

DIFFERENTIAL PRESSURE CONTROL VALVE (DPCV) & COMPANION VALVE

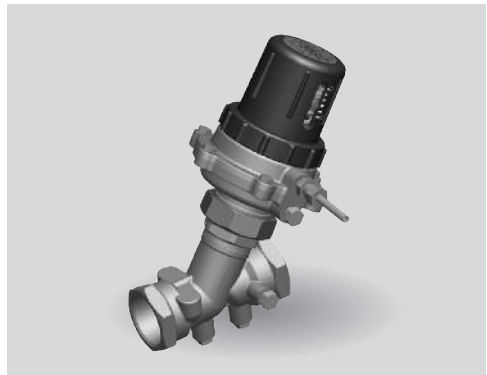
DPAF961: F - DENOTES FLOW MOUNTED

DPAR961: R - DENOTES RETURN MOUNTED

DPF931: COMPANION VALVE

The DPAF/R961;

- 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 20 - 100kPa
- 2 versions available:
 - for flow mounting use the DPAF961
 - for return mounting use the DPAR961, installation in the return pipework renders the sub-circuit in a higher pressure. This helps minimise the risk of cavitation
- has plugged bosses to enable test points to be fitted if required (for use during commissioning or system diagnostics)
- when installed with the DPF931 Fixed Orifice Companion Valve it allows measurement and regulation of flow
- has an operating temperature: -10 to 100°C
- has a maximum operating pressure: 16bar
- end connections are internal taper threaded BSEN10226-2



LIMITS OF USE

These installation, operation and maintenance instructions have been categorised in accordance with the Pressure Equipment Directive – PED.

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.

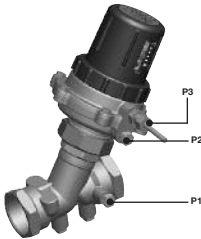
INSTALLATION

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 HVAC guidelines. Particular care should be taking with regards to;
 - accessibility to valve for setting/adjustment
 - tube cutting
 - jointing
 - bracketing/supports
- DPCVs can be installed in either the flow or return pipework but is important to check version before installing
- the DPAF/R961 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 to BS EN 10226 - 1/2" & 3/4" Parallel, 1" to 2" Taper
- 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 if carried out
- to aid flushing the DPCV should be set at position 5 (highest differential pressure setting) or an isolation valve installed in the impulse tube

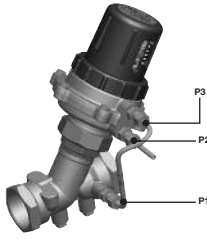
INSTALLATION - IMPULSE TUBE

The impulse tube is supplied with the DPCV and is used to link the system pressure from the flow pipework (when DPCV installed in return) or from return pipework (when DPCV installed in flow 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. An isolation valve, if required, can be installed anywhere along the length of the tube depending on installation conditions.



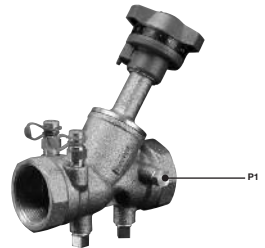
DPAR961 - Return

When DPCV is installed in the return pipework the impulse tube from the flow pipework should be connected to P3. P1 & P2 supplied blanked off.



DPAF961 - Flow

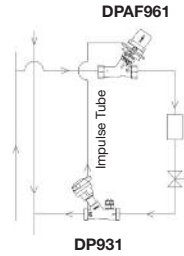
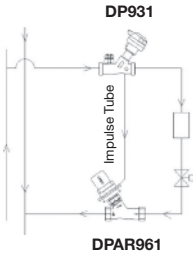
When the DPCV is installed in the flow pipe work the impulse tube from the return should be connected to P2. P1 & P3 supplied blanked off.



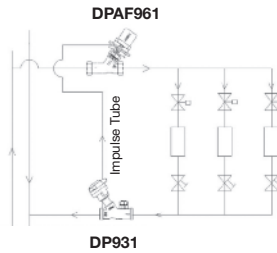
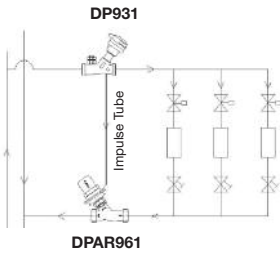
Companion Valve

DPF931 - Fixed Orifice Double Regulating Valve (FODRV). Used to measure and regulate flow. Connect Impulse Tube to tapping P1 of Companion Valve.

TYPICAL INSTALLATION LAYOUTS



DPCV installed across flow and return pipework of a single terminal unit to maintain 2-port control valve authority or control flow rate.



DPCV installed across flow and return pipework of a sub-circuit containing several terminal units to maintain 2-port valve control authority or control flow rate

COMMISSIONING

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

NOTE: As DPCVs are dynamic valves the position of the adjuster can only be recorded when pump is turned off or the circuit is isolated from the pump.

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

1. Set to limit the Maximum Differential Pressure in a sub-circuit or across the two port control valve. Typically used to give the two port very high valve authority or prevent the two port control valve operating against high differential pressures
2. When used in conjunction with the DPF931 Companion Valve, it prevents a rise in flow rate to the sub-circuit. This also maintains the two port control valve authority.

1. Maximum Differential Pressure

- Note – test points can be fitted into ports provided on our valves to enable differential pressure measurement
- with pumps running at full design speed and all valves fully open, set the DPCV to position 5 (highest differential pressure setting) then set the required flow rate using the DPF931 Companion Valve
- measuring the differential pressure between flow and return pipework, manually close the two port control valve until the required maximum differential pressure is measured
- adjust the DPCV until the differential pressure reading starts to fall. At this point, the DPCV is set to control the differential pressure to the level required
- turn off pumps and record DPCV setting
- with two port fully open, turn on pumps, record differential pressure reading. Slowly close two port until maximum differential pressure set point is reached. Further closing of the two port will not increase the differential pressure above the set point.
- the valve is now set to control the maximum differential pressure in the circuit nullifying the effects of pressure variation caused by control valves in other branches
- lower differential pressures may be experienced depending on other parts of the system and the pump set up

2. Set Flow Rate

- with pumps running at full design speed and all valves fully open, determine the flow rate using the DPF931 Companion Valve
- adjust the DPCV until the required flow rate is measured at the Companion Valve. If too much of the DPCV adjustment is used to reach the required flow rate, the DPCV should be backed off and some of the excess pumped head removed using the regulating feature on the Companion Valve. The DPCV can then be used to reduce flow rate to the design flow
- turn off pumps and record DPCV setting
- with two port fully open, turn on pumps, record flow rate and Companion Valve setting, this should be the set design flow rate
- the DPCV will open and close depending on available pumped pressure
- the valve is now set to control the differential pressure and hence the flow rate in the circuit nullifying the effects of pressure variation caused by control valves in other branches
- Note – differential cannot rise above DPCV setting but flow rate falls as two port closes

RANGE

DPAF931 - Flow mounted DPCV • **DPAR961** - Return mounted DPCV

DPF931 - Companion Valve, Fixed Orifice Double Regulating Valve (FODRV)

ACCESSORIES

Impulse Tube Isolating Valve: - 0EA08040Y • **Impulse Tube + Fittings Kit 6mm:** 0EA08039G



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FM311 ISO 9001



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

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