



# cable pressure AirMAIL

## System Studies Incorporated

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### AirTalk Website Modification

The System Studies website was modified recently to make it easier for you to find the information you need more quickly. A Quick Search icon is now located at the top of each page below the company email and phone number information.



Clicking this link generates a search page where you can perform a general or selective word search. You might try clicking the "all search words" button and selecting an option from the Category drop-down menu. For example, if you were to select Data Sheets, type "digital pressure gauge" and press Submit, typically a link to the specific data sheet you need will be positioned at the top of the search results list. **Give it try!**

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This first **AirMAIL** bulletin of 2014 introduces our new 1/2" air pipe connector fittings which were designed as an alternative to the now-discontinued AMP pipe fittings. When properly installed, these new fittings provide secure, leak-free connections, and their nickel-plated brass construction make them ideally suitable for harsh manhole environments.

This bulletin also includes the final segment of a 3-part article on Why Measuring Air Flow is such an important part of cable pressurization system maintenance. If you missed Parts 1 & 2, check out Newsletter Articles on the System Studies website. The entire article appears under General Topics.

### Replacement for Discontinued AMP Half Inch Air Pipe Fittings

Early in 2013 the makers of AMP half inch air pipe couplers discontinued their entire line of mechanical tube fittings due to component obsolescence, tooling wear and end of life issues. Before System Studies' inventory of the most commonly used AMP fittings gradually became depleted, we introduced our own line of half inch air pipe couplers. These pipe connectors, described below, are an exceptionally durable replacement for the AMP fittings, and they provide a permanent leak-free connection when installed properly in your air delivery system.

#### 1/2" Air Pipe Shutoff Valve Fitting Part No. 9800-3051

This fitting makes it possible to shut off air flow into a pipe section during leak locating and maintenance procedures. The tank valves enable you to take pressure readings to confirm that the shutoff valve does not allow air to pass through the pipe.



Part No. 9800-3051

#### 1/2" Air Pipe to 1/4" NPT-M Fitting Part No. 9800-3054

This nickel-plated brass fitting has a 1/2" air pipe coupler connection on one end and a 1/4" NPT-M hex nipple on the other. It is the ideal fitting to use when installing a System Studies Flow Finder™ in a half inch CA 3131 air pipe. Note: two fittings are required for this application.



Part No. 9800-3054

#### 1/2" Air Pipe End Cap Coupler with Tank Valve Part No. 9800-3055

The 1/2" Air Pipe End Cap Coupler is intended for use at the end of an air pipe where the pipe does not terminate at a Flow Finder Manifold, Manifold Monitoring Assembly or standard air pipe manifold. The tank valve provides the means of taking end-of-pipe pressure readings to determine the minimum air pipe delivery pressure. The Teflon ferrule is used as a replacement for the slightly smaller-diameter, rigid black plastic ferrule.



Part No. 9800-3055

#### 1/2" Air Pipe Coupler with Tank Valve Part No. 9800-3057

The 1/2" air pipe coupler fitting is used to connect two lengths of CA 3131 air pipe. It is constructed of nickel-plated brass and equipped with air pipe coupler components on each end. The center hex section of the fitting includes female threads for inserting a ground lug connector and a standard tank valve.



Part No. 9800-3057

## Why Measuring Air Flow Is So Important, Part 3

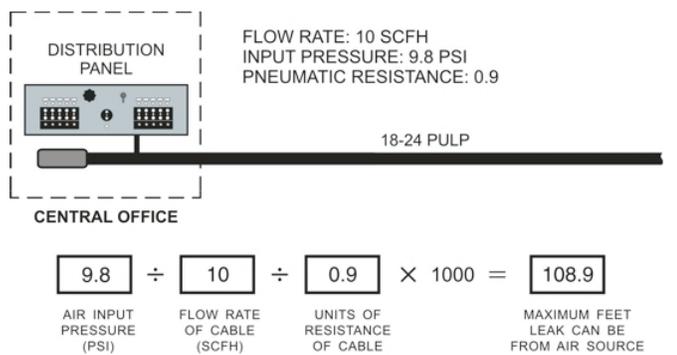
**Editor's Note:** In the previous AirMAIL issue we explained what happens to cable pressure protection when an air pipe feeds too many sheath miles of cable. We also examined the possible causes of low cable pressure. In this concluding article we'll explain how to limit a search area when leak locating and how to prioritize your leaks using air flow information.

### Using Flow Rates in Leak Locating

The use of flow rates in leak locating activities is a valuable tool for both the water department and cable maintenance personnel.

As discussed earlier, the water department measures water flow rates in Cubic Feet per Minute. A typical, or average residential usage rate would be between 0 and 2 Cubic Feet per Minute. If a water main were broken and the repair crew knew that water usage had increased 500 Cubic Feet per Minute, they'd be able to determine the general location of the leak. At least they would certainly know where not to look. Looking down a street that has a 2 inch water main would not only be ridiculous, it would be a total waste of time. It would be impossible for a leak in this area to flow 500 Cubic Feet per Minute because of the small diameter of the pipe. A leak that size would have to be in a main that is large enough to carry the high flow rate.

The same is true in a cable pressurization system. Knowing the amount of air a leak is consuming is critical in determining the location of the leak. The known flow rate, the input pressure, and the pneumatic resistance of the cable help define a general area where the leak could exist. The flow rate is measured in Standard Cubic Feet per Hour (SCFH), and the input pressure in Pounds per Square Inch (PSI). Using these measurements, a Zero Leak Projection, or ZLP can be calculated (see below). The ZLP will indicate the farthest point from where air is placed into the system that a leak could be located and still use the amount of air measured.



The ZLP doesn't really tell you where the leak is, but it does tell you where it isn't. And it's our belief at System Studies that most leak locating (nearly 80%) takes place in areas where the leak cannot possibly be.

### Prioritizing Leaks

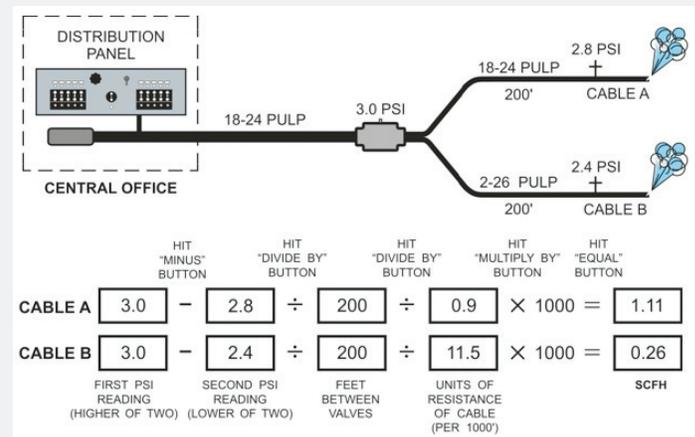
Another similarity between the water department and the cable maintenance department is the process of deciding what leak or leaks to work on. In both systems, there are a number of general

leaks. Some have a major impact on water and air pressure, and others are so small they are not economically worth fixing. The problem is deciding which ones should be fixed first and which ones can wait. It's a matter of establishing priorities.

In a water department, measuring pressure alone won't tell the whole story. Low pressure in an area may not necessarily be the result of a leak, but actually the improper sizing of the water main feeding the area. Fixing the leak in this main may help a few houses in the immediate area, but it will have virtually no impact on improving pressures in the rest of the system. The greatest improvement will be seen if the leak that is using the most water (highest flow rate) is fixed first.

This can also be applied to the air pressure system. When you look for a cable leak that has the largest impact on the system, it is best to use air consumption as a prioritizing tool.

The figure below shows a main cable that feeds two laterals, both of which have leaks. The pressure measurements taken are shown. While Cable B has the lowest cable pressure (2.4 PSI), it is Cable A that is doing the most damage. Why? As determined by the two air flow calculations (see boxes at the bottom of diagram), the leak in Cable A is consuming nearly five times more air than the leak in Cable B. Therefore, the leak in Cable A is damaging the system five times more than the smaller leak in Cable B. If the leak in Cable A were fixed first, Cable B would rise to the same pressure as the main cable splice (3.0 PSI). This pressure is determined by the leak in Cable A.



Calculating the air flow rates of cables provides the information needed to determine which leak to fix first. With the Air Flow Calculation you can direct your efforts toward fixing the most damaging leak—the one that is pulling delivery pressure down.

In a cable pressurization system, a primary objective is to improve cable pressures and maintain adequate protection. Hopefully, the analogies and formulas discussed in this series of articles have shown that the best approach to achieving this goal is through the analysis and use of air flow.

## Advantages of PressureWEB's Multiple "My Offices" Listings

In past bulletins we've listed the important new features that are added to PressureWEB as new releases of the product become available. Sometimes the benefits are obvious to the user and require little or no explanation. Other times it's helpful to provide some additional insight.

If you're an air pressure supervisor and haven't yet defined My Offices listings for your maintenance technicians, you're missing out on a powerful organizational tool—especially if you're responsible for air pressure maintenance in a metropolitan or large geographical area with multiple central offices. The PressureWEB Preferences editor makes it easy to set up and name multiple office groups that you can assign to individual technicians. You can specify a group of offices by technician name, for example, or you may prefer to use geographical representations: North Bay, South Central, West Region, etc.

The advantage for technicians is that they can select their office group from the My Offices drop-down box, and their browser will automatically display those specific offices each time they log into PressureWEB—unless they select another My Offices list before closing the browser. In this case, they simply need to reselect their list from the My Office List Selection drop-down box, and they'll be good to go.

Once it's set up, technicians won't have to weed through a large volume of PressureWEB data to extract the alarms, reports and other information they need to see. This feature breaks down a PressureWEB system's 250-office maximum into manageable units and helps to increase technician efficiency.

To define multiple My Offices lists, simply click the Setup link on PressureWEB's silver navigation bar located at the top of the screen. When the popup window appears, make your selections as indicated in the example below. Don't forget to click the Save button at the bottom of the popup window. It's that easy, and you can repeat the procedure for each office group you need to define.

**PressureWEB Preferences**  
[Help](#)

My Office List Selection:  
John J. [Add] [Delete] [ ]  
Current Setting: John J.

Select offices for: John J.  
[Select All] [Unselect All]

- 1. BEN LOMAND
- 2. BOULDER CREEK
- 3. FELTON
- 4. SCOTT'S VALLEY
- 5. SNCZ EAST
- 6. SNCZ MAIN
- 7. SAN CLEMENTE

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