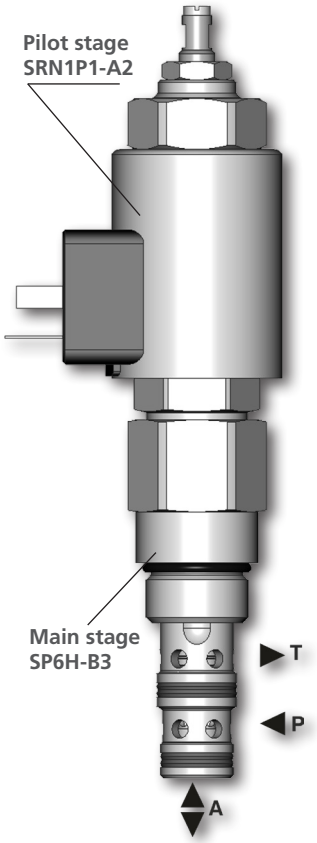
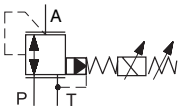
Proportional Pressure Control Valve, Reducing - Relieving, Pilot Operated, Inverted

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 minimum 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

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 minimum cracking pressure use the adjusting screw (s=5) which incorporates also an air bleed screw. Back pressure on port T becomes additive to the pressure setting of the valve. Air bleeding is necessary for the correct function of the valve.
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

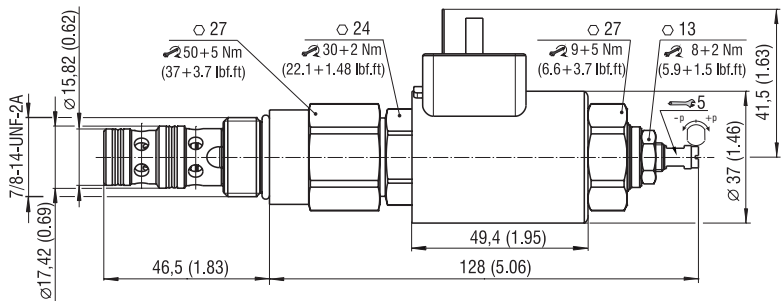
Valve size / Cartridge cavity		7/8-14 UNF-2A / B3 (C-10-3)	
Max. operating pressure (port P)	bar (PSI)	350 (5080)	
Max. operating pressure (port T)	bar (PSI)	100 (1450)	
Max. flow	l/min (GPM)	60 (15.9)	
Max. control flow	l/min (GPM)	0.2 (0.05)	
Fluid temperature range (NBR)	°C (°F)	-30 ... +120 (-22 ... 248)	
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
Max. current	A	1	0.6
Rated resistance at 20 °C (68 °F)	Ω	6.5±5 %	20.6±5 %
Duty cycle	%	100	
Optimal PWM frequency	Hz	250	
Quenching diode		BZW06-19B	BZW06-33B
Enclosure type acc.to EN 60529**		(acc.to terminal type) IP65 / IP67 / IP69K	
Weight with solenoid	kg (lbs)	0.6 (1.32)	
	Data Sheet	Type	
General information	GI_0060	Products and operating conditions	
Coil types	C_8007	C19B*	
Valve bodies In-line mounted	SB_0018	SB-B3*	
Cavity details / Form tools	SMT_0019	SMT-B3*	
Spare Parts	SP_8010		

**The indicated IP protection level is only reached with a properly mounted connector.

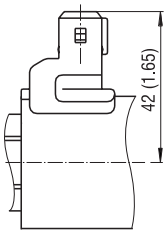
Dimensions in millimeters (inches)

Connector type

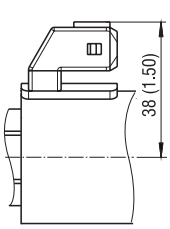
E1, E2 - IP65
EN 175301-803-A



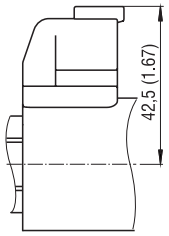
E3, E4 - IP67
AMP Junior Timer
- radial



E3A, E4A - IP67
AMP Junior Timer
- axial



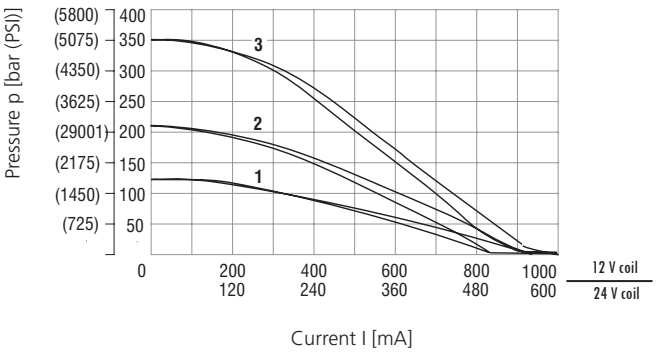
E12A, E13A
- IP67 / IP69K
Deutsch DT04-2P



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

Reduced pressure related to control signal

Q = 0 l/min (0 GPM), pressure in port T= 0 bar, PWM 160 Hz

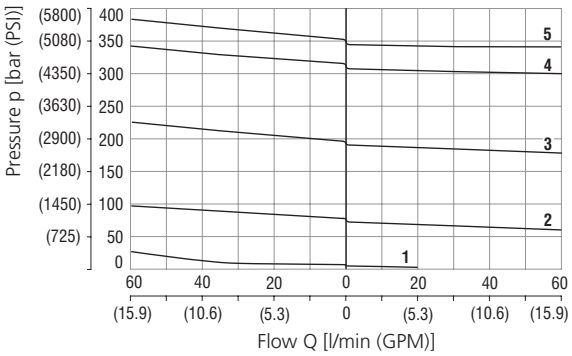


Pressure range	12	21	35
	1	2	3

Reducing - relieving pressure related to flow rate

Pressure range 35, Input 400 bar, various control currents

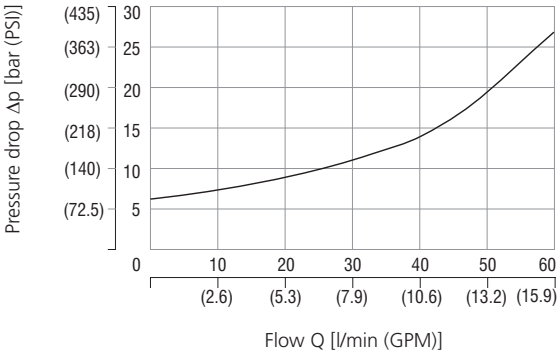
relieving function A-T / reducing function P-A



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

Pressure drop related to flow rate

100% of control current, A-T direction



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

Max. reduced pressure

up to 120 bar (1740 PSI)	**12**
up to 210 bar (3046 PSI)	**21**
up to 350 bar (5076 PSI)	**35**

Supply voltage / max. current

12 V DC / 1.0 A	**12**
24 V DC / 0.6 A	**24**

Main stage ordering key: SP6H-B3/HV

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)

Connector

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

For other solenoid terminals see data sheet No. 8007