

User Manual of Pressure Reducing Valve (PRV) Models W3 & VH

Varie®

1. PIPING ARRANGEMENT

A) It is essential to provide a stop valve (Ball Valve) in the down take line-before the PRV so that water supply can be cut off when the PRV is under repair / maintenance.

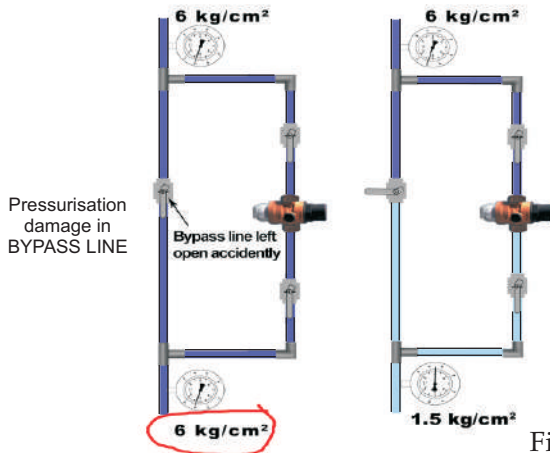
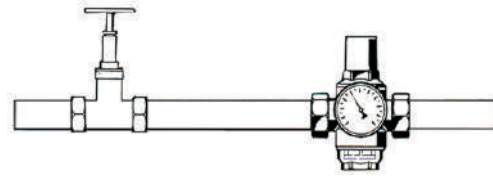


Fig. 2



B) Many a times it is seen that a bypass "arrangement is provided with a throttle valve (stop valve) which can be used when PRV is under maintenance. But there is risk that the bypass line can be left 'open*' accidentally, as a result the outlet pressure will be high (defying the entire purpose of the PRV). With Varie models like W3 (having cartridge internals) the repair/ replacement is very quick and downtime is very less. Hence bypass system can be avoided.

C) Installation - W3 models are suitable for use in horizontal or vertical or inclined pipeline.

Tips for PRV Positioning and pressure setting for telescopic down take system

(Note : Below are general norms which can be followed when designer / consultants instructions are not there)

PRV should be positioned such that they are easily accessible for setting or for future maintenance.

It is necessary during installation to follow codes of good practice, to follow the installation instructions. The installation location should be ideally protected against frost and direct rain water and be easily accessible.

The most commonly followed design of down take distribution is the telescopic down take each having max. 4 to 6 branches. In this system a PRV should be put in the down take just before the first branch (and generally there are 4 branches for 4 storeys in each down take). **Also only one PRV is required in one down take line.** At the 4th branch which is about 9mtrs below the PRV (assuming 3 mtrs ht for each of 4 storeys) the pressure will add by about 0.9kg/cm². Thus the maximum set pressure of PRV should not be more than 1.5kg/cm². So that at the last branch/ storey pressure will be within safe limit. In case there is a change in the number of branches per down take or if the permissible maximum pressure is different (other than the current norm of 2.4kg/cm²) than the maximum set value on PRV will have to be calculated accordingly. Pressure should be set on each PRV such that residents on 1st branch don't complain for poor flow due to less pressure and at the same time residents on last branch don't get excessive pressure.(Generally where more branches are there the VL model with O/P pressure range of 0.5 to 2 kg/cm² are best suited)

2. INSTALLATION:

A) Thoroughly clean or flush out piping system to remove any foreign material etc. otherwise it could cause damage to sealing surfaces during valve operations.

B) Piping should be properly aligned and supported to reduce undue mechanical loading on the end connections.

C) Verify that the space available is adequate to allow the PRV to be installed and to be operated, comfortably.

D) Insufficient clearance for removal of the Filter cap or Bonnet (black) may cause difficulty in opening valve for maintenance in future. Also sufficient clearance should be allowed for threaded valves to rotate on it's axis during installation.

E) Install pressure reducing valve

- Check that arrow is in flow direction, (indicated by arrow on valve body)
- Ideally install in horizontal pipe work with strainer bowl downwards. If not, then W3 model can be installed in vertical lines also.
- Install without tension of bending stresses.

F) End Connection: - Check condition of threads on mating pipe. Apply compound for fixing valve to the male end of joint usually the pipe only (in case of W3-M1 male threaded PRV's apply compound on PRV thread.). This will prevent compound from entering the internals of PRV.

G) Though W3 PRV'S can be installed in any position. It is easier to collect & remove dirt when put in horizontal line.

Note: Remove PRV whilst making soldered connections to avoid high temperatures damaging important internal working components

.H) PRV is now ready for use.

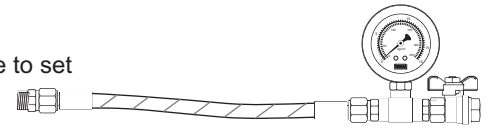
I) Post - installation Procedures

After installation, the line should be cleaned by flushing to remove any foreign material.

With the line pressurized, check the valve end connections for any leaks. The packing may have to be tightened to stop packing leakage/ sweating at the system pressure.

3. SETTING OUTLET PRESSURE

Even if a PRV is calibrated for a certain outlet pressure from factory it is good practice to set & verify pressure at site with help of Varie pressure testing kit* or a pressure gauge.



For fast and efficient work the Varie specialized pressure testing kit is recommended which has built-in arrangement for air release which helps getting correct readings and faster work. (The procedure of setting / checking with pressure testing kit is supplied with the kit.)

If the pressure testing kit is not used a simple pressure gauge with following specifications can be used:

- 50 mm dial 1/4" BSP end connection
- for sizes 15 to 32 mm Ideally back mounted but side mounted will also do.
- Sizes 40 mm & 50 mm needs side mounted only.

Procedure of setting/ checking pressure with pressure gauge

- Close the shut off valve (Ball valve) installed before PRV.
If not provided then close shut off valve installed at the Start of down take on terrace (or uptake line in case of hydro pneumatic system.)
- Open & remove blanking plug along with 'O' ring on its collar with hand. Use spanner only if required.
- Allow residual water in line to empty out through the open port.
- Thread-in the pressure gauge in the 1/4" BSP threaded port. (Apply few turns of Teflon tape on thread of pressure gauge for sealing), **Do not tighten completely.** (to ensure removal of air)
- Turn on supply by opening the shut-off valve before PRV.
- Allow some water to come out thru the threads of the pressure gauge (to ensure that air is removed).
- Tighten pressure gauge completely using a spanner till water stops leaking from threads.
- Ensure that 'no flow' of water is there on outlet, as pressure checking/ setting has always to be done in 'static' or 'no-flow' condition only. i.e. all taps on outlet should be closed.
- To increase pressure setting **turn screw** on bonnet clockwise until desired pressure is achieved. To decrease pressure turn it anticlockwise.
- Allow some water to flow thru the PRV by opening a tap on downstream and closing it again till a perfect no-flow condition is achieved.
- Re-check pressure on gauge.
- If same reading is coming then the PRV is set correctly at pressure shown on pressure gauge. If not reset pressure and repeat procedure. (If consistent reading is not coming call technician or follow 4.2 / 4.3)
- Again close the shut-off valve before PRV. Remove pressure gauge with residual Teflon tape on the inside threads of the port and refit the blanking plug with 'O' ring (**tighten with hand only! not spanner**)
- Start the supply of water. Ensure that NO water is leaking from the Blanking plug. PRV is ready for use.

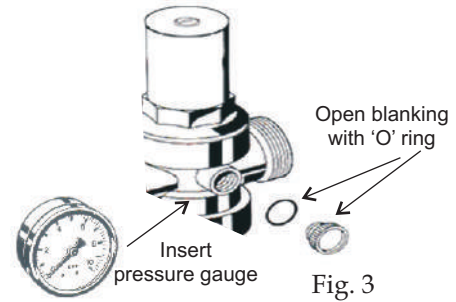


Fig. 3

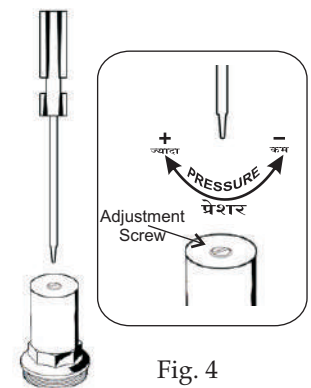


Fig. 4

4. INSPECTION AND MAINTENANCE

We recommend the user to have a planned maintenance schedule and this should include the Following operations:

4.1 Pressure Checking (annually)

- Ensure all taps on downstream are closed.
- Check outlet pressure with a pressure gauge (as explained above or with a pressure testing kit) when 'no-flow' is occurring. Pressure should not rise. If pressure is not stable and slowly rises, then proceed as described under 4.2, 4.3.

4.2 Cleaning Built- in -Filter

Filter Cap and filter can be cleaned as necessary by the user or maintenance personnel as Follows:

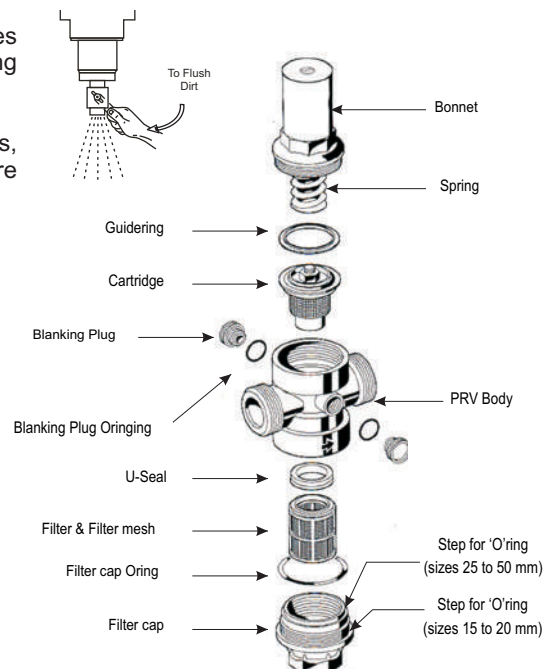
4.2A) In case of PRV with easy clean attachment W3-SC & W3-BSC only.

To clean filter or to discharge all dirt simply turn the handle down till the dirt comes out thru discharge port. The supply should not be shut off during this draining activity.

However at times some foreign material like big pebbles, plastic bag, cloth, moss, mud etc. may not drain out easily same will have to be removed as per procedure explained in 4.2B.

4.2B) In case of PRV without easy clean attachment.

- Shut off supply to PRV by closing the ball valve provided before it.
- Unscrew filter cap with help of spanner.
- Remove 'O' ring and filter which will come out along with the filter cap (If 'O' ring and /or Filter is stuck inside the body of valve then remove it with finger.)
- Clean the Filter mesh in running tap water (Do not use detergents etc) Still if very fine particles, mud or moss is stuck on filter mesh clean it with an old tooth brush.
- Check if U-seal is in proper condition and proper place.



- Refit the 'O' ring on the step provided for it on Filter cap. (For 15 & 20 mm size valves the step is just above collar, for 25, 32, 40 & 50 mm sizes the step is at top of Filter cap.)
- Insert the Filter as shown in sketch (ensure that it is not fit upside down) into the valve body. Generally the Filter will press fit into the collar provided in center inside body (where U-seal is fit.)
- Screw in the Filter cap with 'O' ring into the valve body. Tighten with spanner until the collar of Filter cap touches the valve body. Caution: Over tightening Filter cap may cause damage to same.
- Start supply by opening ball valve before PRV. Check for leakages through Filter cap, if any. In case of leakage open Filter cap and refit the 'O' ring in its place. If same is damaged then replace with a new 'O' ring.

4.3 Removing and Checking Cartridge Internals. The following should be ideally carried out by trained personnel,

1. Close isolating valve before PRV
2. Relieve pressure between valve and PRV by opening blanking plug and allowing water to go out.
3. Loosen slotted screw by turning anticlockwise to slacken spring tension.
4. Remove bonnet (fig 5). Using spanner.
5. Remove guide ring (fig 6)
6. Lever out cartridge (fig 7); use plier if needed.

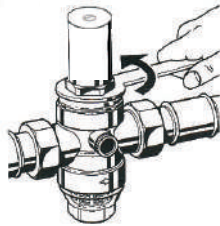


Fig. 5

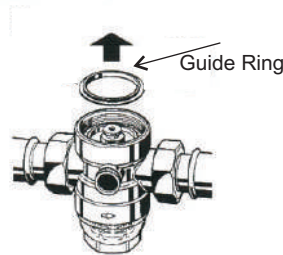


Fig. 6

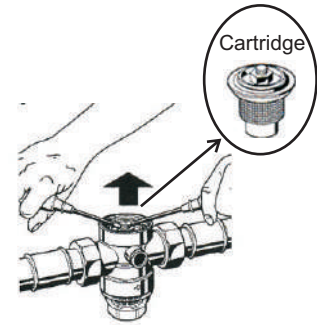


Fig. 7

Check if diaphragm, washer and Useal are in good condition remove dirt, mud, salt, particles if they have deposited in cartridge under running water or use an old tooth brush if needed. ('U'seal can be removed & checked only after removing filter as explained in 4.2B)

- Replace faulty parts. Reassemble in reverse order
Press in diaphragm with a finger around its circumference before inserting guide ring
- Adjust outlet pressure as described under Pressure setting.

5. SCOPE OF APPLICATION: Water, Compressed air, Nitrogen.

Models	:	W3	VH
Max. Inlet pressure kg / cm ²	:	16	16
Outlet pressure kg / cm ²	:	1.5 to 5	1.5 to 10
Max Operating temp.	:	With Transparent Filter Cap – 45°C. With Brass Filter cap - 70°C (For higher temp. special valves are supplied)	

Note: In applications where Chemical or solvent vapours are present, (i.e. in chemical, corrosive environment) Use PRV with brass filter cap instead of transparent plastic Filter cap.

6. TROUBLESHOOTING:

Problem	Cause	Remedy
Beating sounds	Pressure reducing valve is too large or too small for pipe size	Call our Technical Customer Services
Water is escaping from the spring bonnet	Diaphragm in cartridge is worn out or damaged.	Replace cartridge
Too little or no water pressure	Shutoff valves up- or downstream of the pressure reducing valve are not fully open	Open the shutoff valves fully
	Pressure reducing valve is not set to the desired outlet pressure	Increase outlet pressure
	Filter in pressure reducing valve is choked due to dirt.	Clean or Replace filter
	Pressure reducing valve is not fitted in flow direction.	Fit pressure reducing valve in flow direction (note direction of arrow on housing)
The outlet pressure set does not remain constant	Filter screen in pressure reducing valve has torn.	Replace filter
	Cartridge or 'U'seal is contaminated or worn out.	Replace cartridge and / or 'U'seal
	Rising pressure on outlet (e.g. in boiler)	Check NRV
	Upper profile of filter where 'U'seal sits is damaged or worn out.	Replace the filter
	Dirt has entered the mechanism / cartridge	Clean the entire cartridge or replace it.
	Plumber may have removed filter from PRV	Refit filter in its place to avoid dirt from entering internals