

LOW PRESSURE DROP ROUND AIRFLOW CONTROL VALVE



- 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 Voltage and Current Input/Output



Recipient of the 2008 AHR Expo Innovation Award, the **AccuValve® AV3100** 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 the lowest pressure drop of any critical environments valve in the industry.

APPLICATION

The **AccuValve® AV3100** incorporates high accuracy airflow sensing with a revolutionary but simple design based on proven technologies. The AV3100 is designed for use in applications where turndowns of up to 10 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 AV3100 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.

ASHRAE STANDARD 90.1 -6.5.3.2.3



ASHRAE Standard 90.1 calls for the reset of the static pressure setpoint in VAV systems equipped with DDC controls. To meet the intent of this provision, the DDC system “polls” all VAV damper positions, and continually reduces the static pressure setpoint until one of the VAV dampers is near full open. Obviously this can only work when the DDC system “knows” the damper positions, which is the case with the **AccuValve®**. In competing technologies that use mechanical damper positioning (i.e. venturi valves), this is not possible. The **AccuValve’s** combination of low pressure drop and static reset capability allows the absolute minimum possible fan energy consumption for critical airflow control systems. (For more information and energy savings examples see “Demand Based Static Pressure Reset Control for Laboratories”)

LOW PRESSURE DROP

The AV3100 incorporates a streamlined compression section and a carefully designed static regain section. These features offer lower pressure drops, lower noise levels, and better flow measurement conditions than all other available technologies.

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.

Tek-Air Systems, Inc.

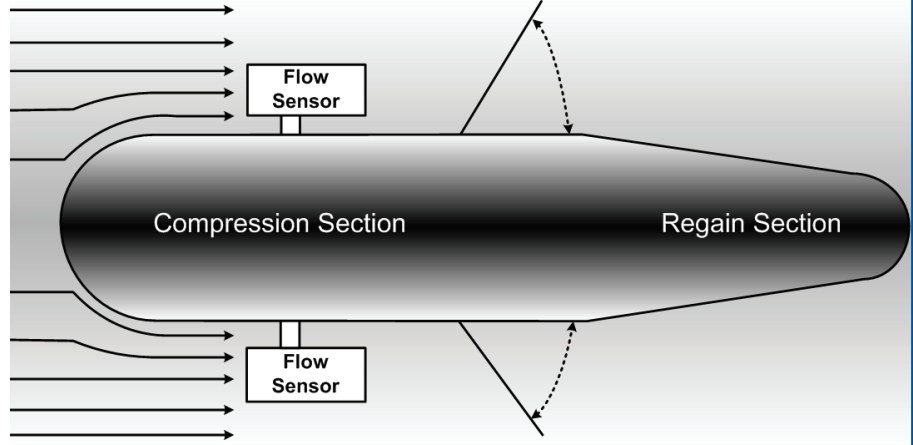
LOW MAINTENANCE

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. (For more details see "Low Pressure Drop by Design" cut sheet.)



SPECIFICATIONS - AV3100 ROUND ACCUVALVE

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
Shutoff Leakage	<2% of FS using 8:1 TD Max CFM
Transmitter Electrical	
Input Power	24 VAC +/- 20% 50/60 Hz, 2.5VA Max or 24 VDC +/- 20%, 75mA Max.
Output Signal	0-10vdc, 2-10vdc, 0-20mA or 4-20mA (jumper selectable)
Electromagnetic Compatibility	EMC Directive 2004/108/EC Low Voltage Directive 2004/108/EEC EN61326-1:2006 FCC Part 15
Product Safety	IEC/EN/UL/CSA 61010-1:2001 CAN/CSA-C22.2 No. 61010-1

Materials of Construction

Sheet Metal Parts	304SS or Galvanized Steel
Shafts	316SS
Airflow Sensors	Polycarbonate UL94

Actuator Electrical

Input Power	24 VAC +/- 20% 50/60 Hz, 24 VA 24 VDC +/- 10%, 12 W (1.5W)
Control Input	2-10 VDC standard, 0-10 VDC available (4-20mA using a 500 Ω ¼ W resistor)
Failure Mode	Fail Last Position or Selectable Fail Open/Closed

PERFORMANCE AV3100 ROUND ACCUVALVE

Valve Size	8:1 Turndown			10:1 Turndown		
	Min CFM	Max CFM	Pressure Drop at Max CFM	Min CFM	Max CFM	Pressure Drop at Max CFM
8"	80	650	0.3"wc	80	800	0.45"wc
10"	120	1000	0.3"wc	120	1200	0.45"wc
12"	180	1450	0.3"wc	180	1800	0.45"wc
14"	250	2300	0.3"wc	250	2500	0.45"wc



Tek-Air Systems, Inc.

41 Eagle Road, Danbury, CT 06810

203-791-1400 Fax: 203-798-6534

Sales Fax: 203-730-9564

Your Tek-Air Representative is: