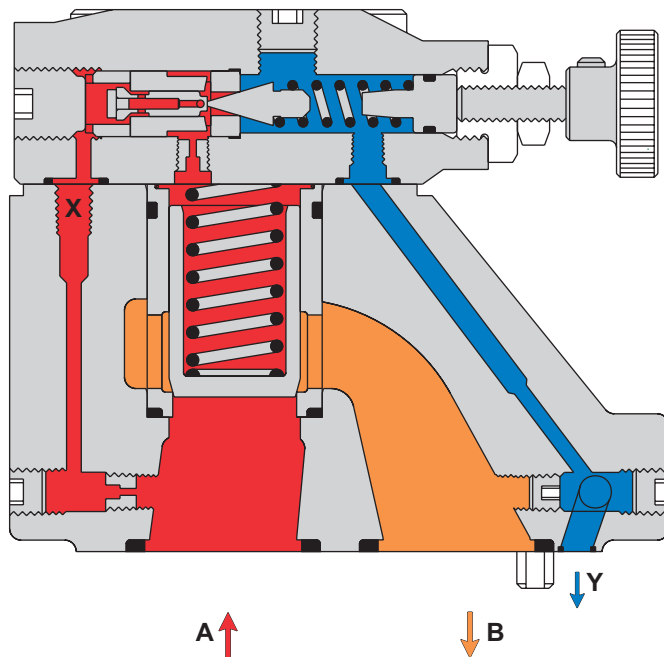
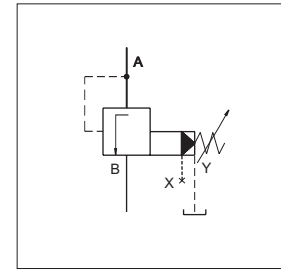


Veljan Sequence Valve Series VR4S are pilot operated controls and enable a hydraulic system to operate in a sequence. Fluid is allowed to pass to a secondary system ( Port B ) after the primary system ( Port A ) pressure reaches the preadjusted value set at pilot spring.

VR4S consists of a high flow poppet type seat valve section controlled by the low flow, adjustable pilot section mounted on top. Pressure setting is altered by means of a knurled knob. For tamper proof setting , acorn nut with lead seal is available as option. Optional vent valve VV01 sandwiched between the pilot section and the main body can be used for venting the VR4S valves. Pilot drain can be taken out externally from a pilot head or from a subplate.

Exceptionally fast response is obtained due to the precise ratio between the main piston area and its mass. The unique design features of pilot allows for accurate and stable secondary pressure controls. Precise adjustment and quick response eliminate pressure variation and system shocks.



Port A is connected to the primary section and port B to the secondary section of a hydraulic system. At low pressure, flow entering to Port A is blocked by the main poppet. Pressure at Port A passes through orifices to the pilot section as well as to the top of the main poppet. No flow takes place to this section until the pressure overcomes the spring setting of the pilot cone. The pilot cone is lifted from its seat releasing a small pilot flow through external drain and resulting in a pressure drop across the main poppet. The main poppet opens and allows only enough flow to the secondary system ( Port B ) maintaining the primary system pressure ( Port A ) at the pre-set value until the pressure at secondary port rises to the same value. As soon as the pressure is equal in both ports, the control piston in the pilot section closes preventing loss of oil through external drain. The main poppet opens fully and allows pressure at A and B to rise to a higher value than set . In such a situation the VR4S works as a gate valve allowing flow in either direction.

## SPECIFICATIONS

### General

Type	:	Pilot operated Sequence Valve
Design	:	Poppet type
Mounting	:	Threaded/Subplate/Cartridge/Flange
Mounting position	:	Optional
Port sizes (nominal)	:	3/8", 3/4", 1 1/4"
Direction of flow	:	A→B
Ambient temperature	:	-20°C...+60°C (-4°F...+140°F)
Special working conditions	:	Consult <b>VELJAN</b>

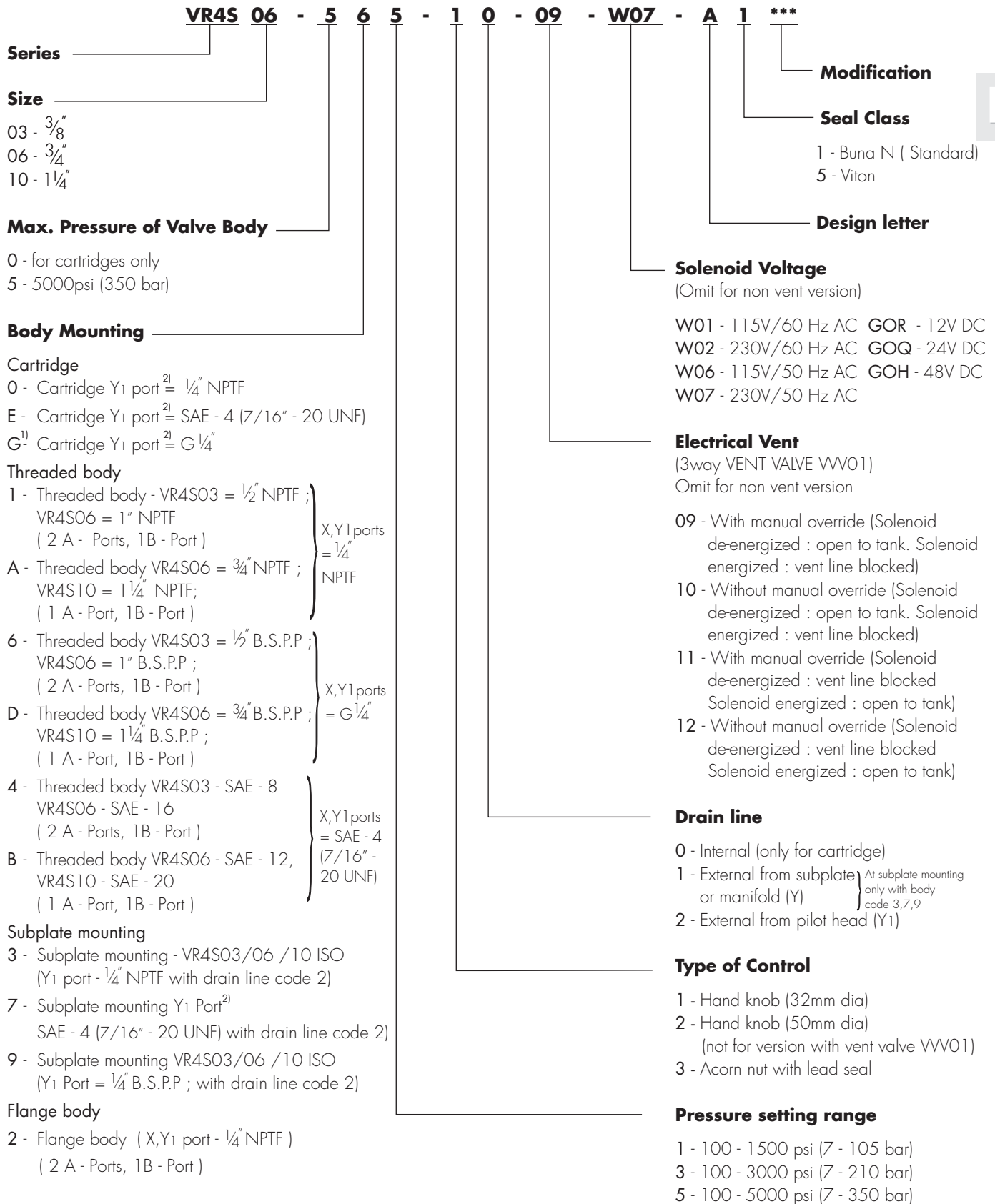
### Hydraulics

Pressure control range	:	Minimum - depends on flow Maximum - 5000 psi (350 bar)
Maximum operating pressure	:	
Port A (inlet)	:	5000 psi (350 bar)
Port B (outlet)	:	5000 psi (350 bar)
Port X (pilot)	:	5000 psi (350 bar)
Port Y, Y <sub>1</sub> (Pilot drain )	:	Without pressure to tank
Nominal flow gpm (lpm)	:	VR4S 03 (3/8")    VR4S 06 (3/4")    VR4S 10 (1 1/4") 15.8 (60)    52.9 (200)    119.0 (450)
Maximum flow gpm (lpm)	:	23.8 (90)    79.4 (300)    158.7 (600)
Fluid	:	Mineral oil as per DIN 51524/25 or other fluids on request
Fluid Temperature Range	:	-18°C...+80°C (0°F...+176°F)
Viscosity Range	:	10 to 650 cSt (60 to 3900 SSU)
Optimum operating viscosity	:	30 cSt (180 SSU)
Seal compatibility	:	Code 1 (Buna N) or Code 5 (Viton) (contact Veljan with specific oil details)
Cleanliness recommended	:	Better than NAS 1638 Class 8 or ISO 17/14

### Adjustment

<b>Manual</b>	:	Handwheel
Rotation	:	3.75 rev.
Operating torque	:	0.72 Nm
<b>Electricals ( Vent Valve VVV01)</b>	:	Solenoid
Nominal voltage	:	Refer to Ordering Code
Permissible voltage fluctuation	:	+5%...-10%
Max. coil temperature	:	+155°C (311°F)
Type of current	:	Alternating Current (AC)/Direct Current (DC)
Input power	:	31 W
Holding	:	78 VA
Inrush	:	264 VA
Relative operating period	:	100%
Type of protection	:	I P 65

ORDERING CODE



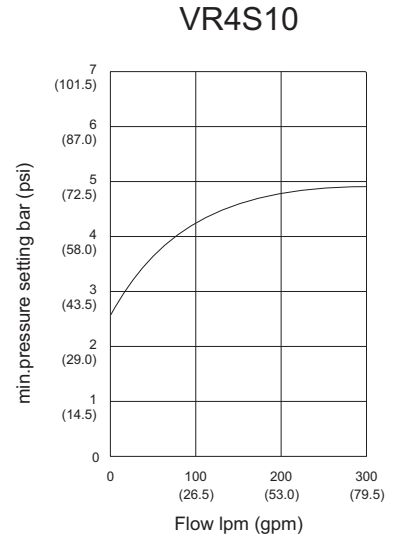
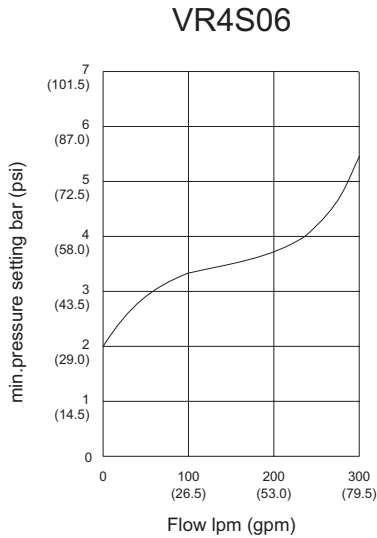
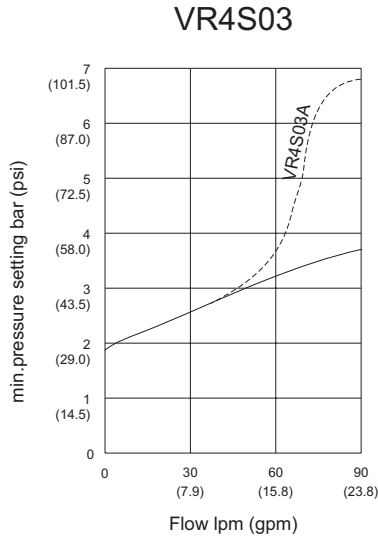
1) Only with Drain line code 2  
2) Port Y1 is only available at Drain line (code2) external from pilot head.

**PERFORMANCE CURVES**

ps min - qv characteristics

Fluid 60 cSt at 40° C (360 Ssu at 104° F), Test temp. 50° C (120° F) ± 10%

PC

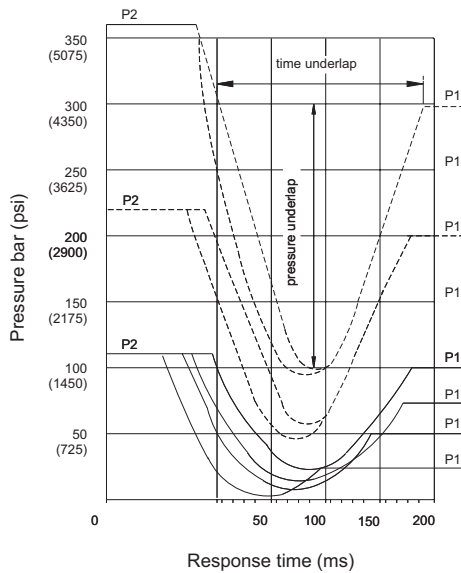


**Pressure Characteristics at Closing Point**

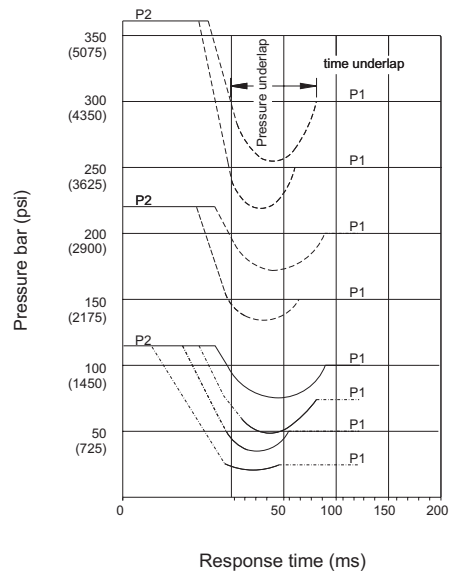
P1 = primary pressure

P2 = secondary pressure (to actuator)

**VR4S03**

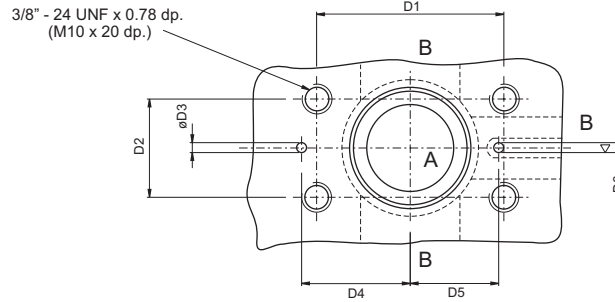
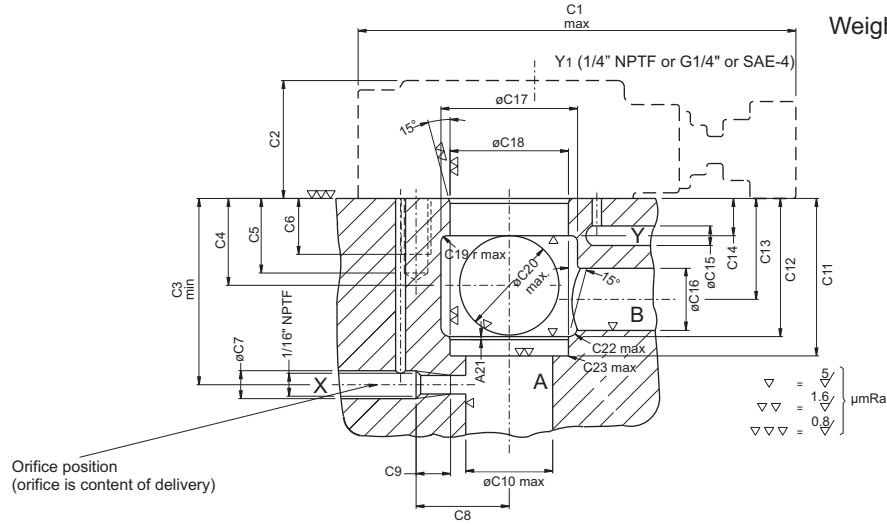


**VR4S03A**



CARTRIDGES WITH PILOT VALVES VR4S06/VR4S10 (#0, #E & #G)

Weight : 2.64 lbs (1.2 kg)



	Dimensions	
	in	mm
C1	5.55	141.0
C2	1.49	38.0
C3	2.362	60
C4	1.083 <sup>+0.019</sup>	27.5 <sup>+0.5</sup>
C5	0.945	24.0
C6	0.78	20.0
C7	ø0.35	ø9.0
C8	1.18	30.0
C9	0.437	11.1
C10	ø1.1	ø28.0
C11	1.997 <sup>+0.003</sup>	50.73 <sup>+0.07</sup>
C12	1.75	44.5
C13	1.28	32.5
C14	0.47	12.0
C15	ø0.25	ø6.3
C16	ø0.79	ø20
C17	ø1.732 <sup>+0.04</sup>	ø44.0 <sup>+1.0</sup>
C18	ø1.5 <sup>HB</sup>	ø38.1 <sup>HB</sup>
C19	0.08 r	2.0 r
C20	ø1.26	ø32.0
C21	0.04	1.0
C22	0.08 r	2.0 r
C23	0.016 r	0.4 r

	Dimensions	
	in	mm
D1	2.375 <sup>+0.008</sup>	60.32 <sup>+0.2</sup>
D2	1.25 <sup>+0.008</sup>	31.75 <sup>+0.2</sup>
D3	ø0.126	ø3.2
D4	1.38	35.0
D5	1.12	28.5
D6	ø0.126	ø3.2

Ports	Function
A	Pressure (Inlet)
B	Secondary (Outlet)
X	External control connection
Y, Y <sub>1</sub> <sup>1)</sup>	Drain

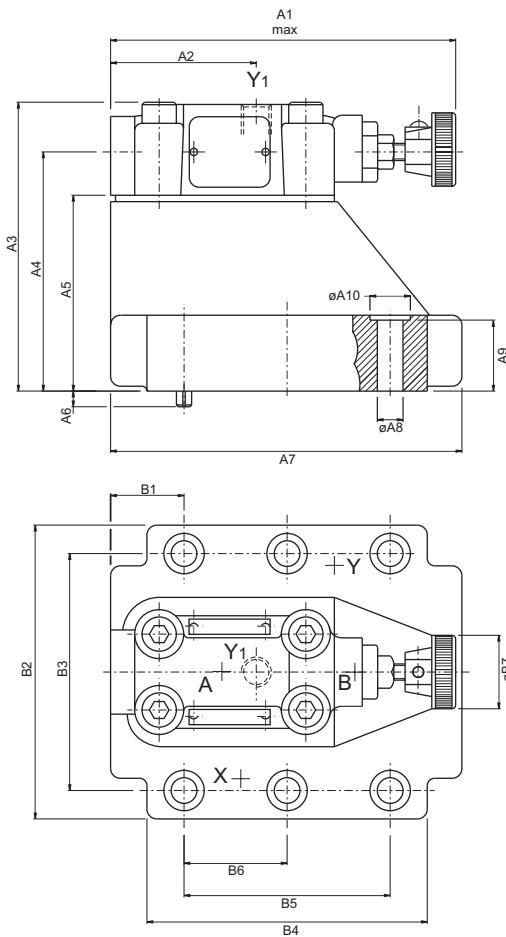
1) Port Y<sub>1</sub> is only available at drain line (code 2) external from the pilot head.

4 Mounting screws*	
Dimensions	Order No.
3/8" - 24 UNF x 1 <sup>3</sup> / <sub>4</sub> " lg.	V359 - 15220
or	or
M10 x 45mm, DIN 912 - 12.9	V700 - 71602

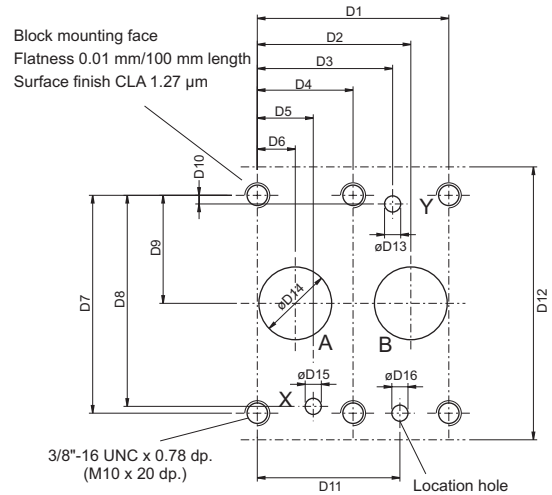
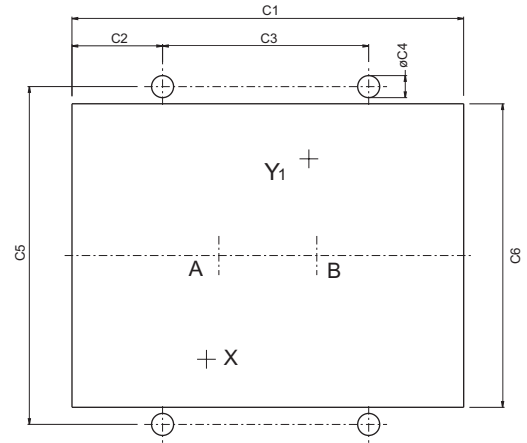
\* Mounting screws must be ordered separately

VR4S10 (1 1/4") SUBPLATE MOUNTING BODY ( #3, #7 & #9 )

Weight : 13.2 lbs (6.0 kg)



Panel opening



Dimensions	in		mm	
A1	5.55	141.0		
A2	2.34	59.5		
A3	4.645	118.0		
A4	3.846	97.7		
A5	3.15	80.0		
A6	0.25	6.4		
A7	5.645	143.5		
A8	ø0.41	ø10.5		
A9	1.14	29.0		
A10	ø0.65	ø16.5		

Dimensions	in		mm	
B1	1.181	30.0		
B2	4.72	120.0		
B3	3.8	96.8		
B4	4.51	114.5		
B5	3.315	84.2		
B6	1.657	42.1		
B7	ø1.26	ø32.0		

Dimensions	in		mm	
C1	6.3	160.0		
C2	1.456	37.0		
C3	3.315	84.2		
C4	ø0.35	ø9.0		
C5	5.433	138.0		
C6	4.88	124.0		

Dimensions	in		mm	
D1	3.315	84.2		
D2	2.657	67.5		
D3	2.342	59.5		
D4	1.657	42.1		
D5	0.97	24.6		
D6	0.657	16.7		
D7	3.8	96.8		
D8	3.653	92.8		
D9	1.87	48.4		
D10	0.15	3.8		
D11	2.468	62.7		
D12	4.724	120.0		
D13	ø0.28	ø7.1		
D14	ø1.26	ø32.0		
D15	ø0.28	ø7.1		
D16	ø0.28 x 0.433 dp.	ø7.1 x 11.0 dp.		

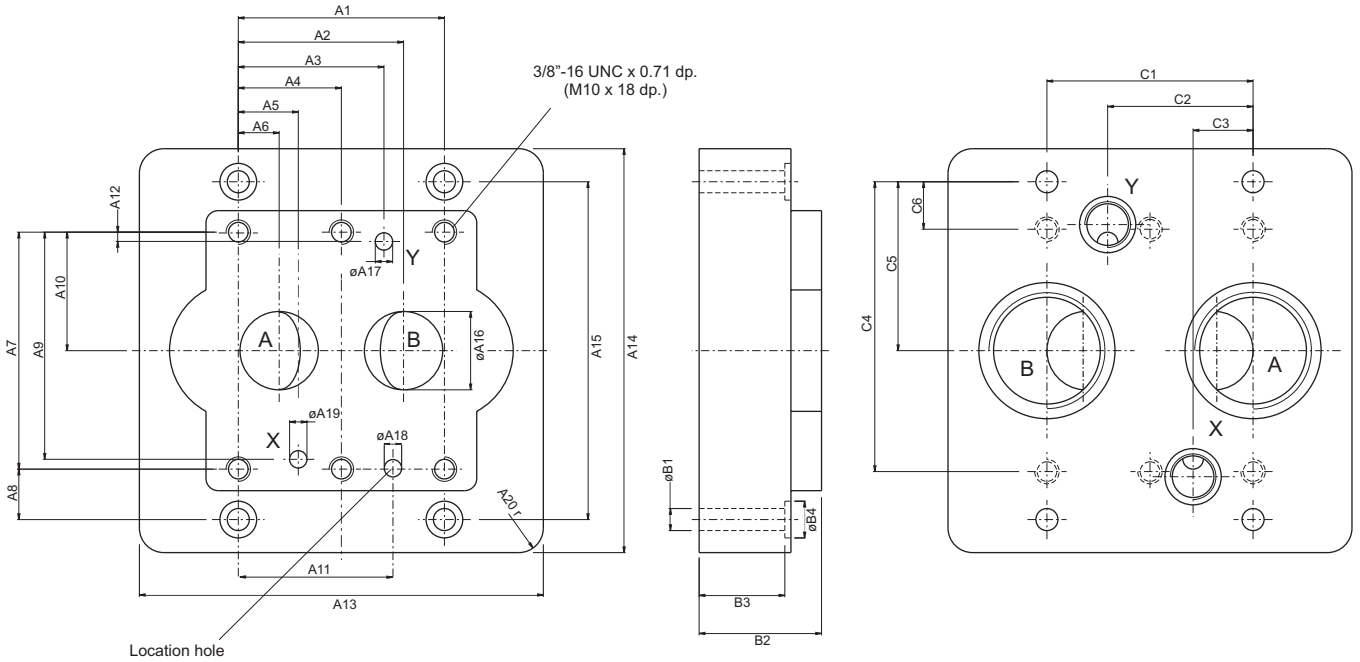
Ports	Function
A	Pressure (inlet)
B	Secondary (outlet)
X	Remote control or vent connection
Y(Y <sub>1</sub> )	External drain <sup>1)</sup>

1) Optional from pilot head or subplate. Port Y<sub>1</sub> is only available at drain line (code 2) external from the pilot head.

Subplate for VR4S10

Weight : 19.1 lbs (8.5 kg)

PC



	Dimensions	
	in	mm
A1	3.315	84.2
A2	2.657	67.5
A3	2.342	59.5
A4	1.657	42.1
A5	0.968	24.6
A6	0.657	16.7
A7	3.811	96.8
A8	0.811	20.6
A9	3.653	92.8
A10	1.905	48.4
A11	2.468	62.7
A12	0.15	3.8
A13	6.535	166.0
A14	6.5	165.0
A15	5.43	138.0
A16	ø1.26	ø32.0
A17	ø0.28	ø7.1
A18	ø0.28 x 0.315 dp.	ø7.1 x 8.0 dp.
A19	ø0.28	ø7.1
A20	0.4 r	10.0 r

	Dimensions	
	in	mm
B1	ø0.351	ø9.0
B2	1.97	50.0
B3	1.38	35.0
B4	ø0.59	ø15.0

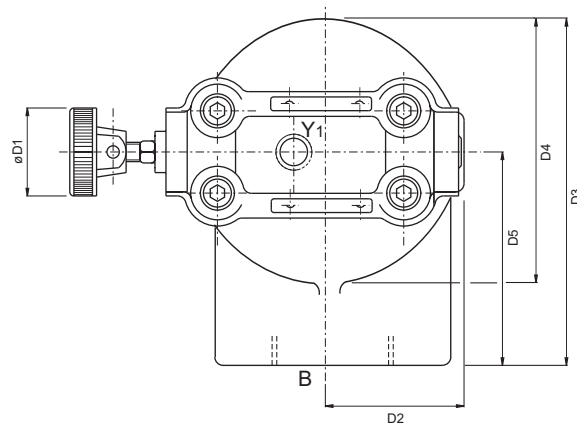
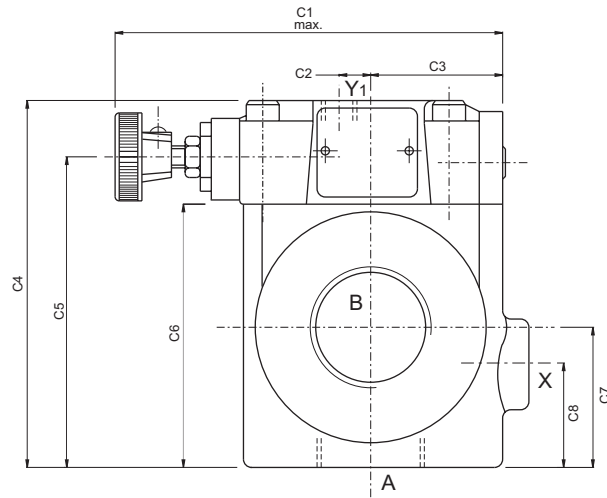
	Dimensions	
	in	mm
C1	3.315	84.2
C2	2.342	59.5
C3	0.97	24.6
C4	4.66	118.4
C5	2.716	69.0
C6	0.764	19.4

Order No.	Port sizes		6 Mounting screws*		
	A+B	X+Y	Dimension	Order No.	min.tensile strength
VSS - P - 24 - G 116	1 1/2" NPTF	1/4" NPTF	3/8" - 16UNC 1 3/4" lg.	V358-16220	at p ≤ 210 bar = 100 daN/mm <sup>2</sup> (Torque 68 Nm)
VSS - B - 24 - G 117	1 1/2" B.S.P.P	1/4" B.S.P.P.	M 10 x 45 DIN 912-12.9	V700-71602	at p > 210 bar = 120 daN/mm <sup>2</sup> (Torque 82 Nm)

\* Mounting screws are included in subplate order.  
For valves ordered without subplate, mounting screws must be ordered separately.

**VR4S10 (1 1/4") - THREADED BODY ( #A, #B & #D )**

Weight : 12.3 lbs (5.6 kg)



Dimensions		
	in	mm
C1	5.55	141.0
C2	0.453	11.5
C3	1.89	48.0
C4	5.236	133.5
C5	4.45	113.0
C6	3.76	95.5
C7	2.01	51.0
C8	1.496	38.0

Dimensions		
	in	mm
D1	ø1.26	ø32.0
D2	2.01	51.0
D3	4.75	120.6
D4	3.374	85.7
D5	3.063	77.8

Ports	Function	Port Sizes
A	Pressure (inlet)	1 1/4" NPTF or G 1 1/4" or SAE - 20 (1 5/8" - 12 UNF)
B	Secondary (outlet)	1 1/4" NPTF or G 1 1/4" or SAE - 20 (1 5/8" - 12 UNF)
X <sup>1)</sup>	Remote control or vent connection	1/4" NPTF or G 1/4" or SAE - 4 (7/16" - 20 UNF)
Y <sub>1</sub>	External drain	1/4" NPTF or G 1/4" or SAE - 4 (7/16" - 20 UNF)

1) closed when supplied

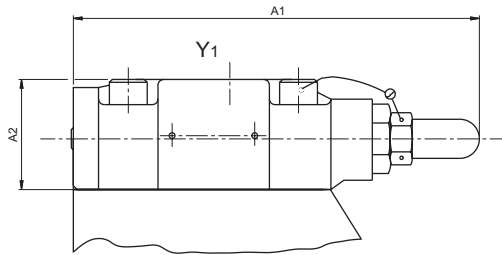


**OPTIONAL CONTROL**

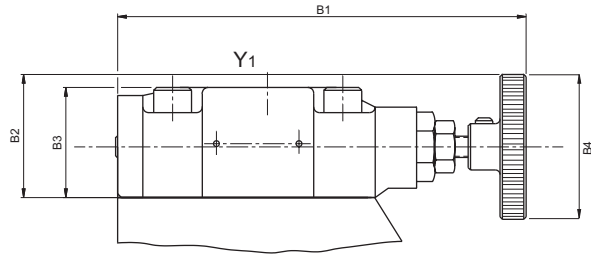
**Type of control - Code 3**  
Acron nut with lead seal

**Type of control - Code 2**  
Hand knob 50mm dia  
(not for version with vent valve VVV01)

PC



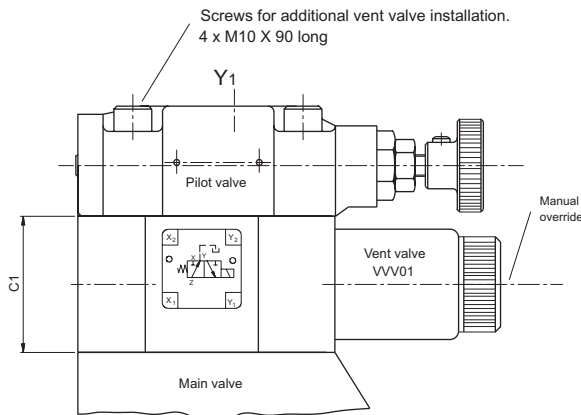
	Dimensions	
	in	mm
A1	5.51	140.0
A2	1.49	38.0



	Dimensions	
	in	mm
B1	5.55	141.0
B2	1.67	42.5
B3	1.49	38.0
B4	ø1.96	ø50.0

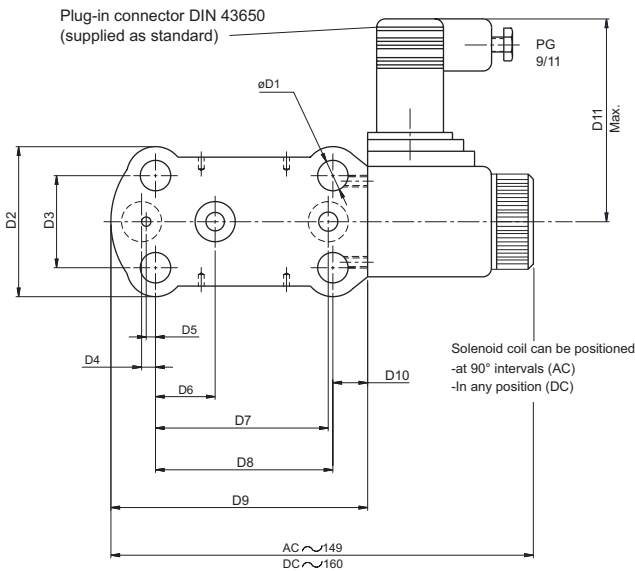
**Version with Vent Valve VVV01**

Weight (VVV01) : 3.73 lbs (1.7 kg)



	Dimensions	
	in	mm
C1	1.85	47.0

	Dimensions	
	in	mm
D1	ø0.41	ø10.5
D2	2.03	51.8
D3	1.25	31.8
D4	0.18	4.8
D5	0.12	3.2
D6	0.81	20.6
D7	2.31	58.7
D8	2.37	60.3
D9	3.49	88.7
D10	0.51	13.0
D11	2.75	70.0



Code	External Drain
11 or 12	
09 or 10	