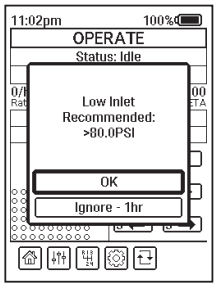
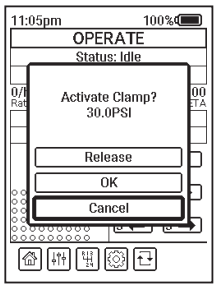
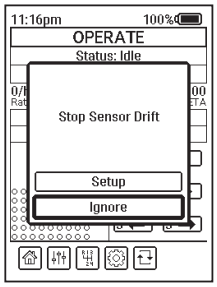
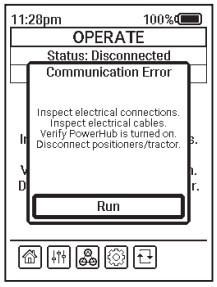
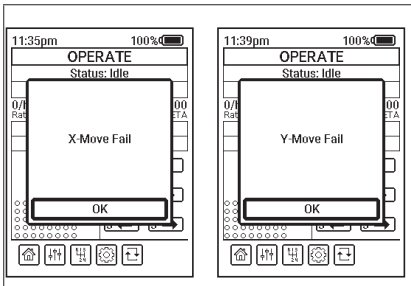
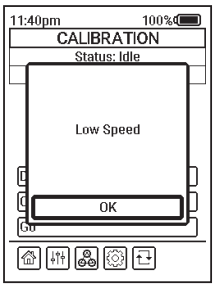
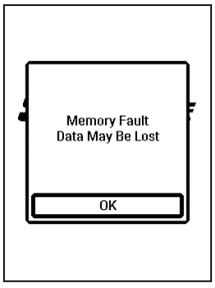
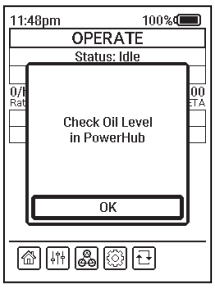
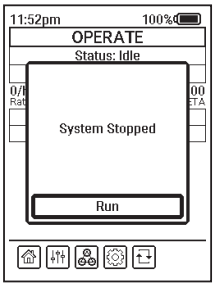
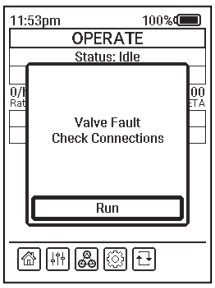
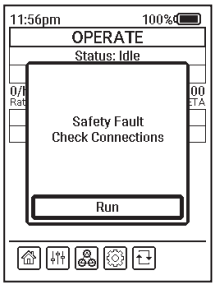
SENTINEL
AUTOMATION TECHNOLOGY BY STONEAGE

AUTOPACK SENTINEL TROUBLESHOOTING GUIDE

Fault / Problem	Resolution Steps
HARD FAULTS	
	• Valve stack active (deadman held) and inlet pressure was below 80 PSI for at least 2 seconds.
	• Attempted to feed with the clamp pressure below the set point (shown on screen as 30PSI).
	• Triggered when a stop sensor changes state 10 times in under 2 seconds. Indicates a loose connection inside the stop sensor, or that the calibration was marginal and a setup should be redone. • SIMILAR TO ABOVE, a break in the stop sensor can be detected, which will show “Stop Sensor Failure”, and instead of “Setup” the option is to ‘Disable” the sensor.
	• Verify all unused electrical connections on Tractor and Power Hub are capped such that they cannot get wet. • One by one remove each cable from Power Hub (except the Controller cable) and check if error is cleared after each removal. • Follow instructions on pop-up screen. • A wet electrical connector could cause a short in system. If an electrical connector has gotten wet, blow the connection with compressed air and wipe with a clean dry rag to remove as much water as possible. Inspect electrical connectors to ensure they have not been damaged. • Replace faulty sensor or cable. Note that if a replacement is not available, the component can be disconnected from the Power Hub, and the operator can continue with a reduced functionality. For example, if a fault in the tractor subsystem results in loss of communication, the tractor can be disconnected from the Power Hub and the operator will not be able to use AutoFeed, but will be able to continue to use AutoMove as long as the positioner sensors are still functional.

	• Occurs when the horizontal/vertical motor stalls out. Note that the motor will retry after a stall, but if it cannot make progress it will fault. May indicate that plumbing is backwards or disconnected/broken.
	• Occurs during the positioner setup if no change in position is detected after attempting to calibrate. Maybe be caused by disconnected or broken plumbing. May be remedied by driving each motor one at a time several inches.
	• One of four memory card faults. This was triggered by removing the SD card entirely. • Other faults include “Memory Read Fault’, ‘Memory Write Fault’, and ‘Initialization Fault’. All of which can only be serviced by replacing the SD card.
	• Occurs every 15 hours of runtime on the air motor valves (tractor feed and horizontal/ vertical motors).
	• Occurs when selecting wireless from the Setting>Connect menu.
	• Displayed after the user presses the kill switch on the top side of the Controller.

	• The Power Hub reported that the valve stack is off, when it was supposed to be on. • Troubleshoot by checking electrical cables, etc
	• Indicates a failure in the electrical cabling and *may* pop up if pressing the kill switch while the valve stack is active. • This may be caused by damaged or wet connectors. The solution is to disconnect the electrical connections, dry them with low pressure air and reconnect them. *High pressure could force water passed the connector seal.* • Trouble shooting- Disconnect the electrical connections from the Power Hub, X and Y Positioners and Tractor. Squeeze the Automation Lever. If the error is continues after disconnecting, the fault is either in the Controller cable or it's connections, or the Power Hub. Trying another controller cable can eliminate that cable as a fault. If the error is cleared, reconnect each connection individually and test again until the fault re-appears. This would indicate a faulty cable or connection. • If the fault is not in the cables it could be a faulty Controller and will need to be replaced.
	• Indicates a job with this name already exists on the Controller.
SOFT FAULTS	
Clamp Leak	• System failed to increase clamp pressure. Check plumbing.
Hold Lever	• Operator clicked an AutoMove control arrow without depressing the deadman lever.
Lances Inserted	• Operator clicked an AutoMove control arrow while the front stop sensor was not active.
Select Dump	• Operator attempted to activate the high pressure water, but no high pressure water control was selected.
Setup Autofeed	• Operator pressed both feed buttons, but the stop sensors are disabled. This will automatically put the user into the tractor setup workflow.
Tube Blocked	• Operator clicked an AutoMove control arrow the result in the system moving to an invalid location, including a 'Blocked' tube status, or past the edge when the Boundary is set to 'locked' in the job configuration>tubesheet menu.
OTHER TROUBLESHOOTING	
Cannot Maintain **Air Pressure** at Clamp Cylinders	• Make sure the push to lock fitting at the tractor is fastened properly. The first click locks the hose into the fitting and the second click seals the connection.
Difficulties pushing the air hoses into the **push-to-connect fittings**	• To be sure all hoses are securely fastened to the push to lock fittings feel for two clicks. The first click locks the hose into the fitting and the second click seals the connection.

Auto Stroke works intermittently or when it should not	• If the clamp pressure is too low, the rollers may not engage. If the clamp pressure is too high, the footballs may not resynchronize. Check that the footballs are able to enter the back of the tractor. • Check the Lance Postion sensor that is used for AutoStoke. With the system completely de-energized, open the belt-side door of the tractor, the Lance Position sensor is located to the left of the belt. • Check that the rollers and sensor are clear of debris and can rotate freely. • Check that the magnet is connected to the roller. • See the CTRL-101 and Power Hub User Manual for detailed instructions on how to set each of the AutoStroke functions.
Difficulties in connecting the **electrical connectors**.	• Using just a little bit of grease on the INSIDE of the ring will prevent corrosion and it will make the turning of the ring smooth and easy. • Using Soft jaw pliers to push the connectors together while tightening. • Make sure there is a “click” when installing to ensure they are fully tightened and waterproof.
Distance between tube face and guides is increasing	• Make sure the Quick Release Clamp on the Vertical Carriage is securely tensioned to Guide Tube Assembly. • When mounting the Guide Tube Assembly make sure to lift the backside of the Tractor a little bit, this will make sure the Guide Tube Assembly is completely parallel with the Vertical Carriage. Since most of the weight is behind the Vertical Carriage the Tractor and Guide Tube Assembly can be hanging in the Vertical Carriage but not completely secured. • Always make sure before operating, to pull down on the Tractor with both hands and try to pull it back from the Lightweight Positioner and tilt the back of the Tractor upwards to make sure there is no play.
Guide tubes are not always aligned with tubes after movement. This may occur when using long guide tubes.	• Make sure the umbilicals (system connections) and flex lances (HP hoses) are “free floating” when indexing. • Make sure nothing is pulling sideways on the tractor. • If using a Hose Containment device, make sure that the snout is not pulling on the tractor
“‘Horizontal/Vertical/Linear/Rotary Not Found’”	• If the position has been lost and the system is not sure which motor is assigned to X or Y, driving the system in either direction should help register them correctly. If this doesn’t fix the error message, go through the troubleshooting steps for the **“Communications Error”**. • If any of the cables have a short, this can cause the error even though the X/Y sensors and cables are functional. Go through the troubleshooting steps for the **“Communications Error”**. • When the message states both X and Y are not found, it is because the system hasn’t registered those sensors. • If X is found and Y is not or vice versa, go through the troubleshooting steps for the **“Communications Error”**
Positioner moves the wrong distance when using AutoMove	• Go to Job Configuration>Positioner>Setup to restart the AutoMove Learning process. See release notes for details. If the operator is unable to fix the issue, disable positioner sensors. • Go back to the setup menu and check the variables that affect the movement of the positioner; 1. Pitch 2. Pattern 3. Rotated Pattern 4. Rotated Tractor 5. Rotated Positioner 6. Number of Moves