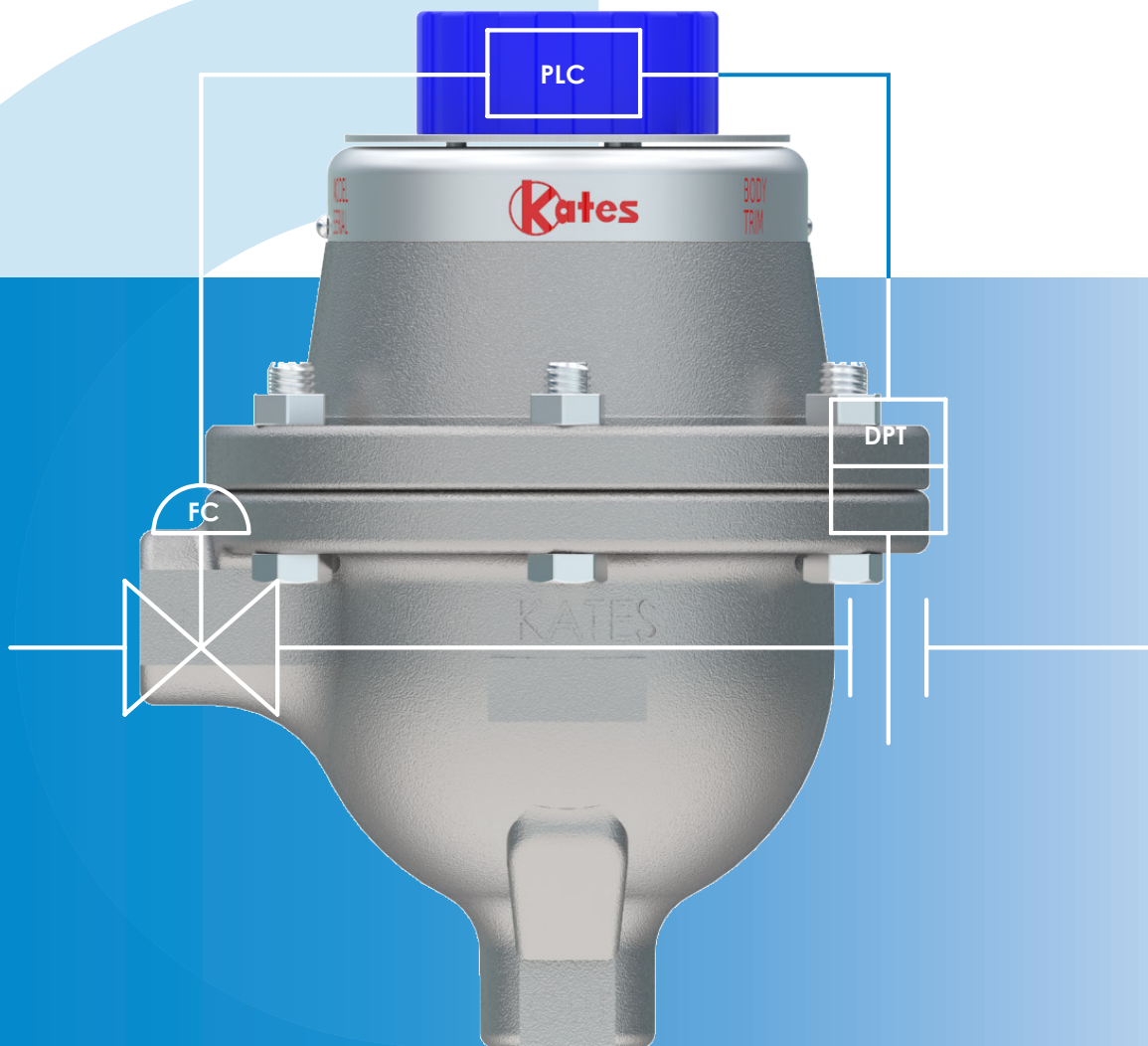
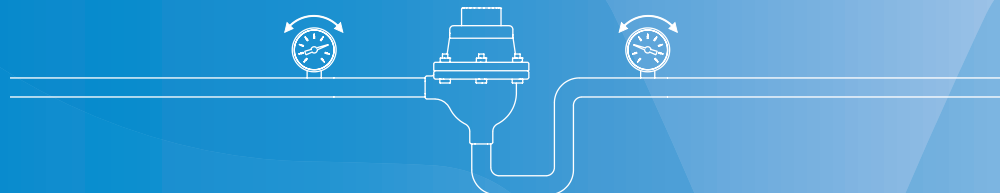




Automatic Flow Rate Controller



Self-Contained Flow Loop

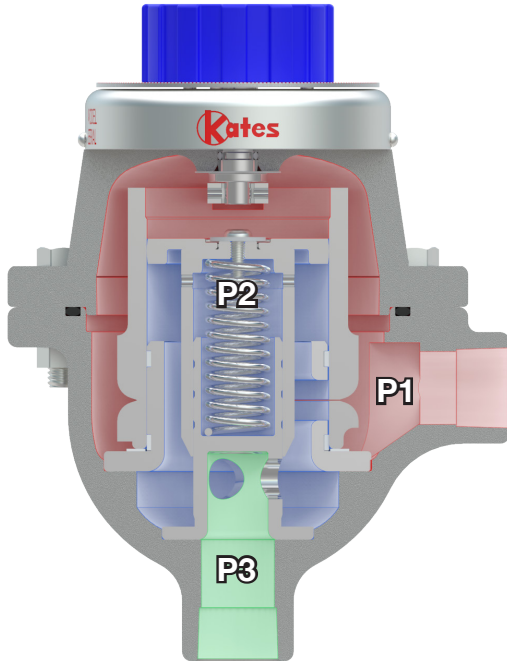


Maintains Flow Regardless of Pressure Changes Upstream or Downstream



Quality and customer satisfaction since 1948 has made Kates a leader in Flow Control Applications world-wide servicing all major process industries.

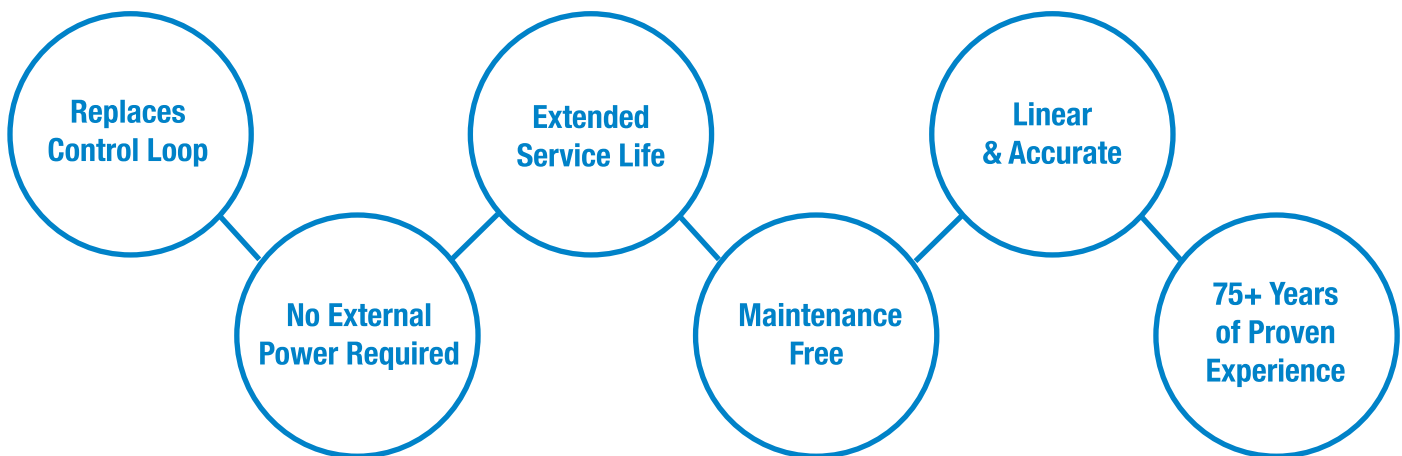
PRINCIPLE OF OPERATION



The Kates Automatic Flow Rate Controller combines an adjustable orifice and an internal regulating valve to automatically control flow rate regardless of upstream or downstream pressure variations.

The Kates unit consists of three chambers, an inlet chamber (**P1**), the center control chamber (**P2**), and the outlet (**P3**). The spring maintains a constant differential across the adjustable orifice, which is set by the control knob on top of the unit. The flow rate is calibrated to the constant differential (**P1:P2**) and the amount of opening of the orifice. Flow rate out of the unit (**P3**) must be equal to the calibrated flow across the orifice slot. Greater or Lesser flow out of the unit will be corrected within 1-2 seconds by the internal regulating valve.

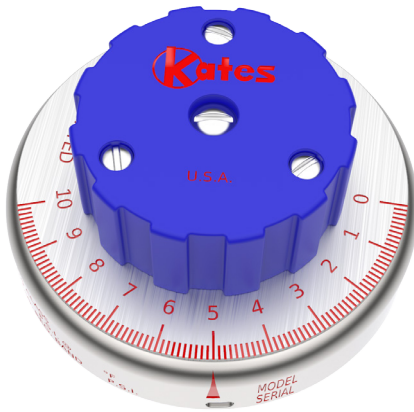
KATES ADVANTAGES



- Accomplishes Flow Control in a Single Self-Contained Unit
- Meters Flow – Monitors Set Flow Rate – Internal Valve Automatically Adjusts to Maintain Set Flow
- Automatically Responds to Pressure Changes Up or Downstream
- Accurate to 1-½% of Setpoint Over Entire Range
- 30:1 Average Turn-Down Ratio
- Simply Set Desired Flow Rate with Calibrated Dial on Top of Unit
- Economical to Design in System, Purchase, Install, Operate and Service

DIAL CALIBRATION

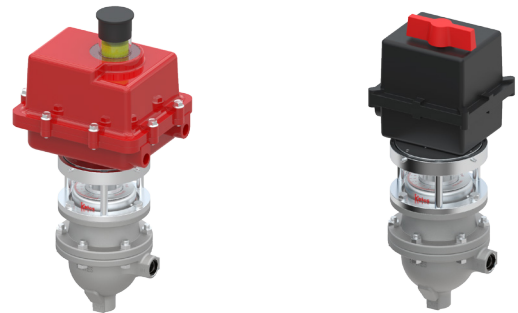
Kates FC Valves are supplied with a 0-10 incremented dial, but may be replaced with a calibrated dial indicating actual GPM, SCFM, or other desired engineering units.



ACTUATION FOR REMOTE POSITIONING

The automated Kates FC Valve will improve the performance of almost any control loop. A change in input signal will cause a direct and linear change in flow rate regardless of inlet or outlet pressure variations. In addition to stabilizing the process loop, it inherently offers accurate cascade control.

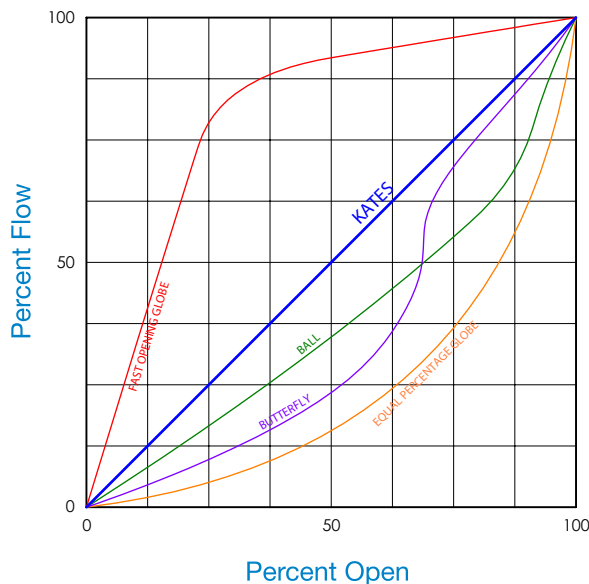
A variety of electric and pneumatic actuation control signals are available.



LINEARITY

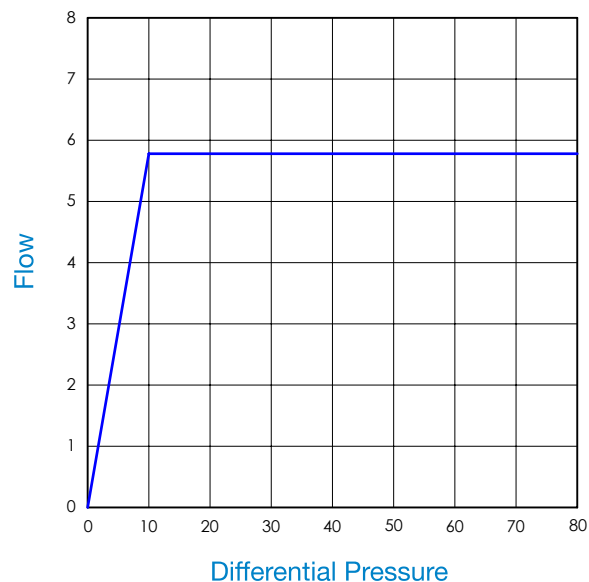
Flow is directly proportional to the arcuate orifice opening.

Each degree of opening is equal in change of flow volume across the entire flow range. Linearity can minimize hunting when maintaining or changing the flow setting.



FLOW CHARACTERISTICS

Kates Flow Controllers are self-contained and do not require external power to operate. Control Set Point is maintained provided there is a minimal differential pressure of 10psi between the inlet and the outlet of the unit. Kates Flow Controllers are capable of taking large pressure drops.

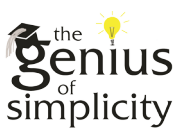








GAS APPLICATIONS

Downstream pressure fluctuations are counterbalanced by the internal regulating valve to maintain the SCFM to within 1-1/2% of setpoint. Variations in upstream pressure and temperature should be minimized due to the compressibility of gases and the corresponding changes in density. Kates controllers require consistent upstream pressure in gas applications. The ranges of Kates FC Valves are cataloged in gal/min for purposes of standardization. Please contact Kates Customer Service to determine the correct unit size based on the desired flow setting in SCFM for your gas application.

FLOW RATE CONTROLLER SELECTION GUIDE

The Kates Flow Controllers have been applied successfully throughout industry to a wide variety of liquid and gas applications. We take pride in providing high quality and high performance instruments that will provide many years of maintenance free service. The models below are a sample of the wide variety of flow controllers available. Our motto, "to serve our customers as we desire our suppliers to serve us," exemplifies our commitment to quality and service.

						
	FC Valve	PVC	Actuated FC Valve	Flo-Miser	Mini-Flo	Micro-Flo
Line Size	½" - 4"	½" - 4"	½" - 4"	¾", ½", or ¾"	¼"	⅛"
Flow Range (GPM Water)	0.02 - 550	0.5 - 25	0.02 - 550	0.3 - 20	0.05 - 1.2	0.01 - 0.5
Materials of Construction	316 S.S., Hastelloy, Monel, Alloy 20, Other	PVC	316 S.S., Hastelloy, Monel, Alloy 20, Other	316 S.S.	316 S.S., Brass	316 S.S.
Max Working Pressure (PSIG)	5,000	275	5,000	1,440	450	1,440
Connections	FNPT, RTJ, RF, Tri-Clamp, Other	Union	FNPT, RTJ, RF, Tri-Clamp, Other	FNPT	FNPT	FNPT
Accuracy (± Setpoint)	± 1½%	± 2%	± 1½%	± 5%	± 5%	± 1½%
Repeatability	± ½%	± 1%	± ½%	± 1%	± 10%	± ½%
Turndown Ratio	30:1	20:1	30:1	10:1	5:1	50:1

The above products can be designed in a wide variety of configurations for special applications.

STRAINER RECOMMENDATIONS

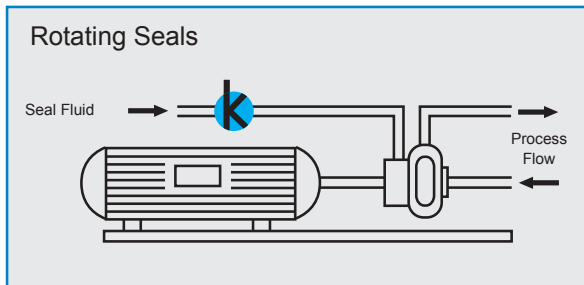


For long lasting maintenance free operation, we recommend that a strainer or filter be installed directly upstream of the Kates.

Kates Unit (Inches)	Strainer/Mesh	Filter/Micron
⅛, ¼, ⅜, ½	1600	10
¾, 1	200	75
1 ½, 2, 3	150	100
4	100	150

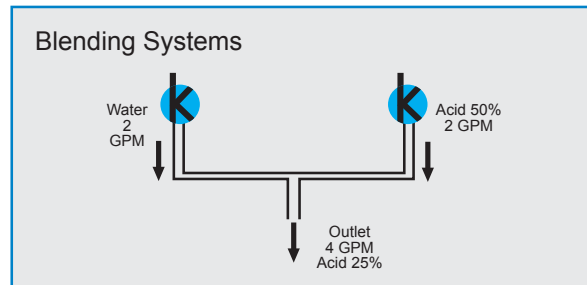
MECHANICAL SEALS

The Kates unit was originally designed for mechanical pump seal systems. The Kates flow controller ensures a consistent flow to the seal to prevent starvation and premature failure.



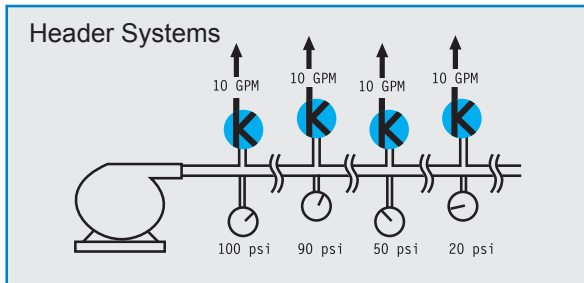
BATCHING / BLENDING

Kates accuracy of setpoint and quick response to process pressure changes makes it an ideal cost-effective design for batching and blending applications.



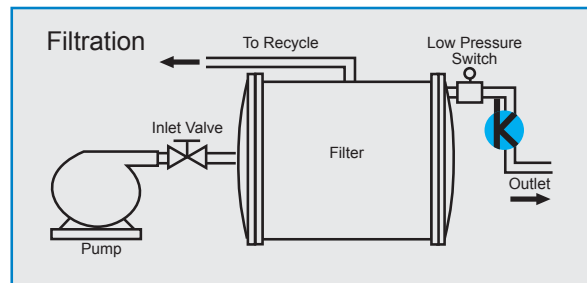
HEADER SYSTEMS

Kates units deliver the required flow to each leg of a header system and eliminates the risk of starving end of system legs inherent in pressure control systems.



FILTRATION

Filtration systems have an optimal flow range for efficiency and effectiveness. Kates can control liquids or gases to deliver constant flow as system pressures change.



APPLICATIONS

- Mechanical Seal Lubrication
- Continuous Casting
- Instrumentation Purge
- Hydrocrackers
- Dewaxing
- Desulphurization
- Heat Exchangers
- Aircraft De-icing
- Sodium Hypochlorite Injection

- Header Systems
- Reverse Osmosis Systems
- High Purity Silicon Chip Manufacturing
- Rotating Seals
- Ratio Blending
- Nitrogen Blanketing
- Dynamometers

INDUSTRIES

- Petroleum
- Medical
- Aerospace
- Food Processing
- Pharmaceutical
- Chemical Processing
- Automotive
- Pulp & Paper

- Waste Water
- Power Generation
- Mining
- Food & Beverage
- Renewable Energy
- High Purity
- Oil & Gas

HOW TO ORDER GUIDE - FC VALVE

Whether the media is liquid or gas, Kates automatic flow rate controllers have been applied successfully worldwide for a myriad of applications. "Just set it and forget it" with a Kates FC Valve or any of our other flow rate controllers.

Regardless of pressure fluctuations, Kates keeps your flow rate constant. The Kates unit is a direct replacement for up to four separate components in a typical flow control loop and are offered in a variety of materials for a broad range of flow rates.

Line Size	Flow Range (GPM Water)	Material	Pressure Class	Connections	Options
1/2"	Z .01 - .15	B 316 SS (STD)	11 150#	T THREADED	A BUNA O-RINGS
	A .02 - .5	C PVC	33 300#	B RF FLANGE	B TEFLON O-RINGS® (STD)
	B .05 - 1.0	D Hastelloy C	64 600#	S SPECIAL	C VITON O-RINGS
	C .1 - 3.0	E Alloy 20	95 900#		E METAL KNOB
3/4"	E 1 - 5	F Monel	06 1500#		F SS TAG
	F 1 - 12		A6 2500#		H ELECTRIC ACTUATOR
	G 1 - 25				J GAS SERVICE
1-1/2"	J 3 - 80			L SPECIAL	
2"	K 10 - 150			M CALIBRATED DIAL	
3"	M 15 - 350			Q STELLITE TRIM	
4"	N 100 - 550				
	O SPECIAL				

Example:

<i>B</i>	<i>B</i>	<i>11</i>	<i>T</i>	<i>-BE</i>
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The sample Model Number, **BB11T-BE**, represents a 1/2" unit with 0.05 to 1.0 gpm flow range, 316 SS body, 150 pound body rating, and threaded connections. The added options are Teflon® seals and a metal knob.

Custom Valve Concepts delivers more than just products. We support our Customers with innovative and efficient solutions. We design and manufacture for a wide variety of industries including automotive, medical, food and sanitary applications.

For Additional Information Refer to www.customvalveconcepts.com or Contact Us at:

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