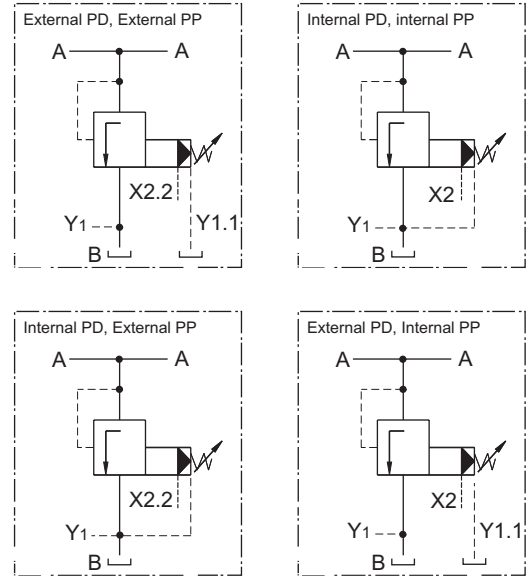
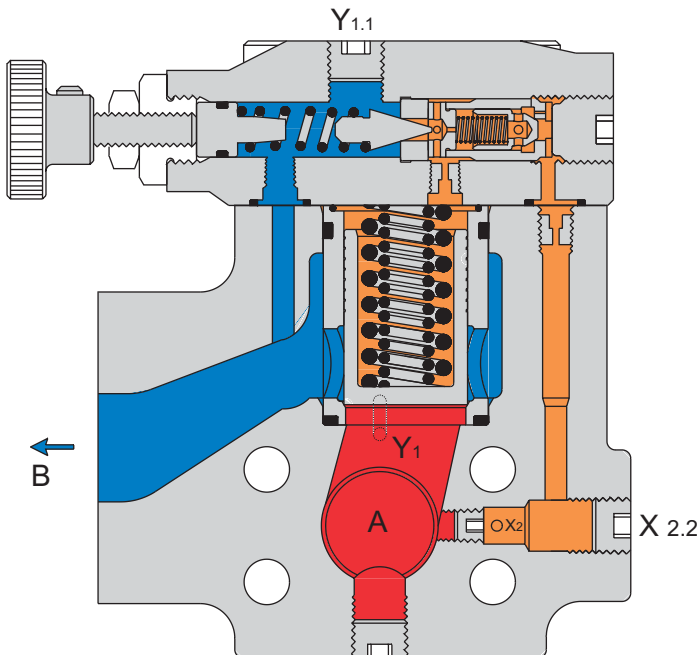
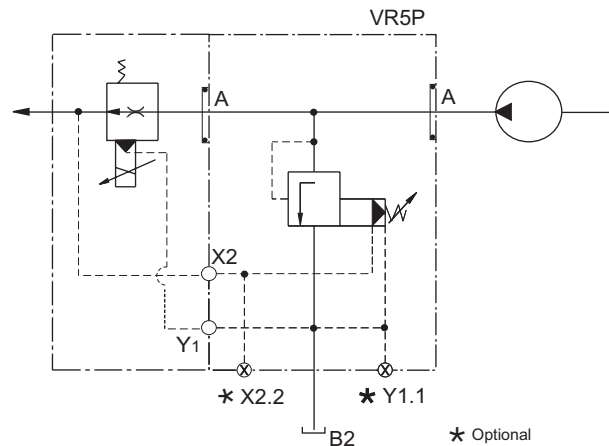


Veljan 3 - ports pressure compensator Valve Series VR5P are designed for improved operation safety and reduced mounting cost. These valves are used to maintain a constant pressure drop across a metering orifice (flow control valve or throttle valve) irrespective of actuator load variation in a hydraulic system and thus maintain a constant and stable flow to the actuator.

The pilot stage of VR5P valves are designed to reduce pressure overshoot and minimise cracking flow, thus reducing power and speed reduction loss during high pressure operation. When fitted across a metering orifice with its pilot taken from outlet of a metering orifice, VR5P acts as a load sensor and relieves metering orifice inlet at load created pressure which is lower than the system setting pressure at VR5P. This enables the system to consume less power and be more efficient.



Typical application
VR5P with flow control valve



VR5P valves can be used as flanged body type units as well as for direct mounting on SAE pumps, motors or manifolds. These are also available as cartridge type for individual manifolds mounting.

VR5P valves 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 a knurled knob. For tamper proof setting, a con nut with lead seal is available as option. Optional vent valve VV01 sandwiched between pilot section and main body can be used for venting the VR5 valves.

SPECIFICATIONS

PC

General

| | | |
|----------------------------|---|--|
| Type | : | Pilot operated Pressure Compensator Valve |
| Design | : | Poppet type |
| Mounting | : | Flanged According to SAE - 3000 psi (210 bar) e.g. Directly on a pump |
| Mounting position | : | Optional |
| Port sizes (nominal) | : | 3/4", 1", 1 1/4" |
| Direction of flow | : | A → B |
| Ambient temperature | : | -20°C...+60°C (-4°F...+140°F) |
| Special working conditions | : | Consult VELJAN |

Hydraulics

| | | |
|---------------------------------------|---|---|
| Pressure control range | : | Minimum - depends on flow Maximum - 5000 psi (350 bar) for VR5P06/ VR5P08 4050 psi (280 bar) for VR5P10 |
| Maximum operating pressure | : | |
| Port A (inlet) | | 5000 psi (350 bar) for VR5P06/ VR5P08 4050 psi (280 bar) for VR5P10 |
| Port B (outlet) | | Open to tank |
| Port X (pilot) | | 120 psi (8.4 bar) less than inlet (port A) pressure |
| Port Y, Y ₁ (Pilot drain) | | Open to tank |
| Maximum flow gpm (lpm) | : | VR5P 06 (3/4") VR5P 08 (1") VR5P10 (1 1/4") 24 (90) 80 (300) 160 (600) |
| Nominal flow gpm (lpm) | : | depends on pump delivery |
| 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) | : | 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

VR5P 06 - 5 1 5 - 1 2 - 09 - W07 - A 1 ***

Series

VR5P = 3 Port Compensator

Size

- 06 - 3/4"
- 08 - 1"
- 10 - 1 1/4"

Max. Pressure of Valve Body

- 0 - for Cartridge only
- 4 - 4000psi (280 bar) - SAE 61 flange (VR5P 10)
- 5 - 5000psi (350 bar) - SAE 61 flange (VR5P 06/08)

Body

- 0 - Cartridge
- 1 - X₂, Y₁ closed
- 2 - X₂, Y₁ open (used only with internally drained flow control valve. Connection on flange face open to link with internal drain from flow control valve)

Pressure setting range

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

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

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)

Pilot Connection

- 2 - Internal PD - Internal PP*
- 4 - External PD - External PP
- 5 - Internal PD - External PP
- 6 - External PD - Internal PP*

* Internal pilot pressure connection on flange face to link with outlet port of flow control Valve

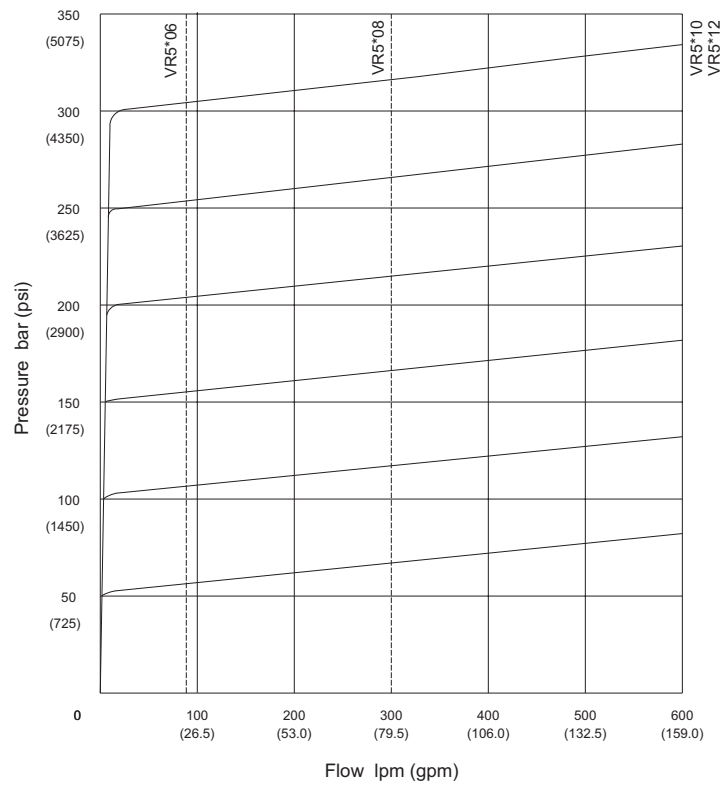


PERFORMANCE

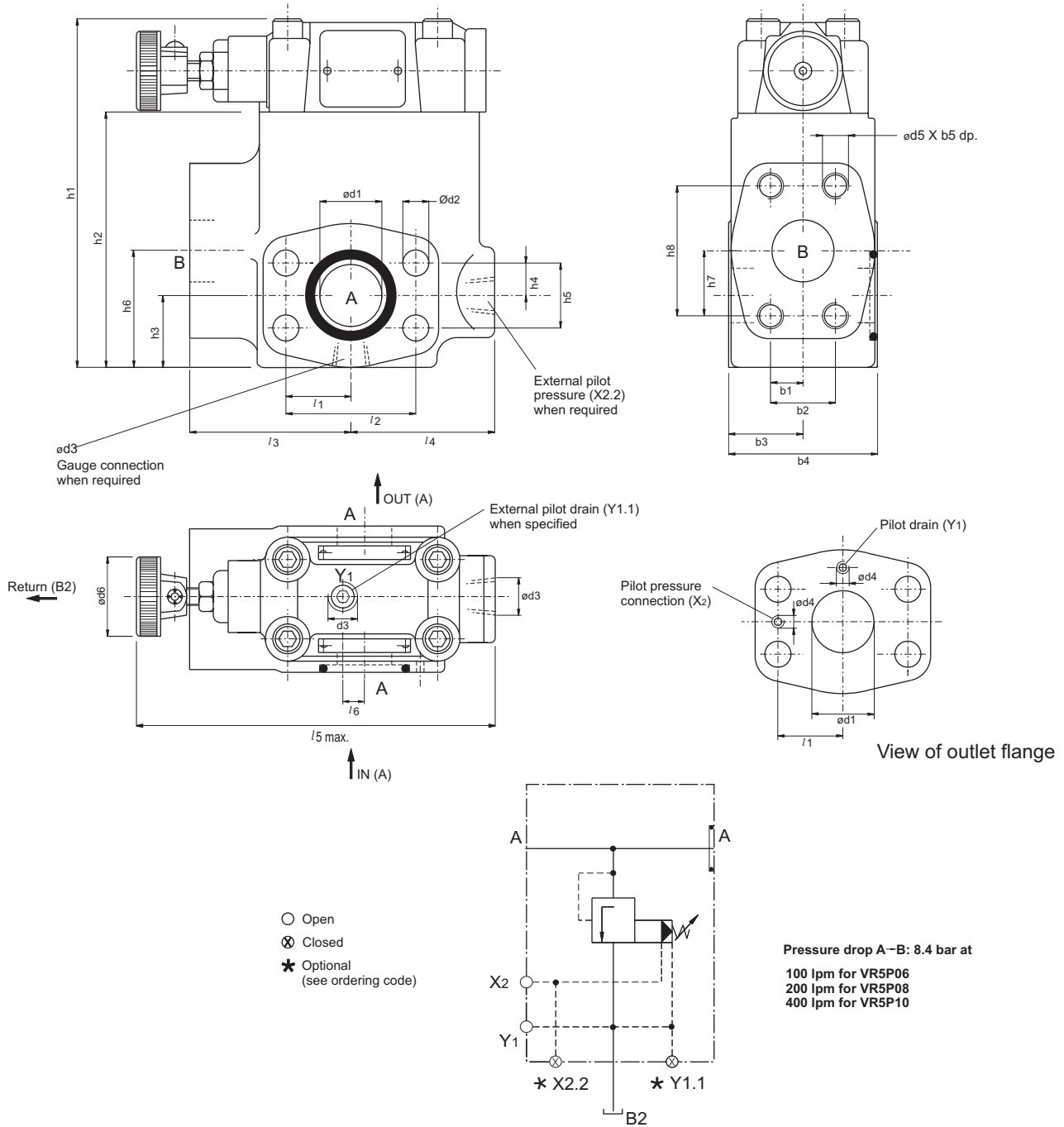


P- Q Curves

Min. possible pressure setting ≥ 8.4 bar. (120 psi)
 Fluid 40 cSt at $50^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$. (240 SSU at $120^{\circ}\text{F} \pm 32.9^{\circ}\text{F}$)



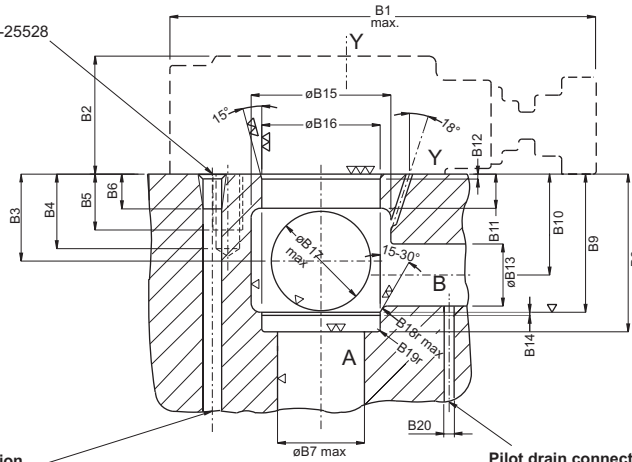
VR5P06 (3/4") - VR5P08 (1") - VR5P10 (1 1/4")



| Dimensions | | l1 | l2 | l3 | l4 | l5 | l6 | b1 | b2 | b3 | b4 | b5 | h1 | h2 |
|-----------------|----|-------|-------|-------|-------|--------|-------|-------|-------|-----------|-------|-----------|--------|-----------|
| VR5P06 (3/4") | in | 0.94 | 1.87 | 2.48 | 2.20 | 5.83 | 0.04 | 0.44 | 0.87 | 1.18 | 2.36 | 0.79 | 4.68 | 3.90 |
| | mm | 23.80 | 47.60 | 63.00 | 56.00 | 148.00 | 1.00 | 11.10 | 22.20 | | | 20.00 | 119.00 | 99.10 |
| VR5P08 (1") | in | 1.03 | 2.06 | 2.56 | 2.28 | 5.69 | 0.20 | 0.51 | 1.03 | 30.00 | 60.00 | 0.90 | 5.59 | 4.81 |
| | mm | 26.20 | 52.40 | 65.00 | 58.00 | 144.60 | 5.00 | 13.10 | 26.20 | | | 23.00 | 142.00 | 122.10 |
| VR5P10 (1 1/4") | in | 1.16 | 2.31 | 2.40 | 2.44 | 5.77 | 0.12 | 0.59 | 1.19 | 1.48 | 2.95 | 0.87 | 5.87 | 5.08 |
| | mm | 29.40 | 58.70 | 61.00 | 62.00 | 146.60 | 3.00 | 15.10 | 30.20 | 37.50 | 75.00 | 22.00 | 149.00 | 129.10 |
| Dimensions | | h3 | h4 | h5 | h6 | h7 | h8 | d1 | ød2 | ød3 | ød4 | ød5 | d6ø | Weight |
| VR5P06 (3/4") | in | 1.13 | 0.44 | 0.87 | 1.64 | 0.94 | 1.87 | 0.75 | 0.41 | 1/4" NPTF | M3 | 3/8" UNC | 1.26 | 8.10 lbs |
| | mm | 28.60 | 11.10 | 22.20 | 41.60 | 23.80 | 47.60 | 19.00 | | | | | | 3.70 kg |
| VR5P08 (1") | in | 1.20 | 0.51 | 1.03 | 1.91 | 1.03 | 2.06 | 0.98 | 10.50 | 1/4" NPTF | M3 | 3/8" UNC | 1.26 | 9.70 lbs |
| | mm | 30.60 | 13.10 | 26.20 | 48.60 | 26.20 | 52.40 | 25.00 | | | | | | 4.40 kg |
| VR5P10 (1 1/4") | in | 1.36 | 0.59 | 1.19 | 2.52 | 1.16 | 2.31 | 1.26 | 0.47 | 1/4" NPTF | M3 | 7/16" UNC | 1.26 | 11.70 lbs |
| | mm | 34.60 | 15.10 | 30.20 | 64.10 | 29.40 | 58.70 | 32.00 | | | | | | 12.00 |

CARTRIDGES WITH PILOT VALVES VR5P08/VR5P10

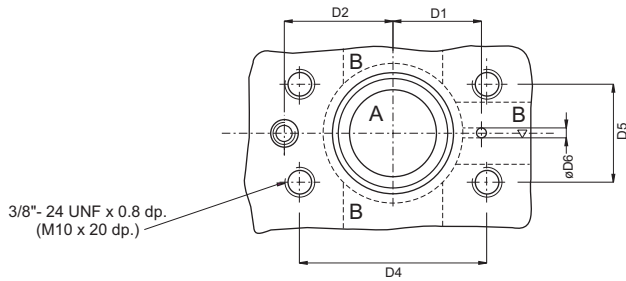
Fit orifice plug
1.2 dia. Number V036-25528



$$\begin{aligned} \nabla &= \sqrt{5} \\ \nabla \nabla &= 1.6 \sqrt{5} \\ \nabla \nabla \nabla &= 0.8 \sqrt{5} \end{aligned} \left. \vphantom{\begin{aligned} \nabla \\ \nabla \nabla \\ \nabla \nabla \nabla \end{aligned}} \right\} \mu\text{mRa}$$

Pilot pressure connection
for VR5P connect to outlet of flow control orifice or internal pilot pressure on flange face of flow control valve

Pilot drain connection
Connect to internal pilot drain in flange face of flow control valve if internal drain is required. Connection point to outlet "B" is optional



| | Dimensions | |
|-----|--------------------------|------------------------|
| | in | mm |
| B1 | 5.55 | 141.0 |
| B2 | 1.49 | 38.0 |
| B3 | 1.083 ^{+0.0004} | 27.5 ^{+0.1} |
| B4 | 0.945 | 24.0 |
| B5 | 0.71 | 18.0 |
| B6 | ø0.35 | ø11.0 |
| B7 | ø1.1 | ø28.0 |
| B8 | 1.997 ^{+0.003} | 50.73 ^{+0.07} |
| B9 | 1.75 | 44.5 |
| B10 | 1.28 | 32.5 |
| B11 | 0.433 | 11.0 |
| B12 | 0.06 | 1.6 |
| B13 | ø0.79 | ø20.0 |
| B14 | 0.04 | 1.0 |
| B15 | ø1.732 ^{+1.73} | ø44.0 ^{+1.0} |
| B16 | ø1.5 ^{HB} | ø38.1 ^{HB} |
| B17 | ø1.26 | ø32.0 |
| B18 | 0.08 | 2.0 |
| B19 | 0.0157 | 0.4 |
| B20 | ø0.126 | ø3.2 |

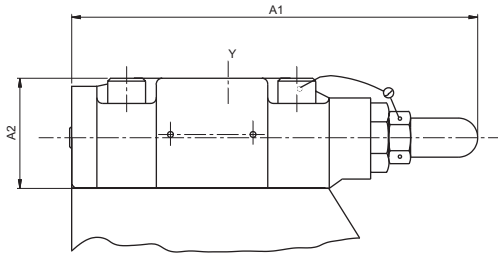
| | Dimensions | |
|----|-------------------------|------------------------|
| | in | mm |
| D1 | 1.122 | 28.5 |
| D2 | 1.38 ^{± 0.008} | 35.0 ^{± 0.2} |
| D3 | 2.37 ^{± 0.008} | 60.32 ^{± 0.2} |
| D4 | 1.25 | 31.75 |
| D5 | ø0.126 | ø3.2 |

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

* Mounting screws must be ordered separately

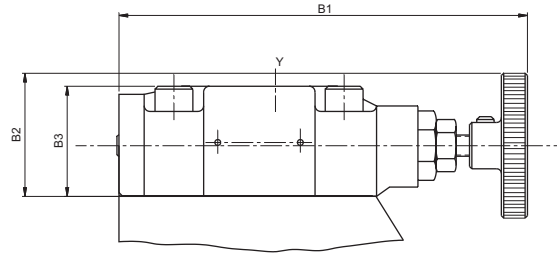
OPTIONAL CONTROL

Type of control - Code 3
Acron nut with lead seal



| | Dimensions | |
|----|------------|-------|
| | in | mm |
| A1 | 5.51 | 140.0 |
| A2 | 0.49 | 38.0 |

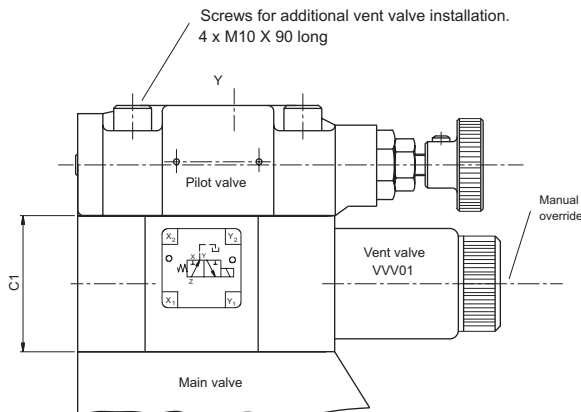
Type of control - Code 2
Hand knob 50mm dia
(not for version with vent valve VVV01)



| | Dimensions | |
|----|------------|-------|
| | in | mm |
| B1 | 5.55 | 141.0 |
| B2 | 1.67 | 42.5 |
| B3 | 1.49 | 38.0 |

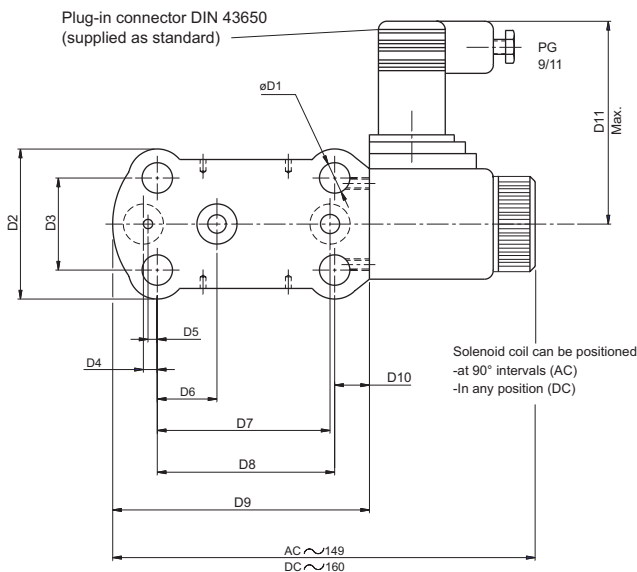
Version with Vent Valve VVV01

Weight (VVV01) : 3.73 lbs (1.7 kg)



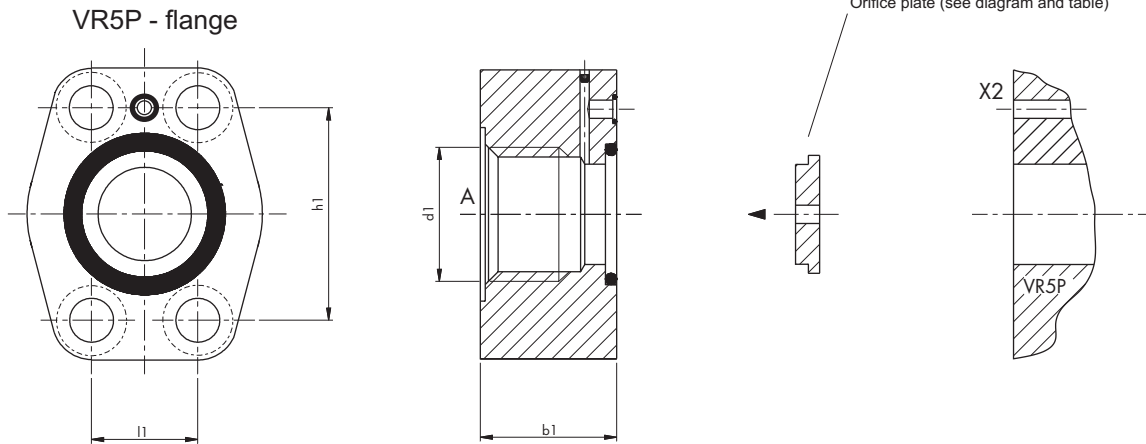
| | Dimensions | |
|----|------------|------|
| | in | mm |
| C1 | 1.85 | 47.0 |

| | 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 |

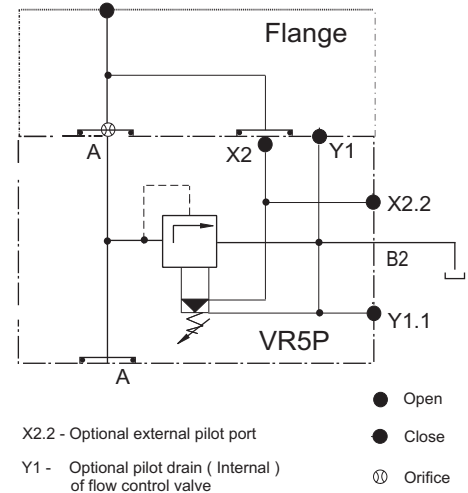
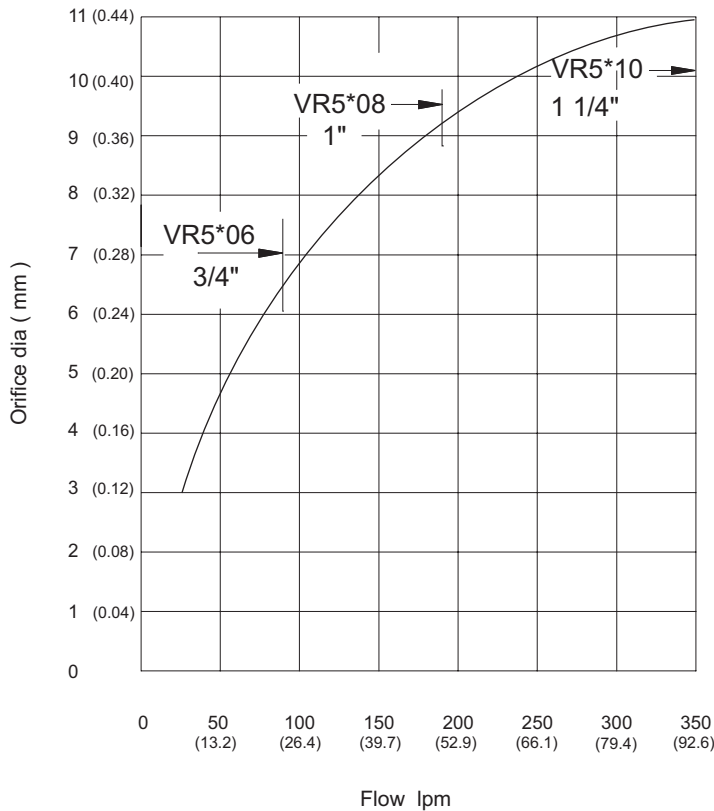


| Code | Pressure Compensator Valve VR5P | |
|----------|---------------------------------|----------------|
| | Internal Drain | External Drain |
| 11 or 12 | | |
| 09 or 10 | | |

SAE - Flanges with A-X connection and orifice plates



The curve below is for user to select orifice diameter (orifice plate) for desired flow. For orifice with fraction size, select the next immediate larger orifice diameter from the table.



Orifice plates

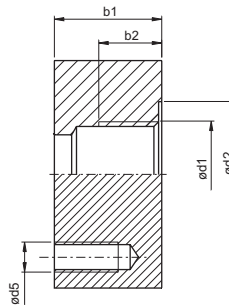
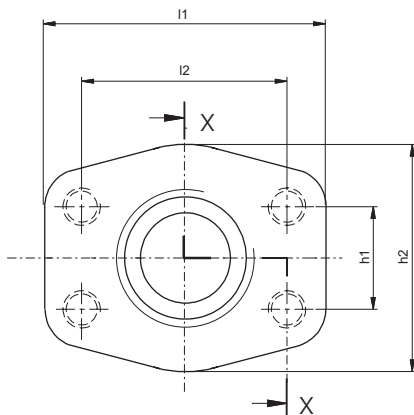
| Orifice dia.(mm) | Order no. | | |
|------------------|---------------|--------------|-----------------|
| | 3/4" (VR5P06) | 1" (VR5P08) | 1 1/4" (VR5P10) |
| 11.0 | - | - | V036 - 84982 |
| 10.0 | - | V036 - 84990 | V036 - 84981 |
| 9.0 | - | V036 - 84989 | V036 - 84980 |
| 8.0 | V036 - 84996 | V036 - 84988 | V036 - 84979 |
| 7.0 | V036 - 84995 | V036 - 84987 | V036 - 84978 |
| 6.0 | V036 - 84994 | V036 - 84986 | V036 - 84977 |
| 5.0 | V036 - 84993 | V036 - 84985 | V036 - 84976 |
| 4.0 | V036 - 84992 | V036 - 84984 | V036 - 84975 |
| 3.0 | V036 - 84991 | V036 - 84983 | V036 - 84974 |

Flanges

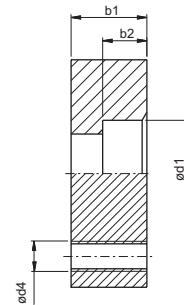
| for | Size d1 | Order no. | b1 | L1 | h1 |
|--------|-----------------|------------------|------|------|------|
| VR5P06 | 3/4" B.S.P.P. | VS16 - 39922 - 0 | 34.0 | 22.2 | 47.6 |
| VR5P08 | 1" B.S.P.P. | VS16 - 39923 - 0 | 34.0 | 26.2 | 52.4 |
| VR5P10 | 1 1/4" B.S.P.P. | VS16 - 39924 - 0 | 39.0 | 30.2 | 58.7 |

SAE - Flanges

Inlet flange (only for pipe mounting)

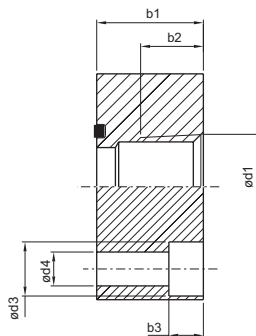
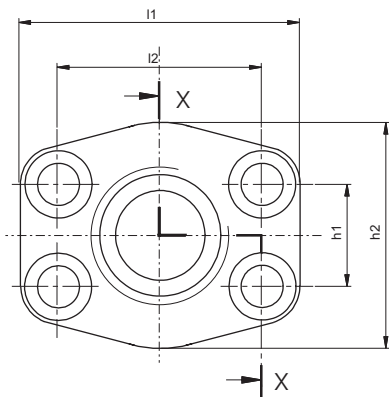


B.S.P. Flange

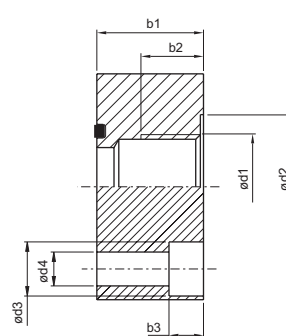


Socket weld

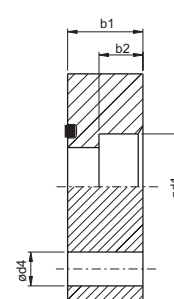
Outlet and tank port flange



N.P.T.F. flange



B.S.P. flange



Socket weld

| Port sizes d1 | Inlet flange (without screws) only for pipe mounting | Outlet flange (without screws) | Tank port flange (with screws) | | | | | | | | | | | |
|----------------------------------|---|-----------------------------------|--------------------------------------|-------|------|------|------|------|------|------|------|------|------|-----------|
| | Order no. | Order no. | Order no. | I1 | I2 | b1 | b2 | b3 | h1 | h2 | ød2 | ød1 | ød4 | ød5 |
| 3/4" B.S.P.P | VS16 - 86520 | VS16 - 86529 | VS14 - 66933 | 67.0 | 47.6 | 34.0 | 15.9 | 12.0 | 22.0 | 52.0 | 40.0 | 16.5 | 10.5 | 3/8" UNC |
| 3/4" N.P.T.F. | - | VS16 - 86530 | VS14 - 66925 | | | | 19.0 | 12.0 | | | - | - | | |
| 3/4" Socket weld | VS16 - 86519 | VS16 - 86528 | VS14 - 66941 | | | | 19.0 | 12.0 | | | - | - | | |
| 1" B.S.P.P | VS16 - 86523 | VS16 - 86 532 | VS14 - 66934 | 72.0 | 52.4 | 34.0 | 20.0 | 12.0 | 26.2 | 58.0 | 46.0 | 16.5 | 10.5 | 3/8" UNC |
| 1" N.P.T.F. | - | VS16 - 86533 | VS14 - 66926 | | | | 19.0 | 12.0 | | | - | - | | |
| 1" Socket weld | VS16 - 86522 | VS16 - 86531 | VS14 - 66942 | | | | 24.0 | 14.0 | | | - | - | | |
| 1 1/4" B.S.P.P | VS16 - 86526 | VS16 - 86535 | VS14 - 66935 | 80.0 | 58.7 | 39.0 | 22.0 | 15.0 | 30.2 | 73.0 | 54.0 | 17.5 | 12.5 | 7/16" UNC |
| 1 1/4" N.P.T.F. | - | VS16 - 86536 | VS14 - 66927 | | | | 20.6 | 14.0 | | | - | - | | |
| 1 1/4" Socket weld | VS16 - 86525 | VS16 - 86534 | VS14 - 66943 | | | | 24.0 | 14.0 | | | - | - | | |
| 1 1/2" B.S.P.P | VS26 - 52364 | VS26 - 52215 | VS14 - 66936 | 94.0 | 69.8 | 39.0 | 24.0 | 15.0 | 35.7 | 82.0 | 60.0 | 20.0 | 14.5 | 1/2" UNC |
| 1 1/2" Socket weld | VS26 - 52366 | VS26 - 52217 | VS14 - 66944 | | | | 26.0 | 16.0 | | | - | - | | |
| 1 1/2" B.S.P.P ¹⁾ | V464 - 01147 | V464 - 01141 | V464 - 01004 | | | | 28.0 | 20.0 | | | - | - | | |
| 1 1/2" Socket weld ¹⁾ | V464 - 01149 | V464 - 01143 | V464 - 01146 | 112.0 | 79.4 | 50.0 | 28.0 | 20.0 | 36.5 | 94.0 | 60.0 | 25.0 | 17.5 | 5/8" UNC |

¹⁾ SAE 62