



## Pneumatic System Performance Part I

*Spend A Little More On Conductors, Save A Lot \$\$ On Valves*

Selecting properly sized components for pneumatic systems is challenging at the very least. At AHS we feel the best system is the most efficient and least costly. Over the next few issues of our *Pneusletter*, we will discuss various sizing techniques to provide you with the tools to efficiently design pneumatic systems. In this issue we will look at the relationship between valves, cylinders, and conductors.

Pneumatic system performance is predicted by a number of variables. The most overlooked variable is the size of the conductor as it relates to the size of other components in the system.

Pneumatic and electronic circuits are similar in that the component with the greatest resistance will determine the flow capacity of the entire system. In many cases the component with the greatest resistance (lowest Cv) is the conductor.

In the following examples the net effect of the conductor will become very evident.

In example 2 the tubing was increased from 1/4" to 3/8" and the directional valve size was REDUCED! The net result was an increase in system Cv from .321 to .442 - a 28% increase! What does this mean for you? Lower costs through downsizing valves, or reduced costs through lower air consumption to existing equipment.

Contact your nearest AHS office if you would like us to review your pneumatic system's efficiency.

\*Technical help and formulas provided by George Lutz  
Regional Manager, Norgren IMI

### Example # 1

Directional valve .....	Cv. 1.2
Conductor 1/4" x 4 feet long .....	Cv. .39
Fittings 1/4" tube x 1/4"npt Elbow .....	Cv. .9
Cylinder port 1/4"npt .....	Cv. .9

**Total Cv = .321**

### Example # 2

Directional valve .....	Cv. .7
Conductor 3/8" x 4 feet long .....	Cv. 1.18
Fittings 1/4" tube x 1/4"npt Elbow .....	Cv. .9
Cylinder port 1/4"npt .....	Cv. .9

**Total Cv = .442**

Formulas for calculating system Cv are available on our website at [wfdonline.com](http://wfdonline.com). Cv values for tubing, fittings, and cylinders can be provided upon request.

