

*Kämmer Valves® – Product Profile*





**Flowserve manufactures a complete line of automatic control valves for special applications. This bulletin briefly describes each product. There is a detailed brochure available for each Kämmer valve series.**

**Please contact us for more information**

With many years of experience FLOWSERVE Kämmer is a manufacturer of special application and general service control valves and actuators, which are used extensively in the chemical, petrochemical, power, petroleum, pulp & paper, pharmaceutical, food processing and cryogenic industries.

From its beginnings in 1966, FLOWSERVE Kämmer concentrated its engineering and manufacturing expertise toward producing valves for specific niche markets, instead of offering a very broad and general valve line. Because users look to FLOWSERVE Kämmer for specific answers to tough applications, more than half of all FLOWSERVE Kämmer valves are custom designed. However, because of the versatility and interchangeability they often do not require additional time or cost. FLOWSERVE Kämmer's ability to meet difficult applications has also added a wealth of experience, which has been applied to Kämmer's standard valves. Overall, FLOWSERVE Kämmer valves are designed to handle a wide range of service conditions: pressures from vacuum to 60,000 psi and temperatures from -520 °F to 800 °F. Body materials include all common stainless steels, in addition to plastics and exotic alloys.

Flowserve Kämmer is located in Essen, Germany serving Europe, Middle East, Africa, Asia and the Pacific Region. For the Americas, Flowserve has a Sales Office with assembly capabilities in Pittsburgh, PA.

## **FLOWSERVE**

FLOWSERVE is one of the most recognized and preferred global suppliers of fluid motion and control products and services.

FLOWSERVE will use its collective resources and experience to deliver products, services and solutions that help customers exceed their business goals.





## Actuators



FLOWSERVE Kämmer pneumatic actuators are widely known for their versatile diaphragm design, easy installation and simplified maintenance. When compared to other manufacturers' diaphragm actuator designs, Kämmer actuators have much higher thrust capabilities, feature a very compact design and are lighter in weight. They also feature a field reversible design that requires no additional parts.

FLOWSERVE Kämmer actuators feature a multiple spring design for improved safety of the fail-safe mode, and for easily increasing thrust capabilities.

50 Series electric actuator for those applications requiring precise positioning and low maintenance, FLOWSERVE Kämmer offers a rugged and compact electric actuator. Upon loss of power, the actuator is designed to fail in the last position.

## Cryogenic



ColdFlow™ - 041000 Series cryogenic valve provides reliable service in cold box applications down to -196°C.

ColdFlow™ - 241000 Series is designed for ultra-low temperatures for Helium liquefaction at 4K (-269 °C).

## High Pressure



High pressure valves with or without bellows seals in different designs up to 60,000psi/PN4000 for super-pressure applications.

## Corrosive



With its new LinedFlow™ - 132000, a PFA lined control valve, FLOWSERVE Kämmer can offer a competitive product for all kind of corrosive applications up to 16 bar pressure.



## Sanitary



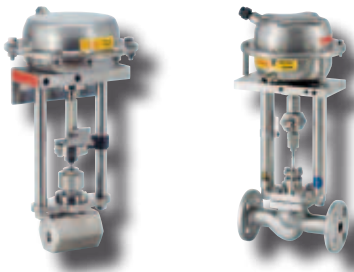
Sanitary valve CleanFlow™ - 191000 is designed to fulfil EHEDG and 3A standards. Various options for food and beverage usage to ultra-clean aseptic requirements. For rugged applications an aseptic bellows version is available.

## Others



Under “Others” we define all customer specific solutions for any kind of application. FLOWSERVE Kämmer is known as “the” manufacturer for special valves and solutions. That’s why we name ourselves the “Solution Provider”

## Low Flow and Micro Flow



FLOWSERVE Kämmer is one of the most recognized manufacturer for low and micro flow valves. A wide variety of options allows the best suitable version for the actual requirement.

## Bellows Seal



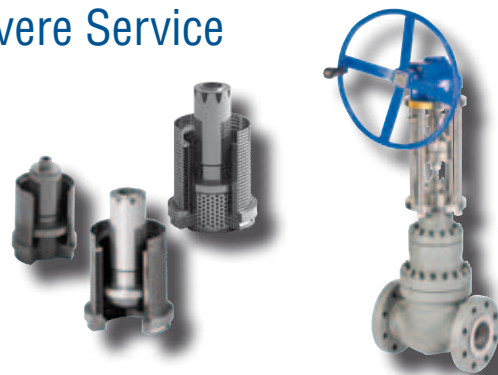
To protect personnel and the environment, toxic or aggressive mediums must be processed in a closed system.

To ensure the integrity of such systems Kämmer can supply

almost all its valves with bellows seals, depending on the valve series in metal or plastic design, that guarantee zero leakage.

Kämmer bellows seals fulfil the requirements of the German “TA-Luft” and ISO 15848-1.

## Severe Service



Severe Service trims can be used in many valves series to reduce noise, cavitation or to protect the trim against corrosion or erosion. The Multi-Z valve series is designed for cavitation elimination in one of the most severe applications – Boiler Feedpump Recirculation. However, the Multi-Z can be used in any application where solids and severe cavitation are prevalent.

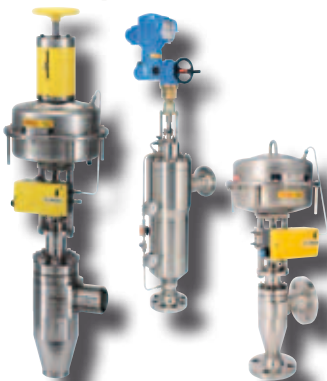




## Project Valves

Our core competencies lie in low flow applications and difficult laminar flows, in mastering complex technologies and in our profound knowledge when engineering valves and creating working solutions. All these resources, bundled together with state-of-the-art manufacturing procedures, qualify us as your prime ally in partnership. Acquired expertise and our ability to understand your applications and recognise your problems provide us with a unique opportunity to work with you and optimise your process systems.

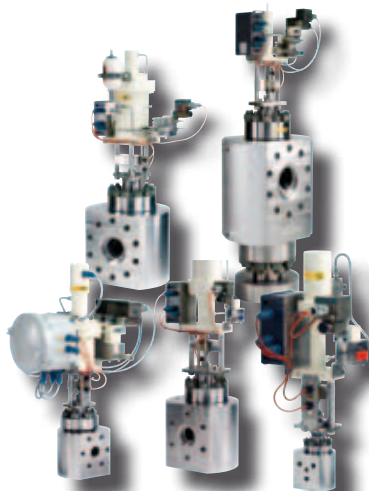
### Engineered products for...



*...heavy duty valves in severe service applications*



*...liquefied natural gas production*



*...high pressure valves in low density Polyethylene production*






*...industrial gas transport*









*...tank outlet and injection valves*

# Actuators



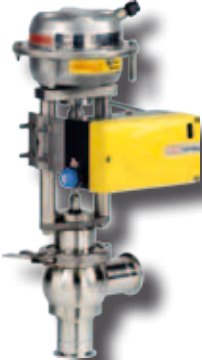
Design	Diaphragm	Diaphragm	Diaphragm
Product			
Type	<b>KP-Series 2</b>	<b>KP-Series 3</b>	<b>KA-Series 4</b>
Action	Linear single acting	Linear single acting	Linear single acting
Material	Stainless Steel	Carbon Steel	Aluminium, powder coated
Air Supply max.	6 bar (87 psi)	6 bar (87 psi)	4.5 bar (65 psi)
Number of sizes	5	1	4
Diaphragm / Piston area	80, 120, 300, 600, 1200 cm <sup>2</sup> 12.5, 18.5, 46.5, 93.0, 186 sq. in.	1700, 3200 263, 496 sq. in.	80, 200, 500, 1000 12.5, 31.0, 77.5, 155 sq. in.
Force max.	34 kN (7644 lbf)	100 kN (22481 lbf)	20 kN (4496 lbf)
Stroke or Angle	10 to 60 mm (0.394 to 2.36 in.)	20 to 80 mm (0.787 to 3.15 in.)	10 to 40 mm (0.394 to 1.57 in.)
Temperature Range	-40 to +80 °C (-40 to 176 °F)	-40 to +80 °C (-40 to 176 °F)	-40 to +80 °C (-422 to 176 °F)
Handwheel (option)	Top mounted	Top mounted	Top mounted
Accessories	Travel stop Top mounted limit switches	Travel stop	Integral Positioner IP/PP Integral air reducer Travel stop Top mounted limit switches
Remarks	Complete stainless steel actuator designed for corrosive atmospheres in different locations. Based on the yoke rod design, flexible usage for almost all valve series with linear movements. Also available for the direct mounted Flowserve positioner series Logix 500	Heavy duty actuator for high thrust requirements for large valves.	Integral analog positioner option highly modular with various accessory options such as air reducer, direct mounted solenoid valves and different IP transducer options. Field reversible

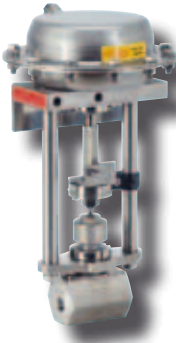


# Cryogenic




Electric		Design	Linear Angle	Linear Angle
		Product		
Series 5		Type	ColdFlow™ - 041000	ColdFlow™ - 241000
Linear single acting	Size Range	1" to 8" DN 25 to DN 200	1/8" to 6" DN 4 to DN 150	
Aluminium, powder coated	Pressure Rating	Class 150 to 600 PN 10 to PN 63	Class 150 to 600 PN 10 to PN 63	
N/A	End Connections	Butt weld	Butt weld	
4	Body Materials	Aluminium Special alloys	Stainless Steel	
–	Temperature Range	Down to -196 °C (-321 °F)	Down to -269 °C (-452 °F)	
25 kN (5620 lbf)	Shut Off Class	IV to VI	IV to VI	
10 to 40 mm (0.394 to 1.57 in.)	Cv Range	0.12 to 740	0.0012 to 470	
-20 to +60 °C (-4 to 140 °F)	Fugitive Emissions (optional)	TA-Luft certified ISO 15848 - part 1 / Class A-C	TA-Luft certified ISO 15848 - part 1 / Class A-C	
Integral	Main Features	<ul style="list-style-type: none"> <li>• Top entry up to DN 100 (4")</li> <li>• Bolted stainless steel low temperature extension</li> <li>• Cold Box installations</li> <li>• Air separation plants</li> </ul>	<ul style="list-style-type: none"> <li>• Top entry</li> <li>• Integral seat</li> <li>• Flexible plug for better tightness</li> <li>• Liquid Helium services</li> </ul>	
Limit switches Analog feedback Integral positioner	Options	<ul style="list-style-type: none"> <li>• Bellows seal</li> <li>• Pressure balanced design</li> <li>• Larger sizes available</li> <li>• Soft seat</li> </ul>	<ul style="list-style-type: none"> <li>• Bellows seal</li> <li>• Thermalisation ring</li> <li>• Soft seat</li> <li>• Cover plate for vacuum sealing</li> </ul>	
IP54 (IP43 for E1) Various power supply options (24VDC to 230VAC)				

	High Performance	High Pressure	
Design	Linear Globe	Linear Angle	Linear Angle
Product			
Type	TotalFlow™ - 035000	HpFlow™ - 011000	HpFlow™ - 011000
Size Range	½" to 6" DN 15 to DN 150	IG NW 3 to 16	¼"
Pressure Rating	Class 150 to 2500 PN 40 to PN 400	ND 325 to ND 700	60000 psi PN 4000
End Connections	Flanged Butt Weld Special connections	Flanged (IG Standard)	Special high pressure threaded connections (Hofer, Autoclave) Clamps (Grayloc, Cajon, Haage)
Body Materials	Carbon Steel Stainless Steel Special alloys	Stainless Steel Special alloys (Hastelloy)	Stainless Steel Special alloys
Temperature Range	-196 to 650 °C (-321 to 1202 °F)	-30 to 400 °C (-22 to 752 °F)	-30 to 400 °C (-22 to 752 °F)
Shut Off Class	IV to VI	IV to VI	IV to VI
Cv Range	0.012 to 400	0.000063 to 2.9	0.000063 to 2.9
Fugitive Emissions (optional)	TA-Luft certified ISO 15848 - part 1 / Class A-C	TA-Luft certified ISO 15848 - part 1 / Class A-C	
Main Features	<ul style="list-style-type: none"> <li>• Compact and lightweight</li> <li>• Wide variety of alloy materials</li> <li>• Plug head guided</li> </ul>	<ul style="list-style-type: none"> <li>• Split body design</li> <li>• Plug head guided</li> </ul>	<ul style="list-style-type: none"> <li>• Plug head guided</li> </ul>
Options	<ul style="list-style-type: none"> <li>• Angle body, 3-way valve</li> <li>• Bellows seal</li> <li>• Low temperature extension</li> <li>• Steam jacket</li> <li>• Severe service trims</li> <li>• API Standards available</li> </ul>	<ul style="list-style-type: none"> <li>• Multistage trim design</li> <li>• Bellows seal, trim kit material (tungsten carbide, ceramic, other), outlet bushing,</li> <li>• Soft seat</li> <li>• Different inlet / outlet sizes</li> <li>• DIN/ANSI flange</li> <li>• Threaded connection</li> <li>• Three Way Valve</li> </ul>	<ul style="list-style-type: none"> <li>• Trim kit material (tungsten carbide, ceramic, other)</li> <li>• Soft seat</li> </ul>



	Corrosive	Sanitary
Linear Angle	Linear Globe	Linear Angle
		
HpFlow™ - 015000	LinedFlow™ - 132000	CleanFlow™ - 191000
IG NW 16 to 45	½" to 6" DN 15 to DN 150	0.38" to 4" DN 10 to 100
ND 325 to ND 700	Class 150 PN 16	Class 150 PN 10 to PN 25
Flanged (IG Standard)	Flanged	Flanged Weld Ends Screwed Ends Tri Clamps
Stainless Steel Special alloys (Hastelloy)	Lined ductile iron 0.7043 (PFA, PFA antistatic)	Stainless Steel (1.4404)
-30 to 400 °C (-22 to 752 °F)	-10 to 200 °C (-14 to 392 °F)	-25 to 130 °C (-13 to 266 °F)
IV to VI	IV to VI	IV
0.12 to 46	0.012 to 210	0.012 to 190
TA-Luft certified ISO 15848 - part 1 / Class A-C	TA-Luft certified ISO 15848 - part 1 / Class B-C	-
<ul style="list-style-type: none"> <li>• Split body design</li> <li>• Plug head guided</li> </ul>	<ul style="list-style-type: none"> <li>• High flow rate</li> <li>• Threaded seat</li> <li>• Modular design</li> <li>• Bellows seal</li> <li>• T-Grooves for liner</li> </ul>	<ul style="list-style-type: none"> <li>• 3A approved</li> <li>• EHEDG approved</li> <li>• Pressure class up to PN25 (191400 version)</li> </ul>
<ul style="list-style-type: none"> <li>• Multistage trim design</li> <li>• Bellows seal, trim kit material (tungsten carbide, ceramic, other), outlet bushing</li> <li>• Soft seat</li> <li>• Different inlet / outlet sizes</li> <li>• DIN/ANSI flange</li> <li>• Threaded connection</li> <li>• Three Way Valve</li> </ul>	<ul style="list-style-type: none"> <li>• Different materials for plug and seat (HC, Tantalum) for low Cv</li> </ul>	<ul style="list-style-type: none"> <li>• Different surface finish 0.4 µm to 0.6 µm</li> <li>• Bellows option (191300)</li> <li>• Standard (191400)</li> <li>• Aseptic version (191700/191800)</li> </ul>

	Low Flow		Others
Design	Linear Globe	Linear Globe	Tank Bottom Valve
Product			
Type	<b>SmallFlow™ - 080000</b>	<b>SmallFlow™ - 385000</b>	<b>DrainFlow™ - 051000</b>
Size Range	¼" DN 6	½" DN 15	½" to 6" DN 15 to DN 150
Pressure Rating	Class 2500 PN 400	Class 150 to 2500 PN 40 to PN 400	Class 150 to 300 PN 10 to PN 40
End Connections	Screwed ¼" Special screwed end connections	Flanged ½" to 1" Flanged DN 15 to DN 25 Screwed ends ½"	Flanged
Body Materials	Stainless Steel Special Alloys	Stainless Steel Carbon Steel Special Alloys	Stainless Steel Special alloys
Temperature Range	-30 to 250 °C (-22 to 482 °F)	-200 to 400 °C (-328 to 752 °F)	-30 to 250 °C (-22 to 482 °F)
Shut Off Class	IV to V	IV to VI	IV to VI
Cv Range	0.000063 to 0.29	0.000063 to 4.7	Up to 650
Fugitive Emissions (optional)	TA-Luft certified ISO 15848 - part 1 / Class A-B	TA-Luft certified ISO 15848 - part 1 / Class A-C	TA-Luft certified ISO 15848 - part 1 / Class A-C
Main Features	<ul style="list-style-type: none"> <li>• Compact valve</li> <li>• Laboratory application</li> <li>• Bar stock body</li> <li>• Plug head guided</li> </ul>	<ul style="list-style-type: none"> <li>• Compact valve</li> <li>• Plug head guided</li> <li>• Flanged bonnet</li> </ul>	<ul style="list-style-type: none"> <li>• Seal welded standard construction</li> <li>• Seat ring designed to fit tank outlet dimensions</li> <li>• Compact and lightweight</li> <li>• Different outlet angle</li> </ul>
Options	<ul style="list-style-type: none"> <li>• Angle valve</li> <li>• High temperature extension</li> <li>• Bellows seal</li> </ul>	<ul style="list-style-type: none"> <li>• Angle valve</li> <li>• 3-way</li> <li>• Cryogenic extension</li> <li>• High temperature extension</li> <li>• Bellows seal</li> <li>• Soft seat</li> </ul>	<ul style="list-style-type: none"> <li>• Bellows seal</li> <li>• Extending / retracting plug</li> <li>• PTFE soft seat / hardened trim</li> <li>• Steam jacket</li> <li>• Purge connection</li> <li>• PT 100 inside the trim</li> </ul>

<b>Severe Service</b>		<b>Bellows</b>
Linear Angle	Trims	Bellows
		
<b>Multi-Z</b>	<b>Severe Service Trims</b>	<b>Bellows</b>
<p>1" to 6" DN 25 to DN 150</p> <p>Up to Class 2500 Up to PN 400</p> <p>Flanged Weld Ends</p> <p>Carbon Steel Stainless Steel</p> <p>-100 to 650 °C (-148 to 1202 °F)</p> <p>IV to VI</p> <p>0.5 - 102</p> <p>TA-Luft certified ISO 15848 - part 1 / Class A-C</p> <p>Dirty Service Trim (Solids up to 10.5 mm) Designed for the service condition Cavitation Elimination</p> <p>• Pressure Balancing • Soft Seat • Custom trim shape • Various actuators • Design changes according to Customers requirements • Block Design (without welding)</p>	<p><b>Trims for Noise Reduction and Cavitation Reduction</b></p> <ul style="list-style-type: none"> <li>• <b>Type I – SoundControl</b> For noise reduction only. It combines a standard parabolic plug with a 1 to 3 stage silencer as a non-guided cage around the plug. Re-trofitable for applicable valve series.</li> <li>• <b>Type II – StreamControl</b> Similar to Type I – SoundControl but with a Multihole plug instead of a parabolic version. The Multihole plug alone can be used for medium noise reduction for gases and as cavitation reduction for liquids. StreamControl with silencer cages are only for gases with improved noise attenuation.</li> <li>• <b>Type III – CageControl</b> Heavy duty version for Noise and Cavitation reduction. The solid cage is the guiding for the plug. The plug can be either as a parabolic type or as a multihole type depending on the application. Can be used in any version for gases and liquids.</li> </ul> <p><b>Suitable for following Valve Series:</b></p> <p><b>Type I – SoundControl</b> HpFlow™, TotalFlow™, ColdFlow™</p> <p><b>Type II – StreamControl</b> HpFlow™, TotalFlow™ ColdFlow™, MiniFlow™ DrainFlow™, CleanFlow™</p> <p><b>Type III – CageControl</b> HpFlow™, TotalFlow™</p> <p><b>Applications:</b></p> <p>Type I – SoundControl Noise (Gases)</p> <p>Type II – StreamControl Noise (Gases) &amp; Cavitation (Liquids)</p> <p>Type III – CageControl Noise (Gases) &amp; Cavitation (Liquids)</p>	<p><b>Standard:</b> The bellows seal is housed within the bellows extension. The Flowserve Kämmer design includes a rugged hydro-formed bellows seal with the backup packing seal located well above the bellows. For maximum protection, Kämmer offers bellows with up to five walls with wall thickness from 0.1 to 0.15 mm (for greater wall flexibility) for pressures up to 320 bar. A leak detection port is optional. Standard materials are SS and HC. Special materials are available upon request.</p> <p><b>Specials (submerged):</b> Using bellows seals in media with crystallising properties can lead to damage due to deposits in the convolutions. A submerged bellows seal is purposely situated directly within the flow path. This design provides a continuous purging of the seal convolutions to prevent a build-up of deposits. A similar design is used for sanitary valves (CIP / SIP)</p> <p><b>Series:</b> Virtually all FLOWSERVE Kämmer valves can be equipped with a bellows seal.</p> <p><b>Applications:</b> For applications with toxic, explosive or fugitive media.</p>





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Flowserve Corporation has established industry leadership in the design and manufacture of its products. When properly selected, this Flowserve product is designed to perform its intended function safely during its useful life. However, the purchaser or user of Flowserve products should be aware that Flowserve products might be used in numerous applications under a wide variety of industrial service conditions. Although Flowserve can (and often does) provide general guidelines, it cannot provide specific data and warnings for all possible applications. The purchaser/user must therefore assume the ultimate responsibility for the proper sizing and selection, installation, operation, and maintenance of Flowserve products. The purchaser/user should read and understand the Installation Operation Maintenance (IOM) instructions included with the product, and train its employees and contractors in the safe use of Flowserve products in connection with the specific application.

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