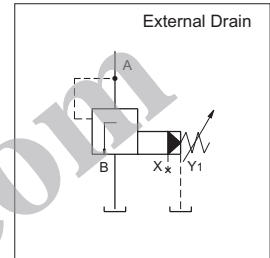
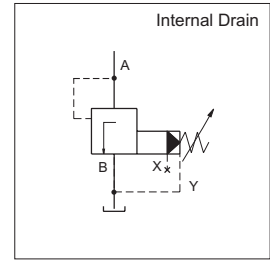


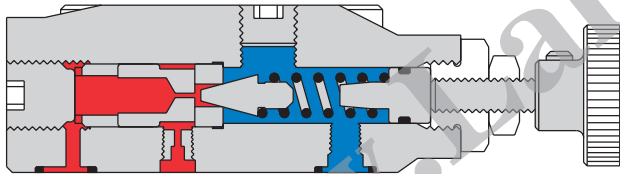
The Veljan Pressure Relief Valve series VR4V are pilot operated and work on the principle of hydraulic balancing. These valves are used to limit the system pressure in a hydraulic system and protect the system against pressure overload. Accurate pressure control even under wide flow variations are achieved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

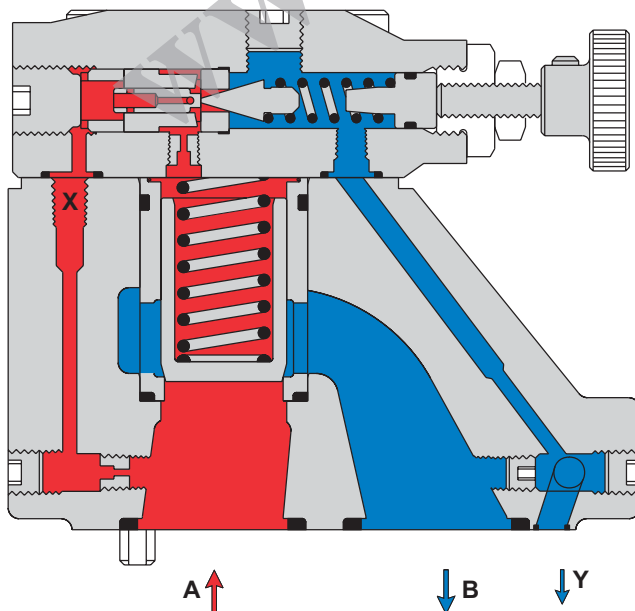
Exceptionally fast response is obtained due to the precise ratio between the main piston area and its mass. High pressure stability is an outstanding feature of VR4V valves.



**VR4V03 pilot valve**  $Y_1$  (OPTIONAL)



**VR4V06/10 pilot valve**  $Y_1$  (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 Y1 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, Y1 (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)
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%
	:	I P 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 VV01)  
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
- 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)

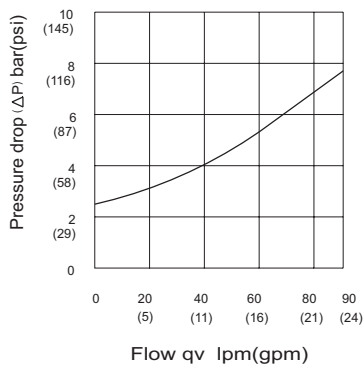
PERFORMANCE CURVES

$\Delta p - q_v$  - Characteristics

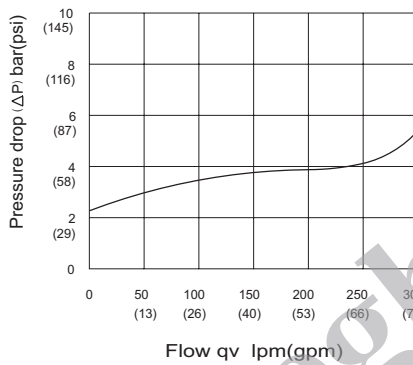
(Fluid 60 cSt at 40° C  
Test temp. 50° C  $\pm$  10%)



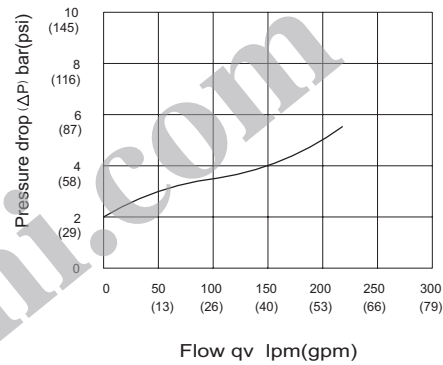
VR4V03



VR4V06

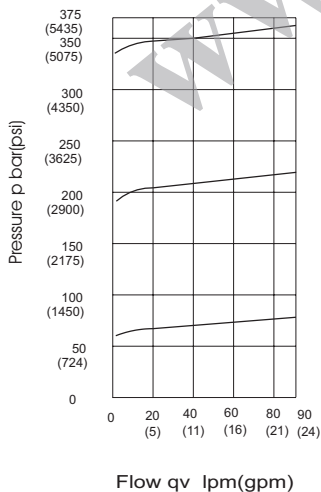


VR4V10

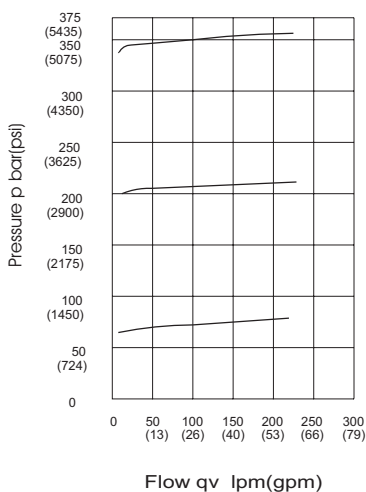


P- $q_v$  - Characteristics

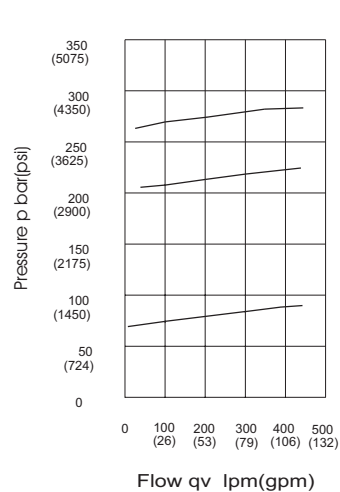
VR4V03



VR4V06



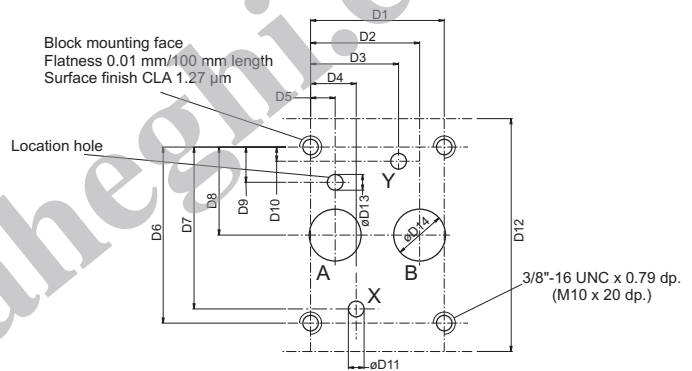
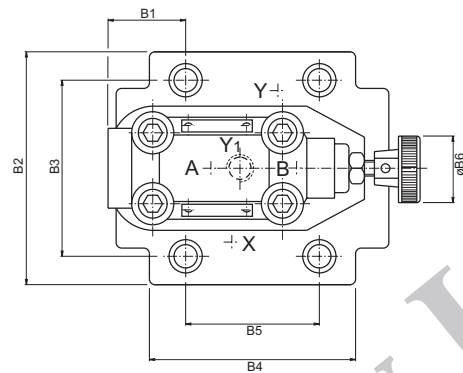
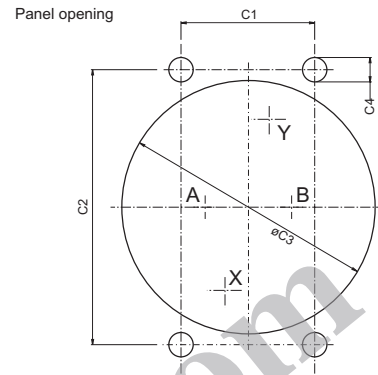
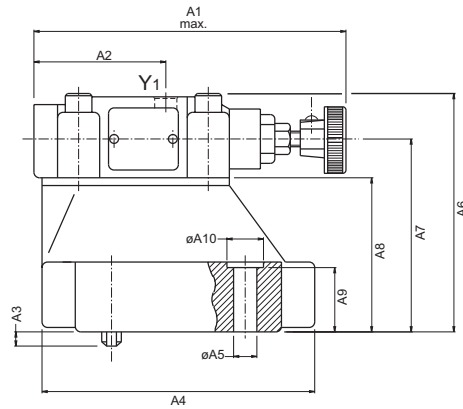
VR4V10



**VR4V06 (3/4") SUBPLATE MOUNTING BODY ( #3, #7 & #9 )**

Weight : 9.89 lbs (4.5 kg)

PC



Dimensions	Dimensions	
	in	mm
A1	5.55	141.0
A2	2.34	59.5
A3	0.25	6.4
A4	4.842	123.0
A5	ø0.41	ø10.5
A6	4.232	107.5
A7	3.425	87.0
A8	2.736	69.5
A9	1.142	29.0
A10	ø0.65	ø16.5

Dimensions	Dimensions	
	in	mm
B1	1.38	35.0
B2	4.134	105.0
B3	3.126	79.4
B4	3.66	93.0
B5	2.374	60.3
B6	ø1.26	ø32.0

Dimensions	Dimensions	
	in	mm
C1	2.374	60.3
C2	4.88	124.0
C3	ø4.645	ø118.0
C4	ø0.433	ø11.0

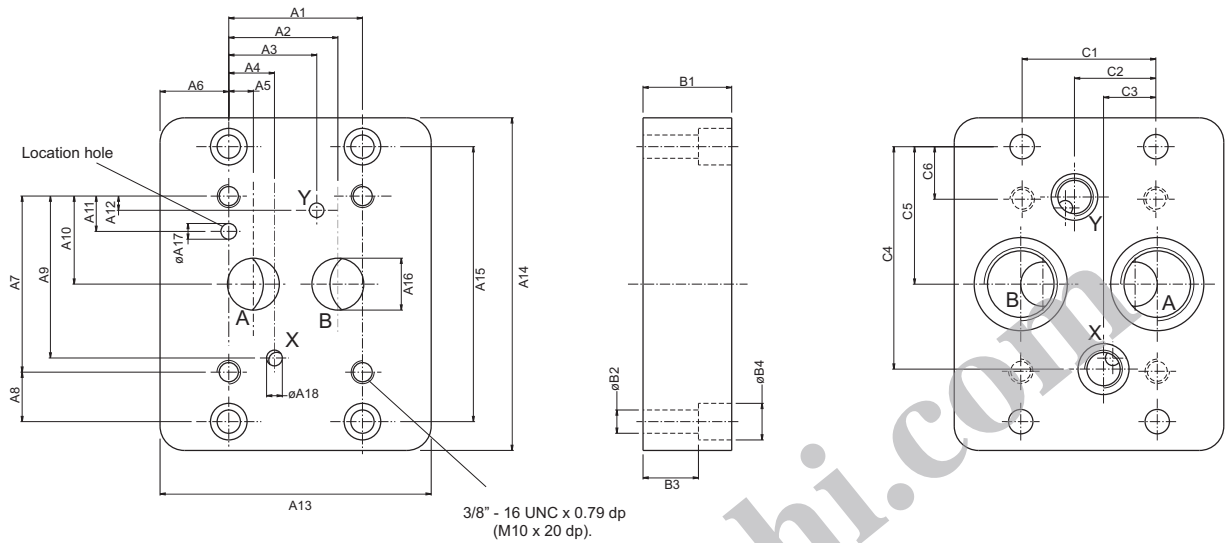
Dimensions	Dimensions	
	in	mm
D1	2.374	60.3
D2	1.937	49.2
D3	1.563	39.7
D4	0.811	20.6
D5	0.437	11.1
D6	3.126	79.4
D7	2.874	73.0
D8	1.563	39.7
D9	0.626	15.9
D10	0.25	6.4
D11	ø0.28	ø7.1
D12	4.134	105.0
D13	ø0.28 x 0.315 dp.	ø7.1 x 8.0 dp.
D14	ø0.92	ø23.4

Ports	Function
A	Pressure (inlet)
B	Tank (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 VR4V06 (3/4")

Weight : 10.54 lbs (4.8 kg)



	Dimensions	
	in	mm
A1	2.374	60.3
A2	1.937	49.2
A3	1.563	39.7
A4	0.811	20.6
A5	0.437	11.1
A6	1.22	31.0
A7	3.126	79.4
A8	0.88	22.3
A9	2.874	73.0
A10	1.563	39.7
A11	0.626	15.9
A12	0.25	6.4
A13	4.843	123
A14	5.905	150.0
A15	4.882	124.0
A16	0.92	23.4
A17	ø0.28 x 0.315 dp.	ø7.1 x 8.0 dp.
A18	ø0.28	ø7.1

	Dimensions	
	in	mm
B1	1.575	40.0
B2	ø0.41	ø10.5
B3	0.984	25.0
B4	ø0.65	ø16.5

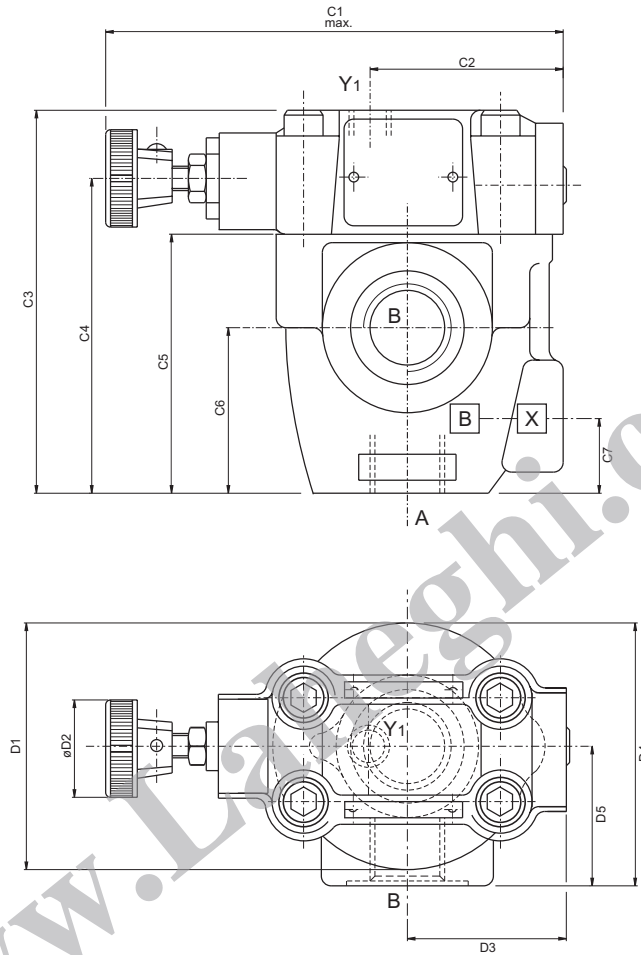
	Dimensions	
	in	mm
C1	2.374	60.3
C2	1.445	36.7
C3	0.93	23.6
C4	3.949	100.3
C5	2.44	62.0
C6	0.933	23.7

Order No.	Port sizes		4 Mounting screws*		
	A+B	X+Y	Dimension	Order No.	min.tensile strength
VSS - P -16 - G 114	1" NPTF	1/4" NPTF	3/8"-16UNC 1 3/4" lg	V359-16220	at p ≤ 210 bar = 100 daN/mm <sup>2</sup> (Torque 68 Nm) at p > 210 bar = 120 daN/mm <sup>2</sup> (Torque 82 Nm)
VSS - B -12 - G 115	3/4" B.S.P.P.	1/4" B.S.P.P.	M10 x 45mm DIN 912 - 12.9	V700 - 71602	
VSS - B - 16 - G 115	1" B.S.P.P.				

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

**VR4V06 (3/4") - THREADED BODY ( #A, #B & #D )**

Weight : 7.25 lbs (3.3 kg)



Dimensions		
	in	mm
C1	5.55	141.0
C2	2.34	59.5
C3	4.646	118.0
C4	3.82	97.0
C5	3.15	80.0
C6	2.01	51.0
C7	0.905	23.0

Dimensions		
	in	mm
D1	2.99	76.0
D2	ø1.26	ø32.0
D3	1.93	49.0
D4	3.19	81.0
D5	1.693	43.0

Ports	Function	Port Sizes
A	Pressure (inlet)	3/4" NPTF or G 3/4" or SAE - 12 (1 <sup>1</sup> / <sub>16</sub> " - 12 UNF)
B	Tank (outlet)	3/4" NPTF or G 3/4" or SAE - 12 (1 <sup>1</sup> / <sub>16</sub> " - 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

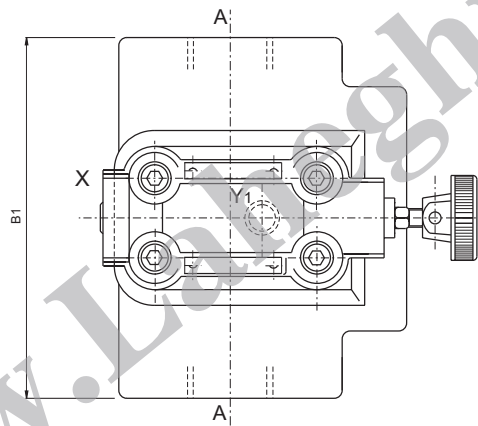
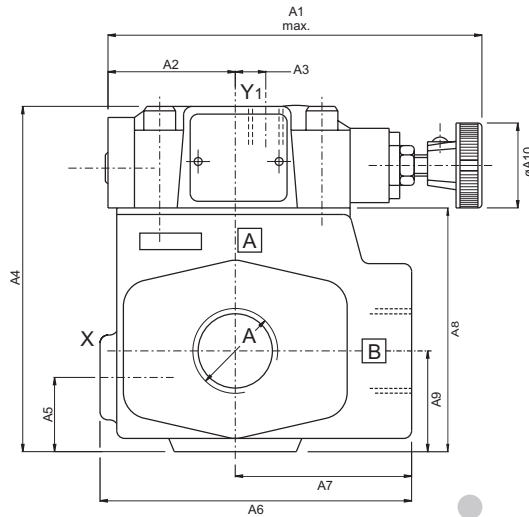
PC

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VR4V06 (3/4") - THREADED BODY ( #1, #4 & #6 )

Weight : 14.5 lbs (6.6 kg)

PC



	Dimensions	
	in	mm
A1	5.55	141.0
A2	1.89	48.0
A3	0.453	11.5
A4	5.12	130.0
A5	1.102	28.0
A6	4.626	117.5
A7	2.62	66.5
A8	3.622	92.0
A9	1.496	38.0
A10	ø1.26	ø32.0

	Dimensions	
	in	mm
B1	5.35	136.0

Ports	Function	Port Sizes
A(2)	Pressure (inlet)	1" NPTF or G 1" or SAE - 16 ( 1 5/16" - 12 UNF)
B	Tank (outlet)	1" NPTF or G 1" or SAE - 16 ( 1 5/16" - 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)

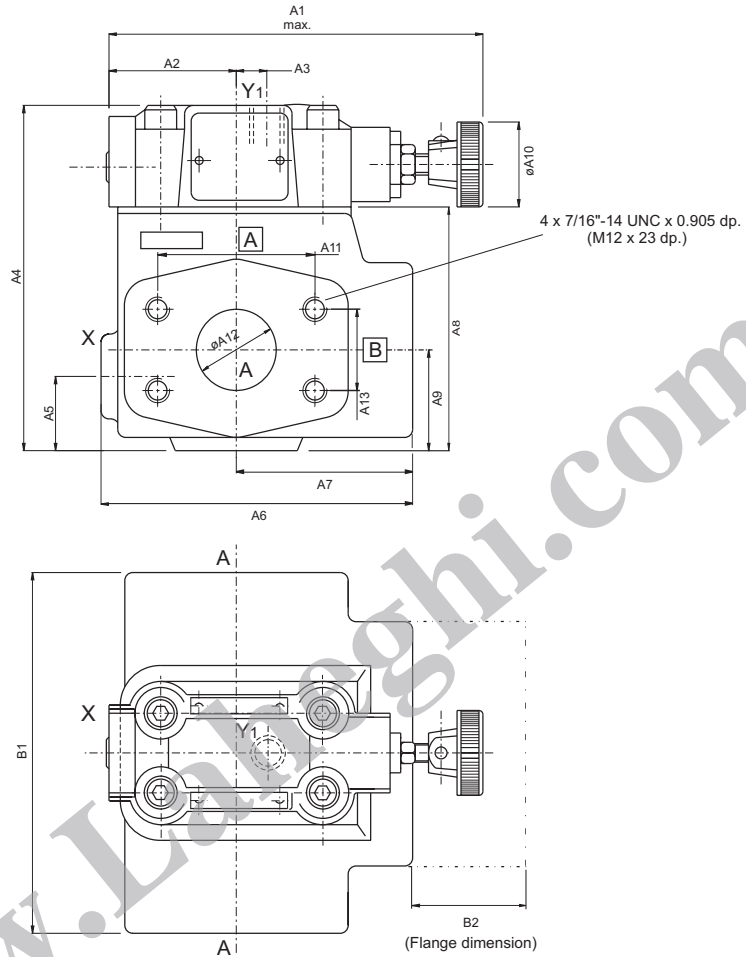
1) Closed when supplied

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



**VR4V06 (3/4") - FLANGE BODY ( #2 )**

Weight : 14.5 lbs (6.6 kg)



Dimensions	Dimensions	
	in	mm
A1	5.55	141.0
A2	1.89	48.0
A3	0.453	11.5
A4	5.12	130.0
A5	1.102	28.0
A6	4.626	114.3
A7	2.5	63.5
A8	3.622	92.0
A9	1.5	38.1
A10	ø1.26	ø32.0
A11	2.307	58.6
A12	ø1.18	ø30.0
A13	1.188	30.2

Dimensions	Dimensions	
	in	mm
B1	5.35	136.0
B2	1.56	39.8

Ports	Function	Flange model no	Flange order no	Port Sizes
A (2x)	Pressure (inlet)	VFS4-B-20-26 or VFS4-P-20-26	VS14-66935 or VS14-66927	1 1/4" B.S.P.P or 1 1/4" NPTF
B	Tank (outlet)	-	-	1/4" B.S.P.P or 1/4" NPTF
X	Remote control or vent connection	-	-	1/4" B.S.P.P or 1/4" NPTF
Y <sub>1</sub>	External drain	-	-	1/4" NPTF

Flanges must be ordered separately.  
Mounting screws are included in flange order.

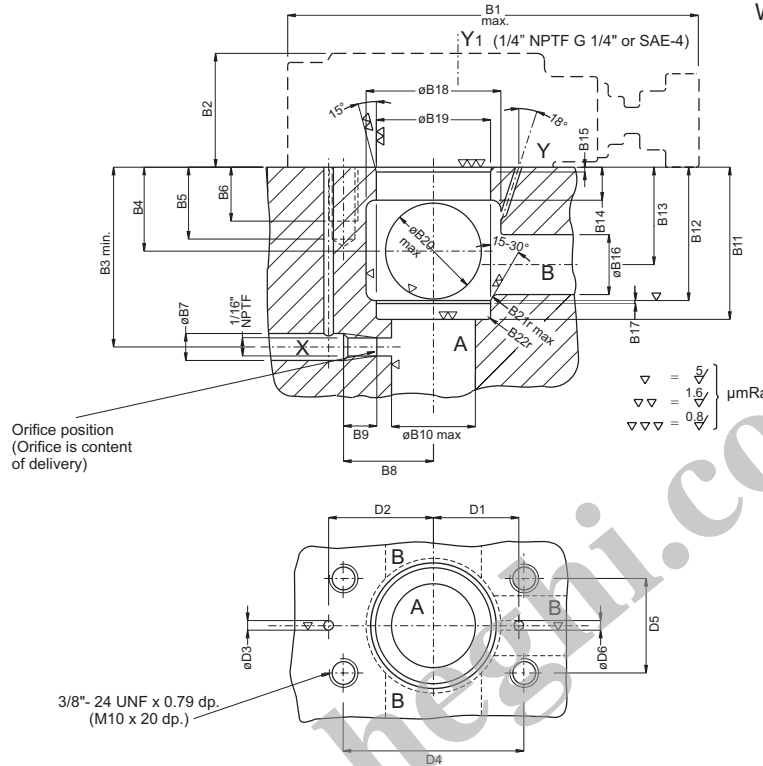
PC

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

Weight : 2.63 lbs (1.2 kg)

PC



Dimensions	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	ø0.35	ø9.0
B8	1.18	30.0
B9	0.437	11.1
B10	ø1.1	ø28.0
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	ø0.79	ø20.0
B17	0.04	1.0
B18	ø1.772/1.732	ø45.0/44.0
B19	ø1.502/1.500	ø38.139/38.100
B20	ø1.26	ø32.0
B21	0.08	2.0
B22	0.0157	0.4

Dimensions	Dimensions	
	in	mm
D1	1.122	28.5
D2	1.38	35.0
D3	ø0.126/0.236	ø3.2/6.0
D4	2.375/2.383	60.32/60.52
D5	1.24/1.26	31.55/31.95
D6	ø0.126	ø3.2

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.	V359 - 15220
or	or
M10 x 45mm, DIN 912 - 12.9	V700 - 71602

\* Mounting screws must be ordered separately