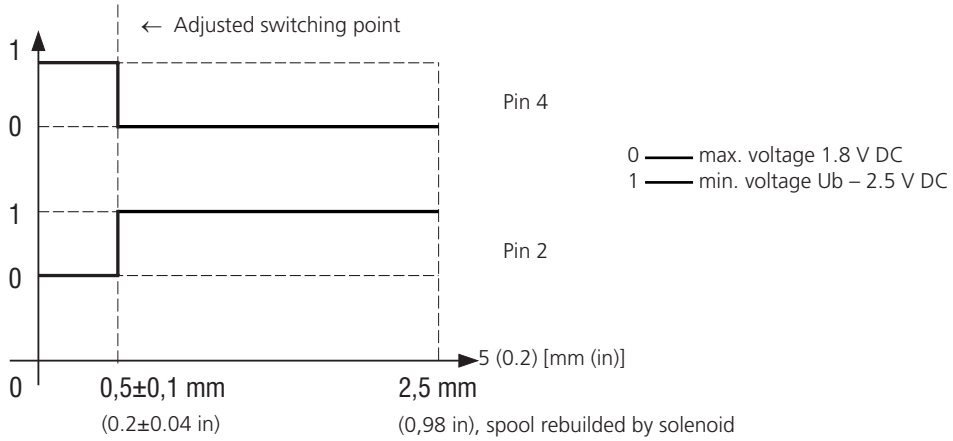
Technical Data		
Max. pressure resistance	bar (PSI)	315 (dynamic)
Operating temperature	°C (°F)	-20 … +85 (-4 ... +185)
Storage temperature	°C (°F)	-25 … +85 (-13 ... +185)
Supply voltage Ub	V	24 V DC ± 20 %
Current consumption (max.)	mA	20
Output voltage (min.)	V	Ub – 2.5 V
Output current	mA	2 x 250
Ingress protection (EN 60529)		IP65
Hysteresis of switching point (max.)	mm (in)	0.06 (0.002)
Reproducibility at 25 °C (77 °F)	mm (in)	± 0.02 (± 0.0008)
Temperature drift	mm / °C	0.002
Weight	kg (lbs)	0.250 (0.55)

Description of sensor:
Contactless inductive sensor with two transistor type switching outputs. The output $\overline{\text{OUT 2}}$ is inverted. The dual output signal is protected against mutual interference and increases the reliability of the spool end position signalization, which is important for command system ensuring the safety of such machines like presses, forming machines etc. The sensor is set at the factory so that it switches when the spool is moved from the basic position by 0.5 ± 0.1 mm. The relative position of the sensor components is indicated in red .

Connection scheme of the spool position sensor



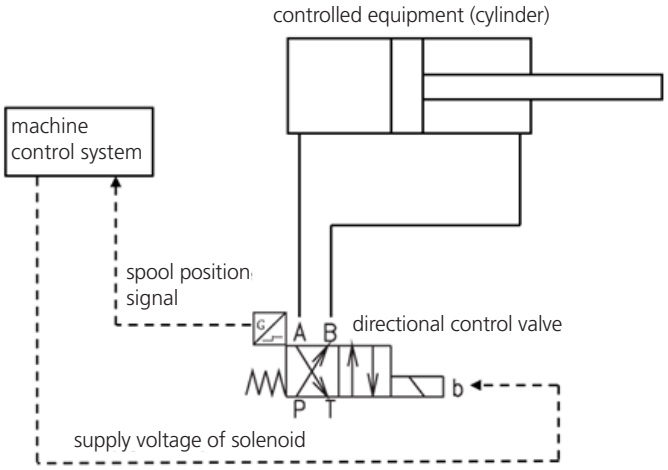
Switching diagram of contacts:



Valve safety function

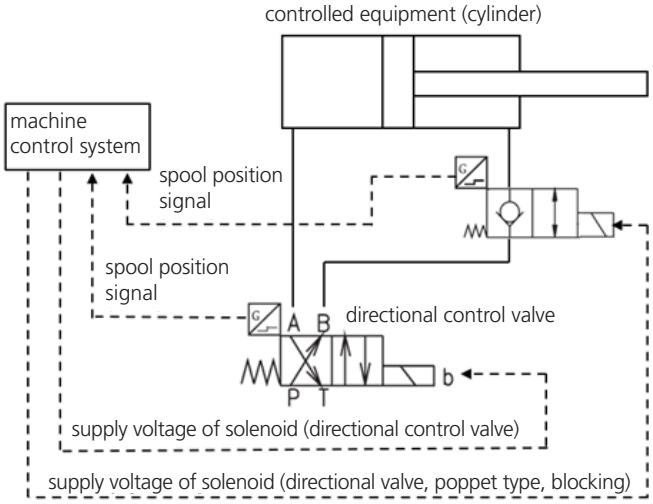
The condition for using the safety function of the valve is the correct connection to the hydraulic circuit and integration into the control system of the machine. The basic rule is that the spool is in the safety position when the solenoid is off. This condition corresponds to a control system failure or a power failure of the machine.

Examples of safe connection



Example of valve connection with sensor, providing functional safety Pl. d

Suitable redundant connection of another, for example blocking poppet, valve, can achieve an increase in functional safety.

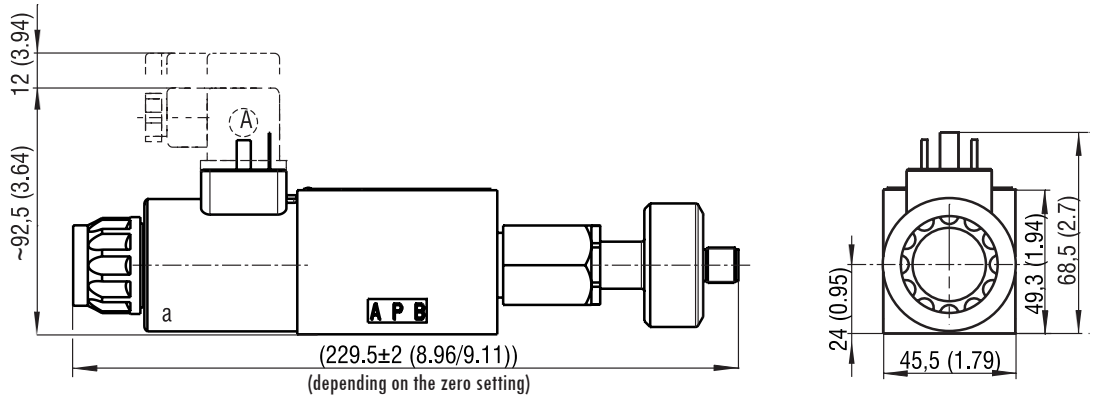


Example of redundant connection of two valves to achieve functional safety Pl. e

Dimensions in millimeters (inches)

Valve with one solenoid „a"

Spool symbols
R11, Z51, R31...



Valve with one solenoid „b"

Spool symbols
X11, K11, Z11...