



This document provides descriptions of the important cable pressurization tools, components, fittings and related equipment that are available for a well-prepared cable maintenance technician. Many of the items should be carried on

the technician's truck, while others should be available for use in an area, as needed. Detailed descriptions of several of the items can be found in the *Cable Pressurization Theory & Practice* book or on the [www.airtalk.com](http://www.airtalk.com) website.

## PRESSURIZATION TOOLS

### Spare Flow Finders



Flow Finders are equipped with an internal orifice which creates a slight pressure differential as air flows through the device. The pressure differential is converted to an accurate flow rate by the Flow Gauge (see below). Flow Finders are calibrated in Standard Cubic Feet per Hour (SCFH) in the following four flow ranges:

Part No.	Range	Color Code Reference
9800-3003	0–9.5 SCFH	Green
9800-3005	0–19 SCFH	Red
9800-3006	0–47.5 SCFH	Blue
9800-3008	0–95 SCFH	Purple

*Recommend several of the more commonly-used ranges for each truck.*

### Flow Gauge



P/N 9800-3100

The Flow Gauge, Part No. 9800-3100, makes it possible to manually read Flow Finders. It has a quick-connect sampler fitting that screws onto the Flow Finder's tank valves. The gauge face provides four color-coded scales which correspond to the individual Flow Finder ranges. A times-two button makes it possible to take accurate flow readings up to twice the indicated maximum range of the Flow Finder.

*Recommend one for each truck.*

### Digital Pressure Gauge or C Pressure Gauge



P/N 9800-3123

The truck should include either an analog C Pressure Gauge or a Digital Pressure Gauge, as shown here. Two versions of the digital gauge are available: Part No. 9800-3123 reads from 0–30 psi with over range protection to 60 psi; Part No. 9800-3135 reads from 0–100 psi with over range protection to 200 psi.

*Recommend one for each truck.*

### Direction of Flow Indicator



P/N 9800-3210

The Part No. 9800-3210 Direction of Flow Indicator is ideal for chasing flow in interlaced cables. As a replacement for the manufacturer -discontinued plastic block flow direction indicator, this new product offers excellent directional sensitivity and reading recognition when tracking the movement of air between cables. It is also used to check for leaks in pneumatic plugs.

*Recommend one for each truck.*

### Flow Direction Gauge



The Flow Direction Gauge, Part No. 9800-3105, is used exclusively in air pressure systems that have Flow Banks installed. A Flow Bank is a type of manifold with five ports and a flow exchange chamber which allows air to flow from one port to another. Each port contains a specially-designed low range Flow Finder. This gauge is used

for leak locating in a Flow Bank System. It indicates if air is flowing from the Flow Bank into a cable or from a cable into the bank.

*Recommend one for each maintenance crew where Flow Banks are used.*

### Transducer Test Meter



P/N 9800-3600

This test meter, Part No. 9800-3600, makes it possible to perform field diagnostics on 4–20 milliamperes (mA) transducers during installation and maintenance. It can be used to obtain transducer output information without having to log into the PressureMAP software and obtain realtime readings on the devices. The Transducer Test

Meter is also used with CopperWATCH cable theft monitoring applications to assist with the installation of the required Cable Section Locator (CSL) devices.

*Recommend one for each truck.*



## Humidity/Temperature Meter



P/N 9800-3140

The Humidity/Temperature Meter, Part No. 9800-3140, is the ideal instrument for determining the amount of relative humidity in a central office or underground cable environment. Designed for portability and ease of use, the meter provides simultaneous relative humidity and temperature data. This information is particularly important in areas with high sustained temperatures or where steam leaks in underground conduit are a common occurrence. The meter reads relative humidity in the range of 5–95% with a resolution to 0.1% relative humidity. Temperatures in the range of 14–122°F can be recorded with +/- 1°F accuracy.

*Recommend one for each truck.*

## Ultrasonic Leak Detector

An ultrasonic leak detector is used to read inaudible high frequency sound waves, such as those created by leaks in the pressurized cable network. This relatively light weight and portable field tool it is used by the technician on the ground to check for leaks on aerial cables and to locate leaks inside ducts when used with a duct probe.

The ultrasonic leak locator is an especially valuable tool when used in conjunction with Zero Leak Projections and Back Projections. After the area of search in a particular pneumatic section has been reduced by using either or both of the above methods, the ultrasonic leak locator will ultimately pinpoint the leak location.

*Recommend one for each per maintenance crew.*

## Volt Ohm Meter

Each field technician is required to have a volt/ohm meter to perform the necessary conductor testing during installation and maintenance activities.

*Recommend one for each truck.*

## Hydrogen or Helium Detector and Tank of Gas

These gas detection devices provide important leak locating options for technicians when cable leaks cannot be tracked to an accessible manhole, riser or aerial location.

*At least one of these detectors is recommended per maintenance crew.*

## Half Inch Air Pipe Cutter



P/N 9800-3508

This hand-held pipe cutter, Part No. 9800-3508, is essential when installing Flow Finders and other pressurization system components in CA3131 air pipe. Using this tool will ensure a clean, 90° crosscut and will minimize the possibility of having the pipe end go out of round. It is also ideal for making clean cuts on 3/8" plastic tubing.

*Recommend one for each truck.*

## Half Inch Air Pipe Reamer



P/N 9800-3275

This tool simplifies installation of air pipe components by making it possible to quickly configure the end of a cut section of air pipe into the necessary roundness required to insert a pipe fitting. The Part No. 9800-3275

Pipe Reamer includes a standard tank valve which makes it possible to take air pipe pressure readings when isolating sections of pipe during air pipe purification procedures. The valve can also be used to reroute air feed from a pressurized air pipe to an existing air source, such as a pipe panel, when replacing panel equipment in a central office.

*Recommend one for each truck.*

## MONITORING DEVICES

### Spare Pressure Transducers



P/N 9800-4000

Cable pressurization systems monitored by 289H LSS, 289H-M LSS or uM260 Micro Monitors and PressureMAP can use either resistive output transducers or the more accurate and stepless 4–20 mA devices. Shown here is the stand-alone version of the High Resolution Pressure Transducer (Part No. 9800-4000).

This device reads from 0–30 psi with reading resolution down to 0.1 psi. A resistive output device reads 0–9.5 or 5–14.5 psi in 0.5 psi increments. The greater resolution of the 4–20 mA device makes it ideal for monitoring subtle changes in pressure, such as fluctuations in the low output side of central office air dryers. It is equally precise when installed in the field to monitor an individual cable or at the end of an air pipe. Part numbers are regional specific. Both stand-alone and back-mount versions are available.

*Recommend one for each truck.*



## Spare Flow Transducers



P/N 9800-4001

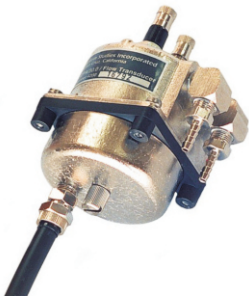
Depending upon monitoring requirements, either resistive or current loop output transducer are used. The High Resolution Flow Transducer, Part No. 9800-4001, is designed to be used with an individual Flow Finder, a Flow Finder Manifold or any of the Flow Finder-equipped central office panels. It reads the pressure differential created by the Flow Finder and converts the information into an electrical current output in the range of 4–20 mA. The electrical current

output is read remotely by the 289H LSS, 289H-M LSS or uM260 Micro monitor. Transducer flow readings can also be obtained manually using the Flow Gauge.

Several configurations of the High Resolution Flow Transducer are available. Fittings are regional specific.

*Recommend one for each truck.*

## Spare Dual (Pressure/Flow) Transducers



P/N 9800-4200

The High Resolution Dual Transducer, Part No. 9800-4200, is a 4–20 mA output device that is unique in that it contains both a pressure and a flow sensor. It can be installed anywhere on a pipe route where remote pressure and flow measures are required. Requires a 289H LSS, 289H-M LSS or uM260 Micro Monitor.

Several configurations of the High Resolution Dual Transducer are available. Fittings are regional specific.

*Recommend one for each truck.*

## FITTINGS & TUBING

- **Small Coil of 3/8" Tubing (Part No. 6522-0029) and Associated Fittings**  
Fittings are regional specific.
- **Small Coil of CA3131 1/2" Air Pipe and Associated Fittings**  
Fittings are regional specific.

## ADDITIONAL EQUIPMENT

- **Access to Cable Records**  
Includes Underground, Aerial & Buried Cable Records, Stickmap, etc.
- **Soap Bucket & Brush**
- **Hand-held Calculator & Pocket Pressurization Calculator Card**  
The card includes pneumatic resistance charts, and leak locating formulas (Zero Leak Projection, Back Projection and Air Flow Calculation).
- **Leak Locating Worksheets**



- **Cable Pressurization Theory & Practice Book**
- **Wire Wrap Tool**



Central office, dryer-fed cable pressurization systems provide ongoing protection for your valuable outside plant. But what happens if a fire, flood, earthquake, tornado, hurricane—or mechanical conditions, such as commercial power loss and backup generator failure—shut down the system and prevent access to the central office for repairs? Significant damage to a central office building could literally cripple a wire center for days or months.

Our emergency air dryer system is designed to remotely supply pressurized air to the cables in a wire center when access to the interior of the central office is impossible. The 0911 Emergency Air Dryer is used in conjunction with a telco-supplied compressor to deliver clean, dry, pressurized air as needed. In emergency-prepared wire centers, the portable air dryer and compressor can be set up directly outside the central office and pneumatically connected to an Emergency Air

Delivery Access (EADA) Cabinet mounted on the exterior wall. In more dire situations when crews cannot reach the EADA Cabinet, well-equipped wire centers can use the Emergency Air Dryer along with a pre-installed one inch air pipe and Emergency Air Feeder Assembly (Part No. 9800-0901). The air feeder assembly, located in a manhole several thousand feet away from the office, provides the means of connecting the Emergency Air Dryer and feeding central office panels via the one inch pipe.

With the necessary equipment in place in each office, and the availability of a 0911 Air Dryer for a designated area or city, response to an emergency situation that disables a central office can be accomplished within a relatively short period of time. The portable air delivery equipment can operate in this capacity to protect the pressurized cable system until the necessary repairs are made.

## 0911 Emergency Air Dryer



P/N 9800-0911

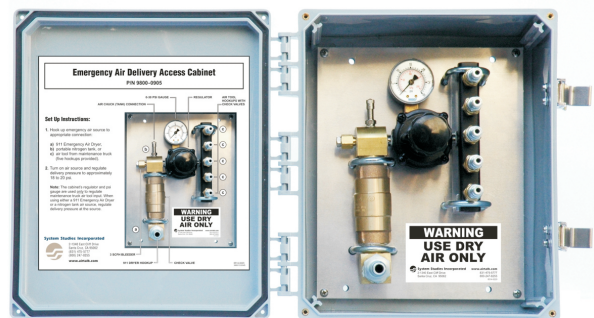
The Emergency Air Dryer, Part No. 9800-0911, is a portable air dryer assembly installed on a commercial-grade hand truck. It is used to extract moisture from a telco-supplied compressor, such as an Ingersoll-Rand, that is set up during an emergency outside the central office at the EADA Cabinet or at the manhole where an Emergency Air Feeder Assembly is installed.

The air dryer uses membrane technology to extract moisture from the compressor feed. The only maintenance required is the changing of pre-filters after a period of extended use. The Emergency Air Dryer weighs less than 70 pounds and generally can be set up by one person. Output flow capacity is 30,000 Standard Cubic Feet per Day (SCFD) at -40°F.

*Recommend having one stored at a centralized location within one hour of each CO.*

## Emergency Air Delivery Access Cabinet

The Emergency Air Delivery Access Cabinet, Part No. 9800-0905, is designed to be mounted to an exterior central office wall. Once installed, it provides a single access point for connecting a System Studies 0911 Emergency Air Dryer or multiple air supplies from up to five trucks/Hesco Trailers. If office dryers fail and a loss of power prevents you from using the card reader at the CO entrance to enter the building, the EADA Cabinet can be used to supply temporary air feed to the pressure system until power is restored and the office air dryers are placed back in operation. Air delivery to the central office panels is achieved by using a flexible one-inch Nylobraid tube, which is routed from the cabinet through a hole in the CO wall and on to the office balance manifold.



P/N 9800-0905

The EADA Cabinet contains an Emergency Air Feeder Assembly which includes fittings to accommodate incoming air feed from: 1) a 0911 Emergency Air Dryer, 2) a portable nitrogen tank, or 3) a maintenance truck air tool (five fittings are supplied, each with a check valve). Another check valve on the connection for the 0911 Emergency Air Dryer prevents air from escaping through this connection. The air feed assembly also includes a 0–30 psi gauge and pressure regulator to adjust delivery pressure from the truck air tool hookups.

*Recommend installing one at each central office.*

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