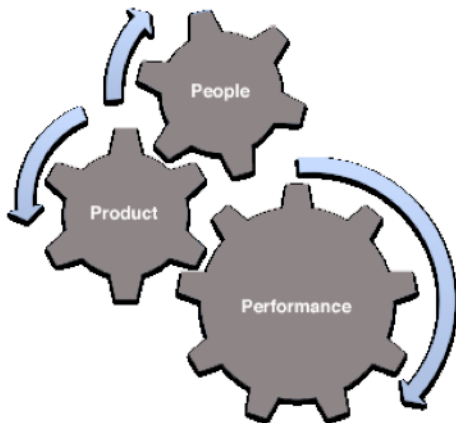# SERVICE MANUAL

Air Tools
Wiring and Operation Guide
Including:

81950B Air Tools Touch Screen
81951 Air Tools Concentrator
81952 Air Tools Alarm/Relay

SAMUEL JACKSON

This page intentionally blank

Welcome to the world of

Table of Contents

We appreciate your business and hope you enjoy your

Samuel Jackson Air Tools System

This manual contains information on the installation, wiring and use of your Air Tools system along with sections on optional sensors available from Samuel Jackson. Included are sections on:

- Ordering Air Tools
- Installing Port and Transducers
- Navigating Through the Screens
- Basic Electrical Installation of System
- Electrical Installation of Optional Sensors

In the future when you require service, technical support, or parts please contact us by phone, fax, or email. Our engineers and service people are available to assist you in obtaining the best performance from your Samuel Jackson, Inc. products.

Again, thanks for choosing a Samuel Jackson Air Tools System

SAMUEL JACKSON, INCORPORATED
MAIL: P.O. BOX 16587   LUBBOCK, TEXAS 79490
COURIER: 3900 UPLAND AVENUE   LUBBOCK, TEXAS 79407
TELEPHONE 806-795-5218 OR 800-862-9966
TELEFAX 806-795-8240
E-Mail: engineering@samjackson.com
Internet: www.samjackson.com

What is Air Tools?

Air Tools allows you to see cotton and air flowing through the pipes like never before. For years, ginners have used amp meters to measure load, proximity switches to measure RPM, and thermocouples to sense temperature, but there has never been an online device that puts airflow at the ginner's fingertips in an easy to understand format. Most people recognize that air is important in a gin, but they probably don't realize how important— especially not how it affects their bottom line.

Chokes are one of the biggest causes of costly downtime in gins. Most air-related chokes could be avoided if the ginner could only see them coming.

Air Tools uses static pressure ports placed at different points throughout the operation to predict and prevent chokes due to leakage, stopped up cyclones, hairing over battery condenser screens, etc. Alarms can be set up to warn if air pressure gets too high or too low. There is also a graphing feature that allows you to look back and see trends over time.

An Air Tools System is usually made of three components. The part you will see most often is referred to as the Touch Screen. The next piece down the line is the Concentrator. Last but not least, you've got the individual Port Assemblies. There may or may not be an Alarm/Relay Interface, depending on what options the system was ordered with.

The Air Tools Interface consists of a 12-inch color touch screen along with a box and an articulating arm for ease of mounting. An Interface can communicate with 3 separate Concentrators in order to display up to 36 points of data.

The Air Tools Concentrator is simply a standard fiberglass box containing the PLC and connection points. Each Concentrator is capable of connecting up to 12 Port Assemblies.

The Air Tools Port Assembly comprises three powder-coated cast iron components that fit together sandwiching a pipe wall in the process. It is possible to install all of these components from the outside of the pipe. These components are exceptionally heavy duty to withstand hostile and abrasive environments.

You can see more about all of these components in the Ordering Air Tools section of this manual.

Air Tools Example – Pull-Through System
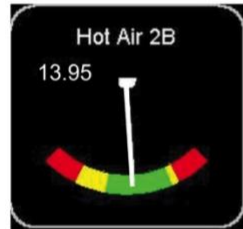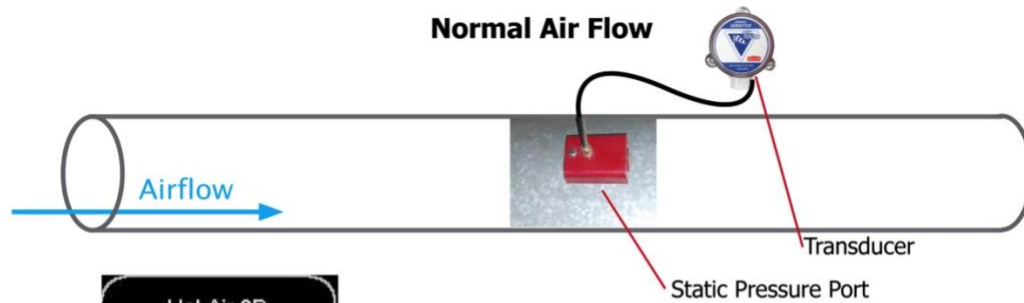
Normal Air Flow

Airflow

Transducer

Static Pressure Port

Hot Air 2B
13.95

During normal operation, the air pressure at this point will have a natural operating range. The needle will be in the green zone.

Choke Before Port

Airflow

Hot Air 2B
22.68

If there is a choke before the port, the air pressure at this point will have a high operating range. The needle will be in the red zone on the right.

Choke After Port

Airflow

Hot Air 2B
5.43
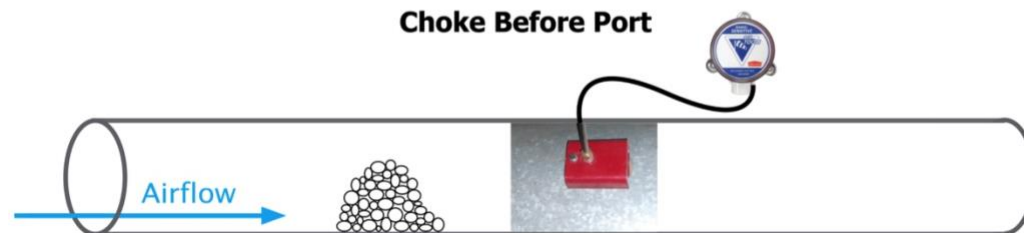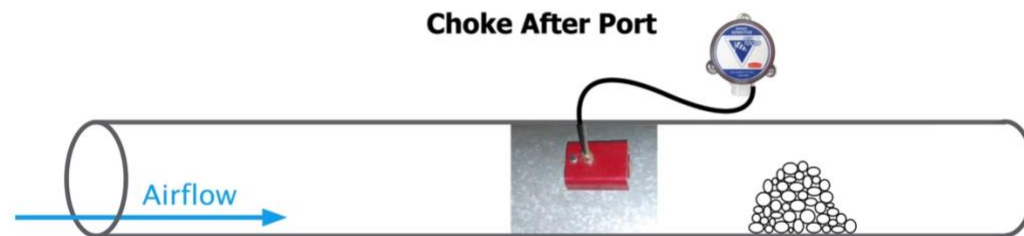
If there is a choke after the port, the air pressure at this point will have a low operating range. The needle will be in the red zone on the left.

Note: All of the above describe pull-through applications with negative static pressure.

Air Tools Example – Push-Pull System

Normal Air Flow
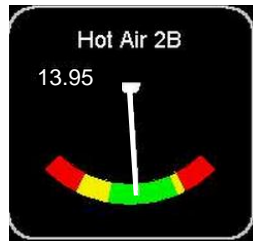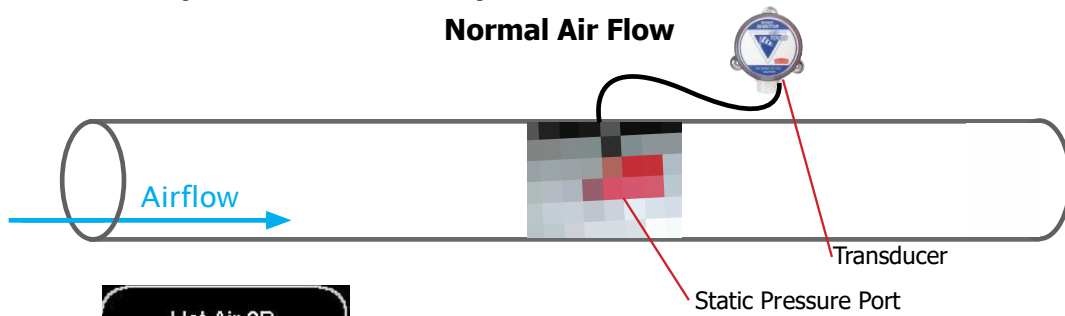
Airflow →

Transducer

Static Pressure Port

Hot Air 2B
13.95

During normal operation, the air pressure at this point will have a natural operating range. The needle will be in the green zone.

Choke Before Port

Airflow →

Hot Air 2B
5.43
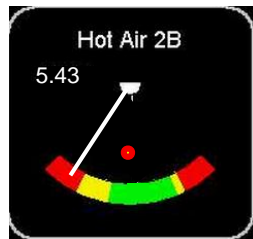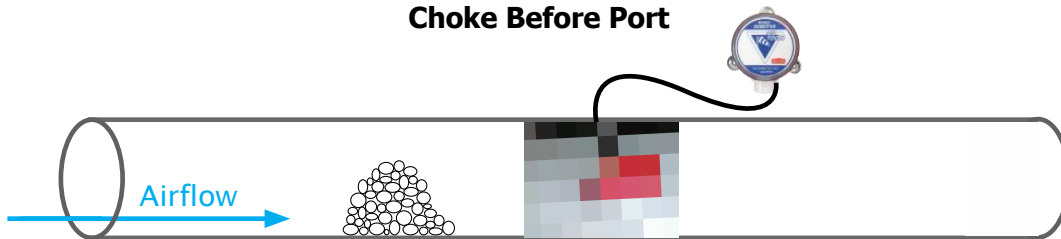
If there is a choke before the port, the air pressure at this point will have a low operating range. The needle will be in the red zone on the left.

Choke After Port
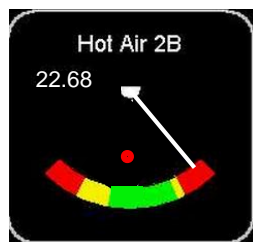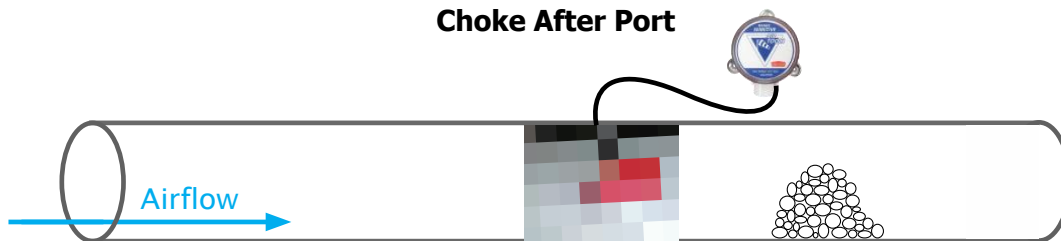
Airflow →

Hot Air 2B
22.68

If there is a choke after the port, the air pressure at this point will have a high operating range. The needle will be in the red zone on the right.

Note: All of the above describe push-pull applications with positive static pressure.

Ordering Air Tools

Air Tools is sold in sets of 12, 24, and 36 points. You can choose the combination that's right for you. If you start with a 12 Point Setup, you can easily add more points later on.

12 Point Setup

Base Pack
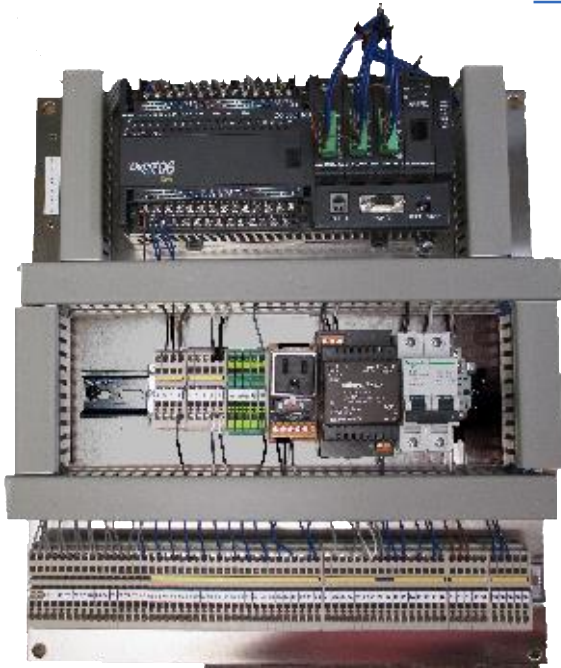
Air Tools Concentrator
81950

12 inch Touch Screen
81950

12 Tranducers

12 Port Assembly
22420B
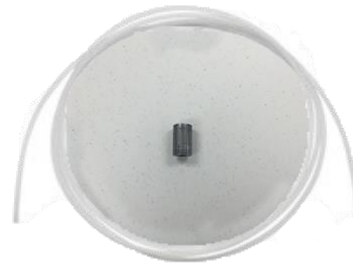
Special Cases Kit
24925

Stack Light
24630A

81000

24 Point Setup

Base Pack
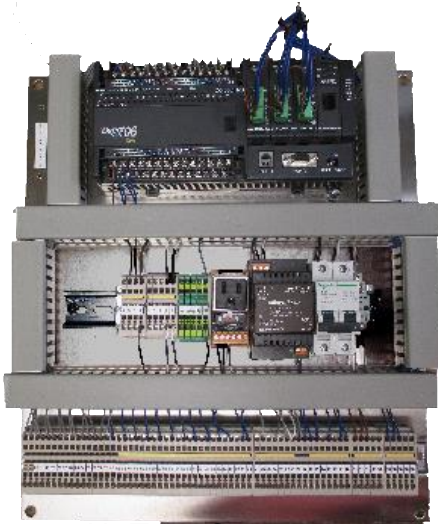
Air Tools Concentrator
81950

12 inch Touch Screen
81950

12 Tranducers

12 Port Assembly
22420B
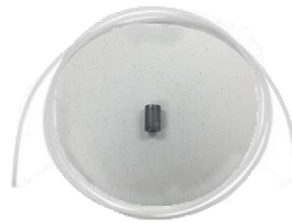
Special Cases Kit
24925

Stack Light
24630A

81000

Expander Pack

Special Cases Kit
24925

12 Tranducers

12 Port Assembly
22420B
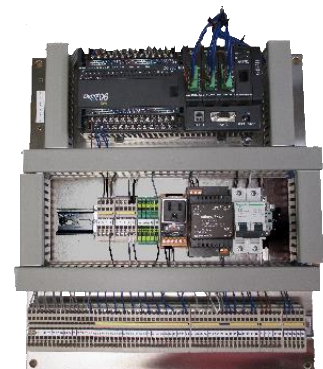
Air Tools Concentrator
81950

81001

81950B AIR TOOLS

36 Point Setup

Base Pack
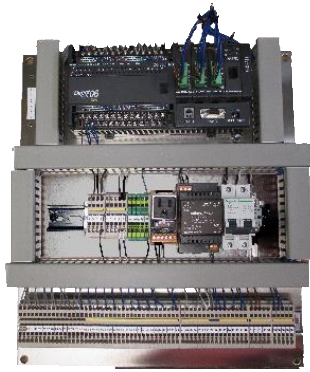
Air Tools Concentrator
81950

12 inch Touch Screen
81950

12 Tranducers

12 Port Assembly
22420B
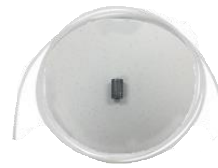
Special Cases Kit
24925

Stack Light
24630A 81000

Expander Pack

Special Cases Kit
24925

12 Tranducers

12 Port Assembly
22420B
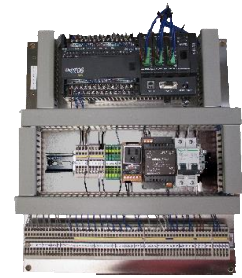
Air Tools Concentrator
81950 81001

Expander Pack

Special Cases Kit
24925

12 Tranducers

12 Port Assembly
22420B
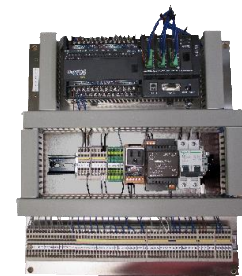
Air Tools Concentrator
81950 81001

11

Picking a Place for the Port

After you decide where you want to monitor the air, you have to find a specific spot to place the port. Use the checklist below to help you pick the optimal location.

☐ **Out of Cotton Flow:** The port should be out of the flow of cotton or trash. Although the nosepiece is made of abrasion resistant steel, it could still wear down if used in high wear locations. In unavoidable high-wear areas, the port should be installed on or near an access door to facilitate easier inspection and replacement.

☐ **Accessible for Cleaning:** Keep all ports easily accessible for cleaning. Lint will cling to anything, including a port, so it may require periodic cleaning.

☐ **Inside Curves:** A good location would be right after an elbow on the inside of the curve, as cotton or trash is conveyed on the outside. Another good spot is immediately after a fan opposite from the scroll.

☐ **Avoid Vertical Pipes:** Avoid having the port in a vertical section of pipe where the material is flowing upward. When the airflow stops, material could fall back down the pipe and plug the sensing hole in the port.

☐ **Avoid Small Pipes:** Avoid pipes smaller than 8" in diameter.

☐ **Avoid Excessive Heat:** Do not mount a port in a place exposed to high temperatures or on a pipe immediately after a burner before the before-mix thermocouple. The port will become as hot as the pipe it is mounted to and that could result in a melted connection between the pipe and the transducer. The plastic hose will melt above 240°**.** In unavoidable high-heat areas, be sure to substitute high temp silicone tubing included in the special cases kit.

☐ **Note on Ports Directly After Gin Stand:** Sometimes right after the gin stand the normal operating pressure can switch from positive to negative. In these cases the port may need to be moved closer to the lint cleaner, ensuring the normal range of operation is negative. Every gin is different and you may not find this to be a problem. It is not suggested to install the port on the bottom of the rectangular pipe as it may clog the port.

*Note that installation instructions are provided later in the manual. See the Installing Ports section of the manual.

Picking a Place for the Transducer

Use the checklist below to help you pick the optimal locations for transducers.

☐ **Avoid Vibrations:** Vibrations will drastically reduce the life of a transducer, so you should avoid placing one on a fan or pipe. It should be installed onto a firm mount.

☐ **Accessible for Conduit:** Conduit will need to be run from the transducer to the concentrator, so take care to ensure this is possible.

☐ **Vertical Surface:** Transducers need to be installed on a vertical surface with the connections directed down to prevent moisture from entering the air or electrical ports. Accuracy can be affected if not installed correctly.

☐ **Avoid Electrical Interference:** Wiring should be separated from high voltage or switched wires to avoid interference. Running several transducer signal wires in the same conduit will not cause any problems.

☐ **Minimize Distance:** Place the transducer as close to the port as possible to improve response time.

81950B AIR TOOLS

Special Cases Kit for High Heat Port Locations and Seed Lines

All new Air Tools orders also includes the Air Tools Special Cases Kit (24925) with everything needed to install ports in high temperature areas and high-pressure transducers in seed lines. The kit includes a foot of PTFE or Teflon tubing that can resist high heat and a coupler (65711) that can be welded onto a seed line that allows direct attachment of the high-pressure transducer.

☐ **High Heat Instructions:** Install the Air Tools port as described in the next section, but substitute the PTFE tubing in place of the black 3/8" black plastic tubing included in each port kit. The PTFE tubing will withstand higher temperatures and prevent heat transfer to the poly-push union.

☐ **Seed Line Transducer Installation Instructions:** It is not recommended that a port be installed in a seed plug line, as it will create too large of an obstruction in the small pipe conveying seed. Instead drill a 13/16" hole into the seed line where you want to measure the air, preferably between the fan and seed plug to avoid clogging the port with debris. Next, weld the coupler included in the kit on. The high-pressure transducer can now be threaded onto the coupler. If vibration is a concern, the PTFE tubing provided or excess black tubing can be used to create a damper that will protect the transducer.

Installing Ports

1. Shut down fans.

2. Determine installation point using the guidelines in the previous section.

3. Place the port template decal (22981) over the selected spot for the port. Make sure the flow of air in the pipe and the direction on the sticker match.

Note: Clear pipe is pictured for added clarity.

4. Drill the 3/8" hole on the template. Cut out the rectangular area using tin snips. For pipe with well casing or a thickness greater than 18-gauge, use a cutting torch.

5. Insert a piece of wire into the small hole in the nosepiece and use that wire to hold the nosepiece in place against the inside of the pipe. Make sure the ramp is pointed into the airflow.

Note: Clear pipe is pictured for added clarity.

6. Place the outside cover plate on the pipe while still holding the inside piece with the wire. The long side of the plate should lie on the same side of the hole as the ramp. Make sure the curve in the cover plate matches the curve of the pipe.

Note: Clear pipe is pictured for added clarity.
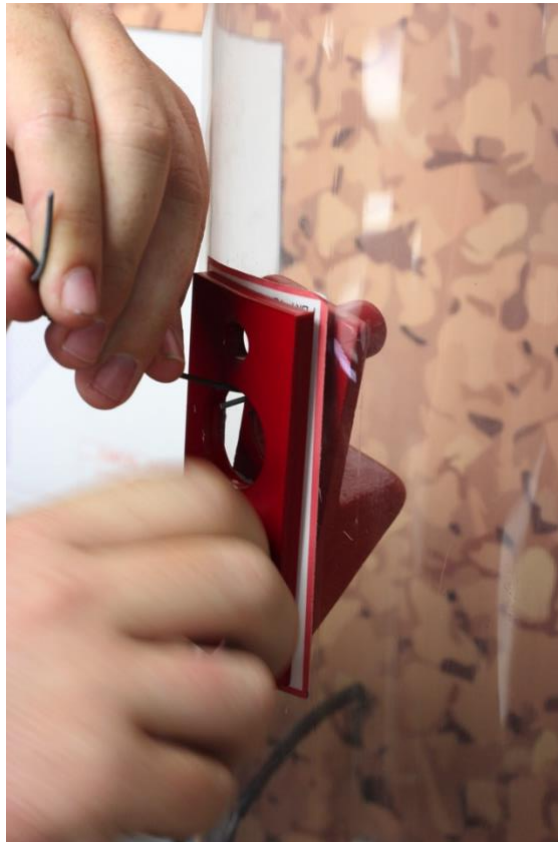
7. Add a locking washer and flat washer to the short bolt and insert it into the long side of the outer piece.

8. Once the short bolt is finger-tight, remove the wire from the inside piece.

9. Thread the long bolt in finger-tight and then use a wrench to tighten the short bolt.

Note: Clear pipe is pictured for added clarity.

10. Once the short bolt is tight, remove the longer bolt.

11. Add a lock washer and flat washer to the long bolt and then slide it through the hole into the port and clamp fixture. Thread a 5/16" nut onto the bolt and add another locking washer and flat washer.

12. Insert this assembly into the outside cover plate and tighten the bolt. If the bolt cannot tighten completely, add more flat washers on the outside so the bolt can fasten tightly to the outer port.

13. Tighten the nut that is between the outside cover plate and the port and clamp fixture.

14. Take the 3/8" black plastic tubing, insert it into the fitting, and make sure that it's secure.

15. Insert the other end of the plastic tubing into the transducer after it has been properly installed, discussed in a later section.

Picking Transducers

Transducers come in a variety of ranges, which are color coded as follows:

Sensitive Range - Blue
0-5 inches WC
23537

Medium Range - Yellow
0-10 inches WC
23539

High Pressure
0-10 psi
24822

Wide Range - Red
0-25 inches WC
23541

Special Range - Black
Variable Range

See the following page for a helpful worksheet on selecting your transducers.

Air Tools Transducer Selection Worksheet

Blue: Sensitive Range (0-5 Inches WC, adjustable)
<mark>Yellow: Medium Range (0-10 Inches WC)</mark>
Red: Wide Range (0-25 Inches WC)
High Pressure Range (0-10 PSI)

Air Tools Chart for a Typical 12-Point System

Point	Location	Pressure Range	Color Code
1	Gin Stand 1	0-5" WC	Blue
2	Gin Stand 2	0-5" WC	Blue
3	Gin Stand 3	0-5" WC	Blue
4	Lint Flue Riser	0-10" WC	Yellow
5	1A Inclined Cleaner Inlet	0-25" WC	Red
6	1B Inclined Cleaner Inlet	0-25" WC	Red
7	2A Inclined Cleaner Inlet	0-25" WC	Red
8	2B Inclined Cleaner Inlet	0-25" WC	Red
9	Trash Line	0-10 PSI	
10	Cotton line from feeder to dryers	0-10" WC	Yellow
11	Battery Condenser Exhaust	0-10" WC	Yellow
12	Overflow separator inlet	0-10" WC	Yellow

Air Tools Chart for Your 12-Point System

Point	Location	Pressure Range	Color Code
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

Setting Up a Sensitive Range Transducer

The blue transducer made for 0-5 inches WC (23537) can also be adjusted to have a range of 0-1 and 0-2 inches WC, giving you the ability to get greater control and resolution if you need it. The adjustment is made with the jumper block PJ3.

PJ3

Note: Jumper bar has been removed for clarity.
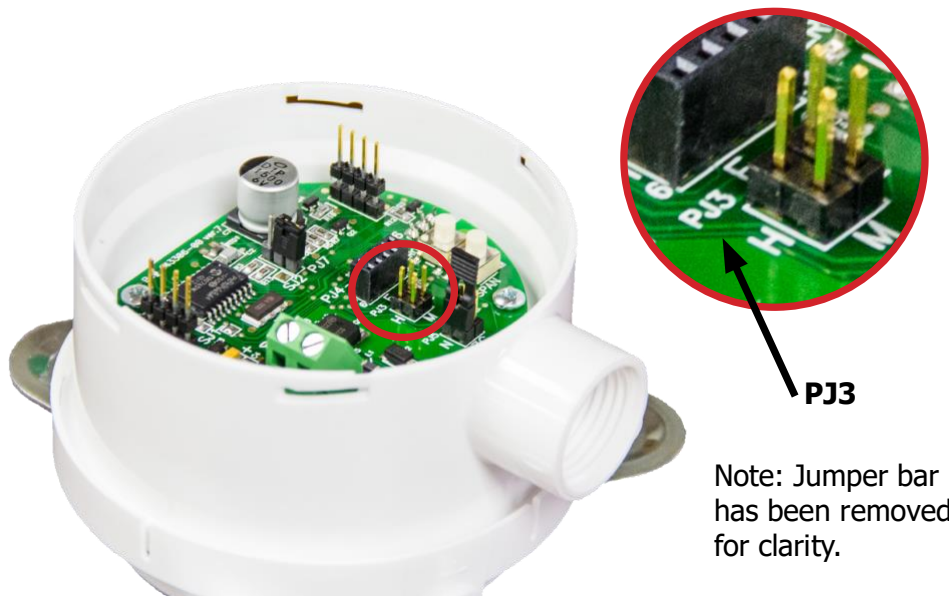
Jumper block PJ3 controls when the unit is in the High, Medium, or Low range. Place the jumper bar on the pins in the desired position based on the diagram below . If for some reason the jumper bar is lost or removed, the device defaults to the 0-5 range. For more information, consult the manual that ships with all transducers.

0-1" WC   **0-2" WC**   **0-5" WC**

Represents Jumper Bar
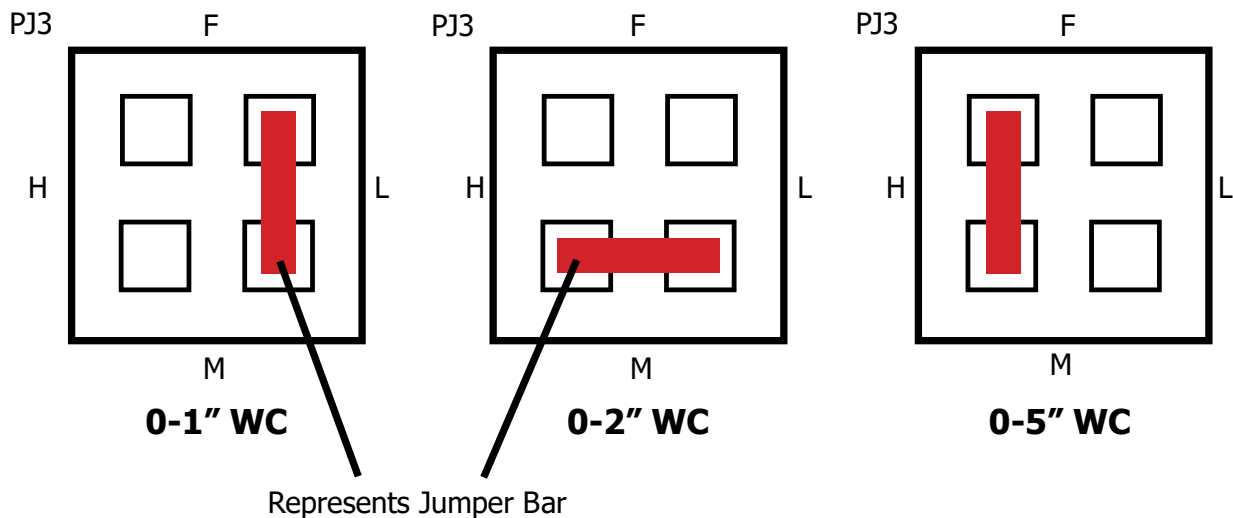
Installing Transducers

Note: Prior to installing and setting up the transducers, you should install the pressure ports. See the earlier section for instructions or visit support.samjackson.com for helpful videos.

Your Air Tools system requires the use of transducers to convert pressure readings in the pipes to an analog current signal that the PLC system can read and display on the touch screen. These transducers should be mounted some place solid near the port that they are attached to. Vibration will severely shorten the lifespan of the transducers, so avoid mounting them on pipes or fans.

Each port is shipped with a bag containing various connectors and two sizes of plastic tubing. Insert the larger (3/8") black tubing into the poly-push fitting in the port, and push the smaller (1/4") tubing onto the barbed connector on the transducer. There are two barbed connectors, one for positive pressure and one for negative pressure. Please consult the factory if you have questions about which one you should connect to.

The transducer requires two wires to connect to the Air Tools Concentrator. It is recommended that you use 18-gauge, two-wire shielded cable for this connection.

Important Note: To reduce the possibility of interference and incorrect readings, the shield for the wiring cable needs to be grounded in the cabinet and the cabinet should be connected to a solid earth ground. A grounding lug is provided on the panel for use during installation.
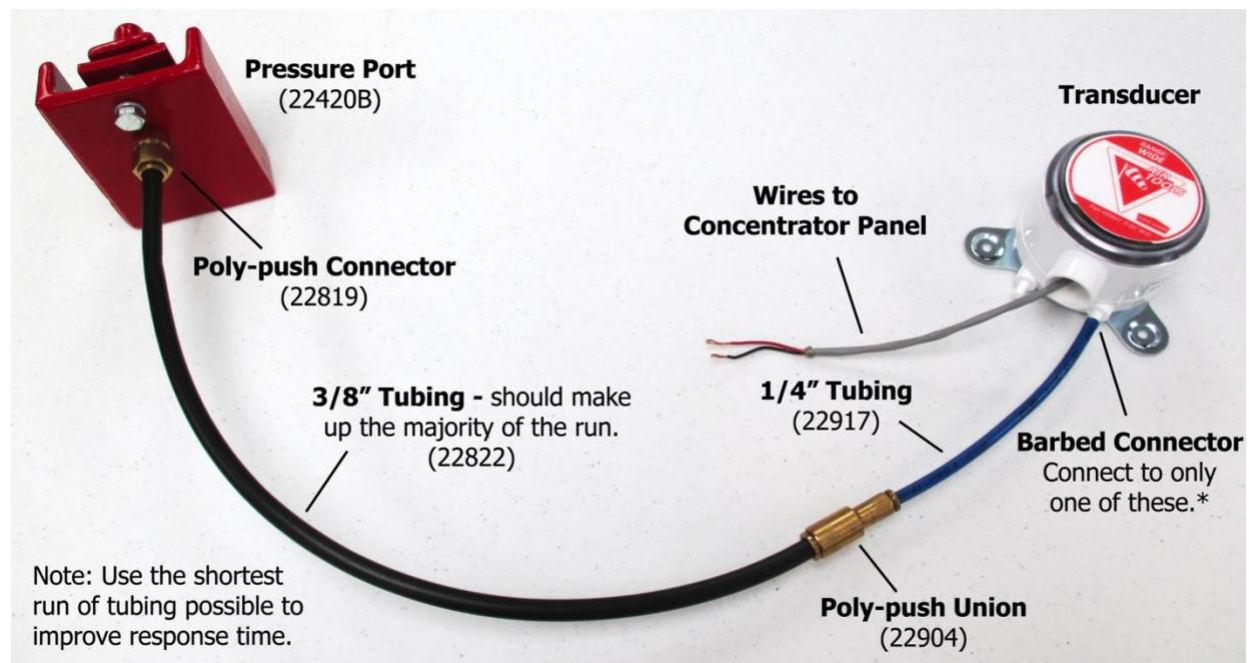
*There are 2 barbed connectors, marked (+) and (−). If the point you're monitoring has positive static pressure, connect the tubing to the (+) side. If it's negative, connect to the (−) side. Leave the unused connector open.

Mounting/Installation of Concentrator

Each set of 12 measurement points comes with one 15" x 17" concentrator panel (81951) also referred to as the Collector. You have 2 options for mounting these panels:

Option 1: Fiberglass Enclosure

The fiber glass enclosure will fit one concentrator panel, which can monitor up to 12 points.
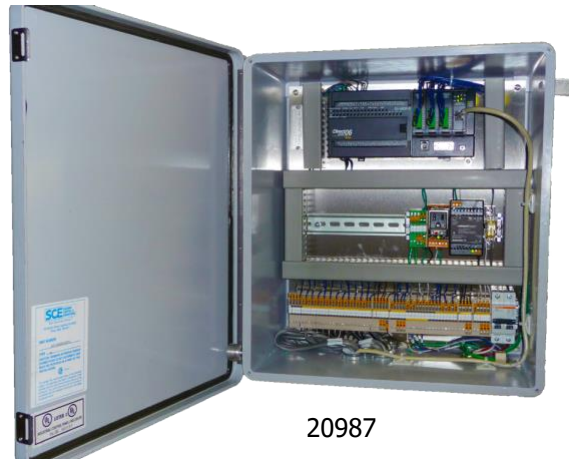
20987

Option 2: Toolbox

The toolbox can accomodate the concentrator panels for monitoring the air at up to 36 points. This option gives the most flexibility for upgrading.

You can also mount the concentrator in an existing toolbox that has space available.

81960

Navigating the Screens

The Air Tools Interface starts at the home screen. Only the active channels are shown. Activation of channels is handled on the main setup page.

Pressing any of the analog meters will take you to the Setup Screen for that channel.

There are 2 graphs for each concentrator.

Indicates whether the gin is in Ginning or Idling mode.

Pressing the wrench takes you to the Main Setup screen.
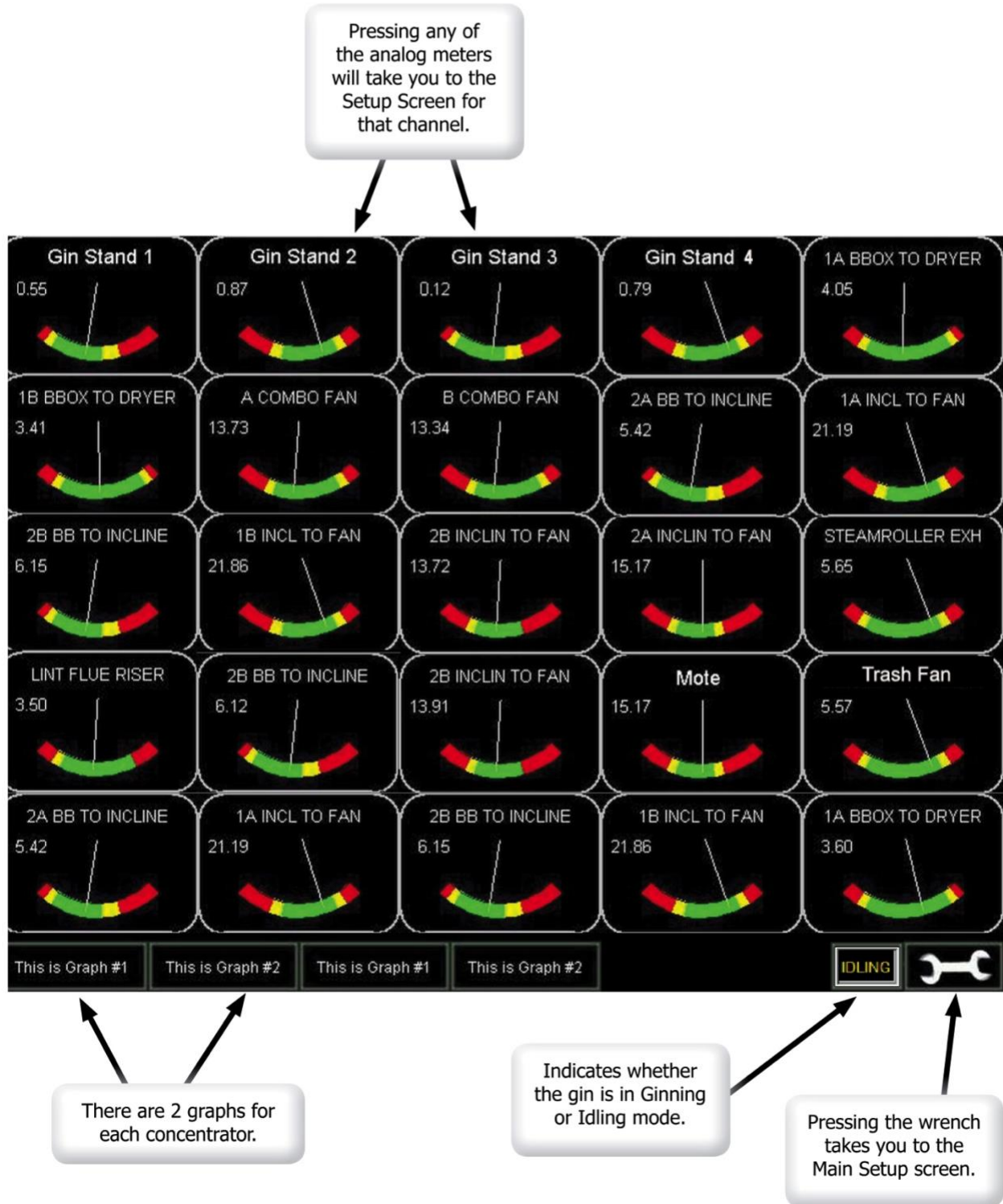
Initial Programming

Before you can enter settings on the touch screen, you'll need to enable the concentrators and channels that you've installed. Note that each concentrator panel is referred to as a "collector" in the setup menu. Press the wrench button from the home screen and enable the collectors that you have. If you installed an Alarm/Relay Interface, enable it now as well. Next you need to enable the individual channels (labeled as "AT Inputs") in each collector. Keep in mind that each collector does not need to have all 12 available channels installed before using the next collector.

Now that you've enabled the installed channels, go back to the home screen and press on the first channel in the top left. This channel would be channel 1 on collector 1. It will be referred to in this manual as Channel 1.1 or AT Input 1.1. This will take you to a more detailed view of the channel. Here you will need to enter a descriptive name (up to 16 characters).

After finishing the initial installation, you'll want to calibrate the alarms and warnings in Air Tools to your specific operation. To do this, you'll need to be able to start all fans as well as run product through the system.

Start by running all fans in the system until the airflow stabilizes. Make sure that all access doors, vacuum droppers, and air seals are closed or running as they would be during normal operation. This may take up to 3 minutes in a large operation because of the settling of access door seals.

Note: This process may be performed by the Samuel Jackson technician during commissioning at an additional charge.

Individual Channels

The home page displays up to 36 individual channels. Unused channels can be hidden.

The custom name allows you to identify each channel, such as "Incline 1A"

This number shows the current numeric reading from the air tools port.

Note: all of the red, yellow, and green zones are user-defined for each particular channel.

Custom Name

2.34"
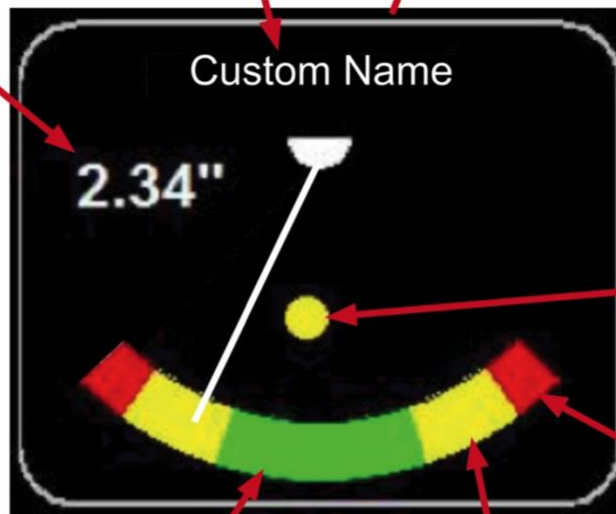
The dot appears as yellow or red when the needle is in the warning or alarm area.

When the needle points to the red zone, it indicates the alarm area. This will trigger the alarm.

When the needle points to the green zone, it indicates the good area.

When the needle points to the yellow zone, it indicates the warning area.

Main Setup Page

After pressing the Wrench button on the Home page, you'll see the Main Setup page. Here you can enable and disable Concentrators (labeled as "Collectors") as well as individual AT Inputs **(elsewhere labeled as Channels)**, and enable the optional Alarm Relay panel. You can also set how Idle and Ginning states are selected.

Enable/Disable Collector
Concentrators are labeled as Collectors at the top of each column. Each collector can be enabled and disabled independently and must be enabled before its channels can be configured.
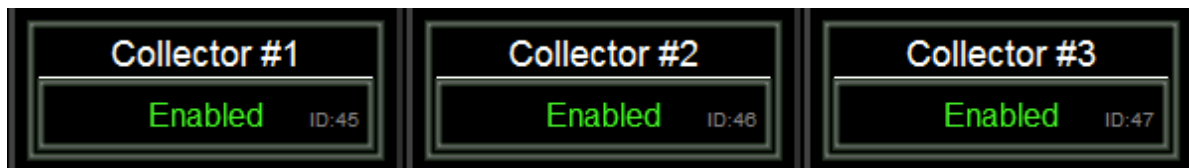
Enable a Collector by simply pressing the button underneath. You must enable all collectors that you have installed.

Enabling Inputs

Gin Stand 1	Hot Air 2A		AT Input 2.1	AT Input 2.7		AT Input 3.1	AT Input 3.7
Enabled	Enabled		Disabled	Disabled		Disabled	Disabled
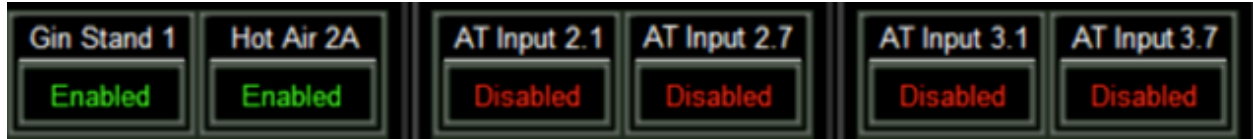
Enable all inputs that are wired to the concentrator panel.

By default, inputs are named based on which concentrator they are connected to; i.e. AT Input 2.8 is connected to Concentrator 2 on input 8. Once the corresponding channel has been named on the channel setup page, this will automatically update the input name here.

Alarm Relay Panel

Alarm Relay Panel
Enabled

If you have connected the Air Tools Alarm Relay Panel, enable the Mirror Interface and Alarm Relay.

Advanced Alarms

Advanced Alarms
Hidden

This button allows the Advanced Alarms for each channel to become visible under the channel setup page. These alarms can then be configured and enabled on a per channel basis.

Cotton Flow Transition Time

Cotton Flow Transition Time
10 s

The cotton flow transition time determines how long the interface waits to switch from the Idle to Ginning settings and vise-versa. The value is set in seconds and should be set to the length of time it takes for the cotton to affect the last sensor in the system so that you can avoid nuisance alarms and warnings when stopping or starting. The time defaults to 10 seconds and should typically be no more than 60 seconds.

Idle Signal

Air Tools can be set to switch from Idling to Ginning mode by either receiving a discrete signal or by comparing Flow Analyzer data from a Moisture Mirror Interface to the desired set point. If you have a Moisture Mirror 2 or greater with connected Flow Analyzers, and Air Tools is connected to the Moisture Mirror network, set this to "Mirror Interface." Otherwise, set as "Local Input" when using a discrete signal from a switch or a plant PLC.

Moisture Mirror Version

If you have set the Idle Signal to "Mirror Interface," set the Moisture Mirror version either as the older version 2, 3, or 4 or the new style Mirror X. For example, if you have a Mirror 3X, simply set it as X.

Flow Analyzer Threshold
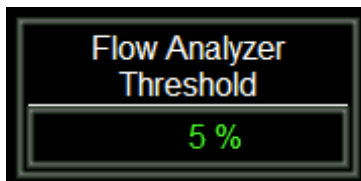
This button will appear if a Moisture Mirror 2, 3, or 4 is selected. Whenever the gin is idling, look at the Flow Analyzer on the Moisture Mirror and note the reading. Add 3% to that number and enter it as the Flow Analyzer Threshold. This will determine whether it is in Ginning or Idling mode.

Language
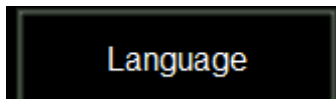
The language can be set as French or English.

Show Splash Screen & Versions
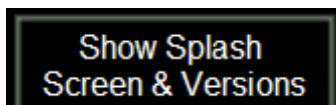
Use this to show the Splash Screen and Versions. This is used for troubleshooting.

Set Factory Defaults
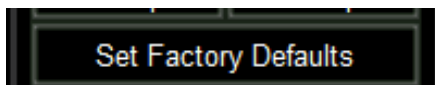
This will reset ALL USER SETTINGS. Consult the manufacturer before using this.

Graph Setup
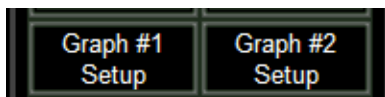
Use these buttons to access the Graph Setup page. See the Graphs section of the manual for more details.

Channel Setup Page

The channel setup page is accessed by pressing on one of the active channels from the Home screen. It shows a larger indicator and a one-minute line graph of that channel.
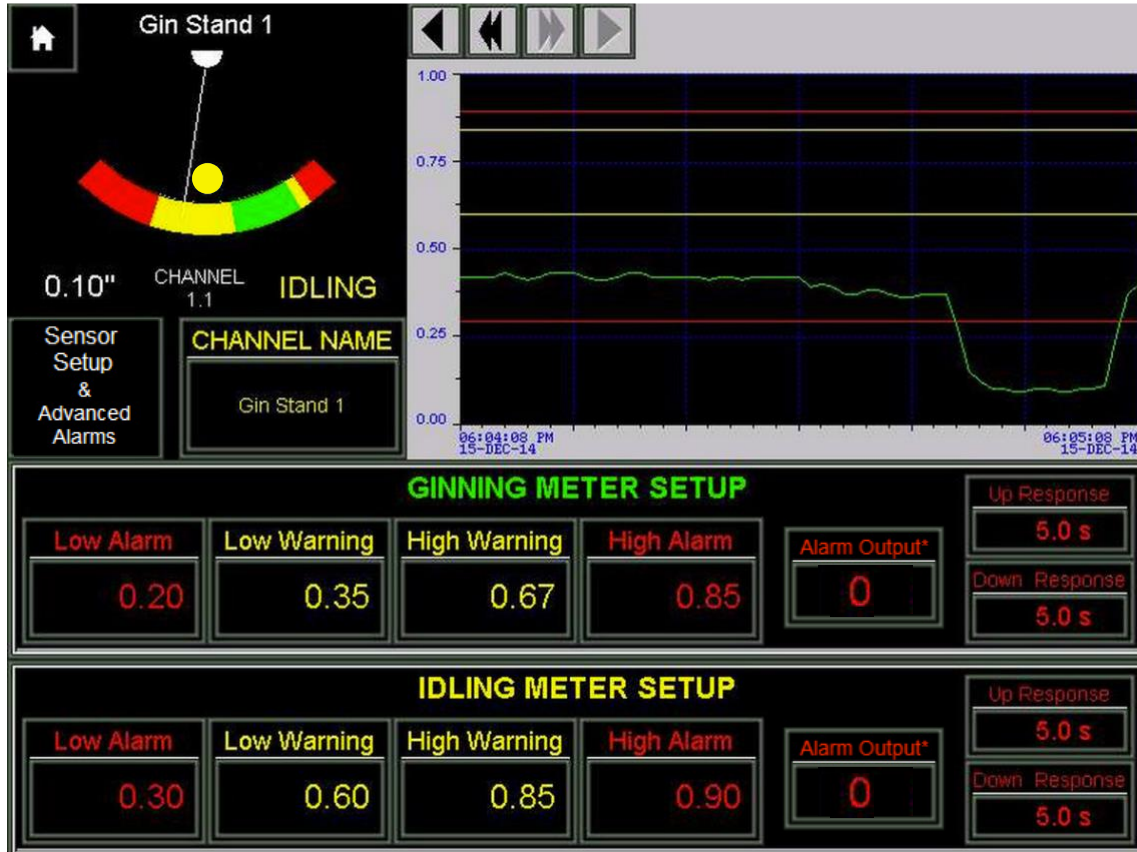
Now you are ready to set up the channels. Each section of the setup page is explained in detail in the following sections.

Display
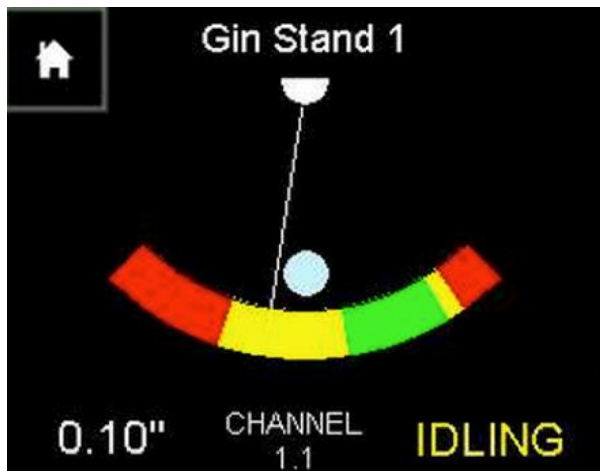
The display area shows a larger version of the current reading graphically and numerically. It shows the customized name of the channel as well as the default channel name.

The text to the bottom right of the display indicates whether the concentrator is in Ginning or Idling mode. The warning and alarm settings are independently defined for these two modes.

Channel Name

Use this button to set a custom name for each channel. There is a character limit of 11.

Sensor Setup & Advanced Alarms

Use the Sensor Setup and Advanced Alarms button to access more advanced settings for the channel. See the Sensor Setup & Advanced Alarms section for more details.

Graph

The graph shows how the current channel reading compares to the Warning and Alarm settings, which are represented by the yellow and red lines, respectively. The green line represents the actual readings. It updates once per second so that you are able to see instant trends. The graph is viewable in 60-second intervals, with a history that goes back 15 minutes. For long-term graphs, see the graphs available from the home screen.

The graph is useful when setting the warning and alarm values discussed in the following sections.

Ginning Meter Setup

These settings determine where the Red (Alarm) and Yellow (Warning) zones start on the needle graph while in Ginning mode. The tolerances should be set loosely so that you can avoid nuisance alarms due to the variability of incoming cotton, but tightly enough that you don't miss any potential chokes.

To set these values, watch the graph and note the normal range of the reading. Set the Low and High Warning values slightly above and below this range. Set the Low and High Alarms at values which indicate serious trouble. **The values will need to be fine-tuned based on observation of airflow and past chokes. Even if a Sam Jackson technician has set the values, these are just a starting point.**

Idling Meter Setup

These settings determine where the Red (Alarm) and Yellow (Warning) areas start on the needle graph while the gin is in Idling mode. It is recommended that you set these as narrowly as possible so that when the gin is idle, any changes in the system's airflow will be immediately noticeable both on the screen and on the stack light. Be sure to allow for a small range of fluctuation based on variations in ambient conditions.

Set these values at the beginning of a season immediately after you have checked the whole system for leaks and obstructions.

The figure to the right shows the location of the warning and alarm values on the needle graph.

Note: These settings are examples. Your Gin Stand settings will vary.
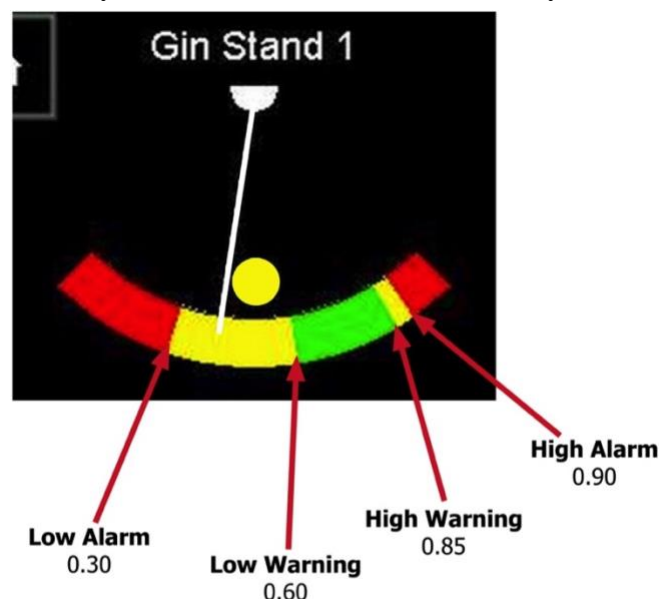
Alarm Output

This button appears when the Alarm Relay Panel is enabled. If so, the alarm output setting determines which alarm contact will be activated upon an alarm. The default of 0 is the single contact that is in the Concentrator Panel that this channel is connected to. Any other value (1 through 16) corresponds to a contact mounted in the optional Alarm/ Relay Interface.

Up Response/Down Response

The Up Response and Down Response settings determine the delay between the reading going above the set point and the stack light turning on or off. In most cases these values should remain at the default setting of 5.0 seconds for each. If the alarm is taking some sort of action on a piece of equipment, then these settings can help to prevent quick cycling of the alarm.

Sensor Setup & Advanced Alarms

Press the button below the needle graph on the channel setup page to get to the Sensor Setup and Advanced Alarms page. The Sensor Setup section is a one-time setup.

4mA Value & 20mA Value
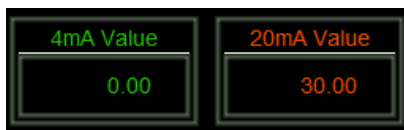
The 4mA and 20mA values depend on how your transducer was set up earlier. When using the Sensitive Range transducer, they should match the high and low settings you selected with the jumpers. The 4mA should be set as the lowest reading from your transducer, which is typically 0.00. The 20mA value is the high end of the range for your transducer. For instance, if you were using a 0-10" transducer, the 4mA would be 0.00, and 20mA would be 10.00.

Filter
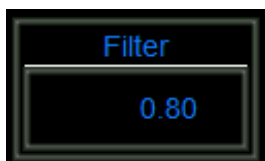
The filter value determines the response time of the sensor. The higher the value, the faster the response. A lower value will slow reaction time and better identify trends. The value defaults to 0.80, but the whole range allows for 0.00 to 1.00. If you notice jagged lines in the graph at the top of the page, reduce the filter until the lines are smooth and readable.

Alarm Bypass

 If there is a need to continue running during an alarm state, the alarm can be bypassed.

Diagnostic

 The Diagnostic shows how many milliamps the PLC is receiving from the transducer. This is used to make sure the card is reading correctly.

Advanced Alarm Setup
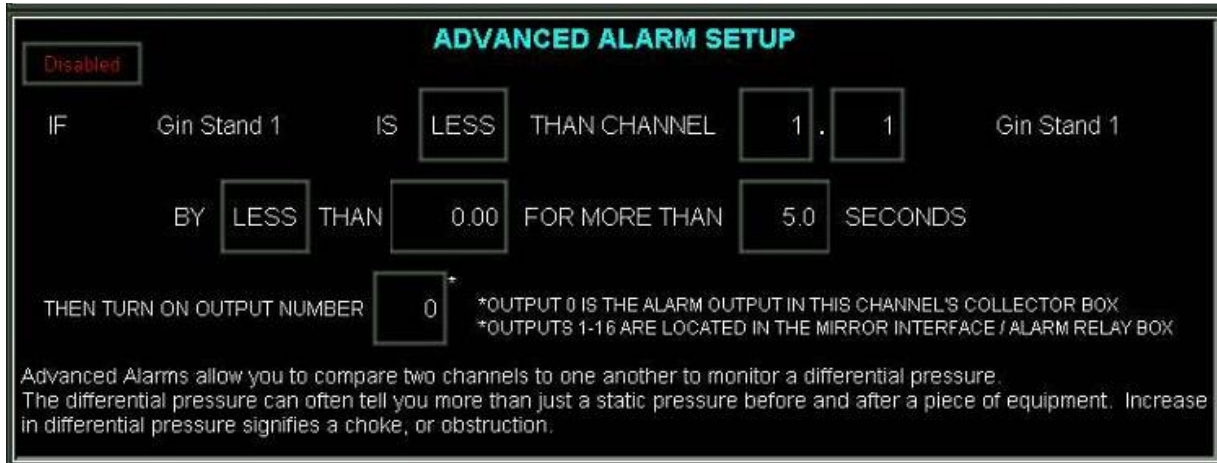
The Advanced Alarm Setup allows you to compare two channels from any part of the system and control the alarm outputs based on that comparison. The channels are named using X.Y where X is the concentrator (1, 2 or 3) and Y is the channel on that concentrator (1 through 12). Output number 0 is located in the concentrator box that the current channel is on. Outputs 1-16 are located in the optional Alarm Relay box. See the wiring diagrams later in the manual for more details.

Usage Example:
Channel 1.6 is on the inlet side of an incline cleaner. Channel 1.7 is on the outlet. You've noticed that even though both readings are in the 'green' while ginning, any time they differ by more than 4.00", the pickup point becomes weaker until it stops picking up or the feeder is slowed down. With the Advanced alarm settings, you can set up an alarm that notifies the ginner to slow the feeder down and that the incline needs to be looked at because there's a good chance something is blocking air flow.

Air Tools Alarm/Relay Interface

Part Number 81952

This optional interface serves to add 16 additional relay outputs to the standard Air Tools system. These relay outputs can be used to activate things based on alarms on the Air Tools system. Each relay has three terminals associated with it. One will be the common (C) another will be Normally Open (NO) and the third will be Normally Closed (NC). Using these will allow the user to set up actions that happen upon an alarm, such as opening or closing a valve or turning on a warning light. See the wiring diagram in this manual for terminal number details.

The Alarm/Relay Interface panel has the same dimensions as the Concentrator Panel (15" x 17") and requires additional enclosure space.

81952

Graphs

The graph setup page can be accessed from the main setup page.
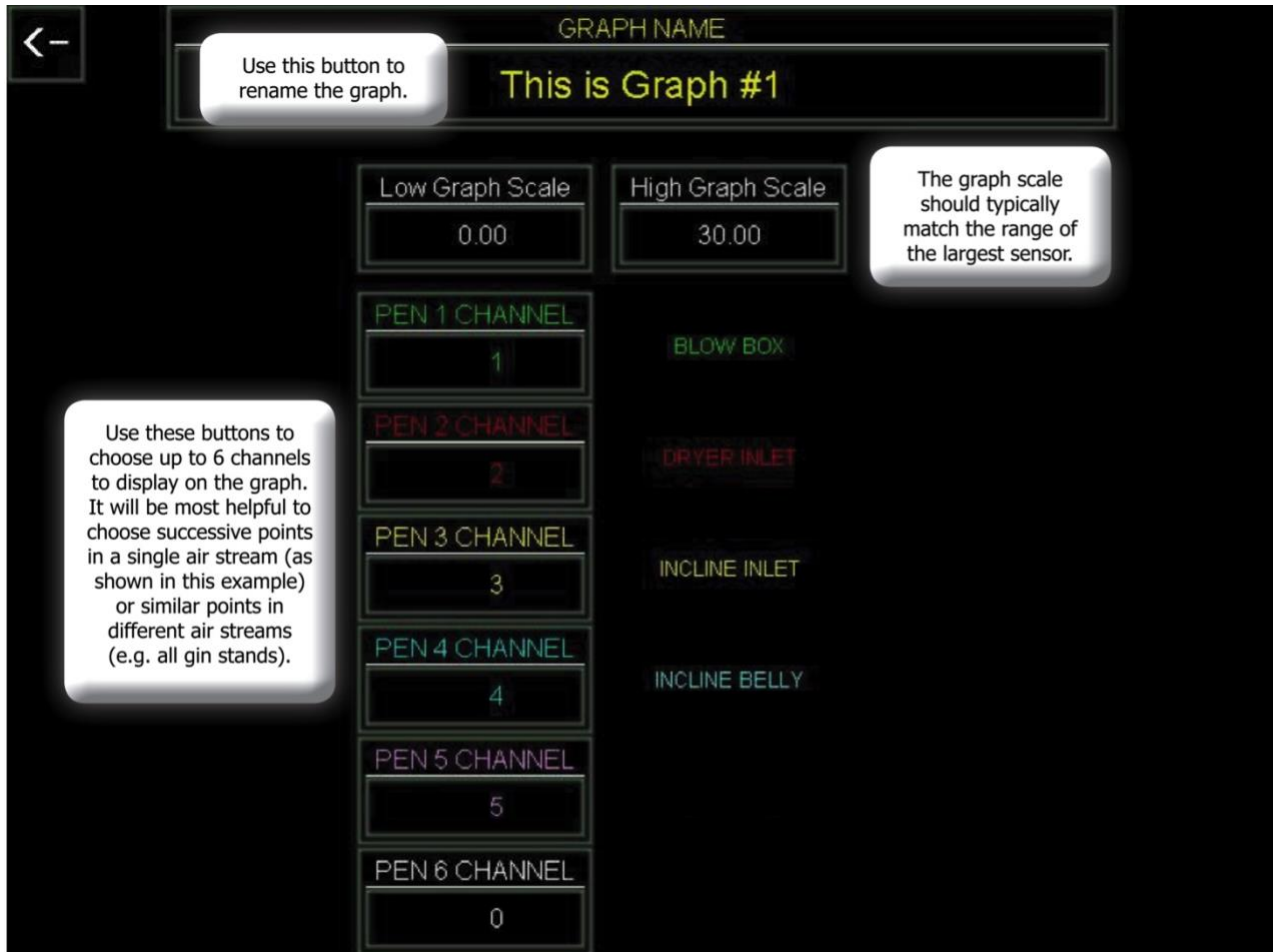
Graphs can be accessed from the buttons at the bottom of the home page. There are 2 graphs for each concentrator panel.
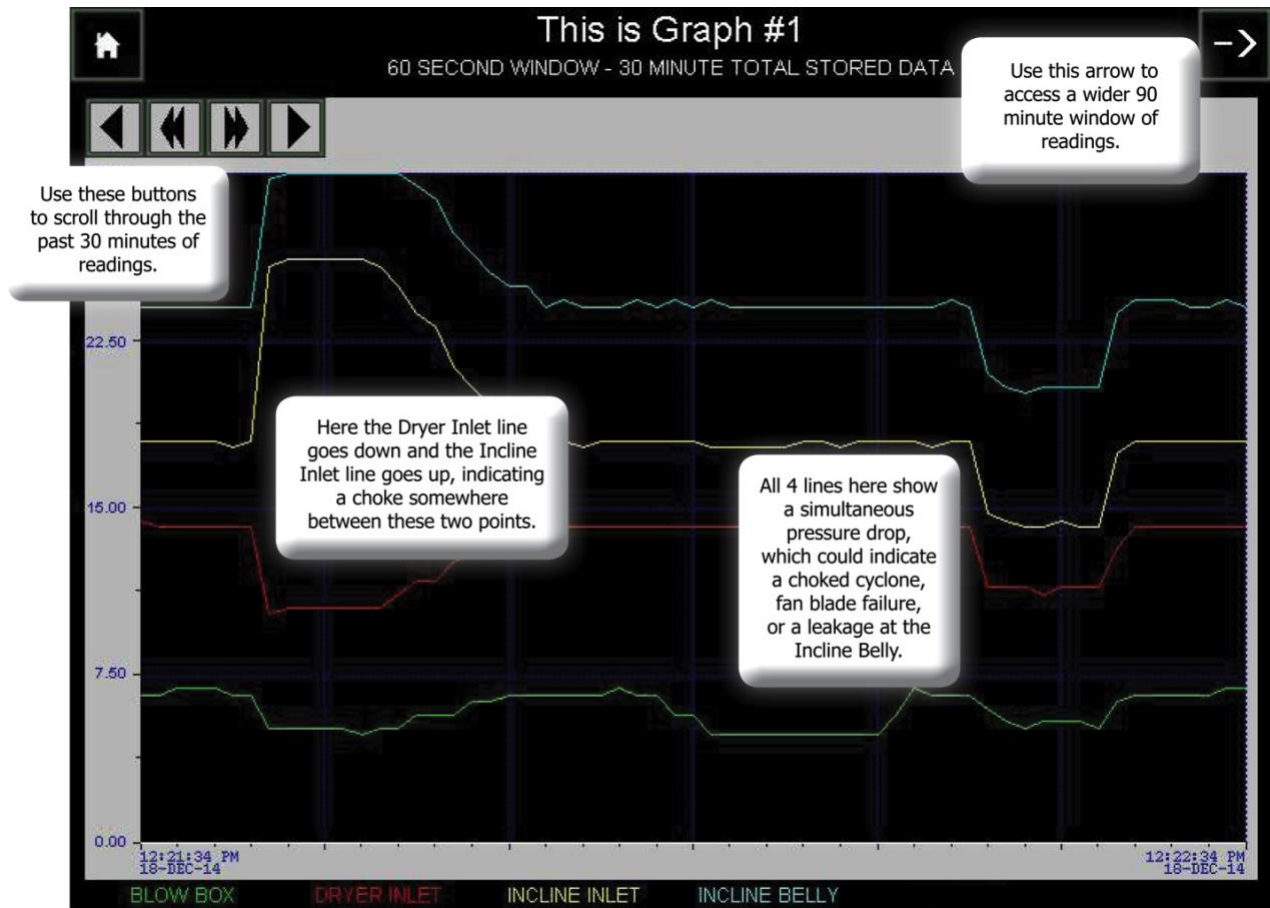
Notes for the Installing Electrician

Intercommunication with Other Devices
Each Air Tools panel comes with 12 relays that can be used to signal other outputs, like PLC's. The coil needs to be wired to one of the alarm outputs (terminals 73-84) and the common (terminal one). The normally open, closed and common terminals can then be wired in whatever manner to accomplish the desired control function.

Signaling other PLC's
Whenever an Air Tools alarm is tripped, it will stay active until the air returns to normal operating conditions. If this alarm is connected to another PLC and used to control something like a gin stand, it is recommended that a one shot be used in the programming of that PLC so that the gin breast can come back in even if the air is not back in normal operating conditions.

Concentrator External Wiring

AIR TOOLS/CHOKE FINDER CONCENTRATOR

EXTERNAL INTERPOSING IDEC ALARM RELAYS

1(NC)	H(13)
5(NO)	
9(C)	N(14)

83 CHANNEL 1 ALARM OUTPUT

1

82 CHANNEL 12 ALARM OUTPUT

CIRCUIT BREAKER

110—120VAC N L1

G

CHOKE FINDER — NOT CONNECTED

AIR TOOLS — COTTON FLOW SIGNAL — 10 / 11

EXTERNAL HORN STROBE — NOT CONNECTED

EXTERNAL STACK LIGHT

GREEN OK LIGHT — 22 / 23

TB1 STROBE

YELLOW WARN LIGHT — 24 / 25

TB101 HORN

RED ALARM LIGHT — 26 / 27

PRESSURE TRANSDUCER + − * / ** GREEN

AIR TOOLS OR CHOKE FINDER TOUCH SCREEN + − 30 / 31

PLC ECOM

CAT5 CABLE

Ethernet — CAT5 CABLE — Ethernet Switch

**MOISTURE MIRROR X SWITCH PREFERRED

*	40	+	CHANNEL 1
**	41	−	
*	42	+	CHANNEL 2
**	43	−	
*	44	+	CHANNEL 3
**	45	−	
*	46	+	CHANNEL 4
**	47	−	
*	50	+	CHANNEL 5
**	51	−	
*	52	+	CHANNEL 6
**	53	−	
*	54	+	CHANNEL 7
**	55	−	
*	56	+	CHANNEL 8
**	57	−	
*	60	+	CHANNEL 9
**	61	−	
*	62	+	CHANNEL 10
**	63	−	
*	64	+	CHANNEL 11
**	65	−	
*	66	+	CHANNEL 12
**	67	−	

SAMUEL JACKSON, INC.

EXTERNAL ELECTRICAL CONNECTIONS FOR AIR TOOLS/CHOKE FINDER

CA15402F
7-20

Concentrator Internal Wiring

81950B AIR TOOLS

Alarm Relay Panel Internal Wiring

GREEN | G | GREEN | POWER SUPPLY
WHITE | 1 | WHITE | N | + 24V | BLUE | 30
BLACK | 3 | BLACK | L | − 0V | BROWN | 31

CIRCUIT BREAKER
110–120VAC | N
L1
G
WHITE | 1
BLACK | 3

30 BLUE | + PLC POWER − | 31 BROWN

PLC INPUTS
10 | 11 BLUE X0 C0
12 | 13 BLUE X1
14 | 15 BLUE X2
16 | 17 BLUE X3

PLC OUTPUTS
3 BLACK | C0 | Y0 GREY | IDEC ALARM RELAY (AR1) | H(13) N(14) | 1(NC) 5(NO) 9(C) | 40 41 42 | 1 WHITE
Y1 GREY | IDEC ALARM RELAY (AR2) | H(13) N(14) | 1(NC) 5(NO) 9(C) | 43 44 45
Y2 GREY | IDEC ALARM RELAY (AR3) | H(13) N(14) | 1(NC) 5(NO) 9(C) | 46 47 48
Y3 GREY | IDEC ALARM RELAY (AR4) | H(13) N(14) | 1(NC) 5(NO) 9(C) | 49 50 51
C1 | Y4 GREY | IDEC ALARM RELAY (AR5) | H(13) N(14) | 1(NC) 5(NO) 9(C) | 52 53 54
Y5 GREY | IDEC ALARM RELAY (AR6) | H(13) N(14) | 1(NC) 5(NO) 9(C) | 55 56 57
Y6 GREY | IDEC ALARM RELAY (AR7) | H(13) N(14) | 1(NC) 5(NO) 9(C) | 58 59 60
Y7 GREY | IDEC ALARM RELAY (AR8) | H(13) N(14) | 1(NC) 5(NO) 9(C) | 61 62 63

PLC OUTPUTS
3 BLACK | C2 | Y10 GREY | IDEC ALARM RELAY (AR9) | H(13) N(14) | 1(NC) 5(NO) 9(C) | 64 65 66 | 1 WHITE
Y11 GREY | IDEC ALARM RELAY (AR10) | H(13) N(14) | 1(NC) 5(NO) 9(C) | 67 68 69
Y12 GREY | IDEC ALARM RELAY (AR11) | H(13) N(14) | 1(NC) 5(NO) 9(C) | 70 71 72
Y13 GREY | IDEC ALARM RELAY (AR12) | H(13) N(14) | 1(NC) 5(NO) 9(C) | 73 74 75
C3 | Y14 GREY | IDEC ALARM RELAY (AR13) | H(13) N(14) | 1(NC) 5(NO) 9(C) | 76 77 78
Y15 GREY | IDEC ALARM RELAY (AR14) | H(13) N(14) | 1(NC) 5(NO) 9(C) | 79 80 81
Y16 GREY | IDEC ALARM RELAY (AR15) | H(13) N(14) | 1(NC) 5(NO) 9(C) | 82 83 84
Y17 GREY | IDEC ALARM RELAY (AR16) | H(13) N(14) | 1(NC) 5(NO) 9(C) | 85 86 87

PART NO. 22926 COMPLETE PLC

D0–06DR–D
Direct LOGIC 06
Koyo
H0–FILL | H0–FILL | H0–ECOM100 | H0–ECOM100
PORT1 | PORT2 | TERM RUN STOP

SAMUEL JACKSON, INC.
ELECTRICAL SCHEMATIC WITH PLC I/O FOR AIR TOOLS MIRROR AND ALARM INTERFACE

CA15401A
11–08

Setting up an Older Style Transducer

Older systems may contain Transducers that can be set to different ranges. If your transducer looks like the ones in the picture below, you have an older style transducer.

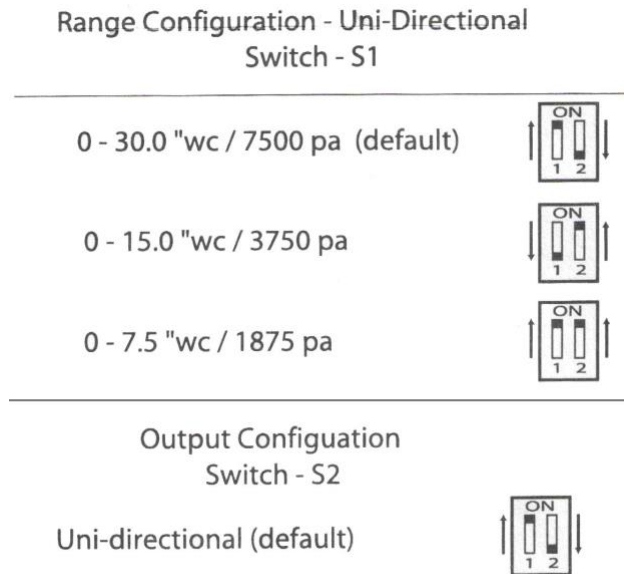There are two different ways to set these transducers and both methods are discussed below.

Jumpers: Earlier systems use jumpers to set the range of the sensor. All sensors are initially set to the 0 to 30 range, and can be changed to the 0 to 15 range or the 1 to 7.5 range placing the jumpers as shown below.


Range Configurations (inches w.c.)		
C	D	E
0 to 30	0 to 15	0 to 7.5
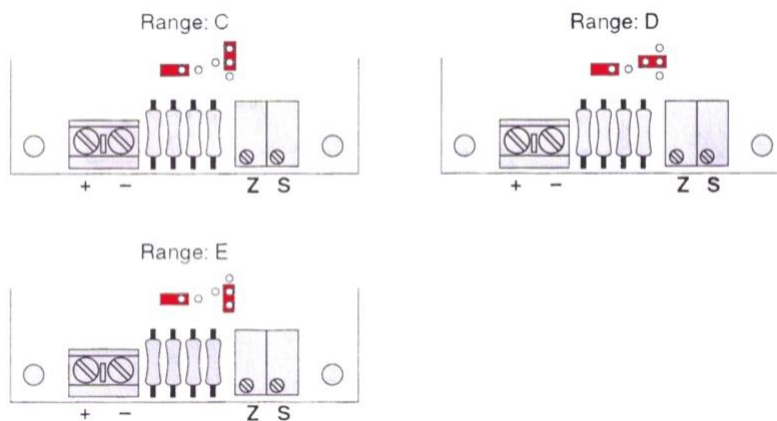
Other systems use dip switches to set the range. All sensors are initially set to the 0 to 30 range, and can be changed using the following dip switch settings:

Range Configuration - Uni-Directional
Switch - S1

0 - 30.0 "wc / 7500 pa (default)	
0 - 15.0 "wc / 3750 pa	
0 - 7.5 "wc / 1875 pa	

Output Configuation
Switch - S2

Uni-directional (default)

High pressure transducers, used on seed and trash lines, are identifiable by a single barb fitting on the side of the transducer and use the following switch settings:

Range Configuration
Switch - S1

0 - 20 psig / 0 - 140 kPa (default)	
0 - 10 psig / 0 - 70 kPa	
0 - 5 psig / 0 - 35 kPa	
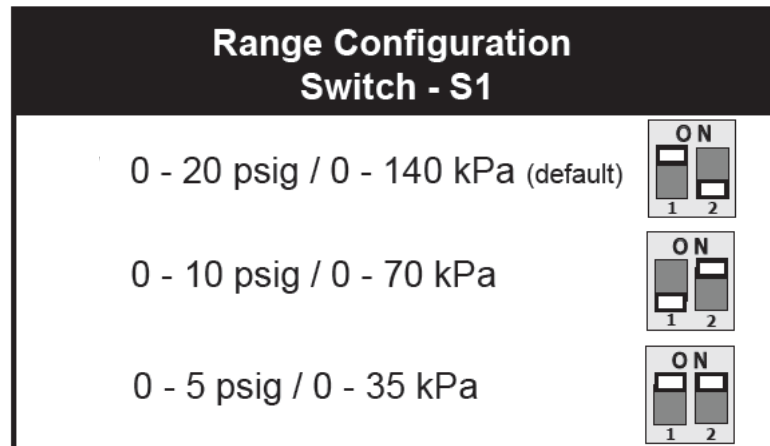
LIMITED WARRANTY

SAMUEL JACKSON, INCORPORATED

For Commercial and Industrial Customers of Samuel Jackson Moisture Control Products

SAMUEL JACKSON, INCORPORATED ("Sam Jackson") warrants to its customers who purchase Sam Jackson products that its equipment is free from defects in material and workmanship under normal use and service for 12 months from the date of shipment from its Lubbock, Texas factory.

THIS WARRANTY DOES NOT EXTEND TO EQUIPMENT SUBJECTED TO MISUSE, NEGLECT, OR ACCIDENT: NOR DOES THIS WARRANTY APPLY UNLESS THE PRODUCT COVERED BY IT IS PROPERLY INSTALLED BY A QUALIFIED, COMPETENT TECHNICIAN, WHO IS LICENSED WHERE STATE AND LOCAL CODES REQUIRE, AND WHO IS EXPERIENCED IN MAKING SUCH INSTALLATIONS.

Equipment, which is defective in material or workmanship and within the warranty period, will be repaired or replaced, at Sam Jackson's option, in order to facilitate proper operation.

THIS WARRANTY IS LIMITED TO THE PRECISE TERMS SET FORTH ABOVE, AND PROVIDES EXCLUSIVE REMEDIES EXPRESSLY IN LIEU OF ALL OTHER REMEDIES, AND IN PARTICULAR THERE SHALL BE EXCLUDED THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT WILL SAM JACKSON BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGE OF ANY NATURE.

Sam Jackson neither assumes nor authorizes any person to assume for Sam Jackson any other liability or obligation in connection with the sale of this equipment, Sam Jackson's liability and Customer's exclusive remedy being limited to repair or replacement as set forth above.

SAMUEL JACKSON, INCORPORATED
3900 Upland Avenue   Lubbock, Texas 79407

IMPORTANT!

The following notice affects your warranty.

Electrical Controls and Your Safety

Your new Sam Jackson product may be equipped with electrical controls, or designed to interact with controls on a related Sam Jackson product.

In the event that local, state, federal or other specified safety compliance is required, we will consider modifications to meet the particular requirements. Implementation of alternative safety devices may incur additional charges. No warranty of compliance with a particular standard is made in the absence of specific reference to it in our quotation.

If you modify, or permit others to modify, these controls without specific written permission from Sam Jackson, Inc. the warranty on your product will be void and there is a possibility of serious damage to machinery, damage to product, serious injury to personnel, or death. The modifier of the controls assumes all liability for these consequences.

Samuel Jackson, Incorporated
3900 Upland Avenue
Lubbock, Texas 79407
806-795-5218

This page intentionally blank