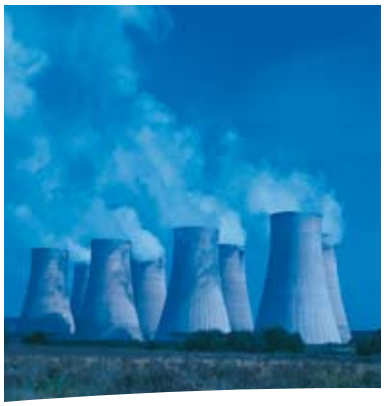
FLOWSERVE

Kämmer® Multi-Z

Severe Service Valves

Experience In Motion


Introduction

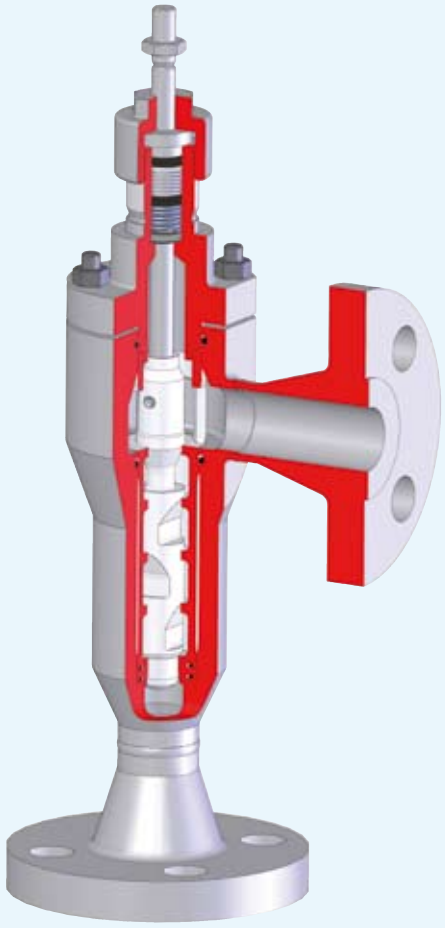
Solids and cavitation completely under control

Users from the power generation, petrochemical and industrial chemicals industries are frequently confronted with extreme pressure differentials in their process systems - differentials of up to 400 bar are not rare. Nevertheless, or rather precisely for this reason these customers desire continuous, harmonious, steady-state curves with appropriate flow characteristics, long and uniform service life, as well as low maintenance costs. The valves to be implemented must satisfy certain prerequisites, such as accommodating solids in liquid media, and prerequisites relative to high sound levels, high temperatures, cavitation formation, and corrosion. Now Flowserve Essen GmbH offers solutions with an interesting technological new development.

Type Multi-Z valves are used if solids are entrained in the medium and if there is a possibility of cavitation forming. In addition this multiple stage valve is capable of reducing high-pressure differentials via a multiple stage relief process. Flowserve reduces pressure via division in partitions - a course which is different to that pursued by other suppliers. The major advantage is a noticeable reduction in wear combined with an extremely low-noise control valve. Likewise deviating from conventional procedures, in order to avoid cavitation a physically optimized technology has been implemented that achieves significantly better results.

The valves are configured on the basis of customer specification so that the valve is optimally tailored to the special operating conditions. In this regard we do not rely on standard values, rather specially matched seat-plug fittings are used in each case. The individual stages of the plug are configured in such a manner that cavitation is impossible. Through the appropriate design of transitions and passages in the plug, solids in the process can be safely managed without destroying the fittings or the valve. The design of the linear / equal percentage multi-stage plug plug results in a greater rangeability and outstanding control characteristics for the installed strokes.

Features



- Eliminates cavitation
- Reduces sound level
- Tolerates solids in the process
- High rangeability
- Custom characteristics possible
- Seat is protected from high velocity, cavitation or flashing
- Variety of actuators:
  - Pneumatic cylinder
  - Pneumatic diaphragm
  - Electric
  - Hydraulic
- Available as unbalanced or pressure balanced

Figure 1: Multi-Z Features

Kämmer Series Multi-Z

Applications

Ideal for high-pressure drop applications in chemical, petrochemical and power.

- The Multi-Z is specifically designed to handle high-pressure drops where entrained solids are a problem, and is tested and certified for pump compatibility.
- Ideal for applications in chemical, petrochemical and power with pressure differentials of up to 5880 psi (400 bar), such as system start-up and boiler feed-water recirculation, the Multi-Z features a multistage trim design that eliminates cavitation and provides extended trim life. The addition of a unique venturi outlet nozzle provides further trim and seat protection from high velocity, cavitation and flashing.
- The Multi-Z linear multistage plug design provides high rangeability and throttling resolution, and dramatically reduces noise. Trim designs are available as unbalanced or pressure-balanced, with the number of stages optimised for specific service conditions.
- The Multi-Z is offered in nominal standard diameters of 1 to 6 inches (DN25 to DN150) - in special applications up to 16 inches (DN300) - and in pressure classes from ANSI 300 to ANSI 2500 (PN40 to PN400). These pressure classes enable the Multi-Z to operate within a maximum pressure drop of 5880 to 15 psi (400 to 1 bar).
- The Multi-Z body is available in angle configurations, and in a choice of carbon steel, stainless steel, nickel-based alloy, and CrMo steel. Custom options and configurations are also available upon request. Two main pneumatic actuator alternatives as the standard choice — the first, a stainless steel diaphragm actuator for air pressure up to 88 psi (6 bar), and the second, an aluminum double-acting piston actuator for pressure up to 176 psi (12 bar).
- Solids can be up to 0,4 inch (10 mm) in size, depending upon the specific design.

Figure 2: Multi-Z at Work

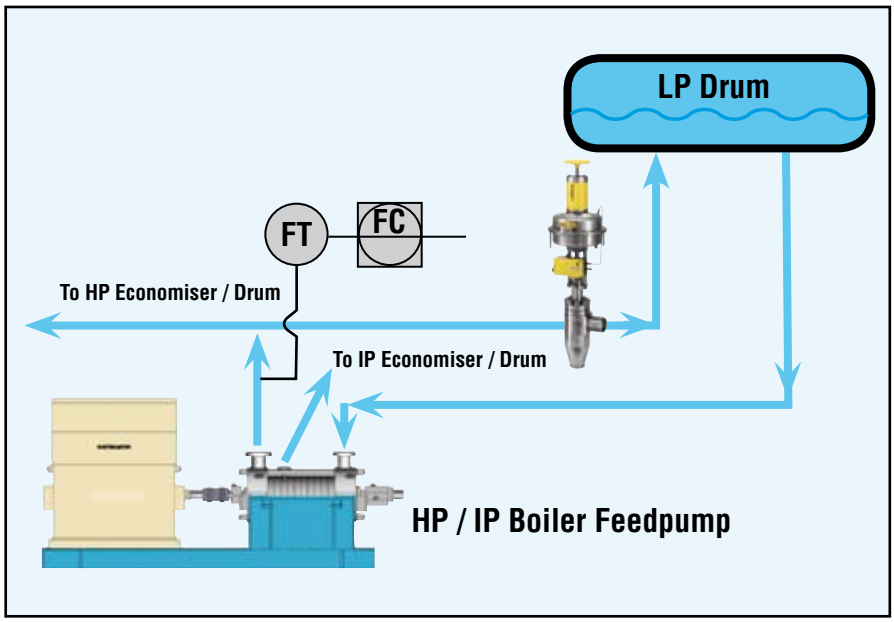


Figure 3: HP Feedpump Recirculation System

Kämmer Series Multi-Z

Cv Table

The table shows standard values. For an engineered valve the values depend on the service conditions.

Size DIN ANSI	Stages	3		4		5		6	
	xF	0.957		0.985		0.995		0.998	
	Sigma	1.045		1.015		1.005		1.002	
	Stroke mm inch	Min - Max Kvs Cv	Solids mm inch	Min - Max Kvs Cv	Solids mm inch	Min - Max Kvs Cv	Solids mm inch	Min - Max Kvs Cv	Solids mm inch
25	10	1.1 - 2.0	1.31	0.9 - 1.2	0.77	2.0	0.46	0.4	0.26
1"	0.4	1.3 - 2.3	0.05	1.1 - 1.4	0.03	0.8	0.02	0.5	0.01
40 / 50	15	2.9 - 10.1	3.41	2.3 - 5.9	2.02	2.0 - 3.4	1.18	2.0	0.70
1.5 / 2"	0.6	3.3 - 11.7	0.13	2.7 - 6.8	0.08	2.3 - 4.0	0.05	2.4	0.03
80	25	5.5 - 25.0	5.35	4.5 -14.5	3.15	3.9 - 8.5	1.86	3.5 - 5	1.09
3"	1.0	6.4 - 28.9	0.21	5.2 - 16.8	0.12	4.5 - 9.8	0.07	4.0 - 5.8	0.04
100	40	8.3 - 43.4	7.32	6.8 - 25.0	4.26	5.9 - 14.5	2.48	5.2 - 8.5	1.46
4"	1.6	9.6 - 50.2	0.29	7.8 - 28.9	0.17	6.8 - 16.8	0.10	6.1 - 9.8	0.06
150	60	12.7 - 88.3	10.42	10.4 - 51.0	6.09	9.0 - 30.0	3.60	8.1 - 18	2.18
6"	2.4	14.7 - 102	0.41	12.0 - 59.0	0.24	10.4 - 34.7	0.14	9.1 - 20.8	0.09

Specifications

Size	1 - 6 inch; DN25 - 150, other sizes upon request
Pressure Class	Class 300 - 2500; PN 40 - 400
Body Materials	Carbon Steel (1.0460) Stainless Steel (1.4571, 1.4404) CrMo Steel (1.7335, 1.7380) Others upon request
Body Type	Angle
End Connections	Weld ends Flanged Screwed NPT Others upon request

Trim Type	Balanced or Unbalanced
Trim Design	Linear Multistage Trim 3 to 6 stages
Plug Material	1.4122 (440C) required by application
Liner Material	1.4112 (440B) required by application
Seat Material	1.4112 (440B) required by application

Solids	Depending on Cv value and size up to 0.4 inch (10 mm)
Actuator	Diaphragm Actuator Type KP (Stainless Steel) Piston Actuator Type VL Electric Actuator Hydraulic Actuator

Kämmer Series Multi-Z

Exploded view

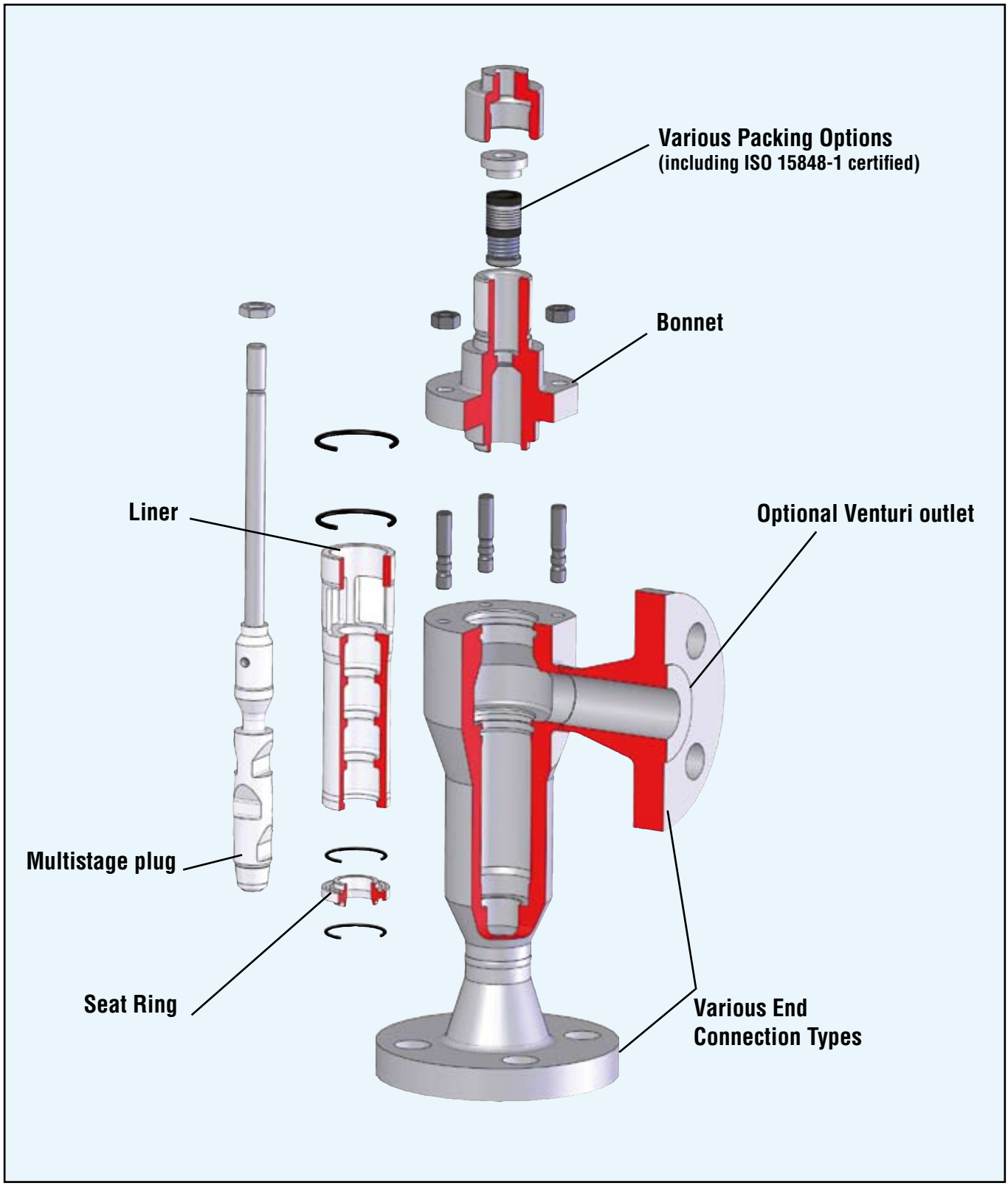


Figure 4: Exploded View

Kämmer Series Multi-Z

Actuator Options

Pneumatic actuators

The Multi-Z Severe Service Valve can be equipped with two high performance pneumatic actuator options:

- The single acting diaphragm actuator Series KP made of stainless steel

and

- The double acting cylinder actuator Series VL for high duty applications and high air supply.

Both actuator series are widely used in different applications for almost all Valtek and Kämmer valve series around the world. The Multi-Z accommodates the different market demands by adapting the actuator individually to the valve.
Precise actuator accuracy in combination with Flowserve positioners gives high performance and optimised processes back to the user.

Figure 5: Pneumatic Actuator

Figure 6: Electric Actuators

Electric actuators

Most types of electric actuator can be adapted to operate the Multi-Z Severe Service Valve. Based on this flexible design in combination with linear motion units, Flowserve is able to provide the electric actuator the customer is familiar with. This helps to reduce maintenance cost and reduces spare part inventory. Electric actuators are used in environments where compressed air is not available.

Your Contact:

KMENBR1631-00 08/08

Worldwide Regional Headquarters

Flowserve Corporation
Flow Control
1350 N. Mt. Springs Parkway
Springville, UT 84663
USA
Phone: +1 801 489 8611
Fax: +1 801 489 3719

Flowserve (Austria) GmbH
Control Valves - Villach Operation
Kasernengasse 6
9500 Villach
Austria
Phone: +43 (0)4242 41181 0
Fax: +43 (0)4242 41181 50

Flowserve India Controls Pvt. Ltd
Plot # 4, 1A, E.P.I.P, Whitefield
Bangalore Kamataka
India 560 066
Phone: +91 80 284 10 289
Fax: +91 80 284 10 286

Kämmer Products
Europe, Middle East, Africa, Asia, Pacific

Flowserve Essen GmbH
Manderscheidtstr. 19
45141 Essen
Germany
Phone: +49 (0)201 8919 5
Fax: +49 (0)201 8919 662

Kämmer Products
Americas

Flowserve (FCD)
Kämmer Valves INC.
1300 Parkway View Drive
Pittsburgh, Pa 15205
USA
Tel.: +1 412 787 8803
Fax: +1 412 787 1944