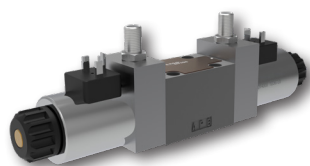


4/2 and 4/3 Directional Control Valve, Solenoid Operated

RPE3-06

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



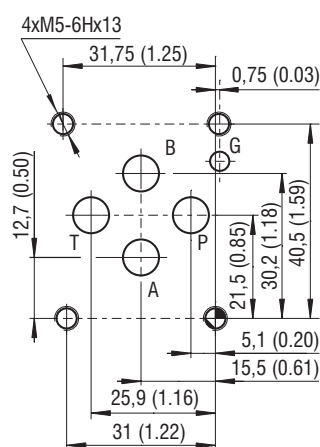
Technical Features

- › 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 spools and manual overrides available
- › 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)

Technical Data

Valve size		06 (D03)	
Max. flow		l/min (GPM) 80 (21.1)	
Max. operating pressure at ports P, A, B		bar (PSI) 350 (5080)	
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 v=32 mm²/s (156 SUS)	ON	ms AC: 30 ... 40 DC: 30 ... 50	
	OFF	ms AC: 30 ... 70 DC: 10 ... 50	
Enclosure type acc. to EN 60529		IP65 / IP67 (see Dimensions, page 3)	
Weight - valve with 1 solenoid		kg (lbs) 1.6 (3.52)	
- valve with 2 solenoids		2.2(4.85)	
		Datasheet	
		Type	
General information		HA 0060 Products and operating conditions	
Coil types / connectors		HA 8007 / HA 8008 C22B* / K*	
Mounting interface		HA 0019 Size 06	
Spare parts		HA 8010	

ISO 4401-03-02-0-05

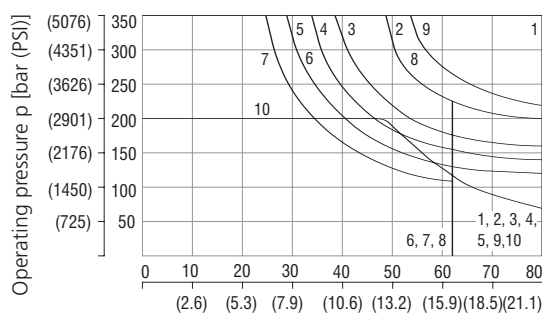


Ports P, A, B, T - max Ø7.5 mm (0.29 in)

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

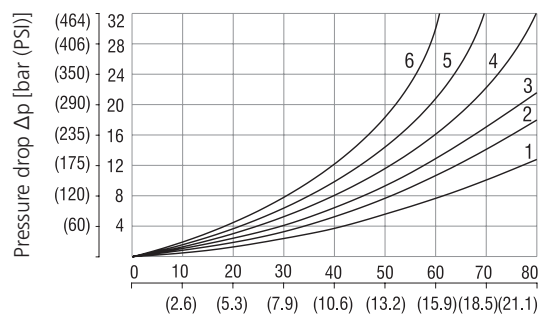
Operating limits

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



Flow Q [l/min (GPM)]

Pressure drop related to flow rate



Flow Q [l/min (GPM)]

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.)

Type of Solenoid Coil in millimeters (inches)

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

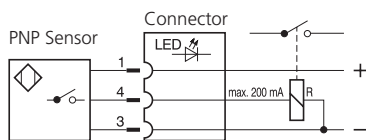
The specified IP rating applies only in the case of correctly connected connectors (male + female) with the corresponding IP rating.

Manual Override in millimeters (inches)

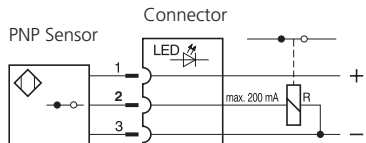
No designation - standard	N1- cap nut covered	N2- rubber boot protected	N3 - detent assembly with the ball	N4 - hand screw
N5 - socket head screw, size 3	N7 - detent assembly with the nut	N8 - with ball	N9 - without manual override	In case of solenoid malfunction or power failure, the spool of the valve 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.

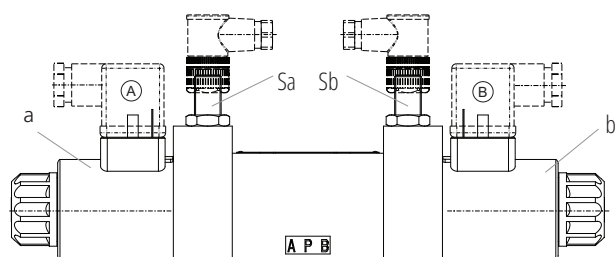
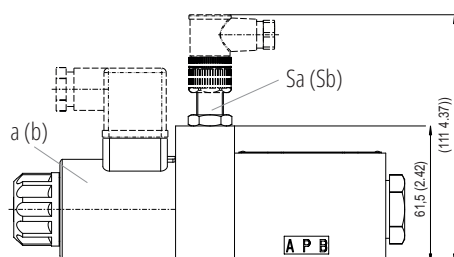
Typical configurations of the valve with a sensor:

- 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.

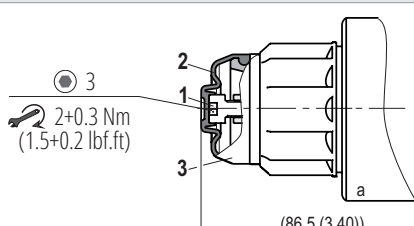
Technical Data of the Sensor		S1, S4
Rated power supply voltage	V	24 DC
Power supply voltage range	V	10 ... 30 DC
Rated current	mA	200
Sensor enclosure protection (EN 60529)		IP 67
Max. operating pressure at port T	bar (PSI)	210 (3046)
Switching frequency	Hz	1000
Ambient temperature range	°C (°F)	-25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

Two-Position Directional Control Valve					
① Signal of solenoid	③ Signal of sensor	①a(b)		③Sa(Sb)	
		S1	S4	S1	S4
0		1	0	ON	OFF
1		0	1	OFF	ON

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

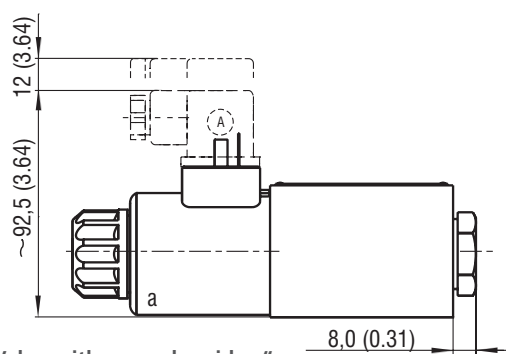
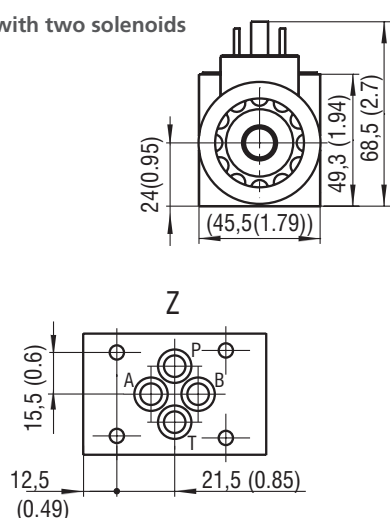


Spool Speed Control in millimeters (inches)

Designation T1	Important:
 2+0.3 Nm (1.5+0.2 lbf.ft) (86,5 (3.40))	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 $\nu = 32 \text{ mm}^2/\text{s}$ (156 SUS) and nominal voltage. They depend on working pressure and flow rate of the directional control valve.	

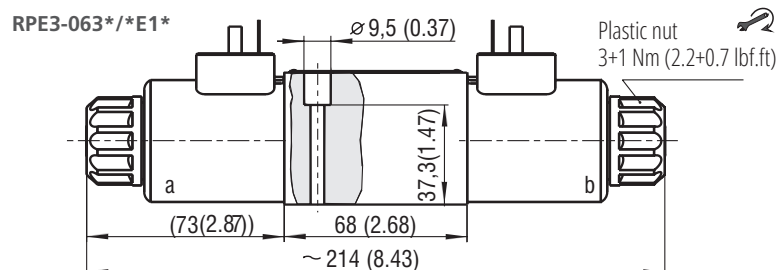
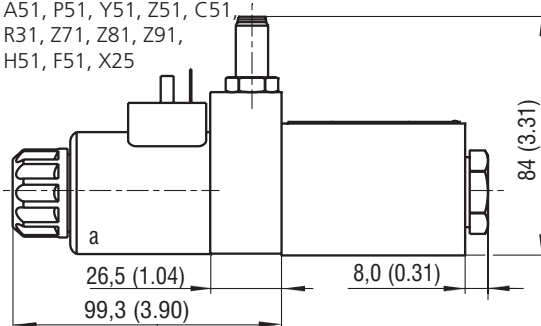
Dimensions in millimeters (inches)

Valve with two solenoids

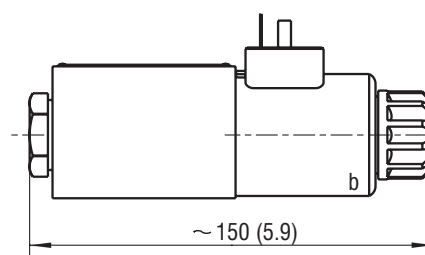
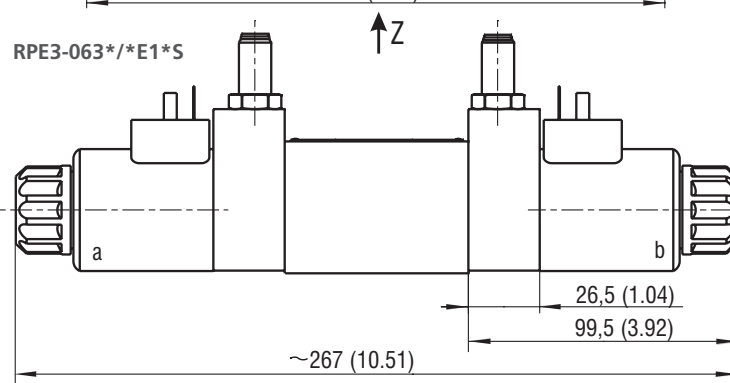


Valve with one solenoid „a“

Spool symbols R11, R21, A51, P51, Y51, Z51, C51, R31, Z71, Z81, Z91, H51, F51, X25

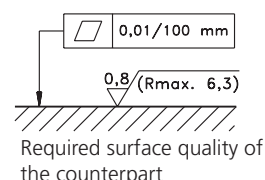
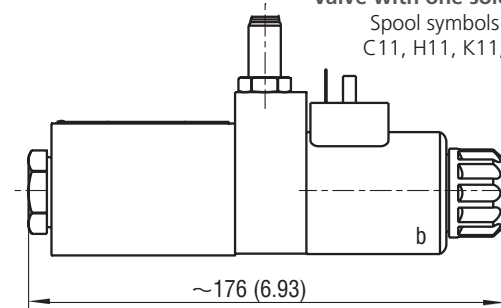


Plastic nut
3+1 Nm (2.2+0.7 lbf.ft)



Valve with one solenoid „b“

Spool symbols X11, Z11, C11, H11, K11, N11, F11



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