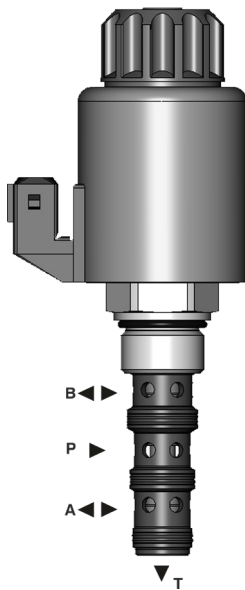


4/3 Proportional Control Valve, Screw-in Cartridge design

SD2P-B4

7/8-14 UNF • Q_{max} 25 l/min (7 GPM) • p_{max} 250 bar (3630 PSI)

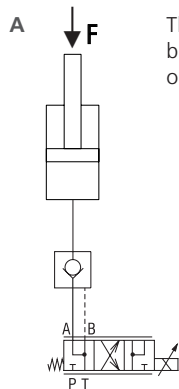


Technical Features

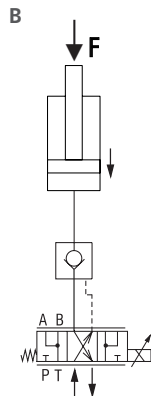
- › Proportional valve with integrated hydraulic lock control function
- › Hardened and precision working parts
- › 12 and 24 VDC standard supply voltage of coils
- › Optional type of electrical terminal EN175301-803-A, AMP Junior Timer or Deutsch DT04-2P
- › Optional Built-in quenching diode for protection of electronic control unit
- › Economical design
- › Connector positioning thanks to coil rotation around its axes 360°
- › In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227. Enhanced surface protection for mobile sector available for the steel parts (ISO 9227, 520 h salt spray)

Functional Description

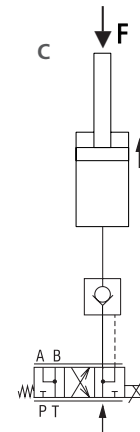
The built-in proportional directional control valve with a special channel opening timing combines two functions. The basic function is the volumetric flow control in the actuator circuit, and thus the control of piston speed in the cylinder or shaft speed of hydraulic motor. The second function is opening the pilot operated check valve at the start of movement. The P.O. check valve secures the position of load connected to the actuator when the pump is switched off. The valve can be used for a single-acting cylinder, where the return movement of piston is assured by load, or for a hydraulic motor, where the rotation in one direction is assured by connected load (e.g. winch drive). For a double-acting cylinder or hydraulic motor with drive in both rotation directions of shaft, two valves must be used (for pipeline A and B). The use of two independent valves in the pipelines A and B enables efficient control of the actuator. In the cooperation with a pressure sensor, the movement of actuator can be safety controlled without using the overcentre valves even at the negative acting load.



The piston lowering is blocked by closed pilot operated check valve.



The pilot operated check valve is opened by pressure fluid in B channel and the cylinder is relieved to the tank via A channel – the piston moves downwards by acting load F; the lowering speed can be smoothly regulated by flow throttling on the spool edge.



The pilot operated check valve remains open by fluid pressure in B channel. The pressure fluid is simultaneously led to the cylinder and the piston moves upwards. The lifting speed can be smoothly regulated.

Note:

The specific placement of the spool edge and the specific function of the Proportional directional control valve are protected by US patent 9,505,288 B2 a EP 2772373.

This original technical solution is the intellectual property of Fluid Systems Partners Holding AG and is subject to legal protection.

Technical Data

Symbol



Valve size / Cartridge cavity		7/8-14 UNF-2A / B4 (C-10-4)	
Flow stages [Δp = 10 bar (145 PSI)]		4 (1.1)	20 (5.3)
Max. flow		9 (2.4)	25 (7)
Max. operating pressure		250 (3630)	
Max. proof pressure in T channel		100 (1450) T channel should stay without pressure for the correct function	
Fluid temperature range		-30 ...90 (-22 ...194), +100 (212) short time	
Ambient temperature range		-30 ...90 (-22 ...194), +100 (212) short time	
Response time at 100 % signal		< 50	
Solenoid data			
Nominal supply voltage		V	12 DC 24 DC
Limit current		A	1.5 1
Rated resistance at 20 °C (68 °F)		Ω	5 13.4
Duty cycle		%	100
Optimal PWM frequency		Hz	200
Enclosure type acc.to EN 60529**		(acc.to terminal type) IP67 / IP69K	
Weight with solenoid		kg (lbs)	0.67 (1.48)
		Data Sheet	Type
General information		GI_0060	Products and operating conditions
Coil types		C_8007	C22B*
Valve bodies	In-line mounted	SB_0018	SB-B4*
	Sandwich mounted	SB-04(06)_0028	SB-*B4*
Cavity details / Form tools		SMT_0019	SMT-B4*
Spare parts		SP_8010	
Compatible control unit			FI 7-F*

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

Ordering Code

SD2P-B4 / H 3Y13 - - - - -

4/3 proportional directional control valve, screw-in cartridge design

Valve cavity
7/8-14 UNF-2A (C-10-4)

Model
High performance

Functional symbol



Nominal flow rate P → A at $\Delta p = 10$ bar (1450 PSI)
4 l/min (1.1 GPM)
20 l/min (5.3 GPM)

5
25

Surface treatment
A zinc-coated (ZnCr-3), ISO 9227 (240 h)
B zinc-coated (ZnNi), ISO 9227 (520 h)

Seals
No designation NBR
V FPM (Viton)

Manual override
No designation standard

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
E12A Deutsch DT04-2P - axial direction (2 pins; male)
E13A E12A with quenching diode

Supply voltage / limit current
12 V DC / 1.5 A
24 V DC / 1.0 A

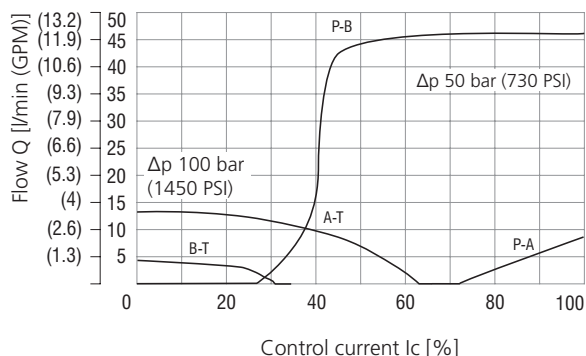
12
24

Elektronic control unit EL7

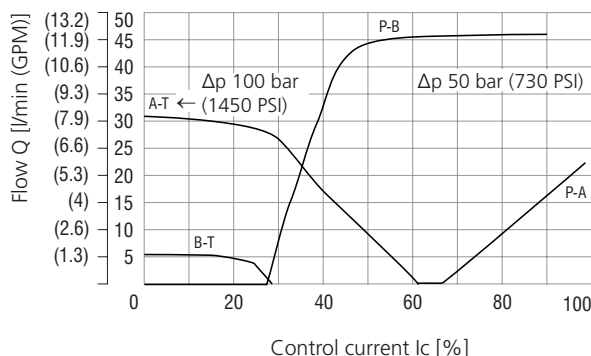
An electronic control unit (ECU) EL7 is used for the valve control. The ECU converts the input command signal into an output current control PWM signal for solenoid coils. The ECU EL7 is available as external for connection to the DIN rail (EL7-E, see datasheet HA 9152) or integrated on the valve in the form of connector plug (EL7-I, see datasheet HA 9151).

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

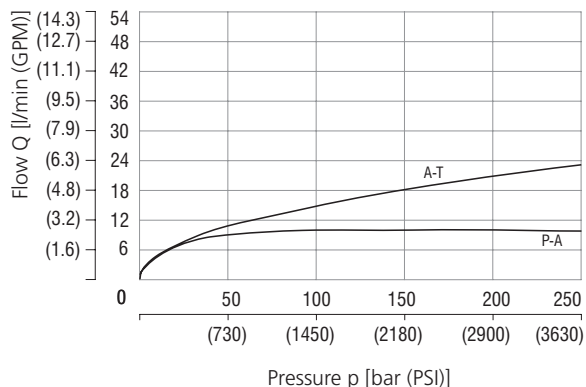
Timing control limit SD2P-B4/H3Y13-5



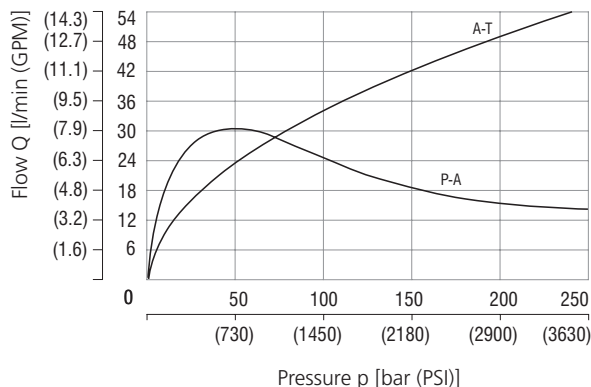
Timing control limit SD2P-B4/H3Y13-25



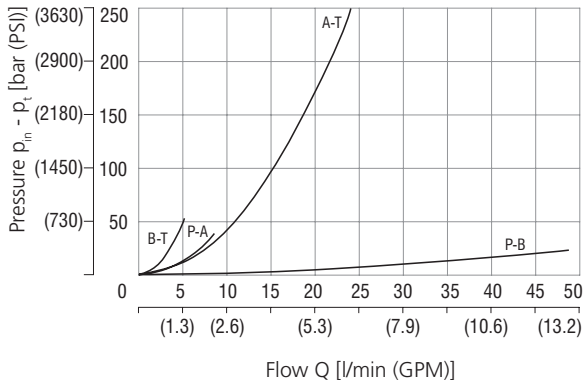
Operating limits SD2P-B4/H3Y13-5



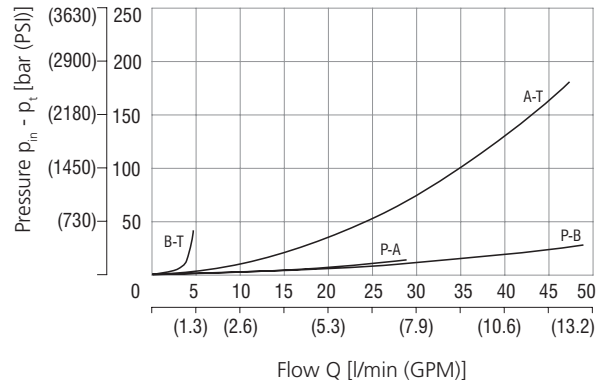
Operating limits SD2P-B4/H3Y13-25



Pressure drop SD2P-B4/H3Y13-5

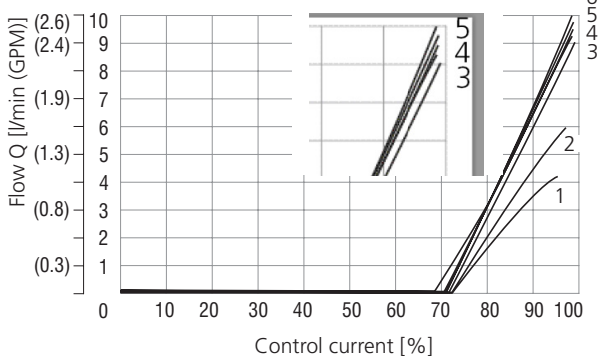


Pressure drop SD2P-B4/H3Y13-25



Flow characteristic SD2P-B4/H3Y13-5

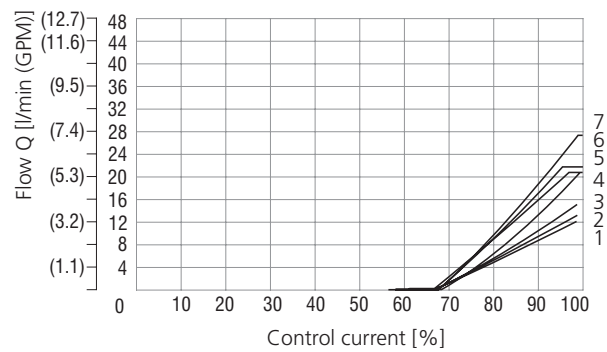
Flow rate P - A



- 1 = Δp 10 bar (145 PSI)
- 2 = p_{in} 20 bar (290 PSI)
- 3 = p_{in} 50 bar (725 PSI)
- 4 = p_{in} 100 bar (1450 PSI)
- 5 = p_{in} 150 bar (2180 PSI)
- 6 = p_{in} 200 bar (2900 PSI)
- 7 = p_{in} 250 bar (3630 PSI)

Flow characteristic SD2P-B4/H3Y13-25

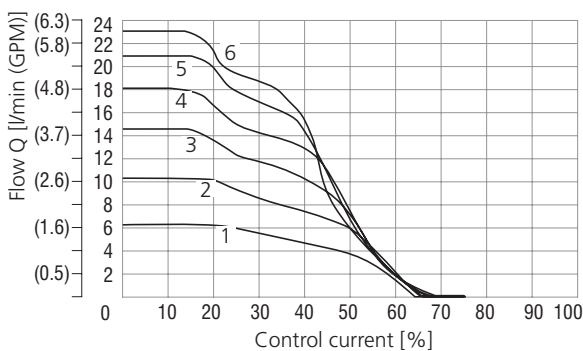
Flow rate P - A



- 1 = p_{in} 250 bar (3630 PSI)
- 2 = p_{in} 200 bar (2900 PSI)
- 3 = p_{in} 150 bar (2180 PSI)
- 4 = p_{in} 100 bar (1450 PSI)
- 5 = Δp 10 bar (145 PSI)
- 6 = p_{in} 20 bar (290 PSI)
- 7 = p_{in} 50 bar (725 PSI)

Flow characteristic SD2P-B4/H3Y13-5

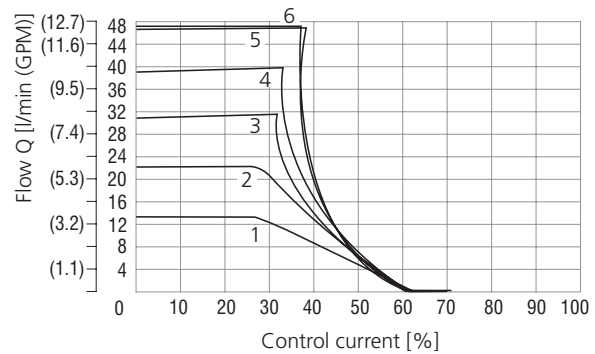
Flow rate A - T



- 1 = p_{in} 20 bar (290 PSI)
- 2 = p_{in} 50 bar (725 PSI)
- 3 = p_{in} 100 bar (1450 PSI)
- 4 = p_{in} 150 bar (2180 PSI)
- 5 = p_{in} 200 bar (2900 PSI)
- 6 = p_{in} 250 bar (3630 PSI)

Flow characteristic SD2P-B4/H3Y13-25

Flow rate A - T



- 1 = p_{in} 20 bar (290 PSI)
- 2 = p_{in} 50 bar (725 PSI)
- 3 = p_{in} 100 bar (1450 PSI)
- 4 = p_{in} 150 bar (2180 PSI)
- 5 = p_{in} 200 bar (2900 PSI)
- 6 = p_{in} 250 bar (3630 PSI)

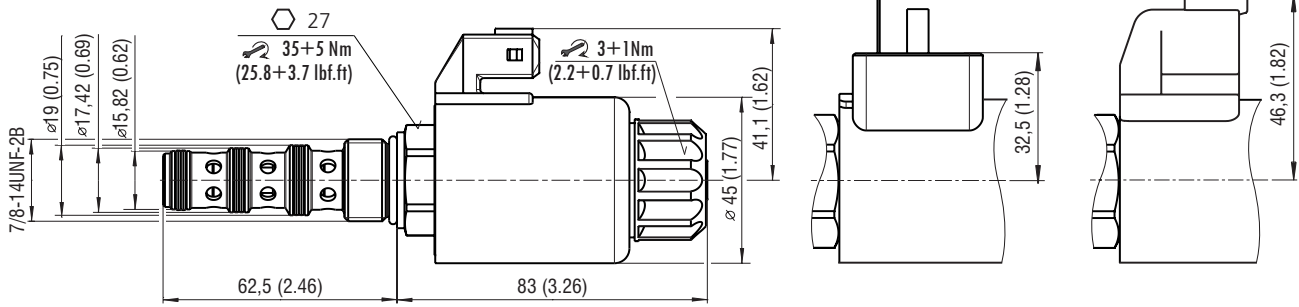
Dimensions in millimeters (inches)

Connector type

E3A, E4A - IP67 (AMP Junior Timer - axial direction)

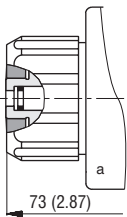
E1, E2 - IP65
EN 175301-803-A

E12A, E13A - IP67/ IP69K
Deutsch DT04-2P



Manual Override in millimeters (inches)

No Designation - Standard



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.