

ECO Valve

Uses:

Back Pressure valve

Anti-Siphon valve

Pressure Sustaining valve

Pressure Relief valve

Instruction Manual

"B" Series DN15, DN20, DN25

ECO-55, ECO-75, ECO-100

Please note:

This instruction manual provides detailed information and instructions that must be read, understood and followed to ensure that the equipment is installed, operated and serviced in an appropriate manner. Failure to do so before using may result in hazardous consequences and/or improper operation.



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Introduction

The following instructions are to provide information on the Installation, operation and maintenance of ECO Valve, diaphragm style valves. The valves are designed to help improve the performance and safe operation of most positive displacement pumps.

Various materials of construction are available dependent on the requirements of the application and the type of fluids being transferred.

These valve(s) have a field adjustment range of 0-1000 kPa(g).

Features of ECO Valve:

- PVC, PP, CPVC (Corzan), PVDF and 316L S/S wetted construction
- PVC diaphragm with PVC valve bodies
- Teflon laminated to EPDM backer diaphragm standard on all other material
- Optional Viton or EPDM wetted diaphragm materials
- only one elastomer is present in the wetted end
- Turn down handle limits pressure to 1000 kPa(g)
- Locking adjustable pressure screw
- Colour-coded caps indicate size at a glance
- Built-in gauge port on both sides of valve body (pre-drilled & threaded optional)
- Specially designed spring provides consistent pressure adjustments through the range
- Eco valve is available in several configurations to meet your needs, such as threaded, socket, flanged, union in DIN, BSPT and American Standard
- Built-in downstream manual air release, for ease of pump priming
- Built-in anti-siphon

Back Pressure Valve/Anti-siphon:

Diaphragm Back Pressure Valves serve two primary functions. The first is to provide a constant discharge pressure on the pump, which improves the performance, efficiency and consistency of the delivered volume. Secondly, the valve performs as an anti-siphon mechanism against positive or negative pressures in the downstream line. The valve is designed to allow for the venting of air into the downstream pipeline. This provides for easier priming of metering pumps that function under a suction lift. This is accomplished by a simple adjustment of the handle.

The valve comes complete with a gauge port located on both sides of the valve body; the ports are normally not drilled or tapped for a gauge connection.

Caution:

The gauge port is solely for the installation of the gauge and must not be used for the bleeding or venting of the system. Improper operation of the valve and/or hazardous consequences could result. (See gauge installation instructions)

Back Pressure /Pressure Sustaining Valve: Reason for Selection and Use

Metering pumps having an atmospheric discharge system pressure or less than 140 kPa will benefit from the installation of a back pressure control valve. Metering pumps in general require downstream back pressure to ensure smoother function of the discharge check assemblies, which enhances the accuracy of the discharge flow.

Pressure Relief Valves:

Diaphragm Pressure Relief Valves are designed to relieve excess line pressure that exceeds the set pressure of the valve. This protects the system piping from overpressure that could result in hazardous leakage and/or damage to the pump and other system components.

The Pressure Relief Valves are normally recommended to be set between 35 and 70 kPa(g) above the system operating pressure.

When ECO valves are used as a pressure relief valve it is a two port valve, thus designed for off line installations. This requires the valve to be installed on a tee branch of the discharge line of the pump for piping back to supply tank or feed side of pump.

The valve comes complete with a gauge port located on both sides of the valve body; the ports are normally not drilled or tapped for a gauge connection.

Caution:

The gauge port is solely for the installation of the gauge and cannot be used for the bleeding or venting of the system. Improper operation and/or hazardous consequences could result. (See gauge installation instructions)

Pressure Relief Valves: Reason for Selection and Use

Most positive displacement pumps require the use of a pressure relief valve; it should always be installed on the downstream side of the pump to protect the system from over pressure which can cause pipe leakage and/or rupture. There should not be any type of valve located between the pump discharge or the pressure relief valve, for the pressure relief valve to function properly.

Installation and Maintenance of Back Pressure Valves:

Back pressure control valves are installed on the discharge line of the pump. The valve should be located as reasonable close as possible of the pump discharge to ensure check valve seating. When pumping to a process line without an injection valve, the back pressure valve should be installed as close as possible to the injection point to prevent siphoning.

When used in conjunction with a pressure relief valve, always locate the back pressure valve on the downstream side of the relief valve.

To increase the pressure setting, back off the lock nut located beneath the colour coded bonnet cap. Turn the Allan bolt using a 5/16" or #8 hex key clockwise to increase pressure setting or counter clockwise to reduce pressure setting. Approximately one (1) full turn of the handle is equal to 70 kPa(g).

If maintenance is required on the valve:

1. Ensure that the valve is **properly isolated** from the line, **not under pressure** and **properly flushed** of chemical before proceeding to disassembly.
2. Turn Allan bolt on the top of valve, counter clockwise until all spring pressure is released **before** proceeding to undo retaining nuts, to remove top of valve for diaphragm replacement.
3. All working components ie. diaphragm, spring can be accessed by removing the four retaining bolts located on the bottom of the valve (item # 9 of parts breakdown).
4. When replacing a teflon coated diaphragm, ensure the teflon coated side of the diaphragm is facing down when viewed from the top of the valve. The installed diaphragm also functions as the body seal. (Torque nuts to 60 inch pounds when reassembling)

Installation and Maintenance of Pressure Relief Valves:

Pressure relief valves are installed on the discharge line of a pump and should be located as close as possible to the metering pump. The valve is of an two port design and is required to be installed on a branch tee for piping back to the supply tank or feed side of the pump.

Never install shut-off/isolation valves between pump discharge and in-line pressure relief valves. When using in conjunction with a back pressure control valve, always install back pressure valve downstream of pressure relief valve. The relief port on the pressure relief valve should be piped back to the feed tank or suction side of the pump (see typical installation schematics).

Caution: The plastic valve bodies have standard threads, which are tapered. When installing pipe into the body, hand tighten only to avoid cracking.

Gauge Installation Instructions:

For the convenience of pressure setting and reading, there are two ports provided one on either side of the valve body. These ports are normally not drilled or tapped unless initially ordered that way. To drill and tap the ports it is recommended that you first disassembly the valve so as to not leave any foreign particles in the valve. You will require a 1/8" or 3.264 mm drill bit to drill out the centre point of the gauge port opening into the body of the valve. The port is already the correct diameter for the tapping of a 1/4" or M10 thread. It is recommended that you use a regular tap then a bottoming tap to open the port up, this will allow for the proper number of gauge threads.

Manual Air Release

To adjust the valve to relieve air or gas downstream:

1. **Back off lock nut located beneath the colour coded handle.**
2. **Turn handle counter clockwise until approximately 1 inch of thread is exposed.**
3. **At this adjustment, the spring has relieved all tension from the diaphragm allowing air or gas to be vented downstream.**

The valve is shipped with a factory set pressure of 50 psig. The diagram to the left shows a cut away view of the position of the diaphragm on the seat.

Exploded View -- Back Pressure / Pressure Relief Valve
 1/2" High Flow, 3/4", 1" ECO Valves

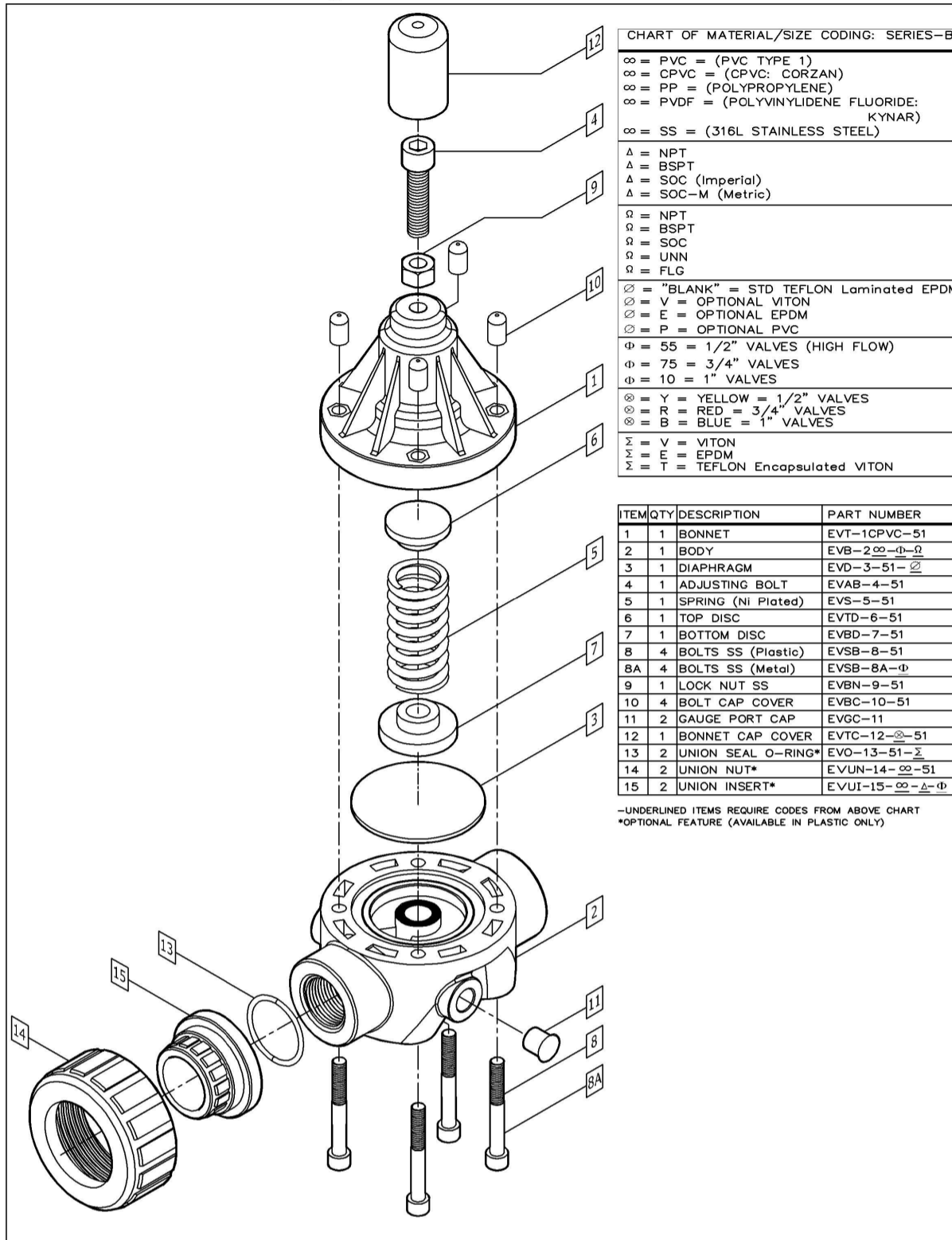


CHART OF MATERIAL/SIZE CODING: SERIES-B

∞ = PVC = (PVC TYPE 1)
 ∞ = CPVC = (CPVC: CORZAN)
 ∞ = PP = (POLYPROPYLENE)
 ∞ = PVDF = (POLYVINYLIDENE FLUORIDE: KYNAR)
 ∞ = SS = (316L STAINLESS STEEL)

Δ = NPT
 Δ = BSPT
 Δ = SOC (Imperial)
 Δ = SOC-M (Metric)

Ω = NPT
 Ω = BSPT
 Ω = SOC
 Ω = UNN
 Ω = FLG

⊘ = "BLANK" = STD TEFLON Laminated EPDM
 ⊘ = V = OPTIONAL VITON
 ⊘ = E = OPTIONAL EPDM
 ⊘ = P = OPTIONAL PVC

Φ = 55 = 1/2" VALVES (HIGH FLOW)
 Φ = 75 = 3/4" VALVES
 Φ = 10 = 1" VALVES

⊗ = Y = YELLOW = 1/2" VALVES
 ⊗ = R = RED = 3/4" VALVES
 ⊗ = B = BLUE = 1" VALVES

Σ = V = VITON
 Σ = E = EPDM
 Σ = T = TEFLON Encapsulated VITON

ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	BONNET	EVT-1CPVC-51
2	1	BODY	EVB-2∞-Φ-Ω
3	1	DIAPHRAGM	EVD-3-51-⊘
4	1	ADJUSTING BOLT	EVAB-4-51
5	1	SPRING (Ni Plated)	EVS-5-51
6	1	TOP DISC	EVD-6-51
7	1	BOTTOM DISC	EVBD-7-51
8	4	BOLTS SS (Plastic)	EVSB-8-51
8A	4	BOLTS SS (Metal)	EVSB-8A-Φ
9	1	LOCK NUT SS	EVBN-9-51
10	4	BOLT CAP COVER	EVBC-10-51
11	2	GAUGE PORT CAP	EVGC-11
12	1	BONNET CAP COVER	EVTC-12-∞-51
13	2	UNION SEAL O-RING*	EVO-13-51-Σ
14	2	UNION NUT*	EVUN-14-∞-51
15	2	UNION INSERT*	EVUI-15-∞-Δ-Φ

-UNDERLINED ITEMS REQUIRE CODES FROM ABOVE CHART
 *OPTIONAL FEATURE (AVAILABLE IN PLASTIC ONLY)