

DPP17E and DPP17EE Pressure Reducing Valves Installation and Maintenance Instructions

These instructions relate to the use of the valve(s) on steam but can be used as a guide when the valve is used on compressed air.

Description

The DPP17E and the DPP17EE are derivatives of the Spirax Sarco DP17 pilot operated pressure reducing valve.

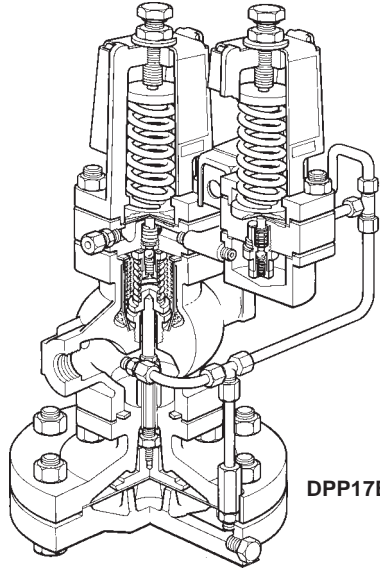
Each valve is fitted with two control pilots, one set higher than the other.

The pilot fitted on top of the main valve is set to provide the high pressure. The pilot fitted to the side of the valve is set to provide the lower pressure.

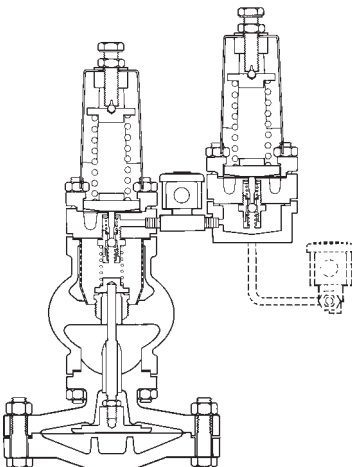
The low pressure pilot operates when the normally closed 'pilot' solenoid valve is de-energised. The solenoid can be controlled by a device capable of interrupting the supply of current to the solenoid coil, such as thermostat, pressure switch, time switch etc.

The DPP17EE is fitted with an additional solenoid valve. When this 'override' solenoid valve is de-energised it shuts off the supply of steam to the main diaphragm chamber, thus causing the reducing valve to close.

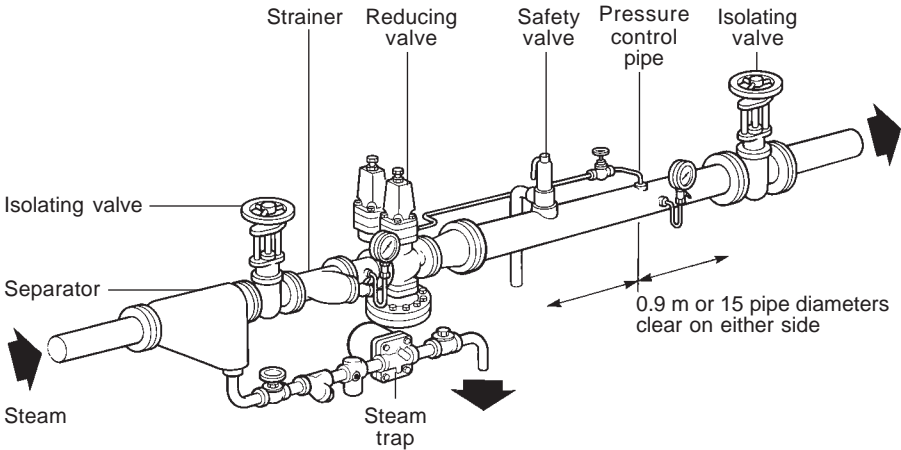
When the solenoid valve is energised the valve operates as normal.



DPP17E



DPP17EE



Fitting

The valve should always be fitted in horizontal pipework with the main diaphragm chamber below the line. To meet the high capacities or widely varying loads, or where stand-by facility is required, two or more valves may be used in parallel.

Pipeline sizing

The piping on each side of the valve must be sized so that velocities do not exceed 30 m/sec. This means that a properly sized valve will often be smaller than the upstream pipework and invariably the downstream pipework will be larger than the upstream pipework.

Pipeline stresses

Line stresses such as could be caused by expansion or inadequate support should not be imposed on the valve body.

Isolating valves

These should preferably be of the full-way type. All isolating valves must be capable of being opened slowly.

Removal of condensate

Ensure that the pipework is adequately drained so that the valve is supplied with dry steam. The ideal arrangement is to fit a separator in the steam supply. If, by closing downstream isolating valves the downstream pipework is likely to become flooded, a trap set should be installed to remove condensate forming as a result of radiation losses.

Preventing dirt

The valve should be protected by a pipeline strainer, the same size as the upstream pipework and fitted with a 100 mesh stainless steel screen. The strainer should be fitted on its side to prevent accumulation of water.

Pressure control pipe

Valves are supplied with a balance pipe fitted directly onto the body. When precise control of pressure and/or the maximum capacity is not required, this assembly can be used.

However, when precise control of pressure, or where maximum capacity is essential, an external control pipe must be fitted. In order to arrange a positive fall in the pressure control line from the reducing valve to the sensing point, the control pipe may need to be connected into the side of the steam main. This must be at a point where in either direction there is a length of straight pipe uninterrupted by fittings for at least 0.9 m or 15 pipe diameters, whichever is the greater.

Pressure gauges

It is essential to fit a pressure gauge upstream and downstream of the valve. The capacity or performance of the reducing valve can be affected if the upstream pressure drops too low. A pressure gauge upstream of the reducing valve will allow this to be checked. The downstream gauge is essential in order to set the reducing valve and to check its performance.

Safety valve

The safety valve is intended to protect the downstream equipment from excessive pressure.

It should be set at, or below, the safe working pressure of the downstream equipment, and will normally be sized to pass the full capacity of the PRV should the PRV fail in the fully open position.

It should not be set too close to the setting of the PRV and should be arranged to discharge to a safe place. Any vertical discharge pipe should be adequately drained.

For further details covering electrical supply, maintenance, trouble tracing and spare parts, refer to Installation and Maintenance Instructions, IM-P100-05, which covers the DP17, DP17E and DP17R.

Setting the valve

1. Ensure that all connections are properly made and that all valves at the reducing station are closed.
2. Check that each pressure control pilot adjustment screw is turned fully anticlockwise until there is no pressure on the spring.
3. Open the upstream isolating valve and blow through the approach pipework by removing the cap screen from the strainer protecting the separator trap set.
Replace the screen and cap upon completion.
Do not remove the screen from the main line strainer during this operation. This strainer should be examined at regular intervals.
4. Energise each solenoid valve.
5. Open small valve in the pressure control pipe, if fitted.
6. Using a 19 mm A/F spanner, slowly turn the adjustment screw of the H.P. pilot in a clockwise direction until the desired downstream pressure is obtained.
7. Holding the adjustment screw in position with the spanner, tighten down the lock-nut to secure the setting of the adjustment spring, making sure that the 'C' washer stays in position.
8. Apply a light steam load by partially opening the downstream isolating valve. Observe that the steam pressure is maintained
9. De-energise the 'pilot' solenoid valve and observe that the downstream pressure reduces to zero.
10. Set the L.P. pilot by turning the adjustment screw clockwise until the desired pressure is obtained.
11. De-energise 'override' solenoid and check that the reducing valve closes.
12. Energise the override solenoid and check that the correct L.P. steam pressure is provided.
13. Energise the 'pilot' solenoid and check that correct H.P. steam pressure is provided.
14. Slowly open the downstream isolating valve until it is fully open.

