CRP SERIES

ChemValve-Schmid Americas

FULLY PFA LINED CONTROL VALVES

For over 30 years, we have been a “world leader” in the design and manufacture of severe service PTFE and PFA lined process equipment including valves, piping, bellows, and lined accessories. In addition to developing our innovative PFA molding processes, to ensure and control quality, we manufacture all CRP products internally.

Our core customer base consists of Chlor-Alkali, Bromine, Chemical, Petro-chemical, Pharmaceutical, Biotechnology, Pulp & Paper, Metals Refining, and Mining industries.

Featuring a comprehensive range of PFA lined, bellows sealed control valves, our Kammer® series valve products are specifically engineered for industries’ most severe corrosive, high purity, and highly permeating control valve applications. Our fully rated PN 16 (232 psig), molecular and mechanically enhanced PTFE bellows seal, totally isolates the rising valve stem from the process media and eliminates environmental concerns associated with fugitive emissions.

Control Valves

Introduction

Throughout industry, control valves are used to accurately control the flow of a liquid or gas in a piping system. They are used as part of a larger control system to maintain desired process conditions such as pressure, temperature, and product mix ratios etc. Typically control valves are operated by pneumatic actuators that are controlled by a form of feedback such as a pressure or temperature transponder or a site wide integrated DCS control system.

Our Kammer control valves are linear in operation and the design is based on the globe valve principle where the valve stem is lifted or lowered into the seat to create the desired flow characteristics. Control valve process applications typically require minimum and maximum flow data to achieve proper sizing. We offer an extensive range of trims to satisfy each specific control valve application. By carefully selecting the correct port size, plug, and spindle design, the optimal flow characteristics of each valve can be achieved. Multiple trims are available for each valve size.

The valve design features a minimum 3.5 mm thick PFA lining that offers superior corrosion and permeation resistance. As an option, PVDF and other linings are available. Prior to lining, a series of strategically placed T-Slots are machined inside the body which mechanically anchors the lining to the valve body, metal substrate. These anchors allow the valve to operate at full vacuum as well as in temperature cycling conditions. For process applications where the potential for static build- up internally exists, the valves can be lined with anti-static PFA (static dissipating) where a small amount of carbon black is blended into the PFA material.

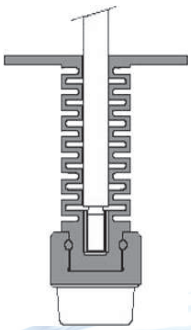
The valve features an environmentally safe, stem seal design that is certified by TA-Luft to the International Standard ISO 15848 part 1/Class B-C. The rising stem is protected from the process by a Molecular and Mechanically Enhanced PTFE Bellows Seal and features a secondary PTFE packing system. Prior to assembly, each individual PTFE bellows is tested at 120˚C (248˚F) with 16 barg (232 psig) to ensure its material and mechanical integrity. The bellows design exceeds the capabilities of the valve itself.

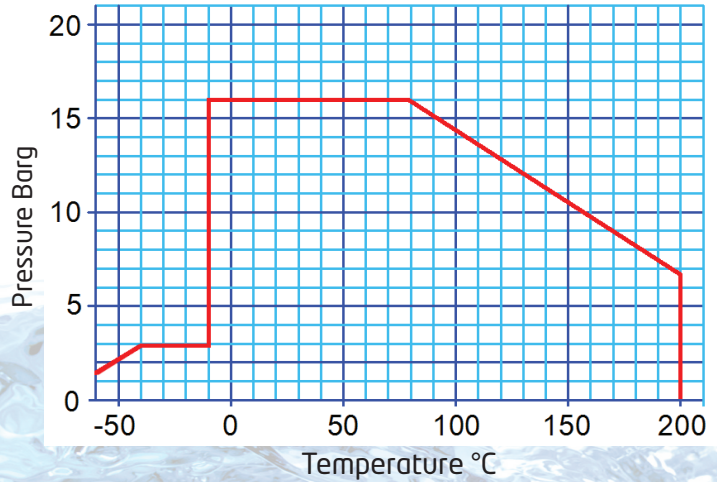
Size Range: $^1/_2$" to 6", (DN 15 - DN 150) in conformance with ASME 150 # flanges and DIN PN 10/16 flanges.
Pressure Rating: Full vacuum to 16 barg (232 psig).
Temperature Range: - 29˚C to 200˚C (- 20˚F to 392˚F)

All control valves are unique and specific to an application.
Our factory maintains an extensive inventory of parts to facilitate short lead times.

Allowable Operating Conditions

The Kammer control valve is designed for a maximum operating pressure of 16 barg (232 psig) and maximum operating temperature of 200°C (392°F). Please refer to the pressure/temperature chart for detailed information regarding the allowable operating conditions.





Control Valves

Flow Trim Options

Control valves are very specific to a set of process conditions. Each valve must be carefully specified to match the customer's requirements. An extensive range of plugs and seats for each bore size is available, providing a wide range of flow control options. We can offer our ½" (DN 15) valve that is capable of accurately controlling flow as low as 0.01 Kvs. Our 6" (DN 150) valve can offer a maximum flow of 340 Kvs. For smaller flow requirements of 2.5 Kvs, the plug is manufactured from exotic metals such as Hastelloy.

Trim options can be selected to provide the optimum flow for a given set of process conditions. They also impact how the flow is controlled within the range by changing the characteristics of the valve. As a standard, valves are supplied with equal percentage trim but there are options for linear trims. As a service, upon receiving all the standard flow control conditions that are relative to a specific process, we can use our sizing program to correctly determine the best valve and trim configuration for the process.

Actuation and Control

Typically, our PFA lined control valves are supplied with Flowserve diaphragm style, pneumatic actuators. The compact designs minimize the overall size and space consumption of the complete control valve package. We offer an option of two standard types of pneumatic actuators. **Valtek FlowAct Series** with an epoxy coated steel housing for environments that are not subject to external corrosion and **Kammer Series 2**, all stainless-steel housing actuators for externally corrosive environments.

Each actuator series offers a wide range of sizes and spring packages to suit the customer's available air supply. Our comprehensive portfolio of actuators ensures the control valve will be supplied with a correctly sized actuator to maintain accurate flow control.

As part of the control feedback loop, we can supply 3- 15 psi pneumatic positioners, 4 – 20 mA electro-pneumatic positioners or digital positioners with HART communications.

Control valve with FlowAct actuator and Logix digital positioner

Features and Benefits

- Anti-blowout stem design
- T-groove liner anchoring
- PN16 modified PTFE bellows seal, as standard configuration
- Guided 316 SS stem (optional Hastelloy® C 276)
- Metal to metal body/bonnet connection for defined compression of the gasket
- Liner thickness 3.5 mm for valve sizes up to DN 20 / ¾" and at least 5 mm for all sizes above
- Threaded plug and seat that are interchangeable with other plug and seat sizes
- DIN / ANSI GGG 40.3 Ductile Iron body / bonnet

Optional:

- Hastelloy C-276 plug and seat inserts for small Kvs / Cvs-values
- Test connection NPT ¼"

Control Valves

Lining Materials

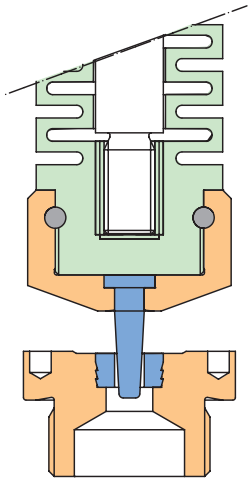
The body liner, the seat and the bellows seal are the only parts which are in contact with the medium.
High quality lining materials such as PFA, (Perfluoroalkoxy resin) protect the metal parts of the valve assembly.

T-grooves provide an extremely robust anchoring between the liner and the valve body.
This is especially important in vacuum applications.

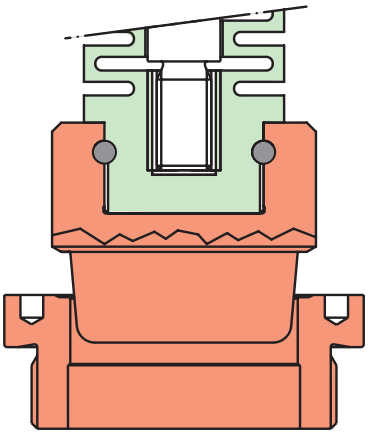
Liner Options: PFA, PVDF, ETFE, PP or Antistatic PFA.

Trim Design

Threaded plug and seat design for easy replacement and maintenance. Excellent reproduceable trims and Cv-values based on long term experience even for very small Cv-values.



Hastelloy Plug and Seat Inserts



PTFE Plug and Seat

Bolt Torques for Flange Connections

Flanges EN1092 (DIN)

DN [mm]	15	20	25	40	50	80	100	150
M_A [Nm]	10	18	25	50	65	65	65	140

Flanges EN1759 (ANSI)

NW [inch]	½"	¾"	1"	1½"	2"	3"	4"	6"
M_A [Nm]	8	11	15	26	60	100	76	100

Bolt Torque for Packing Nut (Nm)

Thread	PTFE
M20 x 1,5	1
M30 x 1,5	6
M38 x 1,5	15
M45 x 1,5	17

Control Valves

K_{VS} / C_V Values

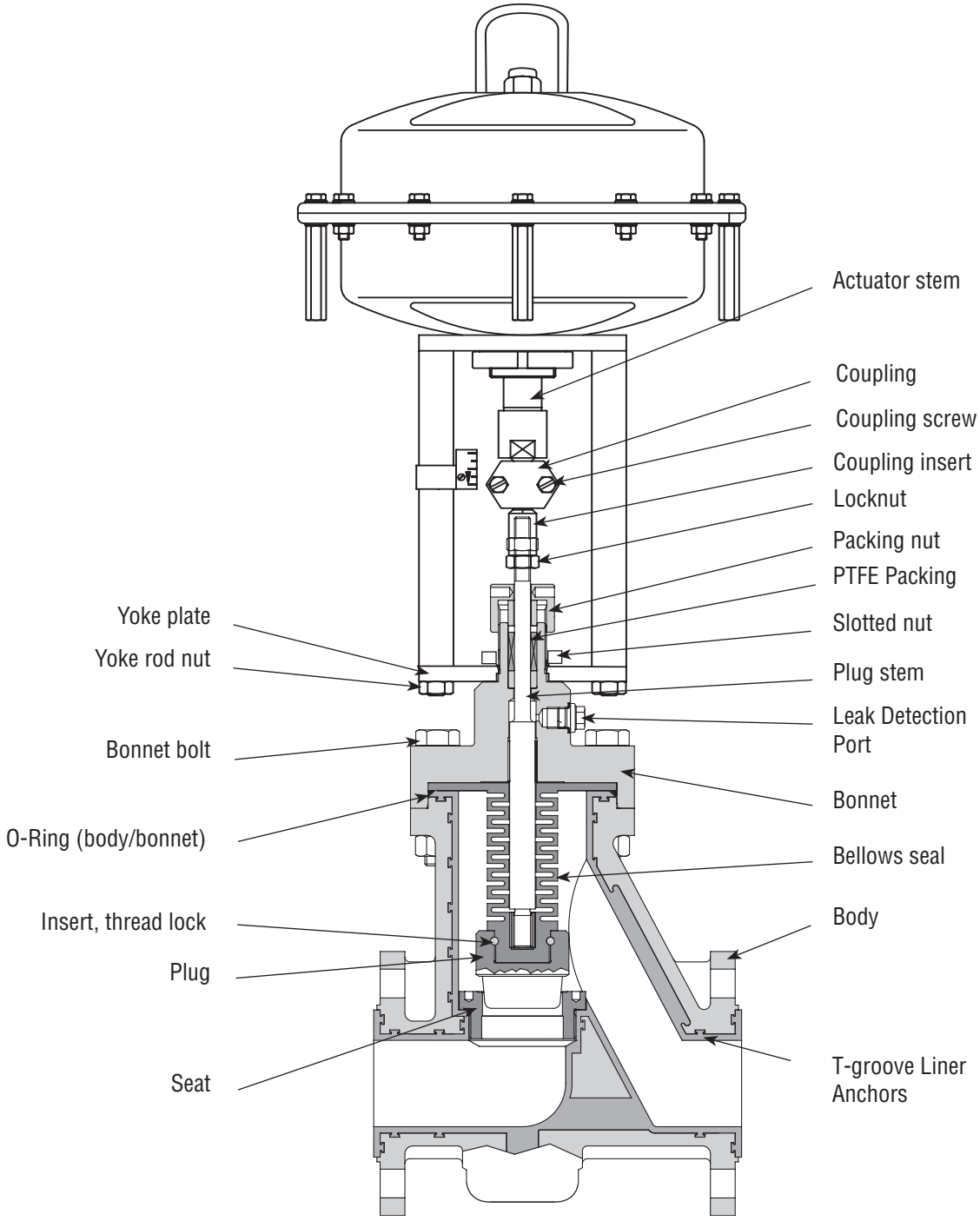
		Plug		Valve Size							Hastelloy	Hastelloy	TFM1600
K_{VS} / C_V-Values		Seat		DN15/20	DN25	DN 40	DN 50	DN 80	DN 100	DN 150	Hastelloy	TFM1600	TFM1600
K_{VS}	C_V	Seat ø		0.5"/0.75"	1"	1½"	2"	3"	4"	6"			
		mm	in.	Stroke (mm/inch)									
0.011		3	0.12	10/0.39	10/0.39						x		
0.017		3	0.12	10/0.39	10/0.39						x		
0.025	0.029	3	0.12	10/0.39	10/0.39						x		
0.040	0.047	3	0.12	10/0.39	10/0.39						x		
0.063	0.074	3	0.12	10/0.39	10/0.39						x		
0.10	0.12	4.5	0.18	10/0.39	20/0.79							x	
0.16	0.19	4.5	0.18	10/0.39	20/0.79							x	
0.25	0.29	4.5	0.18	10/0.39	20/0.79							x	
0.40	0.47	4.5	0.18	10/0.39	20/0.79							x	
0.63	0.74	4.5	0.18	10/0.39	20/0.79							x	
1.0	1.2	7	0.28	10/0.39	20/0.79								x
1.6	1.9	7	0.18	10/0.39	20/0.79								x
2.5	2.9	10	0.25	10/0.39	20/0.79								x
4.0	4.7	12	0.30		20/0.79	20/0.79							x
5.0	5.8	15	0.38	10/0.39									x
6.3	7.4	16	0.41		20/0.79	20/0.79	20/0.79						x
10	12	20	0.51			20/0.79	20/0.79						x
13		25	0.64		20/0.79								x
16	19	25	0.64			20/0.79	20/0.79	40/1.57					x
25	29	32	0.81				20/0.79	40/1.57					x
32		40	1.02			20/0.79							x
40	47	40	1.02					40/1.57	40/1.57				x
47		50	1.27				20/0.79						x
63	74	50	1.27					40/1.57	40/1.57				x
100	120	63	1.60						40/1.57	40/1.57			x
120	139	80	2.03					40/1.57					x
160	190	80	2.03							40/1.57			x
180		100	2.54						40/1.57				x
250	290	100	2.54							40/1.57			x
340	400	125	3.18							40/1.57			x

Bellows Seal Data

Size	Seat/Plug	Stroke (mm)	Bellows Material	Part No.	Effective area (cm^2)
DN 15	TFM1600	10	HS22121	132538501	6,4
DN 20	TFM1600	10	HS22121	132538501	6,4
DN 25	TFM1600	10/20	HS22121	132538601	8,6
DN 40	TFM1600	20	HS22121	132538802	8,6
DN 50	TFM1600	20	HS22121	132538802	8,6
DN 80	TMF1600	40	HS22121	132538901	13,2
DN 100	TFM1600	40	HS22121	132538901	13,2
DN 150	TFM1600	40	HS22121	132539101	13,2

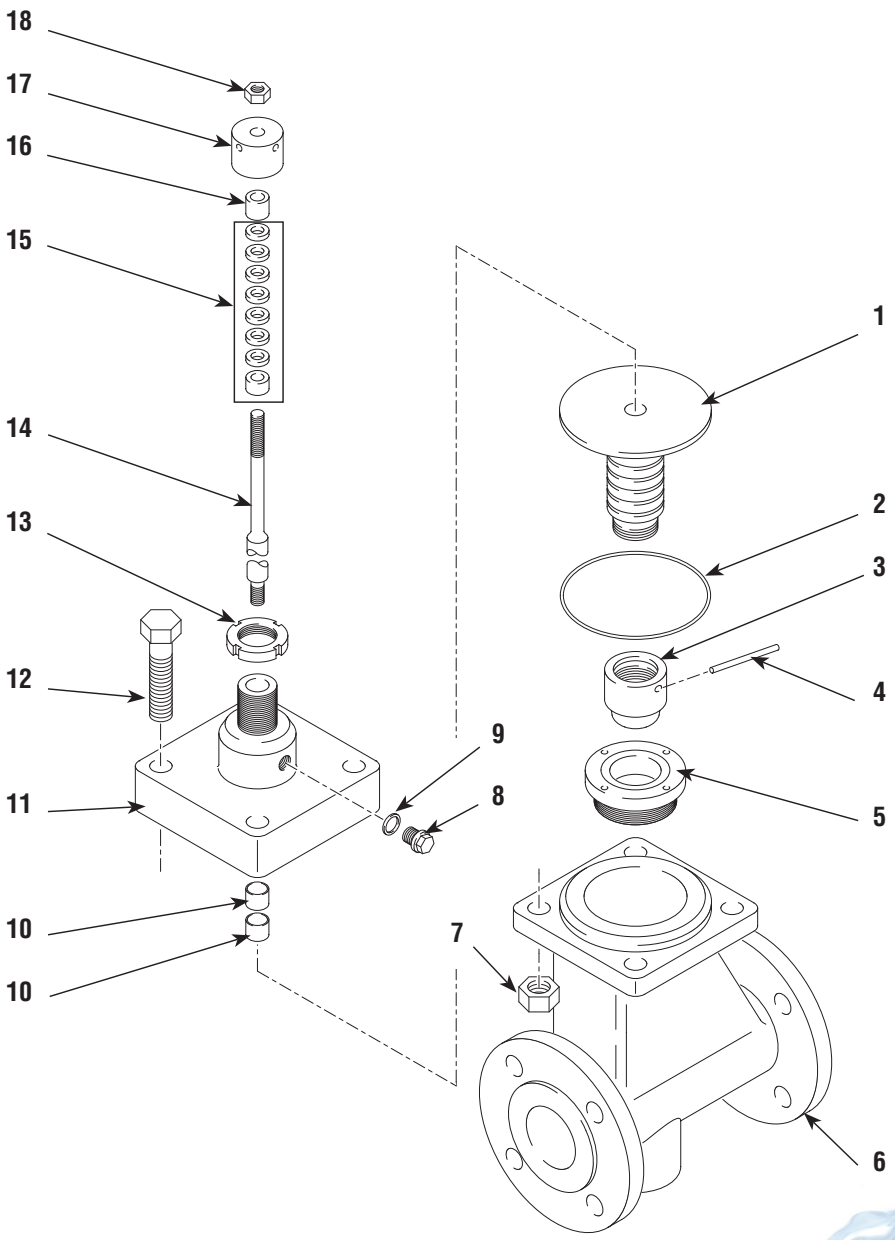
Control Valves

Sectioned View with Series 2 Actuator



Control Valves

Assembly Drawing



1	Bellows Seal
2	O-Ring
3	Plug
4	Insert, Thread Lock
5	Seat
6	Body
7	Nut
8	Plug
9	Seal (G¼ only with adapter)
10	Bushing
11	Bonnet
12	Bolt
13	Slotted Nut
14	Stem
15	Packing
16	Packing follower
17	Packing Nut
18	Nut

Distributed By:

ChemValve-Schmid Americas L.L.C.
34990 Emerald Coast Parkway
Suite 367
Destin, FL 32541
USA
850-842-0045

chemvalve-schmid-americas.com
sales@chemvalve-schmid-americas.com

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