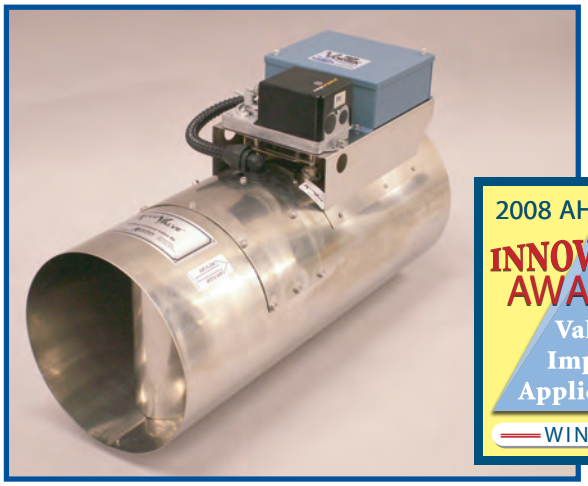
TEK-AIR TECHNICAL PRODUCT DATA SHEET

LOW PRESSURE DROP AIRFLOW CONTROL VALVE

Tek-Air

AccuValve™
BY ACCUTROL, LLC
U.S. Patent # 6,991,177

* Low Pressure Drop
* Electric Actuation
* Fast Speed of Response
* No Straight Run Requirements
* True Flow Feedback
* High Accuracy and Turndown
* Linear Response
* Quiet Performance
* No Scheduled Maintenance
* Universal 4-20mA DC input/output



Recipient of the 2008 AHR Expo Innovation Award, the AccuValve™ AV2000 represents the first truly new design in airflow control valves in decades. By using Computational Fluid Dynamics (CFD) we have been able to create a valve that maximizes turndown while maintaining high accuracy throughout the flow range.

APPLICATION

The AccuValve™ AV2000 incorporates high accuracy airflow sensing with a revolutionary but simple design based on proven technologies. The AV2000 is designed for use in applications where turndowns of up to 8 to 1 are required while maintaining accuracies of 5% of reading over that flow range, ensuring precise airflow control. R&D laboratories, process pharmaceutical manufacturing and vivariums are just a few applications for the AccuValve™ .

DESCRIPTION

The AV2000 uses an airfoil-shaped compression section to divide the airflow into two equal chambers. This causes the air to accelerate and compress into a laminar flow, improving the accuracy of the airflow sensor, and enabling better turndown.

The laminar airflow inherent to the AccuValve™ design improves the efficiency of the vortex shedding airflow sensors. These sensors are located in each chamber to provide a high degree of accuracy throughout the flow range. The AccuValve™ design also allows for greater turndowns than possible in older, more conventional valves.

TRUE FLOW FEEDBACK

The unique design of the AccuValve™ provides true flow feedback while avoiding the drawbacks of other valve designs. This feature provides the end user the benefit of the highest degree of safety in knowing that the critical space is accurately monitored and controlled.

HIGH SPEED OF RESPONSE

The AccuValve™ is a true electronic airflow control valve. While most other valves were originally designed for pneumatic actuation, then converted to electric, the AccuValve™ was designed for electric operation from the beginning. The unique dual-chamber design offers the fastest response time of any electrically operated damper. Unlike a conventional blade damper with a center shaft and full open rotation of 90 degrees, the AccuValve™ has two control surfaces that modulate through 45 degrees. Because the rotation is half that of a conventional blade damper, response speed is improved by 100%. The control surfaces rotate at individual rates, creating more precise linear response than conventional valves making it more responsive to control.

LOW PRESSURE DROP

The AV2000 incorporates a compression section with a streamline design and a static regain section on the downstream side. This design provides a low pressure drop requiring less fan horsepower and better noise performance.

SIMPLE LAYOUT

There are no straight duct runs required before or after the valve making application of the valve very simple. The air compression in the valve provides laminar airflow throughout the airflow range providing repeatable airflow measurement regardless of the inlet or outlet conditions. The design also provides large turndown capability, thereby allowing a wide range of applications. All parts are accessible from the front of the valve simplifying installation requirements.

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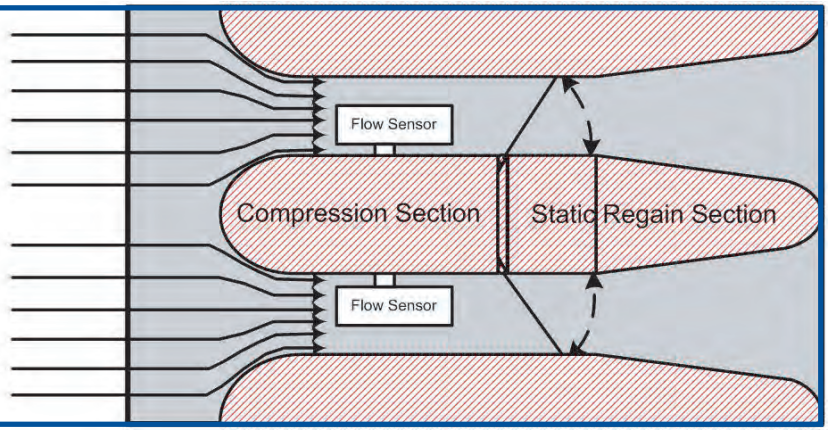
LOW MAINTENANCE

The AccuValve™ is designed to provide many years of maintenance free operation. Other valve designs have many critical parts such as springs, cones and linkages located in the air stream where they are not serviceable and are subjected to harsh conditions. In contrast, the AccuValve™ was designed with very few moving parts. Nearly all of the AccuValve™ critical parts are externally located, out of the air stream, increasing the overall reliability and lifetime of the valve. The internally mounted airflow sensors can be easily accessed for inspection through a removable access door. Because of this design, all critical parts of the AccuValve™ can be serviced with the valve installed.

LOW PRESSURE DROP BY DESIGN

Much like a silencer, the AccuValve™ divides the airflow into two airstreams using an airfoil shaped compression section. By compressing the air it increases the velocity and makes the airstream more laminar. This improves the turndown of the measuring system and eliminates the need for straight runs into the valve.

The static pressure regain section located after the control blades further reduces the pressure drop of the valve making it the lowest pressure drop airflow control valve on the market. This low pressure drop offers the owner years of energy savings by reducing the required fan horsepower and thus making the laboratory building less costly to operate.



SPECIFICATIONS - AV2000

Vor-Tek Accuracy	+/- 5% of reading
Speed of Response	<2.0 sec full open to full closed
Temperature Limits	Airstream -20 to 140 F
	Ambient 25 to 125 F
Humidity Limits	0 to 95% RH non condensing
Power	20-28VAC, 23VA, 32VA Peak
Airflow Output	4-20mAdc
Load Limits	650 Ohms
Enclosure	General Purpose
Actuator Input	4-20mAdc

MATERIALS OF CONSTRUCTION

Valve Body	304SS or Galvanized
Compression Section	304SS or Galvanized
Control Surfaces	304SS or Galvanized
Shaft	304SS or Galvanized
VorTek	Plastic

SELECTION TABLE

Size	Duct	Min CFM	Max CFM	Pressure Drop at Max CFM
8"	Round	100	725	0.29" wc
10"	Round	125	1000	0.27" wc
12"	Round	200	1600	0.27" wc
12x18"	Rectangular	260	2100	0.17" wc
12x24"	Rectangular	375	3000	0.21" wc
12x36"	Rectangular	520	4400	0.18" wc
12x48"	Rectangular	750	6000	0.22" wc

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