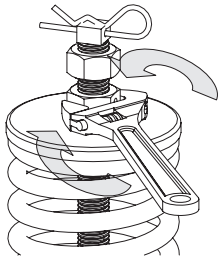
ADJUSTMENT OF DIFFERENTIAL PRESSURE

1. The DPCV valve is supplied at approximately 70 kPa.
2. To adjust differential pressure to respond to service conditions, follow the steps below.

a) With the pump running, measure the differential pressure or flow rate.
b) To adjust loosen the M6 locking set screw on the spring adjusting nut.
c) Turn the nut clockwise or counter-clockwise until the desired reading is achieved.
d) Once finished, lock the nut back in place by tightening the set screw at the desired position to prevent tampering.
e) NOTE: To record set position, first turn off the pump or isolate the sub circuit. You can now record the position on the position indicator.



Clockwise :
increase of differential pressure

Counterclockwise :
decrease of differential pressure

SPECIFICATIONS

Fig No.		DP971F
Pressure		PN16
Fluid		Hot or Cold water
Flow Temperature		-10 to 120°C
Differential pressure adjustment range (kPa)		15 - 150kPa
Pre-set differential pressure (kPa)		70kPa
End Connection		BS EN 1092-2 PN16
Materials	**Body**	Cast Iron
	Diaphragm	EPDM
Capillary tube		Standard 2m

SPARES

Impulse Tube Kit: (Part No. 0JG91883D)

CRANE FLUID SYSTEMS

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FM00311 ISO 9001

- Designed and manufactured under quality management systems in accordance with BS EN ISO 9001-2008

CFS-DPCV_0915
IOM_0JG91975D

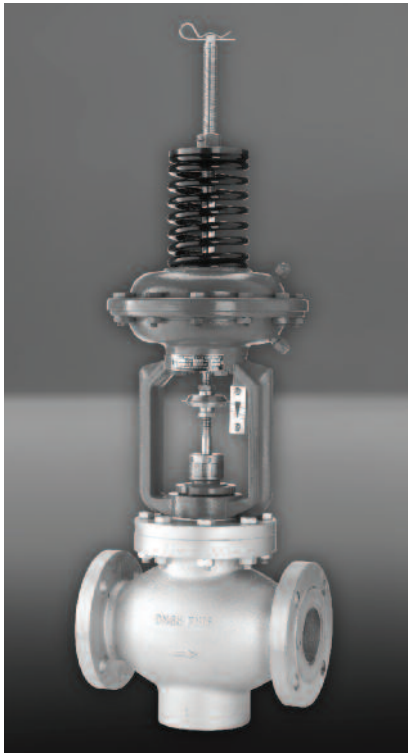
CRANE FLUID SYSTEMS

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.

INSTALLATION

These instructions are issued as guidelines only and do not cover all installed conditions – if unsure please contact our Technical Helpline before installation.

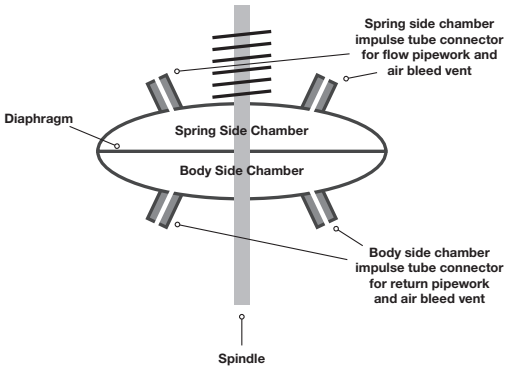
- Crane Fluid Systems products are designed for installation and use within suitably designed systems reflecting CIBSE, BSRIA and B&ES (formally HVCA) guidelines. Particular care should be taken with regards to;
  - Accessibility to valve for setting/adjustment
  - Pipe cutting
  - Jointing
  - Bracketing/supports
- DPCVs can be installed in either the flow or return pipework.
- The DP971F should be installed and commissioned by a suitably qualified person.
- Valves must be installed in pipework of the same nominal diameter.
- The direction of flow must comply with the arrow marked on the body.
- The valve can be installed in any orientation.
- End connections are flanged to BS EN 1092-2 PN16.
- The DPCV should be isolated along with the two port control valve and the terminal unit whilst flushing the system, except when final reverse flushing is carried out.
- Make sure that you install install a strainer in front of the DPCV to prevent contaminant from getting into the valve and coil.
- Install a flushing bypass line for maintenance and management prior to the DPCV.
- Where it is required to flush, use the isolation valve installed in the impulse tube to deactivate the DPCV.

INSTALLATION - IMPULSE TUBE

The impulse tube kits are supplied with the DPCV and is used to link the system pressure from the flow pipework and from return pipework to the DPCV. When installing, the tube length should not be reduced but coiled to use unwanted tube – this reduces the risk of the tube 'work hardening' due to vibration and subsequent failure.

INSTALLATION (NO WATER)

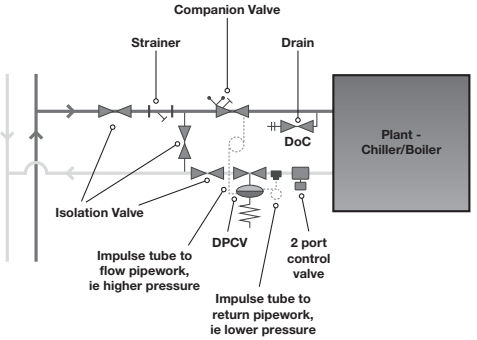
1. Install impulse tubes in the 'body side' chamber to the return pipework and the 'spring side' chamber to the flow side pipework.
2. The connection position of the impulse tube to the pipework should be a minimum distance of 5 times the pipework diameter from the DPCV.
3. Connect the impulse tubes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



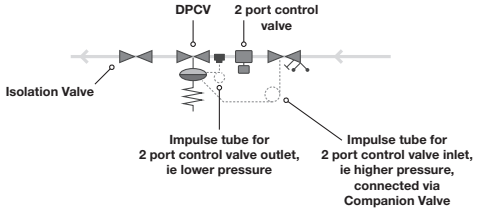
VENTING (ONCE SYTEM HAS BEEN FILLED, FLUSHED AND PRESSURE TESTED)

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