



PHOENIX CONTROLS AIRFLOW CONTROL VALVES

UNMATCHED PERFORMANCE

PROTECT WHAT IS IMPORTANT

The primary focus at Phoenix Controls is always to deliver a safe environment for end users. There is no room for compromise when highly corrosive chemicals are in use, biological contamination is possible, or years of valuable research are at risk. The design of the Phoenix Controls venturi valve and its mechanical pressure-independence ensure stability as room conditions and static pressure change. All Phoenix Controls valves meter airflow using the same control approach: combining a calibrated shaft position with a self-adjusting cone to achieve immediate mechanical pressure independence.

As duct static pressure fluctuates, the valve compensates to hold airflow rates steady. It does this through movement of the spring-loaded cone assembly along the shaft to size the orifice appropriately. This method of control delivers repeatable airflow rates, regardless of fluctuations in duct static pressure. In contrast to devices that rely on damper blades, the spring/cone assembly in a venturi valve enables air flow controllability at a differential pressure across the valve as low as 0.3" WC at $\pm 5\%$ accuracy.

PER ASHRAE 130 – MAXIMUM FLOWS AT MINIMUM OPERATING PRESSURES

As consulting engineers know, the performance of airflow control devices is governed by ASHRAE 130, *Laboratory Methods of Testing Air Terminal Units*. ASHRAE 130 establishes guidelines on how to set-up ductwork for testing valves that are wide open:

“Airflow and pressure measurements shall be recorded with the primary air damper/valve in the fully open position and with the fan delivering the desired airflow against the desired pressure.” (Section 5.3.2, ASHRAE 130-2008)

An open duct (as called for under ASHRAE 130) will flow air at low pressure, but there is no control at the device for the airflow being delivered. A minimum operating differential pressure of 0.5" WC or greater typically is required to control airflow across the airflow range for any damper/airflow device, depending on the accuracy required. For critical spaces like research laboratories, the common specified standard of accuracy is $\pm 5\%$.

MAXIMUM FLOWS AT MINIMUM OPERATING PRESSURE IN CFM (Valve Wide open, with fan delivering desired airflow)						
Valve Size	0.1" WC ¹	0.2" WC ¹	0.3" WC ¹	0.4" WC ¹	0.5" WC ¹	0.6 - 3.0" WC ²
Phoenix 8" Valve Flow	272	440	578	658	714	700
Phoenix 10" Valve Flow	369	614	819	912	964	1000
Phoenix 12" Valve Flow	592	950	1165	1333	1450	1500
Phoenix 14" Valve Flow	950	1447	1809	2044	2300	2500

¹ Per ASHRAE 130 Minimum Operating Pressure Testing

² Per ASHRAE 130, and Mechanically Pressure Independent, and accurate to $\pm 5\%$ of setpoint



VANTAGE BENEFITS

NVLAP Accreditation

All venturi valves are characterized on NVLAP Accredited Airstations, Lab Code 200992-0. NVLAP is administered by the National Institute of Standards and Technology (NIST).

OSHPD Certified

This device is certified for OSHPD Seismic Certification Preapproval per 2013 CBC, 2012 IBC, ASCE 7-10, and IEC-ES-AC-156. OSHPD Special Certification number OSP-0290-10.

ISO

Phoenix Controls designs, develops, manufactures, and sells products, systems, and service to control the environment and airflow of critical spaces. The Phoenix Controls Quality Management System is registered to ISO 9001:2015.

Warranty

Phoenix Controls warrants all venturi valves against defects in material and workmanship for a period of 5 years. In addition, all other equipment manufactured by Phoenix Controls, such as sash sensors, fume hood monitors, and equipment supplied but not manufactured by Phoenix Controls is covered by a 3 year warranty.

Other Compliance Listings

CE/CSA/UL/FCC/RoHS



DESIGN WITH CONFIDENCE – MAXIMUM FLOW RANGE AT MINIMUM OPERATING DIFFERENTIAL PRESSURE

Our experience and products for this industry help provide a range of flows to deliver the appropriate Air Change Rates (ACH) for a given space, helping eliminate over or under-engineering the product solution. A greater turndown in airflow will net a larger energy savings than just reduction in fan speed or Brake Horsepower. The wide airflow and pressure control ranges of Phoenix Controls venturi valves deliver the best airflow control performance possible from 0.3 to 3" WC.

(See chart below)

To ensure safety, even in low pressure operating states, Phoenix Controls includes on every valve a pressure switch that sounds an alarm if system pressure drops below the valve's specs, so you will never be left with "uncontrolled" air. Plus, Phoenix Controls venturi valves do not require straight duct runs due to the mechanical pressure independence, and are engineered for anti-fouling and noise attenuation. A number of coating options are offered to meet general and highly corrosive applications.

OPERATING RANGE IN CFM (M ³ /HOUR)		
(In control)		
Valve Size	Single	Dual
8"	35-700 / (60-1185)	–
10"	50-1000 / (85-1695)	100-2000 / (170-3390)
12"	90-1500 / (155-2545)	180-3000 / (310-5090)
14"	200-2500 / (340-4245)	400-5000 / (680-8490)

SAVING MONEY & ENERGY, BOTH TODAY & TOMORROW

Phoenix Controls takes pride in offering systems that deliver the lowest lifecycle cost in the industry. Every valve is factory characterized on NVLAP Accredited airstations — a program administered by NIST (Lab Code 200992-0) — which allows for lower balancing costs, and speeds commissioning. There is no rebalancing required after start-up, plus with its high turndown capability and high level of accuracy across the entire flow range (automatically compensating within ± 5% of flow setpoint), the Phoenix Controls venturi valve is the best energy saving choice to reduce ACH while maintaining proper directional airflow. Operational costs are also reduced thanks to no routine maintenance being required.

USING THE VALVE TO METER AIRFLOW

All Phoenix Controls valves meter airflow using the same control approach: combining a calibrated shaft position with a self-adjusting cone to achieve immediate mechanical pressure independence. As duct static pressure fluctuates, the valve compensates to hold airflow rates steady. It does this through movement of the spring-loaded cone assembly along the shaft to size the orifice appropriately. This method of control delivers repeatable airflow rates, regardless of fluctuations in duct static pressure. Long, straight runs of duct are not required for effective operation.

- Repeatable accuracy
- Field configurable
- Integration friendly
- Mechanically pressure independent
- Easy installation
- Maintenance free

