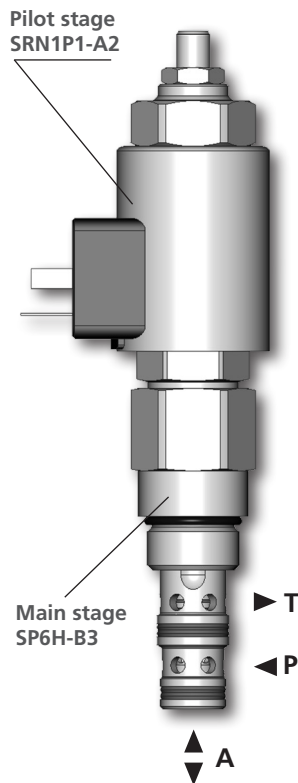


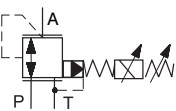
Proportional Pressure Control Valve, Reducing - Relieving, Pilot Operated, Inverted

SPN4P1-B3

7/8-14 UNF • Q_{max} 60 l/min (16 GPM) • p_{max} 350 bar (5100 PSI)



Symbol



The volume flow, which is needed for control of output pressure and maintaining the adjusted value of reducing pressure, flows permanently through the pilot stage of valve.

Technical Features

- › Decreasing pressure output proportional with increasing DC current input
- › Low hysteresis, accurate pressure control and low pressure drop
- › Wide pressure range up to 350 bar
- › Mechanical adjustment of cracking pressure
- › High flow capacity
- › Solenoid electrical terminal acc. to EN 175301-803-A, AMP Junior Timer, Deutsch DT04-2P
- › 12 or 24 V DC coils
- › 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

A pilot-operated proportional pressure reducing valve in the form of a screw-in cartridge. The valve is designed for continuous regulation of pressure in the consumer port. The complete valve consists of a pilot stage valve SRN1P1-A2 and a main stage with connection 7/8-14 UNF. Due to its 3-way design the valve is capable to relief the secondary pressure to the tank port. To set the cracking pressure of valve use the screw with internal HEX 4 after loosening the lock nut ($s=13$). For the valve to function properly, it is necessary to air bleeding by loosening the internal screw with internal HEX 2 socket (1 turn is sufficient). Back pressure on port T becomes additive to the pressure setting of the valve. The air bleeding is done using the nozzle in this air bleeding screw. After Air bleeding the internal screw is tightened again with a torque of 1,1+0,1Nm. Installation: When possible, the valve should be mounted below the reservoir oil level. This will maintain oil in the actuator, preventing instability caused by air in the system. If this is not possible, mount the valve for best results vertically downward coil and ensure proper air bleeding.

Technical Data

Valve size / Cartridge cavity		7/8-14 UNF-2A / B3 (C-10-3)	
Max. operating pressure (port P)	bar (PSI)	350 (5100)	
Max. operating pressure (port T)	bar (PSI)	100 (1450)	
Max. flow	l/min (GPM)	60 (15.9)	
Max. control flow	l/min (GPM)	0.2 (0.05)	
Fluid temperature range (NBR)	°C (°F)	-30 ... +80 (-22 ... 176)	
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... 248)	
Ambient temperature range	°C (°F)	-30 ... +80 (-22 ... 176)	
Min. setting pressure	bar (PSI)	6 (87) for 0 l/min (0 GPM)	
Hysteresis	%	< 5	
Solenoid data			
Supply voltage	V	12 DC	24 DC
Limit current	A	1	0.6
Rated resistance at 20 °C (68 °F)	Ω	6.5	20.6
Duty cycle	%	100	
Optimal PWM frequency	Hz	160	
Quenching diode		BZW06-19B	BZW06-33B
Enclosure type acc.to EN 60529		(acc.to terminal type) IP65 / IP67 / IP69K	
The specified IP rating applies only in the case of correctly connected connectors (male + female) with the corresponding IP rating.			
Weight with solenoid	kg (lbs)	0.6 (1.32)	
		Datasheet	Type
General information		HA 0060	Products and operating conditions
Coil types		HA 8007	C 19B*
Valve bodies	In-line mounted	HA 0018	SB-B3*
Cavity details / Form tools		HA 0019	SMT-B3*
Spare Parts		HA 8010	
Compatible control unit		EL7-E*	

Dimensions in millimeters (inches)

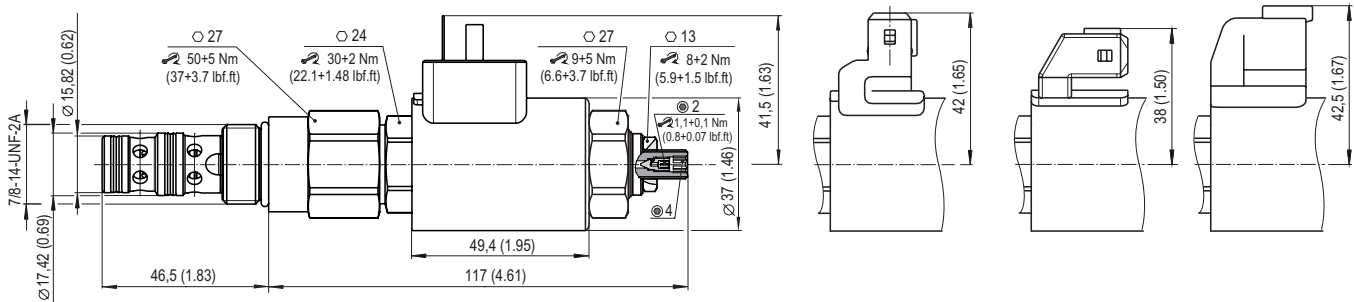
Connector type

E1, E2 - IP65
EN 175301-803-A

E3, E4 - IP65 / IP67
AMP Junior Timer
- radial

E3A, E4A - IP65 / IP67
AMP Junior Timer
- axial

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



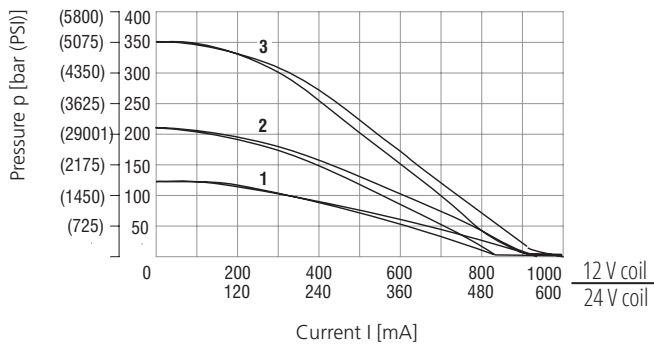
Elektronik control unit EL7

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)

Reduced pressure related to control signal

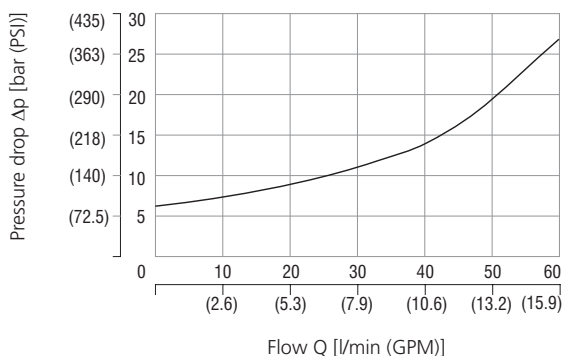
$Q = 0 \text{ l/min}$ (0 GPM), pressure in port T = 0 bar, PWM 160 Hz



Pressure range	12	21	35
	1	2	3

Pressure drop related to flow rate

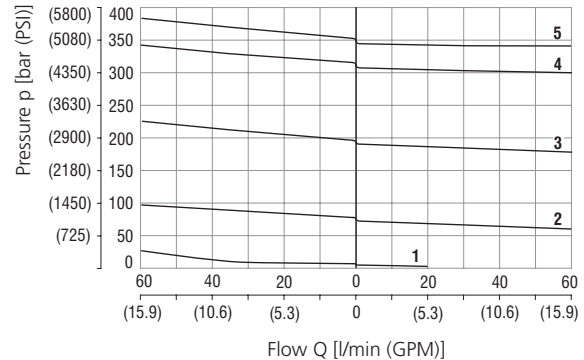
100% of control current, A-T direction



Reducing - relieving pressure related to flow rate

Pressure range 35, Input 400 bar, various control currents

relieving function A-T / reducing function P-A



Control current	1	2	3	4	5
	100%Imax	75%Imax	50%Imax	25%Imax	0%Imax

Ordering Code

SPN4P1 - B3 / H - -

Proportional pressure control valve,
reducing - relieving, pilot operated,
inverted

Valve cavity
7/8-14 UNF (C-10-3)

Model
High performance

Pressure range
up to 120 bar (1740 PSI)
up to 210 bar (3046 PSI)
up to 350 bar (5076 PSI)

Supply voltage / limit current
12 V DC / 1.0 A
24 V DC / 0.6 A

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

No designation
V

Seals
NBR
FPM (Viton)

Connector
EN 175301-803-A
E1 E1 with quenching diode
E2 AMP Junior Timer - radial direction (2 pins; male)
E3 E3 with quenching diode
E4 AMP Junior Timer - axial direction (2 pins; male)
E3A E3A with quenching diode
E4A E4A with quenching diode
E12A Deutsch DT04-2P - axial direction
E13A E12A with quenching diode

Main stage ordering key: SP6H-B3/HV

For other solenoid terminals see datasheet HA 8007.