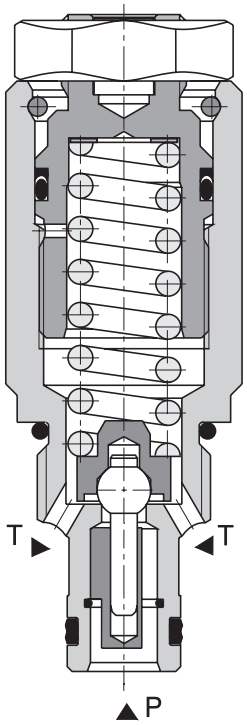
SR1A-A2

3/4-16 UNF • Q_{max} 30 l/min (8 GPM) • p_{max} 350 bar (5100 PSI)

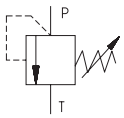


Technical Features

- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop through CFD optimized flow paths
- Wide pressure range up to 350 bar
- Hardened precision parts
- Sharp-edged steel seats for dirt-tolerant performance
- Leak-free closing, suitable for fast cycling with long life
- Adjustable by allen key or hand screw
- In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

A poppet type, direct acting hydraulic relief valve in the form of a screw-in cartridge intended for use as a pressure limiting device for common hydraulic circuit protection. The spring acts on the poppet and presses it onto the valve seat. If the hydraulic pressure is below the pre-set value, the valve is closed. If the hydraulic force exceeds the pre-set value the valve opens and flow passes to the tank port until the system pressure falls below the spring pre-set value and the valve closes again.

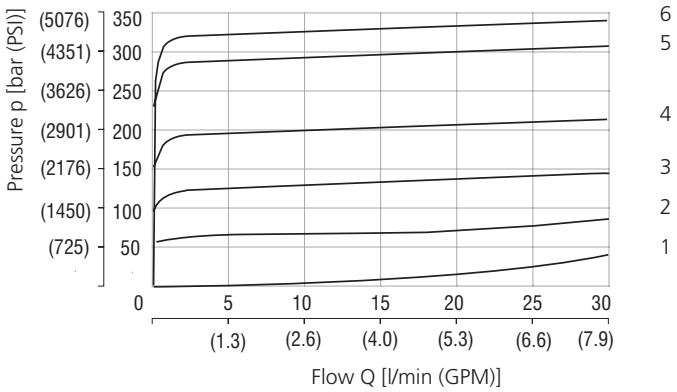
Symbol	

Technical Data

Valve size / Cartridge cavity			3/4-16 UNF-2A / A2 (C-8-2)
Max. flow		l/min (GPM)	30 (7.9)
Max. operating pressure		bar (PSI)	350 (5080)
Max. pressure (port T)		bar (PSI)	160 (2320)
Fluid temperature range (NBR)		°C (°F)	-30 ... +100 (-22 ... 212)
Fluid temperature range (FPM)		°C (°F)	-20 ... +120 (-4 ... 248)
Weight		kg (lbs)	0.13 (0.29)
		Datasheet	Type
General information		GI_0060	Products and operating conditions
Valve bodies	In-line mounted	SB_0018	SB-A2*
	Sandwich mounted	SB-04(06)_0028	SB-*A2*
Cavity details / Form tools		SMT_0019	SMT-A2*
Spare parts		SP_8010	

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

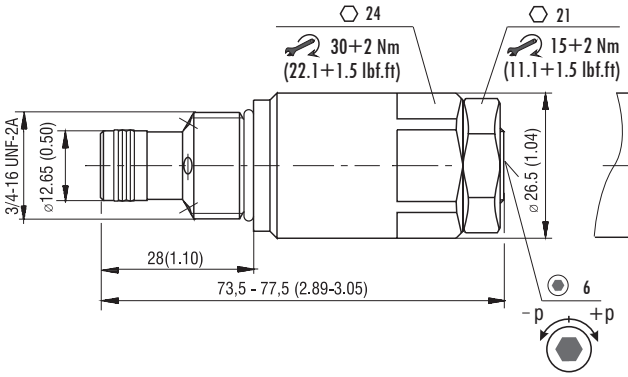
Relief pressure related to flow rate



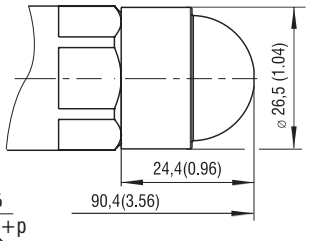
	Pressure range
6	35
5	25
4	16
3	10
2	6
1	Min. pressure setting

Dimensions in millimeters (inches)

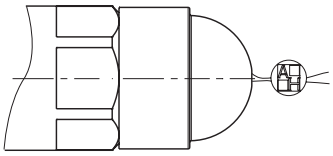
Model S



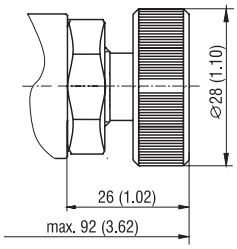
Model T



Model L



Model RS



Ordering Code

SR1A-A2 / L □ □ □ - □

Pressure relief valve, poppet type, direct acting

Valve cavity
3/4-16 UNF (C-8-2)

Model
Lightline

Pressure range

up to 63 bar (914 PSI)	**6**
up to 100 bar (1450 PSI)	**10**
up to 160 bar (2320 PSI)	**16**
up to 250 bar (3630 PSI)	**25**
up to 350 bar (5080 PSI)	**35**

Adjustment option

S	allen key (hex. 6), without protective cap
T	allen key (hex. 6), with protective cap
L	allen key (hex. 6), with protective cap, sealable (lockwire holes)
RS	hand screw, metal

Seals

No designation	NBR
V	FPM (Viton)

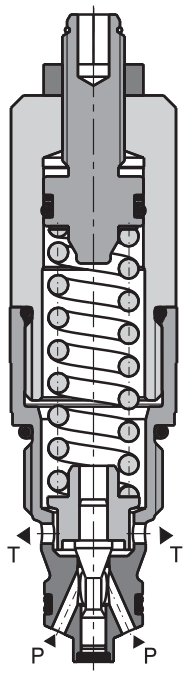
Surface treatment

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

Pressure Relief Valve, Poppet Type, Direct Acting

SR1A-B2

7/8-14 UNF • Q_{max} 60 l/min (16 GPM) • p_{max} 420 bar (6100 PSI)

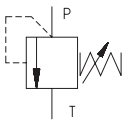


Technical Features

- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop through CFD optimized flow paths
- Wide pressure range up to 420 bar
- Hardened precision parts
- Sharp-edged steel seats for dirt-tolerant performance
- Leak-free closing, suitable for fast cycling with long life
- Adjustable by allen key or hand screw
- In the standard version, the valve is zinc-coated for 520 h protection acc. to ISO 9227

Functional Description

A poppet type, direct acting hydraulic relief valve in the form of a screw-in cartridge intended for use as a pressure limiting device for common hydraulic circuit protection. The spring acts on the poppet and presses it onto the valve seat. If the hydraulic pressure is below the pre-set value, the valve is closed. If the hydraulic force exceeds the pre-set value the valve opens and flow passes to the tank port until the system pressure falls below the spring pre-set value and the valve closes again.

Symbol	

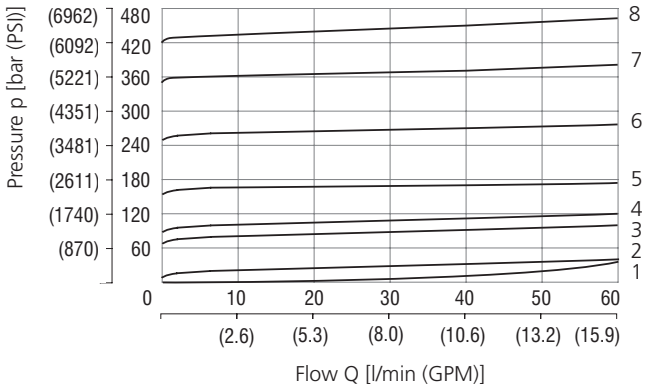
Technical Data

Valve size / Cartridge cavity		7/8-14 UNF-2A / B2 (C-10-2)
Max. flow	l/min (GPM)	60 (15.9)
Max. operating pressure	bar (PSI)	420 (6090)
Max. pressure (port T)	bar (PSI)	250 (3630)
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... 212)
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... 248)
Weight	kg (lbs)	0.25 (0.55)

		Datasheet	Type
General information		GI_0060	Products operating conditions
Valve bodies	In-line mounted	SB_0018	SB-B2*
	Sandwich mounted	SB-04(06)_0028	SB-*B2*
Cavity details / Form tools		SMT_0019	SMT-B2*
Spare parts		SP_8010	

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

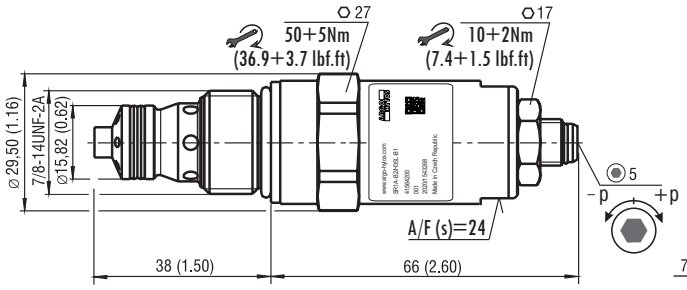
Relief pressure related to flow rate



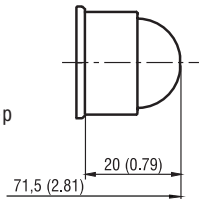
	Pressure range
8	42
7	35
6	25
5	16
4	10
3	6
2	2
1	Min. pressure setting

Dimensions in millimeters (inches)

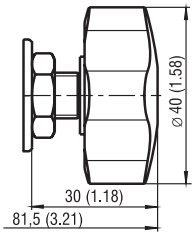
Model S



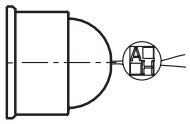
Model T



Model RP



Model L



Ordering Code

SR1A - B2 / H ☐ ☐ ☐ **- B1**

Pressure relief valve, poppet type, direct acting

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

Model
High performance

Pressure range

adjustable pressure 25 bar (360 PSI)	**2**
adjustable pressure 63 bar (910 PSI)	**6**
adjustable pressure 100 bar (1450 PSI)	**10**
adjustable pressure 160 bar (2320 PSI)	**16**
adjustable pressure 250 bar (3630 PSI)	**25**
adjustable pressure 350 bar (5080 PSI)	**35**
adjustable pressure 420 bar (6090 PSI)	**42**

Adjustment option

S	allen key (hex. 5), without protective cap
T	allen key (hex. 5), with protective cap
RP	hand screw, plastic
L	allen key (hex. 5), with protective cap, sealable (lockwire holes)

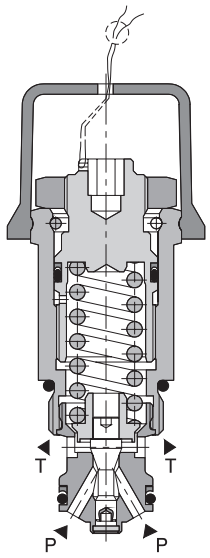
Seals

No designation	NBR
V	FPM (Viton)

Surface treatment
zinc-coated (ZnNi), ISO 9227 (520 h)

VPP2-04/S

M22x1.5 • Q_{max} 40 l/min (11 GPM) • p_{max} 320 bar (4600 PSI)

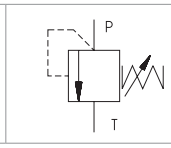


Technical Features

- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Wide pressure range up to 320 bar
- Hardened precision parts
- Sharp-edged steel seats for dirt-tolerant performance
- Leak-free closing, suitable for fast cycling with long life
- Adjustable by allen key or hand screw
- In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

A poppet type, direct acting hydraulic relief valve in the form of a screw-in cartridge intended for use as a pressure limiting device for common hydraulic circuit protection. The spring acts on the poppet and presses it onto the valve seat. If the hydraulic pressure is below the pre-set value, the valve is closed. If the hydraulic force exceeds the pre-set value the valve opens and flow passes to the tank port until the system pressure falls below the spring pre-set value and the valve closes again.

Symbol	

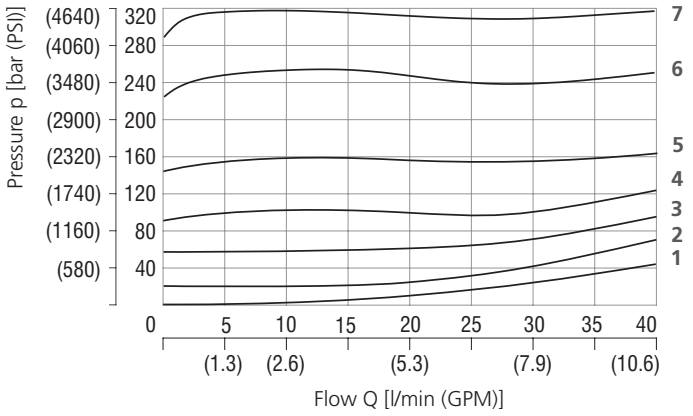
Technical Data

Valve size / Cartridge cavity		M22x1.5 / QG2
Max. flow	l/min (GPM)	40 (10.6)
Max. operating pressure	bar (PSI)	320 (4640)
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... 212)
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... 248)
Mass	kg (lbs)	0.17 (0.37)

		Datasheet	Type
General information		GI_0060	Products and operating conditions
Valve bodies	In-line mounted	SB_0018	SB-QG2*
	Sandwich mounted	SB-04(06)_0028	SB-*QG2*
Cavity details		SMT_0019	SMT-QG2*
Spare parts		SP_8010	SMT-B2*

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

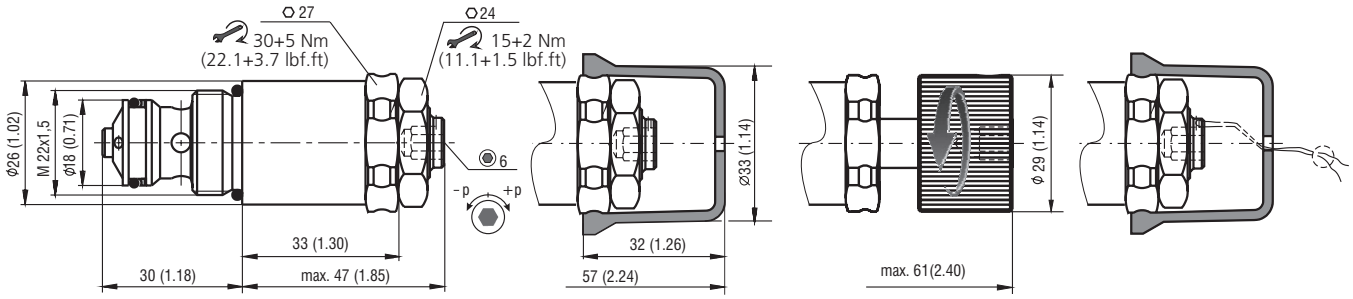
Relief pressure related to flow rate



	Pressure range
7	32
6	25
5	16
4	10
3	6
2	2
1	Min. pressure setting

Dimensions in millimeters (inches)

Model S **Model T** **Model RS** **Model L**



Ordering Code

VPP2-04 / S ☐ - ☐ ☐ - ☐

Pressure relief valve, poppet type, direct acting **M22x1.5**

Model

screw-in cartridge	**S**

Pressure range

up to 25 bar (360 PSI)	**2**
up to 63 bar (910 PSI)	**6**
up to 100 bar (1450 PSI)	**10**
up to 160 bar (2320 PSI)	**16**
up to 250 bar (3630 PSI)	**25**
up to 320 bar (4600 PSI)	**32**

Adjustment option

S	allen key (hex. 6), without protective cap
T	allen key (hex. 6), with protective cap
RS	hand screw, metal
L	allen key (hex. 6), with protective cap, sealable (lockwire holes)

Seals

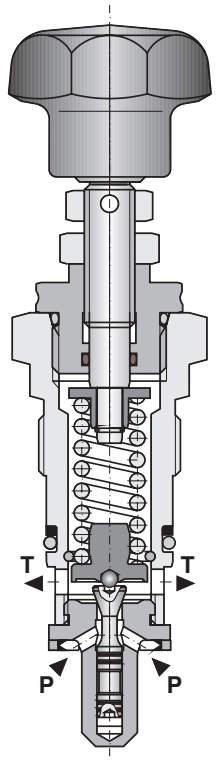
No designation	NBR
V	FPM (Viton)

Surface treatment

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

VPP2-06

M28x1.5 • Q_{max} 50 l/min (13 GPM) • p_{max} 320 bar (4600 PSI)

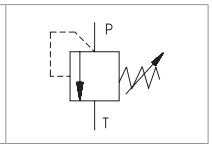


Technical Features

- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Wide pressure range up to 320 bar
- Hardened precision parts
- Sharp-edged steel seats for dirt-tolerant performance
- Leak-free closing, suitable for fast cycling with long life
- Adjustable by allen key or hand screw
- In the standard version, the valve is black oxide coated

Functional Description

A poppet-type, direct-acting hydraulic relief valve in the form of a screw-in cartridge intended for use as a pressure limiting device for common hydraulic circuit protection. The spring acts on the poppet and presses it onto the valve seat. If the hydraulic pressure is below the pre-set value, the valve is closed. If the hydraulic force exceeds the pre-set value the valve opens and flow passes to the tank port until the system pressure falls below the spring pre-set value and the valve closes again.

Symbol	

Technical Data

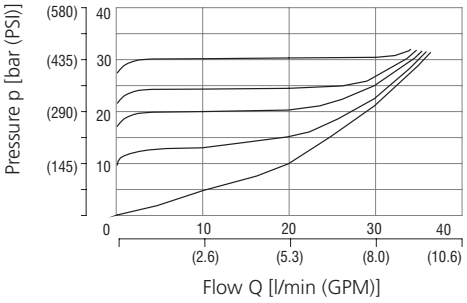
Valve size / Cartridge cavity		M28x1.5 / QP2
Max. flow	l/min (GPM)	50 (13.2)
Max. operating pressure	bar (PSI)	320 (4640)
Fluid temperature range (NBR)	°C (°F)	-30...+100 (-22 ...212)
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... +248)
Mass	kg (lbs)	0.4 (0.88)

		Datasheet	Type
General information		GI_0060	Products and operating conditions
Valve bodies	In-line mounted	SB_0018	SB-QP2*
Cavity details		SMT_0019	SMT-QP2*
Spare parts		SP_8010	

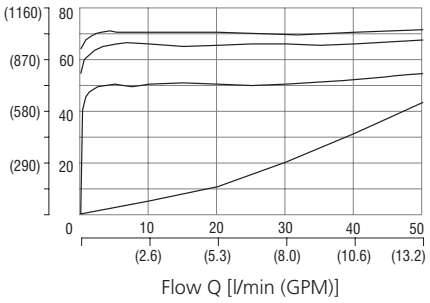
Characteristics measured at ν = 32 mm²/s (156 SUS)

Relief pressure related to flow rate

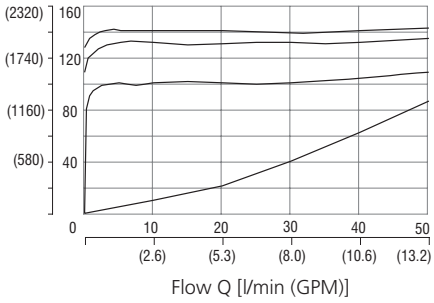
Pressure range 2.5



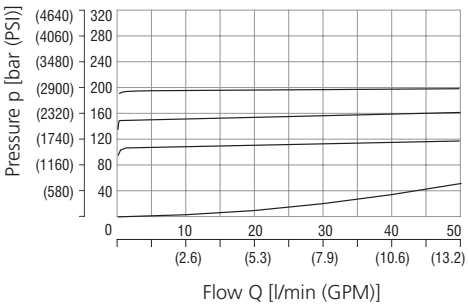
Pressure range 6.3



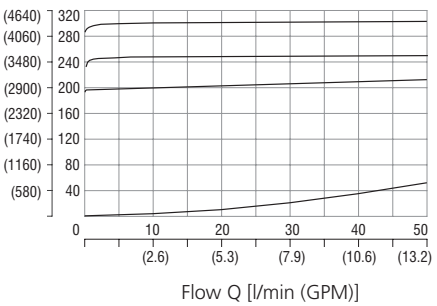
Pressure range 10



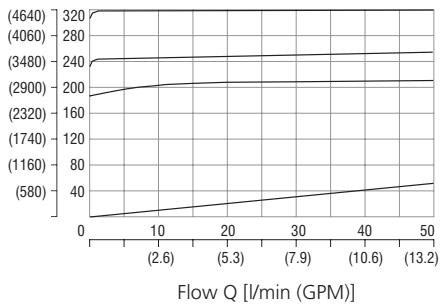
Pressure range 16



Pressure range 25

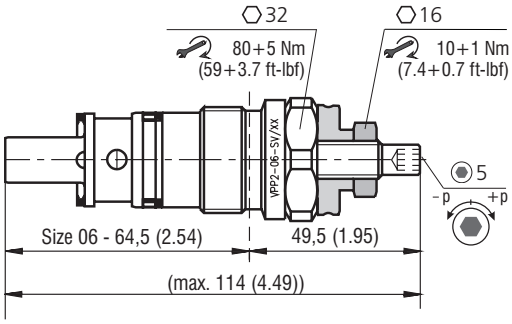


Pressure range 32

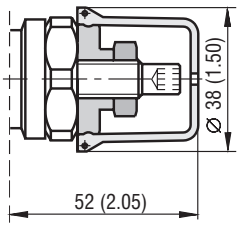


Dimensions in millimeters (inches)

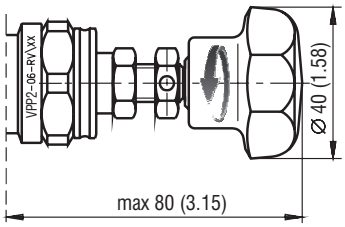
Model S



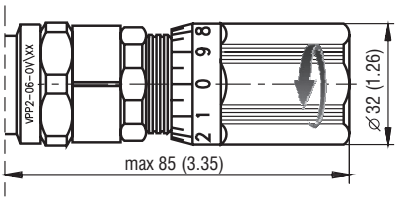
Model T



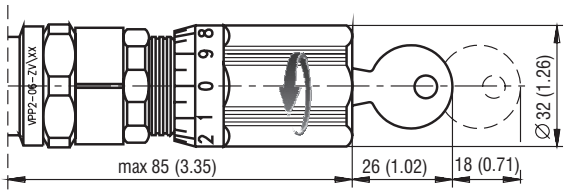
Model RP



Model O

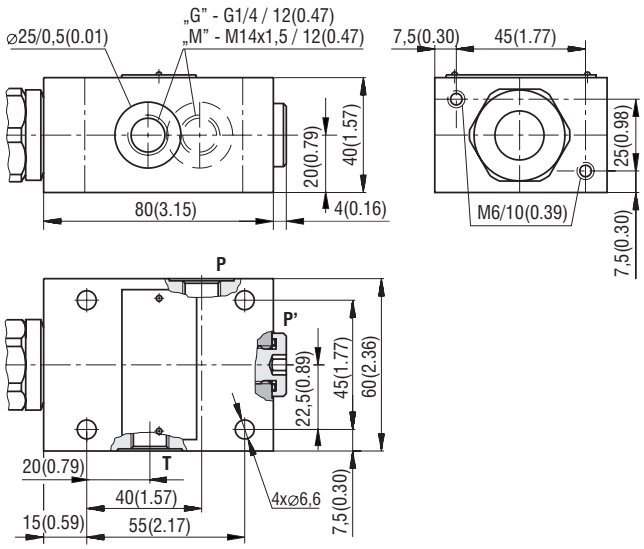


Model Z



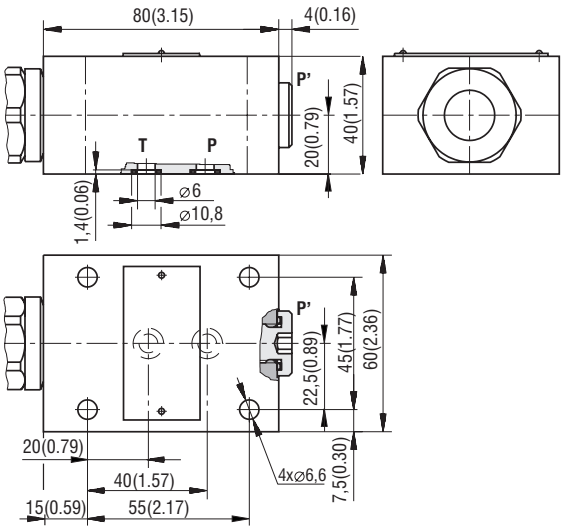
Dimensions in millimeters (inches)

Cartridge in threaded housing - models „M" and „G"



Port P´ (either P or P´can be used as input port), thread G1/4 (M14x1.5), depth 12 mm (0.47in)

Cartridge in subplate mounted housing - model „P"



Port P´ (e.g. for pressure measuring), thread M14x1.5, depth 12 mm (0.47 in)
Note: subplates - see catalog HA 0002

Ordering Code

VPP2-06 - □ □ / □ □ - □

Pressure relief valve, poppet-type, direct-acting — **M28x1.5**

Adjustment option

allen key (hex. 5), without protective cap	**S**
allen key (hex. 5), with protective cap	**T**
hand screw, plastic	**RP**
non-lockable cylindrical hand screw	**O**
lockable cylindrical hand screw	**Z**

Model

screw-in cartridge	**V**
cartridge in threaded housing - metric threads	**M**
cartridge in threaded housing - with BSP threads	**G**
cartridge in subplate mounted housing	**P**

Surface treatment (cartridge valve only)

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

Seals

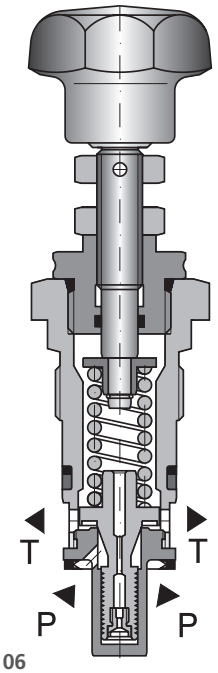
No designation	NBR
V	FPM (Viton)

Pressure range

2.5	up to 25 bar (360 PSI)
6.3	up to 63 bar (910 PSI)
10	up to 100 bar (1450 PSI)
16	up to 160 bar (2320 PSI)
25	up to 250 bar (3630 PSI)
32	up to 320 bar (4600 PSI)

VPP1-06(10)

M28x1.5 / M35x1.5 • Q_{max} 50 l/min (13 GPM) / 120 l/min (32 GPM) • p_{max} 320 bar (4600 PSI)



Size 06

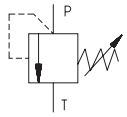
Size 10

Technical Features

- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Wide pressure range up to 320 bar
- Hardened precision parts
- Sharp-edged steel seats for dirt-tolerant performance
- Leak-free closing, suitable for fast cycling with long life
- Adjustable by allen key or hand screw
- In the standard version, the cartridge valve is black oxide coated and the valve body is phosphated

Functional Description

A poppet type, direct acting hydraulic relief valve in the form of a screw-in cartridge intended for use as a pressure limiting device for common hydraulic circuit protection. The spring acts on the poppet and presses it onto the valve seat. If the hydraulic pressure is below the pre-set value, the valve is closed. If the hydraulic force exceeds the pre-set value the valve opens and flow passes to the tank port until the system pressure falls below the spring pre-set value and the valve closes again.

Symbol	

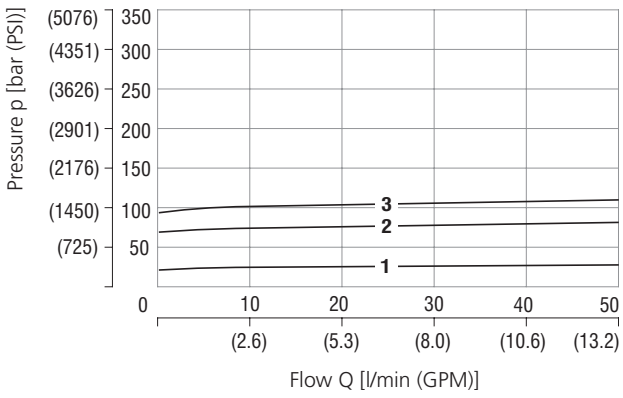
Technical Data

Valve size			size 06	size 10
Valve size / Cartridge cavity			M28x1.5 / QP2	M35x1.5 / QT2
Max. flow		l/min (GPM)	50 (13.2)	120 (31.7)
Max. operating pressure		bar (PSI)	320 (4640)	
Fluid temperature range (NBR)		°C (°F)	-30...+100 (-22 ...212)	
Fluid temperature range (FPM)		°C (°F)	-20...+120 (-4...248)	
Weight		kg (lbs)	0.4 (0.88)	0.5 (1.10)
		Datasheet	Type	
General information		GI_0060	Products and operating conditions	
Valve bodies	In-line mounted	SB_0018	SB-QP2*	SB-QT2*
Cavity details		SMT_0019	SMT-QP2*	SMT-QT2*
Spare parts		SP_8010		

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

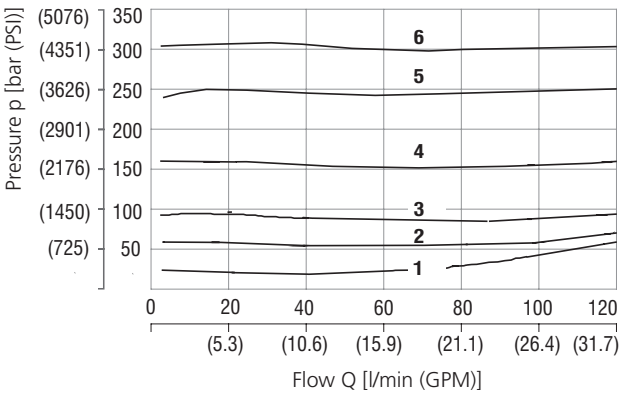
Relief pressure related to flow rate

Size 06



	Pressure range
3	10
2	6.3
1	2.5

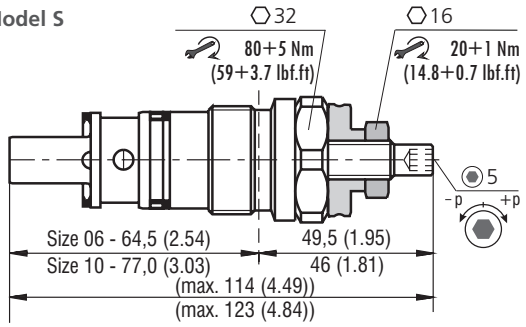
Size 10



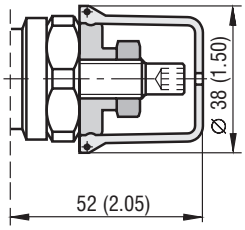
	Pressure range
6	32
5	25
4	16
3	10
2	6.3
1	2.5

Dimensions in millimeters (inches)

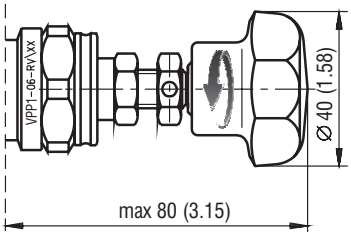
Model S



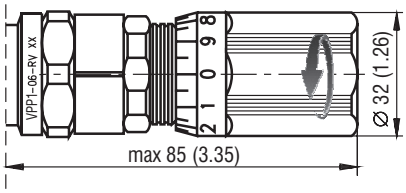
Model T



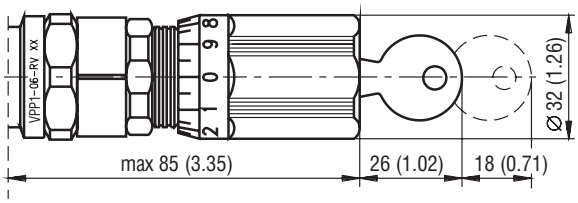
Model RP



Model O

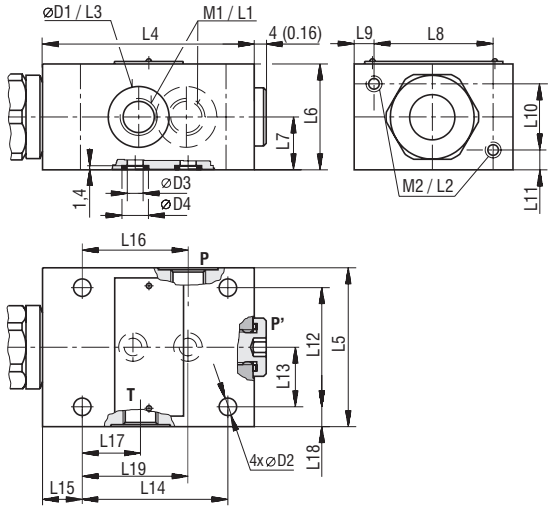


Model Z



Dimensions in millimeters (inches)

Cartridge in threaded housing - models „M", „G" and „P"



Port P´ (as input can be used P or P') thread M1/L1

Model	06-xM/x	06-xG/x	06-xP/x	10-xM/x	10-xG/x	10-xP/x
M1	M14x1.5	G1/4	G1/4	M22x1.5	G1/2	G1/4
M2	M6			M8		
ØD1	25(0.98)			34(1.34)		
ØD2	6.6(0.26)			9(0.35)		
ØD3			6(0.24)			10(0.39)
ØD4			10.8(0.43)			15.6(0.61)
L1	12(0.47)			16(0.63)		
L2	10(0.39)			20(0.79)		
L3	0.5(0.02)			0.5(0.02)		
L4	80(3.15)			100(3.94)		
L5	60(2.36)			80(3.15)		
L6	40(1.57)			60(2.36)		
L7	20(0.79)			30(1.18)		
L8	45(1.77)			60(2.36)		
L9	7.5(0.30)			10(0.39)		
L10	25(0.98)			40(1.57)		
L11	7.5(0.30)			10(0.39)		
L12	45(1.77)			60(2.36)		
L13	22.5(0.89)			30(1.18)		
L14	55(2.17)			70(2.76)		
L15	15(0.59)			20(0.79)		
L16	40(1.57)			49(1.93)		
L17	20(0.79)			21(0.83)		
L18	7.5(0.30)			10(0.39)		
L19			40(1.57)			45(1.77)

Ordering Code

VPP1- ☐ - ☐ ☐ / ☐ ☐ - ☐

Pressure relief valve, poppet type, direct acting M28x1.5 / M35x1.5

Nominal size

size 06	**06***
size 10	**10**

* VPP1-06 only available for pressure range 2.5; 6.3 and 10

Adjustment option

allen key (hex. 5), without protective cap	**S**
allen key (hex. 5), with protective cap	**T**
hand screw, plastic	**RP**
non-lockable cylindrical hand screw	**O**
lockable cylindrical hand screw	**Z**

Model

screw-in cartridge	**V**
cartridge in threaded housing - with metric threads	**M**
cartridge in threaded housing - with BSP threads	**G**
cartridge in subplate mounted housing	**P**

Surface treatment (cartridge valve only)

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

Seals

No designation	NBR
V	FPM (Viton)

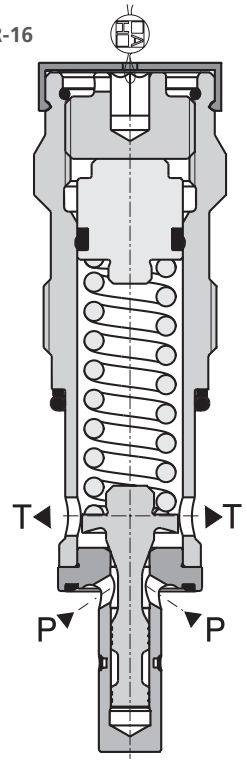
Pressure range

2.5	up to 25 bar (360 PSI)
6.3	up to 63 bar (910 PSI)
10	up to 100 bar (1450 PSI)
16	up to 160 bar (2320 PSI)
25	up to 250 bar (3630 PSI)
32	up to 320 bar (4600 PSI)

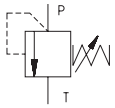
VPP-R-16(25)

M36x2 / M42x2 • Q_{max} 120 / 400 l/min (32 / 106 GPM) • p_{max} 350 bar (5100 PSI)

VPP-R-16



Symbol



Technical Features

- Pressure relief valve, direct-acting, intended for installation in a manifold
- Wide pressure range up to 350 bar
- Large flow range
- Low hysteresis, accurate pressure control and low pressure drop
- Hardened precision parts
- Leak-free closing, suitable for fast cycling with long life
- Adjustment option with sealable allen head and a protective cap
- In the standard version, the valve is zinc coated for 240 h (for size 25) and 520 h (for size 16) protection acc. to ISO 9227

Functional Description

A poppet type, direct acting hydraulic relief valve in the form of a screw-in cartridge intended for use as a pressure limiting device for common hydraulic circuit protection. The spring acts on the poppet and presses it onto the valve seat. If the hydraulic pressure is below the pre-set value, the valve is closed. If the hydraulic force exceeds the pre-set value the valve opens and flow passes to the tank port until the system pressure falls below the spring pre-set value and the valve closes again.

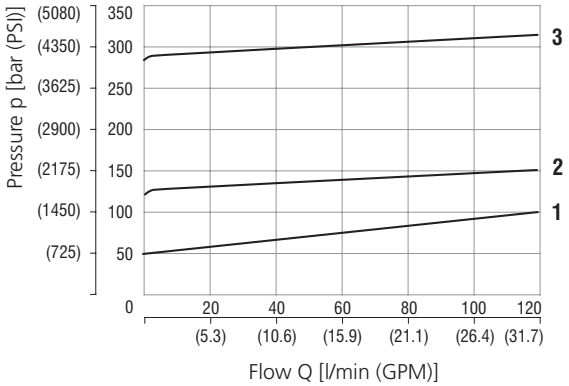
Technical Data

Valve size			Size 16	Size 25
Connection thread			M36x2	M42x2
Max. flow		l/min (GPM)	120 (31.7)	400 (106)
Max. inlet pressure (port P)		bar (PSI)	350 (5080)	
Max. outlet pressure (port T)		bar (PSI)	160 (2320)	
Fluid temperature range (NBR)		°C (°F)	-30 ... +100 (-22 ... 212)	
Fluid temperature range (FPM)		°C (°F)	-20 ... +120 (-4 ... 248)	
Kinematic viscosity range		mm²/s (SUS)	10 ... 500 (49 ... 2450)	
Weight	valve	kg (lbs)	0.56 (1.23)	1.03 (2.27)
	valve with body		3.06 (6.75)	5.5 (12.1)
		Datasheet	Type	
General information		GI_0060	Products and operating conditions	
Spare parts		SP_8010		

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

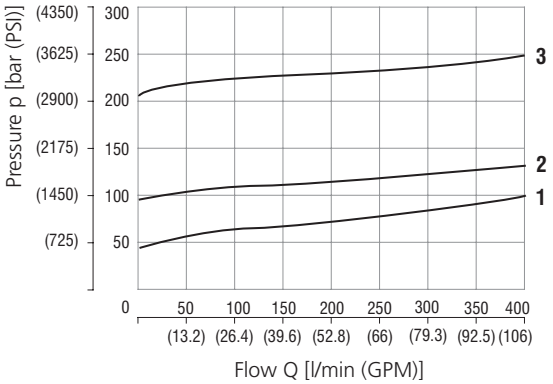
Relief pressure related to flow rate

Size 16



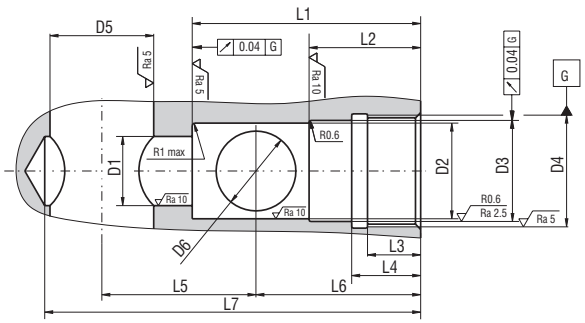
	Pressure stage	Pressure range bar (PSI)
3	28	280 - 350 (4060 - 5080 PSI)
2	13	130 - 280 (1890 - 4060 PSI)
1	5	50 - 130 (730 - 1890 PSI)

Size 25



	Pressure stage	Pressure range bar (PSI)
3	20	200 - 350 (2900 - 5080 PSI)
2	10	100 - 200 (1450 - 2900 PSI)
1	5	50 - 100 (730 - 1450 PSI)

Cavity dimensions in millimeters (inches)

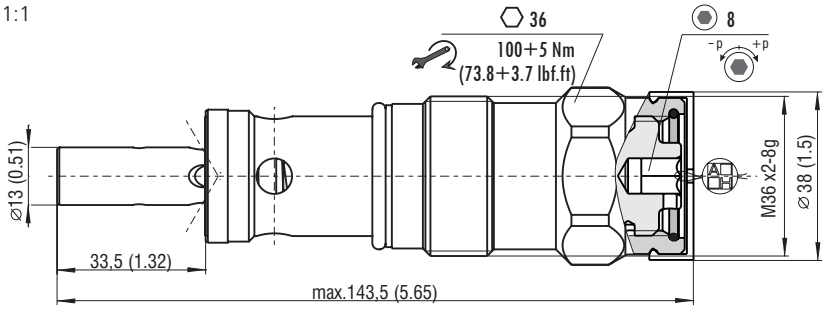


Size	∅ D1	∅ D2	∅ D3	∅ D4	∅ D5	∅ D6	Dimensions in mm (in)
16	20 H14 (0.79)	30 H11 (1.18)	32.6 H10 (1.28)	M36x2-7H	30 (1.18)	25 (0.98)	
25	26 H14 (1.02)	36 H11 (1.42)	38 H10 (1.50)	M42x2-7H	34 (1.34)	31 (1.22)	
Size	L1	L2	L3	L4	L5	L6	L7
16	66 (2.6 / 2.61)	31 (1.22 / 1.22)	18 (0.71 / 0.73)	21 (0.83 / 0.85)	46 (1.81)	44 (1.73 / 1.75)	105 (4.13)
25	86 (3.4)	44 (1.73)	20 (0.79)	26 (1.02)	58 (2.29)	62 (2.44)	135 (5.32)

Dimensions in millimeters (inches)

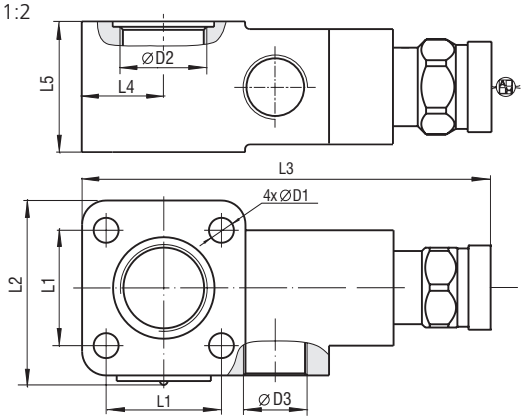
VPP-R-16

1:1



VPPB-R

1:2



Size	∅ D1	∅ D2	∅ D3	L1	L2	L3	L4	L5
16	10.5 (0.41)	M33x2	M27x2	48 (1.89)	66 (2.60)	168 (6.61)	33 (1.30)	57 (2.24)
25	13 (0.51)	M42x2	M33x2	60 (2.36)	85 (3.35)	218 (8.58)	42.5 (1.67)	68 (2.68)

Ordering Code

VPP [ ] **-R-** [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

Pressure relief valve, poppet type, direct acting

Design of valve
screw-in cartridge valve — **no designation**
with a body — **B**

Valve size
size 16 — **16**
size 25 — **25**

Range of adjustable pressure - pressure stage size 16
50 - 130 bar (730 - 1890 PSI) — **5**
130 - 280 bar (1890 - 4060 PSI) — **13**
280 - 350 bar (4060 - 5080 PSI) — **28**

Range of adjustable pressure - pressure stage size 25
50 - 100 bar (730 - 1450 PSI) — **5**
100 - 200 bar (1450 - 2900 PSI) — **10**
200 - 350 bar (2900 - 5080 PSI) — **20**

Adjustment option
S allen key (hex. 8), without protective cap
T allen key (hex. 8), with protective cap
L allen key (hex. 8), with protective cap, sealable (lockwire holes)

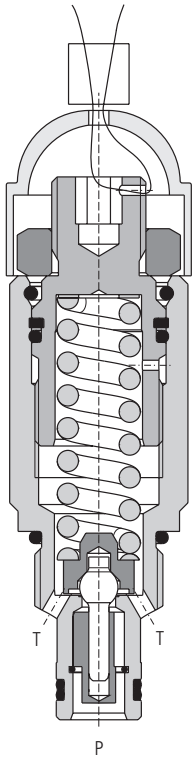
Seals
No designation NBR
V FPM (Viton)

Surface treatment
A zinc-coated (ZnCr-3), ISO 9227 (240 h) (only for size 25)
B zinc-coated (ZnNi), ISO 9227 (520 h) (only for size 16)

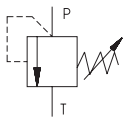
Pressure Relief Valve, PED Certified, Poppet Type, Direct Acting

SR1A-A2/LxxL-CE1017

3/4-16 UNF • Q_{max} 30 l/min (8 GPM) • p_{max} 350 bar (5100 PSI)



Symbol



Technical Features

- Hydraulic safety relief valve suitable for use as a safety device in Category IV Group 2 applications acc.to European Commission (EC) Pressure Equipment Directive (PED) 2014/68/EU
- CE marked valves are supplied with "Declaration of Conformity", "Operating Instructions" and the list of residual risks
  Always follow the operating instructions supplied with the valve!
- Wide pressure range up to 350 bar
- Hardened precision parts
- Sharp-edged steel seats for dirt-tolerant performance
- Leak-free closing and suitable for fast cycling with long life
- Adjustable by allen key or hand screw
- In the standard version, the valve is zinc-coated for 1000 h protection acc. to ISO 9227)

Functional Description

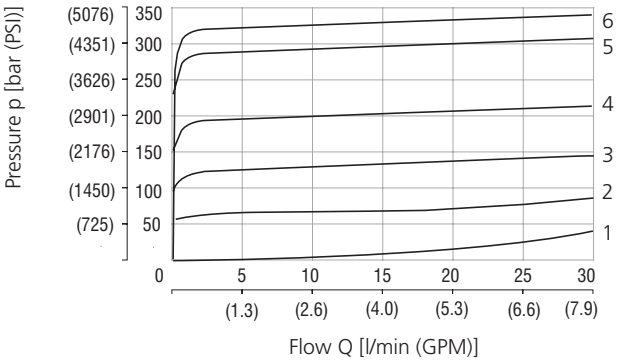
A poppet type, direct acting hydraulic relief valve in the form of a screw-in cartridge intended for use as a pressure limiting device for common hydraulic circuit protection. The spring acts on the poppet and presses it onto the valve seat. If the hydraulic pressure is below the pre-set value, the valve is closed.
If the hydraulic force exceeds the pre-set value the valve opens and flow passes to tank port until the system pressure falls below the spring pre-set value and the valve closes back again.

Technical Data

Valve size / Cartridge cavity			3/4-16 UNF-2A / A2 (C-8-2)
Max. flow		l/min (GPM)	30 (7.9)
Max. operating pressure		bar (PSI)	350 (5080)
Max. pressure (T port)		bar (PSI)	160 (2320)
Fluid temperature range (NBR)		°C (°F)	-30 ... +100 (-22 ... 212)
Fluid temperature range (FPM)		°C (°F)	-20 ... +120 (-4 ... 248)
Max. leakage of closed valve at 80% cracking pressure		cm^3/min	0.1
Viscosity range		mm^2/s (SUS)	10 ... 500 (49 ... 2450)
Weight		kg (lbs)	0.13 (0.29)
		Datasheet	Type
General information		GI_0060	Products operating conditions
Valve bodies	In-line mounted	SB_0018	SB-A2*
	Sandwich mounted	SB-04(06)_0028	SB-*A2*
Cavity details / Form tools		SMT_0019	SMT-A2*
Spare parts		SP_8010	

Characteristics measured at ν = 32 mm^2/s (156 SUS)

Relief pressure related to flow rate



	Pressure range
6	35
5	25
4	16
3	10
2	6
1	Min. pressure setting

Valves Adjusted by the Manufacturer

- The valves are adjusted for the specified pressure at the relevant flow rate and they are fitted with tamper-indicating seals
- The pressure and flow rate values are indicated in the valve description on the product [pressure in bar, flow rate in l/min]
- The seals bear the company logo

Valves NOT Adjusted by the Manufacturer

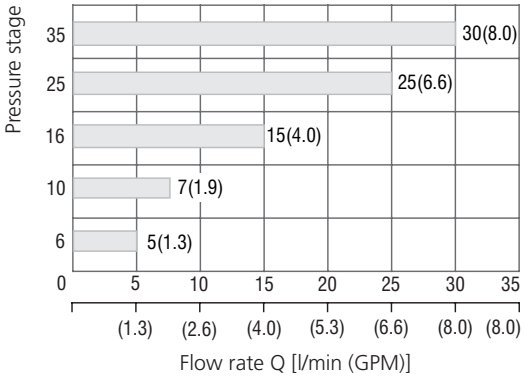
› Valves have no tamper-indicating seals
› No pressure and no flow rate indicated - SR1A-B2/HxxL-CE1017
› After the completion of the functional test, the adjusting screw is completely loosened and the pressure is set to p = 0 bar
› To adjust the required valve pressure proceed as follows:
  - turn the adjusting screw to the right (clockwise) to increase the pressure
  - turn the adjusting screw to the left (counter-clockwise) to decrease the pressure
› The manufacturer accepts no responsibility for the adjustment, securing, and sealing of the valve

Residual Risks

Residual risks are listed and preventive measures against the occurrence of residual risk are described in the document „Operating instructions for pressure relief valve SR1A-A2/LxxL-CE1017“ which is delivered with each valve.

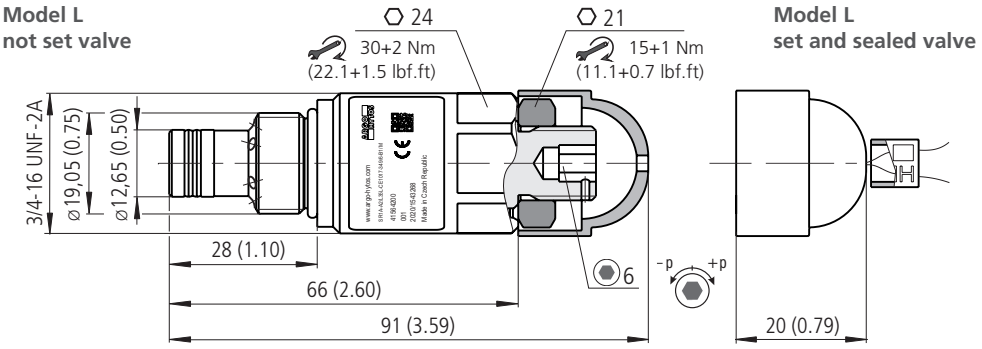
Application area

The diagram shows the operating region where the valve meets the requirements of Directive 2014/68/EU and Standard ISO 4126-1 on maximum short-time overshoot of system pressure by 10 % above the set cracking pressure when the valve opens.
The dynamics of the valve depend on the kinematic viscosity of working fluid.
Measurement conditions: oil Renolin VG 32, T = 40 °C (104 °F) , V = 0.5 l (0.132 gal US)



Aplication area characteristics from certification of SR1A-A2/LxxL-CE1017*

Dimensions in millimeters (in)



Ordering Code

SR1A-A2 / L [ ] **L** [ ] **- CE1017 -** [ ] **/** [ ] **- B1**

Pressure relief valve, PED certified, poppet type, direct acting

Valve cavity
3/4-16 UNF (C-8-2)

Model
Lightline

Pressure range

adjustable pressure 63 bar (910 PSI)	**6**
adjustable pressure 100 bar (1450 PSI)	**10**
adjustable pressure 160 bar (2320 PSI)	**16**
adjustable pressure 250 bar (3630 PSI)	**25**
adjustable pressure 350 bar (5080 PSI)	**35**

No designation
V

Seals
NBR
FPM (Viton)

Adjustment option
allen head (hex. 6), with protective cap, sealable (lockwire holes)

Certification PED
notified body number CE1017

Adjusted pressure [bar]*
(example)
120

Pressure setting at flow rate [l/min]*
Std. pressure setting made at flow 6 litres/min
(example)
6

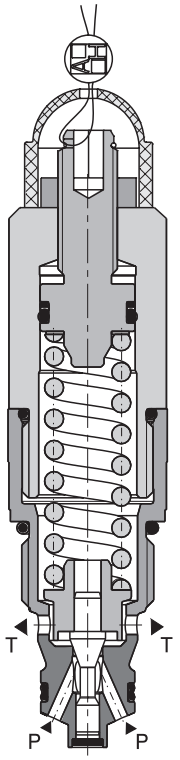
Surface treatment
zinc-coated (ZnNi), ISO 9227 (1000 h)

*If not preset valves are ordered, pressure and flow rate information is not shown.

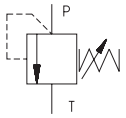
Pressure Relief Valve, PED Certified, Poppet Type, Direct Acting

SR1A-B2/HxxL-CE1017

7/8-14 UNF • Q_{max} 60 l/min (16 GPM) • p_{max} 420 bar (6100 PSI)



Symbol



Technical Features

- Hydraulic safety relief valve suitable for use as a safety device in Category IV Group 2 applications acc.to European Commission (EC) Pressure Equipment Directive (PED) 2014/68/EU
- CE marked valves are supplied with "Declaration of Conformity", "Operating Instructions" and the list of residual risks. Always follow the operating instructions supplied with the valve!
- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop through CFD optimized flow paths
- Wide pressure range up to 420 bar
- Hardened precision parts
- Sharp-edged steel seats for dirt-tolerant performance
- Leak-free closing and suitable for fast cycling with long life
- In the standard version, the valve is zinc-coated for 1000 h protection acc. to ISO 9227

Functional Description

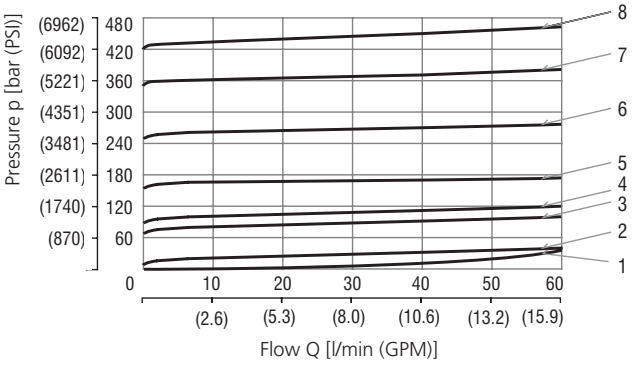
A poppet type, direct acting hydraulic relief valve in the form of a screw-in cartridge intended for use as a pressure limiting device for common hydraulic circuit protection. The spring acts on the poppet and presses it onto the valve seat. If the hydraulic pressure is below the pre-set value, the valve is closed.
If the hydraulic force exceeds the pre-set value the valve opens and flow passes to tank port until the system pressure falls below the spring pre-set value and the valve closes back again.

Technical Data

Valve size / Cartridge cavity			7/8-14 UNF-2A / B2 (C-10-2)
Max. flow		l/min (GPM)	60 (15.9)
Max. operating pressure		bar (PSI)	420 (6090)
Max. pressure (T port)		bar (PSI)	250 (3630)
Fluid temperature range (NBR)		°C (°F)	-30 ... +100 (-22 ... 212)
Fluid temperature range (FPM)		°C (°F)	-20 ... +120 (-4 ... 248)
Max. leakage of closed valve at 80% cracking pressure		cm^3/min	0.1
Viscosity range		mm^2/s (SUS)	10 ... 500 (49 ... 2450)
Weight		kg (lbs)	0.27 (0.60)
		Datasheet	Type
General information		GI_0060	Products operating conditions
Valve bodies	In-line mounted	SB_0018	SB-B2*
	Sandwich mounted	SB-04(06)_0028	SB-*B2*
Cavity details / Form tools		SMT_0019	SMT-B2*
Spare parts		SP_8010	

Characteristics measured at ν = 32 mm^2/s (156 SUS)

Relief pressure related to flow rate



	Pressure range
8	42
7	35
6	25
5	16
4	10
3	6
2	2
1	Min. pressure setting

Valves Adjusted by the Manufacturer

- The valves are adjusted for the specified pressure at the relevant flow rate and they are fitted with tamper-indicating seals
- The pressure and flow rate values are indicated in the valve description on the product [pressure: in bar, flow rate in l/min]
- The seals bear the company logo

Valves NOT Adjusted by the Manufacturer

› Valves have no tamper-indicating seals
› No pressure and no flow rate indicated - SR1A-B2/HxxL-CE1017
› After the completion of the functional test, the adjusting screw is completely loosened and the pressure is set to p = 0 bar
› To adjust the required valve pressure proceed as follows:
  - turn the adjusting screw to the right (clockwise) to increase the pressure
  - turn the adjusting screw to the left (counter-clockwise) to decrease the pressure
› The manufacturer accepts no responsibility for the adjustment, securing, and sealing of the valve

Residual Risks

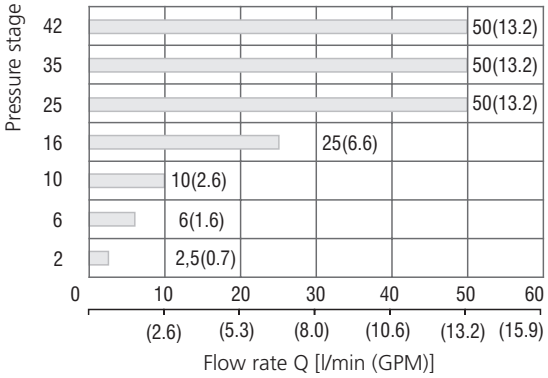
Residual risks are listed and preventive measures against the occurrence of residual risk are described in the document „Operating instructions for pressure relief valve SR1A-B2/HxxL-CE1017“ which is delivered with each valve.

Application area

The diagram shows the operating region where the valve meets the requirements of Directive 2014/68/EU and Standard ISO 4126-1 on maximum short-time overshoot of system pressure by 10 % above the set cracking pressure when the valve opens.

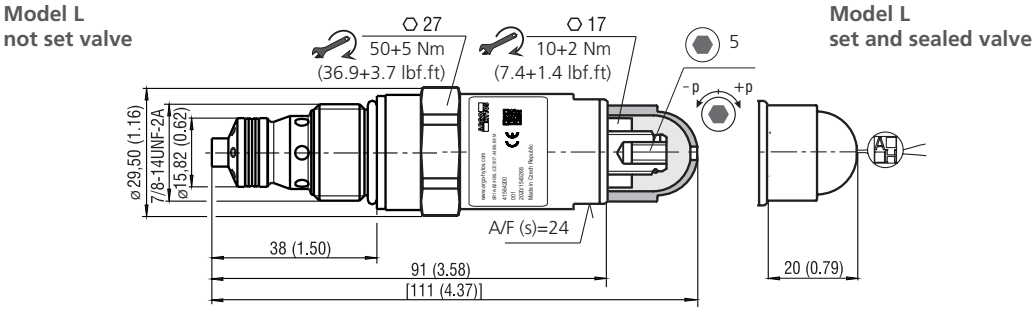
The dynamics of the valve depend on the kinematic viscosity of working fluid.

Measurement conditions: oil Renolin VG 32, T = 40 °C (104 °F), V = 0.5 l (0.132 gal US)



Application area characteristics from certification of SR1A-B2/HxxL-CE1017*

Dimensions in millimeters (inches)



Ordering Code

SR1A-B2 / H [ ] **L** [ ] **- CE1017 -** [ ] **/** [ ] **- B1**

Pressure Relief Valve, PED Certified, Poppet Type, Direct Acting

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

Model
High performance

Pressure range

adjustable pressure 25 bar (360 PSI)	**2**
adjustable pressure 63 bar (910 PSI)	**6**
adjustable pressure 100 bar (1450 PSI)	**10**
adjustable pressure 160 bar (2320 PSI)	**16**
adjustable pressure 250 bar (3630 PSI)	**25**
adjustable pressure 350 bar (5080 PSI)	**35**
adjustable pressure 420 bar (6090 PSI)	**42**

Surface treatment
zinc-coated (ZnNi), ISO 9227 (1000 h)

Pressure setting at flow rate [l/min]*
Std. pressure setting made at flow 6 litres/min
6 (example)

Adjusted pressure [bar]*
120 (example)

Certification PED
notified body number CE1017

Seals
No designation NBR
V FPM (Viton)

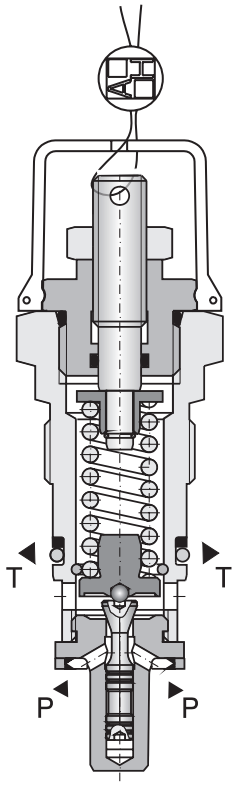
Adjustment option
allen head (hex. 5), with protective cap, sealable (lockwire holes)

*If not preset valves are ordered, pressure and flow rate information is not shown.

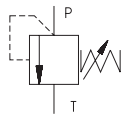
Pressure Relief Valve, PED Certified, Poppet Type, Direct Acting

VPP2-06-xV/xx-CE1017

M28 x 1.5 • Q_{max} 50 l/min (13 GPM) • p_{max} 320 bar (4600 PSI)



Symbol



Technical Features

- Hydraulic safety relief valve suitable for use as a safety device in Category IV Group 2 applications acc.to European Commission (EC) Pressure Equipment Directive (PED) 2014/68/EU
- CE marked valves are supplied with "Declaration of Conformity", "Operating Instructions" and the list of residual risks
- Always follow the operating instructions supplied with the valve
- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop through CFD optimized flow paths
- Wide pressure range up to 320 bar
- Hardened precision parts
- Sharp-edged steel seats for dirt-tolerant performance
- Leak-free closing, suitable for fast cycling with long life
- In the standard version, the valve is black oxide coated

Functional Description

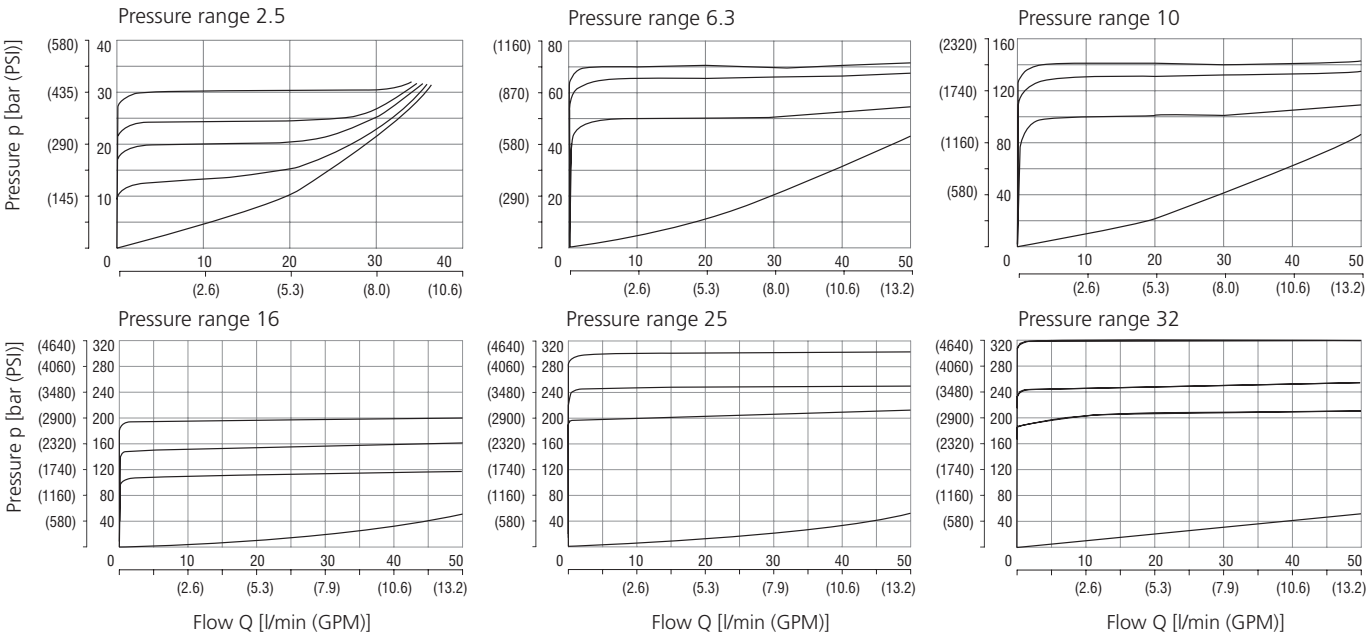
A poppet type, direct acting hydraulic relief valve in the form of a screw-in cartridge intended for use as a pressure limiting device for common hydraulic circuit protection. The spring acts on the poppet and presses it onto the valve seat. If the hydraulic pressure is below the pre-set value, the valve is closed. If the hydraulic force exceeds the pre-set value the valve opens and flow passes to the tank port until the system pressure falls below the spring pre-set value and the valve closes again.

Technical Data

Valve size / Cartridge cavity			M28 x 1.5 / QP2
Max. flow		l/min (GPM)	50 (13.2)
Max. operating pressure		bar (PSI)	320 (4640)
Fluid temperature range (NBR)		°C (°F)	-30 ...+100 (-22... 212)
Fluid temperature range (FPM)		°C (°F)	-20 ...+120 (-4... 248)
Viscosity range		mm^2/s (SUS)	10 … 500 (49 … 2450)
Weight		kg (lbs)	0.4 (0.88)
		Datasheet	Type
General information		GI_0060	Product and operating conditions
Valve bodies	In-line mounted	SB_0018	SB-QP2*
Cavity details		SMT_0019	SMT-QP2*
Spare parts		SP_8010	

Characteristics measured at ν = 32 mm^2/s (156 SUS)

Relief pressure related to flow rate



Valves Adjusted by the Manufacturer

- The valves are adjusted for the specified pressure at the relevant flow rate and they are fitted with tamper-indicating seals
- The pressure and flow rate values are indicated in the valve description on the product [pressure: in bar, flow rate in l/min]
- The seals bear the company logo

Valves NOT Adjusted by the Manufacturer

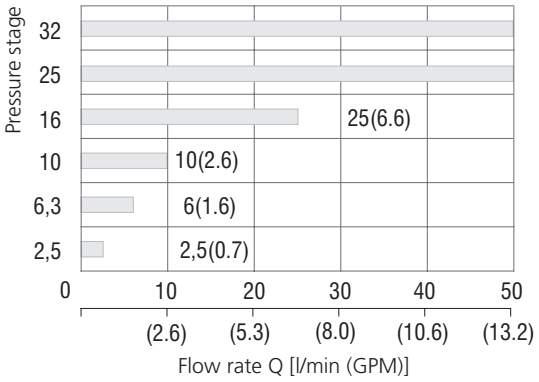
- Valves have no tamper-indicating seals
- No pressure and no flow rate indicated
- After the completion of the functional test, the adjusting screw is completely loosened and the pressure is set to p = 0 bar
- To adjust the required valve pressure proceed as follows:
  - turn the adjusting screw to the right (clockwise) to increase the pressure
  - turn the adjusting screw to the left (counter-clockwise) to decrease the pressure
- The manufacturer accepts no responsibility for the adjustment, securing, and sealing of the valve

Residual Risks

Residual risks are listed and preventive measures against the occurrence of residual risk are described in the document „Operating instructions for pressure relief valve VPP2-06-xV/xx-CE1017" which is delivered with each valve.

Operating Region

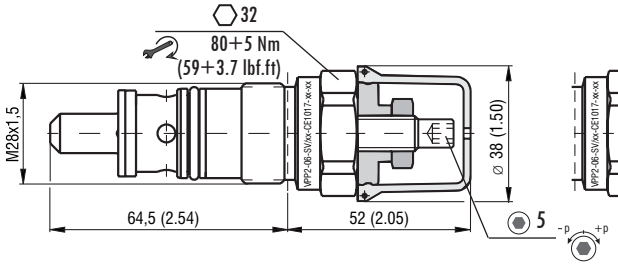
The diagram shows the operating region where the valve meets the requirements of Directive 2014/68/EU and Standard ISO 4126-1 on maximum short-time overshoot of system pressure by 10 % above the set cracking pressure when the valve opens.
The dynamics of the valve depend on the kinematic viscosity of working fluid.
Measurement conditions: oil Renolin VG 32, T = 40 °C (104 °F) , V = 0.5 l (0.132 gal US)



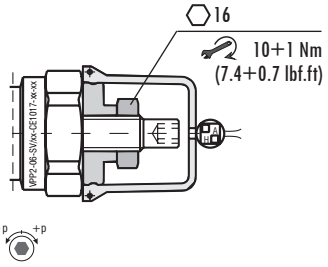
Operating region characteristics from certification of VPP2-06*CE*

Dimensions in millimeters (inches)

Model T



Model L



Ordering Code

VPP2-06- ☐ **V /** ☐ ☐ **- CE1017-** ☐ **-** ☐

Pressure relief valve, PED certified, poppet type, direct acting M28 x 1.5

Adjustment option
allen key (hex. 5), with protective cap **T**
allen key (hex. 5), with protective cap, sealable (lockwire holes) **L**

Model
screw-in cartridge

Pressure range
up to 25 bar (360 PSI) **2,5**
up to 63 bar (910 PSI) **6,3**
up to 100 bar (1450 PSI) **10**
up to 160 bar (2320 PSI) **16**
up to 250 bar (3630 PSI) **25**
up to 320 bar (4600 PSI) **32**

Seals
No designation NBR
V FPM (Viton)

Certification PED
notified body number CE1017

Relief pressure and flow rate setting
120/6 (example) 120 bar / 6 l/min

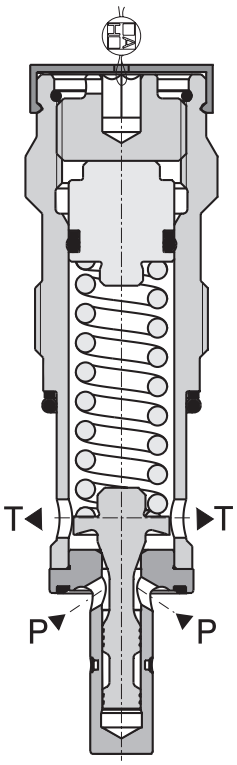
Surface treatment
No designation black oxide coating
A zinc-coated (ZnCr-3), ISO 9227 (240 h)
B zinc-coated (ZnNi), ISO 9227 (520 h)

If not preset valves are ordered, pressure and flow rate information is not shown.

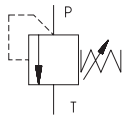
Pressure Relief Valve, PED Certified, Poppet Type, Direct Acting

VPP-R-16-xx-L-CE1017

M36 x 2 • Q_{max} 120 l/min (32 GPM) • p_{max} 350 bar (5100 PSI)



Symbol



Technical Features

- Hydraulic safety relief valve suitable for use as a safety device in Category IV Group 2 applications acc.to European Commission (EC) Pressure Equipment Directive (PED) 2014/68/EU
- CE marked valves are supplied with "Declaration of Conformity", "Operating Instructions" and the list of residual risks. Always follow the operating instructions supplied with the valve!
- Large flow range and pressure up to 350 bar
- Low hysteresis, accurate pressure control and low pressure drop through CFD optimized flow paths
- Hardened precision parts
- Leak-free closing, suitable for fast cycling with long life
- Adjustment option with allen head, adjustable hand knob or sealing (Lockwire holes)
- In the standard version, the valve is zinc coated for 520 h protection acc. to ISO 9227

Functional Description

A poppet type, direct acting hydraulic relief valve in the form of a screw-in cartridge intended for use as a pressure limiting device for common hydraulic circuit protection. The spring acts on the poppet and presses it onto the valve seat. If the hydraulic pressure is below the pre-set value, the valve is closed. If the hydraulic force exceeds the pre-set value the valve opens and flow passes to the tank port until the system pressure falls below the spring pre-set value and the valve closes again.

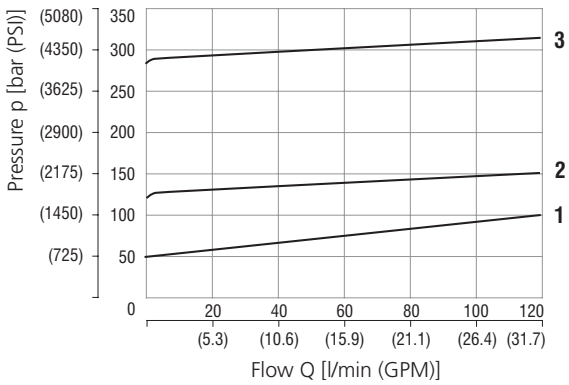
Technical Data

Valve size			M36 x 2
Max. flow		l/min (GPM)	120 (31.7)
Max. inlet pressure (port P)		bar (PSI)	350 (5080)
Max. outlet pressure (port T)		bar (PSI)	250 (3630)
Fluid temperature range (NBR)		°C (°F)	-30 ... +100 (-22 ... 212)
Fluid temperature range (FPM)		°C (°F)	-20 ... +120 (-4 ... 248)
Max. leakage of closed valve at the input pressure set on 80 % of cracking pressure		cm^3/min	0.2
Kinematic viscosity range		mm^2/s (SUS)	10 ... 500 (49 ... 2450)
Weight	valve	kg (lbs)	0.56 (1.22)
	valve with body		3.05 (6.73)
		Datasheet	Type
General information		GI_0060	Products and operating conditions
Spare parts		SP_8010	

Characteristics measured at ν = 32 mm^2/s (156 SUS)

Relief pressure related to flow rate

	Pressure stage	Pressure range (PSI)
3	28	280 - 350
2	13	130 -280
1	5	50 - 130



Valve adjusted by the manufacturer

- The valve is adjusted for the specified cracking pressure at the relevant flow rate and they are fitted with tamper-indicating seal.
- The pressure and flow rate values are indicated in the valve description [in bar, or liters per min respectively].
- The seal bear the ARGO-HYTOS logo.

Unadjusted valve

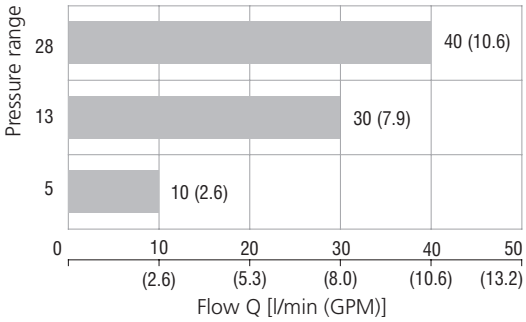
- The valve have no tamper-indicating seal.
- No adjusted pressure and flow rate are indicated for unadjusted valve - VPP-R-16-xx-L-CE1017.
- The adjusting screw is completely loosened. Pressure p = 0 bar
- For the adjustment of the valve required pressure, proceed as follows:
  - Turn right = higher pressure
  - Turn left = lower pressure
- Producer ARGO-HYTOS (CZ) takes no responsibility for the adjustment, securing and sealing the valve.

Residual risks

Residual risks are listed and preventive measures against the occurrence of residual risk are described in the document „Operating instructions for pressure relief valve VPP-R-16-xx-L-CE1017“ which is delivered with each valve.

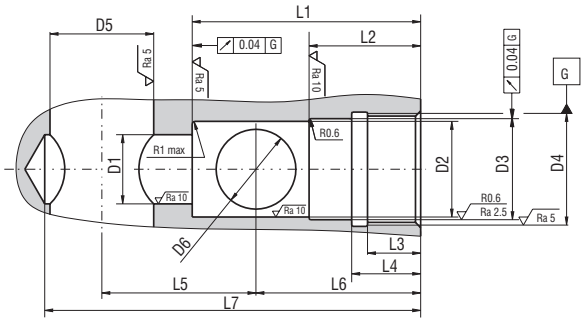
Application area

The diagram shows the area of the valve application meets the requirement of Directive 2014/68/EU and Standard ISO 4126-1 on maximal short-time overshooting of system pressure 10 % above the set cracking pressure when the valve opens.
The dynamics of the valves depends on the kinematic viscosity of working fluid.
Measurment conditions: oil Renolin VG 32, T = 40 °C (104 °F), V = 0.5 l (0.132 gallon US)



Operating region characteristics from certification of VPP-R-16*CE1017*

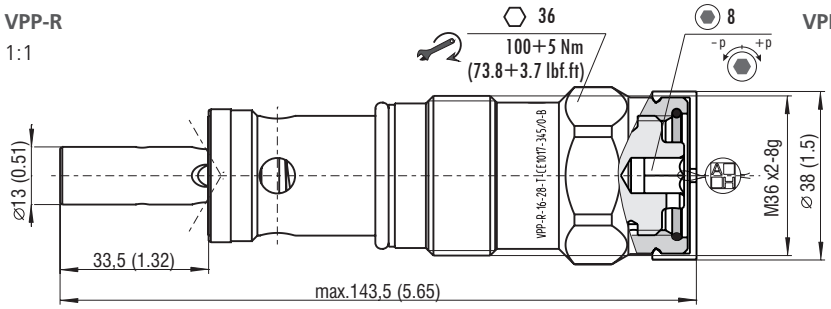
Cavity dimensions in millimeters (inches)



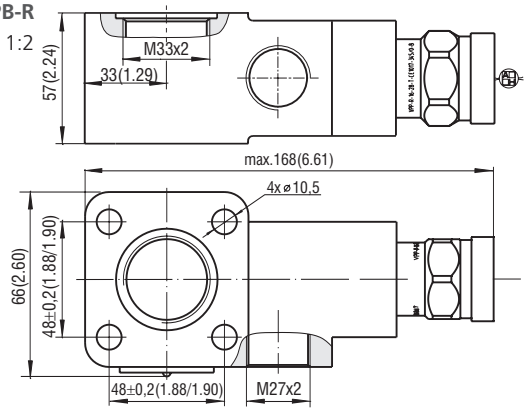
Dimensions in mm (in)			
∅ D1	20 H14 (0.79)	L1	66 (2.6 / 2.61)
∅ D2	30 H11 (1.18)	L2	31 (1.22 / 1.22)
∅ D3	32,6 H10 (1.28)	L3	18 (0.71 / 0.73)
∅ D4	M36x2-7H	L4	21 (0.83 / 0.85)
∅ D5	30 (1.18)	L5	46 (1.81)
∅ D6	25 max (0.98 max)	L6	44 (1.73 / 1.75)
		L7	105 (4.13)

Dimensions in millimeters (inches)

VPP-R
1:1



VPPB-R
1:2



Ordering Code

VPP [ ] **-R-16-** [ ] **- L -** [ ] **- CE1017-** [ ] **/** [ ] **- B**

Pressure relief valve PED certified, direct acting — **M36 x 2**

Design of screw-in cartridge valve
without a body — **No designation**
with a body — **B**

Valve size

Range of adjustable pressure - pressure stage
50 - 130 bar (730 - 1890 PSI) — **5**
130 - 280 bar (1890 - 4060 PSI) — **13**
280 - 350 bar (4060 - 5080 PSI) — **28**

Adjustment option
allen head HEX 8 with protective cap and sealing (Lockwire holes)

No designation
V

Seals
NBR
FPM (Viton)

Certification PED
notified body number CE1017

Adjusted pressure [bar]*
(example) — **120**

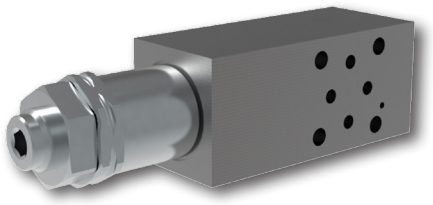
Pressure setting at flow rate [l/min]*
Std. pressure setting made at flow 6 litres/min (example) — **6**

Surface treatment
zinc-coated (ZnNi), ISO 9227 (520 h)

*If not preset valves are ordered, pressure and flow rate information is not shown.

VPP2-04/M(R)

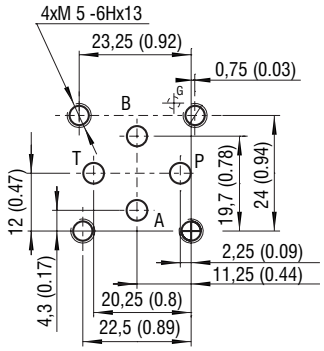
Size 04 (D02), 06 (D03) • Q_{max} 40 l/min (11 GPM) • p_{max} 320 bar (4600 PSI)



Technical Features

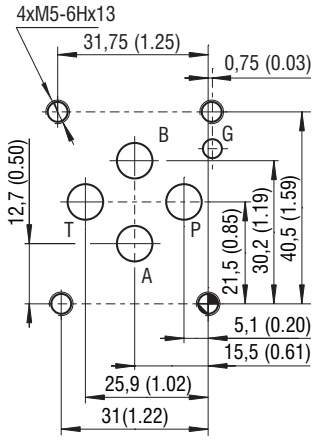
- Pressure relief valve, poppet type, direct acting, modular with mounting interface acc. to ISO 4401, DIN 24340 (CETOP 02 and 03) or in-line design
- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Wide pressure range up to 320 bar
- Hardened precision parts
- Sharp-edged steel seats for dirt-tolerant performance
- Leak-free closing, suitable for fast cycling with long life
- Adjustable by allen key or hand screw
- In the standard version the valve body is phosphated. The valve surface are zinc coated (240 h corrosion protection in NSS acc. to ISO 9227)

ISO 4401-02-01-0-05



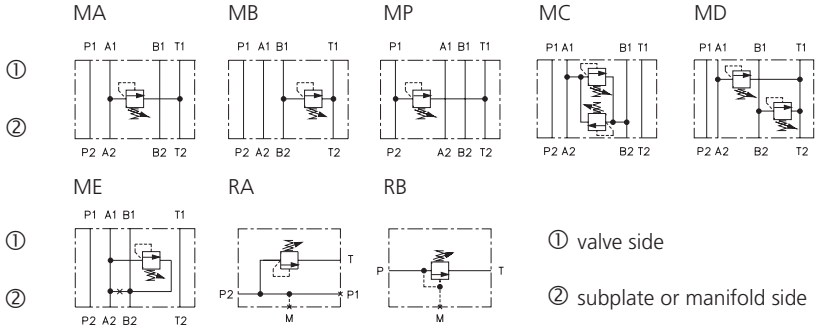
Ports P, A, B, T - max. ∅4.5 mm (0.18 in)

ISO 4401-03-02-0-05



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

Functional Symbols



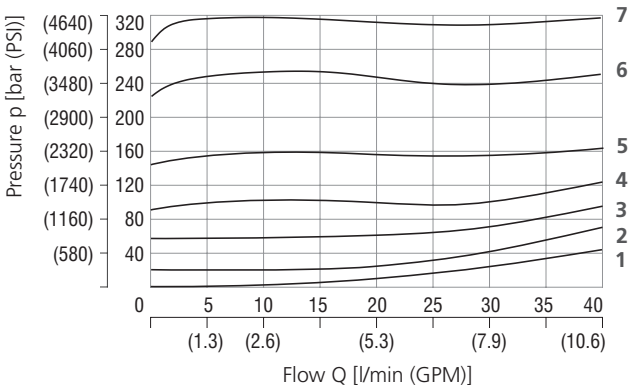
Notice: The orientation of the symbol on the name plate corresponds with the valve function.

Technical Data

Valve size		04 (D02), 06 (D03)
Max. flow	l/min (GPM)	40 (10.6)
Max. pressure	bar (PSI)	320 (4640)
Fluid temperature range (NBR)	°C (°F)	-30...+100 (-22...+212)
Fluid temperature range (FPM)	°C (°F)	-20...+120 (-4...+248)
Weight - models MA (B, P) 04	kg (lbs)	0.82 (1.81)
- models MC (D, E) 04		1.32 (2.91), ME 1.25 (2.76)
- models MA (B, P) 06		1.12 (2.46)
- models MC (D, E) 06		1.42 (3.12), ME 1.35 (2.98)
- models RA1 (2), RB1 (2)		1.17 (2.57)
	Datasheet	Type
General information	GI_0060	Products operating conditions
Mounting interface	SMT_0019	Size 04 / 06
Spare parts	SP_8010	

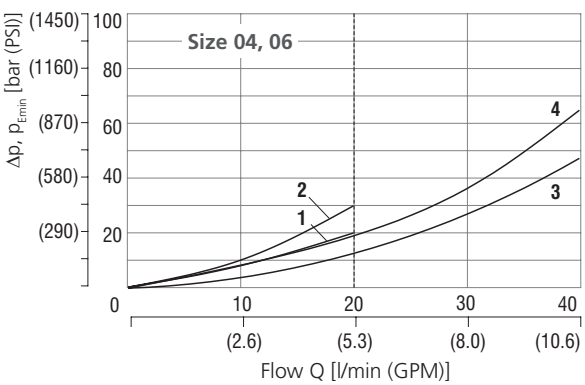
Characteristics measured at ν = 32 mm²/s (156 SUS)

Relief pressure related to flow rate



Pressure range	Min. pressure setting	2	6	10	16	25	32
	1	2	3	4	5	6	7

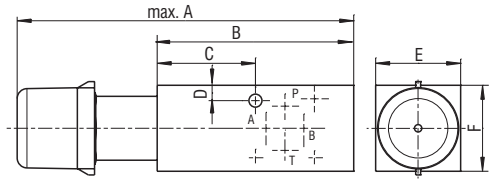
Minimum set and circulation pressure



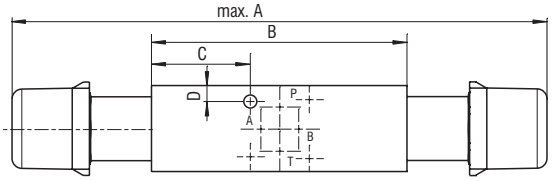
Size 04	Size 06	Models
1	3	MA, MB, MP, MD
2	4	MC, ME

Dimensions in millimeters (inches)

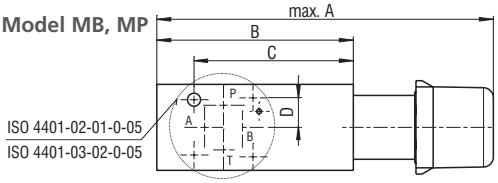
Model MA



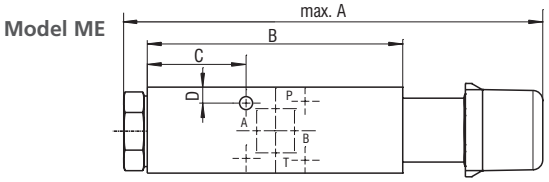
Model MC,MD



Model MB, MP

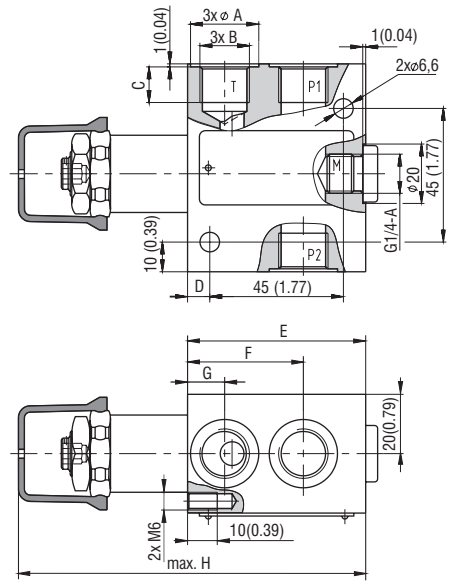


Model ME

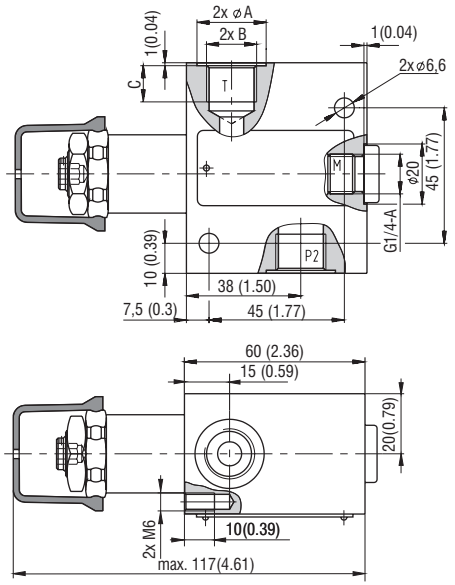


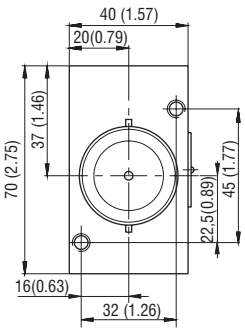
Version	Size	04 (D02)	06 (D03)
MA (B,P)	A	137 (5.39)	
MC (D)		218 (8.58)	208 (8.19)
ME		170.5 (6.71)	160.5 (6.32)
MA (B,P)	B	80 (3.15)	
MC (D,E)		104 (4.09)	94 (3.70)
MA (C,D,E)	C	40 (1.57)	25.5 (1.0)
MB (P)		64 (2.52)	68.5 (2.7)
MA (B,C) MD (E,P)	D	6.25 (0.25)	7 (0.28)
	E	35 (1.38)	40 (1.57)
	F	35 (1.38)	45 (1.77)

Model RA1, RA2



Model RB1, RB2





	RA1, RB1	RA2, RB2
A	∅ 23	∅ 28
B	G 3/8-A	G 1/2-A
C	12 (0.47)	14 (0.55)
D	7.5 (0.3)	18 (0.71)
E	60 (2.36)	70 (2.76)
F	39 (1.54)	46 (1.81)
G	12.5 (0.49)	16 (0.63)
H	117 (4.61)	127 (5)

Ordering Code

VPP2-04 / □ □ - □ - □ □ - □

Pressure relief valve, poppet type, direct acting, modular

Model

modular, valve from A to T	**MA**
modular, valve from B to T	**MB**
modular, valve from P to T	**MP**
modular, valve from A to B and B to A	**MC**
modular, valve from A to T and B to T	**MD**
modular, valve from A to B	**ME**
in-line valve, three ports, thread G 3/8 (P1, P2, T)	**RA1**
in-line valve, three ports, thread G 1/2 (P1, P2, T)	**RA2**
in-line valve, two ports, thread G 3/8 (P, T)	**RB1**
in-line valve, two ports, thread G 1/2 (P, T)	**RB2**

Modular plate size

ISO 4401-02-01-0-05, DIN 24340 (CETOP 02), size 04	**04**
ISO 4401-03-02-0-05, DIN 24340 (CETOP 03), size 06	**06**

Pressure range

2	up to 25 bar (360 PSI)
6	up to 63 bar (910 PSI)
10	up to 100 bar (1450 PSI)
16	up to 160 bar (2320 PSI)
25	up to 250 bar (3630 PSI)
32	up to 320 bar (4600 PSI)
	Model with two pressure relief cartridges
32/10	320 bar (4600 PSI) in port A, 100 bar (1450 PSI) in port B

Adjustment option*

S	allen key (hex. 6), without protective cap
T	allen key (hex. 6), with protective cap
RS	hand screw, metal
L	allen key (hex. 6), with protective cap, sealable (lockwire holes)
	Model with two pressure relief cartridges
S/RS	A side, allen key (hex. 6), without protective cap B side, hand screw, metal

*for dimensions of adjustment options see data sheet No.5093

Seals

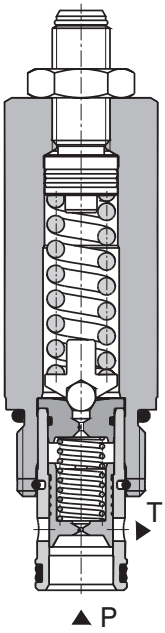
No designation	NBR
V	FPM (Viton)

Surface treatment

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

SR4A-B2

7/8-14 UNF • Q_{max} 100 l/min (26 GPM) • p_{max} 350 bar (5100 PSI)

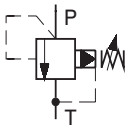


Technical Features

- Low hysteresis, accurate pressure control and low pressure drop through CFD optimized flow paths
- Wide pressure range up to 350 bar
- High flow capacity
- Hardened precision parts
- Ideal for use as control valve where accuracy and repeatability is required
- Adjustable by allen key hand screw
- In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

A pilot operated, spool type hydraulic relief valve in the form of a screw-in cartridge intended for use as a pressure limiting device. Fast-acting with low hysteresis. Because of the absence of any internal seals, the valve shows excellent reseating and repeatability characteristics. It may be used as a main pressure control element but due to its two stage design it is not recommended for safety applications where operating speed is critical.

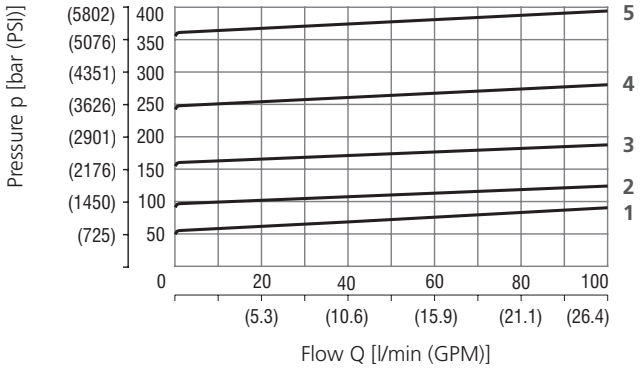
Symbol	

Technical Data

Valve size / Cartridge cavity			7/8-14 UNF-2A / B2 (C-10-2)
Max. flow		l/min (GPM)	100 (26)
Max. operating pressure		bar (PSI)	350 (5080)
Max. pressure (T port)		bar (PSI)	100 (1450)
Fluid temperature range (NBR)		°C (°F)	-30 ... +100 (-22 ... 212)
Fluid temperature range (FPM)		°C (°F)	-20 ... +120 (-4 ... 248)
Weight		kg (lbs)	0.24 (0.53)
		Datasheet	Type
General information		GP_0060	Products and operating conditions
Valve bodies	In-line mounted	SB_0018	SB-B2*
	Sandwich mounted	SB-04(06)_0028	SB-*B2*
Cavity details / Form tools		SMT_0019	SMT-B2*
Spare parts		SP_8010	

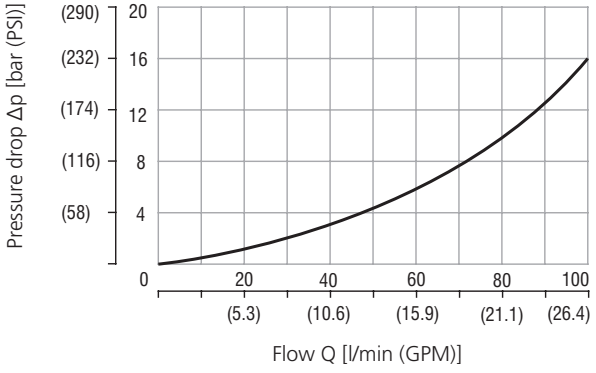
Characteristics measured at ν = 32 mm²/s (156 SUS)

Relief pressure related to flow rate



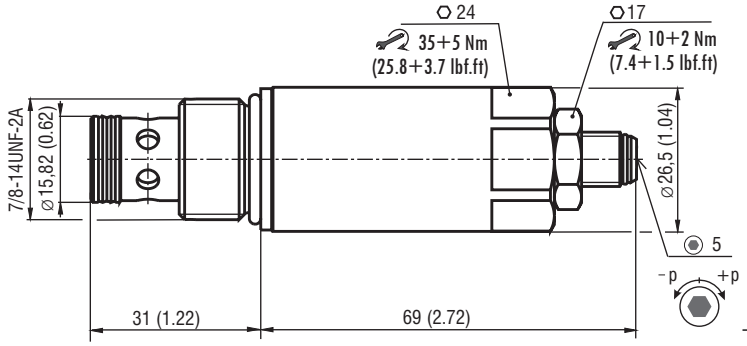
	Pressure range
5	35
4	25
3	16
2	10
1	6

Minimum set and circulation pressure

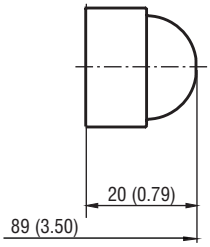


Dimensions in millimeters (inches)

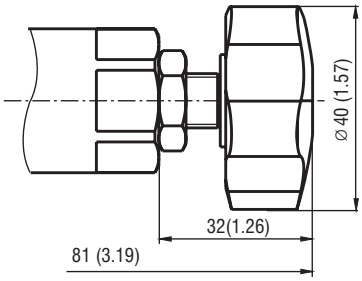
Model S



Model T



Model RP



Ordering Code

SR4A-B2 / H [ ] [ ] [ ] - [ ]

Pressure relief valve, spool type, pilot operated

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

Model
High performance

Pressure range

up to 63 bar (910 PSI)	**6**
up to 100 bar (1450 PSI)	**10**
up to 160 bar (2320 PSI)	**16**
up to 250 bar (3630 PSI)	**25**
up to 350 bar (5080 PSI)	**35**

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)

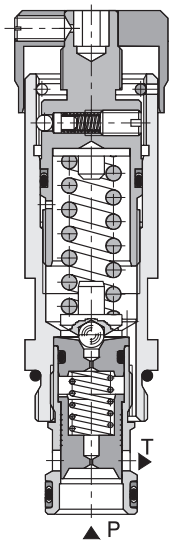
Adjustment option

S	allen key (hex. 5), without protective cap
T	allen key (hex. 5), with protective cap
RP	hand screw, plastic

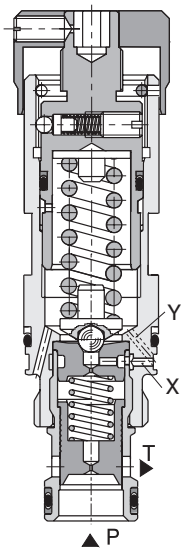
VPN1-06/S

M22 x 1.5 • Q_{max} 70 l/min (18.5 GPM) • p_{max} 320 bar (4600 PSI)

Model S



Model SX (SY)



Technical Features

- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Wide pressure range up to 320 bar
- High flow capacity
- Hardened precision parts
- Ideal for use as control valve where accuracy and repeatability is required
- External pilot and drain option
- Adjustable by allen key or hand screw, optionally sealable (lockwire holes)
- In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

A pilot operated, spool type hydraulic relief valve in the form of a screw-in cartridge intended for use as a pressure limiting device. Fast-acting with low hysteresis. Because of the absence of any internal seals, the valve shows excellent reseating and repeatability characteristics. It may be used as a main pressure control element but due to its two stage design it is not recommended for safety applications where operating speed is critical. Version SX has an external pilot line, version SY allows a separate drain connection.

Model	S	SX	SY
Symbol			

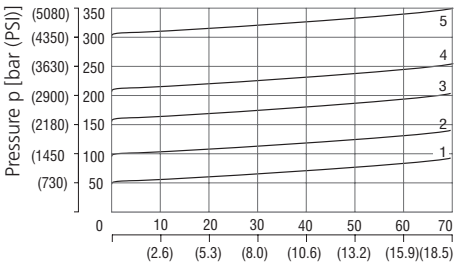
Technical Data

Valve size / Cartridge cavity		M22 x 1.5 / QG2	M22 x 1.5 / QF2
Model		S	SX, SY
Max. flow	l/min (GPM)	70 (18.5)	
Max. operating pressure	bar (PSI)	320 (4640)	
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... 212)	
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... 248)	
Weight	kg (lbs)	0.25 (0.55)	
	Datasheet	Type	
General information	GI_0060	Products and operating conditions	
Valve bodies – In-line mounted	SB_0018	SB-QG2*	-
Valve bodies – Sandwich mounted	SB-04(06)_0028	SB-*QG2*	-
Cavity details	SMT_0019	SMT-QG2*	SMT-QF2*
Spare parts	SP_8010		

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

Relief pressure related to flow rate

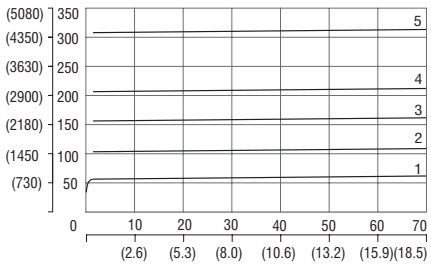
Model S, SX



	Pressure range
5	32
4	21
3	16
2	10
1	6

Relief pressure related to flow rate

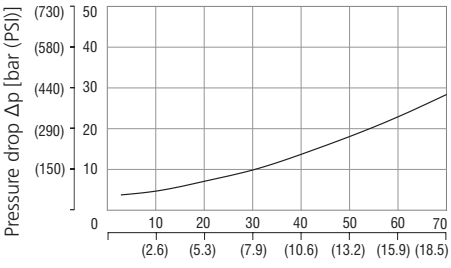
Model SY



	Pressure range
5	32
4	21
3	16
2	10
1	6

Minimum set and circulation pressure

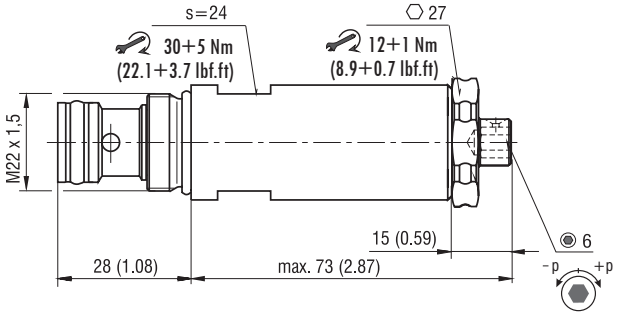
Model S, SX, SY



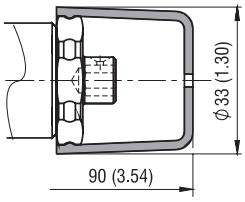
Dimensions in millimeters (inches)

VPN1-06/S

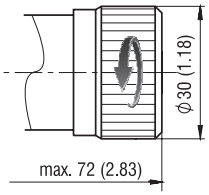
Model S



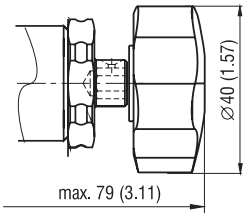
Model T



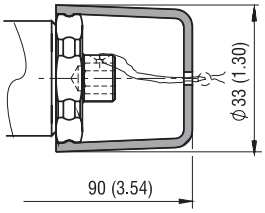
Model RS



Model RP

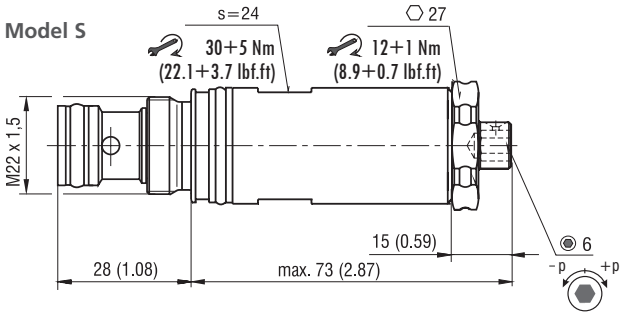


Model L

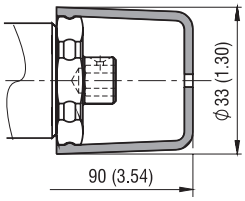


VPN1-06/SX (SY)

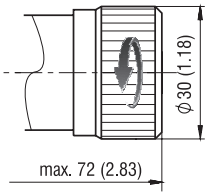
Model S



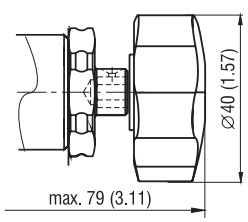
Model T



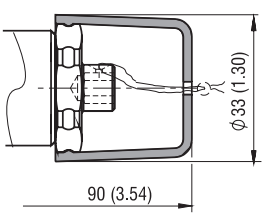
Model RS



Model RP



Model L



Ordering Code

VPN1-06 / □ - □ □ □ - □

Pressure relief valve, spool type, pilot operated, external pilot and drain — **M22 x 1.5**

Model

internal pilot and drain	**S**
external pilot, internal drain	**SX**
internal pilot, external drain	**SY**

Pressure range

up to 63 bar (910 PSI)	**6**
up to 100 bar (1450 PSI)	**10**
up to 160 bar (2320 PSI)	**16**
up to 210 bar (3050 PSI)	**21**
up to 320 bar (4600 PSI)	**32**

Adjustment option

S	allen key (hex. 6), without protective cap
T	allen key (hex. 6), with protective cap
RS	hand screw, metal
RP	hand screw, plastic
L	allen key (hex. 6), with protective cap, sealable (lockwire holes)

Seals

No designation	NBR
V	FPM (Viton)

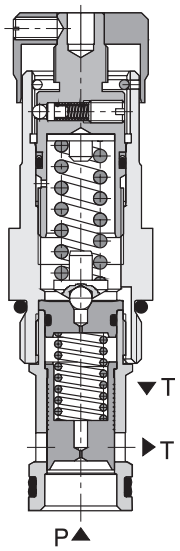
Surface treatment

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

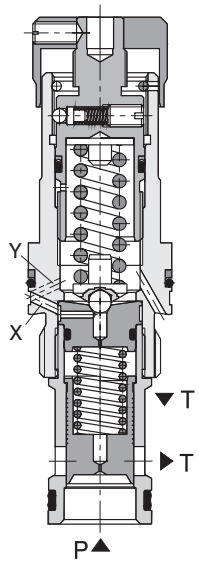
VPN2-10/S

M27x2 • Q_{max} 150 l/min (40 GPM) • p_{max} 350 bar (5100 PSI)

Model S



Model SX (SY)



Technical Features

- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Wide pressure range up to 350 bar
- High flow capacity
- Hardened precision parts
- Ideal for use as control valve where accuracy and repeatability is required
- External pilot and drain option
- Adjustable by allen key or hand screw, optionally sealable (lockwire holes)
- In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

A pilot-operated, spool-type hydraulic relief valve in the form of a screw-in cartridge intended for use as a pressure limiting device. Fast-acting with low hysteresis. Because of the absence of any internal seals, the valve shows excellent reseating and repeatability characteristics. It may be used as a main pressure control element but due to its two stage design it is not recommended for safety applications where operating speed is critical. Version SX has an external pilot line, version SY allows a separate drain connection.

Model	S	SX	SY
Symbol			

Technical Data

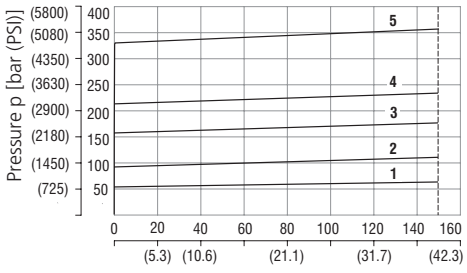
Valve size / Cartridge cavity		M27x2 / QK2	M27x2 / QL3
Model		S	SX, SY
Max. flow	l/min (GPM)	150 (39.6)	
Max. operating pressure	bar (PSI)	350 (5080)	
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... 212)	
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... 248)	
Mass	kg (lbs)	0.3 (0.66)	

		Datasheet	Type	
General information		GI_0060	Products operating conditions	
Valve bodies	In-line mounted	SB_0018	SB-QK2*	-
	Sandwich mounted	SB-04(06,10)_0028	SB-*QK2*	-
Cavity details		SMT_0019	SMT-QK2*	SMT-QL3*
Spare parts		SP_8010		

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

Relief pressure related to flow rate

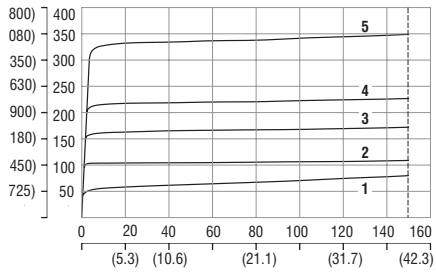
Model S, SX



	Pressure range
5	32
4	21
3	16
2	10
1	6

Relief pressure related to flow rate

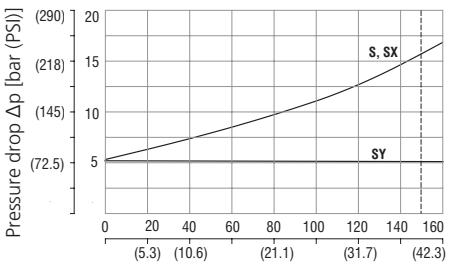
Model SY



	Pressure range
5	32
4	21
3	16
2	10
1	6

Minimum set and circulation pressure

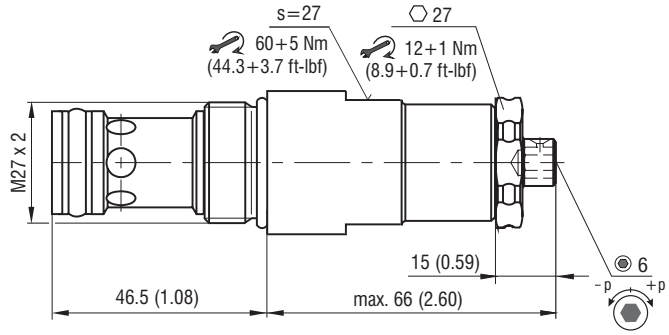
Model S, SX, SY



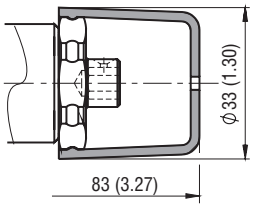
Dimensions in millimeters (inches)

VPN2-10/S

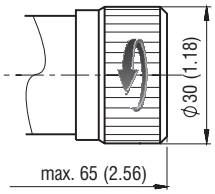
Model S



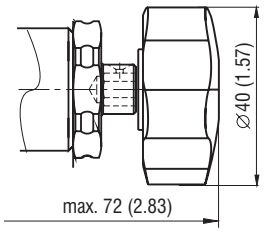
Model T



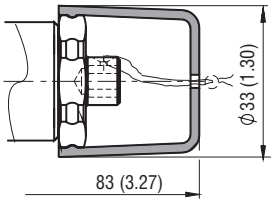
Model RS



Model RP

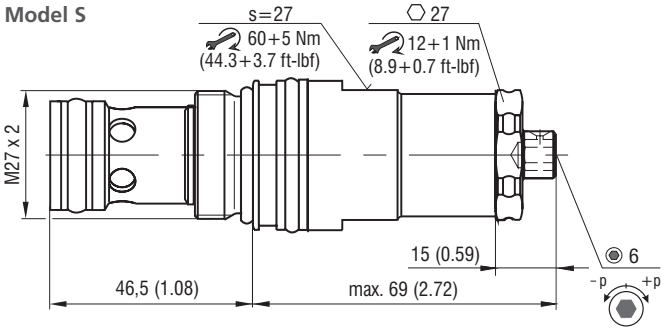


Model L

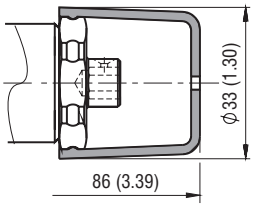


VPN2-10/SX (SY)

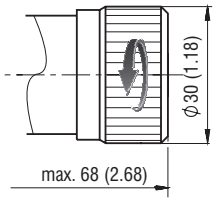
Model S



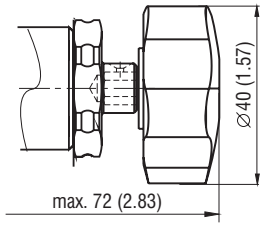
Model T



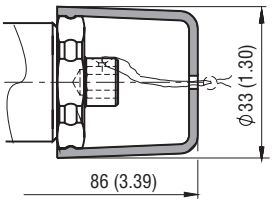
Model RS



Model RP



Model L



Ordering Code

VPN2-10 / □ - □ □ □ - □

Pressure relief valve, spool-type, pilot-operated, external pilot and drain — **M27x2**

Model

internal pilot and drain	**S**
external pilot, internal drain	**SX**
internal pilot, external drain	**SY**

Pressure range

up to 63 bar (910 PSI)	**6**
up to 100 bar (1450 PSI)	**10**
up to 160 bar (2320 PSI)	**16**
up to 210 bar (3050 PSI)	**21**
up to 320 bar (4600 PSI)	**32**

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)

Adjustment option

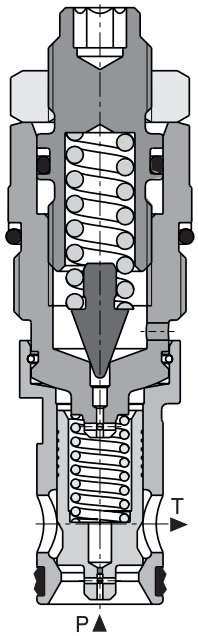
S	allen key (hex. 6), without protective cap
T	allen key (hex. 6), with protective cap
RS	hand screw, metal
RP	hand screw, plastic
L	allen key (hex. 6), with protective cap, sealable (lockwire holes)

Pressure Relief Valve, Spool-Type, Pilot-Operated, External Pilot and Drain

VPN1-20/S

M30 x 1,5 • Q_{max} 250 l/min (66 GPM) • p_{max} 420 bar (6100 PSI)

Model S

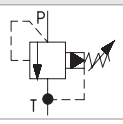
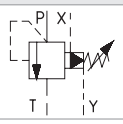
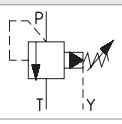


Technical Features

- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Wide pressure range up to 420 bar
- High flow capacity
- Hardened precision parts
- Ideal for use as control valve where accuracy and repeatability is required
- External pilot and drain option
- Adjustable by allen key or hand screw, optionally sealable (lockwire holes)
- In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

A pilot-operated, spool-type hydraulic relief valve in the form of a screw-in cartridge intended for use as a pressure limiting device. Fast-acting with low hysteresis. Because of the absence of any internal seals, the valve shows excellent reseating and repeatability characteristics. It may be used as a main pressure control element but due to its two stage design it is not recommended for safety applications where operating speed is critical. Version SX has an external pilot line, version SY allows a separate drain connection.

Model	S	SX	SY
Symbol			

Technical Data

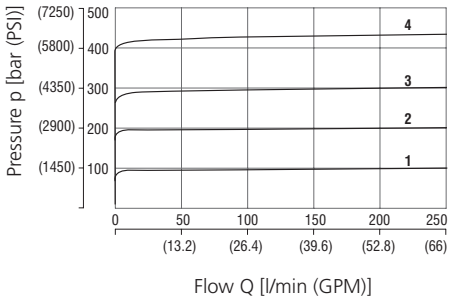
Valve size		M30 x 1,5/RB2	M30 x 1,5/RB3
Model		S, SY	SX
Max. flow	l/min (GPM)	250 (66)	
Max. pressure ports (P, X)	bar (PSI)	420 (6100)	
Max. pressure ports (T, Y)	bar (PSI)	160 (2320)	
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... 212)	
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... 248)	
Weight	kg (lbs)	0.3 (0.66)	

		Datasheet	Type	
General information		GI_0060	Products operating conditions	
Valve bodies	In-line mounted	SB 0018	SB-RB2*	SB-RB3*
Cavity details		SMT_0019	SMT-RB2*	SMT-RB3*
Spare parts		SP_8010		

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

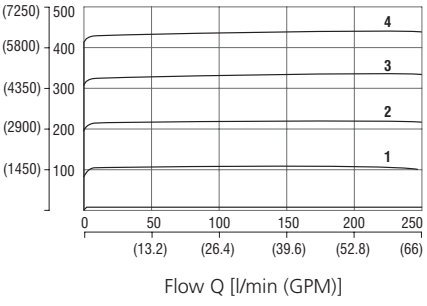
Relief pressure related to flow rate

Model S



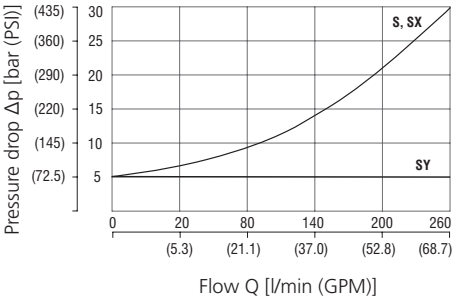
Relief pressure related to flow rate

Model SY



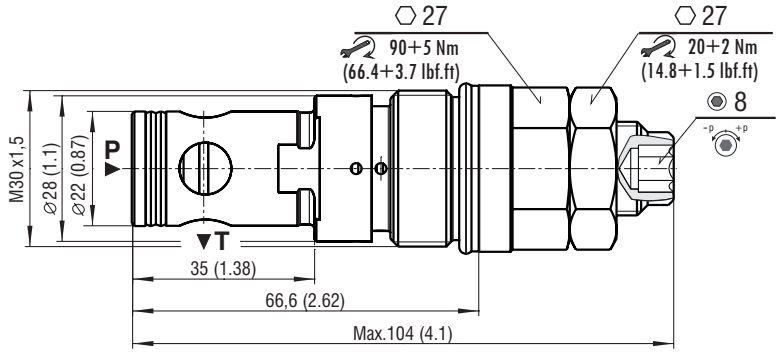
Minimum set and circulation pressure

Model S, SX, SY

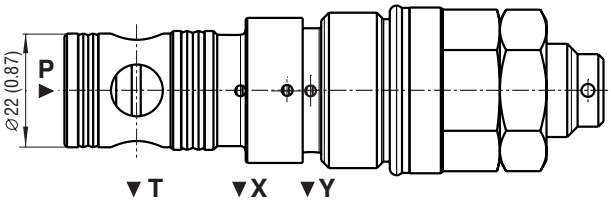


Dimensions in millimeters (inches)

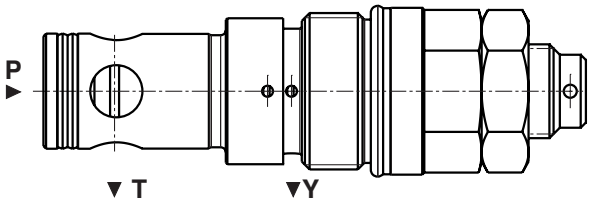
VPN1-20/S



VPN1-20/SX



VPN1-20/SY



Ordering Code

VPN1-20 / ☐ - ☐ ☐ ☐ - ☐

Pressure relief valve, spool-type, pilot-operated, external pilot and drain **M30 x 1,5**

Model

internal pilot and drain	**S**
external pilot, external drain	**SX**
internal pilot, external drain	**SY**

Pressure range

10 ... 420 bar (145 ...6100 PSI)	**42**

Surface treatment

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

Seals

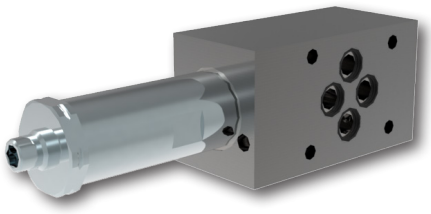
No designation	NBR
V	FPM (Viton)

Adjustment option

S	allen key (hex. 6), without protective cap

VPN1-06/M(R)

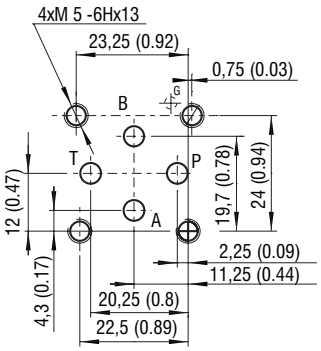
Size 04 (D02), 06 (D03) • Q_{max} 70 l/min (18.5 GPM) • p_{max} 320 bar (4600 PSI)



Technical Features

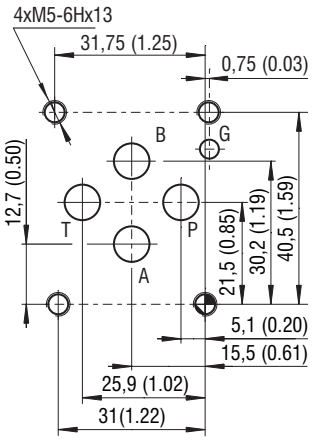
- Pressure relief valve, spool type, pilot operated, with mounting interface acc. to ISO 4401, DIN 24340 (CETOP 02 and 03) or in-line design
- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Wide pressure range up to 320 bar
- High flow capacity
- Hardened precision parts
- Ideal for use as control valve where accuracy and repeatability is required
- Adjustable by allen key or hand screw, optionally sealable (lockwire holes)
- In the standard version, the valve housing is phosphated and steel parts are zinc-coated for 240 h protection acc. to ISO 9227

ISO 4401-02-01-0-05



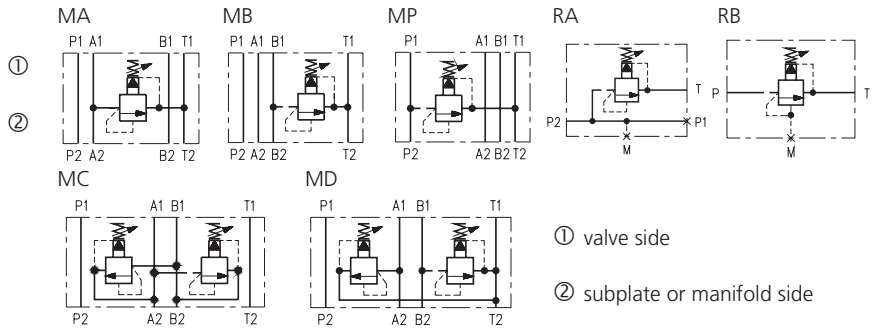
Ports P, A, B, T - max ∅4.5 mm (0.18 in)

ISO 4401-03-02-0-05



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

Functional Symbols



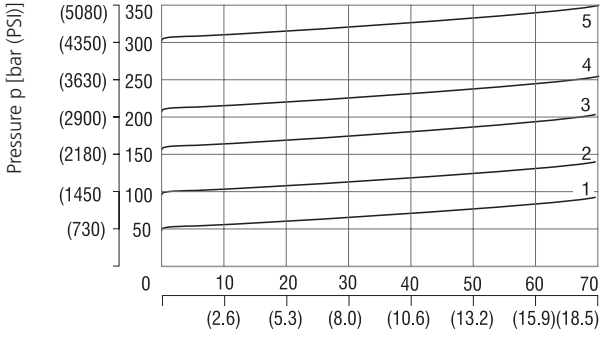
Notice: The orientation of the symbol on the name plate corresponds with the valve function.

Technical Data

Valve size		04 (D02), 06 (D03)
Max. flow	l/min (GPM)	70 (18.5)
Max. pressure (ports P, T)	bar (PSI)	320 (4640)
Fluid temperature range (NBR)	°C (°F)	-30...+100 (-22...+212)
Fluid temperature range (FPM)	°C (°F)	-20...+120 (-4...+248)
Weight - models MA (B, P) 04	kg (lbs)	0.82 (1.81)
- models MC (D) 04		1.32 (2.91)
- models MA (B, P) 06		1.2 (2.64)
- models MC (D) 06		1.5 (3.31))
- models RA1 (2), RB1 (2)		1.25 (2.76)
	Datasheet	Type
General information	GI_0060	Products operating conditions
Mounting interface	SMT_0019	Size 04 / 06
Spare parts	SP_8010	

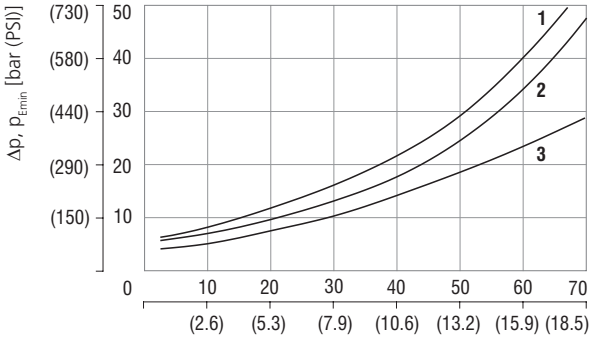
Characteristics measured at ν = 32 mm²/s (156 SUS)

Relief pressure related to flow rate



Pressure range	6	10	16	21	32
	1	2	3	4	5

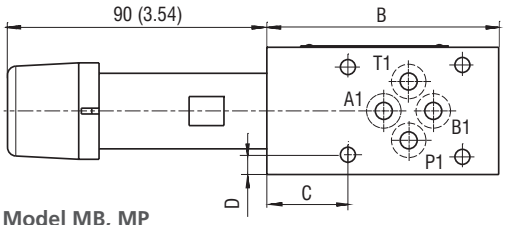
Minimum set and circulation pressure



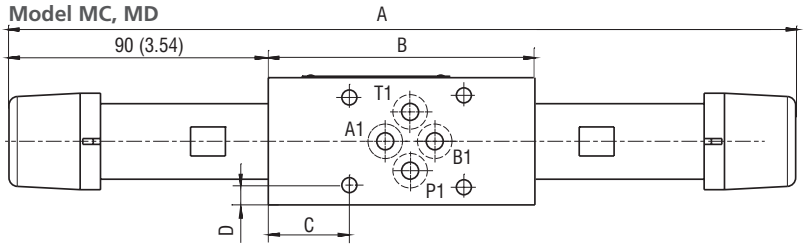
Models	MC	MA, MB MP, MD	RA, RB
	1	2	3

Dimensions in millimeters (inches)

Model MA

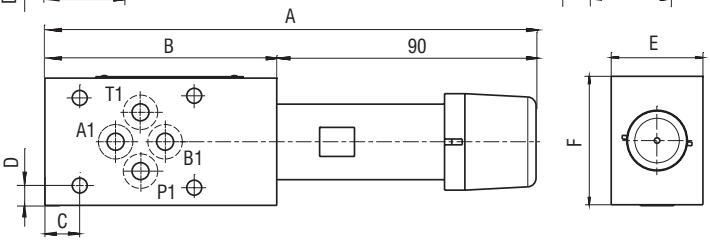


Model MC, MD



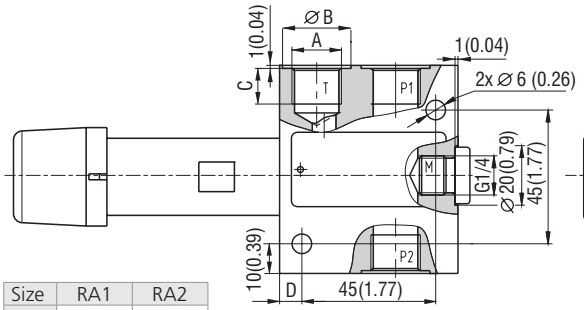
Model MB, MP

Size	04 (D02)	06 (D03)
MA, MB, MC,MD,MP		
D	6.25 (0.25)	7 (0.28)
E	34.6 (1.36)	40 (1.57)
F	35 (1.38)	45 (1.77)

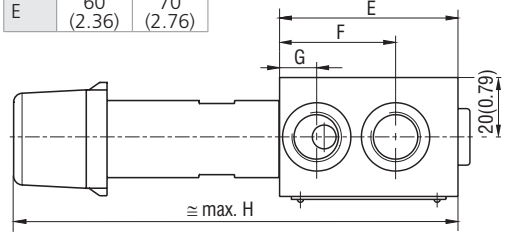


Version	Size	04 (D02)	06 (D03)
MA (B,P)	A	170 (6.70)	
MC (D)		284 (11.18)	274 (10.79)
MA (B,P)	B	80 (3.15)	
MC (D)		104 (4.09)	94 (3.70)
MA (C,D)	C	40 (1.57)	25.5 (1.0)
MB (P)		16 (0.63)	11.5 (0.45)

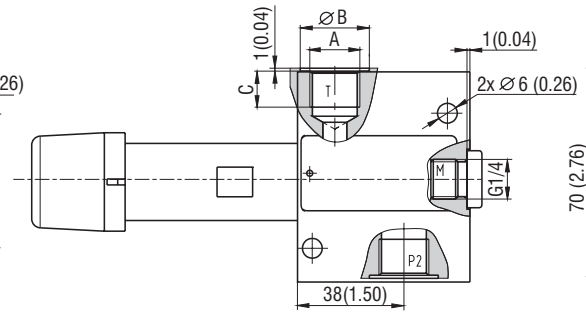
Model RA1, RA2

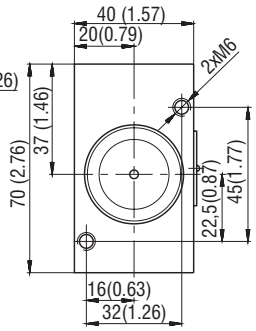


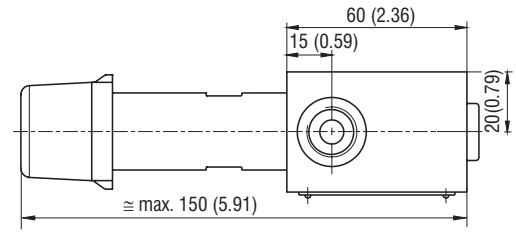
Size	RA1	RA2
E	60 (2.36)	70 (2.76)



Model RB1, RB2







	RA1, RB1	RA2, RB2
A	G 3/8-A	G 1/2-A
B	⌀ 23	⌀ 28
C	12 (0.47)	14 (0.55)
D	7.5 (0.3)	18 (0.71)
F	39 (1.54)	46 (1.81)
G	12.5 (0.49)	16 (0.63)
H	117 (4.61)	127 (5.0)

Ordering Code

VPN1-06 / □ □ - □ - □ □ - □

Pressure relief valve, spool type, pilot operated, modular

Model

modular, valve from A to T	**MA**
modular, valve from B to T	**MB**
modular, valve from P to T	**MP**
modular, valve from A to B and B to A	**MC**
modular, valve from A to T and B to T	**MD**
in-line valve, three ports, thread G 3/8 (P1, P2, T)	**RA1**
in-line valve, three ports, thread G 1/2 (P1, P2, T)	**RA2**
in-line valve, two ports, thread G 3/8 (P, T)	**RB1**
in-line valve, two ports, thread G 1/2(P, T)	**RB2**

Modular plate size

ISO 4401-02-01-0-05, DIN 24340 (CETOP 02), size 04	**04**
ISO 4401-03-02-0-05, DIN 24340 (CETOP 03), size 06	**06**

Pressure range

6	up to 63 bar (910 PSI)
10	up to 100 bar (1450 PSI)
16	up to 160 bar (2320 PSI)
21	up to 210 bar (3050 PSI)
32	up to 320 bar (4600 PSI)

Adjustment option*

S	allen key (hex. 6), without protective cap
T	allen key (hex. 6), with protective cap
RS	hand screw, metal
RP	hand screw, plastic
L	allen key (hex. 6), with protective cap, sealable (lockwire holes)
	Model with two pressure relief cartridges
S/RS	A side, allen key (hex. 6), without protective cap B side, hand screw, metal

*for dimensions of adjustment options see data sheet No.5161

Seals

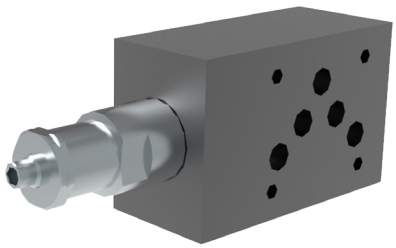
No designation	NBR
V	FPM (Viton)

Surface treatment

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

VPN2-10/M(R)

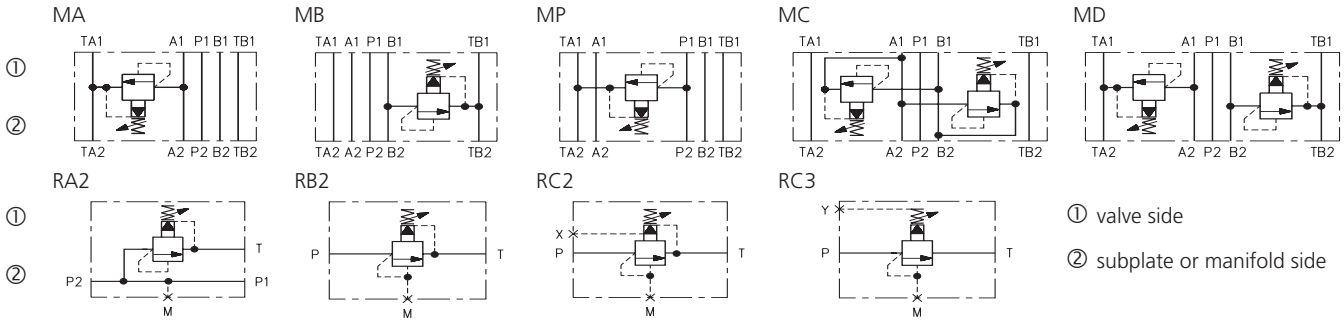
Size 10 (D05) • Q_{max} 150 l/min (40 GPM) • p_{max} 350 bar (5100 PSI)



Technical Features

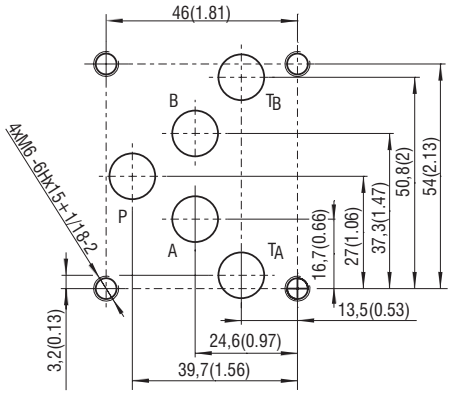
- Pressure relief valve, spool type, pilot operated, with mounting interface acc. to ISO 4401, DIN 24340 (CETOP 05) or in-line design
- Low hysteresis, accurate pressure control and low pressure drop
- Wide pressure range up to 350 bar
- High flow capacity
- Hardened precision parts
- Ideal for use as control valve where accuracy and repeatability is required
- Adjustable by allen key or hand screw, optionally sealable (lockwire holes)
- In the standard version, the valve housing is phosphated and steel parts are zinc-coated for 240 h protection acc. to ISO 9227

Functional Symbols



Notice: The orientation of the symbol on the name plate corresponds with the valve function.

ISO 4401-05-04-0-05



Ports P, A, B, T - max. ∅11.2 mm (0.44 in)

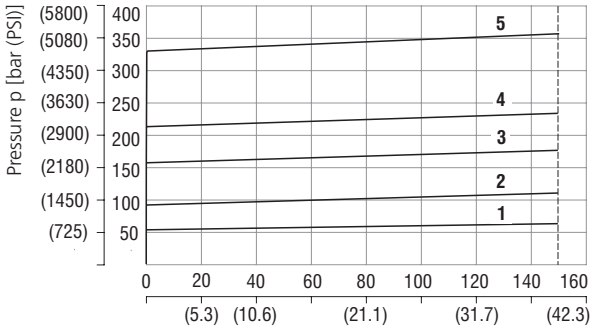
Technical Data

Valve size		10 (D05)
Max. flow	l/min (GPM)	150 (40)
Max. operating pressure	bar (PSI)	350 (5080)
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... 212)
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... 248)
Mass - models MA (B, P) 10	kg (lbs)	2.15 (4.74)
- models MC (D) 10		3.0 (6.61)
- models RA2, RB2, RC2 (3)		2.7 (5.95)

	Datasheet	Type
General information	GI_0060	Products and operating conditions
Mounting interface	SMT_0019	Size 10
Spare parts	SP_8010	

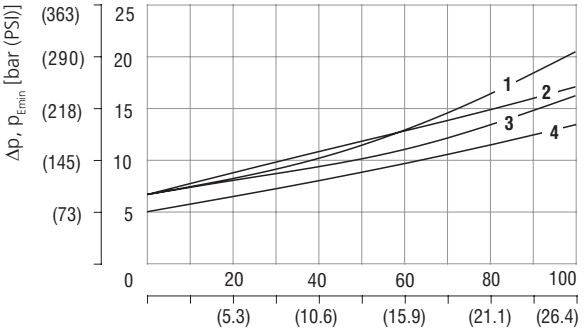
Characteristics measured at ν = 32 mm²/s (156 SUS)

Relief pressure related to flow rate



Pressure range	6	10	16	21	32
	1	2	3	4	5

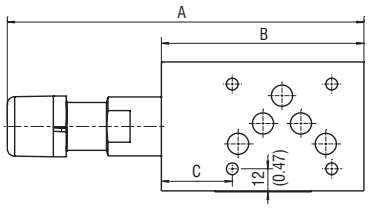
Minimum set and circulation pressure



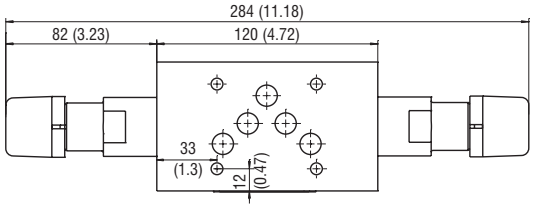
Models	MC	MP	MA, MB	RA, RB, RC
	1	2	3	4

Dimensions in millimeters (inches)

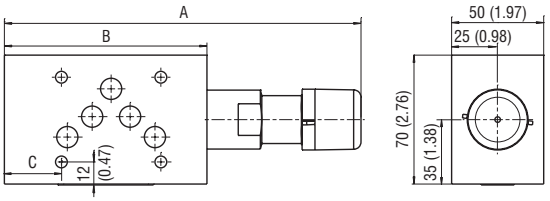
Model MA, MP



Model MC,MD

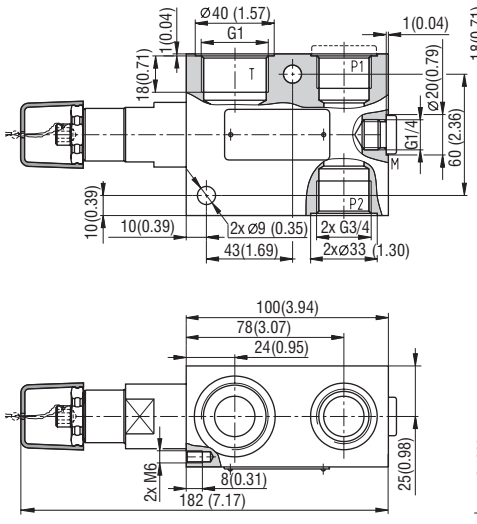


Model MB

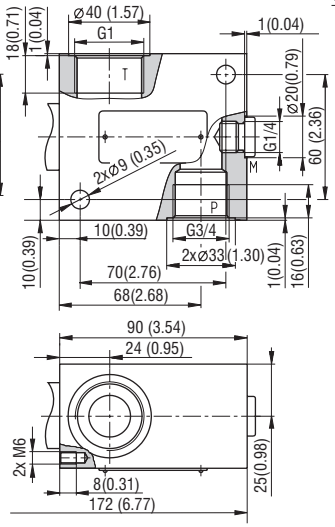


Size 10	A	B	C
MA	187 (7.36)	105 (4.13)	33 (1.30)
MB			38.5 (1.52)
MP	192 (7.56)	110 (4.33)	18 (0.71)

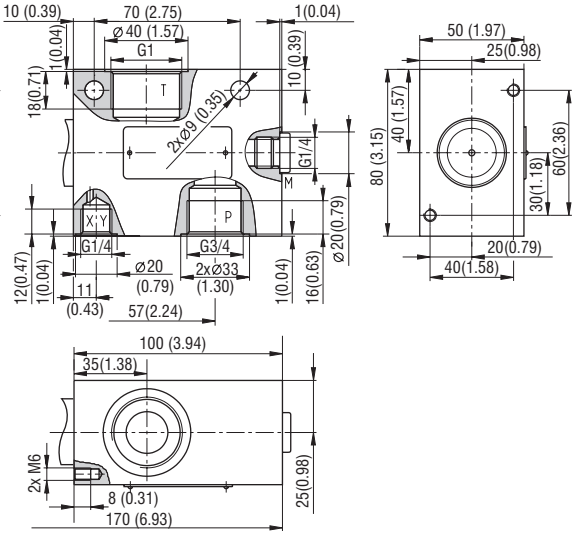
Model RA2



Model RB2



Model RC2, RC3



Ordering Code

VPN2-10 / ☐ ☐ - ☐ - ☐ ☐ - ☐

Pressure relief valve, spool type, pilot operated, modular

Model

modular, valve from A to TA	**MA**
modular, valve from B to TB	**MB**
modular, valve from P to TA	**MP**
modular, valve from A to B and B to A	**MC**
modular, valve from A to TA and B to TB	**MD**
in-line valve, three ports, thread P1, P2-G3/4, T-G1	**RA2**
in-line valve, two ports, thread P-G3/4, T-G1	**RB2**
in-line valve, two ports, thread P-G3/4, T-G1, X-G1/4	**RC2**
in-line valve, two ports, thread P-G3/4, T-G1, Y-G1/4	**RC3**

Modular plate size

ISO 4401-05-04-0-05, DIN 24340 (CETOP 05), size 10	**10**

Pressure range

6	up to 63 bar (910 PSI)
10	up to 100 bar (1450 PSI)
16	up to 160 bar (2320 PSI)
21	up to 210 bar (3050 PSI)
32	up to 320 bar (4600 PSI)

Model with two pressure relief cartridges

32/10	320 bar (4600 PSI) in port A, 100 bar (1450 PSI) in port B

Adjustment option*

S	allen key (hex. 6), without protective cap
T	allen key (hex. 6), with protective cap
RS	hand screw, metal
RP	hand screw, plastic
L	allen key (hex. 6), with protective cap, sealable (lockwire holes)

Model with two pressure relief cartridges

S/RS	A side, allen key (hex. 6), without protective cap B side, hand screw, metal

*for dimensions of adjustment options see data sheet No.5163

Seals

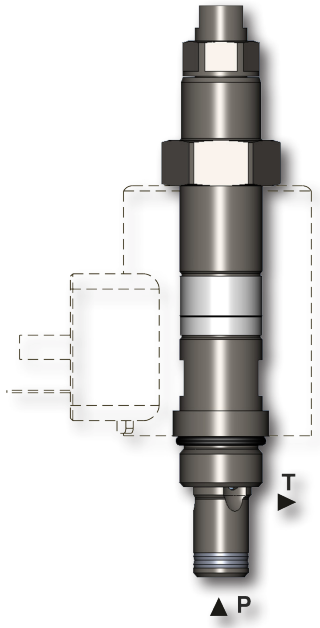
No designation	NBR
V	FPM (Viton)

Surface treatment

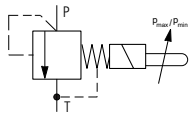
No designation	body phosphated, steel parts
	zinc-coated (ZnCr-3), ISO 9227 (240 h)
A	zinc-coated (ZnCr-3), ISO 9227 (240 h)
B	zinc-coated (ZnNi, ISO 9227 (520 h)

SR1E2-A2

3/4-16 UNF • Q_{max} 1.5 l/min (0.40 GPM) • p_{max} 350 bar (5100 PSI)



Symbol



Technical Features

- Screw-in cartridge direct acting pressure relief valve used as a pilot valve or a valve for small flow rate up to 1.5 l/min
- Solenoid operated remote switching between minimum and maximum set pressure
- Possible combined function of pressure relief and unloading valve
- Five pressure ranges with a maximum settable pressure of 350 bar
- Accurate pressure control
- Easily interchangeable solenoid coil and easy connector positioning
- In the standard version, the valve is zinc-coated with corrosion protection 240 h in NSS acc. to ISO 9227 the reinforced protection 520 h in NSS is designed for demanding environment

Functional Description

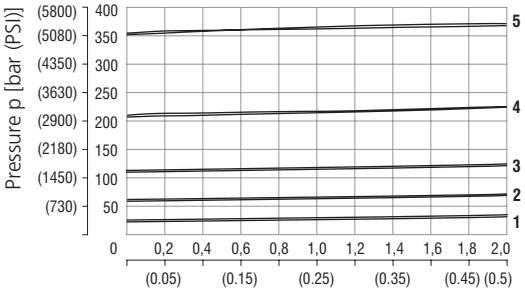
Screw-in cartridge pressure valve, direct acting, is used as a pilot valve for pressure valves SR4E2-B2 and SP4E1-B3 or as a direct acting pressure relief valve for small flow rate up to 1,5 l/min. The input system pressure is permanently compared with mechanically adjusted cracking pressure. The system pressure higher than set cracking pressure opens the valve and unloads the circuit by connection to the tank. The valve thus protects the connected circuit against pressure overloading. Additionally, it is possible to mechanically adjust two values of cracking pressure with the help of adjusting screws built into the end plug of the solenoid actuating system. The two set pressure values can be remotely switched by solenoid. When the solenoid is switched on the valve is set to maximum pressure. The maximum adjustable pressure is defined by pressure range of valve. The minimum circuit pressure can be set from 0 bar to the set maximum pressure. The valve can be used in two ways – as a switcher between two set pressure values or as a combined relief – unloading valve when one pressure value is adjusted on min. system pressure 7 bar.
The complete valve consists of direct acting poppet valve with connecting thread 3/4-16 UNF and a control solenoid with two adjusting screws.
CAUTION: A pressure change in T channel will cause a change of the set cracking pressure of 1:1.

Technical Data

Valve size / Cartridge cavity		3/4-16 UNF-2A / A2 (C-8-2)
Max. flow	l/min (GPM)	1.5 (0.40)
Max. operating pressure (port P)	bar (PSI)	350 (5080)
Max. operating pressure (port T)	bar (PSI)	100 (1450)
Min. adjustable pressure	bar (PSI)	0
Fluid temperature range (NBR)	°C (°F)	-30 ... +80 (-22 ... 176)
Fluid temperature range (FPM)	°C (°F)	-20 ... +80 (-4 ... 176)
Ambient temperature range (NBR)	°C (°F)	-30 ... +50 (-22 ... 122)
Ambient temperature range (FPM)	°C (°F)	-20 ... +50 (-4 ... 122)
Supply voltage tolerance	%	AC, DC ± 10
Max. switching frequency	1/h	5 000
Weight	kg (lbs)	0.44 (0.97)
Mounting position: If possible, the valve should be mounted with the coil vertically downward.		
	Datasheet	Type
General information	GI_0060	Products and operating conditions
Coil types	C_8007	C19B*
Valve bodies – In-line mounted	SB_0018	SB-A2*
Valve bodies – Sandwich mounted	SB-04(06)_0028	SB-*A2*
Cavity details / Form tools	SMT_0019	SMT-A2*
Spare Parts	SP_8010	

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

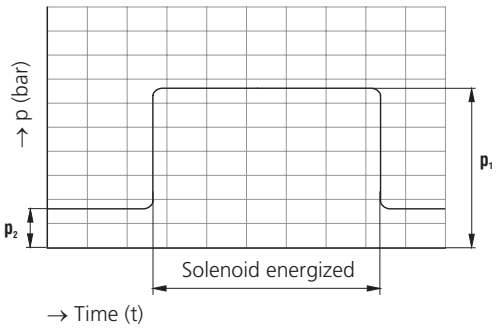
Relief pressure related to flow rate



Pressure range	3	6	12	21	35
	1	2	3	4	5

Example showing the adjustable pressures p_1 and p_2 ($p_1 \geq p_2$)

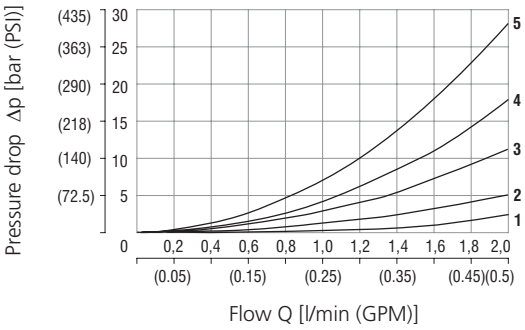
p_1 (p_max, relief pressure) is set as the higher working pressure (solenoid energized)
p_2 (p_min, vented pressure) is set as a lower working pressure (solenoid de–energized)



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

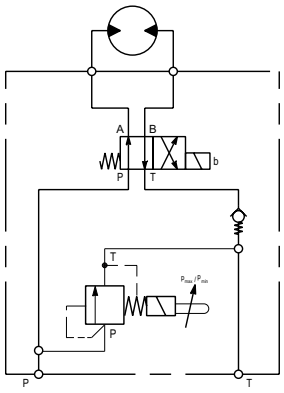
Pressure drop related to flow rate

0 % of control current, P-T direction



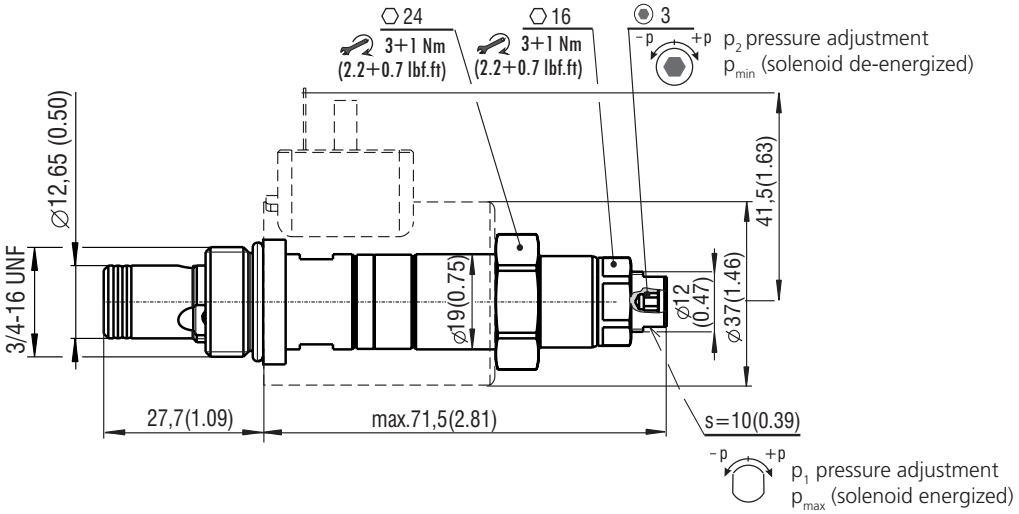
Pressure range	3	6	12	21	35
	1	2	3	4	5

Application example



The valve is used to unload a pump to tank with a very low pressure drop. This results in less heating of the oil and therefore lower energy costs for the user.
p_1 (p_max) must be set before p_2 (p_min). To set p_1, the solenoid is energized and the pressure adjusted with a flat wrench (size 10).
The solenoid is then de-energized and the lower pressure adjusted with an allen key (hex. 3).

Dimensions in millimetesr (in)



Ordering Code

SR1E2 - A2 / H ☐ ☐ - ☐

Pressure relief solenoid-operated On/Off valve, direct acting

Valve cavity
3/4-16 UNF (C-8-2)

Model
High performance

Max. reduced pressure

up to 30 bar (435 PSI)	**3**
up to 60 bar (870 PSI)	**6**
up to 120 bar (1740 PSI)	**12**
up to 210 bar (3046 PSI)	**21**
up to 350 bar (5076 PSI)	**35**

Seals

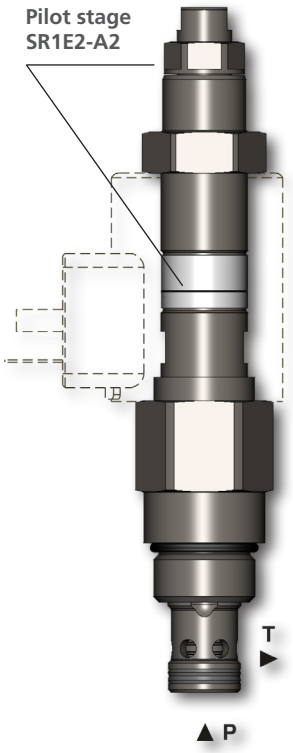
No designation	NBR
V	FPM (Viton)

Surface treatment

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

SR4E2-B2

7/8-14 UNF • Q_{max} 80 l/min (21.1 GPM) • p_{max} 350 bar (5100 PSI)



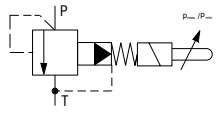
Technical Features

- Screw-in cartridge pilot operated pressure relief valve
- Solenoid operated remote switching between minimum and maximum set pressure
- Possible combined function of pressure relief and unloading valve
- Five pressure ranges with a maximum settable pressure of 350 bar
- Excellent stability throughout the flow range to 80 l/min
- Low hysteresis and accurate pressure control
- Easily interchangeable solenoid coil and easy connector positioning
- In the standard version, the valve is zinc-coated with corrosion protection 240 h in NSS acc. to ISO 9227. The reinforced protection 520 h in NSS is designed for demanding environment

Functional Description

Screw-in cartridge pressure relief valve, pilot operated, protects the connected circuit against pressure overloading. The input system pressure is permanently compared with mechanically adjusted cracking pressure. The system pressure higher than set cracking pressure opens the valve and unloads the circuit by connection to the tank. Additionally, it is possible to mechanically adjust two values of cracking pressure with the help of adjusting screws built into the end plug of the solenoid actuating system. The two set pressure values can be remotely switched by solenoid. When the solenoid is switched on the valve is set to maximum pressure. The maximum adjustable pressure is defined by pressure range of valve. The minimum circuit pressure can be set from 7 bar to the set maximum pressure. The valve can be used in two ways – as a switcher between two set pressure values or as a combined relief – unloading valve when one pressure value is adjusted on min. system pressure 7 bar.
The complete valve consists of direct acting poppet valve with, main spool valve with connecting thread 7/8-14 UNF and a control solenoid with two adjusting screws.
CAUTION: A pressure change in T channel will cause a change of the set cracking pressure of 1:1.

Symbol

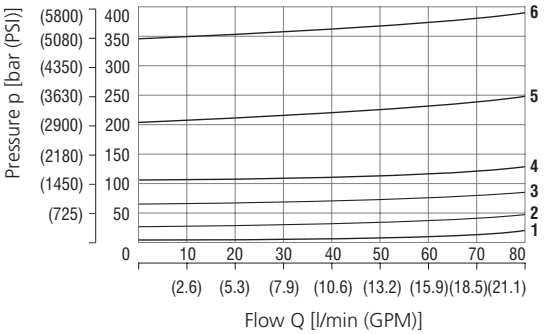


Technical Data

Valve size / Cartridge cavity		7/8-14 UNF-2A / B2 (C-10-2)
Max. flow	l/min (GPM)	80 (21.1)
Max. operating pressure	bar (PSI)	350 (5080)
Max. pressure (port T)	bar (PSI)	100 (1450)
Min. adjustable pressure	bar (PSI)	7 (102)
Fluid temperature range (NBR)	°C (°F)	-30 ... +80 (-22 ... 176)
Fluid temperature range (FPM)	°C (°F)	-20 ... +80 (-4 ... 176)
Ambient temperature range (NBR)	°C (°F)	-30 ... +50 (-22 ... 122)
Ambient temperature range (FPM)	°C (°F)	-20 ... +50 (-4 ... 122)
Supply voltage tolerance	%	AC, DC ± 10
Max. switching frequency	1/h	5 000
Weight	kg (lbs)	0.57 (1.23)
Mounting position: If possible, the valve should be mounted with the coil vertically downward.		
	Datasheet	Type
General information	GI_0060	Products and operating conditions
Coil types	C_8007	C19B*
Valve bodies – In-line mounted	SB_0018	SB-B2*
Valve bodies – Sandwich mounted	SB-06_0028	SB-*B2*
Cavity details / Form tools	SMT_0019	SMT-B2*
Spare parts	SP_8010	

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

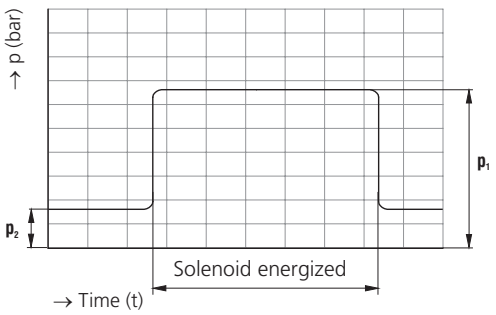
Relief pressure related to flow rate



Pressure range	Min. pressure setting	3	6	12	21	35
	1	2	3	4	5	6
	Solenoid de-energized	Typical performance				

Example showing the adjustable pressures p_1 and p_2 ($p_1 \geq p_2$)

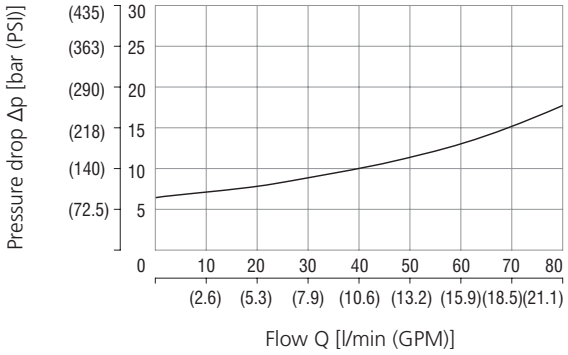
p_1 (p_max, relief pressure) is set as the higher working pressure (solenoid energized)
p_2 (p_min, vented pressure) is set as a lower working pressure (solenoid de–energized)



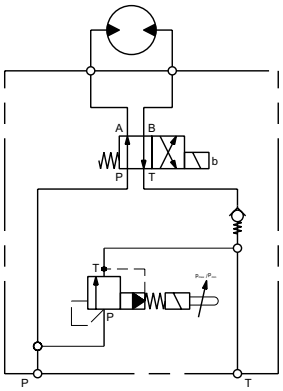
Characteristics measured at ν = 32 mm²/s (156 SUS)

Pressure drop related to flow rate

0 % of control current, P-T direction

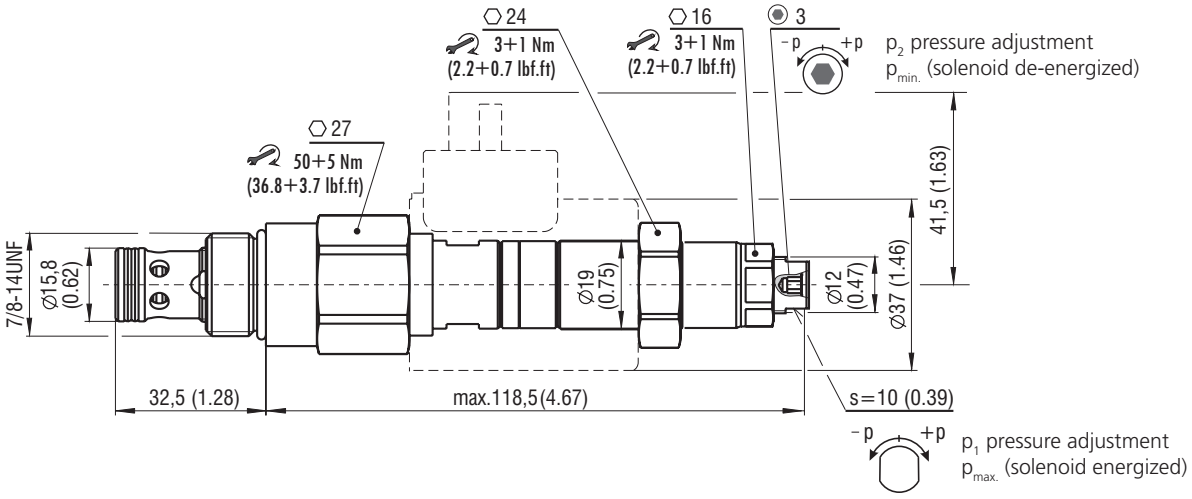


Application example



The valve is used to unload a pump to tank with a very low pressure drop. This results in less heating of the oil and therefore lower energy costs for the user.
p_1 (p_max) must be set before p_2 (p_min). To set p_1, the solenoid is energized and the pressure adjusted with a flat wrench (size 10). The solenoid is then de-energized and the lower pressure adjusted with an allen key (hex. 3).

Dimensions in millimeters (inches)



Ordering Code

SR4E2 - B2 / H ☐ ☐ - ☐

Pressure relief solenoid-operated On/Off valve, piloted

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

Model
High performance

Max. reduced pressure

up to 30 bar (440 PSI)	**3**
up to 60 bar (870 PSI)	**6**
up to 120 bar (1740 PSI)	**12**
up to 210 bar (3050 PSI)	**21**
up to 350 bar (5080 PSI)	**35**

Seals

No designation	NBR
V	FPM (Viton)

Surface treatment

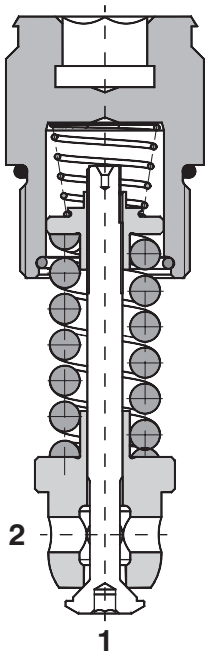
A	zinc-coated (ZnCr-3), ISO 9227 (240 h)
B	zinc-coated (ZnNi), ISO 9227 (520 h)

Factory setting:
If the valve does not have a specific setting in accordance with the customer's order, standard valves are set to a minimum value of approx 7 bar after function tests.

Pressure Relief Valve with Reverse Flow Check, Poppet Type, Not Adjustable

DBV3

M24 x 1.5 • Q_{max} 200 l/min (53 GPM) • p_{max} 480 bar (7000 PSI)



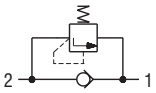
Technical Features

- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop through CFD optimized flow paths
- Adjustable pressure range 160-480 bar
- Factory pre-set, non adjustable version only
- Hardened precision parts
- Sharp-edged steel seats for dirt-tolerant performance
- Leak-free closing, suitable for fast cycling with long life
- One-way bypass valve with suction function
- In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

A direct acting, poppet type hydraulic relief valve in the form of a screw-in cartridge with reverse flow check intended for use as a pressure limiting and anti-cavitation device for common hydraulic circuit protection. The spring acts on the poppet and presses it on the valve seat. If the hydraulic pressure is below the pre-set value, the valve is closed. If the hydraulic force exceeds the pre-set value, the valve opens and flow passes to the tank port until the system pressure drops below the spring pre-set value and the valve closes again.

Symbol



Technical Data

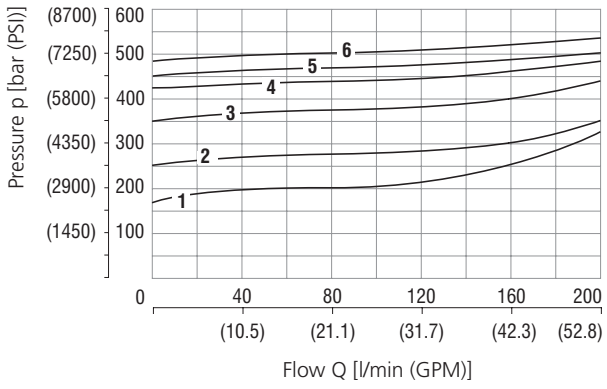
Valve size / Cartridge cavity		M24 x 1.5 / QH2
Max. flow	l/min (GPM)	200 (52.8)
Max. operating pressure	bar (PSI)	480 (6960)
Fluid temperature range (NBR)	°C (°F)	-30... + 100 (-22 ... +212)
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... +248)
Weight	kg (lbs)	0.16 (0.36)

	Datasheet	Type
General information	GI_0060	Products and operating conditions
Cavity details	SMT_0019	SMT-QH2*
Spare parts	SP_8010	

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

Relief pressure related to flow rate

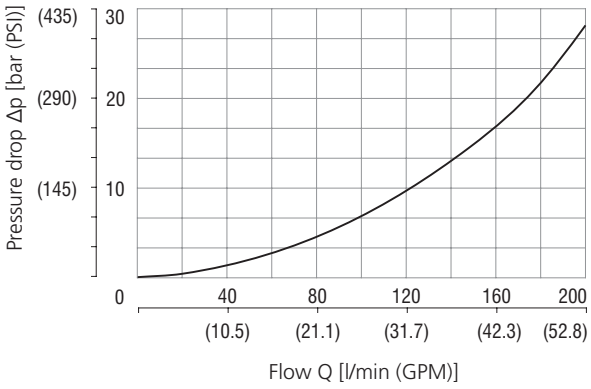
Pressure relief function, flow direction 2 - 1



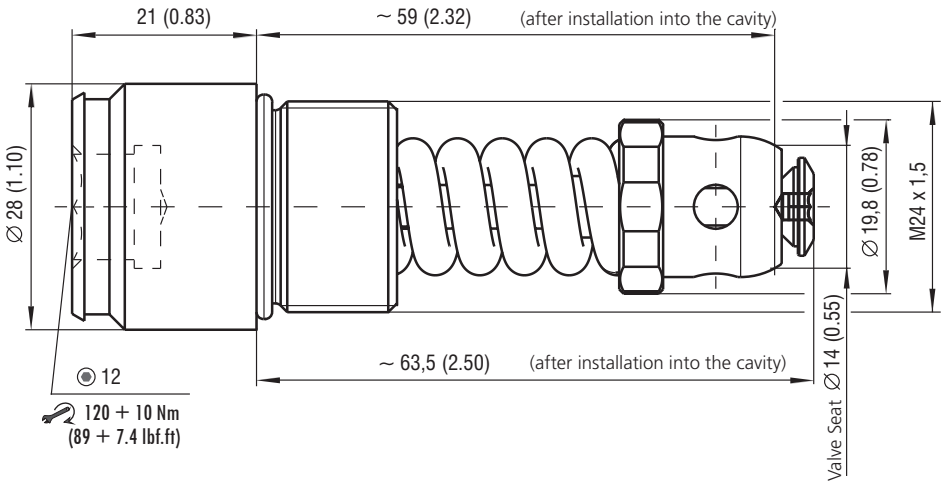
Pressure settings					
1	2	3	4	5	6
160	250	350	420	450	480

Pressure drop related to flow rate

Check valve function, flow direction 1 - 2



Dimensions in millimeters (inches)



Ordering Code

DBV 3 - ☐ / 4 - ☐ ☐ - ☐

Pressure relief valve with reverse flow check, poppet type, direct acting, non-adjustable

Design stage

Pressure range

up to 160 bar (2320 PSI)	**160**
up to 250 bar (3630 PSI)	**250**
up to 350 bar (5080 PSI)	**350**
up to 420 bar (6090 PSI)	**420**
up to 450 bar (6530 PSI)	**450**
up to 480 bar (6960 PSI)	**480**

*All standard valves settings are at flow 4 l/min (1.06 GPM)

Model

M1	M24 x 1.5
S1	SAE 12

Seals

No designation	NBR
V	FPM (Viton)

Surface treatment

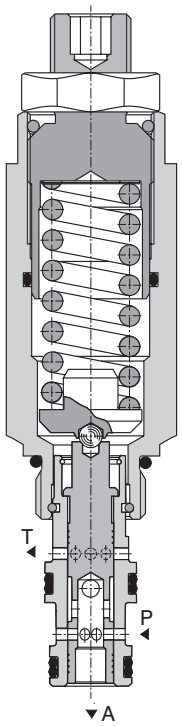
No designation	phosphated valve cup
A	zinc-coated (ZnCr-3), ISO 9227 (240 h)
B	zinc-coated (ZnNi), ISO 9227 (520 h)

Pressure Reducing - Relieving Valve, Spool Type, Direct Acting

SP2A-A3/L

3/4-16 UNF • Q_{max} 20 l/min (5 GPM) • p_{max} 350 bar (5100 PSI)

Model S



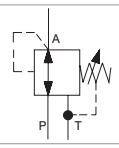
Technical Features

- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Three-way valve with relief function for protection of actuator against pressure overloading
- Wide range of input pressure up to 350 bar
- Precise produced and hardened function parts
- Reduced pressure adjustable by allen key or hand screw
- In the standard version, the valve is zinc-coated with corrosion protection 240 h in NSS acc. to ISO 9227

Functional Description

The valve provides an adjustable regulated pressure level below supply pressure. This direct acting model is suitable for applications with lower flow rates and lower regulated pressures. In case of shock or surge pressures in the downstream line the valve acts as a relief valve, directing excessive pressure and flow to the tank.

Symbol



Technical Data

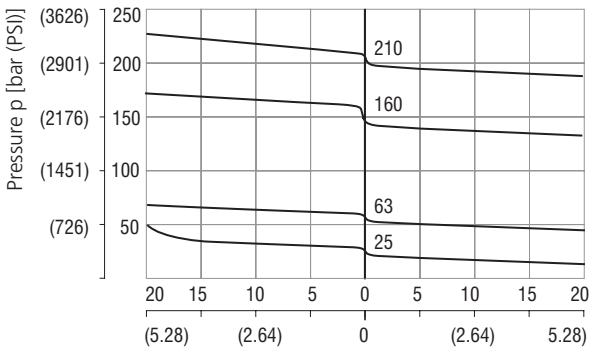
Valve size / Cartridge cavity		3/4-16 UNF-2A / A3 (C-8-3)			
Max. flow	l/min (GPM)	20 (5.3)			
Pressure range		2	6	16	21
Max. operating pressure (port P)	bar (PSI)	50 (730)	150 (2180)	250 (3630)	350 (5080)
Reduced pressure range (at Q = 5 l/min)	bar	10-25	20-63	50-160	100-210
	(PSI)	(150-360)	(290-910)	(730-2320)	(1450-3050)
Max. back pressure (port T)	bar (PSI)	200 (3630)			
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... 212)			
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... 248)			
Weight	kg (lbs)	0.13 (0.29)			

		Datasheet	Type
General information		GI_0060	Products and operating conditions
Valve bodies	In-line mounted	SB_0018	SB-A3*
	Sandwich mounted	SB-04(06)_0028	SB-*-A3*
Cavity details / Form tools		SMT_0019	SMT-A3*
Spare parts		SP_8010	

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

Reducing - relieving pressure related to flow rate

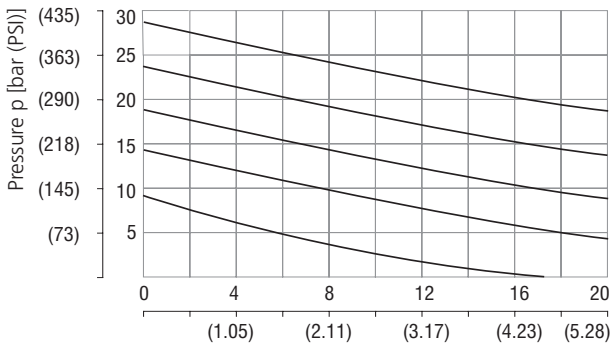
Relieving function A→T / Reducing function P→A



Flow Q [l/min (GPM)]

Minimum reducing pressure related to flow rate

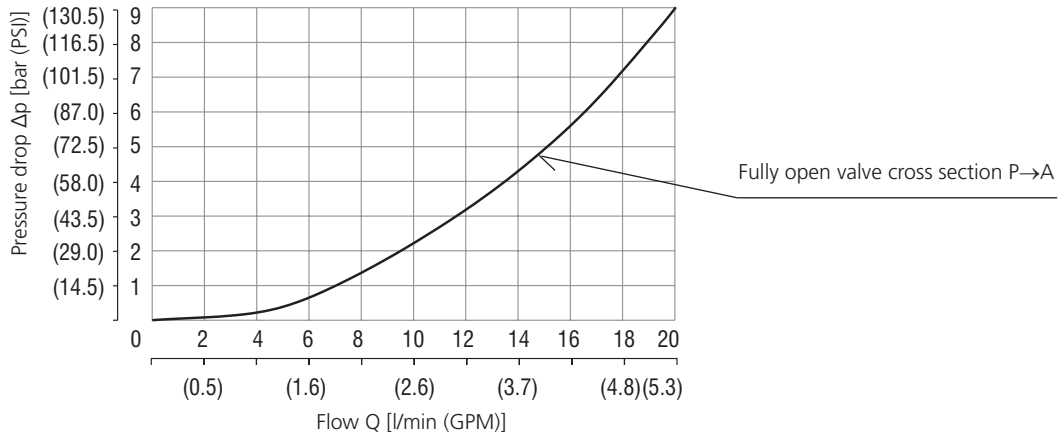
Pressure range 6



Flow Q [l/min (GPM)]

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

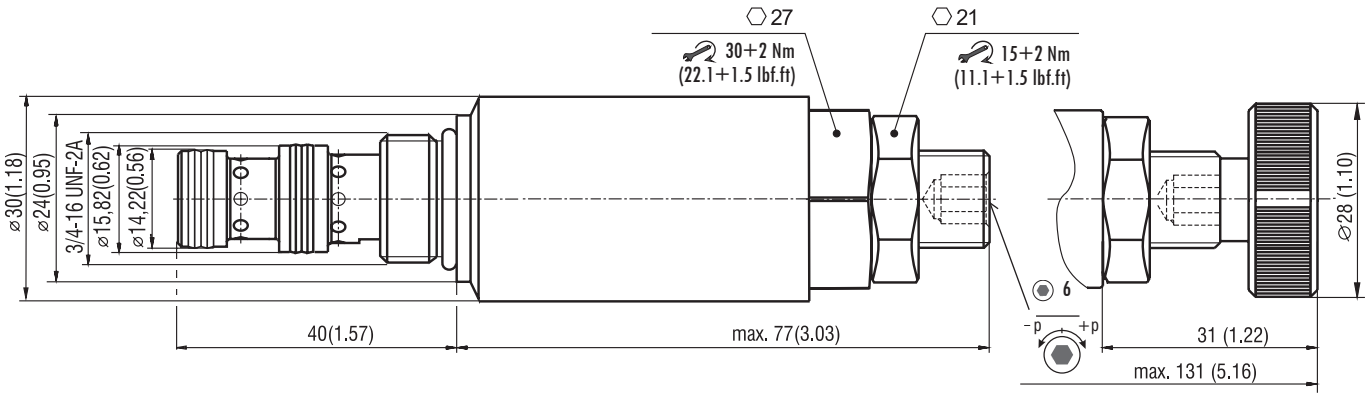
Pressure drop related to flow rate



Dimensions in millimeters (inches)

Model S

Model RS



Ordering Code

SP2A - A3 / L ☐ ☐ ☐ - ☐

Pressure reducing - relieving valve, spool type, direct acting

Valve cavity
3/4-16 UNF (C-8-3)

Model
Lightline

Reduced pressure ranges (at Q = 5 l/min)

10 - 25 bar	(150 - 360 PSI)	**2**
20 - 63 bar	(290 - 910 PSI)	**6**
50 - 160 bar	(730 - 2320 PSI)	**16**
100 - 210 bar	(1450 - 3050 PSI)	**21**

Adjustment option

S	allen key (hex. 6), without protective cap
RS	hand screw, metal

Seals

No designation	NBR
V	FPM (Viton)

Surface treatment

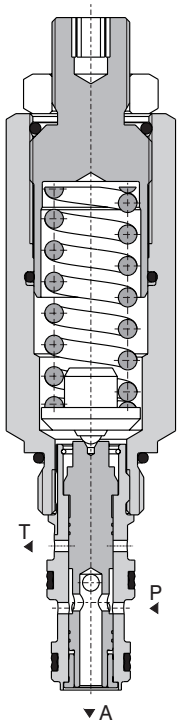
A	zinc-coated (ZnCr-3), ISO 9227 (240 h)
B	zinc-coated (ZnNi), ISO 9227 (520 h)

Pressure Reducing - Relieving Valve, Spool Type, Direct Acting

SP2A-A3/H

3/4-16 UNF • Q_{max} 20 l/min (5 GPM) • p_{max} 350 bar (5100 PSI)

Model S

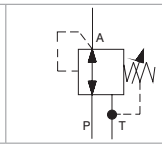


Technical Features

- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Three-way valve with relief function for protection of actuator against pressure overloading
- Wide range of input pressure up to 350 bar
- Precise produced and hardened function parts
- Reduced pressure adjustable by allen key or hand screw
- In the standard version, the valve is zinc-coated with corrosion protection 240 h in NSS acc. to ISO 9227

Functional Description

Screw-in pressure reducing valve, direct acting, is designed for maintaining the constant pressure in the circuit of actuator, it means for adjusting the force on piston rod or torque on output shaft of hydraulic motor.
The spool is a control part of the valve. The output pressure acts on the frontal surface of spool and is permanently compared with the reducing pressure adjusted by screw on the opposite side of the valve. The output pressure is regulated by throttling of input flow from the pump on the control edge of spool. The hydraulic damping of spool moving improves the stability of valve function.
If the actuator is overloaded, the spool closes the input of pressure fluid from the pump (P) and unloads the actuator circuit by connecting to the tank (A → T). The actuator is thus protected against pressure overloading.

Symbol	

Technical Data

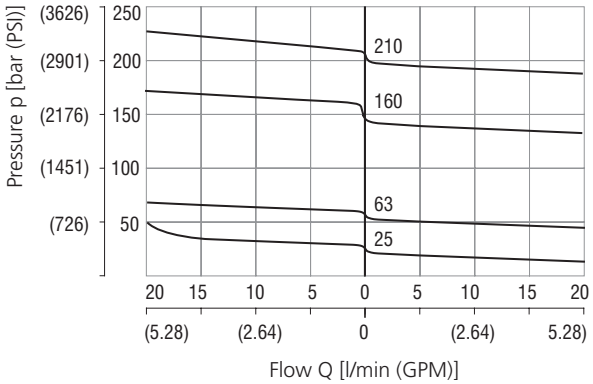
Valve size / Cartridge cavity		3/4-16 UNF-2A / A3 (C-8-3)			
Max. flow	l/min (GPM)	20 (5.3)			
Pressure range		2	6	16	21
Max. operating pressure (port P)	bar (PSI)	350 (5080)			
Reduced pressure range (at Q = 5 l/min)	bar	10-25	20-63	50-160	70-210
	(PSI)	(150-360)	(290-910)	(730-2320)	(1020-3050)
Max. back pressure (port T)	bar (PSI)	200 (3630)			
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... 212)			
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... 248)			
Weight	kg (lbs)	0.13 (0.29)			

		Datasheet	Type
General information		GI_0060	Products and operating conditions
Valve bodies	In-line mounted	SB_0018	SB-A3*
	Sandwich mounted	SB-04(06)_0028	SB-*-A3*
Cavity details / Form tools		SMT_0019	SMT-A3*
Spare parts		SP_8010	

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

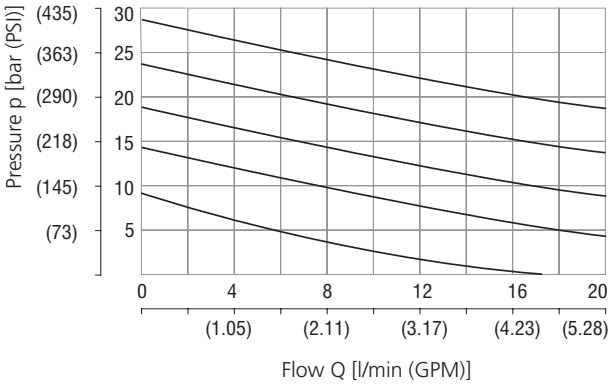
Reducing - relieving pressure related to flow rate

Relieving function A→T / Reducing function P→A



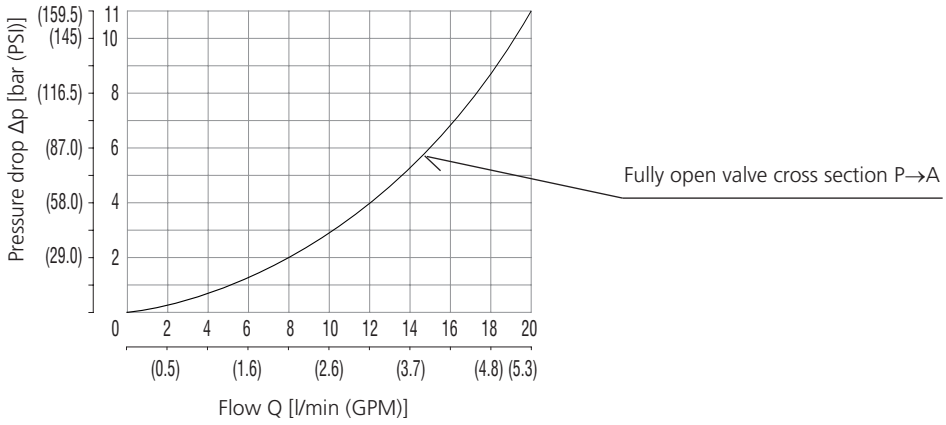
Minimum reducing pressure related to flow rate

Pressure range 6



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

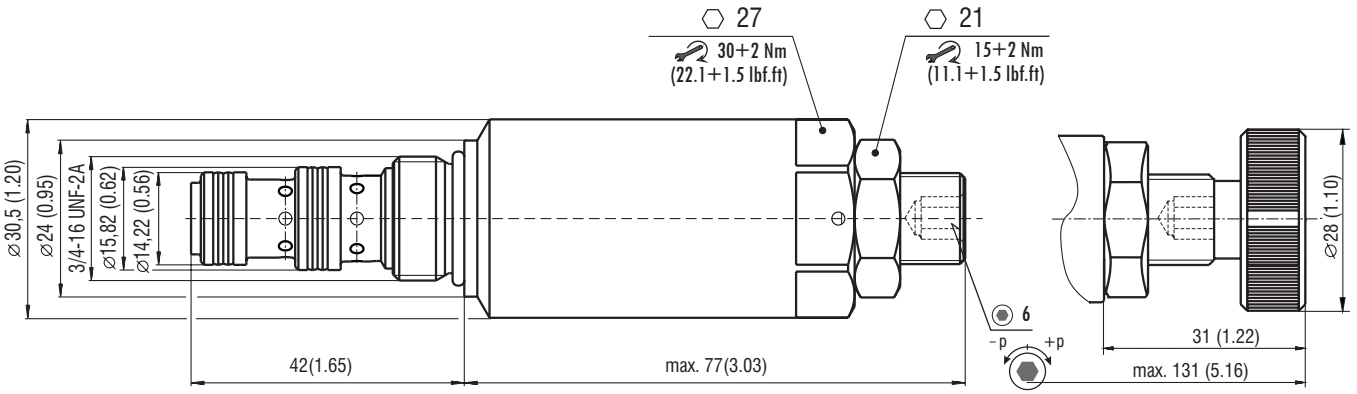
Pressure drop related to flow rate



Dimensions in millimeters (inches)

Model S

Model RS



Ordering Code

SP2A - A3 / H ☐ ☐ ☐ - ☐

Pressure reducing - relieving valve, spool type, direct acting

Valve cavity
3/4-16 UNF (C-8-3)

Model
High performance

Reduced pressure ranges (at Q = 5 l/min)

10 - 25 bar	(150 - 360 PSI)	**2**
20 - 63 bar	(290 - 910 PSI)	**6**
50 - 160 bar	(730 - 2320 PSI)	**16**
70 - 210 bar	(1020 - 3050 PSI)	**21**

Adjustment option

S	allen key (hex. 6), without protective cap
RS	hand screw, metal

Seals

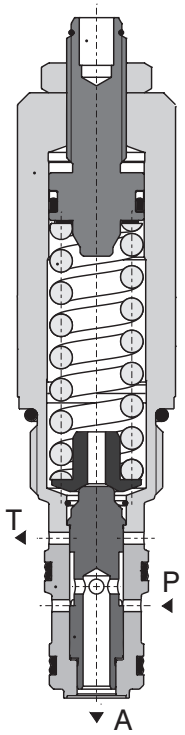
No designation	NBR
V	FPM (Viton)

Surface treatment

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

SP2A-B3/H

7/8-14 UNF • Q_{max} 60 l/min (16 GPM) • p_{max} 420 bar (6100 PSI)



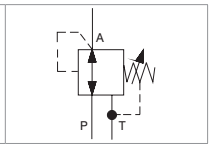
Technical Features

› Excellent stability throughout flow range with rapid response to dynamic pressure changes
› Low hysteresis, accurate pressure control and low pressure drop
› Wide pressure range up to 420 bar
› Hardened precision parts
› Adjustable by allen key or hand screw
› In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

The valve provides an adjustable regulated pressure level below supply pressure. This direct acting model is suitable for applications with lower flow rates and lower regulated pressures. In cases of shock or surge pressures in the downstream line the valve acts as a relief valve, directing excessive pressure and flow to the tank.

Symbol



Technical Data

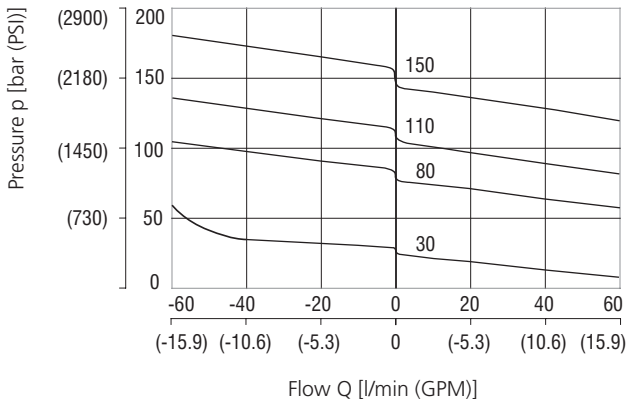
Valve size / Cartridge cavity		7/8-14 UNF-2A / B3 (C-10-3)			
Max. flow	l/min (GPM)	60 (15.9)			
Pressure range		3	8	11	15
Max. operating pressure	bar (PSI)	420 (6090)			
Reduced pressure range (at Q = 5 l/min)	bar	10-30	20-80	30-110	40-150
	(PSI)	(150-440)	(290-1160)	(440-1600)	(580-2180)
Max. back pressure (port T)	bar (PSI)	200 (3626)			
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... 212)			
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... 248)			
Weight	kg (lbs)	0.26 (0.57)			

		Datasheet	Type
General information		GI_0060	Products and operating conditions
Valve bodies	In-line mounted	SB_0018	SB-B3*
	Sandwich mounted	SB-04(06)_0028	SB-*-B3*
Cavity details / Form tools		SMT_0019	SMT-B3*
Spare parts		SP_8010	

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

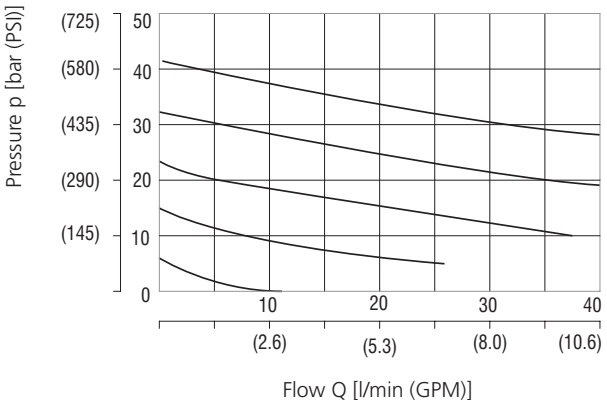
Reducing - relieving pressure related to flow rate

Relieving function A→T / Reducing function P→A



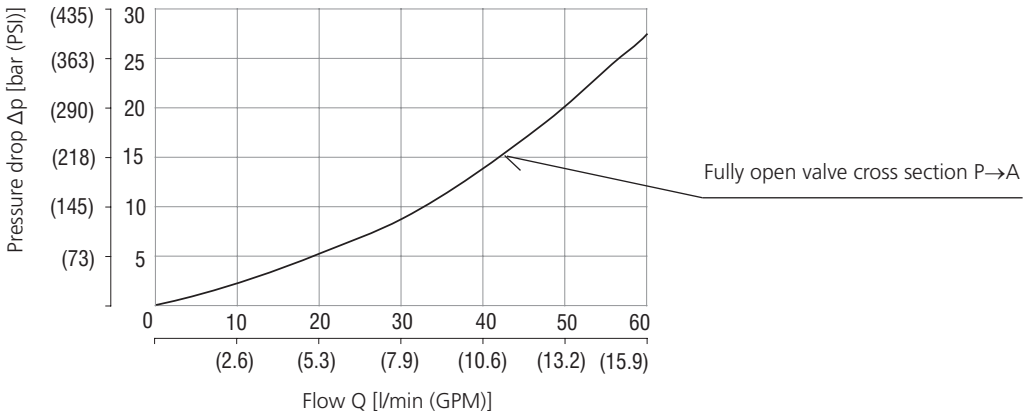
Minimum reducing pressure related to flow rate

Pressure range 3



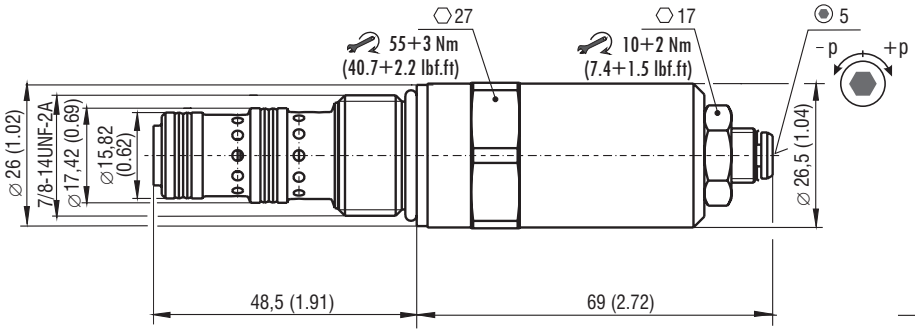
Characteristics measured at ν = 32 mm²/s (156 SUS)

Pressure drop related to flow rate

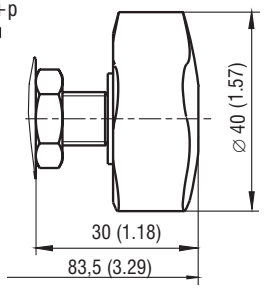


Dimensions in millimeters (inches)

Model S



Model RP



Ordering Code

SP2A-B3 / H ☐ ☐ ☐ - ☐

Pressure reducing - relieving valve, spool type, direct acting

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

Model
High performance

Reduced pressure range (at Q = 5 l/min)

10 - 30 bar (150 - 440 PSI)	**3**
20 - 80 bar (290 - 1160 PSI)	**8**
30 - 110 bar (440 - 1600 PSI)	**11**
40 - 150 bar (580 - 2180 PSI)	**15**

Adjustment option

S	allen key (hex. 5), without protective cap
RP	hand screw, plastic

Seals

No designation	NBR
V	FPM (Viton)

Surface treatment

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

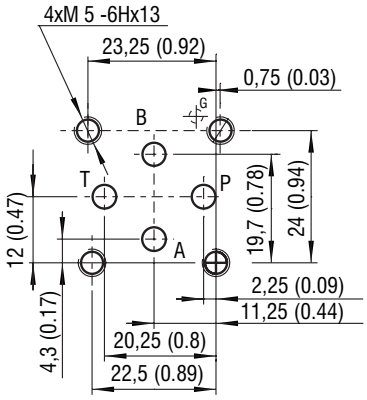
VRP2-04

Size 04 (D02) • Q_{max} 20 l/min (5 GPM) • p_{max} 320 bar (4600 PSI)

Technical Features

- Pressure reducing - relieving valve, spool type, direct acting, with mounting interface acc. to ISO 4401, DIN 24340 (CETOP 02)
- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Wide pressure range up to 320 bar
- Hardened precision parts
- Pressure reduction function in ports P, A, or B
- Adjustable by allen key or hand screw
- Good adjustment sensitivity with reduced drainage flow
- In the standard version the valve body is phosphated. The steel parts are zinc coated (240 h corrosion protection in NSS acc. to ISO 9227)

ISO 4401-02-01-0-05



Ports P, A, B, T - max. ∅ 4.5 mm (0.18 in)

Technical Data

Valve size		04 (D02)			
Max. flow	l/min (GPM)	20 (5.3)			
Max. operating pressure (ports P, A, B)	bar (PSI)	320 (4640)			
Max. operating pressure (port T)	bar (PSI)	210 (3050)			
Reduced pressure range (at Q = 5 l/min)	bar	10-25	20-63	30-160	50-210
	(PSI)	(150-360)	(290-910)	(440-2320)	(730-3050)
Fluid temperature range (NBR)	°C (°F)	-30 .... +100 (-22 ... +212)			
Fluid temperature range (FPM)	°C (°F)	-20 .... +120 (-4 ... +248)			
Weight - model "A"	kg (lbs)	0.82 (1.81)			
- model "B", "P"		0.60 (1.32)			

	Datasheet	Type
General information	GI_0060	Products and operating conditions
Mounting interface	SMT_0019	ISO 4401-02-01-0-05 DIN 24340 (CETOP 02)
Spare parts	SP_8010	

Functional Description

The pressure valves VRP2 are directly operated reducing-relieving valves for vertical stacking assemblies designed as 3 way valves, which means it includes pressure protection of the secondary circuit. The valve consists of the valve body, control spool, spring, and adjustment element. The body includes a port M with thread G 1/4 for attachment of a pressure measuring device or a by-pass free flow check valve.

Model A

In model A, the fluid enters the valve body from the primary circuit through port A1 and passes through the metering edge, where its pressure is reduced. The flow is passed to the output port A2 and on to the user. The reverse free flow from port A2 to port A1 passes through a check valve which is connected in parallel to the metering edge of the control spool.

Model B

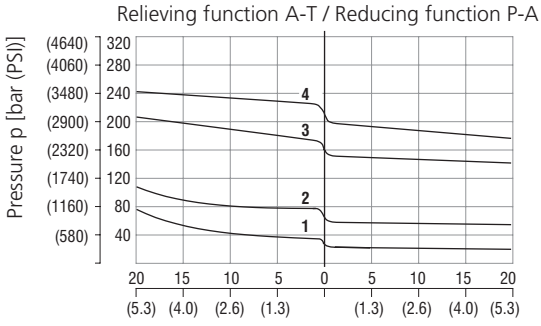
In model B, the pressure reduction occurs from port P2 to port P1, but only if the flow in port B passes towards the user (not opposite). The protection of the secondary circuit is therefore ensured for one flow direction only.

Model P

In model P, the pressure reduction occurs from port P2 to port P1, and is effective in both flow directions through the directional valve. Therefore, the protection of the secondary circuit is ensured for both flow directions.

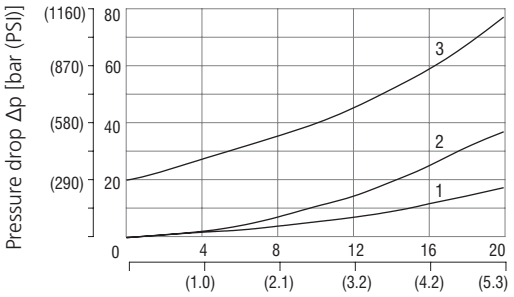
Characteristics measured at ν = 32 mm²/s (156 SUS)

Reducing - relieving pressure related to flow rate



	Pressure range
4	21
3	16
2	6
1	2

Pressure drop related to flow rate



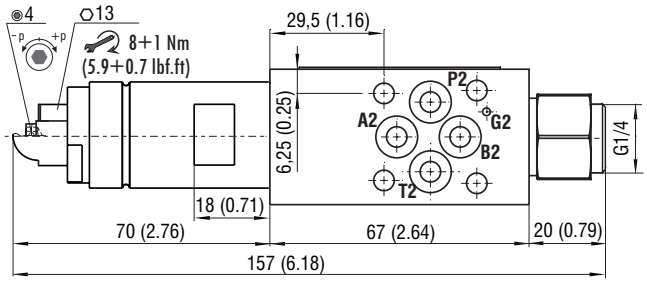
1 - Pressure drop of check valve
2 - Pressure drop of reducing valve at min. adjustable pressure range
3 - Pressure drop of relief valve at min. adjustable safety pressure

	Direction	
	Model A	Models P, B
3	A2–T	P1–T
2	A1–A2	P2–P1
1	A2–A1	

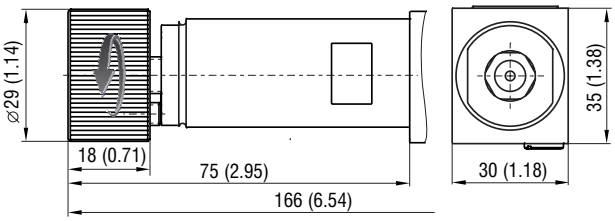
Dimensions in millimeters (inches)

Type „A"

Model S (T)

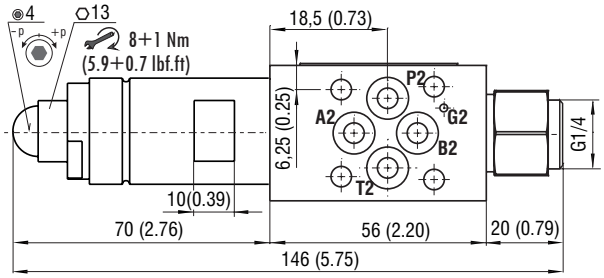


Model RS

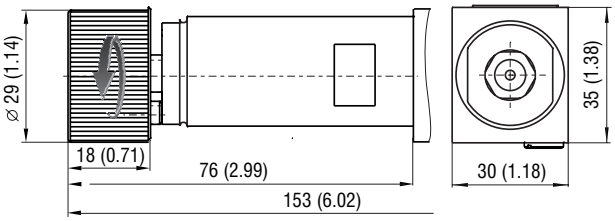


Type „B" and „P"

Model S (T)

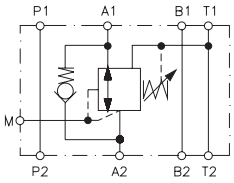


Model RS

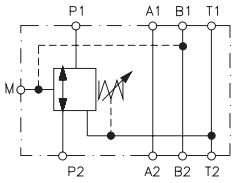


Functional symbols

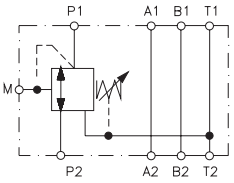
VRP2-04-A*



VRP2-04-B*



VRP2-04-P*



① valve side

② subplate or manifold side

Notice: The orientation of the symbol on the name plate corresponds with the valve function.

Ordering Code

VRP2 - 04 - ☐ ☐ / ☐ ☐ - ☐

Pressure reducing - relieving valve, spool type, direct acting, modular

Valve size
ISO 4401-02-01-0-05, DIN 24340 (CETOP 02), size 04

Model

Pressure reduction	Pressure sensing	
on port A2	at port A2	**A**
on port P1	at port B1	**B**
on port P1	at port P1	**P**

S	allen key (hex. 4), without protective cap
T	allen key (hex. 4), with protective cap
RS	hand screw, metal

Adjustment option

Reduced pressure range (at Q = 5 l/min)

2	10 - 25 bar (150 - 360 PSI)
6	20 - 63 bar (290 - 910 PSI)
16	30 - 160 bar (440 - 2320 PSI)
21	50 - 210 bar (730 - 3050 PSI)

Seals

No designation	NBR
V	FPM (Viton)

Surface treatment

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

Pressure Reducing - Relieving Valve, Spool Type, Direct Acting, Modular

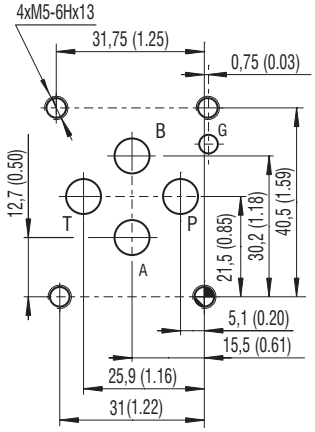
VRP2-06

Size 06 (D03) • Q_{max} 50 l/min (13 GPM) • p_{max} 350 bar (5100 PSI)

Technical Features

- Pressure reducing - relieving valve, spool type, direct acting, with mounting interface acc. to ISO 4401, DIN 24340 (CETOP 03)
- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Wide pressure range up to 350 bar
- High flow capacity
- Hardened precision parts
- Pressure reduction function in ports P, A, or B
- Adjustable by allen key or hand screw
- Good adjustment sensitivity with reduced drainage flow
- In the standard version, the valve housing is phosphated and steel parts are zinc-coated for 240 h protection acc. to ISO 9227

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)	50 (13.2)			
Max. operating pressure (ports P, A, B)	bar (PSI)	350 (5080)			
Max. operating pressure (port T)	bar (PSI)	210 (3050			
Reduced pressure range (at Q = 5 l/min)	bar	10-25	20-63	30-160	40-210
	(PSI)	(150-360)	(290-910)	(440-2320)	(580-3050)
Fluid temperature range (NBR)	°C (°F)	-30 .... +100 (-22 ... +212)			
Fluid temperature range (FPM)	°C (°F)	-20 .... +120 (-4 ... +248)			
Mass - model "A", "E"	kg (lbs)	1.75 (3.85)			
- model "B", "P"		1.50 (3.31)			

	Datasheet	Type
General information	GI_0060	Products and operating conditions
Mounting interface	SMT_0019	ISO 4401-03-02-0-05 DIN 24340 (CETOP 03)
Spare parts	SP_8010	

Functional Description

The pressure valves VRP2 are directly operated reducing-relieving valves for vertical stacking assemblies designed as 3 way valves, which means it includes pressure protection of the secondary circuit. The valve consists of the valve body, control spool, spring, and adjustment element. The body includes a port M with thread G 1/4 for attachment of a pressure measuring device or a by-pass free flow check valve.

Model A

In model A, the fluid enters the valve body from the primary circuit through port A1 and passes through the metering edge, where its pressure is reduced. The flow is passed to the output port A2 and on to the user. The reverse free flow from port A2 to port A1 passes through a check valve which is connected in parallel to the metering edge of the control spool.

Model E

In model E, the fluid enters the valve body from the primary circuit through port B1 and passes through the metering edge, where its pressure is reduced. The flow is passed to the output port B2 and on to the user. The reverse free flow from port B2 to port B1 passes through a check valve which is connected parallel to the metering edge of the control spool.

Model B

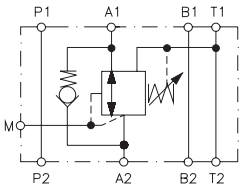
In model B, the pressure reduction occurs from port P2 to port P1, but only if the flow in port B passes towards the user (not opposite). The protection of the secondary circuit is therefore ensured for one flow direction only.

Model P

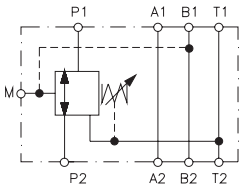
In model P, the pressure reduction occurs from port P2 to port P1, and is effective in both flow directions through the directional valve. Therefore, the protection of the secondary circuit is ensured for both flow directions.

Functional symbols

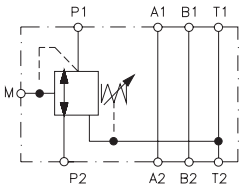
A



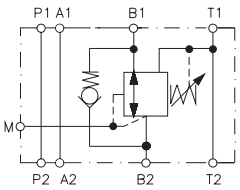
B



P



E



① valve side

② subplate or manifold side

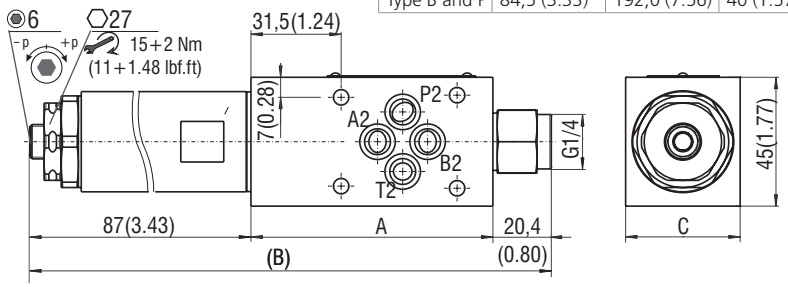
Notice: The orientation of the symbol on the name plate corresponds with the valve function.

Dimensions in millimeters (inches)

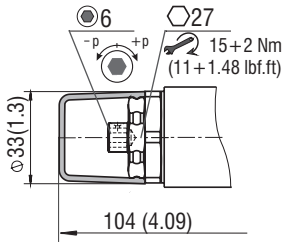
Type A, B, P

Dimensions	A	B	C
Type A	85,0 (3.35)	192,5 (7.58)	45 (1.77)
Type B and P	84,5 (3.33)	192,0 (7.56)	40 (1.57)

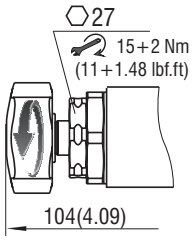
Model S



Model T

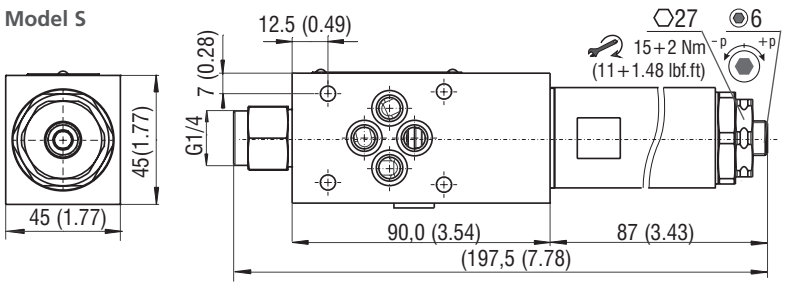


Model RP

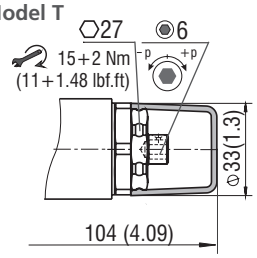


Type E

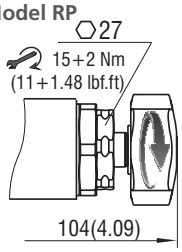
Model S



Model T



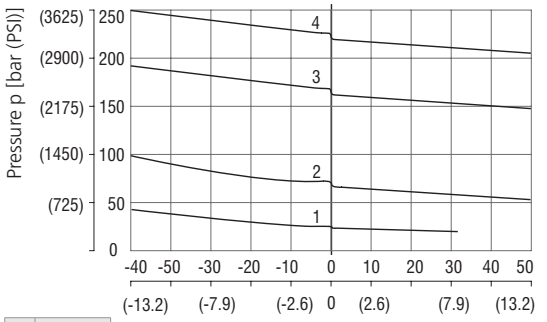
Model RP



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

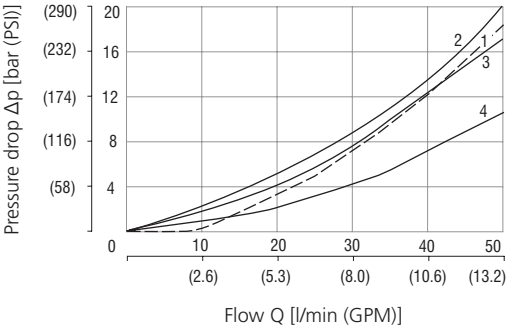
Reducing - relieving pressure related to flow rate

Relieving function A-T / Reducing function P-A



	Pressure range
4	21
3	16
2	6
1	2

Pressure drop related to flow rate



	Flow direction - Model			
	A	B	E	P
4	A1-A2		B1-B2	
3	A2-A1		B2-B1	
2	A2-T	P1-T	B2-T	P1-T
1		P2-P1		P2-P1

1 (4) - Pressure drop of reducing valve at min. adjustable pressure range
2 - Pressure drop of relief valve at min. adjustable safety pressure
3 - Pressure drop of check valve

Ordering Code

VRP2 - 06 - □ □ / □ □ - □

Pressure reducing - relieving valve, spool type, direct acting, modular

Valve size
ISO 4401-03-02-0-05, DIN 24340 (CETOP 03), size 06

Model

Pressure reduction	Pressure sensing	
on port A2	at port A2	**A**
on port P1	at port B1	**B**
on port B2	at port B2	**E**
on port P1	at port P1	**P**

Pressure range range (at Q = 5 l/min)

2	10 - 25 bar (150 - 360 PSI)
6	20 - 63 bar (290 - 910 PSI)
16	30 - 160 bar (440 - 2320 PSI)
21	40 - 210 bar (580 - 3050 PSI)

Adjustment option

S	allen key (hex. 6), without protective cap
T	allen key (hex. 6), with protective cap
RP	hand screw, plastic

Seals

No designation	NBR
V	FPM (Viton)

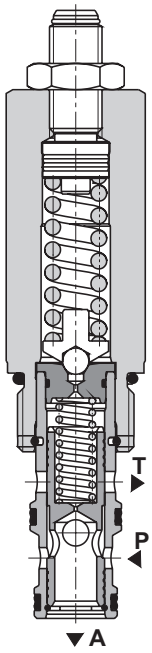
Surface treatment

No designation	body phosphated, steel parts
	zinc-coated (ZnCr-3), ISO 9227 (240 h)
A	zinc-coated (ZnCr-3), ISO 9227 (240 h)
B	zinc-coated (ZnNi), ISO 9227 (520 h)

Pressure Reducing Valve, Spool Type, Pilot Operated

SP4A-B3

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



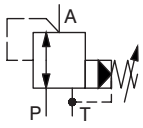
Technical Features

- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop by CFD optimized flow path
- Reverse relief protection
- Wide pressure range up to 350 bar
- High flow capacity
- Hardened precision parts
- Adjustable by allen key or hand screw
- In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

This 3 way pilot operated pressure reducing valve is designed to reduce the system pressure at the consumer port. Due to its 3 way design the valve provides reverse relief protection of the secondary circuit to the tank port. The pressure can be set by an adjustment screw (by allen key or by hand screw).

Symbol



Technical Data

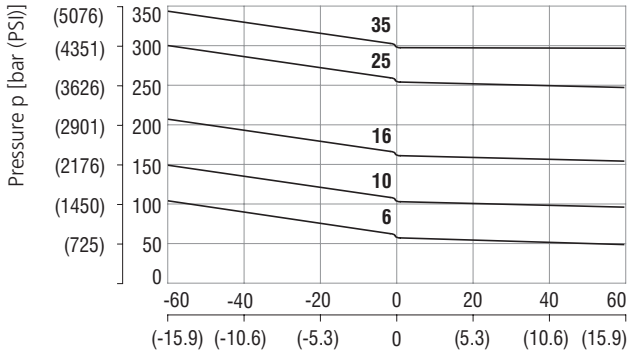
Valve size / Cartridge cavity			7/8-14 UNF-2A / B3 (C-10-3)
Max. flow		l/min (GPM)	60 (15.9)
Max. control flow		l/min (GPM)	0.34 (0.09)
Max. operating pressure		bar (PSI)	350 (5080)
Max. pressure (port T)		bar (PSI)	100 (1450)
Fluid temperature range (NBR)		°C (°F)	-30 ... +100 (-22 ... 212)
Fluid temperature range (FPM)		°C (°F)	-20 ... +120 (-4 ... 248)
Weight		kg (lbs)	0.24 (0.53)
		Datasheet	Type
General information		GI_0060	Products and operating conditions
Valve bodies	In-line mounted	SB_0018	SB-B3*
	Sandwich mounted	SB-04(06)_0028	SB-*B3*
Cavity details / Form tools		SMT_0019	SMT-B3*
Spare parts		SP_8010	

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.

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

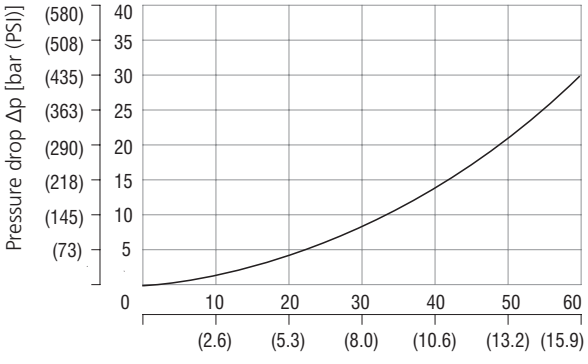
Reducing - relieving pressure related to flow rate

Relieving function A-T / Reducing function P-A



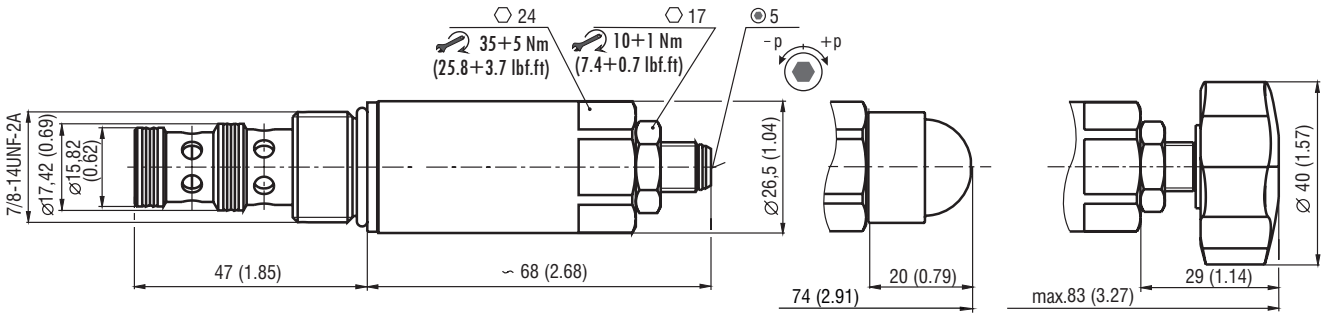
Pressure drop related to flow rate

Flow direction P - A
Fully open valve cross section



Dimensions in millimeters (inches)

Model S **Model T** **Model RP**



Ordering Code

SP4A-B3 / H ☐ ☐ ☐ - ☐

Pressure reducing - relieving valve, spool type, pilot operated

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

Model
High performance

Adjustable range of reduced pressure

10 ... 63 bar (145 ... 910 PSI)	**6**
10 ... 100 bar (145 ... 1450 PSI)	**10**
10 ... 160 bar (145 ... 2320 PSI)	**16**
10 ... 250 bar (145 ... 3630 PSI)	**25**
10 ... 350 bar (145 ... 5080 PSI)	**35**

Adjustment option

S	allen key (hex. 5), without protective cap
T	allen key (hex. 5), with protective cap
RP	hand screw, plastic

Seals

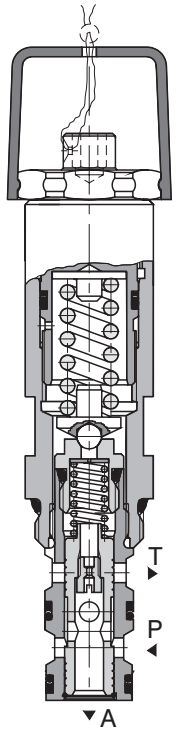
No designation	NBR
V	FPM (Viton)

Surface treatment

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

VRN2-06/S

M22 x 1.5 • Q_{max} 40 l/min (11 GPM) • p_{max} 320 bar (4600 PSI)

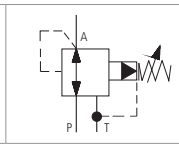


Technical Features

- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Reverse relief protection
- Wide pressure range up to 320 bar
- High flow capacity
- Hardened precision parts
- Adjustable by allen key or hand screw, optionally sealable (lockwire holes)
- In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

This 3 way pilot operated pressure reducing valve is designed to reduce the system pressure at the consumer port. Due to its 3 way design the valve provides reverse relief protection of the secondary circuit to the tank port. The pressure can be set by an adjustment screw (by allen key or by hand screw) and the valve is optionally equipped with lockwire holes for sealing.

Symbol	

Technical Data

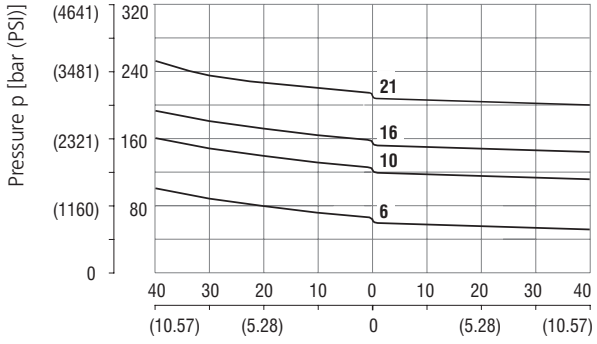
Valve size / Cartridge cavity			M22 x 1.5 / QF3
Max. flow		l/min (GPM)	40 (10.6)
Max. control flow		l/min (GPM)	0.25 (0.07)
Max. operating pressure		bar (PSI)	320 (4640)
Max. pressure (T port)		bar (PSI)	160 (2320)
Fluid temperature range (NBR)		°C (°F)	-30 ... +100 (-22 ... 212)
Fluid temperature range (FPM)		°C (°F)	-20 ... +120 (-4 ... 248)
Weight		kg (lbs)	0.22 (0.49)
		Datasheet	Type
General information		GI_0060	Products and operating conditions
Valve bodies	In-line mounted	SB_0018	SB-QF3*
	Sandwich mounted	SB-04(06)_0028	SB-04(06)-QF3*
Cavity details		SMT_0029	SMT-QF3*
Spare parts		SP_8010	

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.

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

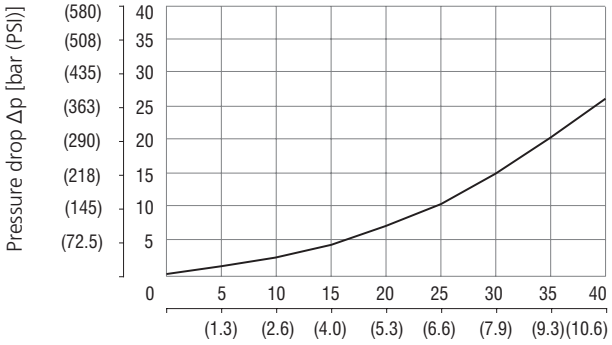
Reducing - relieving pressure related to flow rate

Relieving function A-T / Reducing function P-A



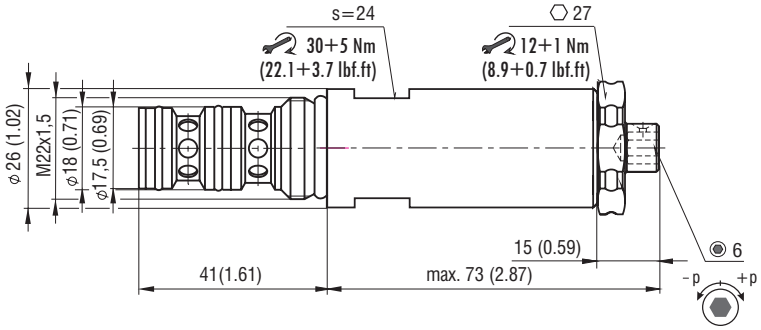
Pressure drop related to flow rate

Flow direction P-A
Fully open valve cross section

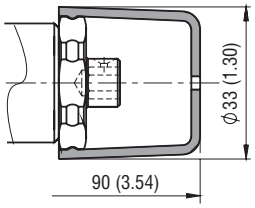


Dimensions in millimeters (inches)

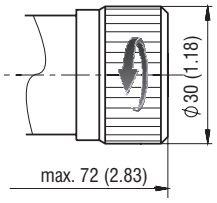
Model S



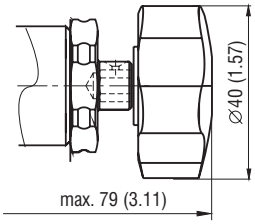
Model T



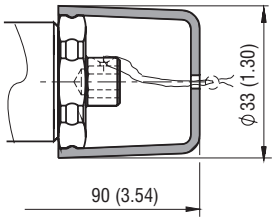
Model RS



Model RP



Model L



Ordering Code

VRN2-06 / S - ☐ ☐ ☐ - ☐

Pressure reducing - relieving valve, spool type, pilot operated **M22 x 1.5**

Model
screw-in cartridge

Adjustable range of reduced pressure

10 ... 63 bar (145 ... 910 PSI)	**6**
10 ... 100 bar (145 ... 1450 PSI)	**10**
10 ... 160 bar (145 ... 2320 PSI)	**16**
10 ... 210 bar (145 ... 3045 PSI)	**21**

Adjustment option

S	allen key (hex. 6), without protective cap
T	allen key (hex. 6), with protective cap
RS	hand screw, metal
RP	hand screw, plastic
L	allen key (hex. 6), with protective cap, sealable (lockwire holes)

Seals

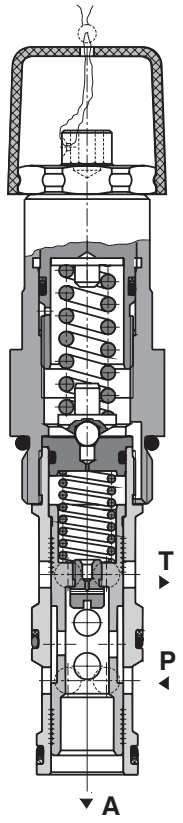
No designation	NBR
V	FPM (Viton)

Surface treatment

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

VRN2-10/S

M27 x 2 • Q_{max} 150 l/min (40 GPM) • p_{max} 320 bar (4600 PSI)

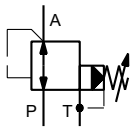


Technical Features

- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Reverse relief protection
- Wide pressure range up to 320 bar
- High flow capacity
- Hardened precision parts
- Adjustable by allen key or hand screw, optionally sealable (lockwire holes)
- In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

This 3 way pilot operated pressure reducing valve is designed to reduce the system pressure at consumer port. Due to its 3 way design the valve provideds reverse relief protection of the secondary circuit to the tank port. The pressure can be set by an adjustment screw (by allen wrench or by hand) and the valve is optionally equipped with lockwire holes for sealing.

Symbol	

Technical Data

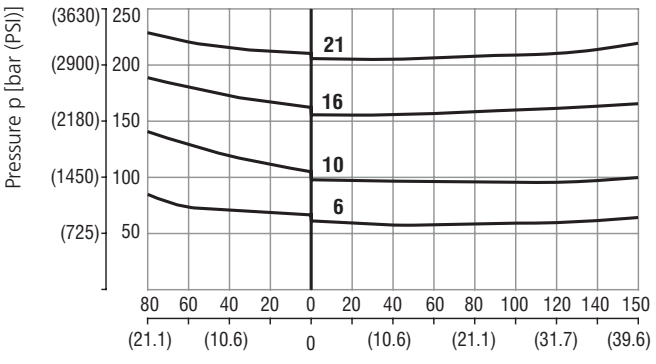
Valve size / Cartridge cavity		M27 x 2 / K3
Max. flow	l/min (GPM)	150 (39.6)
Max. control flow	l/min (GPM)	0.65 (0.17)
Max. operating pressure	bar (PSI)	320 (4640)
Max. pressure (port T)	bar (PSI)	160 (2320)
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... 212)
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... 248)
Weight	kg (lbs)	0.35 (0.77)
	Datasheet	Type
General information	GI_0060	Products and operating conditions
Valve bodies In-line mounted	SB_0018	SB-K3*
Cavity details	SMT_0029	SMT-K3*
Spare parts	SP_8010	

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.

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

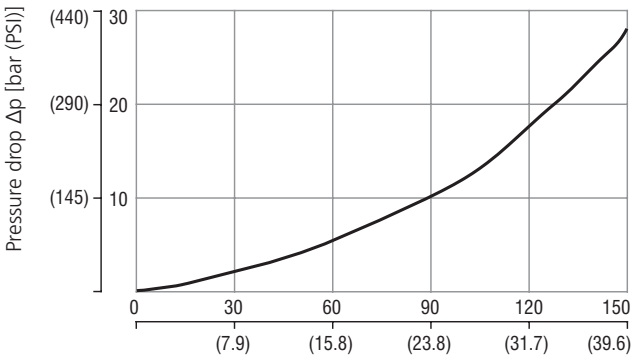
Reducing - relieving pressure related to flow rate

Relieving function A-T / Reducing function P-A



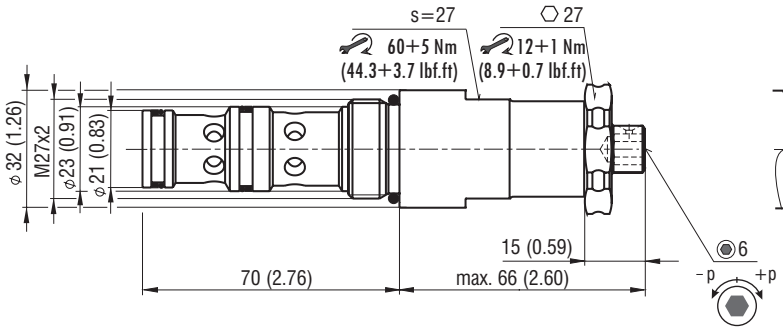
Pressure drop related to flow rate

Flow direction P-A
Fully open valve cross section

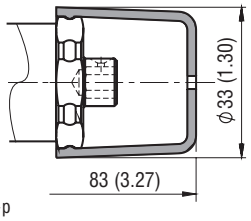


Dimensions in millimeters (inches)

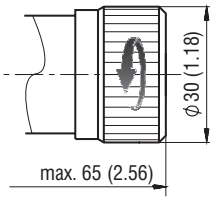
Model S



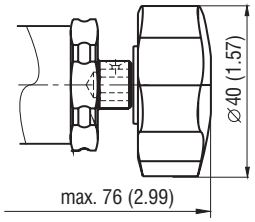
Model T



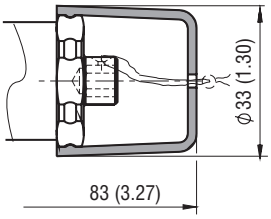
Model RS



Model RP



Model L



Ordering Code

VRN2-10 / S - ☐ ☐ ☐ - ☐

Pressure reducing - relieving valve, spool type, pilot operated **M27 x 2**

Model
screw-in cartridge

Adjustable range of reduced pressure

10 ... 63 bar (145 ... 910 PSI)	**6**
10 ... 100 bar (145 ... 1450 PSI)	**10**
10 ... 160 bar (145 ... 2320 PSI)	**16**
10 ... 210 bar (145 ... 3045 PSI)	**21**

Adjustment option

S	allen key (hex. 6), without protective cap
T	allen key (hex. 6), with protective cap
RS	hand screw, metal
RP	hand screw, plastic
L	allen key (hex. 6), with protective cap, sealable (lockwire holes)

Seals

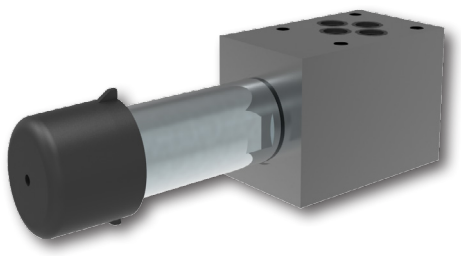
No designation	NBR
V	FPM (Viton)

Surface treatment

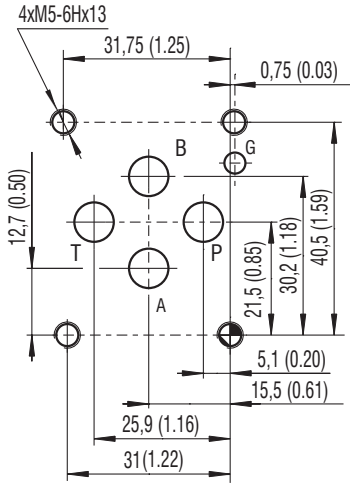
A	zinc-coated (ZnCr-3), ISO 9227 (240 h)
B	zinc-coated (ZnNi), ISO 9227 (520 h)

VRN2-06/M(R)

Size 06 (D03) • Q_{max} 40 l/min (11 GPM) • p_{max} 320 bar (4600 PSI)



ISO 4401-03-02-0-05



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

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

- Pressure reducing - relieving valve, spool type, pilot operated with mounting interface acc. to ISO 4401, DIN 24340 (CETOP 03)
- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Reverse relief protection
- Wide pressure range up to 320 bar
- High flow capacity
- Hardened precision parts
- Adjustable by allen key or hand screw, optionally sealable (lockwire holes)
- In the standard version, the valve housing is phosphated and steel parts are zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

This pilot operated pressure reducing valve is designed to reduce the system pressure at the consumer port. Its 3 way design provides reverse relief protection of the secondary circuit to the tank port. The pressure can be set by an adjustment screw and the valve is optionally equipped with lockwire holes for sealing. Valve bodies for vertical stacking assemblies are available with pressure reduction in ports A and P. Check valves incorporated into the valve bodies MA(B) enable the reverse flow to pass freely through the valve.

Model MA, MB, MC

In models MA and MB, the flow enters the valve through port A1 (B1). The input pressure is reduced and routed to port A2 (B2). In model MB the reverse flow passes through a check valve. The MC type is identical to the MB type, but without the bypass check valve.

Model MP

In model MP, the pressure is reduced from port P2 to port P1.
All models support the connection of a pressure gauge to port M (thread G 1/4).

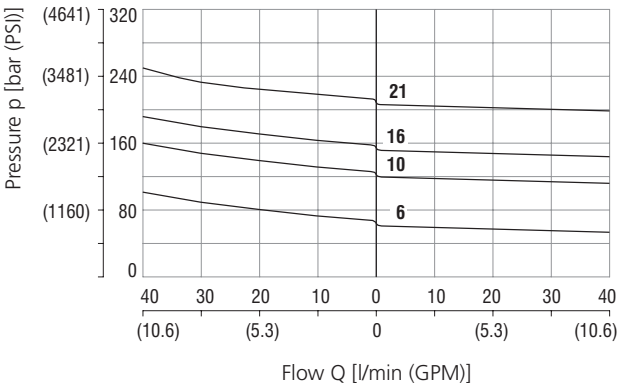
Technical Data

Valve size / Cartridge cavity		Size 06 / QF3
Max. flow	l/min (GPM)	40 (10.6)
Max. control flow	l/min (GPM)	0.25 (0.07)
Max. operating pressure (ports P, A, B)	bar (PSI)	320 (4640)
Max. operating pressure (port T)	bar (PSI)	160 (2320)
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... 212)
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... 248)
Weight - models MA, MB	kg (lbs)	1.20 (2.65)
- models MC, MP		1.10 (2.43)
- model RA1		1.10 (2.43)
	Datasheet	Type
General information	GI_0060	Products and operating conditions
Mounting interface	SMT_0019	ISO 4401-03-02-0-05 DIN 24340 (CETOP 03)
Spare parts	SP_8010	

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

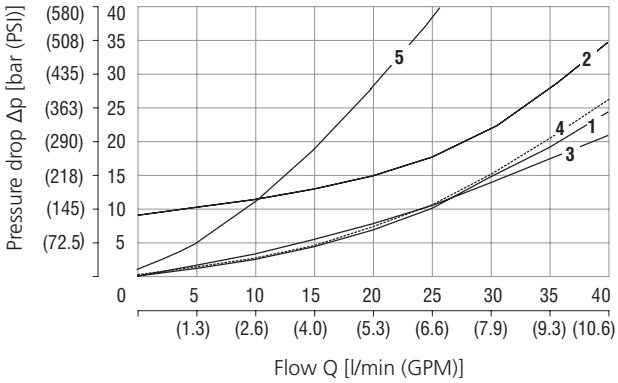
Reducing - relieving pressure related to flow rate

Relieving function A-T / Reducing function P-A



Pressure drop related to flow rate

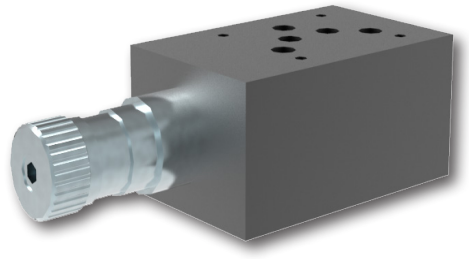
Flow direction P-A Fully open valve through section



Flow direction	1	2	3	4	5
	A1-A2 B1-B2	A2-T B2-T P1-T	A2-A1 B2-B1 flow through check valve and fully opened main spool	P2-P1	A2-A1 B2-B1 flow through check valve only

VRN2-10/M(R)

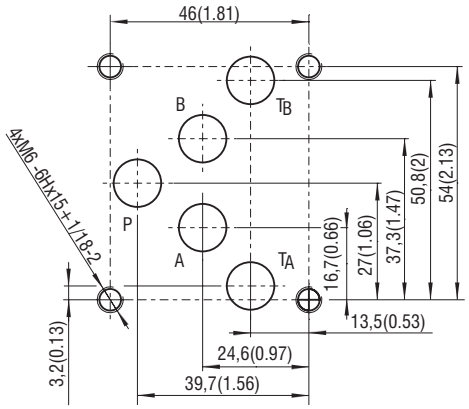
Size 10 (D05) • Q_{max} 150 l/min (40 GPM) • p_{max} 320 bar (4600 PSI)



Technical Features

- Pressure reducing - relieving valve, spool type, pilot operated with mounting interface acc. to ISO 4401, DIN 24340 (CETOP 05) or in-line design
- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Reverse relief protectionw
- Wide pressure range up to 320 bar
- High flow capacity
- Hardened precision parts
- Adjustable by allen key or hand screw, optionally sealable (lockwire holes)
- In the standard version, the valve housing is phosphated and steel parts are zinc-coated for 240 h protection acc. to ISO 9227

ISO 4401-05-04-0-05



Ports P, A, B, T - max. ∅11.2 mm (0.44 in)

Functional Description

This pilot operated pressure reducing valve is designed to reduce the system pressure at the consumer port. Its 3 way design provides reverse relief protection of the secondary circuit to the tank port. The pressure can be set by an adjustment screw and the valve is optionally equipped with lockwire holes for sealing. Valve bodies for vertical stacking assemblies are available with pressure reduction in ports A and P. Check valves incorporated into the valve bodies MA(B) enable the reverse flow to pass through the valve.

Model MA, MB

In models MA and MB, the flow enters the valve through port A1 (B1). The input pressure is reduced and routed to port A2 (B2). In model MB the reverse flow passes through a check valve.

Model MP

In model MP, the pressure is reduced from port P2 to port P1.
All models support the connection of a pressure gauge to port M (thread G 1/4).

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.

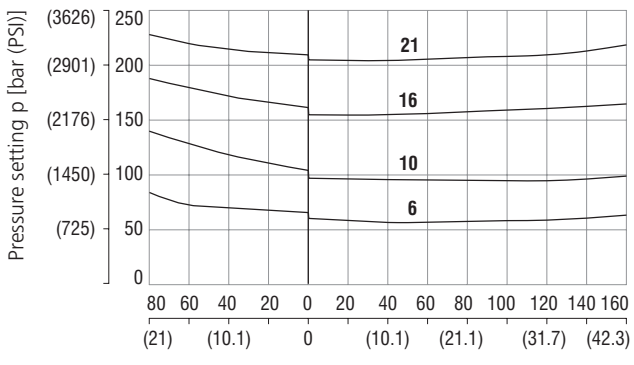
Technical Data

Valve size / Cartridge cavity		Size 10 / K3
Max. flow	l/min (GPM)	150 (40)
Max. control flow	l/min (GPM)	0.65 (0.17)
Max. operating pressure (ports P, A, B)	bar (PSI)	320 (4640)
Max. operating pressure (port T)	bar (PSI)	160 (2320)
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... 212)
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... 248)
Weight - models MA, MB	kg (lbs)	3.20 (7.05)
- model MP		2.85 (6.28)
- model RA1		2.20 (4.85)
	Datasheet	Type
General information	GI_0060	Products and operating conditions
Mounting interface	SMT_0019	ISO 4401-05-04-0-05 DIN 24340 (CETOP 05)
Spare parts	SP_8010	

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

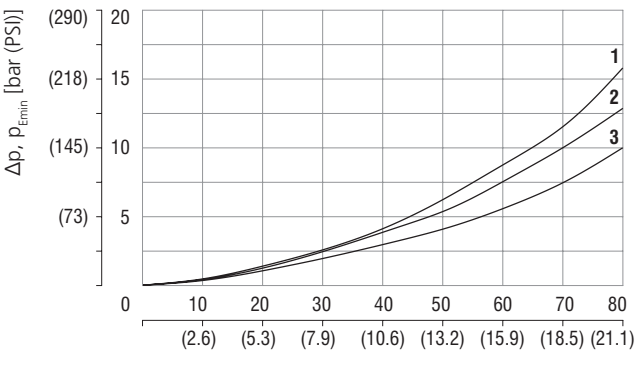
Reducing - relieving pressure related to flow rate

Relieving function A-T / Reducing function P-A



Pressure drop related to flow rate

Flow direction P-A Fully open valve through section

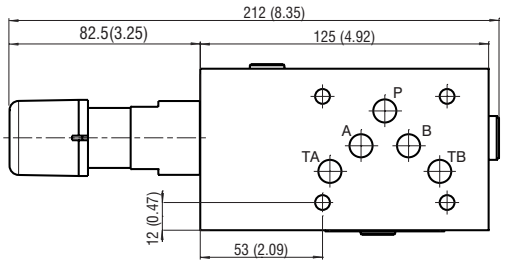


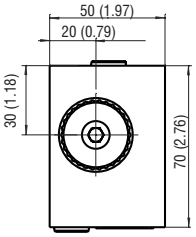
	Models	Directions
1	MA, MB	A-B, B1-B2
2	MP	P2-P1
3	MA, MB	A2-A1, B2-B1

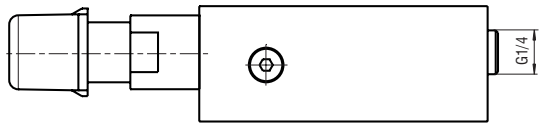
Subject to change · VRN2-10/M(R)_5156_3en_09/2020

Dimensions in millimeters (inches)

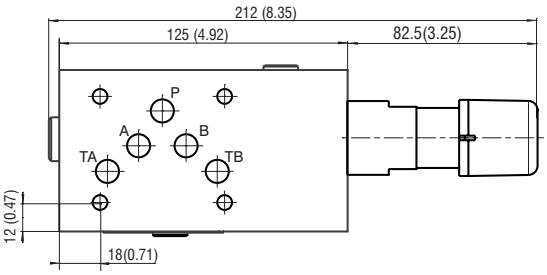
Model MA





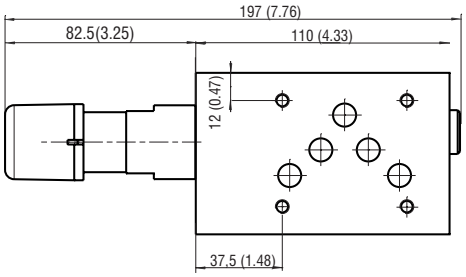


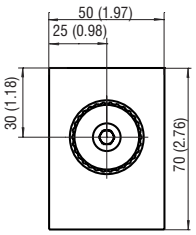
Model MB



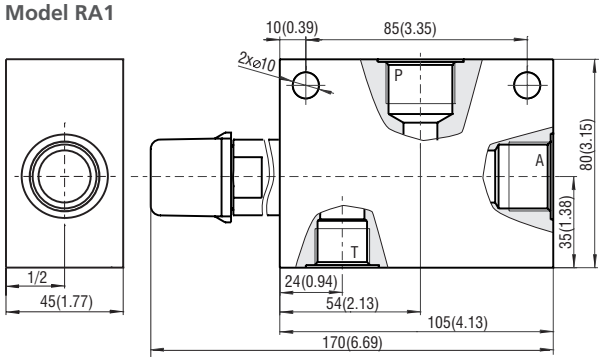
Dimensions in mm (in)			
Port	A	P	T
Thread	M27x2	G3/4	G1/2
Depth of thread	19 (0.75)	16 (0.63)	14 (0.55)
Counterbore	Ø40	Ø33	Ø28
Depth of counterbore	1 (0.04)	1 (0.04)	1 (0.04)

Model MP



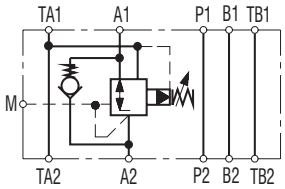


Model RA1

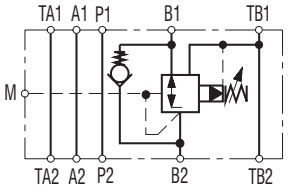


Functional Symbols

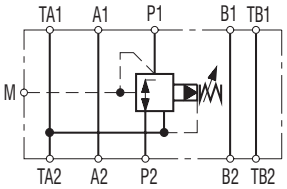
VRN2-10/MA



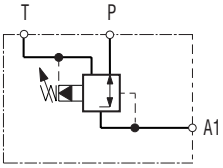
VRN2-10/MB



VRN2-10/MP



VRN2-10/RA1



① valve side

② subplate or manifold side

Notice: The orientation of the symbol on the name plate corresponds with the valve function.

Ordering Code

VRN2-10/ □ - □ □ □ - □

Pressure reducing - relieving valve, spool type, pilot operated, modular

Valve size
ISO 4401-05-04-0-05, DIN 24340 (CETOP 05), size 10

Model — Pressure reduction	
modular valve, on port A2 (with by-pass check valve)	**MA**
modular valve, on port B2 (with by-pass check valve)	**MB**
modular valve, on port P1	**MP**
in-line valve, three ports, thread G 3/4 (P), G 1/2 (T)	**RA1**

Adjustable range of reduced pressure

10 ... 63 bar (145 ... 910 PSI)	**6**
10 ... 100 bar (145 ... 1450 PSI)	**10**
10 ... 160 bar (145 ... 2320 PSI)	**16**
10 ... 210 bar (145 ... 3045 PSI)	**21**

Surface treatment

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

Seals

No designation	NBR
V	FPM (Viton)

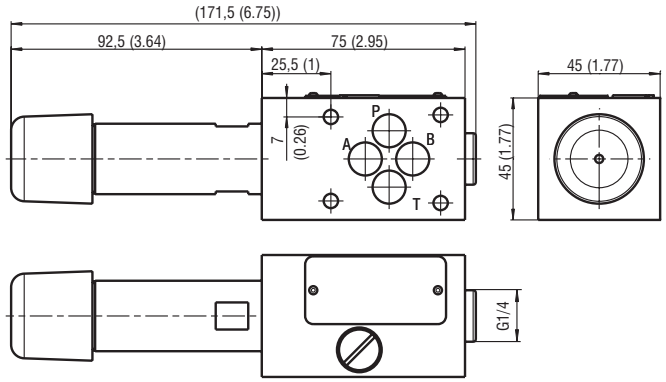
Adjustment option*

S	allen key (hex. 6), without protective cap
T	allen key (hex. 6), with protective cap
RS	hand screw, metal
RP	hand screw, plastic
L	allen key (hex. 6), with protective cap, sealable (lockwire holes)

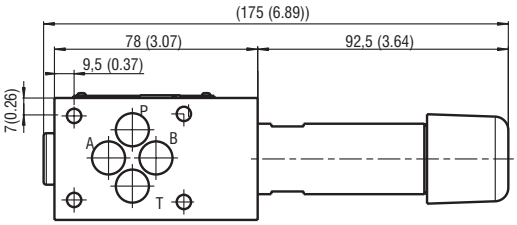
*for dimensions of adjustment options see data sheet No. 5154

Dimensions in millimeters (inches)

Model MA

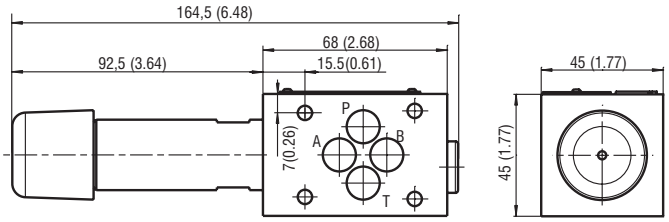


Models MB, MC

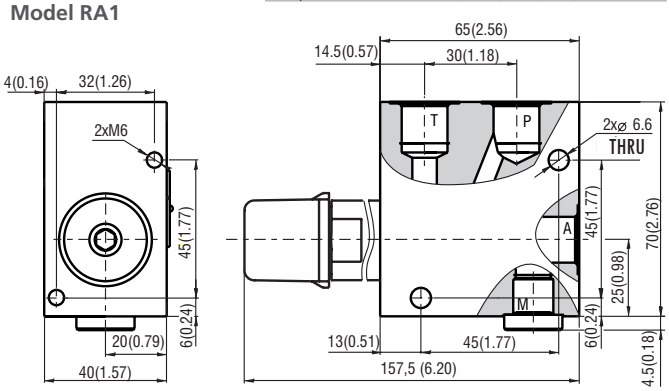


Dimensions in mm (in)				
Port	A	P	T	M
Thread	G 3/8			G1/4
Depth of thread	12 (0.47)			12 (0.47)
Counterbore	Ø23			Ø20
Depth of counterbore	1	1	1	1

Model MP

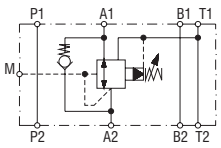


Model RA1

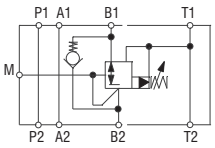


Functional Symbols

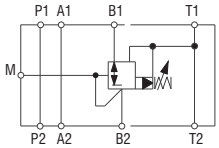
VRN2-06/MA



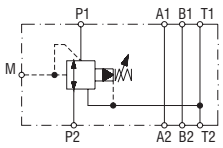
VRN2-06/MB



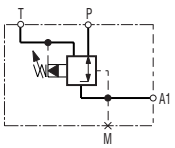
VRN2-06/MC



VRN2-06/MP



VRN2-06/RA1



① valve side

② subplate or manifold side

Notice: The orientation of the symbol on the name plate corresponds with the valve function.

Ordering Code

VRN2-06/ □ - □ □ □ - □

Pressure reducing - relieving valve, spool type, pilot operated, modular

Valve size
ISO 4401-03-02-0-05, DIN 24340 (CETOP 03), size 06

Model	**Pressure reduction**
modular valve, on port A2 (with by-pass check valve)	**MA**
modular valve, on port B2 (with by-pass check valve)	**MB**
modular valve, on port B2 (without by-pass check valve)	**MC**
modular valve, on port P1	**MP**
in-line valve, three ports, thread G 3/8 (P, T, A)	**RA1**

Adjustable range of reduced pressure

10 ... 63 bar (145 ... 910 PSI)	**6**
10 ... 100 bar (145 ... 1450 PSI)	**10**
10 ... 160 bar (145 ... 2320 PSI)	**16**
10 ... 210 bar (145 ... 3045 PSI)	**21**

Surface treatment

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

Seals

No designation	NBR
V	FPM (Viton)

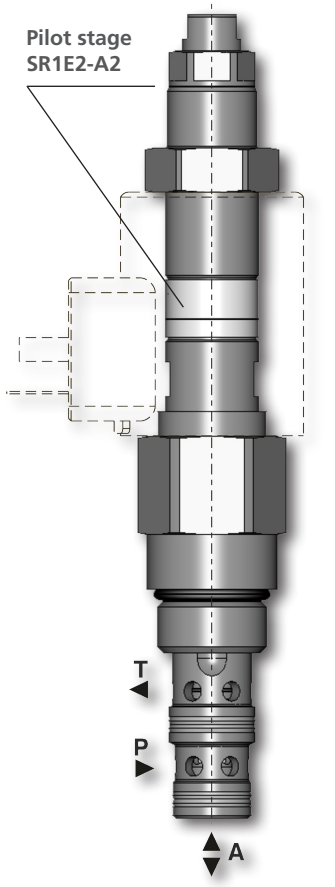
Adjustment option*

S	allen key (hex. 6), without protective cap
T	allen key (hex. 6), with protective cap
RS	hand screw, metal
RP	hand screw, plastic
L	allen key (hex. 6), with protective cap, sealable (lockwire holes)

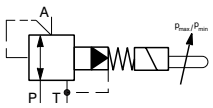
*for dimensions of adjustment options see data sheet No.5153

SP4E1-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

- Screw-in cartridge pilot operated valve with combined function of pressure reducing and relief valve
- Solenoid operated remote switching between minimum and maximum set pressure
- Possible combined function of pressure reducing and unloading valve
- Five pressure ranges with a maximum settable pressure of 350 bar
- Excellent stability throughout the flow range to 60 l/min
- Accurate pressure control
- Easily interchangeable solenoid coil and easy connector positioning
- In the standard version, the valve is zinc-coated with corrosion protection 240 h in NSS acc. to ISO 9227 the reinforced protection 520 h in NSS is designed for demanding environment

Functional Description

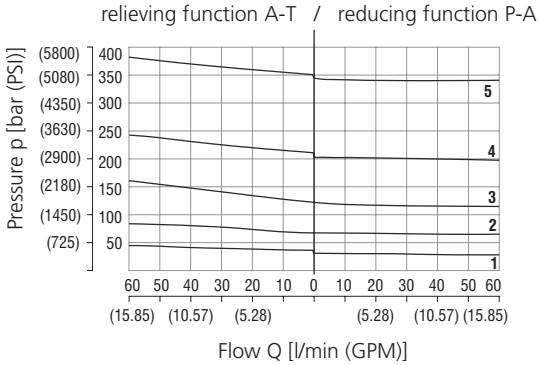
Screw-in cartridge pressure valve, pilot operated, combines function of reducing and relief valve. The valve continuously controls a pressure in A-port (connected to actuator) maintains the set pressure constant. When the A-line is overloaded by external load, A-port is connected to T-port and thanks to back flow to the tank the A-line is unloaded and protected (relief function). Additionally, it is possible to mechanically adjust two pressure values in A-port with adjusting screws built into the end plug of the solenoid actuating system. The two set pressure values can be remotely switched by solenoid. When the solenoid is switched on the valve is set to maximum pressure. The maximum adjustable pressure is defined by pressure range of valve. The minimum circuit pressure can be set from 6 bar to the set maximum pressure. The valve can be used in two ways – as a switcher between two set pressure values or as a combined reducing – unloading valve when one pressure value is adjusted on min. system pressure.
The complete valve consists of poppet pilot valve, main spool valve with connected thread 7/8-14 UNF and a control solenoid with adjusting screws.

Technical Data

Valve size / Cartridge cavity		7/8-14 UNF-2A / B3 (C-10-3)
Max. flow	l/min (GPM)	60 (15.9)
Max. operating pressure	bar (PSI)	350 (5080)
Max. pressure (port T)	bar (PSI)	100 (1450)
Min. adjustable pressure	bar (PSI)	6 (87)
Fluid temperature range (NBR)	°C (°F)	-30 ... +80 (-22 ... 176)
Fluid temperature range (FPM)	°C (°F)	-20 ... +80 (-4 ... 176)
Ambient temperature range (NBR)	°C (°F)	-30 ... +50 (-22 ... 122)
Ambient temperature range (FPM)	°C (°F)	-20 ... +50 (-4 ... 122)
Supply voltage tolerance	%	AC, DC ± 10
Max. switching frequency	1/h	5 000
Weight	kg (lbs)	0.6 (1.32)
Mounting position: If possible, the valve should be mounted with the coil vertically downward.		
	Datasheet	Type
General information	GI_0060	Products and operating conditions
Coil types	C_8007	C19B*
Valve bodies – In-line mounted	SB_0018	SB-B3*
Valve bodies – Sandwich mounted	SB-04(06)_0028	SB-*B3*
Cavity details / Form tools	SMT_0019	SMT-B3*
Spare parts	SP_8010	

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

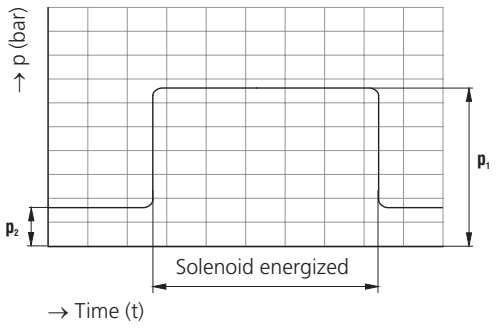
Reducing - relieving pressure related to flow rate



Pressure range	3	6	12	21	35
	1	2	3	4	5

Example showing the adjustable pressures p_1 and p_2 ($p_1 \geq p_2$)

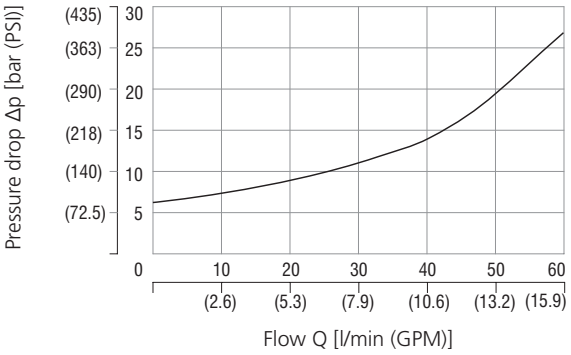
p_1 (p_max, relief pressure) is set as the higher working pressure (solenoid energized)
p_2 (p_min, vented pressure) is set as a lower working pressure (solenoid de–energized)



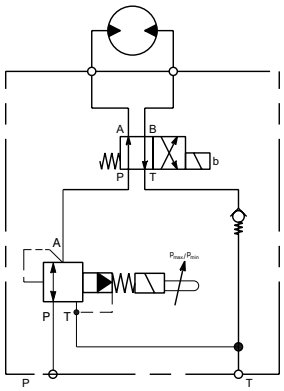
Characteristics measured at ν = 32 mm2/s (156 SUS)

Pressure drop related to flow rate

0 % of control current, A-T direction

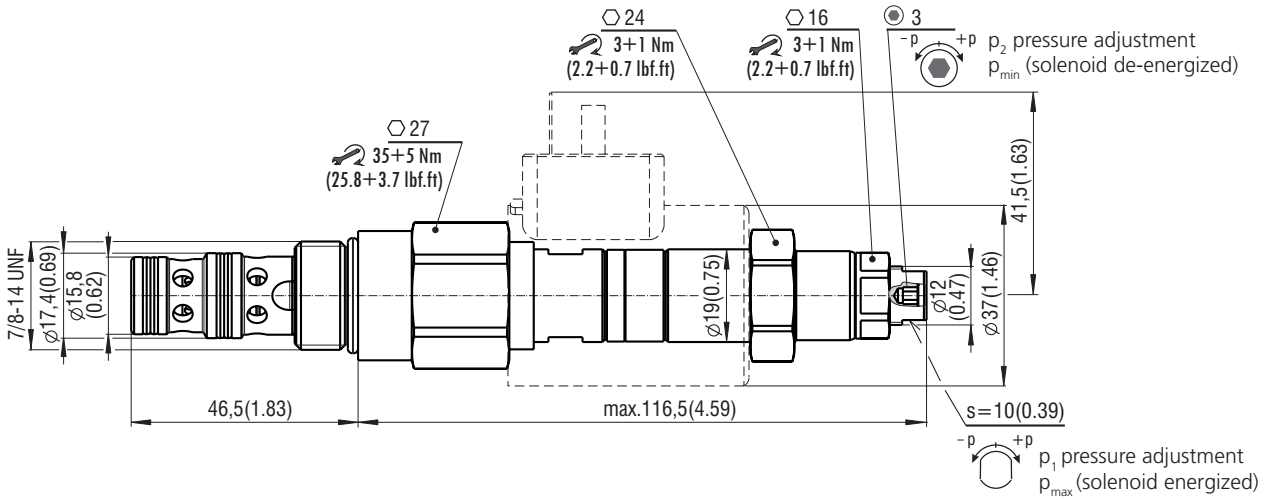


Application example



The valve is used to switch between two different set pressure values and to protect the applicator against pressure overloading. When p_2 is set on min. pressure, the pump and applicator are unloaded to the tank with a very low pressure drop. This results in less heating of the oil and therefore lower energy costs for the user.
The pressure p_1 (p_max) must be set before the pressure p_2 (p_min). To set p_1, the solenoid is energized and the pressure adjusted with a flat wrench (size 10). The solenoid is then de-energized and the lower pressure adjusted with an allen key (hex. 3).

Dimensions in millimeters (in)



Ordering Code

SP4E1 - B3 / H □ □ - □

Pressure reducing-relieving solenoid-operated On/Off valve, piloted

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

Model
High performance

Max. reduced pressure

up to 30 bar (440 PSI)	**3**
up to 60 bar (870 PSI)	**6**
up to 120 bar (1740 PSI)	**12**
up to 210 bar (3050 PSI)	**21**
up to 350 bar (5080 PSI)	**35**

Seals

No designation	NBR
V	FPM (Viton)

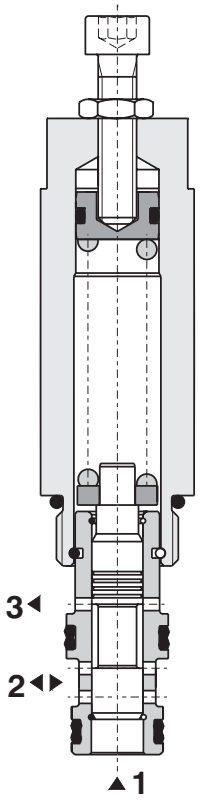
Surface treatment

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

Sequence Valve, Internal Pilot and Drain, Spool Type, Direct Acting

SS4A-A3

3/4-16 UNF • Q_{max} 30 l/min (8 GPM) • p_{max} 350 bar (5100 PSI)

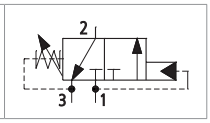


Technical Features

- Excellent stability throughout flow range with rapid response to dynamic pressure changes
- Low hysteresis, accurate pressure control and low pressure drop
- Pressure range up to 350 bar
- Hardened precision parts
- Adjustable by allen key
- In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

A direct acting, spool type hydraulic sequence valve in the form of a screw-in cartridge with internal pilot and spring chamber drain. The valve directs the fluid to the secondary circuit when the input pressure exeeds the pre-set pressure. In the neutral position, the valve blocks flow at port 1 (inlet), while allowing flow to pass from port 2 to 3 (tank). When the pressure on port 1 reaches the pre-set pressure, the cartridge opens the connection between port 1 to 2. Back pressure on port 3 adds to the pressure pre-set by the spring.

Symbol	

Technical Data

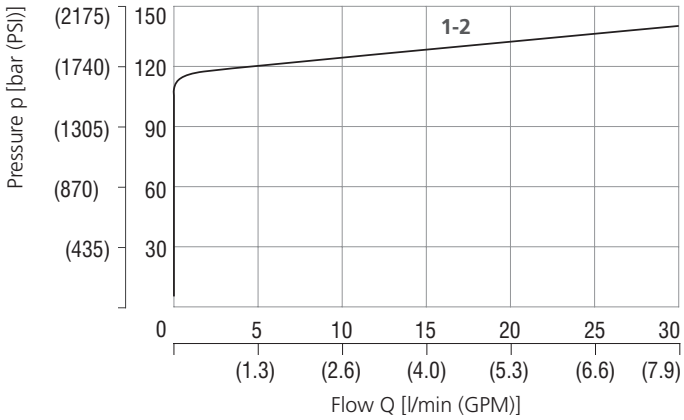
Valve size / Cartridge cavity		3/4-16 UNF-2A / A3
Max. flow	l/min (GPM)	30 (7.9)
Max. operating pressure	bar (PSI)	350 (5080)
Max. preset pressure	bar (PSI)	240 (3480)
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... 212)
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... 248)
Weight	kg (lbs)	0.23 (0.51)

		Datasheet	Type
General information		GI_0060	Products and operating conditions
Valve bodies	In-line mounted	SB_0018	SB-A3*
	Sandwich mounted	SB-04(06)_0028	SB-*A3*
Cavity details / Form tools		SMT_0019	SMT-A3*
Spare parts		SP_8010	

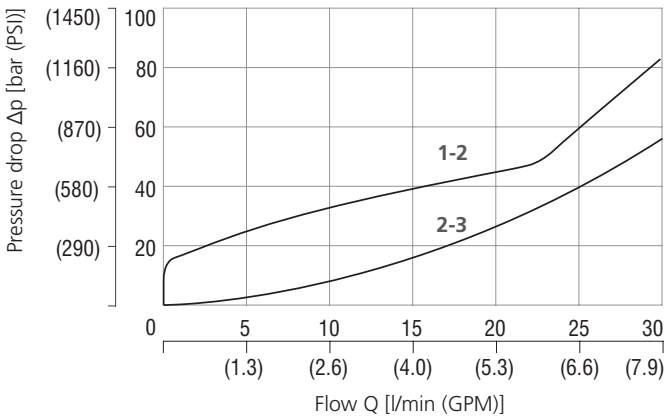
Characteristics measured at ν = 32 mm²/s (156 SUS)

Relief pressure related to flow rate

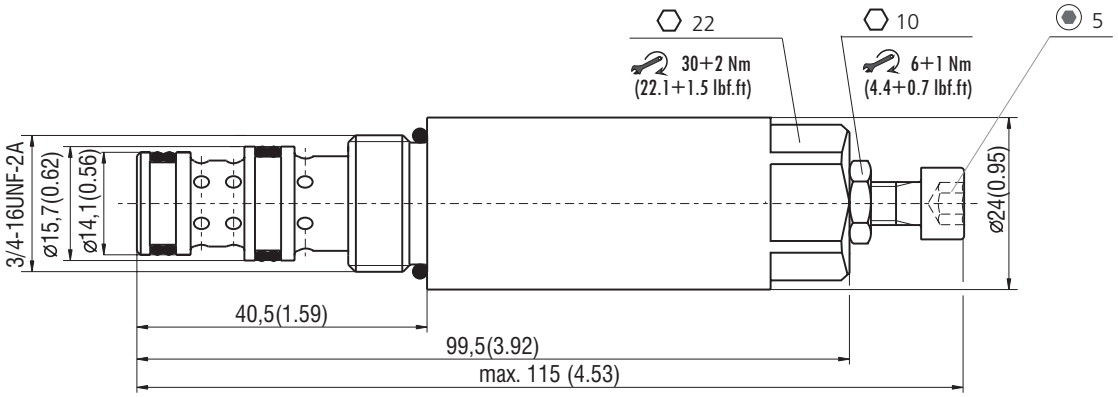
Example of factory preset valve,
at 120 bar (1740 PSI), 5 l/min (1.3 GPM)



Pressure drop related to flow rate



Dimensions in millimeters (inches)



Ordering Code

SS4A-A3 / ☐ ☐ ☐ ☐ - ☐

Sequence valve, internal pilot and drain, spool type, direct acting
3/4-16UNF

Model
High performance **H**

Pressure range
10 - 50 bar (150 - 730 PSI) **5**
50 - 240 bar (730 - 3480 PSI) **24**

Seals
No designation NBR
V FPM (Viton)

Adjustment option
S allen key (hex. 5), without protective cap

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