

## LOW FLOW AIRFLOW CONTROL VALVE



**AccuValve®**  
BY ACCUTROL, LLC  
US Pat #6,991,177

2008 AHR Expo®

**INNOVATION  
AWARDS**

Value  
Impact  
Application

— WINNER —

- **Low Pressure Drop**
- Electric Actuation
- Fast Speed of Response
- No Straight Run Requirements
- True Flow Feedback
- High Accuracy
- Quiet Performance
- No Scheduled Maintenance
- Universal voltage and current input/output

**AV3100-L8**  
**(Low Flow)**



**Recipient of the 2008 AHR Expo Innovation Award**, the AccuValve® AV3100-L8 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-L8 incorporates high accuracy airflow sensing with a revolutionary but simple design based on proven technologies. The AV3100-L8 is designed for use in applications where low-flow rates are required such as snorkels and capture hoods. Turndown of the AV3100-L8 is 6 to 1 while maintaining accuracies of 5% of reading over that flow range, ensuring precise airflow control.

#### DESCRIPTION

The AV3100-L8 uses a compression section to reduce the area in the valve. 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 sensor. The sensor is located in the 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-L8 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 one side of the valve simplifying installation requirements.

**Tek-Air Systems, Inc.**

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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 AIRFLOWS

The **AccuValve®** AV3100-L8 is specifically designed for low airflows in applications such as snorkel exhaust in laboratories. The AV3100-L8 can be used for control of airflow as low as 50 CFM / 85 m<sup>3</sup>/hr with a 6 to 1 turndown while maintaining 5% of reading accuracy.

### SPECIFICATIONS - AV3100-L8 ROUND ACCUVALVE

<b>Accuracy</b>	5% of reading	<b>Materials of Construction</b>	
<b>Speed of Response</b>	<2.0 sec full open to full closed	Sheet Metal Parts	304SS or Galvanized Steel
<b>Temperature Limits</b>	Airstream -20 to 140°F Ambient 25 to 125°F	Shafts	316SS
<b>Shutoff Leakage</b>	<2% of FS using 6:1 TD Max CFM	Airflow Sensors	Polycarbonate UL94
<b>Transmitter Electrical</b>		<b>Actuator Electrical</b>	
Input Power	24 VAC +/- 20% 50/60 Hz, 2.5VA Max or 24 VDC +/- 20%, 75mA Max.	Input Power	24 VAC +/- 20% 50/60 Hz, 24 VA 24 VDC +/- 10%, 12 W (1.5W)
Output Signal	0-10vdc, 2-10vdc, 0-20mA or 4-20mA (jumper selectable)	Control Input	2-10 VDC standard, 0-10 VDC available (4-20mA using a 500 Ω ¼ W resistor)
Electromagnetic Compatibility	EMC Directive 2004/108/EC Low Voltage Directive 2004/108/EEC EN61326-1:2006 FCC Part 15	Failure Mode	Fail Last Position or Selectable Fail Open/Closed
Product Safety	IEC/EN/UL/CSA 61010-1:2001 CAN/CSA-C22.2 No. 61010-1		

### PERFORMANCE 8" LOW-FLOW ACCUVALVE AV3100-L8

Valve Size	5:1 Turndown			6:1 Turndown		
	Min CFM	Max CFM	Pressure Drop at Max CFM	Min CFM	Max CFM	Pressure Drop at Max CFM
8" dia.	50	250	0.3"wc	50	300	0.45"wc



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