DIFFERENTIAL PRESSURE CONTROL VALVE (DPCV)

DP971F
DN65 - DN150

The DP971F:
• Is a self-acting differential pressure control valve designed to absorb unwanted head pressure.
• Limits the differential pressure across circuit.
• Has an adjustable differential pressure control range of 15 - 150kPa.
• It is recommended that this valve is paired with a companion valve (DM931) allowing for flow measurement and the connection of the impulse tube.
• Has an operating temperature: -10 to 120°C.
• Has a maximum operating pressure: 16bar.
• End connections are flanged to BS EN 1092-2 PN16.

LIMITS OF USE
These installation, operation and maintenance instructions have been categorised in accordance with the Pressure Equipment Directive - 97/23/EC.
The fluid to be transported is limited to Group 2 liquids i.e. non-hazardous. On no account must these valves be used on any Group 1 liquids, Group 1 gases or Group 2 gases.

SPECIFICATIONS

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<th>Fig No.</th>
<th>DP971F</th>
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<td>Pressure</td>
<td>PN16</td>
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<td>Fluid</td>
<td>Hot or Cold water</td>
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<tr>
<td>Flow Temperature</td>
<td>-10 to 120°C</td>
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<td>Differential pressure adjustment range (kPa)</td>
<td>15 - 150kPa</td>
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<td>Pre-set differential pressure (kPa)</td>
<td>70kPa</td>
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<td>End Connection</td>
<td>BS EN 1092-2 PN16</td>
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<tr>
<td>Materials</td>
<td>Body - Cast Iron, Diaphragm - EPDM</td>
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<td>Capillary tube</td>
<td>Standard 2m</td>
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SPARES
Impulse Tube Kit: (Part No. 0JG91883D)

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The impulse tube kits are supplied with the DPCV and is used to link the system pressure from the flow pipework to the DPCV. The impulse tubes should be installed in the body side. DPCVs can be installed in either the flow or return pipework.

Installation: Impulse Tube

1. Install impulse tubes in the 'body side' chamber to the return pipework and the 'spring side' chamber to the flow side pipework.
2. The connection position of the impulse tube to the pipework should be a minimum distance of 5 times the pipework diameter from the DPCV.
3. Connect the impulse tubes with the supplied ball valves. (The ball valves can be connected at any point along the impulse tube). Close both ball valves once connected.

Venting (Once System Has Been Filled,Flushed and Pressure Tested)

4. To vent diaphragm slowly open the impulse tube ball valves to pressurise the diaphragm chamber.
5. Open the chamber bleed vents attached to the diaphragm chamber.
6. CAUTION: When bleeding close the spring side vent first followed by the body side vent when air has been vented to avoid any possible damage to the diaphragm.
7. Once venting is complete, impulse tube ball valves must be left in the fully open position.

Typical Installation Layouts

1. DPCV installed in return pipework protecting plant sub-circuit
2. DPCV installed protecting 2-port control valve

Commissioning

DPCVs need to be commissioned before use. The following is a general guide; if unsure please contact our Technical helpline.

NOTE
- as DPCVs are dynamic valves, the recordable position shown by the position indicator is only valid when the pump is turned off or the circuit protected by the DPCV is isolated, i.e. no flow
- the 'high' and 'low' pressure chambers need to be bled before commissioning – see installation instructions on page 2.
- because of 'hysteresis' (the directional difference in force applied by springs), the DPCV should be set starting with the Differential Pressure or Flow Rate reading too high and adjusted to the required lower value. If the reducing adjustment is too great, i.e. reading is adjusted too low, the adjuster should be re-set to give a higher value and then reduced to the required value
- the adjusted nut is locked in position with a 'grub' screw, this must be loosened before adjusting to prevent damage to spindle thread

In general, DPCVs are commissioned in one of two ways:

1. Using Differential Pressure Value
   - with pumps running, measure differential pressure (ΔP) across protected circuit
   - if the ΔP is too high, turn the adjuster screw anti-clockwise to reduce the ΔP value

   • if when fully adjusted anti-clockwise the ΔP is still too high then the required ΔP value is lower than the control range of the DPCV
   • if the ΔP is too low, turn the adjuster screw clockwise to increase the ΔP value to a greater value then required ΔP and then anti-clockwise to set to the required value – see hysteresis above
   • if when fully adjusted clockwise the ΔP is still too low then the required ΔP is greater than the control range of the DPCV
   • record set position – isolate circuit or turn off pump

2. Using Flow Rate
   - with pumps running, measure flow rate through the protected circuit
   - if the flow rate is too high, turn the adjuster screw anti-clockwise to reduce the flow rate value
   - if when fully adjusted anti-clockwise the flow rate is still too high then the required flow rate value is lower than the control range of the DPCV
   - if the flow rate is too low, turn the adjuster screw clockwise to increase the flow rate value to a greater value then required and then anti-clockwise to set to the required value – see hysteresis
   - if when fully adjusted clockwise the flow rate is still too low then the required flow rate is greater than the control range of the DPCV
   - record set position – isolate circuit or turn off pump