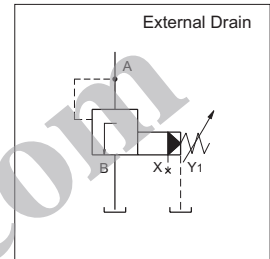
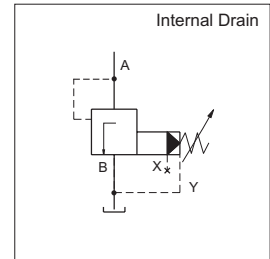


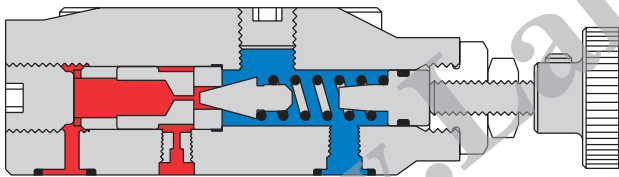
The Veljan Pressure Relief Valve series VR4V are pilot operated and work on the principle of hydraulic balancing. These valves are used to limit the system pressure in a hydraulic system and protect the system against pressure overload. Accurate pressure control even under wide flow variations are achieved by these valves. The valves may also be used to generate a pressure drop in a hydraulic circuit.

VR4V consist of a high flow poppet type seat valve section controlled by the low flow, adjustable pilot section mounted on top. Pressure setting is achieved by means of knurled knob. For tamper proof setting, an acorn nut with lead seal is available as option. Optional vent valve VV01 sandwiched between pilot section and the main body can be used for venting the VR4V valves.

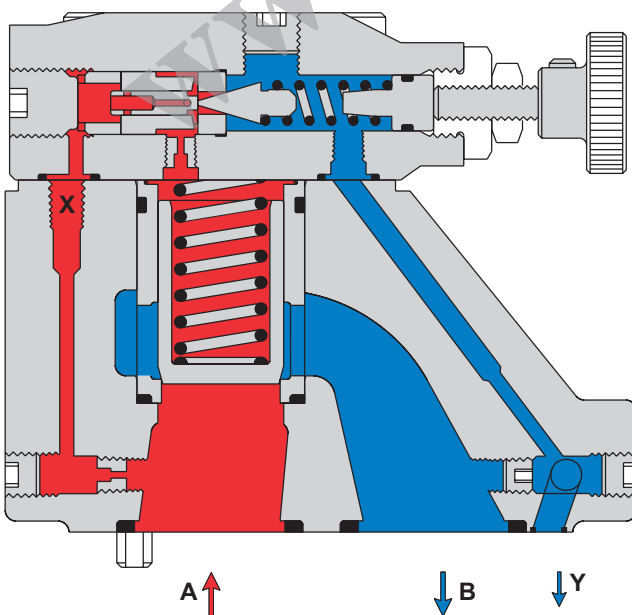
Exceptionally fast response is obtained due to the precise ratio between the main piston area and its mass. High pressure stability is an outstanding feature of VR4V valves.



VR4V03 pilot valve Y<sub>1</sub> (OPTIONAL)



VR4V06/10 pilot valve Y<sub>1</sub> (OPTIONAL)



Normally port A is connected to pump and port B to tank . At low pressure, flow entering port A is blocked by the main poppet. Pressure at port A passes to the pilot section as well as to the top of the main poppet through orifices. No flow takes place in this portion until the pressure overcomes the spring setting of the pilot cone. This pilot cone is lifted from its seat releasing a small pilot flow to tank and resulting in a pressure drop across the main poppet. The main poppet opens and allows only enough flow from port A to port B maintaining inlet pressure at the set value of the pilot spring. At drop of inlet pressure below the set value, the main poppet closes instantly.

Pilot drain is normally through port B for internal drain valves. External drain from port Y or Y<sub>1</sub> is optional. Port X may be used for venting or remote control of VR4V valves.

## SPECIFICATIONS

### General

Type	:	Pilot operated pressure relief
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

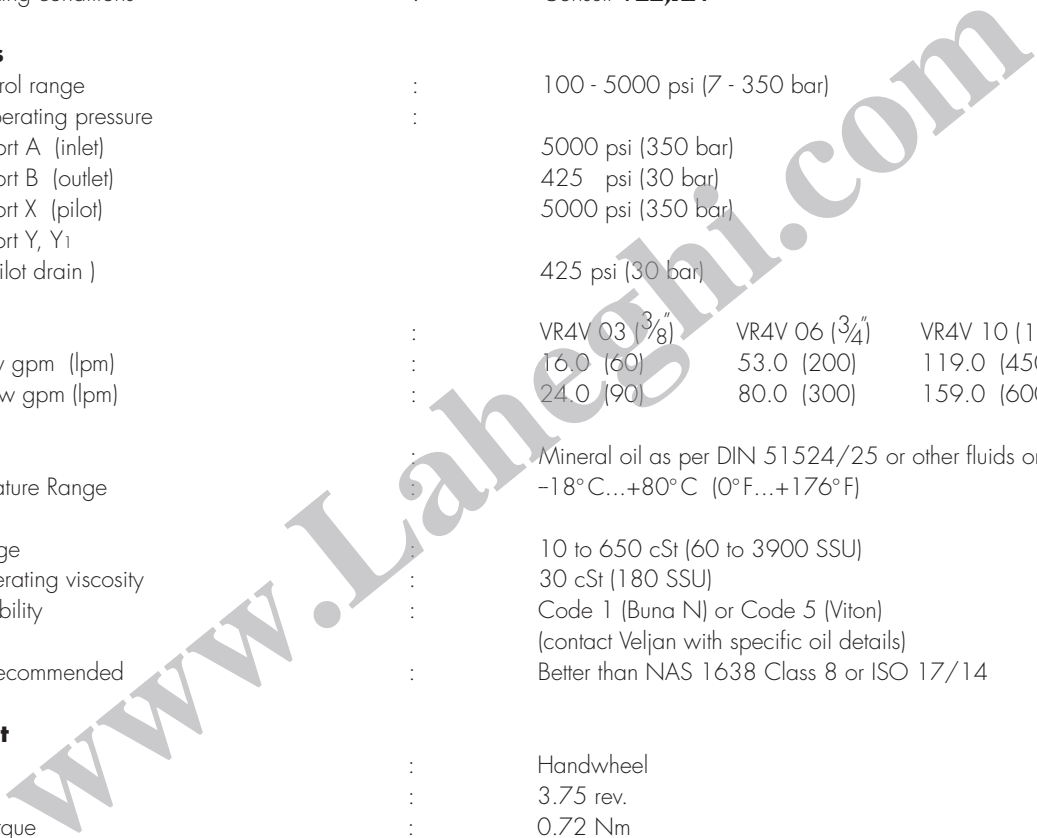
Pressure control range	:	100 - 5000 psi (7 - 350 bar)
Maximum operating pressure	:	
Port A (inlet)	:	5000 psi (350 bar)
Port B (outlet)	:	425 psi (30 bar)
Port X (pilot)	:	5000 psi (350 bar)
Port Y, Y <sub>1</sub> (Pilot drain )	:	425 psi (30 bar)
Nominal flow gpm (lpm)	:	VR4V 03 (3/8")      VR4V 06 (3/4")      VR4V 10 (1 1/4")
Maximum flow gpm (lpm)	:	16.0 (60)            53.0 (200)            119.0 (450)
	:	24.0 (90)            80.0 (300)            159.0 (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

Manual	:	Handwheel
Rotation	:	3.75 rev.
Operating torque	:	0.72 Nm

### Electricals ( Vent Valve VVV01)

Nominal voltage	:	Solenoid
Permissible voltage fluctuation	:	Refer to Ordering Code
Max. coil temperature	:	+5%...-10%
Type of current	:	+155°C (311°F)
Input power	:	Alternating Current (AC)/Direct Current (DC)
Holding	:	31 W
Inrush	:	78 VA
Relative operating period	:	264 VA
Type of protection	:	100%
	:	IP 65



ORDERING CODE

VR4V 06 - 5 6 5 - 1 0 - 09 - W07 - A 1 \*\*\*

Series

Size

- 03 - 3/8"
- 06 - 3/4"
- 10 - 1 1/4"

Max. Pressure of Valve Body

- 0 - for cartridges only
- 5 - 5000psi (350 bar)

Body Mounting

Cartridge

- 0 - Cartridge Y1 port = 1/4" NPTF
- E - Cartridge Y1 port = SAE - 4 (7/16" - 20 UNF)
- G - Cartridge Y1 port = G 1/4"

Threaded body

- 1 - Threaded body - VR4V03 = 1/2" NPTF ;  
VR4V06 = 1" NPTF  
(2 A - Ports, 1B - Port) } X,Y1 ports = 1/4" NPTF
- A - Threaded body VR4V06 = 3/4" NPTF ;  
VR4V10 = 1 1/4" NPTF  
(1 A - Port, 1B - Port) }
- 6 - Threaded body VR4V03 = 1/2" B.S.P.P. ;  
VR4V06 = 1" B.S.P.P. ;  
(2 A - Ports, 1B - Port) } X,Y1 ports = G 1/4"
- D - Threaded body VR4V06 = 3/4" B.S.P.P. ;  
VR4V10 = 1 1/4" B.S.P.P.  
(1 A - Port, 1B - Port) }
- 4 - Threaded body VR4V03 - SAE - 8,  
VR4V06 - SAE - 16  
(2 A - Ports, 1B - Port) } X,Y1 ports = SAE - 4 (7/16" - 20 UNF)
- B - Threaded body VR4V06 - SAE - 12,  
VR4V10 - SAE - 20  
(1 A - Port, 1B - Port) }

Subplate mounting

- 3 - Subplate mounting - VR4V03/06 /10 ISO  
(Y1 port - 1/4" NPTF ; with drain line code 2)
- 7 - Subplate mounting - VR4V03/06 /10 ISO  
(Y1 Port - SAE - 4 (7/16" - 20 UNF)
- 9 - Subplate mounting VR4V03/06 /10 ISO  
(Y1 Port - 1/4" B.S.P.P. ; with drain line code 2)

Flange body

- 2 - Flange body ( X,Y1 port - 1/4" NPTF )  
(2 A - Ports, 1 B - Port)

Modification

Seal Class

- 1 - Buna N ( Standard)
- 5 - Viton

Design letter

Solenoid Voltage

(Omit for non vent version)

- W01 - 115V/60 Hz AC GOR - 12V DC
- W02 - 230V/60 Hz AC GOQ - 24V DC
- W06 - 115V/50 Hz AC GOH - 48V DC
- W07 - 230V/50 Hz AC

Electrical Vent

(3way VENT VALVE WV01)  
Omit for non vent version

- 09 - With manual override (Solenoid de-energized : open to tank. Solenoid energized : vent line blocked)
- 10 - Without manual override (Solenoid de-energized : open to tank. Solenoid energized : vent line blocked)
- 11 - With manual override (Solenoid de-energized : vent line blocked Solenoid energized : open to tank)
- 12 - Without manual override (Solenoid de-energized : vent line blocked Solenoid energized : open to tank)

Drain line

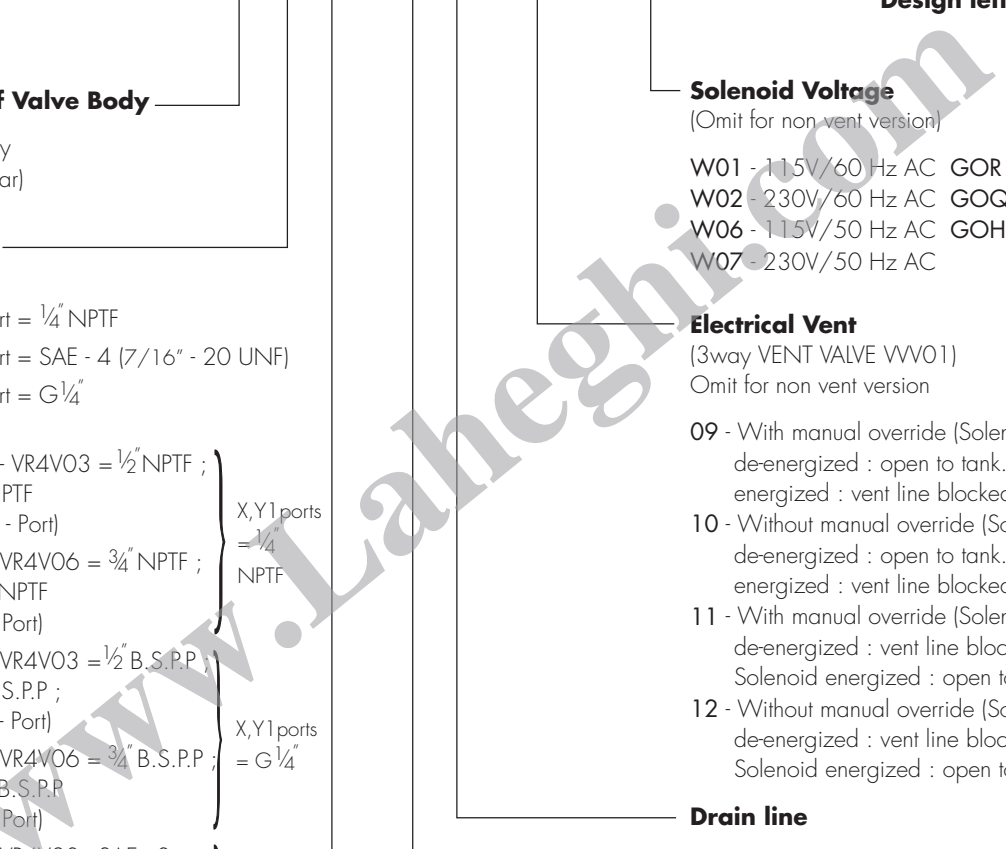
- 0 - Internal
- 1 - External from subplate } At subplate mounting only with body code 3,7,9  
or manifold (Y)
- 2 - External from pilot head (Y1)

Type of Control

- 1 - Hand knob (32mm dia)
- 2 - Hand knob (50mm dia) (not for version with vent valve)
- 3 - Acorn nut with lead seal

Pressure setting range

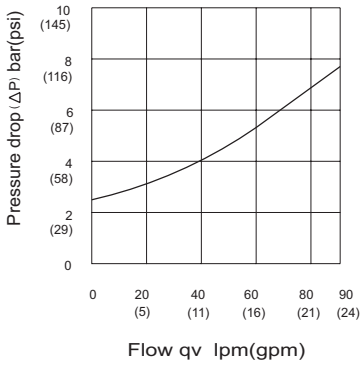
- 1 - 100 - 1500 psi (7 - 105 bar)
- 3 - 100 - 3000 psi (7 - 210 bar)
- 5 - 100 - 5000 psi (7 - 350 bar)



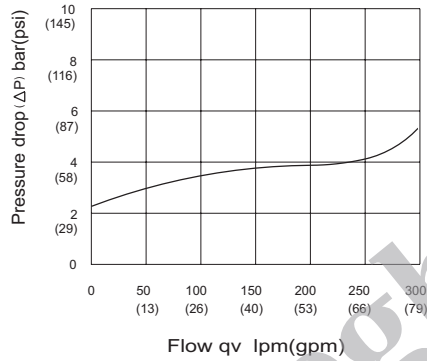
**PERFORMANCE CURVES**

$\Delta p - q_v$  - Characteristics  
 (Fluid 60 cSt at 40°C  
 Test temp. 50°C ± 10%)

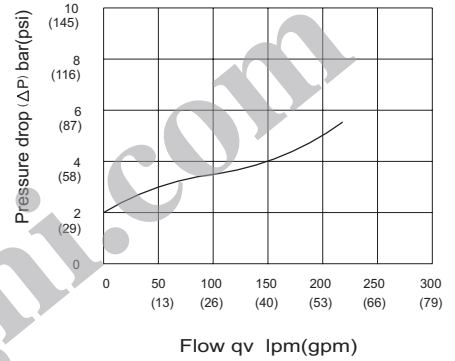
VR4V03



VR4V06

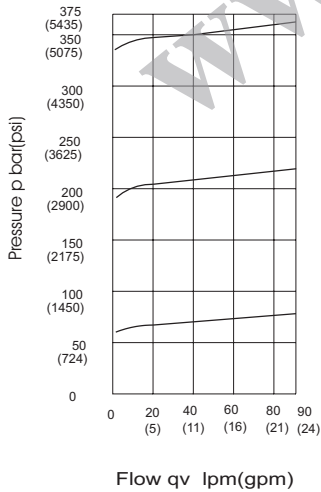


VR4V10

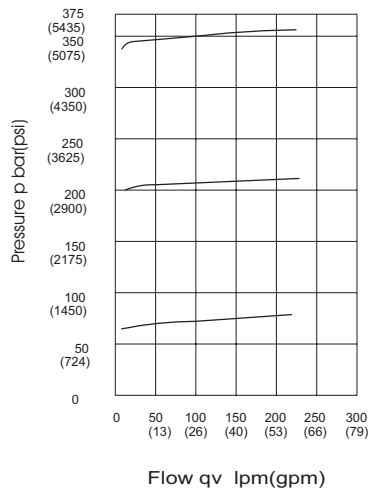


$P - q_v$  - Characteristics

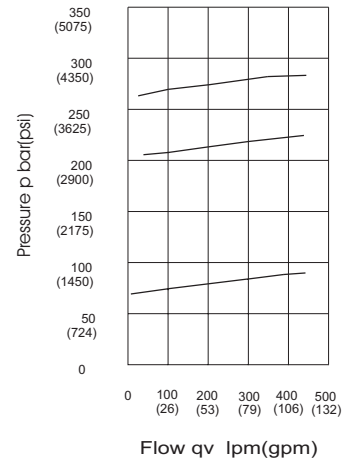
VR4V03



VR4V06

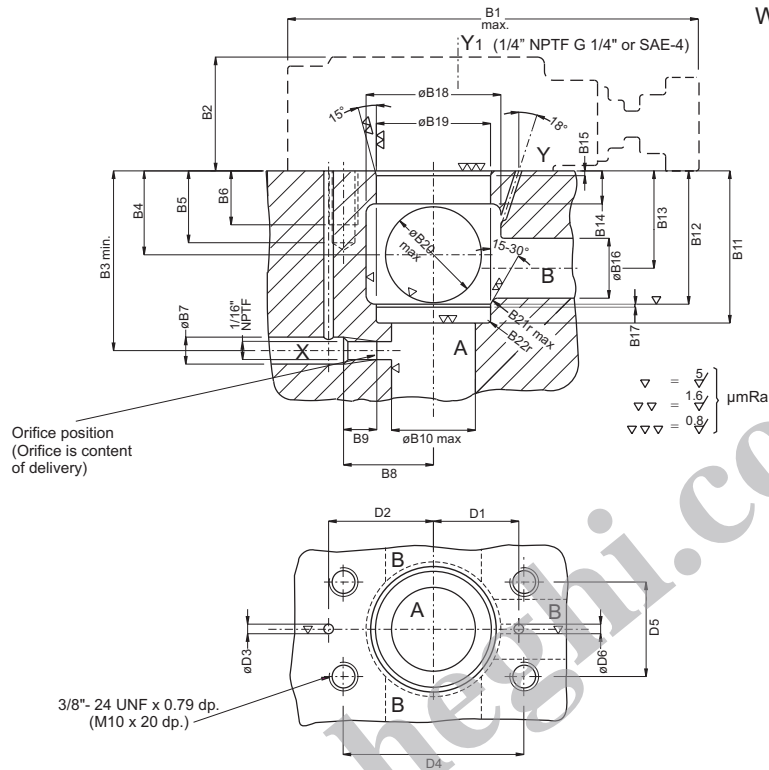


VR4V10



**CARTRIDGES WITH PILOT VALVES VR4V06/VR4V10 ( #0, #E & #G )**

Weight : 2.63 lbs (1.2 kg)



	Dimensions	
	in	mm
B1	5.55	141.0
B2	1.49	38.0
B3	2.362	60.0
B4	1.102/1.083	28.0/27.5
B5	0.945	24.0
B6	0.71	18.0
B7	$\phi 0.35$	$\phi 9.0$
B8	1.18	30.0
B9	0.437	11.1
B10	$\phi 1.1$	$\phi 28.0$
B11	2.000/1.997	50.80/50.73
B12	1.75	44.5
B13	1.28	32.5
B14	0.433	11.0
B15	0.06	1.6
B16	$\phi 0.79$	$\phi 20.0$
B17	0.04	1.0
B18	$\phi 1.772/1.732$	$\phi 45.0/44.0$
B19	$\phi 1.502/1.500$	$\phi 38.139/38.100$
B20	$\phi 1.26$	$\phi 32.0$
B21	0.08	2.0
B22	0.0157	0.4

	Dimensions	
	in	mm
D1	1.122	28.5
D2	1.38	35.0
D3	$\phi 0.126/0.236$	$\phi 3.2/6.0$
D4	2.375/2.383	60.32/60.52
D5	1.24/1.26	31.55/31.95
D6	$\phi 0.126$	$\phi 3.2$

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

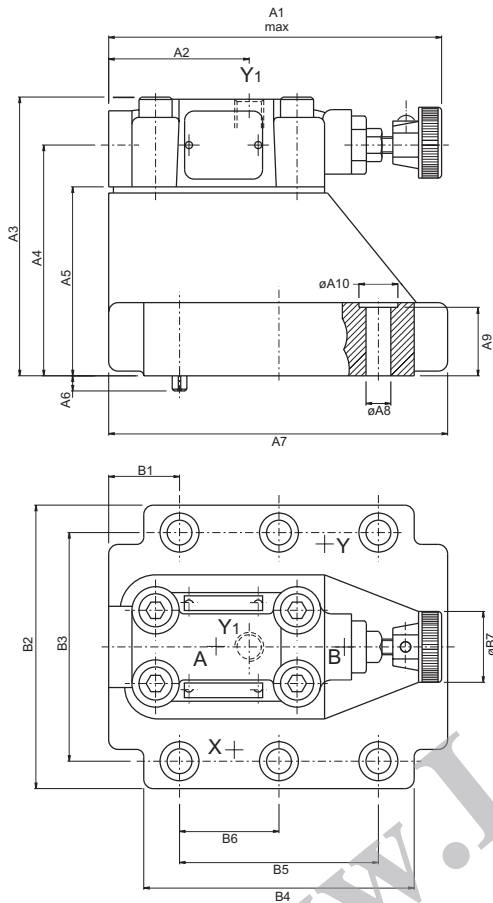
1) Port Y<sub>1</sub> is only available at drain line (code 2) external from the pilot head.

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

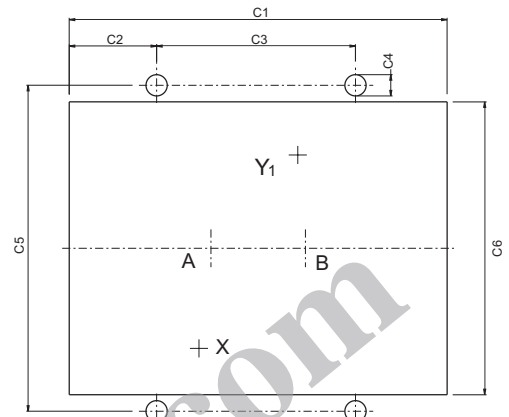
\* Mounting screws must be ordered separately

**VR4V10 (1 1/4") SUBPLATE MOUNTING BODY ( #3, #7 & #9 )**

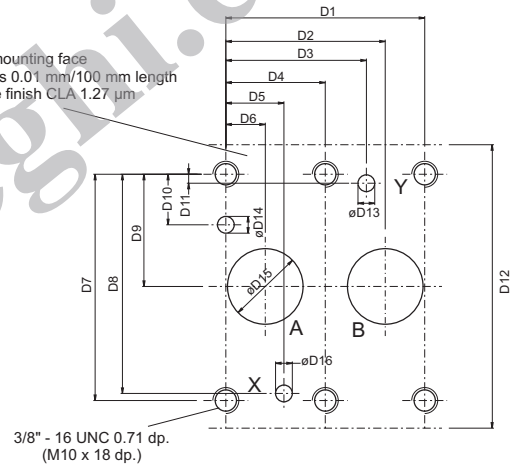
Weight : 13.2 lbs (6.0 kg)



Panel opening



Block mounting face  
Flatness 0.01 mm/100 mm length  
Surface finish CLA 1.27 µm



3/8" - 16 UNC 0.71 dp.  
(M10 x 18 dp.)

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

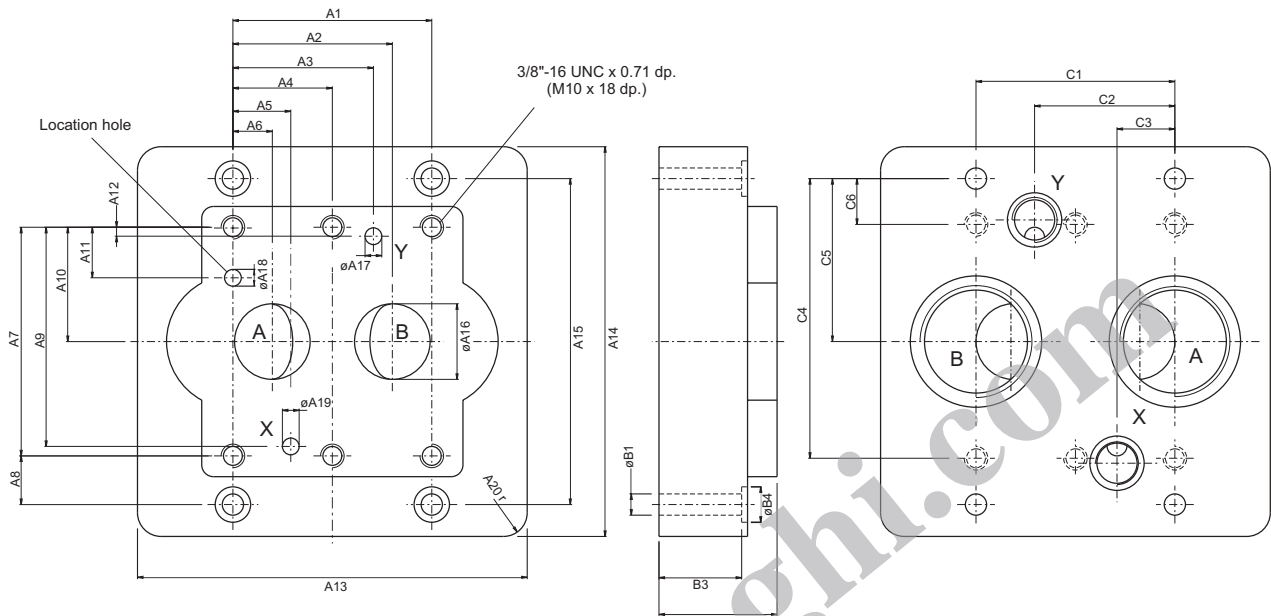
Dimensions		
	in	mm
D1	3.345	84.2
D2	2.657	67.5
D3	2.342	59.5
D4	1.657	42.1
D5	0.97	24.6
D6	0.657	16.7
D7	3.811	96.8
D8	3.653	92.8
D9	1.905	48.4
D10	0.842	21.4
D11	0.15	3.8
D12	4.724	120.0
D13	ø0.28	ø7.1
D14	ø0.28 x 0.4 dp.	ø7.1 x 11.0 dp.
D15	ø1.26	ø32.0
D16	ø0.28	ø7.1

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

<sup>1)</sup> 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 VR4V10

Weight : 18.68 lbs (8.5 kg)



Dimensions	Dimensions	
	in	mm
A1	3.315	84.2
A2	2.657	67.5
A3	2.342	59.5
A4	1.657	42.1
A5	0.965	24.5
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	0.842	21.4
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	0.4r	10.0 r

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

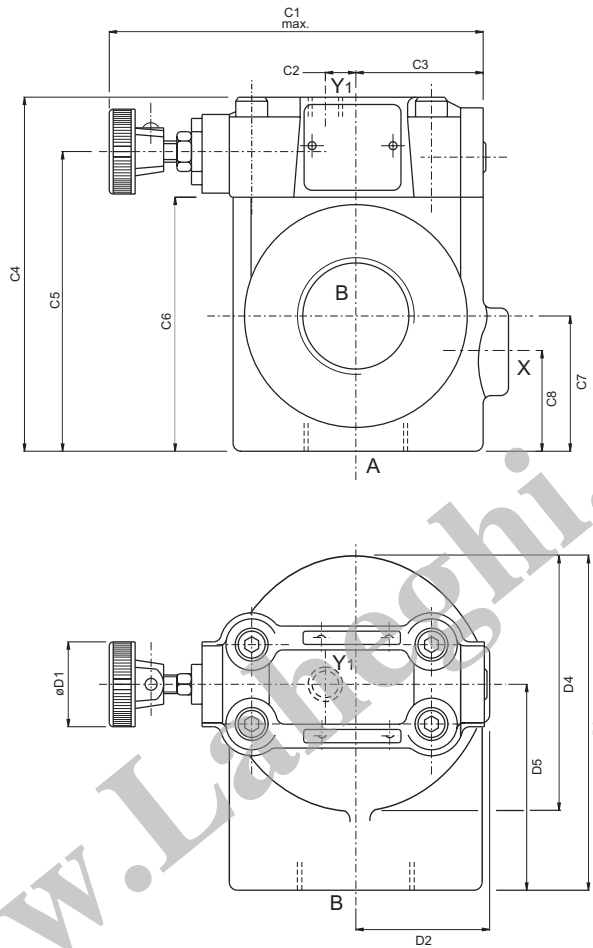
Dimensions	Dimensions	
	in	mm
C1	3.315	84.2
C2	2.342	59.5
C3	0.97	24.6
C4	4.66	118.4
C5	2.716	69.0
C6	0.764	19.4

Order No.	Port sizes		6 Mounting screws*		
	A+B	X+Y	Dimension	Order no	min.tensile strength
VSS - P - 24 - G 116	1½" NPTF	1/4" NPTF	3/8"- 16UNC 1¾" lg.	V358 - 16220	at p≤ 210 bar = 100 daN/mm <sup>2</sup> (Torque 68 Nm)
VSS - B - 24 - G 117	1½" 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.

**VR4V10 (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	Tank (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> <sup>2)</sup>	External drain	1/4" NPTF or G 1/4" or SAE - 4 (7/16" - 20 UNF)

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

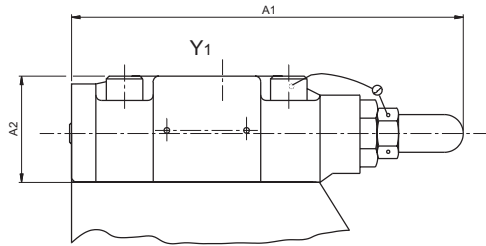




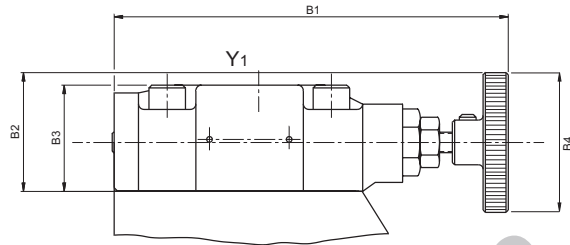
### OPTIONAL CONTROL

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)



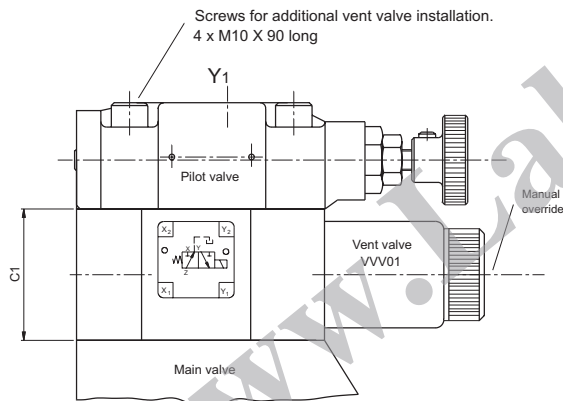
Dimensions	in		mm	
	in	mm	in	mm
A1	5.51	140.0		
A2	1.49	38.0		



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

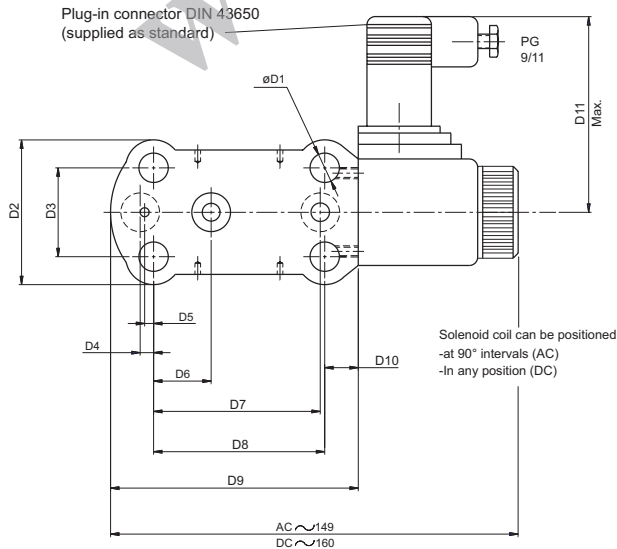
Version with Vent Valve VVV01

Weight (VVV01) : 3.73 lbs (1.7 kg)



Dimensions	in		mm	
	in	mm	in	mm
C1	1.85	47.0		

Dimensions	in		mm	
	in	mm	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	Internal Drain	External Drain
11 or 12		
09 or 10		