

CRANE

FLUID SYSTEMS

Peak Pro

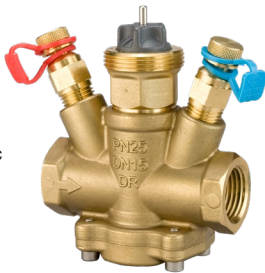
PRESSURE INDEPENDENT CONTROL VALVE (PICV)

D995 DN15, DN20 & DN25

GENERAL NOTES

The Crane Fluid Systems D995 PICV;

- can be used in variable volume heating and chilled water systems
- provides modulating control for terminal units when installed with a modulating actuator
- has an equal percentage control characteristic at all pre-set flow rates with actuator
- has built in Differential Pressure Control
- has an operating temperature: 0 to 90°C
- product available in both 400kPa and 800kPa
- has a maximum operating pressure of 25 bar
- Integral test points for verification of ΔP and valve performance

**PICV D995 DN15**

LIMITS OF USE

These valves 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 FS 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
- orientation: whilst the PICV can operate correctly in different orientations, there are recommendations regarding the orientation of actuators - Please refer to separate actuator IOM
- would normally be installed on return pipework, i.e. after the equipment it is controlling, but can be installed in flow if required.
- ensure direction of flow is correct - indicated by forged arrow on body.
- D995 operates between a minimum and maximum pressure drop across the valve - see commissioning.
- PICV's are not designed as isolation valves. Dedicated isolation valves should be installed to isolate against system pressure, i.e. for maintenance etc., when disconnecting/draining pipework.
- systems should be installed with strainers to protect the PICV and other installed items.

INSTALLATION CONT.

Please note this valve must not be used for end of line service or as an isolation valve. In order for the valve to function as intended water quality should be maintained at all times (e.g. as per BSRIA BG50 or equivalent).

FLUSHING

Control valves, like the PICV, are sized to give good control over the system flow, therefore have been designed with small convoluted flow paths. Even when fully open these flow paths may not allow adequate water velocities for flushing of the coil. In line with BSRIA recommendations, it is recommended that a flushing point be located between the coil and the PICV. This allows the coil to be flushed without the water passing through the PICV. As per the Dominator Peak Pro range.

SET POSITION

The PICV set position can be established by **use of lookup table on page 4**

- Identify installed valve from marking on side of body
- Check flow rate required
- Read across chart:
 - Valve = DN15 SF
 - Required flow rate = 0.15 l/sec
 - Set position = 6



To set the flow rate, using your hand, turn the dial to close the valve (position 0), then re-open the valve by turning the dial anti-clockwise until position 6 is reached. Please note at no point should any tools, such as spanners, be used to set the dial.

COMMISSIONING

The D995 controls the flow rate depending on its set position, therefore, removing the need to measure the flow rate.

The D995 maintains a constant differential pressure across its internal seat, any excess pressure being removed by the internal differential pressure controller. To ensure that sufficient pressure is available for the differential pressure controller to control the flow rate correctly, a differential pressure reading should be taken using the test points provided.

When taking differential pressure readings, it is important that the system is running at full load, i.e. at their set position. This ensures that differential pressure readings are carried out in the most unfavourable conditions, guaranteeing optimum performance in normal running conditions.

To ensure that all PICVs are working at the required differential pressure, it is necessary to check the least favoured / index PICV. By verifying the least favoured PICV is set to the required differential pressure, all other PICVs must have a higher differential pressure. However, we would also recommend that a selection of other PICVs are tested along the circuit to verify this.

The PICV is designed to be operated under dynamic conditions (i.e. variable pump loads). It is therefore good practice to exercise the valve if left in a static condition for an extended period (i.e. over 72 hours). The valve can be exercised via a linked actuator, using the valve cap, or manually turning the valve. This will aid in maintaining a steady flow rate within the operating range of the valve

DN15SF – DN25 PICV

The settings provided are for guidance only and will provide an accuracy in the region of +/- 15%. With the use of a flow measuring device this accuracy can be further improved in the region of +/-10%.

DN15LF PICV Only

Flow accuracy $\pm 15\%$ of set flow (without FMD) or $\pm 7.5\%$ of max flow, whichever is greater.

DIFFERENTIAL PRESSURE REQUIREMENTS

Each valve size, at each % setting option, requires a minimum ΔP (Differential Pressure) to ensure the PICV is within its working range.

POS	DN15 LF		DN15 SF		DN15 HF		DN20 SF		DN20 HF		DN25 SF		DN25 HF	
	Typical ΔP	Flow (l/s)	Typical ΔP	Flow (l/s)	Typical ΔP	Flow (l/s)	Typical ΔP	Flow (l/s)	Typical ΔP	Flow (l/s)	Typical ΔP	Flow (l/s)	Typical ΔP	Flow (l/s)
2	15	0.008	20	0.060	25	0.100	20	0.070	18	0.09	20	0.12	-	-
3	15	0.015	20	0.085	30	0.145	21	0.100	20	0.16	20	0.18	-	-
4	15	0.028	20	0.115	35	0.190	22	0.135	24	0.22	22	0.24	40	0.43
5	15	0.038	20	0.130	35	0.240	23	0.180	27	0.28	25	0.30	45	0.57
6	20	0.050	20	0.150	40	0.280	24	0.22	30	0.34	27	0.38	50	0.70
7	20	0.060	20	0.170	45	0.310	25	0.255	33	0.39	30	0.45	55	0.81
8	20	0.070	25	0.180	45	0.330	26	0.285	36	0.43	32	0.52	60	0.90
9	20	0.075	25	0.190	50	0.350	27	0.320	38	0.47	35	0.56	65	0.98
10	20	0.080	25	0.200	50	0.370	27	0.350	40	0.50	35	0.60	70	1.03

For flow rates in between settings, extrapolation of position can be used.

The pump speed should be set to ensure that the required differential pressure is always available. By setting the differential pressure across the least favoured PICV to the value stated in the above table, it ensures that minimum pump energy is used, therefore, reducing system running costs and CO₂ emissions.

To set pump speed to achieve this; whilst measuring ΔP , increase pump speed until ΔP is at, or just above, the minimum shown in the table above. Flow rate verification should be carried out using separate Flow Measurement Devices (FMD) where fitted. In line with CIBSE & BSRIA recommendations, we recommend that as a minimum requirement, FMDs are installed in all branches.

Where flow rate verification is required at terminals, FMDs may also be installed at each terminal. Terminal flow rates can also be confirmed by measuring branch flow rates and closing individual terminal PICVs one at a time and measuring the reduction in flow at the branch. Care should be taken to ensure that reduced flow rates are still within the measuring range of the branch FMD, i.e. that the measured 'signal' doesn't drop below 1kPa.



To visit our Video Library go to:
www.youtube.com/user/CraneBSU

CRANE

FLUID SYSTEMS

CRANE HOUSE, EPSILON TERRACE,
WEST ROAD, IPSWICH,
SUFFOLK IP3 9FJ

TELEPHONE: +44 (0)1473 277300

FAX: +44 (0)1473 277301

UK SALES ENQUIRES:

enquiries@cranefs.com

TECHNICAL ENQUIRES:

tech-enquiries@crane-ltd.co.uk

TELEPHONE: +44 (0)1473 277400

MIDDLE EAST & NORTH AFRICA
SALES OFFICE,

BUILDING 4, OFFICE 901,

THE GALLERIES, PO BOX 17415,

DOWNTOWN JEBEL ALI

DUBAI, UAE

TELEPHONE: 5800 816 4(0) 971+

EXPORT SALES ENQUIRES:

mena-enquiries@cranefs.com

www.cranefs.com

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



FM 00311

EMS 553775

Every effort has been made to ensure that the information contained in this publication is accurate at the time of publishing. Crane Ltd assumes no responsibility or liability for typographical errors or omissions or for any misinterpretation of the information within the publication and reserves the right to change without notice.

CFS_PICV_D995_0421
IOM_0JG92853X_V3