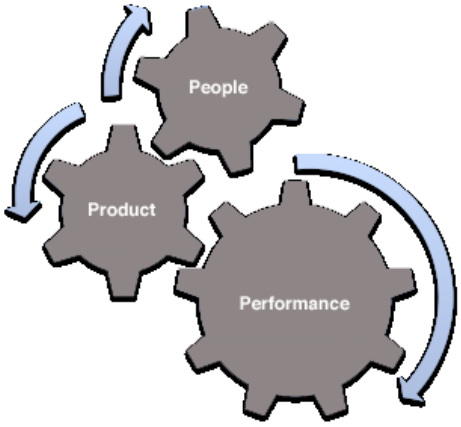
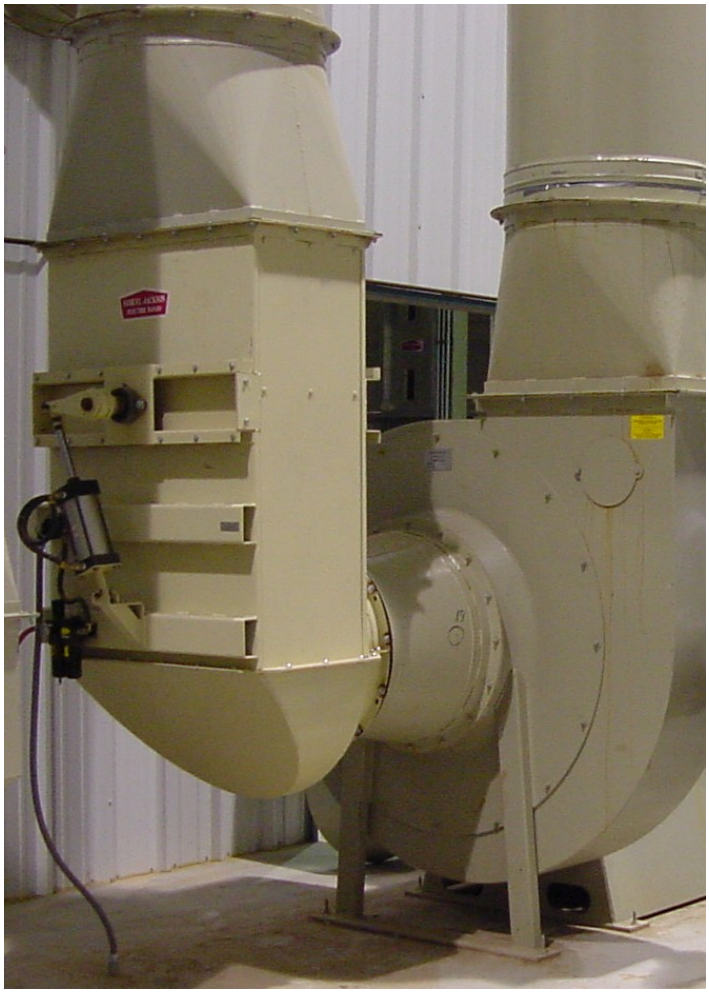
SERVICE MANUAL

Electric Banjo II

Model 81515B
With Air Actuator



SAMUEL JACKSON



ELECTRIC BANJO installed on first stage inclined cleaner pull fan

CONTENTS

We appreciate your business and hope you enjoy your Electric Banjo System

This manual contains information on the installation, startup, and operation of the Electric Banjo System. Included are sections on:

- Overview of Electric Banjo Operation
- Installation and Assembly
- Startup and Adjustment
- List of Major Components

In the future when you require service, technical support, or parts please contact us by phone, fax, or the internet. 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 Electric Banjo

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HOW DOES THE ELECTRIC BANJO WORK?

The Electric Banjo is installed at the inlet of the fan (see Figure 1). When the fan is operating, air enters the Banjo through the rectangular opening. Once inside the Banjo, a vane directs the air to a specially-designed funnel, which connects to the fan inlet. The combination of the vane and the funnel forces the air to swirl in the direction of the fan's rotation. A linear actuator positions the vane, which determines the amount of swirl induced into the air. Controlling this swirl allows control of the air volume and motor load.

The Banjo is ruggedly constructed to resist wear. Internal assemblies deflect trash from jamming between the vane and the sidewalls. External channels reinforce the Banjo walls, which are subject to high vacuum during operation. The vane's life is extended by its reversible design.

The Banjo control allows the operator to adjust the fan motor load setpoint. The setpoint is expressed as a percentage of the motor's full load amps. Once the operator has entered the setpoint, the control maintains the motor current by adjusting the vane position. As changes in the system occur, the control automatically moves the vane in response. For instance, an increase in cotton into the system will cause an amperage drop in the fan motor. The Banjo control senses the change in amperage with a current transformer. To compensate for this change, the control will open the vane until the fan's motor current reaches the setpoint. Conversely, if the feed of cotton is stopped, the control will close the vane until the motor current reaches the setpoint.

The Banjo control also senses when the fan is turned off. When this occurs, the Banjo vane is moved to the closed position. It remains at this position until the fan is restarted. By moving the vane to the unloading position, the fan draws less current when started, thus providing a "soft start" on the fan motor.

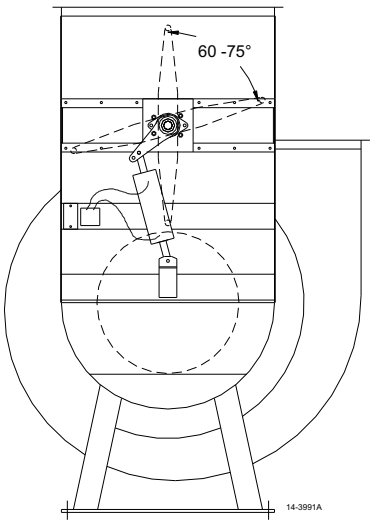


Figure 1 – Electric Banjo 14-3991A

WHAT'S NEW WITH THE BANJO II?

The Electric Banjo II makes setup and operation easier with the new 6-inch touch screen controls. The new touch screen enables the user to view and modify the settings on the Banjo II with unprecedented ease, without having to open the control box.

The touch screen can recall the last 500 errors for improved troubleshooting. Each error is recorded with information about which Banjo had the error as well as the time and date of the error.

Another useful new feature is a running record of the load for each fan. The load is constantly graphed and can be accessed on the touch screen by pressing the Graphs button on the home screen.

The Banjo II is also capable of sending information to the Moisture Mirror III or IV using a standard CAT5 cable. Setpoints, current loading, limit status, error notices and Banjo status can all be viewed and set from the console. Errors can also be acknowledged from the console, so problems don't go unnoticed and normal Banjo operation can be resumed as soon as possible.

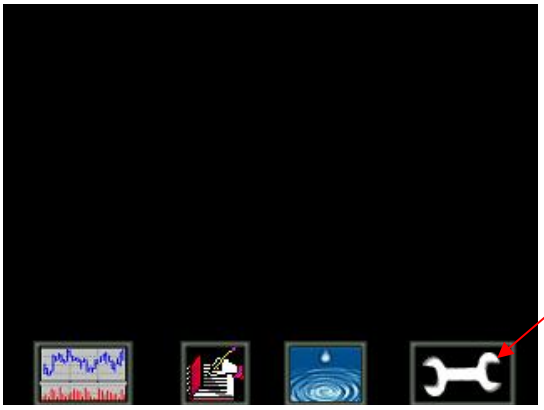
A Setup Wizard allows the user to customize the Banjo control for each application. In this program, the Banjo control can be enabled and fine tuned. This program also allows the user to enter the value for each motor's full load amp rating and provides a means to set the internal clock. Each Banjo control can operate up to eight Banjos.

ELECTRIC BANJO II
MAIN SETUP
(FOR SOFTWARE VERSIONS 1.0 AND LATER)

The *SETUP* program can only be accessed from the touch screen located on the LOCAL PANEL. The main screen is shown during normal operation if no alarms or errors are active. If the display shows an active alarm or error, it must be acknowledged before any other part of the program can be accessed. See the Errors and Alarms section later in this manual for more information.

LOCAL PANEL

- Once the main screen is displayed, press the Wrench button in the bottom right to access the setup menu. The default password is 1234.



HOME SCREEN

- When the Banjo is first turned on and no Banjos are installed, the Main Setup page will automatically be shown.

MAIN SETUP MENU OPTIONS

The menu that comes up when the wrench button is pressed is the Main Setup page. It will also come up automatically when the Banjo is first started. Any changes made on this page affect all Banjos that are installed.

SETTING TIME AND DATE

- To set the time and date, press the Set Date & Time button on the left side of the screen. Press each button and enter the correct information for each field. The Hour parameter uses the 24-hour format.

- When finished, confirm the new time and date by pressing Set Date & Time on the bottom of the screen. Press the Back arrow to return to the *Setup Menu*.

SET FACTORY DEFAULTS FOR ALL BANJOS

- This button sets all options back to the factory default, including Names, Setpoints, and Enabled status for all Banjos.

MIN ALLOWED STROKE AND MAX ALLOWED STROKE

- This setting determines how slow is considered too slow and how fast is considered too fast for the air cylinder to move. The factory defaults are 2.0s and 4.0s, respectively. The default settings are appropriate for most installations and should not be changed unless instructed to do so by a factory representative.

MAX STROKE TEST TIME

- This setting determines how long the program waits before showing the "Extend/Retract limit never met" error. The default setting is 15.0 seconds. This has been shown to be appropriate for most installations and should not be changed unless by or under the direction of a factory representative.

PASSWORD

- Press this button to enter a new password. Any number from 0 to 9999 will work. The default is 1234.

BANJO INDIVIDUAL SETTINGS

- On the right side of the Main Setup screen, there are buttons for each individual Banjo. The pictures in this manual depict the settings for Banjo 1, however all Banjos have identical menus.
- Press the button corresponding to the Banjo you wish to configure or install.
- It is recommended that you used the Setup Wizard to install the Electric Banjos. Simply press the "Setup Wizard" button on the screen and it will guide you through the process. The next section of the manual covers the Setup Wizard in detail.

BANJO INSTALLED/NOT INSTALLED

- This button toggles whether or not the Banjo is installed. The status of a Banjo will not show up on the Home screen or on the Moisture Mirror III if it is not installed. When a Banjo is first installed, it will be DISABLED. This keeps it from moving until it is enabled. When a Banjo is first enabled, it will close then open the vane to check that the extend and retract times are acceptable.

CHANGE NAME

- Use this button to change the name of the Banjo from the default "Electric Banjo" to a name that better describes the location of the Banjo such as "1st Stage North" Be aware that you can use no more than 16 characters, including spaces.

BANJO DISABLED/ENABLED

- This shows whether or not the Banjo you are looking at is being controlled by the panel. This setting is off by default. When a Banjo is first enabled, it will close and then open the vane to check that the extend and retract times are acceptable.

SET-POINT SETUP

- This menu allows you to set the desired set-point for the Banjo you are looking at. There are two user-programmable set-points available. Which one the Banjo uses is determined by the set-point switch. Each Banjo has its own switch so that either set-point may be used on any Banjo at a given time. The light above the set-point shows which one is active at the moment. If no switch is installed, Set-Point #1 is always used. Press the Back arrow to return to the individual Banjo setup page.

SET DEFAULTS

- This button sets all default values only for the current Banjo.

LOW LOAD

- This button sets the limit below which the *LOW LOAD* alarm occurs indicating a possible chokage in the air system. The default low load value is 5%. The *LOW LOAD* alarm occurs when the measured motor load remains below the set-point by at least this percent fore more than 10 minutes.

DEADBAND

- The deadband sets how far off the setpoint the load must be before the Banjo moves the vane to correct. Too large of a deadband will cause the Banjo to be unresponsive to changes in the load, while too small of a deadband will cause the Banjo to 'hunt' or continuously pulse in and out.

PV FILTER

- This filters the input from the load sensor on the fan motor. This helps keep the load reading smooth and prevents inaccurate readings. Setting the filter value to 0 will disable filtering. Increasing the filter value will increase the amount of filtering. The filter default is 10. This value should be adjusted after the performance of the Banjo is evaluated. If the control is unstable, try increasing the filtering. Keep in mind that increasing the filtering lowers the responsiveness of the control.

SAMPLE TIME

- The Banjo control only makes adjustments to the Banjo actuator at discrete intervals of time. This time interval is controlled by the sample time setting. The sample time can be set from 0.5 seconds to 5.0 seconds. The default is 1.5 seconds. A shorter sample time will yield a more responsive, faster control; however, it may also lead to unstable operation. A longer sample time will be less responsive and increase the time to make adjustments, especially each time the fan is started.

FLA (Full Load Amps)

- Input the FLA of the motor on the fan in this dialog so that the percentages used in the control loop are accurate. Motors with an amperage rating over 200 amps are not supported.

EXTEND (CLOSE) and RETRACT (OPEN)

- These buttons allow you to open and close the Banjo from the local panel. Use these buttons to test whether or not the Banjo is setup correctly or to position the vane manually when the Banjo is disabled. The lights below will turn on and off to signal when a limit is met on the control cylinder.

ELECTRIC BANJO II
SETUP WIZARD
(FOR SOFTWARE VERSIONS 1.0 AND LATER)

The Setup Wizard makes it easy to make sure that your Banjos have been installed correctly and are functioning properly. To access the Setup Wizard, go to the Main Setup page and press the Individual Settings button for the Banjo you wish to install or check. Next, press the Setup Wizard button and follow the prompts. Press the Next button to continue to the next screen after completing each step or the Back button to go back a page.

"Back" Button

"Next" Button

Step 1: Name the Banjo. The name has a character limit of 16 letters, including spaces. It is not required that you change the name.

Check that the air hose is routed similarly to the picture shown on the screen.

Make sure that the vane position is marked on the shaft. If it is not, mark the position with a permanent marker or paint.

Once the name has been set, the hoses have been checked, and the vane position determined and marked, press the Next arrow to continue to the next step.

Step 2: Check to see that the vane lever matches the way the Banjo is installed on your fan. Refer to the picture on the screen or the drawing in the back of this manual in order to know which direction the arm should be facing based on the rotation of the fan it is installed on.

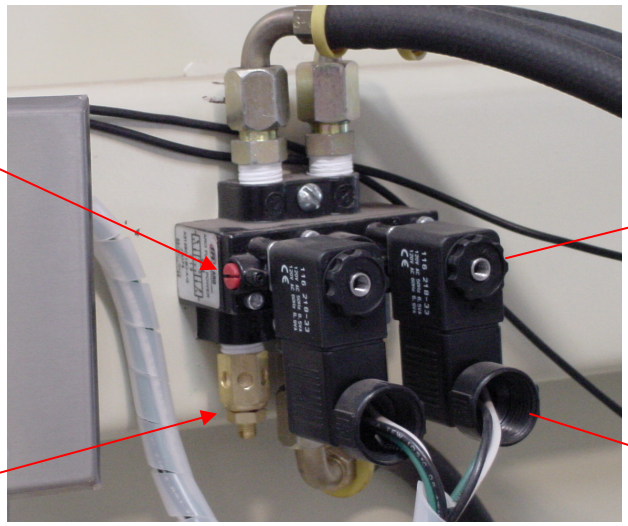
Step 3: Check to make sure that the air cylinder is pinned in the outer hole (60 degree rotation) on the vane lever. The 60 degree vane travel is used if a little air flow is desirable when the vane is in the "closed" position. The 75 degree travel allows the Banjo vane to unload most of the air flow through the fan. Consult factory with questions regarding vane travel choice.

Make sure that there is sufficient oil in the air lubricator reservoir. Use high quality air tool oil to preserve the life of your Banjo's pneumatic components.

Check to see that the air pressure reads 80 psi. If not, adjust the regulator and/or air supply to get the desired pressure.

EXTEND Manual Override Valve

Note the position of the slot for normal operation



EXTEND Manual Override Valve (Not shown)

RETRACT Exhaust Port for Speed Adjustment

RETRACT Exhaust Port for Speed Adjustment (Not shown)

Step 4: You should now adjust the exhaust ports that control the speed of the cylinder. There is one exhaust port on each side of the control valve assembly. As a starting point, loosen the jam nuts and tighten both screws until they seat. Then, back them out one full turn and tighten the jam nuts back down. They may need to be more accurately adjusted in step 9.

Step 5: Use the manual override valve (see picture above for location) to fully retract the cylinder. There is one manual override valve on each side of the control valve assembly. The one on the left side controls the extension, the right side controls retraction. Use a flat-head screwdriver to turn it as if you were tightening a screw to activate the override. The override valve must be set back to its initial position before it will function.

Step 6: Use the manual override valves to check to see that the vane is fully open when the cylinder is fully retracted. If it is not, you will need to adjust the vane position. First, loosen the outer nut on the keyless bushing until the bushing breaks away from the shaft. With the cylinder in the retracted position, rotate the vane inside the Banjo to the fully open position and then tighten the keyless bushing. Use the manual override screws to stroke the cylinder in and out while checking to make sure that the vane opens and closes without jamming.

Step 7: Use a hex wrench to tighten the adjustment screw on top of the lubricator fully tight and then back it out ½ turn. Use the override screws to stroke the cylinder and watch for oil dripping from the top of the regulator. One drop every three or four full strokes provides adequate lubrication. If the amount of oil being consumed is not correct, loosen the adjustment screw to increase the rate or tighten it to reduce the oil usage.

Step 8: Check that the limit switches are wired correctly. Use the override screw to move the cylinder to the fully extended position. Make sure that indicator on the screen shows that the limit is met the cylinder is fully extended and the light on the extend limit switch is on. Repeat the steps to check that the retract limit switch is functioning. If there is a problem, check that the wiring matches that on the wiring diagram.

NOTE: ***WHEN THE NEXT SCREEN IS ACTIVATED, THE BANJO VANE WILL MOVE AUTOMATICALLY. BE SURE THAT EVERYONE IS CLEAR AND THE FANS ARE NOT RUNNING.***

Step 9: The PLC will measure the extend and retract times on the Banjo and then display these times on the screen. If either the extend or retract time is out of bounds, you will need to adjust the appropriate exhaust port in order to achieve the correct time. See the picture on the previous page for the location of the exhaust ports. Loosen the appropriate exhaust port screw to make the Banjo move faster and tighten the screw to move more slowly. Press the Test Again button to the run the test again if necessary.

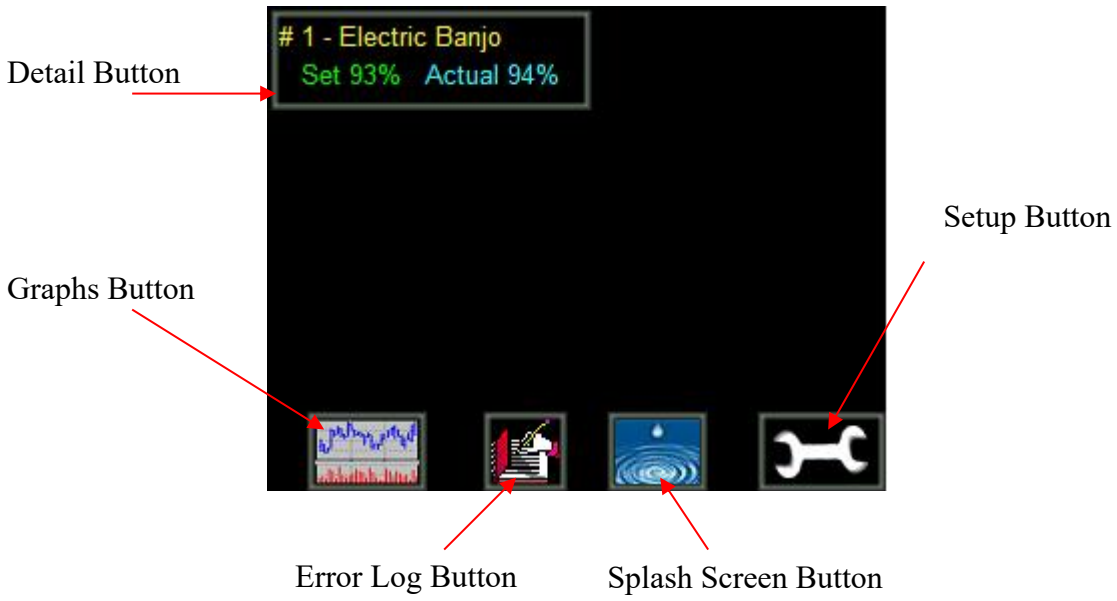
Step 10: Calibrate the Banjo reading to your motor. Press the Fan Motor FLA button on the right and enter the Full Load Amp rating of your motor. Motors with amp ratings over 200 are not supported.
Check to see that the vane is closed (cylinder fully retracted). The light on the arm side of the cylinder will come on when the retract limit is met.
Now, bump the fan and check that the rotation is correct.

Step 11: Start the fan and observe the amp draw and % value shown on the screen. Use an amp meter to check that the actual current matches the current displayed (within 5 amps).

Step 12: Set your setpoints and check to see that the setpoint switch is working (if installed). Press the button for the setpoint (SP #_) you would like to set and enter the desired value. If there is a setpoint switch installed, toggle it on and check to see that SP #2 becomes active. If there is no switch, SP#1 will always be used.

ELECTRIC BANJO II
NORMAL OPERATION

During normal operation, the following screen will be displayed. This screen is referred to as the Home screen. All features of the Banjo II can be accessed from this screen.



DETAIL BUTTON

- This button shows a summary of the current status of the Banjo. These buttons are hidden until the Banjo they display is installed. You can install new Banjos by following the steps outlined in the Setup Wizard section.

GRAPHS BUTTON

- The Graphs button displays a graph of the current values from the time that the panel was powered up. Each Banjo is shown in a different color.

SPLASH SCREEN BUTTON

- This button brings up the splash screen that shows the version numbers for the touch screen and the Banjo panel.

SETUP BUTTON

- The Setup button is used to access the Main Setup page. See the Main Setup section of this manual for more information.

ERROR AND ALARM LOGGING SYSTEM

The *ERROR and ALARM LOGGING SYSTEM* is a feature of the ELECTRIC BANJO designed to make troubleshooting easier for both the user and Samuel Jackson service personnel. This system remembers the last 500 ERRORS and ALARMS, thus showing a history of past problems. The alphanumeric display located in the LOCAL PANEL will show the code number for the ERROR or ALARM along with the month, day, and time of occurrence.

Access to the logging system is easy.

- Press *LOG* button located on the Home screen.

The display changes to show ***Error Log***, which starts with the most recent ERROR or ALARM. Use the buttons +1 and -1 to increment to earlier logs or decrement to the latest. Use +50 to go 50 errors older and use -50 to go 50 errors newer.

A typical Error Log display is shown below. Error Log is shown with a code of 320 that occurred on 05/23 (May 23) at 14:51 (2:51 PM). Code 320 is an ERROR that the input signal for Fan # 2 failed before operation. There are a total of two errors in the stock as signified by the number 2 in grey to the left of the date. A more detailed description of the code is given in this manual.

ERROR LOG DISPLAY

To quickly advance through earlier logs, press the *+50 or* -50 buttons to skip 50 errors in either direction.

If you entered the error log from the home screen, press the EXIT LOG button to return to the Home screen. If the error screen was called because of an error that occurred, press the OK button to return to the Home screen.

ERRORS AND ALARMS EXPLANATION
ELECTRIC BANJO
(FOR SOFTWARE VERSIONS 1.0 AND LATER)

PRELIMINARIES – An ERROR will prevent the Banjo vane from moving either direction until they are acknowledged. ALARMS result in different effects based on the severity of the problem or condition. In each case, the DIAGNOSTIC CODE with a description of the ERROR or ALARM will be shown on the touch screen display located on the LOCAL PANEL and on the Moisture Mirror III (if installed).

The display will continue to show the ALARM or ERROR until the *OK* button is pressed. Only one ALARM or ERROR condition is displayed at a time. The oldest unacknowledged ALARM condition is shown even if other ALARMS or ERRORS follow. Pressing the *OK* button will show consecutive ALARM and ERROR conditions.

The # place in the ALARM or ERROR number indicates the fan number that the ALARM occurred for. For example, E-331 indicates this ERROR is for fan number 3 and is a failure of the input signal (*INPUT 3 FAILED DURING OPERATION).*

ERROR 300
LOW AIR PRESSURE: This error stops all movement of all Banjo actuators when air pressure drops below 80psi. Movement will resume when the pressure exceeds 80psi again. Check that all air compressors are running and that all air line valves are open. 60psi is the minimum pressure required for the air solenoid valve.

ERROR 3#0
INPUT FAILED BEFORE OPERATION: This error occurs if the 4-20mA signal is lost for this Banjo before the Banjo enters the active stage (before the fan starts). This alarm will freeze movement of the Banjo vane until the signal returns.

ERROR 3#1
INPUT FAILED DURING OPERATION: This error occurs if the 4-20mA signal is lost for this Banjo after the Banjo enters the active stage (after the fan starts up). This alarm will freeze movement of the Banjo vane until the signal returns.

ALARM 3#2
LOW LOAD: This alarm occurs if the measured load stays lower than the setpoint for more than 10 minutes after the retract limit has turned on. This alarm does not interfere with the operation of the Banjo.

ALARM 3#3
EXTEND AND RETRACT BOTH ON: This alarm occurs if the extend and retract limits are on at the same time. One or both limit switches are misadjusted or bypassed. See the setup wizard for this Banjo for more help correcting this problem. This alarm does not interfere with the operation of the Banjo.

ALARM 3#4
RETRACT TIME TOO SLOW: This alarm occurs if the measured retract time is longer than the time interval set on the Main Setup page. See the setup wizard for this Banjo for more help correcting this problem. This alarm does not interfere with the operation of the Banjo.

ALARM 3#5
RETRACT TIME TOO FAST: This alarm occurs if the measured retract time is less than the time specified on the Main Setup page. See the setup wizard for this Banjo for more help correcting this problem. This alarm does not interfere with the operation of the Banjo.

ALARM 3#6
EXTEND TIME TOO SLOW: This alarm occurs if the measured extend time is longer than the time interval set on the Main Setup page. See the setup wizard for this Banjo for more help correcting this problem. This alarm does not interfere with the operation of the Banjo.

ALARM 3#7
EXTEND TIME TOO FAST: This alarm occurs if the measured extend time is less than the time specified on the Main Setup page. See the setup wizard for this Banjo for more help correcting this problem. This alarm does not interfere with the operation of the Banjo.

ALARM 3#8
RETRACT LIMIT NEVER MET: This alarm occurs if the retract limit switch is not satisfied within the time limit set on the Main Setup page. See the setup wizard for this Banjo for more help correcting this problem. This alarm does not interfere with the operation of the Banjo.

ALARM 3#9
EXTEND LIMIT NEVER MET: This alarm occurs if the extend limit switch is not satisfied within the time limit set on the Main Setup page. See the setup wizard for this Banjo for more help correcting this problem. This alarm does not interfere with the operation of the Banjo.

TIPS

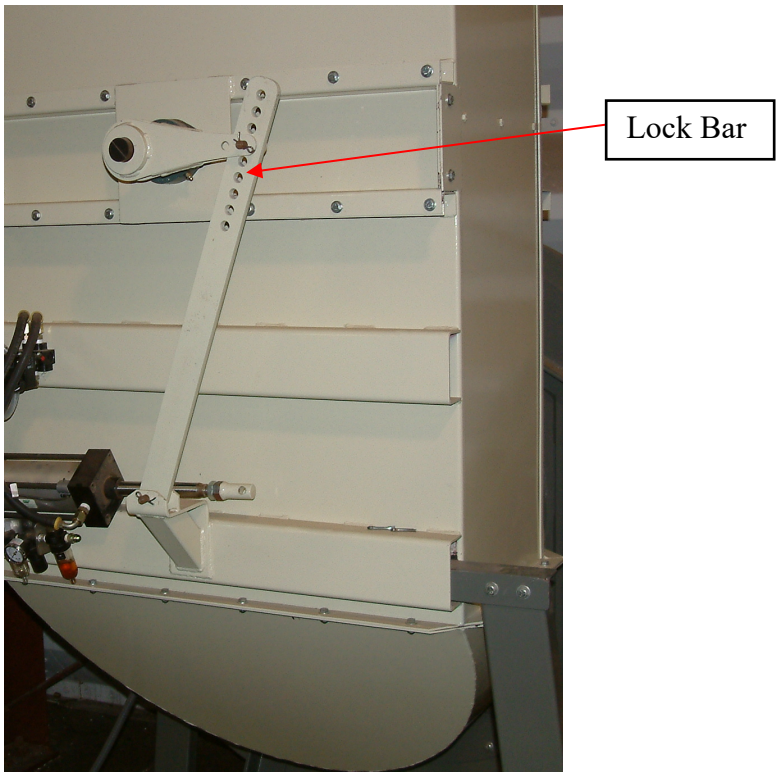
If the problem cannot be immediately corrected, the Banjo vane position can be moved manually to a position that avoids fan motor overloading. See MANUAL VANE POSITIONING section.

MANUAL VANE POSITIONING

Manual movement of the Banjo vane is allowed when the Banjo is in DISABLE mode. Manual movement of the vane is helpful in checking for proper wiring in the Setup Program. Manual movement also allows the fan to continue to operate until any problem causing an error condition is corrected.

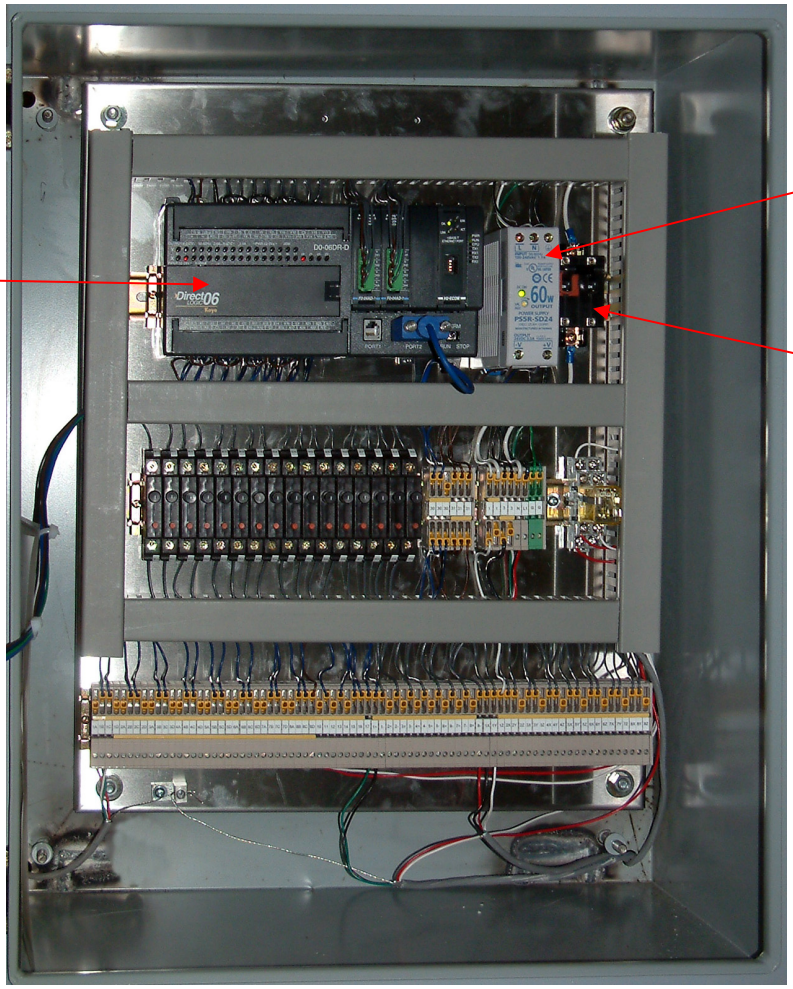
With the Home screen shown, press the button to show the disabled Banjo. Press the Extend or Retract button to open or close the vane. Move the vane until the desired air volume and/or fan motor amperage is obtained. If the problem is not with the signal from the load sensor, then the load value can be monitored on the display while the vane position is changed.

If the air solenoid valve or air cylinder actuator is defective, the vane can be locked in place by removing the actuator and installing the 20643 BANJO VANE POSITIONER LOCK BAR shipped with the Banjo control cabinet. Be sure to turn off the fan before disconnecting the cylinder.



81515B CONTROL CABINET
FOR ELECTRIC BANJO

(REFER TO COMPONENT LIST FOR PART NUMBERS AND DESCRIPTIONS)

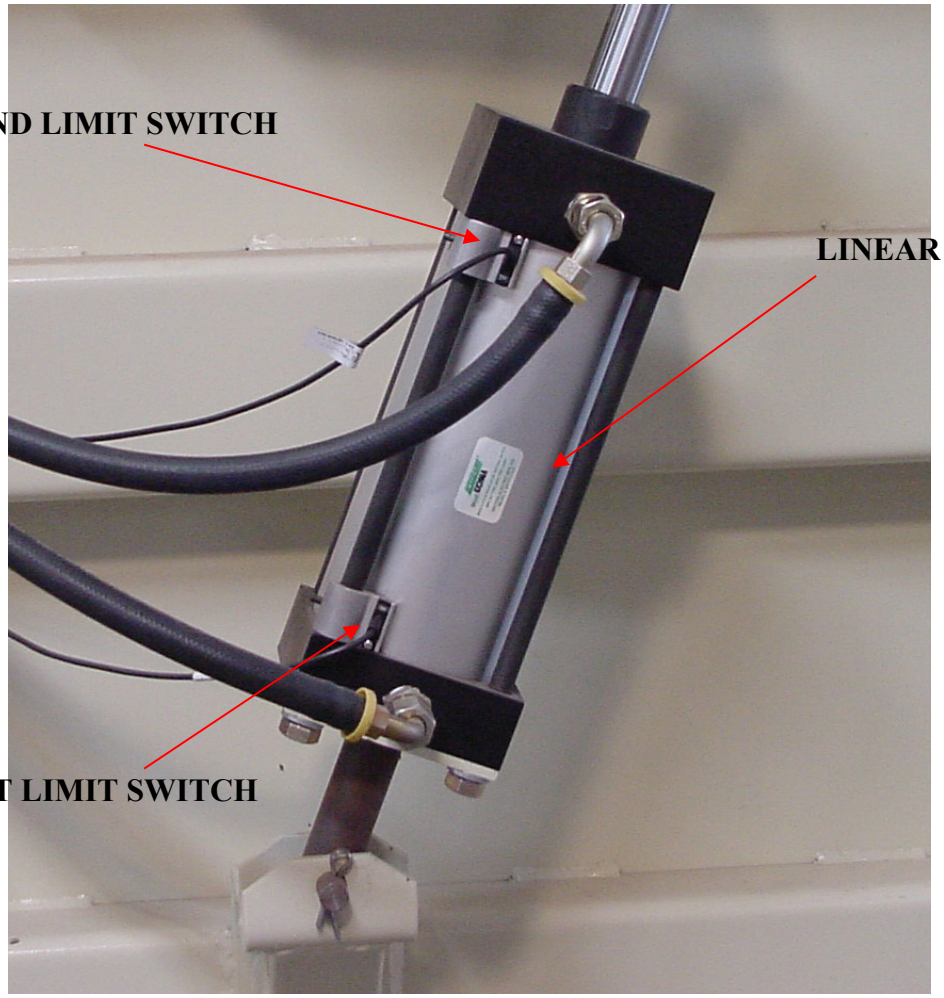


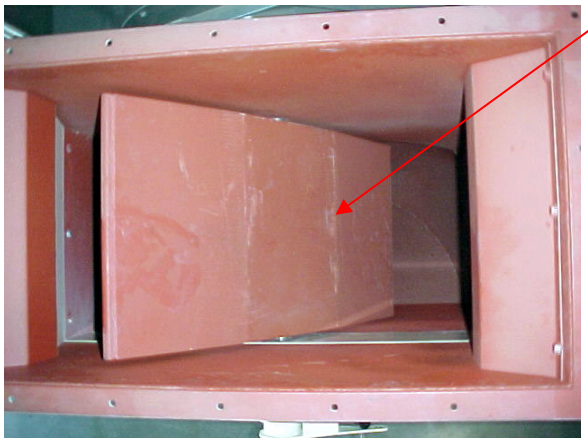
LOCAL PANEL ON CABINET DOOR

OPTIONAL 20521
BANJO STATUS PANEL
(located at ginner's console)
(not used with MM III+)

COMPONENTS FOR ELECTRIC BANJO

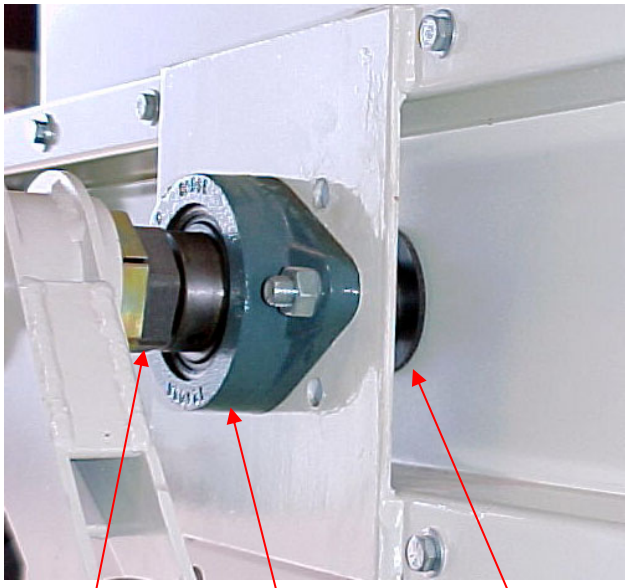
(REFER TO COMPONENT LIST FOR PART NUMBERS AND DESCRIPTIONS)



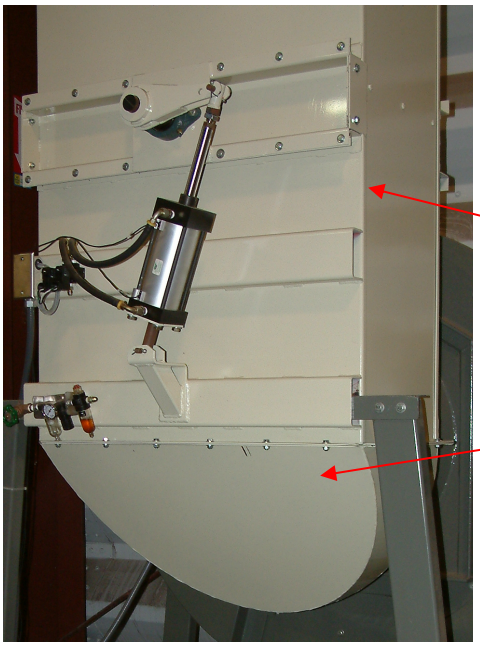


COMPONENTS FOR ELECTRIC BANJO

(REFER TO COMPONENT LIST FOR PART NUMBERS AND DESCRIPTIONS)



KEYLESS BUSHING **BEARING** **SHAFT WASHER**

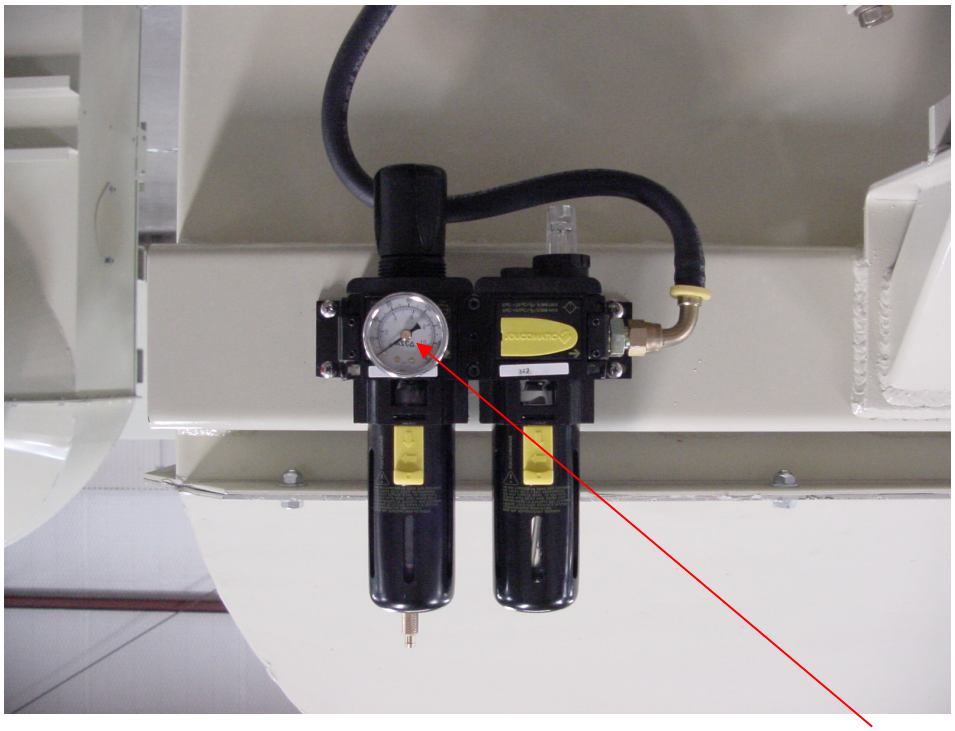


MAIN HOUSING

LOWER HOUSING

COMPONENTS FOR ELECTRIC BANJO

(REFER TO COMPONENT LIST FOR PART NUMBERS AND DESCRIPTIONS)



22292 AIR TRAIN

13706
AIR GAUGE

22305
PRESSURE
TRANSDUCER

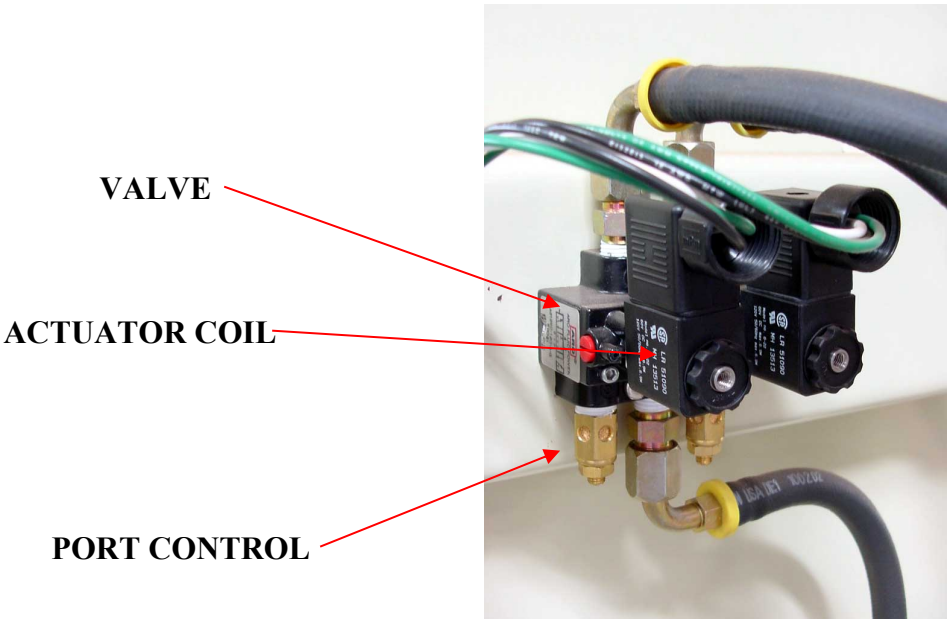
14705
BRASS
BUSHING

15451
3/8” GALVANIZED TEE

AIR PRESSURE TRANSDUCER

COMPONENTS FOR ELECTRIC BANJO

(REFER TO COMPONENT LIST FOR PART NUMBERS AND DESCRIPTIONS)



AIR SOLENOID VALVE

LOAD SENSOR

COMPONENT LIST

SYMBOL	PART NAME, NUMBER, MFR'S TYPE	LOCATION
AIR PRESSURE TRANSDUCER	PRESSURE TRANSDUCER, 22305 BRASS BUSHING, 14705 3/8 TEE, 15451	IN AIR LINE
AIR SOLENOID VALVE	AIR VALVE, 4 WAY, 3 POSITION, CLOSED CENTER, 20813 COIL, 20814 PORT CONTROL, 20816, ¼ NPT	BODY
AIR TRAIN	FILTER, REGULATOR, LUBRICATOR WITH GAUGE ASSEMBLY, 22292	BODY
BANJO BODY	BANJO BODY 19950A,	BODY
BANJO LOWER HOUSING	LOWER HOUSING, 20735	BODY
TOUCH SCREEN	C-MORE 6" TOUCH SCREEN, 22044	CONTROL CABINET
BEARING	BEARING 15695	BODY
CIRCUIT BREAKER	CIRCUIT BREAKER 22175	CONTROL CABINET
KEYLESS BUSHING	KEYLESS BUSHING 15640, 6202380	BODY
LINEAR ACTUATOR	LINEAR ACTUATOR 20815, 3 ¼ BORE X 6 STROKE	BODY
LOAD SENSOR	LOAD SENSOR 19938	FAN MOTOR STARTER
POWER SUPPLY	POWER SUPPLY (24VDC) 21553	CONTROL CABINET
PLC	PLC ASSEMBLY, 22077, DL-06	CONTROL CABINET
LIMIT SWITCH	REED SWITCH, 22088	BODY
SHAFT WASHER	SHAFT WASHER 20242	BODY
VANE	VANE ASSEMBLY 19909A	BODY

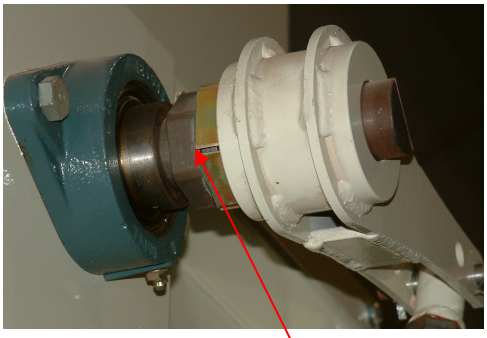
ASSEMBLY & INSTALLATION

BANJO PHYSICAL INSTALLATION

The Electric Banjo requires little assembly during installation. The factory will preset the vane position if the "clock" of the fan is known prior to shipment. If required, setting the vane position once the Banjo is installed on the fan is easy.

Refer to Drawings CAT6240A and CAT6250A in this manual for vane adjustment. The two drawings show a choice of 60 and 75 degree vane travels. The 75 degree travel is the most common choice as this allows the Banjo vane to unload most of the air flow through the fan. The 60 degree vane travel is provided if a little air flow is desirable for the vane "closed" position. Consult factory with questions regarding vane travel choice.

- Observe vane lever pin position for linear actuator rod. See Drawings for details.
- Vane should be in full open position when linear actuator is fully retracted. A keyless bushing allows easy and infinite adjustment of the vane lever to the vane shaft.



Keyless Bushing

TIPS

*Tightening of the KEYLESS BUSHING to the proper torque of 190 ft-lb is **extremely** important.*

- Be sure vane rotates right direction for "clock" of fan. See Drawings for details.

A 24 inch diameter angle flange with 12 equally spaced bolt holes is attached to the outlet of the Banjo. The Banjo can be rotated for 12 positions (each 30 degrees apart). See Drawing CAT6210A for Banjo dimensions.

IMPORTANT

In some installations, a short duct or increaser/reducer transition is required between the Banjo outlet and fan inlet. The overall length of this section must be kept under 36 inches for maximum Banjo performance.

BANJO ELECTRICAL INSTALLATION

Drawing CAT6236A in this manual shows the external electrical connections from the No. 1 Banjo, fan and motor to the Control Cabinet. For the connection of additional Banjos (maximum of 8 per Control) refer to the electrical schematic CAT6226B for the connections.

IMPORTANT

Follow wire gauge sizes and shielding instructions for sensitive signal wires. Ground both the Banjo and the Control Cabinet. The Banjo's PLC can lose its program if not properly grounded.

- Electrical requirements are 120VAC, 10 amp service.

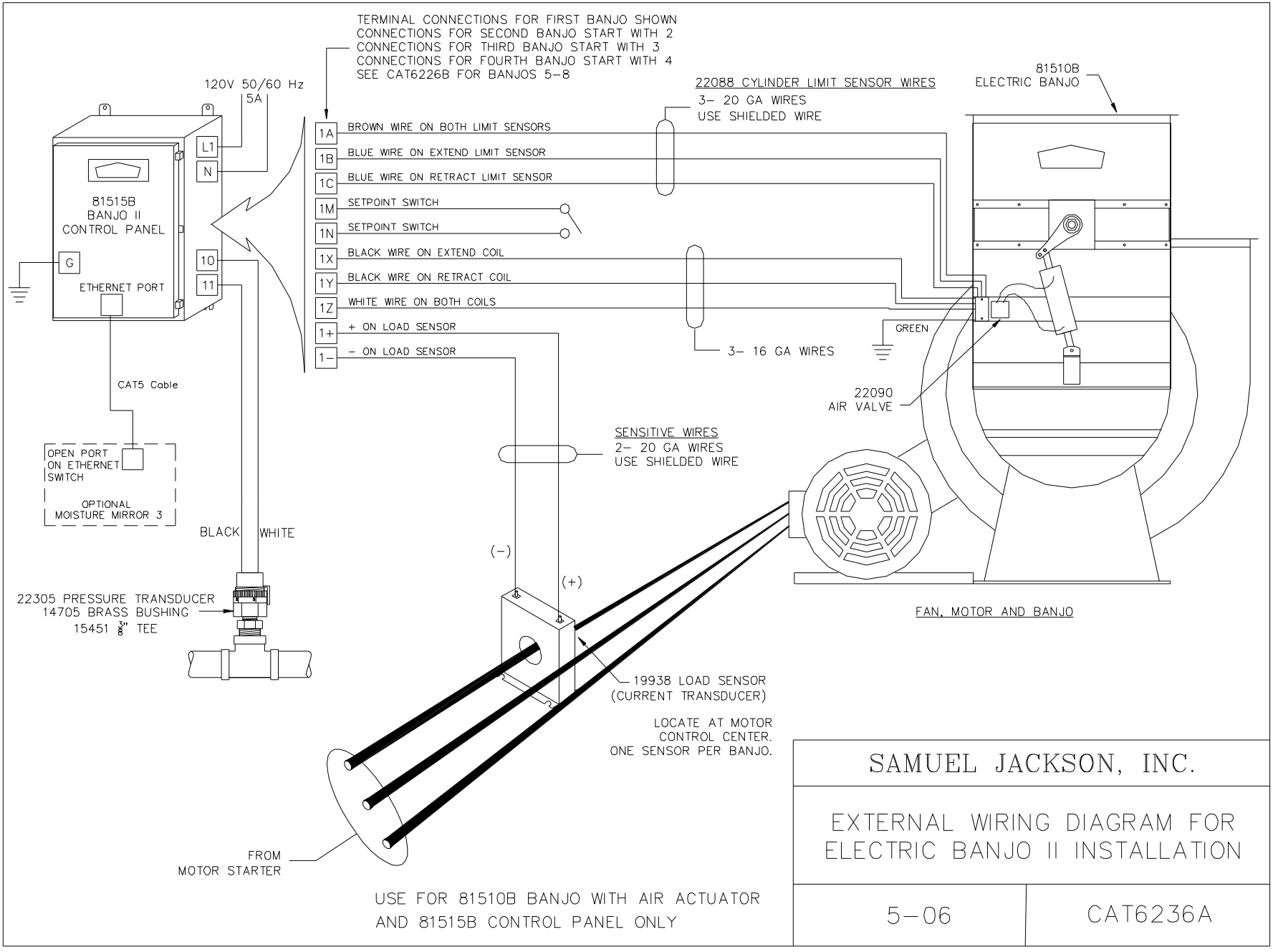
BANJO COMPRESSED AIR HOOKUP

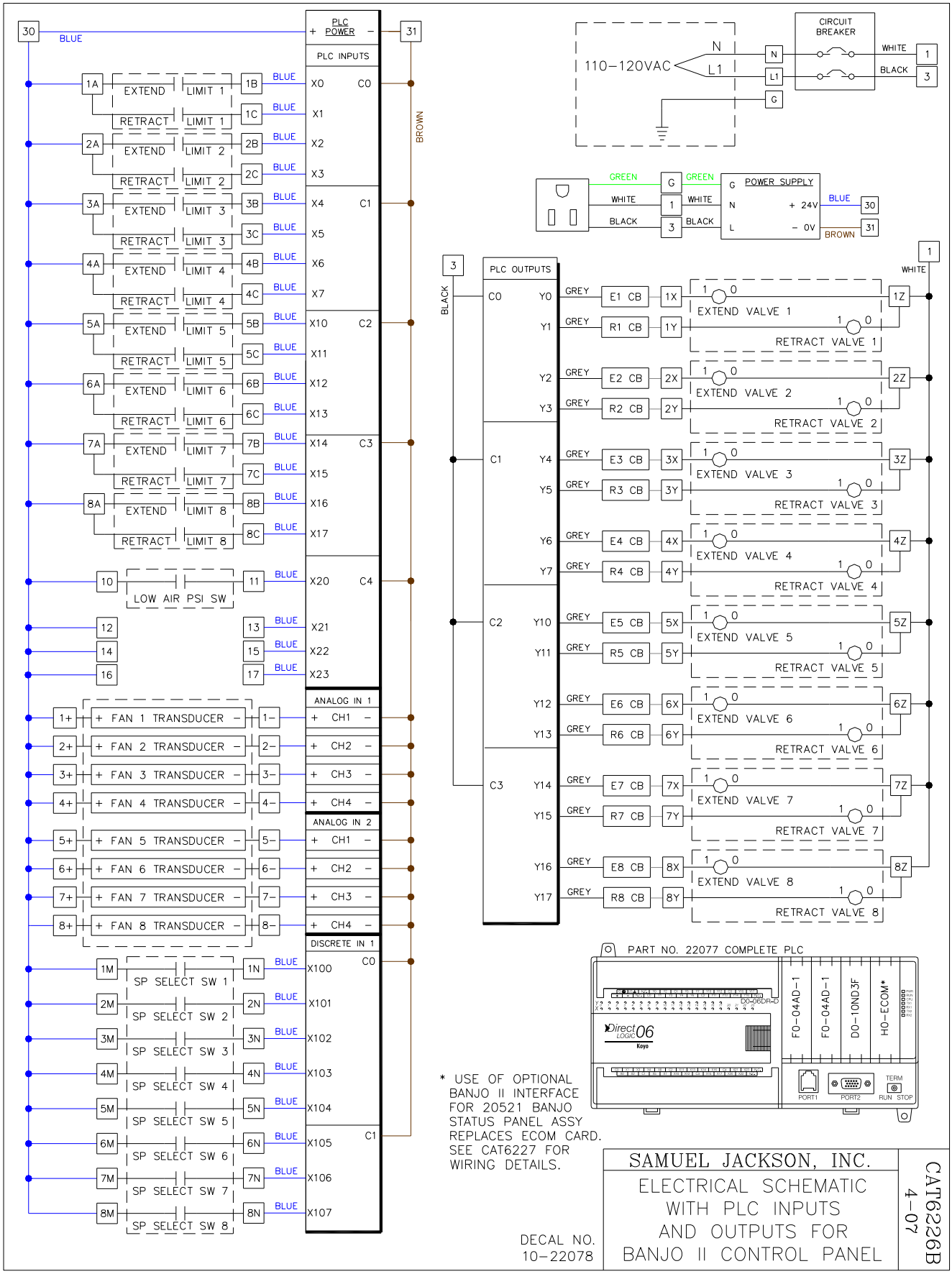
A constant source of compressed air of at least 80 psi (5.5 bar) is required. The volume of air is small with 1 cubic foot/minute (CFM) (0.028 cubic meter/minute) being sufficient for operating 8 Banjos. In cold climates, protect the airlines from freezing, if an air dryer is not used.

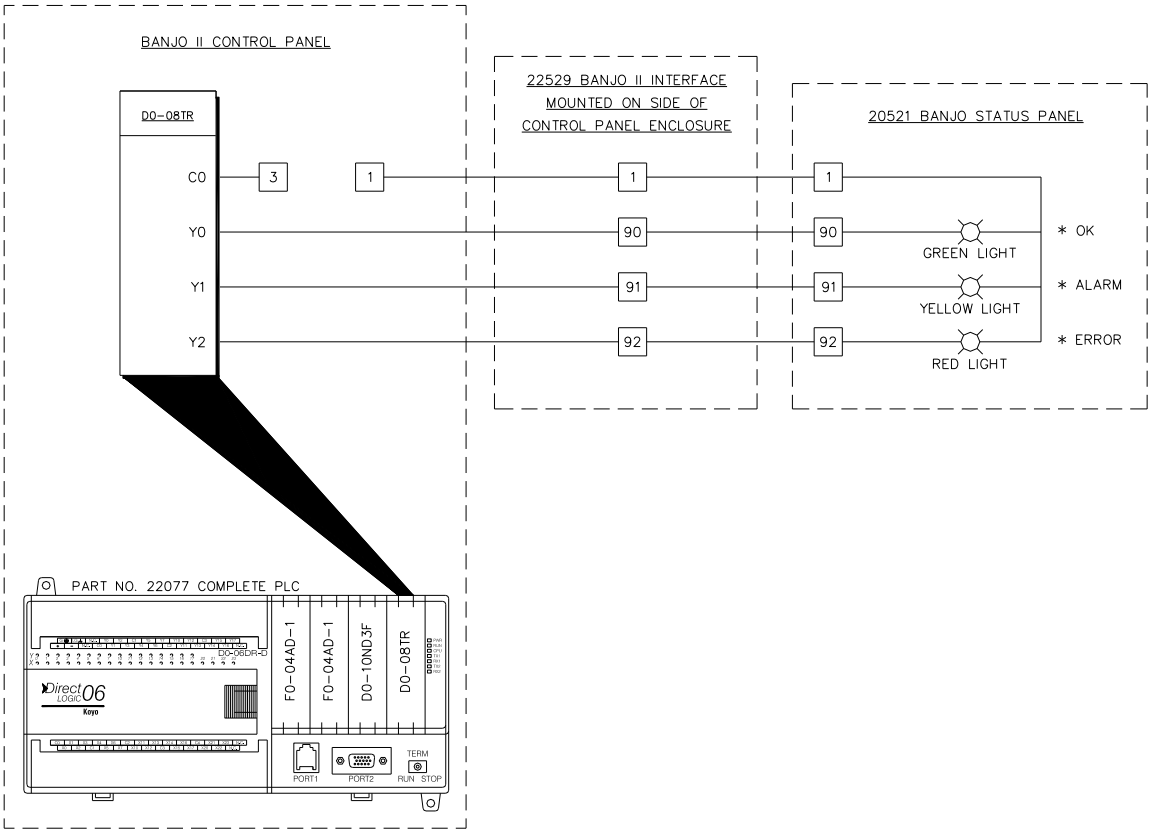
Install the Air Pressure Switch unit in the air supply line feeding the Banjos. ¼ inch air supply line is adequate. The switch should be adjusted to activate when the supply air pressure falls below 80 psi (5.5 bar).

IMPORTANT

A supply of dry clean air will minimize maintenance and prolong the life of the air solenoid valves.

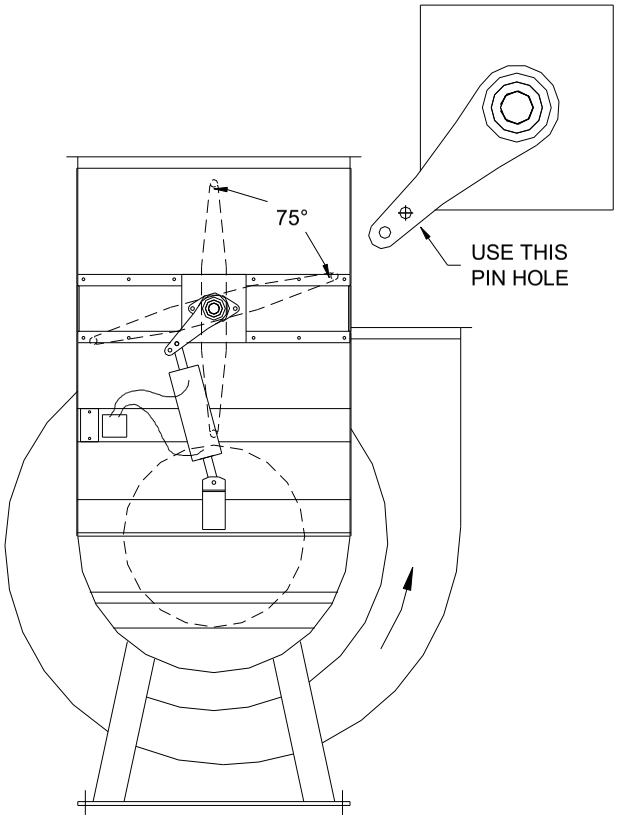




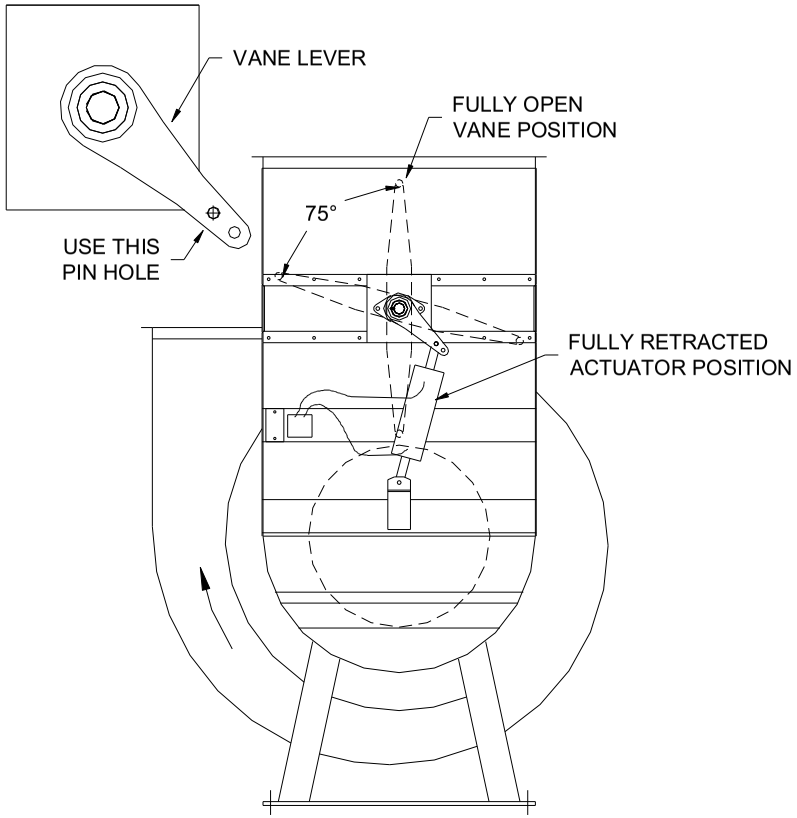


DECAL NO. 10-22531	SAMUEL JACKSON, INC. ELECTRICAL SCHEMATIC FOR 22529 BANJO II INTERFACE FOR BANJO STATUS PANEL	CAT6227 4-07

ADJUST VANE AND VANE LEVER WITH VANE IN FULLY OPEN POSITION
AND ACTUATOR IN FULLY RETRACTED POSITION



FAN ROTATION: CW (LH)



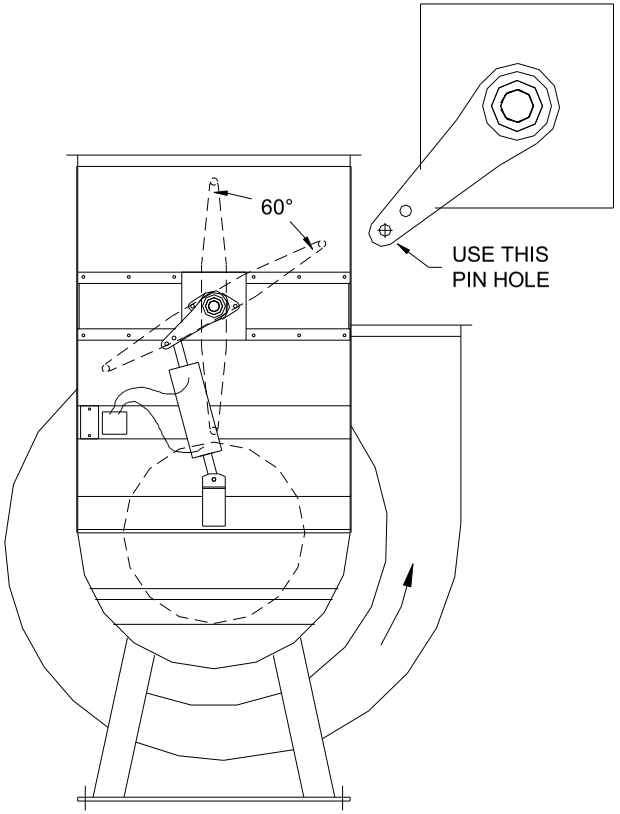
FAN ROTATION: CCW (RH)

CAUTION

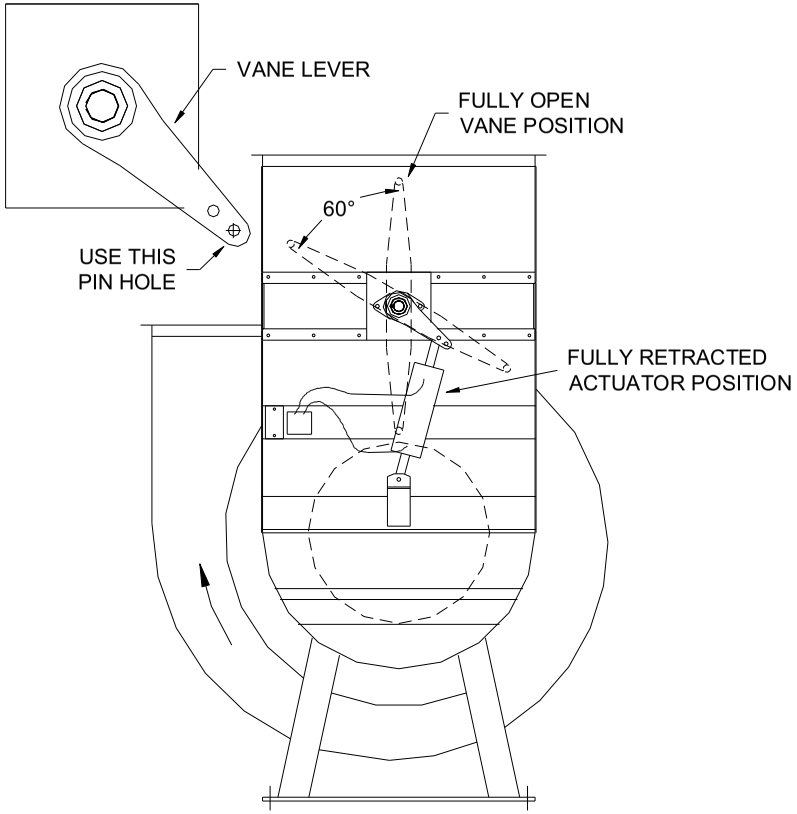
BE SURE ELECTRICAL POWER IS TURNED OFF TO
BANJO CONTROL PANEL BEFORE MAKING ADJUSTMENTS.

SAMUEL JACKSON INC.	
75° VANE SETUP FOR 81510A ELECTRIC BANJO	6240A 7-03

ADJUST VANE AND VANE LEVER WITH VANE IN FULLY OPEN POSITION
AND ACTUATOR IN FULLY RETRACTED POSITION



FAN ROTATION: CW (LH)

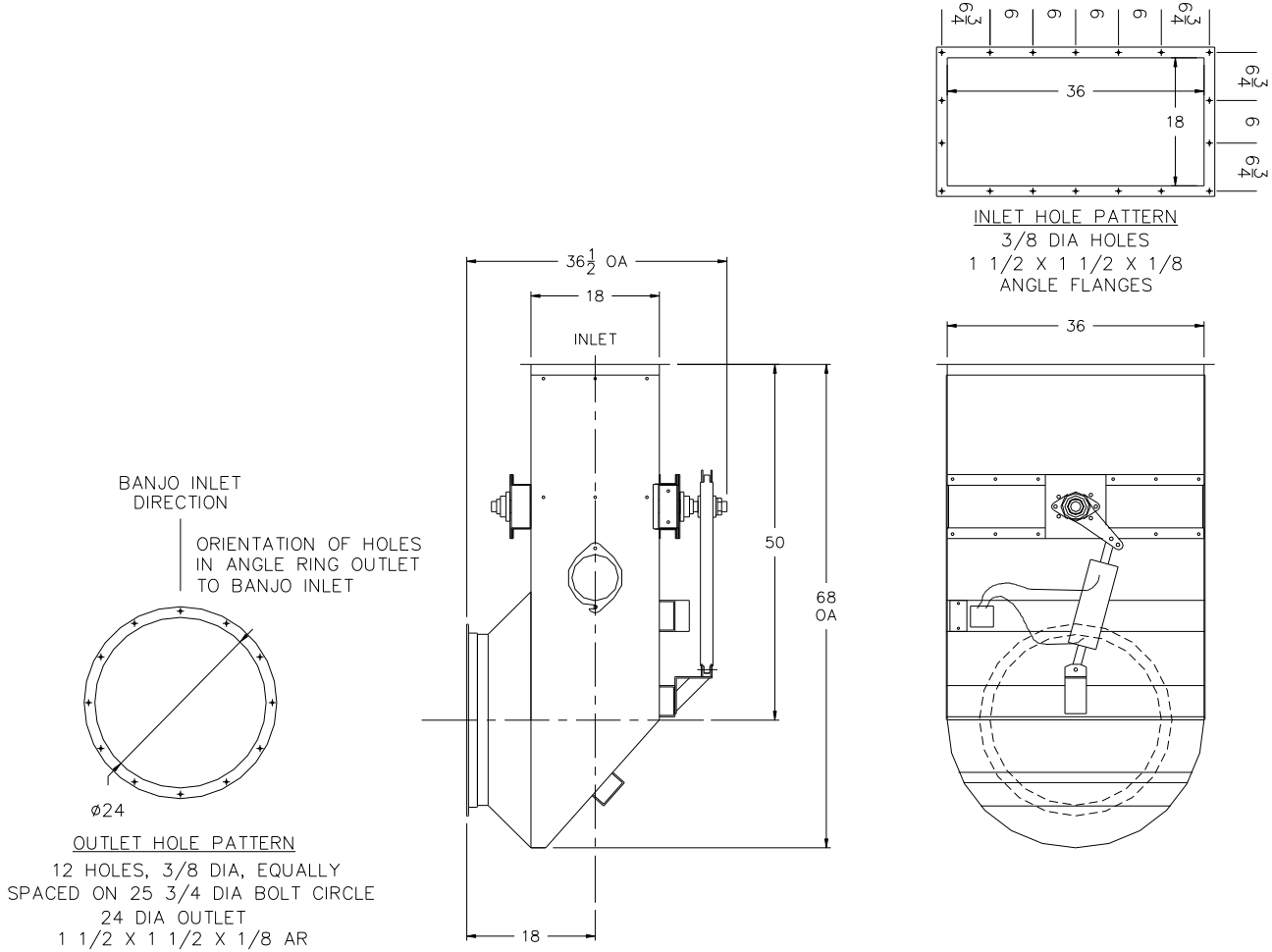


FAN ROTATION: CCW (RH)

CAUTION

BE SURE ELECTRICAL POWER IS TURNED OFF TO
BANJO CONTROL PANEL BEFORE MAKING ADJUSTMENTS.

SAMUEL JACKSON INC.	
60° VANE SETUP FOR 81510A ELECTRIC BANJO	6250A 7–03



SAMUEL JACKSON INC.	
81510A ELECTRIC BANJO DIMENSION SHEET	6210A 7-03

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

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