

## Actuation and Control

All of the Kammer range of PFA lined control valves are supplied with a Flowserve diaphragm actuator. There are a choice of two standard types of actuator, we can supply a Valtek FlowAct series with an epoxy coated casing or where external corrosion could also be a problem a Kammer Series 2 actuator which is manufactured from long lasting stainless steel providing trouble free performance.

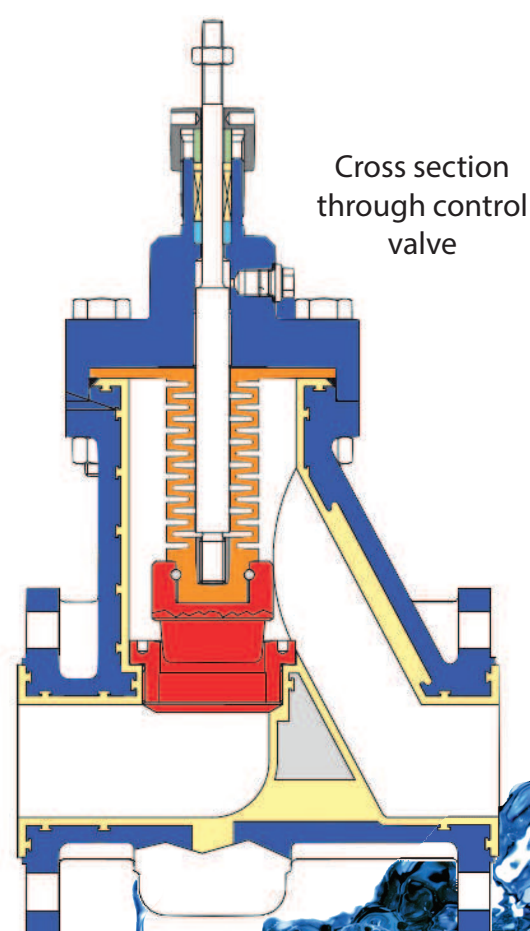
Each actuator series has a wide range of sizes and spring pack options to suit the customer's available air supply so you can be sure the control valve will be supplied with the correctly sized actuator to maintain accurate flow control.

Their compact design keeps the installation footprint to a minimum.

As part of the control feedback loop we can supply positioners to match the customers specifications, either traditional 3-15 psi / 4-20 mA or higher specifications to integrate into HART systems etc.



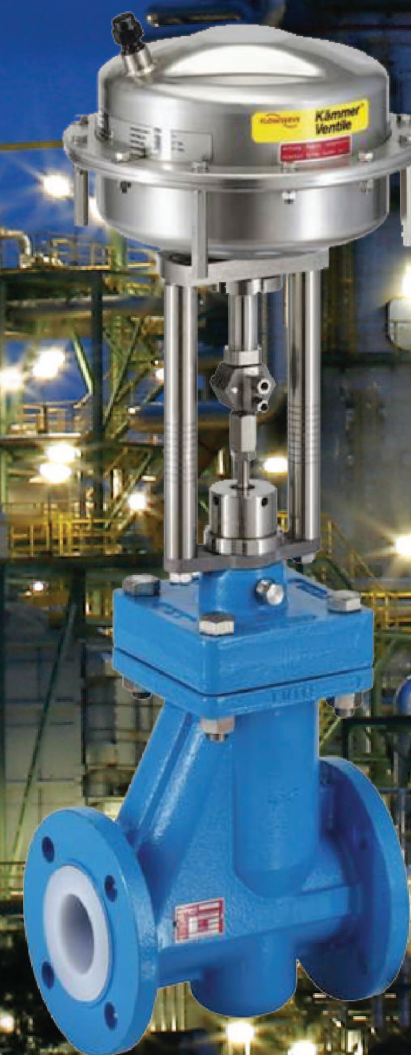
Control valve fitted with FlowAct actuator and Logix digital positioner



Cross section  
through control  
valve

# Control Valves

## PFA lined for Corrosive Applications



For over 30 years CRP has been supplying high quality Fluoropolymer lined piping, valves and ancillaries into the chemical and pharmaceutical industries.

Our range of lined products is extensive, with piping manufactured in both DIN and ASME dimensions with a size range from DN15 / ½"NB up to DN350 / 14" NB.

We have our own paste extruders and produce all our PTFE liners at our facilities in Manchester, UK to maintain and control the quality of our products. We design and manufacture a wide range of sampling systems, from simple in-line samplers through to reactor top samplers and bespoke systems tailored to the customers needs. Our range of FluoroFlow tubular sight glasses, poppet and swing check valves are also PFA lined for use in highly corrosive processes. We have been the UK distributor of the Atomac range of lined ball and check valves since our inception. We are now able to offer exclusively in the UK the PFA lined control valve manufactured by Flowserve's Kammer division based in Essen in Germany.

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## Introduction

Control valves are used to very accurately throttle the flow of gas or liquid in a pipeline. They are used as part of a larger control system to maintain a desired characteristic, be it a set temperature, product mix ratio, pressure etc. The control valve is operated by a pneumatic actuator that in turn is controlled by some form of feedback loop, for example a simple pressure or temperature transponder up to a complex site wide integrated computerised control system.

Each control valve process application would typically have a minimum and maximum flow requirement, the range of Kammer control valves are available with a wide choice of 'trims' to provide the required flow control. By carefully selecting the right port and spindle design the optimum flow characteristics can be achieved. Several different trims are available for each size of valve.

The Kammer control valve is linear in operation based on the globe valve principle where the stem is lifted or lowered into the seat to allow more or less flow.

The valve body is fully lined in thick walled PFA providing the best all round corrosion protection. They are lined in the same facility as the Atomac ball valves in Ahaus Germany so have a great heritage utilising the latest high quality fluoropolymer moulding processes. Where there is a concern of static build up within the valves, the lining can be supplied in static dissipating PFA.

The stem is sealed using a specially designed bellows manufactured from modified PTFE and is TA-Luft certified to ISO 15848 part 1 / Class B-C. Each bellows seal is tested at 120 degrees C to 16 barg to prove integrity.

The valve size range starts at DN15 / 1/2"NB up to DN150 / 6"NB and is available with DIN PN 10/16 or ASME 150 flanges. The valve has machined 'T' slots within the body anchoring the lining to the casting and so is suitable for use from full vacuum to 16 barg whilst the temperature range is -29 to + 200 degrees C. (Please consult the temperature / pressure chart for more info).

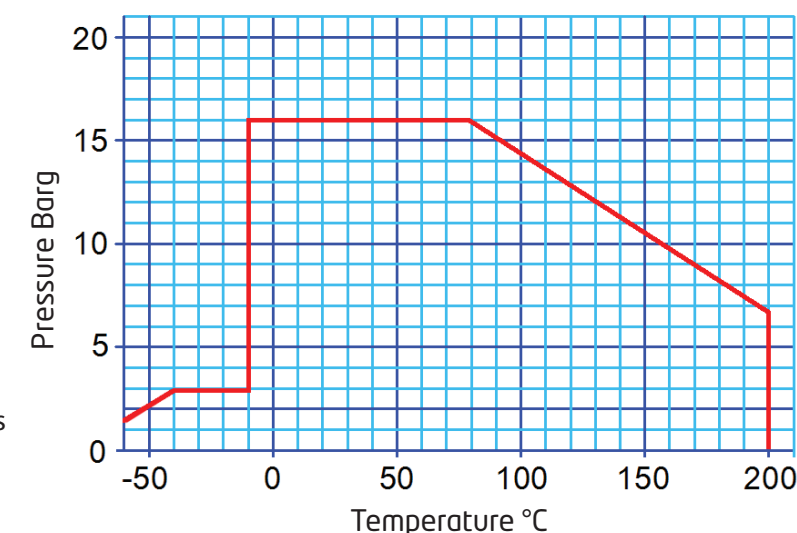
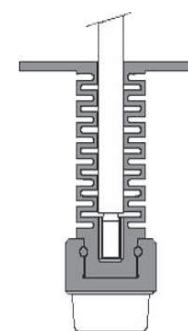
All valves are specially manufactured to order but Kammer keep extensive stocks of the component parts at their facility in Essen Germany so we are still able to offer short delivery times.



## Allowable Operating Conditions

The Kammer control valve is suitable for use up to 16 barg and up to 200 degrees C. Please refer to the chart for more information on the allowable working parameters of the valve.

Each modified PTFE bellows seal is tested to 16 barg at 120 degrees C to ensure the valves integrity. Type testing had been conducted that confirms the bellows seal is still suitable for use at 16 barg at 200 degrees C, way surpassing the capabilities of the valve itself.



## Flow Trim Options

Almost no two control valve applications are the same, each valve must be carefully selected to match the customer's process requirements. The Kammer control valve has an extensive range of plugs and seats for each bore size giving a wide range of flow control options for the customers application. We can offer DN15 / 1/2" NB valves which can accurately control flow as low as 0.01 Kvs. The largest valve in the range the DN150 / 6" can offer a maximum flow of 340 Kvs. For smaller flows up to 2.5 Kvs the valve utilises a Hastelloy plug.

Maximum and minimum flows with number of trim options available per valve size.

DN	NB	Min Kvs	Max Kvs	Number of Trims
15	1/2"	0.01	5	14
20	3/4"	0.01	5	14
25	1"	0.01	13	16
40	1.1/2"	4	32	6
50	2"	6.3	47	5
80	3"	16	120	5
100	4"	40	180	4
150	6"	63	340	4

Not only can trims be selected to provide the optimum flow but also how the flow is controlled in the range by changing the characteristics of the valve. As a standard we supply control valves with an equal percentage trim but there are options to provide linear trims too. Once we have received all of the standard flow control information from the customer we can use the Kammer sizing programme to correctly determine the best valve and trim configuration for the process.