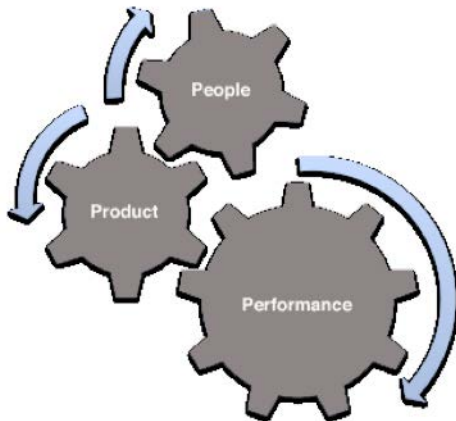




Choke Finder
Wiring and Operation Guide



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We appreciate your business and hope you enjoy your

Samuel Jackson Choke Finder System

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

- Ordering Choke Finder
- 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 Choke Finder System

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What is Choke Finder?

Chokes in a cotton gin are costly, increasing downtime and sometimes requiring additional repairs. Choke Finder can help identify chokes as they are about to occur, quickly pinpointing the problem area and many times helping avoid the choke altogether. The biggest financial benefit from Choke Finder is that it will allow your ginners to run faster with confidence knowing that they will be alerted to problems quickly, if they were to occur. Best of all, this affordable technology is easy to install and use.

Choke Finder uses static pressure ports placed across machinery in an airstream throughout the operation to predict and prevent chokes caused by worn doffing brushes, stopped up cyclones, hairing over battery condenser screens, etc. Alarms can be set up to alarm if air pressure goes to level that indicates a choke. There is also a graphing feature that allows you to look back and see trends over time.

A Choke Finder 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.

The Choke Finder Interface consists of a 12-inch color touch screen, capable of displaying up to 12 choke points.

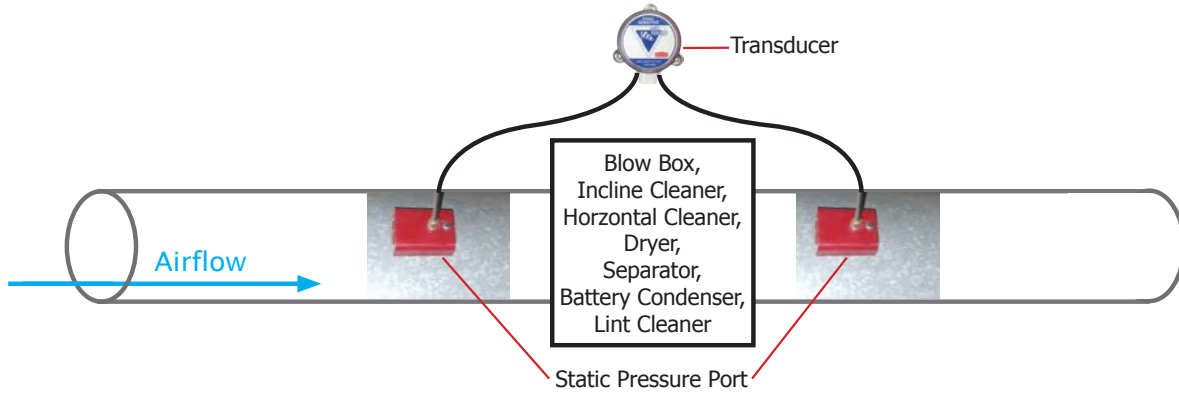
The Choke Finder Concentrator is simply a panel with the PLC and connection points that can be mounted in a Toolbox or fiberglass enclosure.

The Choke Finder 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.

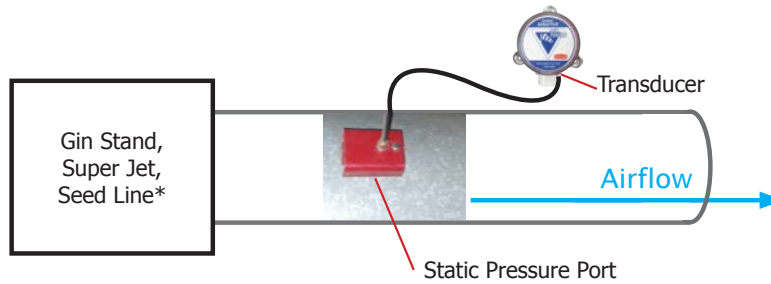
You can see more about all of these components in the following pages.

Choke Finder Installation Examples

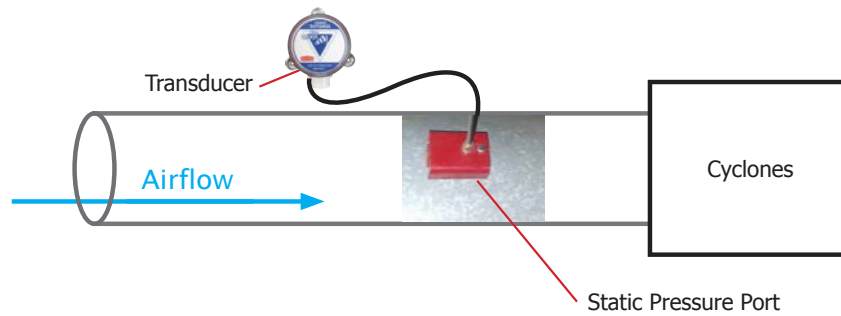
Typical Installations



Special Cases



*Requires special transducer and doesn't use the standard probe.



Choke Finder



Choke Finder Concentrator
81951



12 inch Touch Screen
22433A



12 Transducers



24 Port Assembly
25787



Horn/Strobe
25319

81005

81005 CHOKE FINDER



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Special Cases for Seed Lines

All new Choke Finder orders can also be customized includes the high-pressure transducers in seed lines. This includes a coupler (15043) that can be welded onto a seed line that allows direct attachment of the high-pressure transducer.

- **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 on the coupler included in the kit. The high-pressure transducer can now be threaded onto the coupler.



Picking a Place for the Ports

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 direct 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 ports as possible to improve response time.



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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.



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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.



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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 1/4" black plastic tubing, insert it into the fitting, and make sure that it's secure. It is recommended to run this tubing in conduit for long distances or near machinery.



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



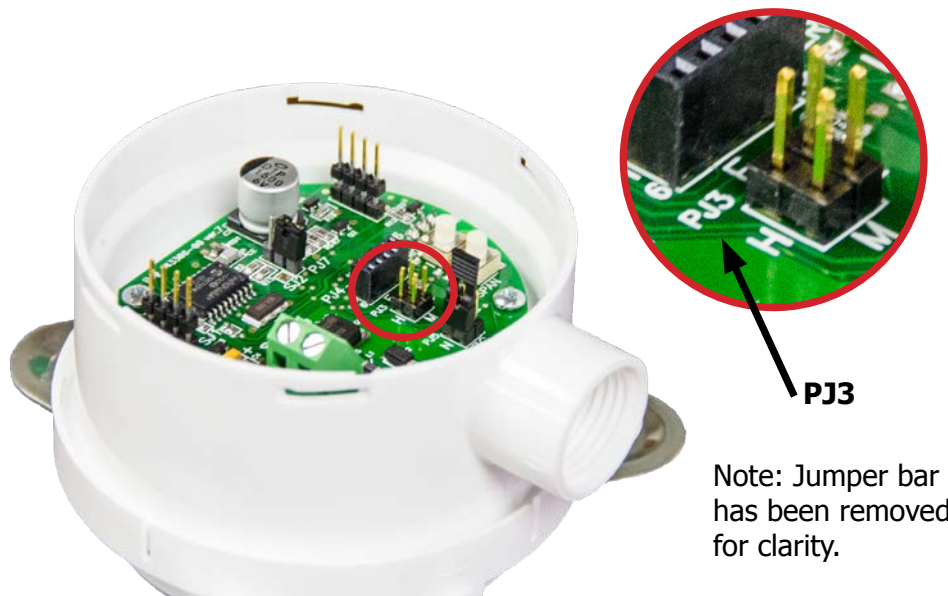
Wide Range - Red
0-25 inches WC
23541



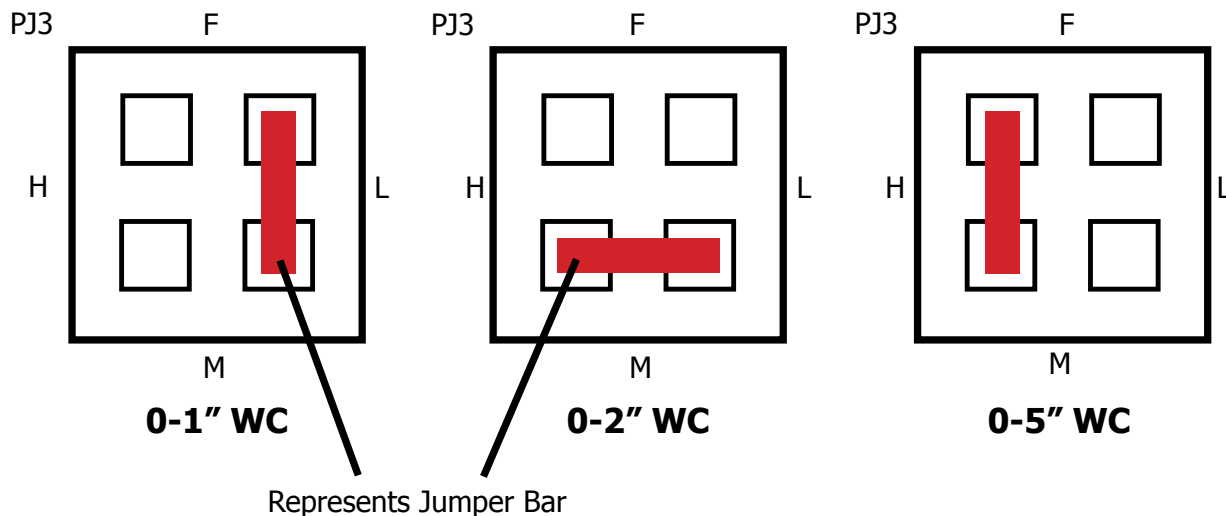
Special Range - Black
Variable Range

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.



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.



Installing Transducers

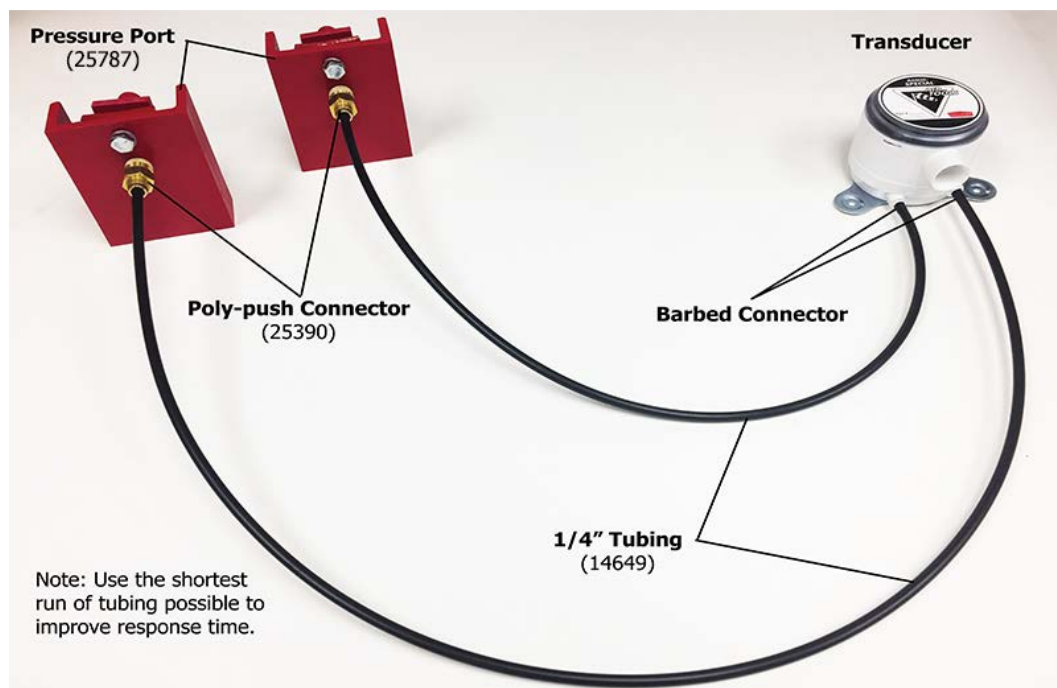
Note: Prior to installing and setting up the transducers, you should install the pressure ports. See the earlier section for instructions or visit support.samjackson.com for helpful videos.

Your Choke Finder 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 attached ports. 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 plastic tubing. Insert the black tubing into the poly-push fitting in the port, and push the other end of the tubing onto the barbed connector on the transducer. There are two barbed connectors, one for high pressure and one for low pressure. In pneumatic conveyance downstream, or where the air is going, is low pressure while upstream, or where it is coming from, is high pressure. Please consult the factory if you have questions about these connections.

The transducer requires two wires to connect to the Choke Finder 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 (-). Use (+) for the upstream port and (-) for the downstream port.**

Mounting/Installation of Concentrator

Each Choke Finder comes with one 15” x 17” concentrator panel (81951) also referred to as the Collector. You have 2 options for mounting this panel:

Option 1: Fiberglass Enclosure

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



Option 2: Toolbox



The toolbox can accommodate the concentrator panel.

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

Initial Programming

Before you can begin programming alarms on the touch screen, you'll need to enable the channels that you've installed. Press the wrench button from the home screen and enable the individual channels.



Now that you've enabled the installed channels, go back to the home screen and press on the first channel at the top. This channel would be channel 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 in Choke Finder 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.



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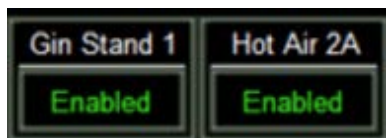
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Main Setup Page

After pressing the Wrench button on the Home page, you'll see the Main Setup page. Here you can enable and disable individual CF Inputs (**elsewhere labeled as Channels**).



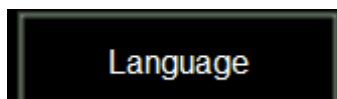
Enabling Inputs



Enable all inputs that are wired to the concentrator panel.

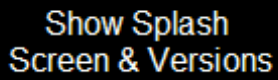
By default these are all named by channel number. Once the corresponding channel has been named on the channel setup page, this will automatically update the input name here.

Language




The language can be set as French or English.

Show Splash Screen & Versions

A rectangular button with a black background and white text that reads "Show Splash Screen & Versions".


Use this to show the Splash Screen and Software Version. This is helpful for troubleshooting.

Set Time & Date

A rectangular button with a black background and white text that reads "Time/Date".

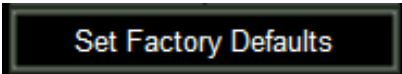
Use this to edit the Time and Date, which is used in graphs and Auto-Tune dates.

Change Password

A rectangular button with a black background and white text that reads "Change Password".

Use this to change the setup password.

Set Factory Defaults

A rectangular button with a black background and white text that reads "Set Factory Defaults".

This will reset ALL USER SETTINGS including password. Because ALL user settings are reset, it is recommended to consult the manufacturer before setting defaults.

Individual Channels

The home page displays up to 12 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 choke finder port.



The dot appears when the blue bar is in the alarm area for the threshold time.

Indicates this channel has been bypassed by the user. While bypassed, this channel will not trigger an alarm.

When the blue bar enters the yellow zone, it indicates the warning area.

When the blue bar enters the red zone, it indicates the alarm area. This will trigger the alarm.

Navigating the Screens

Now that you have enabled the desired channels, they will need to be configured. Pressing on any channel will bring you to that channel's individual setup page.

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

Channel	Value
Collider A	1.06
Collider B	3.14
Incline 1A	1.93
Incline 1B	1.95
Incline 2A	1.83
Incline 2B	1.20
Gin 1	3.18
Gin 2	3.07
Gin 3	2.98
Gin 4	3.10
Batt Condenser	6.86
Trash Fan	10.72

Advanced Diagnostics | SAMUEL JACKSON | Choke Finder | Acknowledge All Alarms | Silence Alarms |

Pressing will display the advanced diagnostics screen.

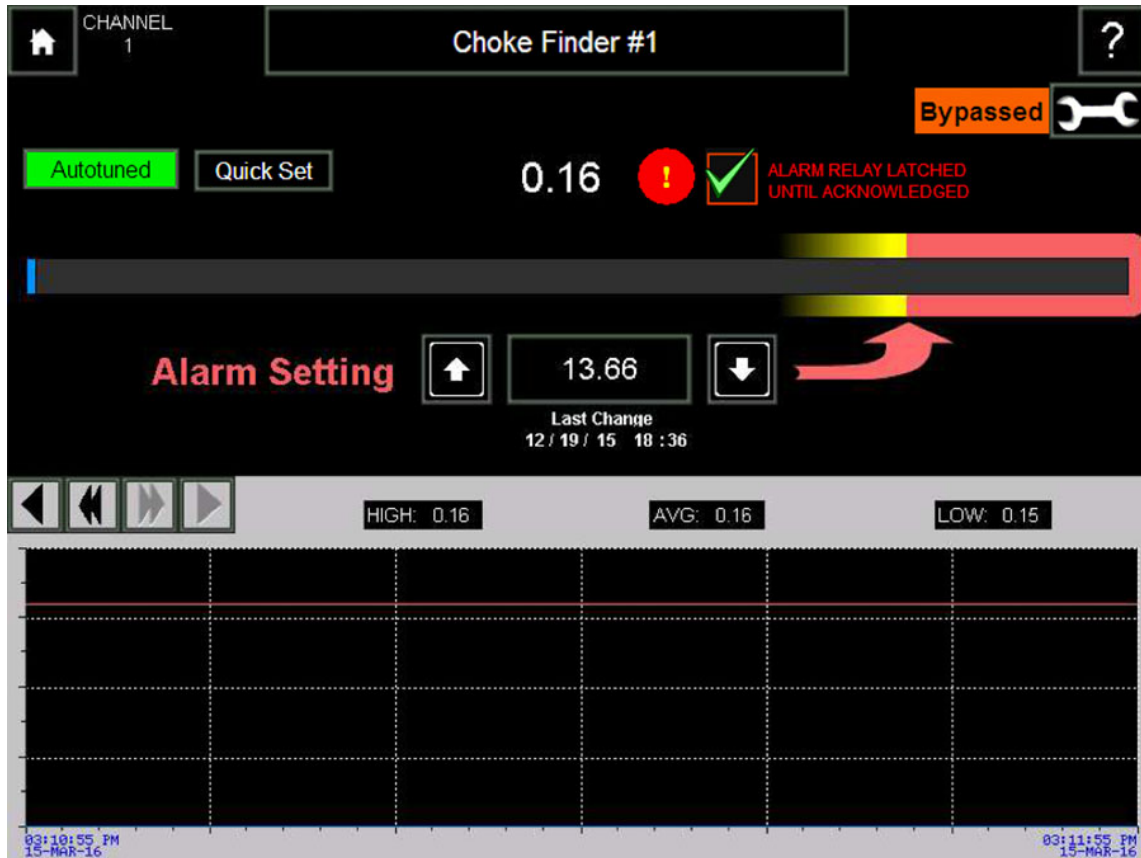
When using latching alarms pressing this button will clear all alarms.

During an alarm pressing this will silence the horn.

Pressing the wrench takes you to the Main Setup screen.

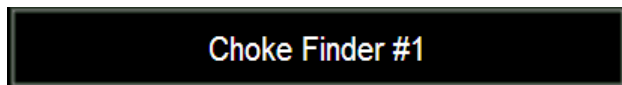
Channel Setup Page

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.

Channel Name



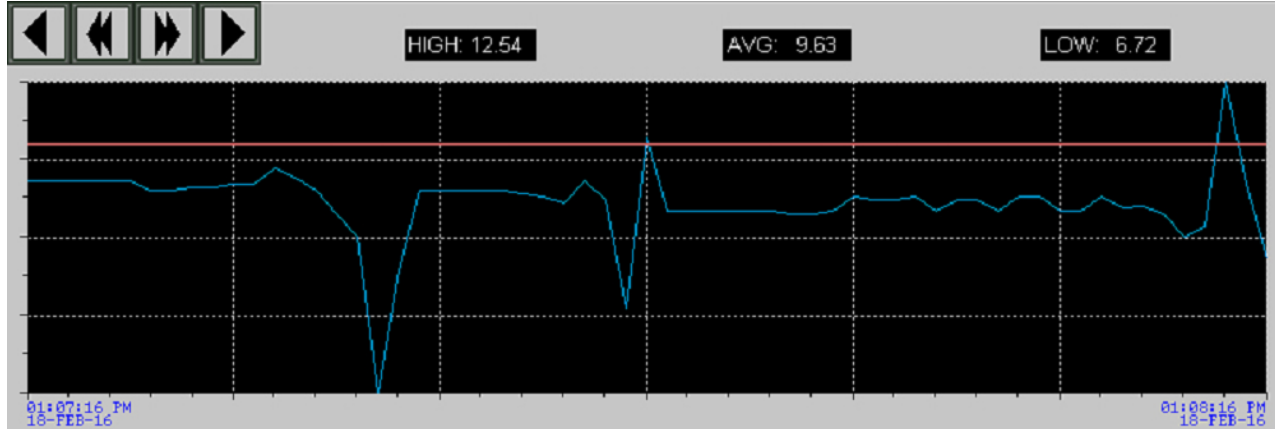
Use this button to set a custom name for each channel. There is a character limit of 16.

Autotune



Use this button to go to the Autotune screen, which is described later in this manual.

Graph



The graph shows how the current channel reading compares to the Alarm setting, which is represented by the red line. The blue 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 10 minutes. The values at the top are the High, Low, and Average over the last 10 minutes.

The graph is useful when setting the alarm value when not using Autotune.

Alarm Setting Adjustment

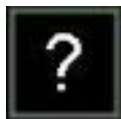


This is the point at which the channel will alarm. Make adjustments by pressing on the number itself, and type in a new value.

Adjustments can also be made by pressing either the up arrow or down arrow.

The date and time of the last change is recorded below the setting value.

Help Button



Press this button to open the help screen. The help screen is an overlay describing the channel setup page.

Sensor Setup



Used to enter the channel sensor setup screen.

Sensor Setup

Collider A CHANNEL 1

SENSOR SETUP

4mA Value: 0.00
20mA Value: 15.00
Filter: 0.50
Diagnostic: 5.63 mA
Bypass Alarm: Normal Operation
Alarm Response Time: 2.0s
Alarm Behavior: Non-Latching

Alarms: 22 RESET COUNT

Last Reset On
11/10/15 13:8

4mA Value is the pressure at the low end of the sensor range.
20mA Value is the pressure at the high end of the sensor range.
Filter smooths the sensor reading. Higher values cause greater smoothing or less extreme peaks and valleys. Lower values show more of the variations to their full extremes.
Diagnostic shows realtime sensor signal current.
Bypass Alarm toggles between normal alarm relay function and bypassed alarm relay function.
Alarm Behavior toggles between latching and non-latching alarms.
Alarms at the bottom of the screen displays the number of alarms on this channel since it was last reset.

4mA Value & 20mA Value

4mA Value: 0.00
20mA Value: 30.00

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

Filter: 0.80

The filter value determines the response time of the sensor. As the value increases, the faster the signal responds. A lower value will slow reaction time, smoothing the reading to 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.

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.

Bypass Alarm



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

Alarm Response Time



The Alarm Response Time setting is the delay between the reading going above the set point and the alarm being triggered. This is to reduce nuisance alarms. In most cases this value should remain at the default setting of 2.0 seconds.

Alarm Behavior



The alarm on action can be set to either Non-Latching, default, or Latching. Latching alarms will need to be acknowledged before they clear, even if the situation that caused the alarm is no longer present. Non-Latching alarms will clear as soon as the alarm condition is no longer present.

Alarm Count, Reset, and Reset Date



Counts the times the channel alarms. The reset count button can be used to zero this value and will also record the date and time of the reset.

Autotuning Function

Press the button below the home button on the channel setup page to get to the Autotune page.



Autotune



Press and answer the prompts to start Autotune.

Autotune will run on the channel until it receives a confirmation of a choke at which point it will exit having set the alarm below the actual choke threshold. This value may need tweaked by the user overtime, or Autotune can be run again.

Notes for the Installing Electrician

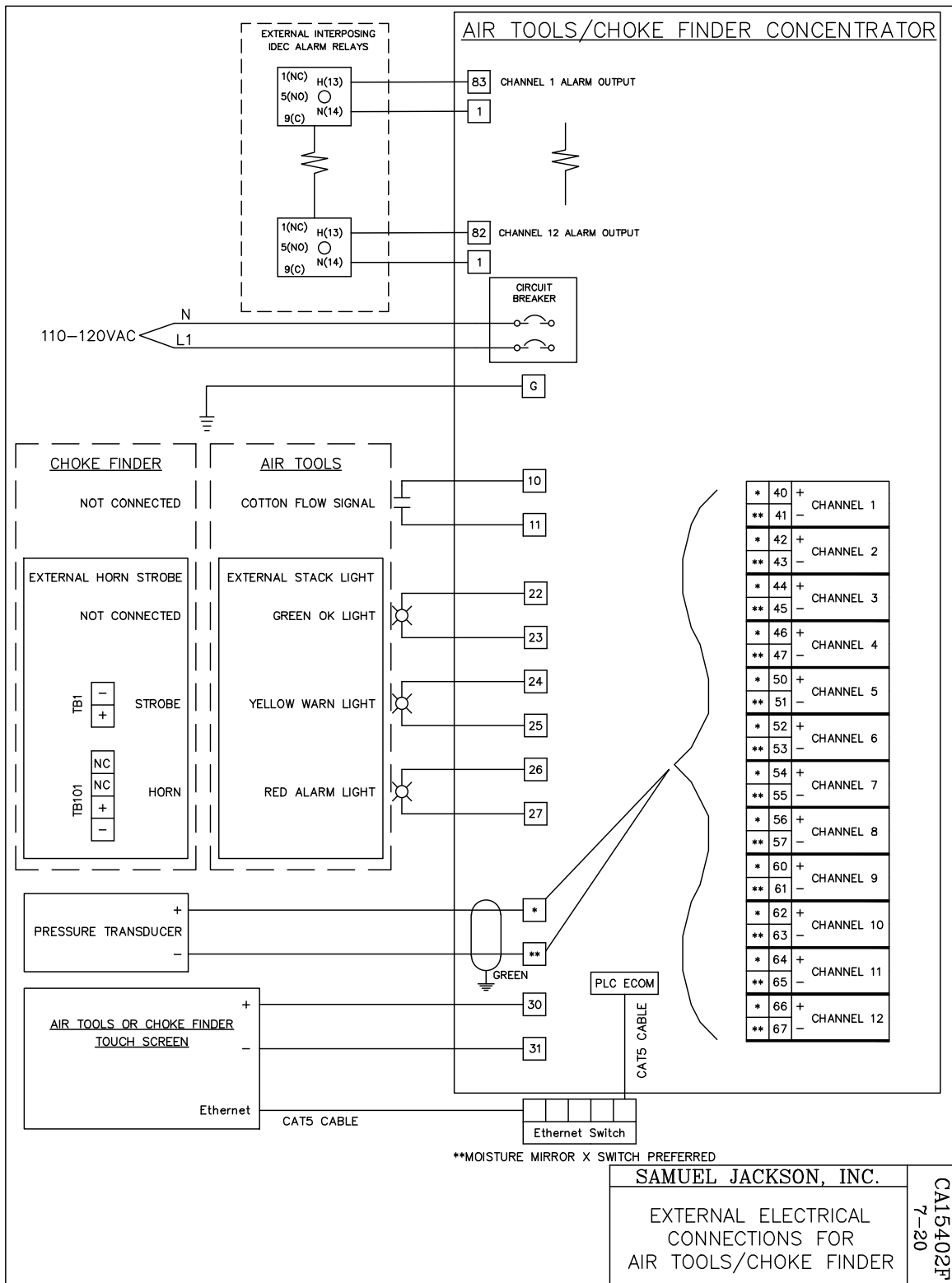
Intercommunication with Other Devices

The Choke Finder panel comes with 12 relays that can be used to signal other outputs, like PLC's. These relays are not physically on the panel. They were shipped with their order. The coil needs to be wired to one of the alarm outputs (terminals 73-84) and the common (terminal 1). 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 a Choke Finder alarm is tripped, it will stay active until acknowledged (Latching), or until the air returns to normal operating conditions (Non-Latching). 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

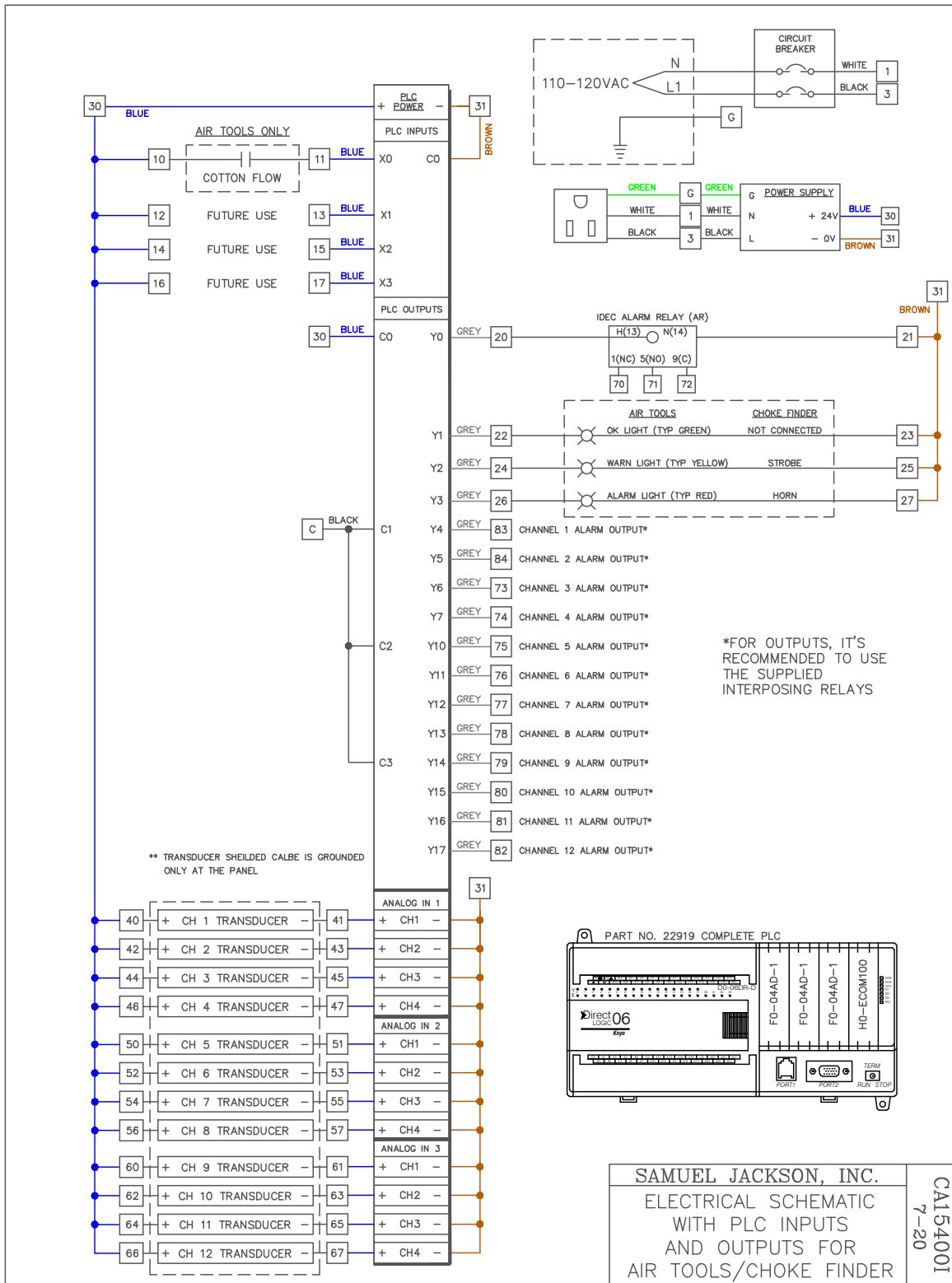


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Concentrator Internal Wiring



81005 CHOKER FINDER



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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, NEGLIGENCE, 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
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Lubbock, Texas 79407
806-795-5218

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