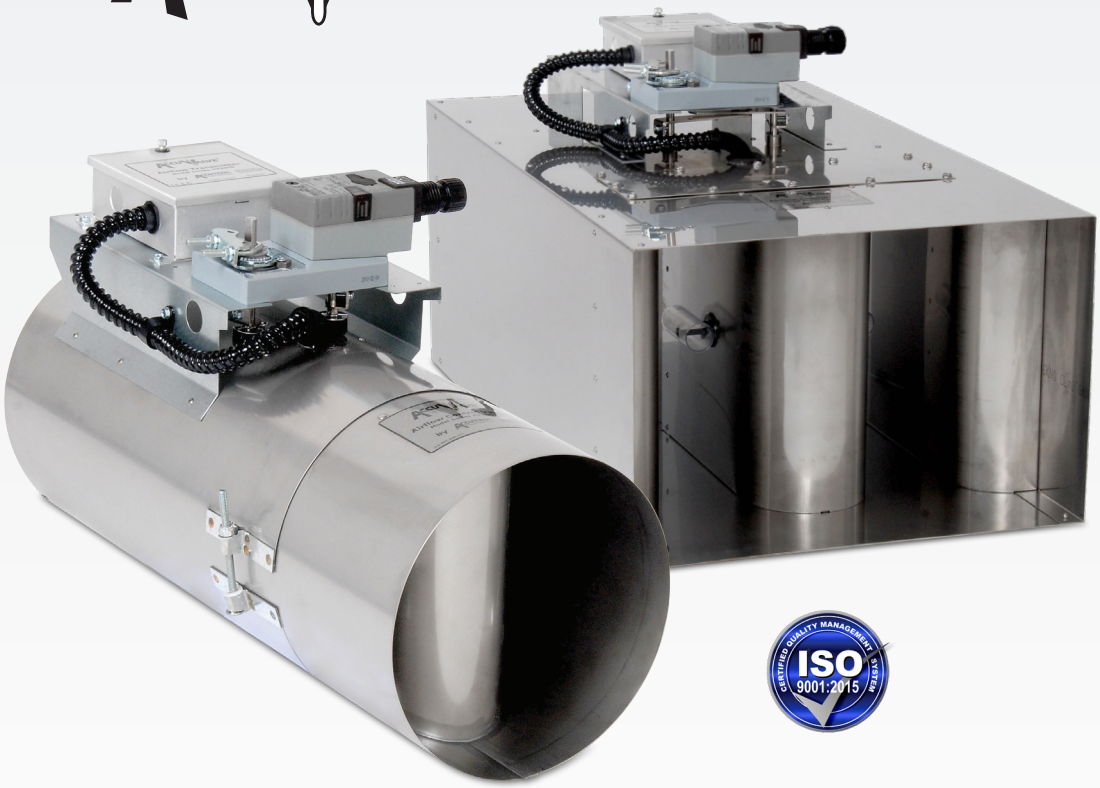
ACCUTROL® LLC

Low Pressure Drop

By Design

ACCUVALVE®



Accutrol, LLC • 21 Commerce Drive, Danbury, CT 06810 • 203-445-9991 • www.accutrolllc.com

AccuValve® Overview

The ISO 9001:2015 certified AccuValve is an electronically operated airflow control valve for critical environments such as laboratories, life science and healthcare. The valve was created for sustainable "green" design, low pressure drop for energy reduction and safety through true airflow measurement.

The AccuValve was introduced as the first critical environments airflow control valve designed for use with electronic actuation. The valve was also designed to meet the needs of the world energy situation by operating with the lowest pressure drop of any critical environments airflow control valve on the market. This low pressure drop offers the owner years of energy savings making their building less costly to operate. For more information on using the low pressure drop AccuValve along with Demand Based Static Pressure Reset Control scheme to maximize savings please refer to the Accutrol paper – "Demand Based Static Pressure Reset Control."

Low Pressure Drop…

When the design criteria for the AccuValve were being evaluated, minimizing the pressure drop of the valve was the top priority. The largest selling critical environment airflow control valves on the market were venturi valves, which require very high static pressure to operate reliably. The AccuValve provides a more efficient alternative to the energy conscious owner.

…By Design

The inspiration for the design of the AccuValve originated from analysis of the design of a silencer (Figure 1). A rectangular silencer reduces the area in that duct section by roughly 50% however the pressure drop of a silencer is considerably less that what might be expected. This is because of the airfoil shape of the silencer battens. An airfoil shape creates less drag for a given surface area (Figure 2) thereby creating a minimal pressure drop. This is especially true with a properly designed static pressure regain section as is provided on the AccuValve.

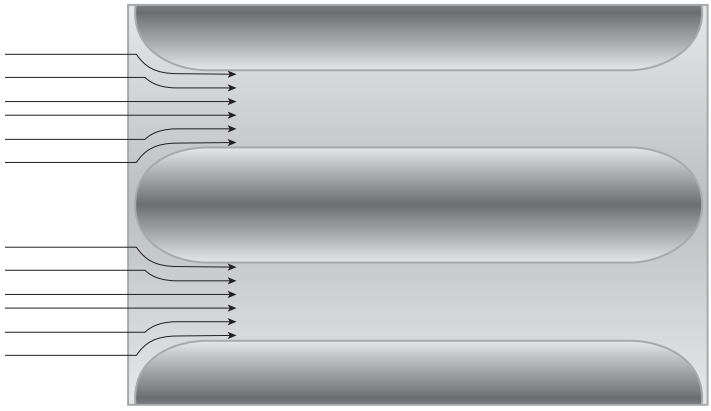


Figure 1

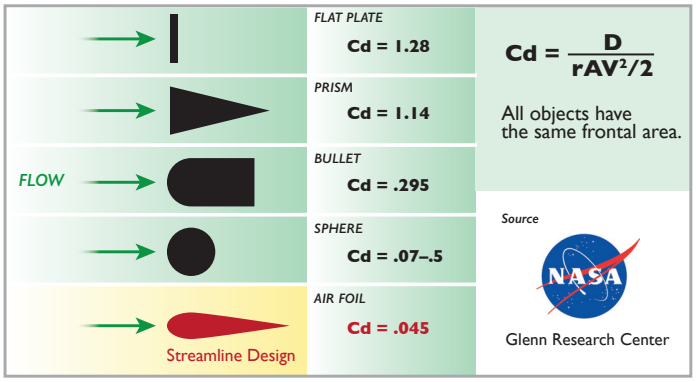


Figure 2

AccuValve® Design

Much like a silencer, the AccuValve divides the airflow into two airstreams using an airfoil shaped compression section (Figure 3). 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 the straight runs into the valve.

By adding a static pressure regain section after the control blades this further reduces the pressure drop of the valve making it the lowest pressure drop airflow valve on the market.

Cost & Environmental Benefits of Low Pressure Drop Design

Reducing the overall pressure drop in a ventilation system allows the system to be run at a lower static pressure. This requires less fan horsepower resulting in a significant reduction in energy cost. This energy savings also reduces the building's environmental impact and carbon footprint. Reducing the operating static pressure has the added benefit of lowering noise levels in the duct, making the building environment more pleasant to work in.

A laboratory building running at an average airflow of 50,000 CFM can be expected to see a reduction of .75"wc static pressure in the supply system by using low pressure drop AccuValves in place of venturi valves. This represents a reduction of 9.53 required fan HP. At a rate of 0.12/kWh, this results in an annual energy cost savings of $10,018 and an environmental impact reduction of nearly 35.9 tons of CO2. Over the 20 year life of a system, this becomes a savings of more than $200,000. Similar savings could be expected for the exhaust system, resulting in a total savings of over $400,000 and over 1400 tons of CO2.

AccuValve Minimum Operating Pressure

The minimum operating pressure for each size AccuValve has been tested in accordance with ANSI/ASHRAE 130 and the resulting performance is included on the following graphs.

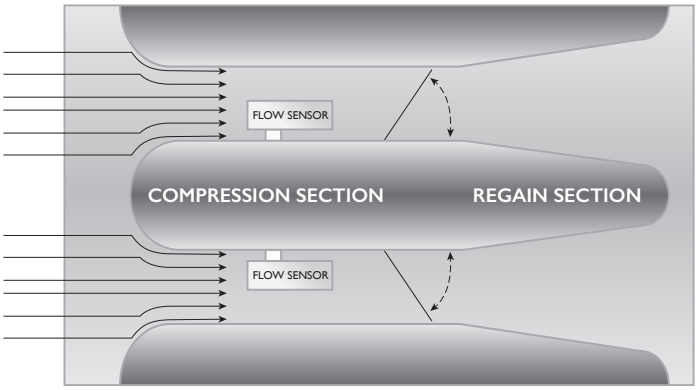
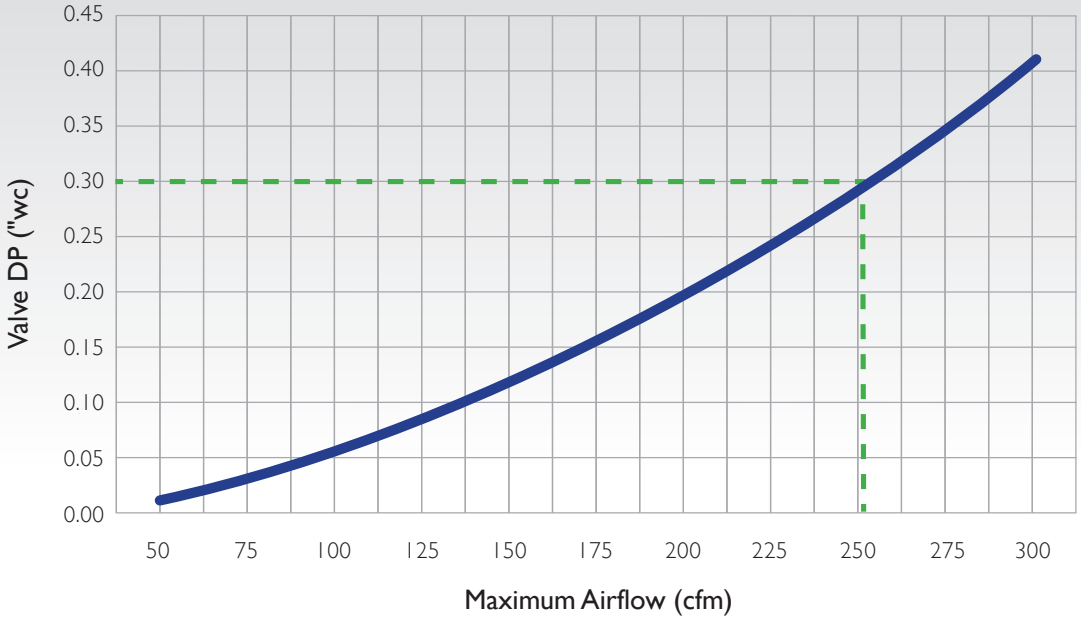


Figure 3

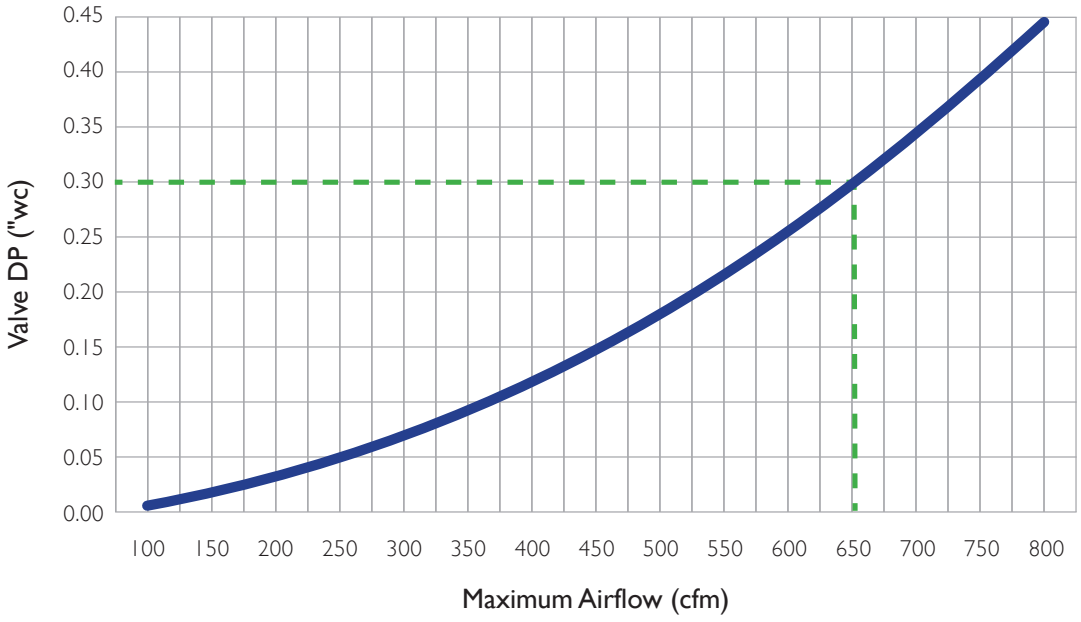
6" Round AccuValve Pressure Drop

Airflow Vol. (cfm)	Valve DP ("wc)
50	0.010
75	0.030
100	0.050
125	0.080
150	0.110
175	0.150
200	0.190
225	0.240
250	0.290
275	0.350
300	0.410



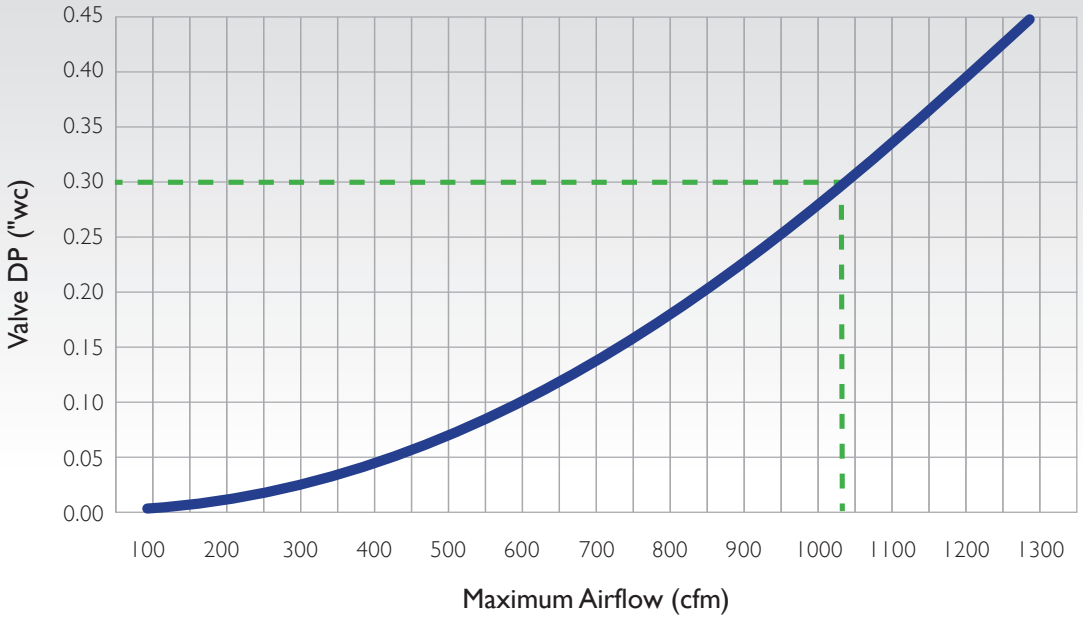
8" Round AccuValve Pressure Drop

Airflow Vol. (cfm)	Valve DP ("wc)
100	0.010
150	0.020
200	0.035
250	0.050
300	0.069
350	0.094
400	0.117
450	0.145
500	0.179
550	0.215
600	0.258
650	0.300
700	0.349
750	0.393
800	0.451



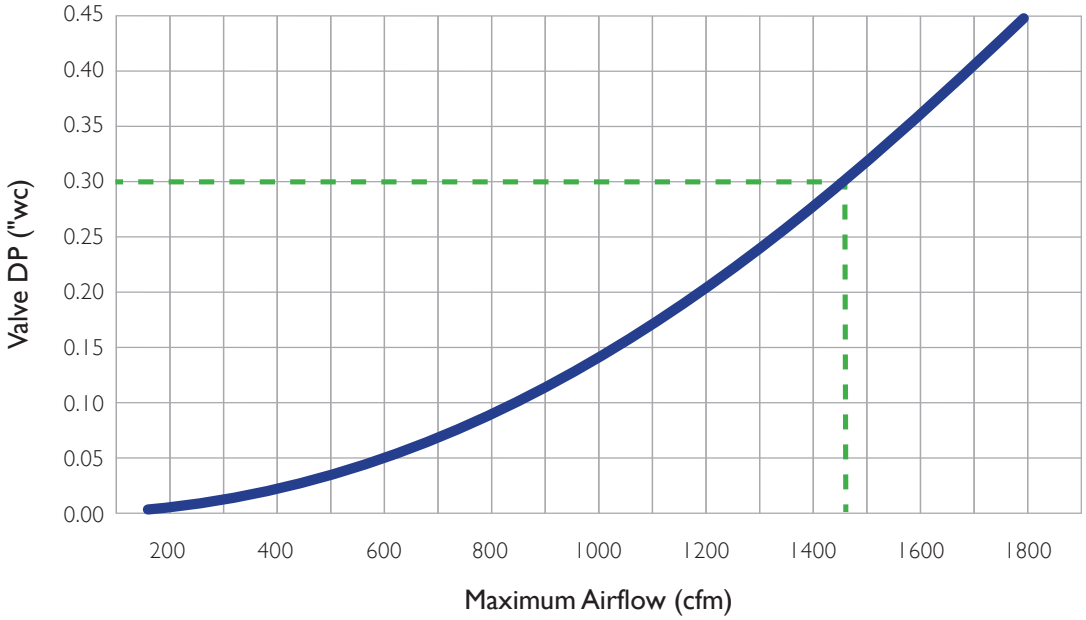
10" Round AccuValve Pressure Drop

Airflow Vol. (cfm)	Valve DP ("wc)
100	0.00
200	0.01
300	0.02
400	0.04
500	0.07
600	0.10
700	0.13
800	0.17
900	0.22
1000	0.28
1100	0.34
1200	0.39
1300	0.45



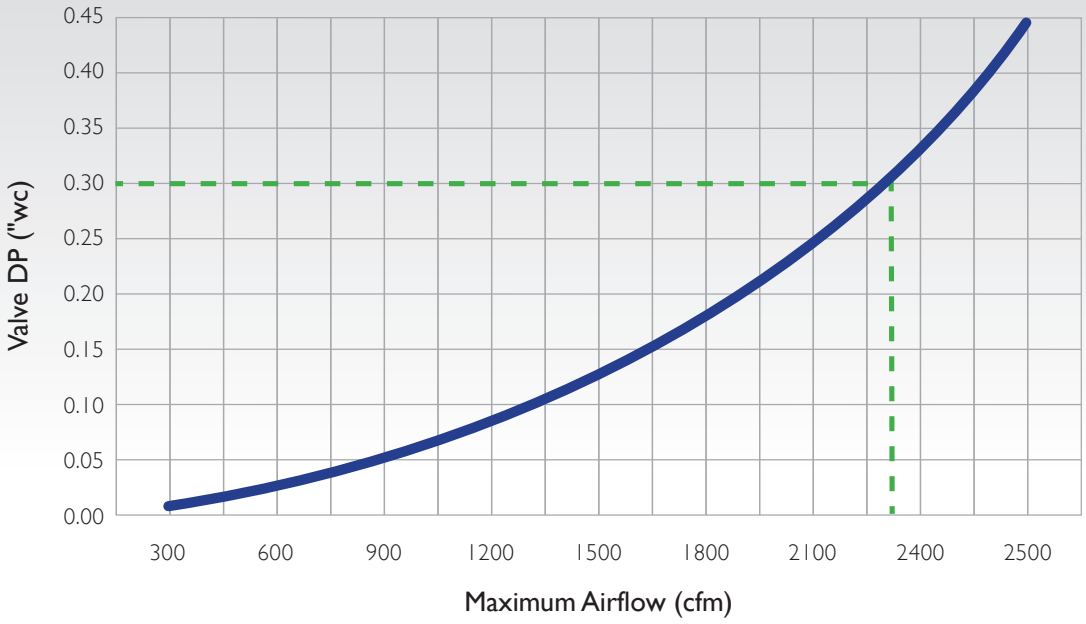
12" Round AccuValve Pressure Drop

Airflow Vol. (cfm)	Valve DP ("wc)
200	0.01
400	0.02
600	0.05
800	0.09
1000	0.14
1200	0.20
1400	0.27
1600	0.36
1800	0.45



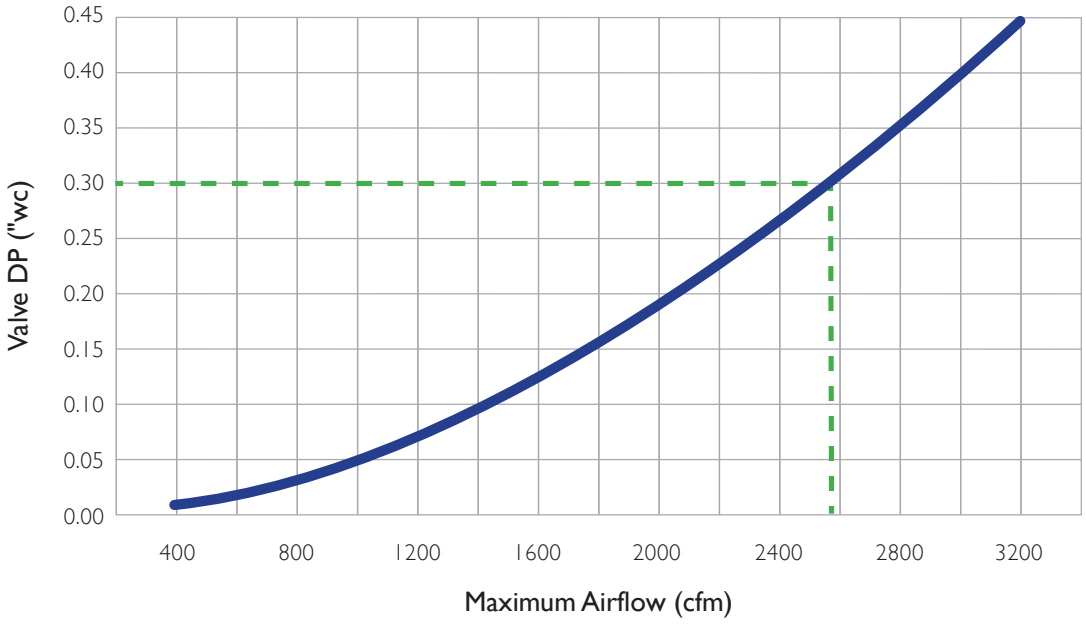
14" Round AccuValve Pressure Drop

Airflow Vol. (cfm)	Valve DP ("wc)
300	0.006
600	0.022
900	0.046
1200	0.080
1500	0.128
1800	0.178
2100	0.240
2400	0.327
2500	0.440



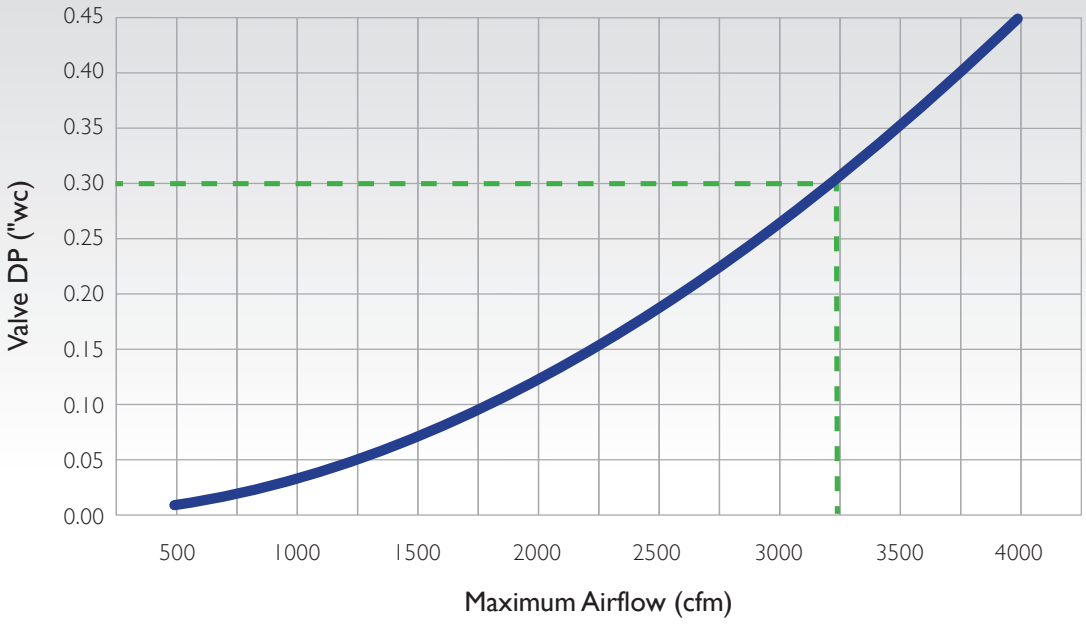
12"x18" Rectangular AccuValve Pressure Drop

Airflow Vol. (cfm)	Valve DP ("wc)
400	0.007
800	0.030
1200	0.066
1600	0.121
2000	0.188
2400	0.266
2800	0.348
3200	0.442



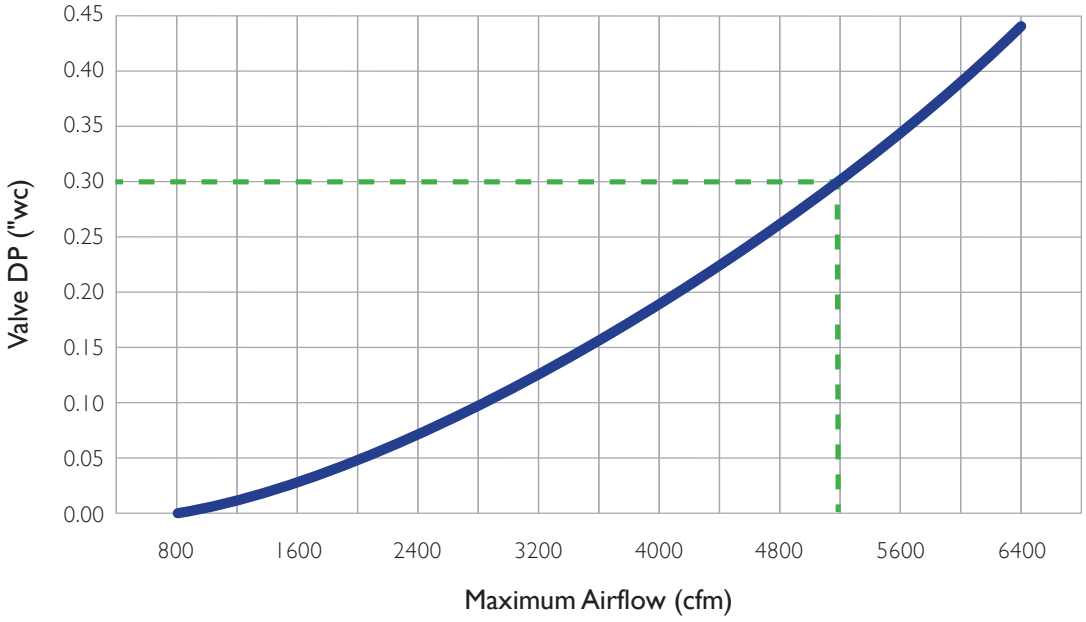
12"x24" Rectangular AccuValve Pressure Drop

Airflow Vol. (cfm)	Valve DP ("wc)
500	0.006
1000	0.022
1500	0.046
2000	0.080
2500	0.128
3000	0.178
3500	0.240
4000	0.327



12"x36" Rectangular AccuValve Pressure Drop

Airflow Vol. (cfm)	Valve DP ("wc)
800	0.000
1600	0.030
2400	0.070
3200	0.120
4000	0.190
4800	0.260
5600	0.350
6400	0.440



12"x48" Rectangular AccuValve Pressure Drop

Airflow Vol. (cfm)	Valve DP ("wc)
1000	0.010
2000	0.030
3000	0.070
4000	0.120
5000	0.180
6000	0.260
7000	0.350
8000	0.450