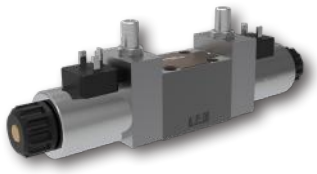
RPE3-06

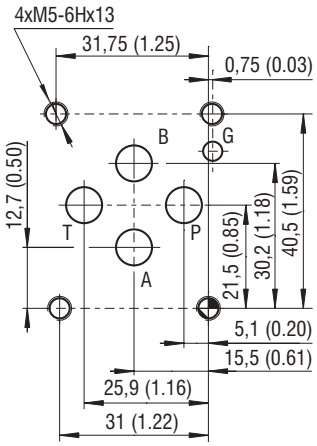
Size 06 (D03) • Q_{max} 80 l/min (21 GPM) • p_{max} 350 bar (5100 PSI)



Technical Features

- Direct acting, directional control valve with subplate mounting interface acc. to ISO 4401, DIN 24340 (CETOP 03)
- High transmitted hydraulic power up to 350 bar with optimized design to minimize pressure drop
- Five chamber housing design with reduced hydraulic power dependence on fluid viscosity
- The valve is available with interchangeable DC solenoids, also for AC power supply using a built-in rectifier bridge
- Wide range of solenoid electrical terminal versions available
- Wide range of interchangeable spools and manual overrides available
- CSA Certificate upon request
- Inductive contactless Normally Open and Normally Closed spool position sensor option
- Soft-shift spool speed control option
- The coil is fastened to the core tube with a retaining nut and can be rotated by 360° to suit the available space
- 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)

ISO 4401-03-02-0-05



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

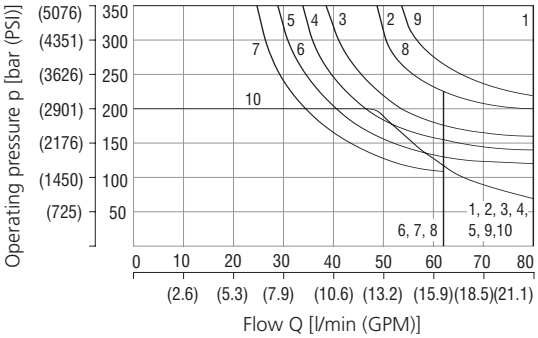
Technical Data

Valve size			06 (D03)	
Max. flow		l/min (GPM)	80 (21.1)	
Max. operating pressure at ports P, A, B		bar (PSI)	standard 350 (5080)	
			320 (4640) acc. to CSA	
Max. operating pressure at port T		bar (PSI)	210 (3050)	
Fluid temperature range (NBR)		°C (°F)	-30 ... +80 (-22 ... +176)	
Fluid temperature range (FPM)		°C (°F)	-20 ... +80 (-4 ... +176)	
Ambient temperature range		°C (°F)	-30 ... +50 (-22 ... +122)	
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
	OFF	ms	AC: 30 ... 70	DC: 10 ... 50
Weight - valve with 1 solenoid		kg (lbs)	1.6 (3.52)	
- valve with 2 solenoids			2.2(4.85)	
		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		

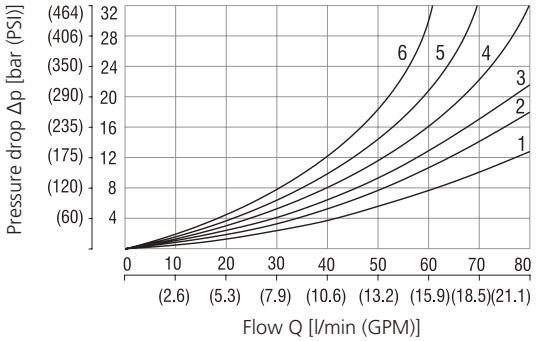
Characteristics measured at ν = 32 mm²/s (156 SUS)

Operating limits

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



Pressure drop related to flow rate



Spool symbol					
1	Z11	5	F11	7	Z91
6	C11	3	R11	5	R31
5	H11	4	R21	5	H51
1	P11	5	A51	7	F51
2	Y11	1	P51	3	X11
5	L21	2	Y51	7	K11
8	B11	6	C51	7	N11
6	Y41	1	Z51	10	X25
1	Z21	7	Z71	1	J15
5	C41	7	Z81	9	J75

Spool symbol	P-A	P-B	A-T	B-T	P-T		P-A	P-B	A-T	B-T	P-T
Z11,L21,B11,R11 R21,X11,N11,J15	2	2	3	3		P51		1	3		
C11	5	5	5	6	3	Y51		2	2		
H11	2	2	2	3	3	C51	2			3	4
P11	1	1	3	3		Z71	3	3			
Y11	2	2	2	2		Z81			3	3	
Y41	3	3	3	3		Z91	3			3	3
Z21,Z51,H51		2	3			R31	2			3	
C41	4	4			5	F51		2	3		
F11	1	2		3	3	K11		2	3		
A51,J75	2	2				X25	3	3	3		

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.)

Ordering Code

RPE3 - 06 [ ][ ]/[ ][ ][ ][ ][ ][ ]-[ ][ ]

4/2 and 4/3 directional control valve, solenoid operated

Valve size

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

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**

CSA upon request - only for 320 bar (4640 PSI)

Connector

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

- For directional valves with two solenoids, one solenoid must be de-energized before the other solenoid can be charged.
- For AC voltage supply use coils with connector type E5.
- For other solenoid voltage supply options see datasheet C_8007.
- The solenoid operated valves are delivered without connectors. For available connectors see datasheet K_8008.

Soft-shift spool speed control

No designation	without soft-shift control
T1	orifice ∅ 0.7 mm (0.03 inch) in solenoid*

*The manual overrides listed in the Ordering Code cannot be used when using the spool speed control (T1)

Manual override

No designation	standard
N1	cap nut covered
N2	rubber boot protected
N3	detent assembly with the ball
N4	hand screw
N5	socket head screw, size 3
N7	detent assembly with the nut
N8	with ball
N9	without manual override

- The orifice to the P port can be ordered separately, see datasheet SP_8010.
- Mounting bolts M5 x 45 DIN 912-10.9 or studs must be ordered separately. Tightening torque is 8.9+1 Nm (6.56+0.7 lbf.ft).
- Besides the commonly used valve versions shown other special models are available. Contact our technical support for their identification, feasibility and operating limits.

Seals

No designation	NBR
V	FPM (Viton)

Spool monitoring

No designation	without sensors
S1	normally-open sensor
S4	normally-closed sensor

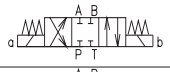
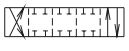
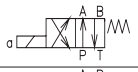
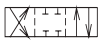
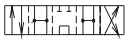
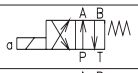
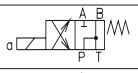
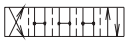
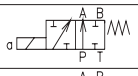
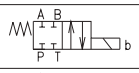
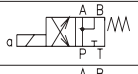
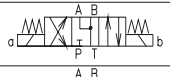
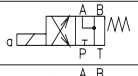
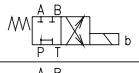
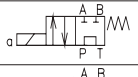
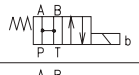
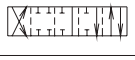
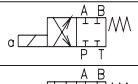
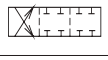
Surface treatment

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

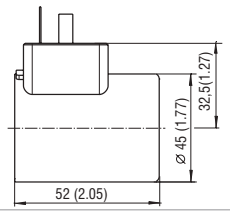
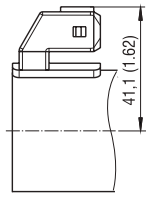
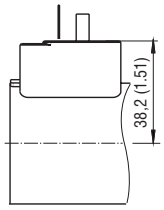
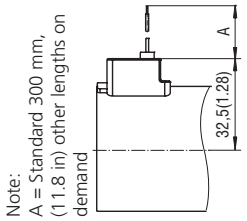
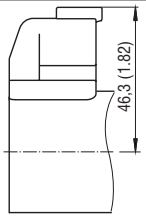
CSA Certified

No designation	without certification
U	certification CSA

Spool Symbols

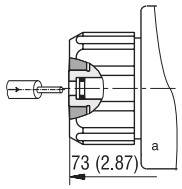
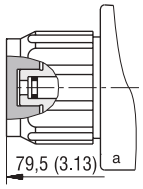
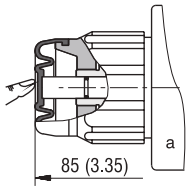
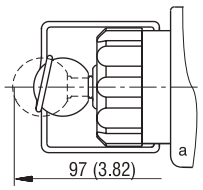
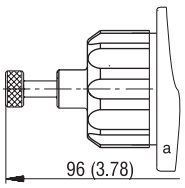
Type	Symbol	Interposition	Type	Symbol	Interposition	Type	Symbol	Interposition
Z11			R11			H51		
C11			R21			F51		
H11			A51			Z11		
P11			P51			X11		
Y11			Y51			C11		
L21			C51			H11		
B11			Z51			K11		
Y41			Z71			N11		
Z21			Z81			F11		
C41			Z91			X25		
F11			R31			J15		
						J75		

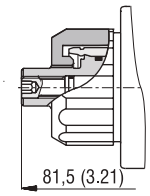
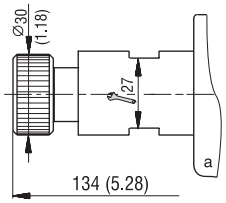
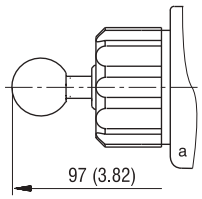
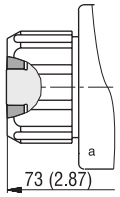
Type of Solenoid Coil in millimeters (inches)

E1, E2 / IP65	E3A, E4A / IP67	E5 / IP65	E8, E9	E12A, E13A / IP67 / 69K
				

The specified IP rating applies only in the case of correctly connected connectors (male + female) with the corresponding IP rating.

Manual Override in millimeters (inches)

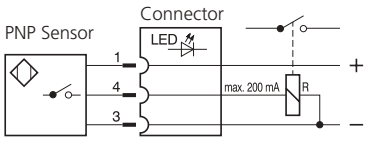
No designation - standard	N1- cap nut covered	N2- rubber boot protected	N3 - detent assembly with the ball	N4 - hand screw
				

N5 - socket head screw, size 3	N7 - detent assembly with the nut	N8 - with ball	N9 - without manual override
			

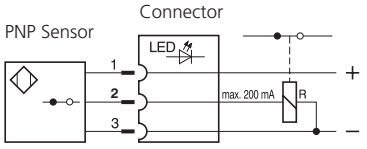
In case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override as long as the pressure in port T does not exceed 25 bar (363 PSI). For alternative manual overrides contact our technical support.

Spool Position Sensor

S1 - Circuit diagram for the normally - **OPEN** sensor



S4 - Circuit diagram of the normally - **CLOSED** sensor



Function of the position sensor:
In the basic position (when the solenoid is switched off), a steel core, connected to the spool, is under the position sensor. The sensor is activated, it means contacts of the sensor S1 are closed and contacts of the sensor S4 are open. After switching on the solenoid the spool with core moves out of the sensor range and the sensor is deactivated.

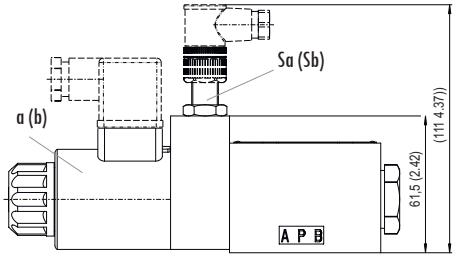
Technical Data of the Sensor		S1, S4
Rated power supply voltage	V	24 DC
Power supply voltage range	V	10 ... 30 DC
Rated current	mA	200
Sensor enclosure protection (EN 60529)		IP 67
Max. operating pressure at port T	bar (PSI)	210 (3046)
Switching frequency	Hz	1000
Ambient temperature range	°C (°F)	-25 ... +80 (-13 ... +176)
Technical Data of the Connector		
Power supply voltage range	V	10 ... 30 DC
Ambient temperature range	°C (°F)	-25 ... +80 (-13 ... +176)
Indicator		yellow LED

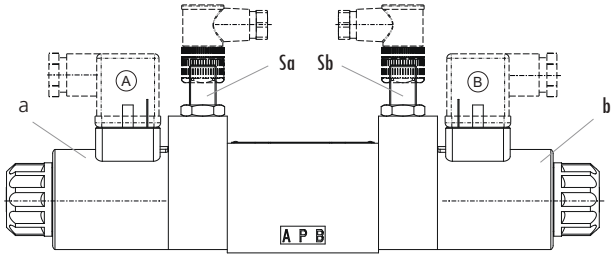
Typical configurations of the valve with a sensor:
3-position valve with two solenoids, equipped with two sensors
2-position valve with one solenoid, equipped with one sensor on the solenoid side
2-position valve with a detent assembly of spool, equipped with one sensor on the side of the solenoid which moves the spool from the basic position to the switched position according to the spool symbol
Note: the sensor always indicates the change of spool position realised by the energised solenoid, mounted on the side of the sensor.

① Signal of solenoid
③ Signal of sensor

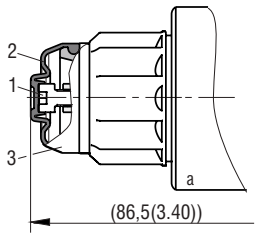
Two-Position Directional Control Valve				
①a(b)	③Sa(Sb)		LED	
	S1	S4	S1	S4
0	1	0	ON	OFF
1	0	1	OFF	ON

Three-Position Directional Control Valve									
①a(b)		③ Sa(Sb)				LED			
		S1		S4		S1		S4	
a	b	Sa	Sb	Sa	Sb	Sa - LED	Sb - LED	Sa - LED	Sb - LED
0	0	1	1	0	0	ON	ON	OFF	OFF
1	0	0	1	1	0	OFF	ON	ON	OFF
0	1	1	0	0	1	ON	OFF	OFF	ON



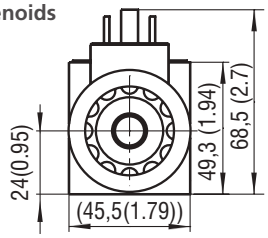


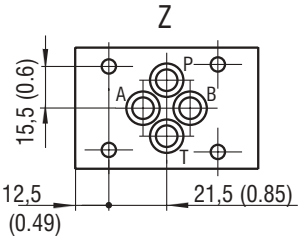
Spool Speed Control in millimeters (inches)

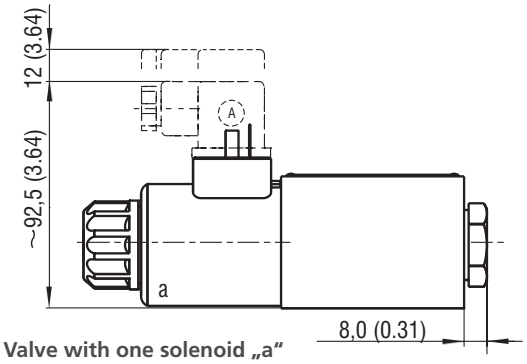
Designation T1	Important:
	This directional valve provides the means to control spool soft shifting by an orifice situated in the solenoid armature. To ensure the proper function of the valve, unobstructed venting of the solenoid is required through the bleeding plug (1). The plugs are accessible after removing the rubber boot (2) from the solenoid cap nut (3). The valve spool can be adjusted manually by pushing on the tightened bleeding plug.
Switching time ON and OFF	300 ... 800 ms
The switching times shown are valid for viscosity ν = 32 mm²/s (156 SUS) and nominal voltage. They depend on working pressure and flow rate of the directional control valve.	

Dimensions in millimeters (inches)

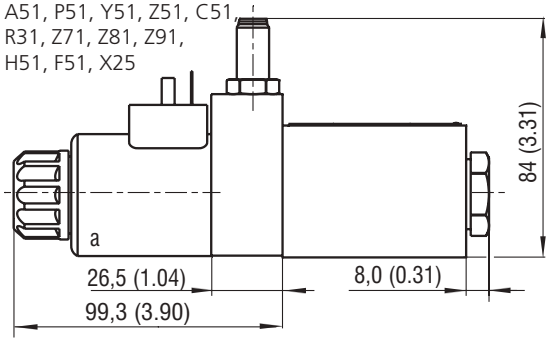
Valve with two solenoids



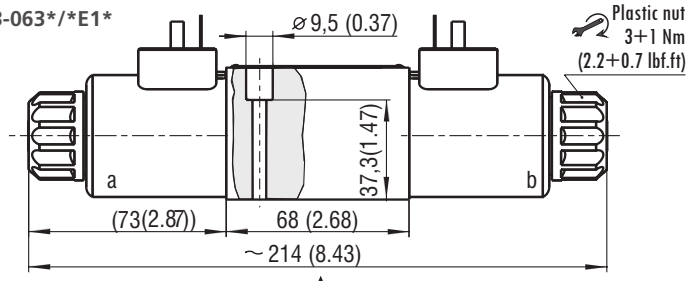




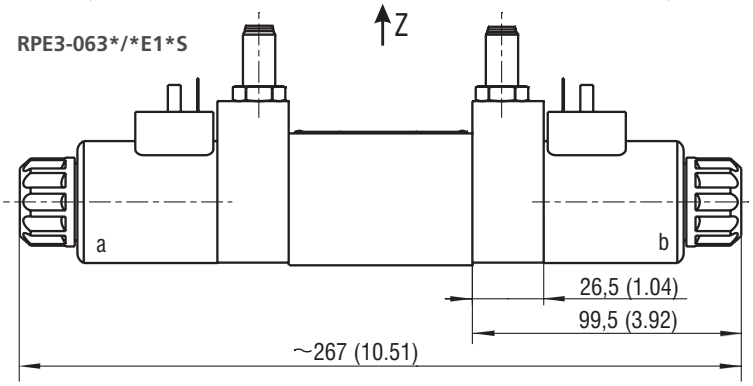
Valve with one solenoid „a"
Spool symbols R11, R21,
A51, P51, Y51, Z51, C51,
R31, Z71, Z81, Z91,
H51, F51, X25

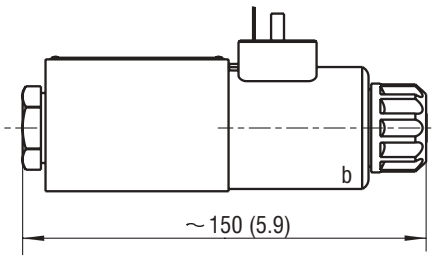


RPE3-063*/*E1*

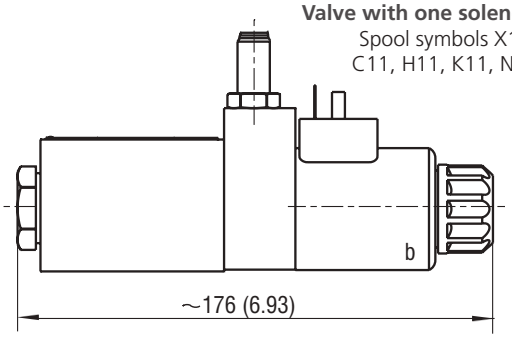


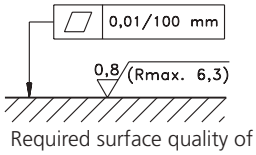
RPE3-063*/*E1*S





Valve with one solenoid „b"
Spool symbols X11, Z11,
C11, H11, K11, N11, F11





Required surface quality of
the counterpart

Mounting screws 8.9+1 Nm (6.56+0.7 lbf.ft)
M5x45 DIN 912-10.9