



AUTOMIZER™

MULTIPLEX DIAGNOSTIC MANUAL



WITTKE

PENCAG



MULTIPLEX DIAGNOSTIC MANUAL
FOR THE AUTOMIZER™



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Introduction

As technology grows in both complexity and importance, use of electrical and electronic systems has increased substantially in recent years. In fact, the electrical and electronic components are now more reliable and efficient than ever. Today, they are used to reduce the operating costs, improve productivity, protect investments, enhance operational safety and increase energy efficiency.

As one of the leader in manufacturing equipment for the solid waste industry in North America, Labrie Enviroquip Group made the decision to take advantage of this ever-evolving technology and all the benefits it brings in terms of performance and efficiency by implementing the Multiplex System into many of its platforms.

The Multiplex System used by Labrie is a CAN-based system that integrates a monitor display, a control panel and a number of electronic modules. This whole system has been designed to help you operate your unit in an efficient and easy way and to make the collection process more friendly-oriented.

The Multiplex System is used to electronically monitor all systems that are onboard the truck. It monitors the use of the automated arm, the tailgate and the waste body. It also monitors the multicycle function of the packing system, the oil temperature inside the hydraulic system and the number of carts emptied into the hopper.

The Multiplex System also informs the operator of anything that may go wrong in the truck and provides adequate solutions to operational problems. See *Labrie's Multiplex System* on page 11 for a complete description of that system.

Finally, the Multiplex System is equipped with an onboard diagnostic tool, which makes the troubleshooting process more orderly and manageable. See *Multiplex Diagnostic Guide* on page 45.

The purpose of this publication is to clearly explain the Multiplex System and to provide troubleshooting information and guidelines to the maintenance personnel as well as in-the-field technicians.

How the Multiplex System Works

The control modules that are part of the Multiplex System controls/monitors every logical function of the truck (packing, raising/lowering tailgate/body, interlocks, lights, automated arm, etc.).

Because all functions are now integrated into one system, the number of wires and harnesses has drastically decreased without changing anything in the procedures and operating principles of the waste collection. The Multiplex System now replaces old, complex monitoring systems that were formerly used in our trucks. With this system, no more relays are needed to perform all the logical functions of the truck.

One of the many benefits that stem from the Multiplex System is that new functions can be added quickly and easily. All that is needed to do is to reprogram the system.

The control modules also allow in-the-field or remote diagnostics of the electronic system with the help of a computer (proper software must be installed first). The status of all inputs and outputs can thus be seen on the computer screen. To simplify troubleshooting even more, the Multiplex System can display error codes on the monitor, which may indicate the cause of a problem.

Because it integrates several control modules, the Multiplex System is a network with modules interacting with each other. These modules transmit data to one another using a communication protocol and a receiver/transmitter chip. To be received and interpreted by the appropriate module, the data should indicate where they come from, and their relevance and final destination. That is why each module has been assigned a node number (see *Module Locations* on page 26). The data that are transmitted may relate, for example, to the position of the tailgate or the body or to the number of cycles the packer has performed.

Benefits of the Multiplex System

The Multiplex System installed on the truck has many benefits. Here are some of them:

- ♦ It replaces the old relay logic.
- ♦ It needs less electrical wiring. Only a few harnesses are needed to make this system work.
 - The system is less complicated to operate and maintain and the related costs are reduced.
- ♦ It makes troubleshooting easier and faster.
- ♦ The system is programmable to allow presetting functions that were not possible with the relay logic.
 - Adding new functions is easy;
 - Modifying truck logic can easily be done at Labrie Enviroquip Group or at the distributor's or customer's facility.
- ♦ All inputs and outputs are tied to a computerized module.
 - Remote diagnostic is possible;
 - All electrical inputs and outputs can be seen on a computer screen;
 - Reduced number of fuses.

NOTE: The Multiplex System does not change interlocks nor the theory of operation of the truck.

Location of the Control Modules

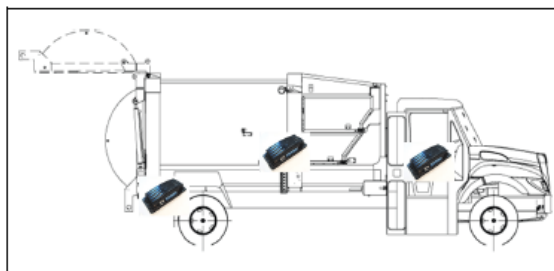
The Multiplex System is comprised of various control modules that make up the electronic network through which information is distributed. These modules can be found at different locations on the truck:

- ♦ in the cab console; on the doghouse;
- ♦ at the rear end of the vehicle;
- ♦ on each side of the vehicle; and
- ♦ on the chassis under the body.

Figure 1-1 Control module

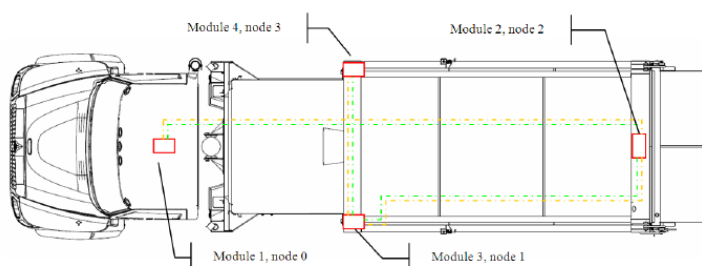


Figure 1-2 Possible module locations



To know exactly where the control modules are located on the truck, refer to the schematics provided with the configuration sheets.

Figure 1-3 Example of schematic indicating location of modules



To Contact Labrie Plus

In the U.S.

Address: 1981 W. Snell Road
Oshkosh, WI 54904

Toll Free: 1-800-231-2771

Telephone: 1-920-233-2770

General Fax: 1-920-232-2496

Sales Fax: 1-920-232-2498

Parts and warranty: During business hours, 7:00 AM to 7:00 PM Central Standard Time

Technical Support Service: Available 24 hours

In Canada

Address: 175 Route du Pont
St-Nicolas, QC G7A 2T3

Toll Free: 1-877-831-8250

Telephone: 1-418-831-8250

Service Fax: 1-418-831-1673

Parts Fax: 1-418-831-7561

Parts and warranty: During business hours, 8:00 AM to 5:00 PM Eastern Standard Time

Technical Support Service: Available 24 hours

Website: www.labriegroup.com

E-mail: sales@labriegroup.com

IMPORTANT: For technical support and parts ordering, the serial number of your vehicle is required. Therefore, Labrie Enviroquip Group recommends to keep record of the information found on the VIN plate, which is located in the cab.

2

Safety

Safety should always be given highest priority when doing maintenance on any type of equipment. Service technicians and maintenance personnel must take all precautions to avoid damages to the equipment and personal injuries. In this section, you will find general safety information/instructions that you should take into account when performing your tasks.

Conventions

Danger!



Indicates a hazardous situation which, if not avoided, **will** result in serious injury or death.

Warning!



Indicates a hazardous situation which, if not avoided, **could** result in serious injury or death.

Caution!



Indicates a hazardous situation which, if not avoided, may result in **minor or moderate injury**.

Basic Safety Instructions

NOTE: It is important to point out that the safe use of the vehicle remains the user's responsibility. He must heed all safety instructions explained in this manual and on the decals affixed to the vehicle.

Danger!



Always be aware of the vehicle's surroundings to make sure that no pedestrians, passersby, bystanders, or other people or vehicles are in any way exposed to any danger caused by the use of the vehicle.

Danger!

Never enter the hopper area when the engine is running. Only authorized personnel may do so following a lockout/tagout procedure. See the *Operator's Manual* for more information on this procedure.

Warning!

Do not operate or service the automated arm until you have been fully trained, and have read and understood both the *Operator's Manual* and the *Maintenance Manual* supplied with this unit.

Warning!

Make sure that all people and obstructions are sufficiently cleared from the automated arm before moving it. Failure to do so may result in unit and/or property damages, personal injury or death.

Warning!

Make sure there is enough clearance between raised container and overhead power lines. The automated arm or the container must not come in direct contact with the electrical cables for the power to go through the unit. If the unit comes in contact with a power line, stay in the cab and keep away from any metal parts.

Danger!

Never drive this vehicle if the lifting arm is not fully retracted to its home position. The unit would be simply too wide to be driven safely. Failure to fully retract the arm will result in unit and /or property damages, severe injury or even death. Warning red lights on dashboard flash when the arm is not completely retracted to its home position.

Warning!

Remove all control levers from the proportional valve. These levers should be used only for maintenance purposes.

Warning!

Units with two driving positions: Prior to changing driving position, stop vehicle, apply parking brake, push emergency button and stop engine. Properly adjust mirrors and set driving control switches including arm control joystick (if applicable) to the new driving position before starting the engine. This will ensure that the automated arm is completely inoperative.

IMPORTANT: Read and thoroughly understand this manual before performing any adjustment. Thorough understanding of the *Operator's Manual* is also mandatory before operating the vehicle.

Responsibilities

Safety is the responsibility of both the employer and the employee. Each must play their part to create a work environment that is safe and secure.

Employer Responsibilities

It is the responsibility of the employer:

- ♦ To ensure that the vehicle is operated in accordance with all safety requirements and codes, including all applicable regulations, the Occupational Safety and Health Act (OSHA), and the American National Standards Institute (ANSI).
- ♦ To ensure that employees are qualified for operating the vehicle and its equipment, and that they all take safety measures before using them.
- ♦ To properly maintain all mobile equipment to meet all provincial/state and federal safety standards.
- ♦ To supply adequate instructions and training for the safe use of the vehicle and its equipment before assigning an employee to such vehicle/equipment.
- ♦ To keep the vehicle maintained and properly adjusted to meet the manufacturer's standards and recommendations. For help or for more information, please contact the manufacturer or any of its authorized representatives.
- ♦ To keep records of all vehicle breakdowns and malfunctions, as well as any inspection and maintenance.
- ♦ To ensure that all failures or malfunctions that may be affecting the safe use of the vehicle are repaired before the vehicle is put back into operation.
- ♦ To meet the appropriate lighting requirements for night shift work (if permitted).
- ♦ To regularly accompany the vehicle operator and take measures to ensure the smooth and safe operation of the vehicle.
- ♦ To make sure that the backup alarm works properly when the vehicle is in reverse.
- ♦ To take necessary measures to correct any damage or malfunction reported by any employee.
- ♦ To establish a "lockout/tagout" procedure and ensure its application any time inspection, repair or maintenance is performed on the vehicle, regardless of whether it takes place on the road or in the garage.

Employee Responsibilities

It is the responsibility of the employee:

- ♦ To enforce all safety measures to meet the requirements established by the employer.
- ♦ To operate the vehicle only after having received instructions and training.
- ♦ To make sure that nobody is near the vehicle before activating any of the controls, and to be prepared to stop at any indication of possible danger.
- ♦ To immediately report any damage or malfunction of the vehicle to the employer or supervisor.
- ♦ To wear a grounding bracelet when manipulating control modules. Static electricity can damage the inputs and outputs.

- ♦ To take all the necessary precautions to protect the battery box before performing any welding on the chassis or body. Welding tools can produce electrical spikes on the ground circuit, which can damage control modules.

IMPORTANT: Do not use damaged equipment.

Things to Do

- ♦ Make sure that the area is clear of people and obstructions.
- ♦ Inspect for overhead hazards (e.g. power lines) prior to raising tailgate/body.
- ♦ Obey all warning and operation stickers.

Things to Avoid

- ♦ Do not operate any vehicle while under the influence of alcohol, narcotics or other intoxicants.
- ♦ Do not leave the vehicle before it is brought to a complete stop and work brake or parking brake is applied.
- ♦ Do not drive with the tailgate fully open.
- ♦ Do not use body safety prop to prop a loaded body.
- ♦ Do not enter the hopper or main body unless the engine is shut off, the key is removed and there is an out-of-service tag on the steering wheel. See the lockout/tagout procedure in the *Operator's Manual*.
- ♦ Do not hoist the body on uneven ground (unit with a hoisting cylinder).
- ♦ Do not back up the vehicle when the body is raised (unit with a hoisting cylinder).

General Precautions

- ♦ Read and make sure that you fully understand the *Operator's Manual* and all safety decals before operating this vehicle. Maintenance personnel must also read and understand the *Maintenance Manual* for this vehicle. In case of doubt, ask a supervisor for clarifications.
- ♦ Before activating the automated arm, operators shall make sure that people and obstructions are far away from the vehicle. Operators must be able to stop the arm at all times.
- ♦ Do not operate this vehicle if there are any signs of damage or incomplete repairs.
- ♦ Report any doubts that you might have and any safety service requirements regarding this vehicle to a supervisor.
- ♦ *Never* drive this vehicle with the tailgate unlocked.
- ♦ Before opening and closing the tailgate, make sure no one is behind the vehicle.
- ♦ Do not enter the hopper compartment or try to repair anything behind the packer when it is moving or when the hydraulic pump is still running. Personnel authorized to enter the hopper *must* first lock out and tag out the vehicle, as required by the employer. For more information, see the lockout/tagout procedure in the *Operator's Manual*.

- ♦ *Never* stand near or underneath a raised arm or grabber, since no arm cylinder is equipped with a holding valve.
- ♦ When the vehicle is parked, the parking brake must be applied.
- ♦ Use the body safety prop when servicing under the body.
- ♦ Use the tailgate safety prop before entering the area between the main body and the tailgate.
- ♦ *Never, under any circumstances* (maintenance or otherwise), stand underneath a *loaded* body.

3

Controls and Indicators

The AUTOMIZER™ has a series of controls and indicators that allow easier operation of the different functions that come with the vehicle. These controls and indicators are mainly located on the in-cab control panel and on the dashboard.

Labrie's Multiplex System

Labrie has equipped your AUTOMIZER™ unit with a CAN bus-based multiplex system, which integrates a monitor display, a control panel, a joystick, and a set of electronic modules. This whole system has been designed to help you operate your unit in an efficient and easy way. Labrie's multiplex system is reliable and safe, and it requires less wiring harnesses to operate. It can also monitor various function status of the body and display warning and caution messages.

Through its monitor display (see Figure 3-1), Labrie's multiplex system informs you of any malfunction that may occur during use of the truck. Various caution and warning messages can be displayed on the monitor, depending on the seriousness of the situation. Messages in yellow blocks indicate that caution should be used; messages in red blocks indicate a warning situation that must be dealt with quickly.

Figure 3-1 Monitor display



Each time the operator turns the ignition key on, a complete bit test of the multiplex system is conducted. This test takes about 5 seconds to complete.

NOTE: A flashing green light on the monitor indicates that the display power is on. This light should be blinking steadily at 2 Hz during normal operation. If it blinks at a faster rate, it is a sign of a problem with the monitor. A flashing red light on the monitor is also a sign of a problem. Call *LabriePlus* for support.

The logo of Labrie Enviroquip Group appears momentarily on the monitor display at the start of the system (see Figure 3-2).

Figure 3-2 Labrie logo on the monitor display



NOTE: If the Welcome Screen with the Labrie logo stays on continually, there may be a communication problem between the monitor and the master control module. Refer this problem to the maintenance personnel.

NOTE: The monitor display works even if the engine is not started. All it needs is electrical power. However, if you start the engine, the monitor will reboot to reflect the changes caused by the starting of the truck.

Main Page

The next page that comes up after the Welcome Screen is the Main Page (see Figure 3-3). On this page, you will find the access to the Main Menu, as well as any warnings and errors that may occur during operation of the unit. The Main Page may also have the following indicators: the Time and Date Indicator, the Hydraulic Oil Temperature Indicator and the Cart-Counting Indicator (or Cart Counter). These indicators are provided as options.

Cart Counter (optional)

This indicator lets you know how many carts have been emptied so far. If your vehicle is equipped with two arms, the number of carts emptied is shown for each of these arms (right and left counters).

Figure 3-3 Cart counter

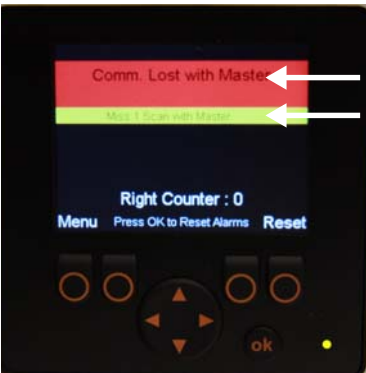


Press the far right button to reset the counter display to zero.

Warning and Caution Messages

On the monitor display, messages in yellow blocks indicate that caution should be used and messages in red blocks indicate a warning situation that must be dealt with quickly.

Figure 3-4 Warning and caution messages on monitor



See Table 1 for a list of warning and caution messages. Please note that this list is not exhaustive.

Table 1 Warning messages

Warning and Caution Messages	Solution
Arm Up:Chute Bad Pos.	Place Chute in Correct Position
Arm Up:Crusher Not Raised	Raise Crusher Panel
Arm:Auxiliary Deadman ON	Release Auxiliary Deadman
Arm:Body Raised	Lower Body
Arm:Hopper Door Not Close	Close Hopper Door
Arm:Pump Not Started	Engage Pump

Table 1 **Warning messages (cont'd)**

Warning and Caution Messages	Solution
Arm:Tailgate Unlocked	Lock Tailgate
AutoDump:Cab EStop	Pull Out Cab EStop Button
AutoDump:Pump Not Started	Engage Pump
Body:Pump Not Started	Engage Pump
Buzzer:Arm Not Stow	Retract Arm to Stowed Position
Buzzer:Body Raised	Lower Body
Buzzer:TailGate Unlocked	Lock Tailgate
Chute:Arm Too High	Lower Arm
Chute:Crusher Not Up	Raise Crusher
Chute:Pump Not Started	Engage Pump
Crusher:Arm Too High	Lower Arm
Crusher:Chute Bad Pos.	Move Chute to Correct Position
Crusher:Hopper Door Not Closed	Close Hopper Door
Crusher:Packer Not Retracted	Retract Packer
Crusher:Pump Not Started	Engage Pump
ESTOP:Aux. Cab EStop	Pull Out Aux. Cab EStop Button
ESTOP:Cab Emergency Stop	Pull Out Cab EStop Button
FullEject:Cab EStop	Pull Out Cab EStop Button
FullEject:Packer Not Retracted	Retract Packer
FullEject:Pump Not Started	Engage Pump
Gripper Open:Arm Too High	Lower Arm
High Hydraulic Oil Temp.	Turn Off Engine and Refer to your Maintenance Personnel
Low Hydraulic Oil	Add Hydraulic Oil
Packer Extend:Air Weigh Signal	Unload Body
Packer:Already Extended	Refer to Maintenance Personnel or LabriePlus

Table 1 **Warning messages (cont'd)**

Warning and Caution Messages	Solution
Packer:Already Retracted	Refer to Maintenance Personnel or Labrie <i>Plus</i>
Packer:Extend Too Long	Check Extend Prox
Packer:Pump Not Started	Engage Pump
Packer:Retract Too Long	Check Retract Prox
Pump Not Started:Aux. Cab EStop	Pull Out Aux. Cab EStop Button
Pump Not Started:Cab EStop	Pull Out Cab EStop Button
Pump Not Started:Hopper Door Open	Close Hopper Door
Pump Not Started:Main Air Pressure	Let the Air Build Up to Required Pressure
Pump Not Started:RPM Too High	Lower Engine Speed Below 900 RPM
Pump Stop:Main Air Pressure	Let Air Build Up to Req'd Pressure
Pump:Aux. AutoDump Switch ON	Release Aux. AutoDump Switch prior to Engaging Pump
Pump:Aux. ChuteToLeft Switch ON	Release Aux. ChuteToLeft Switch prior to Engaging Pump
Pump:Aux. ChuteToRight Switch ON	Release Aux. ChuteToRight Switch prior to Engaging Pump
Pump:Aux. CloseGripper Switch ON	Release Aux. CloseGripper Switch prior to Engaging Pump
Pump:Aux. Deadman Switch ON	Release Aux. Deadman Switch prior to Engaging Pump
Pump:Aux. OpenGripper Switch ON	Release Aux. OpenGripper Switch prior to Engaging Pump
Pump:BodyLower Switch ON	Release BodyLower Switch prior to Engaging Pump
Pump:BodyRaise Switch ON	Release BodyRaiseSwitch prior to Engaging Pump
Pump:CrusherDown Switch ON	Release CrusherDown Switch prior to Engaging Pump

Table 1 **Warning messages (cont'd)**

Warning and Caution Messages	Solution
Pump:CrusherUp Switch ON	Release CrusherUp Switch prior to Engaging Pump
Pump:Hopper Door Not Close	Close Open Door
Pump:J1 AutoDump Switch ON	Release J1 AutoDump Switch prior to Engaging Pump
Pump:J1 ChuteToLeft Switch ON	Release J1 ChuteToLeft Switch prior to Engaging Pump
Pump:J1 ChuteToRight Switch ON	Release J1 ChuteToRight Switch prior to Engaging Pump
Pump:J1 CloseGripper Switch ON	Release J1 CloseGripper Switch prior to Engaging Pump
Pump:J1 Deadman Switch ON	Release J1 Deadman Switch prior to Engaging Pump
Pump:J1 OpenGripper Switch ON	Release J1 OpenGripper Switch prior to Engaging Pump
Pump:J2 AutoDump Switch ON	Release J2 AutoDump Switch prior to Engaging Pump
Pump:J2 ChuteToLeft Switch ON	Release J2 ChuteToLeft Switch prior to Engaging Pump
Pump:J2 ChuteToRight Switch ON	Release J2 ChuteToRight Switch prior to Engaging Pump
Pump:J2 CloseGripper Switch ON	Release J2 CloseGripper Switch prior to Engaging Pump
Pump:J2 Deadman Switch ON	Release J2 Deadman Switch prior to Engaging Pump
Pump:J2 OpenGripper Switch ON	Release J2 OpenGripper Switch prior to Engaging Pump
Pump:Packer Extend Switch ON	Release Packer Extend Switch prior to Engaging Pump
Pump:Packer Retract Switch ON	Release Packer Retract Switch prior to Engaging Pump
Pump:PTO Not OK	Refer to Maintenance Personnel or LabriePlus

Table 1 **Warning messages (cont'd)**

Warning and Caution Messages	Solution
Pump:RPM Too High	Lower Engine Speed Below 900 RPM
Pump:TailgateDown Switch ON	Release TailgateDown Switch prior to Engaging Pump
Pump:TailgateUp Switch ON	Release TailgateUp Switch prior to Engaging Pump
Pump:Trans. Not OK	Refer to Maintenance Personnel or <i>LabriePlus</i>
Raise Body:Air Susp. Not Down	Lower Air Suspension
Raise Body:Arm Not Stow	Retract Arm to Stowed Position
Raise Body:Tag Not Down	Lower Tag
Raise Body:Tailgate Not Open	Open Tailgate
Raise Body:Truck Moving	Bring Truck to a Standstill
Service Oil Filter #1	Replace Oil Filter #1
Service Oil Filter #2	Replace Oil Filter #2
Tag:Move Tag switch to Tag Up	Raise Tag
Tailgate Up:Truck Moving	Bring Truck to a Standstill
Tailgate:Pump Not Started	Engage Pump
Wrong Driver Position	Change Driver Position Switch to Correct Position

Should the system issue a warning or caution message, it will appear on the Main Page.

For example, if the following caution message “Pump Not Started: Main Air Pressure” is issued by the system, it will appear on the Main Page of the monitor display. An action that could be taken by the operator, when faced with such a situation, would be to wait until the required main air pressure level is reached.

For a specific problem or condition that requires special attention, the multiplex system will suggest a possible cause to the operator. This will appear in bold and large print on the monitor screen (active cause). The operator should check if the problem stems from the highlighted or active cause. One possible cause is highlighted at a time. What is shown in light and small print in the lower part of the screen are causes that have already been dealt with (see Figure 3-5).

Figure 3-5 Example of a possible cause

NOTE: If the system detects a problem, a beep will sound and a message will appear on the monitor display.

NOTE: To go back to the Main Page or the Main Menu, press “Esc” as many times as necessary until the desired page is displayed.

Hydraulic Oil Temperature Indicator (optional)

This optional indicator shows you the current hydraulic oil temperature. When provided, this indicator is found on the upper right-hand side corner of the Main Page.

Time and Date Indicator

A time and date indicator may be found on the upper left-hand side corner of the screen. The availability of this indicator is based on the chassis on which the body is mounted. If the chassis provides real-time clock information through the J1939 bus, time and date will appear on the screen. To set the Time and Date Indicator, go to the Main Menu and choose Time Adjust.

Main Menu

To access the Main Menu, press the far left button when the Main Page is opened.

Once the Main Menu is displayed, you can have access to the following sections:

- ♦ Multicycle
- ♦ I/O Status
- ♦ Program Version
- ♦ Optional Item
- ♦ Time Adjust (available according to chassis)

Displayed in the lower center of the screen is an indicator that monitors traffic on the network. This indicator is called Network Load, and it shows values that reflect such traffic.

NOTE: The higher the network load value is, the heavier the traffic is on the network.

To exit this page and return to the Main Page, press “Esc”. To choose a section from the main menu, highlight the desired section using the up/down arrows and press the “OK” button.

Multicycle

The monitor display of Labrie’s multiplex system is user-friendly. Say you want to change the multicycle settings of the packer. All you have to do is select MENU from the Main Page by pressing the corresponding button at the bottom left corner of the monitor display. From the displayed menu, choose the option SELECT THE NUMBER OF CYCLES. If need be, use the arrow to choose that option and press “OK”. The multicycle settings can be changed from 2 to 8 cycles. Choose the desired number of cycles and press “OK”. It could not be easier!

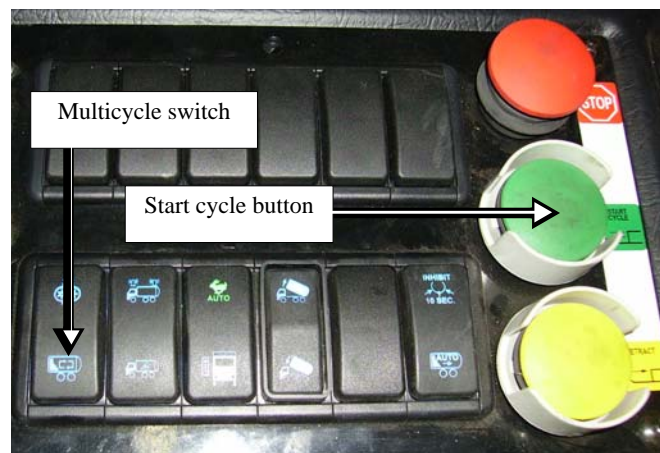
Figure 3-6 Multicycle page



NOTE: The packer multicycle function has been preset at the factory to carry out 3 cycles after every cart dumped.

When the MULTICYCLE switch on the control panel is on and the packer is activated, the packer will move according to the default number of cycles (that is 3) or to the number of cycles you chose (up to 8 cycles).

Figure 3-7 Control panel



To test the new settings:

1. On the control panel press the MULTICYCLE switch and the green START CYCLE button (Figure 3-7).
2. Once the packer has completed its cycles and come to a stop, switch off the hydraulic pump and turn off the engine.

The number of cycles needs to be adjusted depending on the type of collection route used by the vehicle. For example, in a residential area, if the houses are numerous and close one to another, it may be required to increase the number of cycles. This will allow the hopper to be clear for the next house pickup.

Each time the packer completes a full cycle, the limit switch located on the right-hand side behind the packer sends a signal to the electronic module. The module then counts the amount of cycles that the packer does, and will stop the packer after the preset amount of cycles has been reached.

I/O Status

In this section, you will find helpful information to troubleshoot body-related problems that you may face during your day-to-day tasks. These problems can be of any nature, from hydraulic to mechanical, electrical or pneumatic.

Select the control module corresponding to the part of the truck that needs to be checked.

For example, if you want to check all functions that are found in the cab, choose module #10. For all functions that pertain to the chassis, choose module #20, etc.

To choose a particular module, use the up/down arrows to select it and press “OK”.

NOTE: Entering “OK” can be done two ways: press either the far right button or the “OK” button.

Press “Esc” to return to the preceding page.

Figure 3-8 Module I/O Status page



Input Status

The Input Status page is accessible from the Module I/O Status page. After selecting the desired module and pressing “OK”, the Input Status page of the selected module is displayed (see Figure 3-9).

Figure 3-9 Input Status page



The Input Status page contains a set of rectangles. Each of these rectangles represents input elements, which correspond to a particular function of the truck. For example, if you select rectangle I00, a short description appears in the lower part of the screen, which indicates that this rectangle relates to the input element coming from the service brake pressure switch.

NOTE: Each rectangle is numbered and relates to a specified function of the truck. However, for a given number, the related function may vary from truck to truck.

Table 2 Colored rectangles

Rectangles (inputs)	Function Status
Blue	Inactive
Green	Active

Press “Esc” to return to the preceding page.

Press the “Output” button to display the Output Status page.

Output Status

The Output Status page is accessible from the Input Status page (see Figure 3-10).

Figure 3-10 Output Status page



The rectangles found on this page are used to check the status of different outputs.

NOTE: Each rectangle is numbered and relates to a specified function of the truck. However, for a given number, the related function may vary from truck to truck.

Table 3 Colored rectangles

Rectangles (outputs)	Function Status
Blue	Inactive
Green	Active
Red	Closed short-circuit
Yellow	Open circuit

Press “Esc” to return to the preceding page.
Press the “Force” button to display the Force page.

NOTE: To go back to the Main Page or the Main Menu, press “Esc” as many times as necessary until the desired page is displayed.

Force

The Force page is accessible from the Output Status page. Just press the corresponding button to access the Force page.
But before the Force page is displayed, a warning message appears on the screen (see Figure 3-11).

Figure 3-11 Warning message



This message stays on for 15 seconds. Then an “OK” prompt appears on the lower right-end corner of the screen.

IMPORTANT: It is very important to read this message entirely before accessing the next page.

Figure 3-12 Warning message w/ “OK” prompt



Press “OK” to go to the Force page or “Esc” to return to the preceding page.
After pressing “OK”, the Force page appears on the screen.

Figure 3-13 Force page (input)



As no input function can be forced to be active or inactive, the operator must press the “Output” button to go to the following page (see Figure 3-14).

Figure 3-14 Force page (output)



The Force page allows the operator to force a function to be overridden. This is useful to enable an inactive function or to disable an active function.

This page contains a set of rectangles. Each of these rectangles is numbered and relates to a specific function of the truck.

Colors are used to indicate whether the corresponding function is active or not:

- ♦ a blue rectangle means the corresponding function is inactive
- ♦ a green rectangle means the corresponding function is active

Also:

- ♦ a red rectangle means there is a closed short-circuit
- ♦ a yellow rectangle means there is an open circuit

A white-bordered rectangle means that this rectangle is selected. Use the directional arrows to select a specific rectangle or function. When a rectangle is selected, a short description of the corresponding function appears in the lower part of the screen.

After selecting a rectangle:

- ♦ press “ON” to activate the corresponding function (rectangle turns from blue to green)
- ♦ press “OFF” to deactivate the corresponding function (rectangle turns from green to blue)
- ♦ press “RESET” to have the software control the status of the corresponding function

NOTE: To go from a module to another (e.g. from module 10 to 20), the operator has to go back to the Module I/O Status page (see Figure 3-8) and select module 20.

Press “Esc” to return to the preceding page.

Joystick

The joystick page is accessible from the Module I/O Status page (see Figure 3-8). From that page select “Joystick” using up/down arrows and press “OK”. The Joystick page opens (see Figure 3-15).

Figure 3-15 Joystick page


The Joystick page allows the operator to check if all functions of the joystick are working correctly. If one joystick is installed on your vehicle, it will be represented on the monitor display by joystick 127. However, if two joysticks are installed on your vehicle, any of the two joystick numbers (127 and 72) can represent either joystick on the screen.

If you press a joystick button, the corresponding button on the monitor display will turn green. If nothing happens, there might be a communication problem between the joystick and the master control module. Refer to maintenance personnel or *LabriePlus*.

Also, if you move the joystick backwards, forwards or sideways, you should see the values changing under the illustration. If no change occurs when moving the joystick, a communication problem between the joystick and the master control module may be the cause. Refer to maintenance personnel or *LabriePlus*.

Press “Esc” to return to the preceding page.

J1939

The J1939 page is useful when you need some specific information (e.g. current gear, road speed, brake status).

Figure 3-16 J1939 page


Your vehicle is equipped with 2 different CAN-based communication buses:

- ♦ the **J1939 bus**, which is used for the chassis equipment; and
- ♦ the **CANopen bus**, which is used for the body.

These 2 communication buses are completely independent of one another, except for some specific data that are transferred from the chassis J1939 bus to Labrie's multiplex system in order to be used by such system. These specific data are the following:

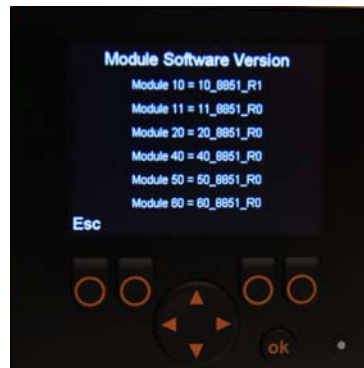
- ♦ selected gear
- ♦ current gear
- ♦ road speed
- ♦ engine RPM
- ♦ brake
- ♦ parking brake

Press "Esc" to return to the preceding page.

Module Software Version

In this section, you will find the software version currently used by each of the modules installed on the truck and by the master control module.

Figure 3-17 Program version page



Press "Esc" to return to the preceding page.

Pump Usage (optional)

This section contains an optional hour meter that tracks pump usage for maintenance purposes.

Press "Esc" to return to the preceding page.

Time Adjust

This section allows you to set the Time and Date Indicator.

Press "Esc" to return to the preceding page.

NOTE: To go back to the Main Page or the Main Menu, press "Esc" as many times as necessary until the desired page is displayed.

Module Locations

The multiplex control system used on all Labrie & Wittke models have multiple control modules located throughout the unit. At times, it may be necessary to access these to perform maintenance or diagnostic procedures.

On the AUTOMIZER™, the control modules are located at various points on the chassis and body. Please refer to the following pages for exact module locations.

Node 10 Module Location

The module will always be located in cab. On the Mack LEU chassis, the module will typically be located under the left (street) side foot well. On the Autocar & Peterbilt chassis, a black console box is mounted on the doghouse by the back window. Please note that the Autocar & Peterbilt also use IFM modules for the chassis-based controls; ensure that the module in question is connected to the Labrie electrical system.

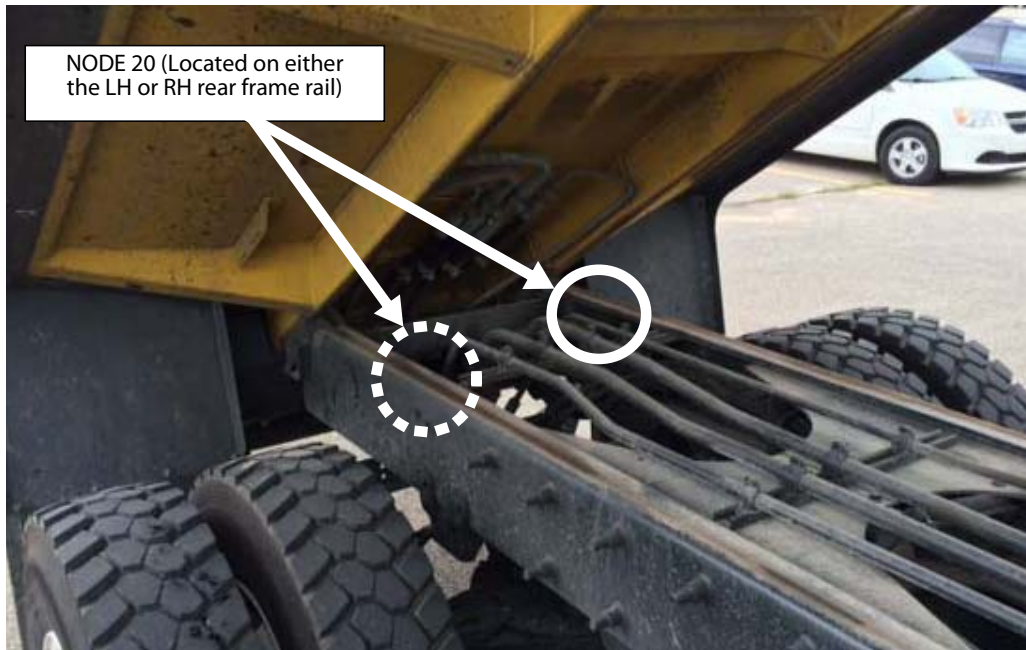
Figure 3-18 Module location on a Mack LEU chassis



Node 20 Module Location

The module will always be located at the rear of the chassis, frame-mounted inside the frame rail. The module may be on either LH or RH frame rail, depending on the particular chassis and configuration.

Figure 3-19 Node 20 module location



Node 30 Module Location

The module will typically be located in the upper rear light bar, usually mounted to the cover of the light bar housing. Early production Multiplex units may have the module mounted further back on the tailgate, but still on the topside.

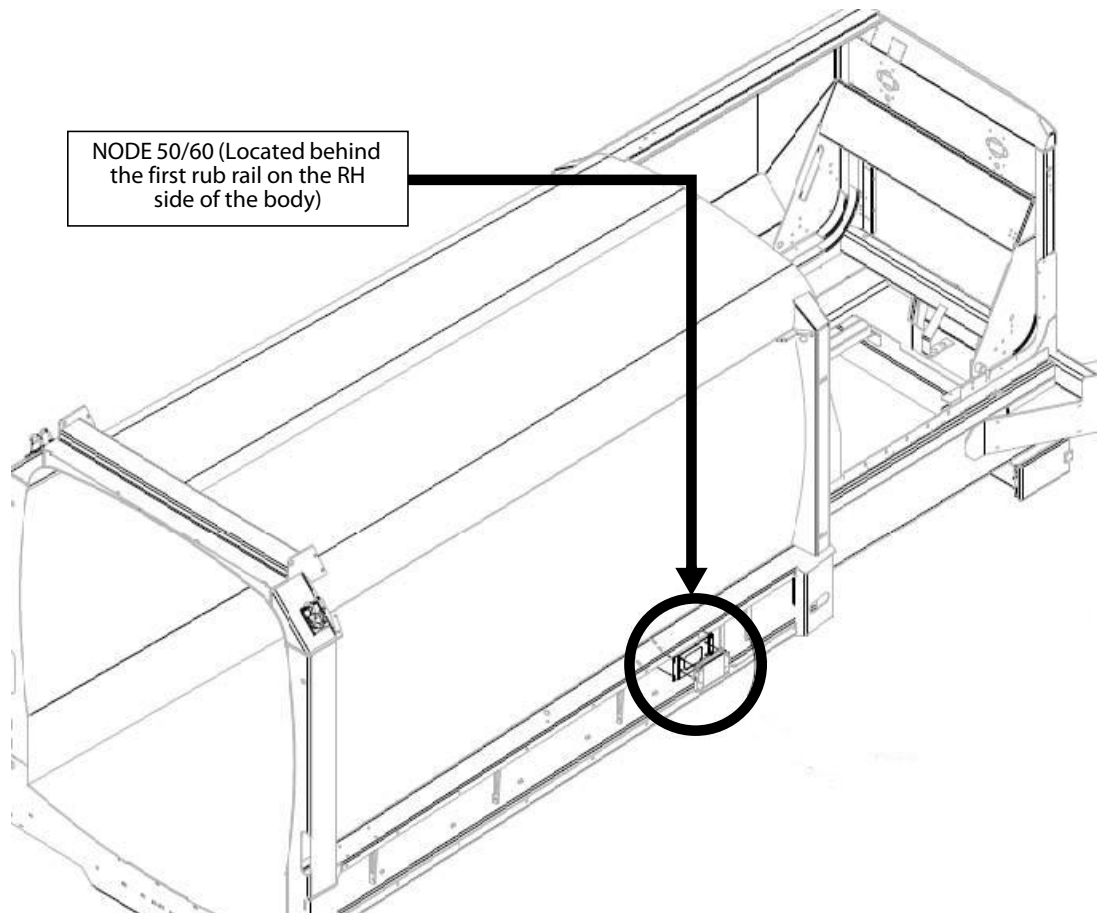
Figure 3-20 Node 30 module location



Node 50/60 Module Location

This dual module (a single component containing two modules) is located on the right (curb) side of the body, rearward of the arm valve. The module may be accessed by removing the forward rub rail panel.

Figure 3-21 Node 50/60 module location



Connections and Module Condition

An item of importance on the multiplex control system is good, reliable connections at the multiplex modules. The following pages provide guidance on properly checking the connections and module condition.

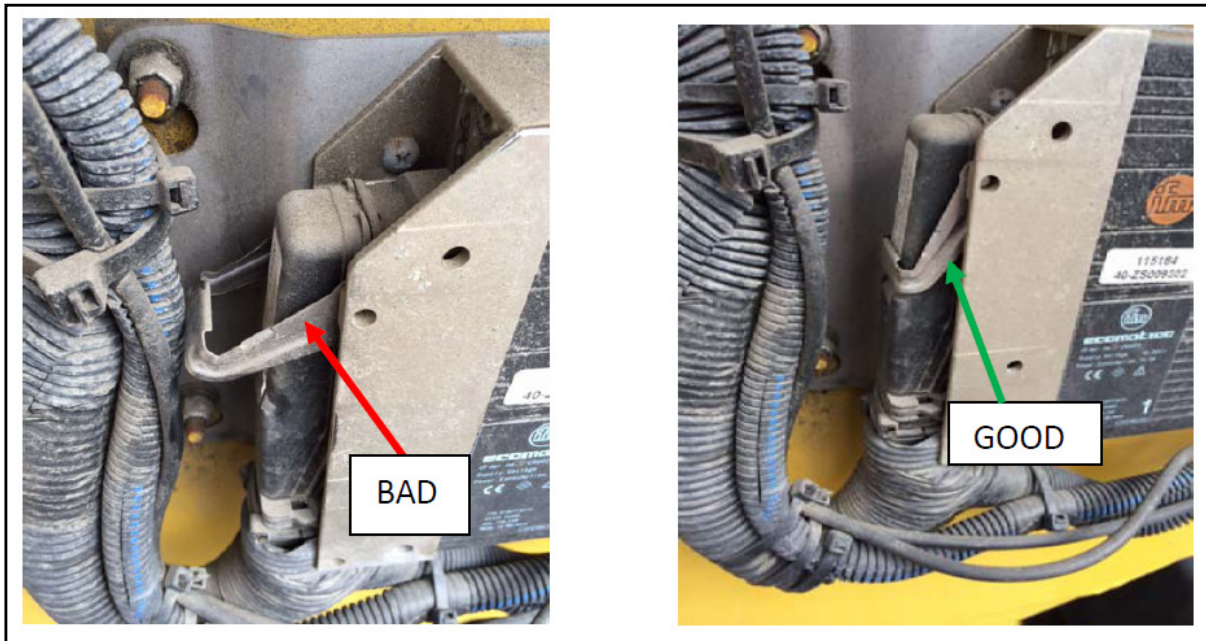
When diagnosing multiplex module connectivity issues (fault “Node XX Disconnected” on the display) on Labrie AUTOMIZER™, basic checks must be made.

Verify that the module is correctly receiving/sending inputs and outputs; locate the LED light near the wire connector; a module operating correctly will have a green, blinking light (commonly referred to as a “heartbeat”) [see Figure 3-22]. If solid green light exists, not blinking, the module is not running and will need to be restarted. If there is a fast-paced green blinking light, then the module has lost its firmware and will need to be reprogrammed. If there is no light present, then the module is not powering up/communicating, and further diagnostics on the wire routing will be required.

Figure 3-22 LED light on module

Once module light status condition has been verified, the connector condition should be checked:

1. Check for proper connection to module

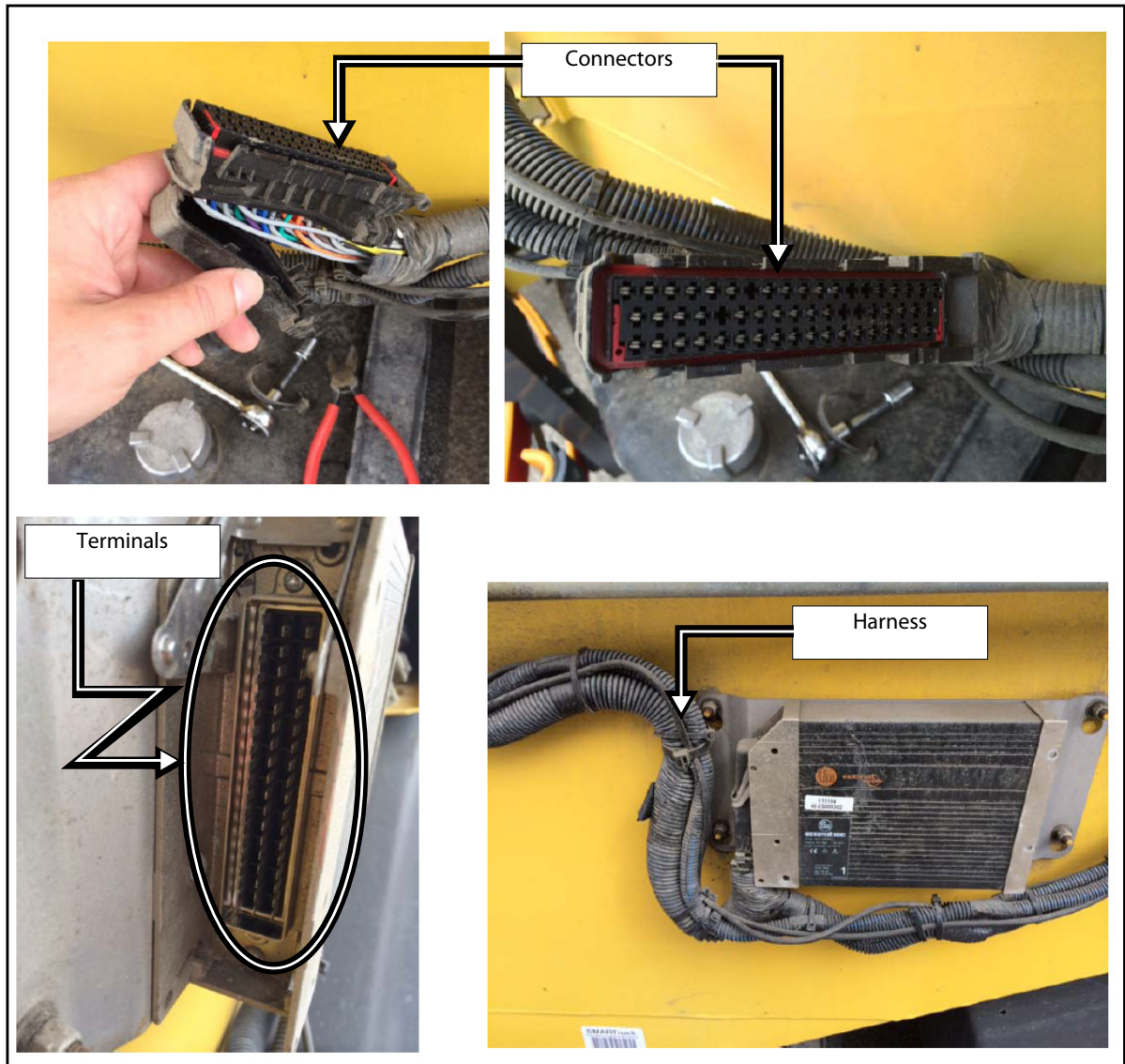
Figure 3-23 Connection status

2. Check for any moisture or corrosion in the connector or on the module terminals.

It is highly recommended that dielectric grease be applied to connector.

3. Check the condition of the harness and ensure that it is not secured too tight with tie-wraps, which may pull the wires back within the connector.

Figure 3-24 Connectors, terminals and harness



4. Check all ignition (power) and grounds to the module and also check the CAN_H & CAN_L side to the module.
 - 4 a. Verify all power supplies (IGN) to the module, if there is a suspicion that power is intermittent check the ignition relay, which is located next to the battery box.
 - 4 b. Verify that grounds are good to the module. Need to isolate and check the resistance on the individual grounds.
 - 4 c. Check the CAN_H & CAN_L wires and verify that there is 60 ohms resistance. If there is not, this will cause connectivity issues to the specific module.

Control Panel

The control panel is located in the middle of the cab for easy access during collection and operation. Here is a description of the controls and switches found on the control panel.

Figure 3-25 Control panel (part 1)

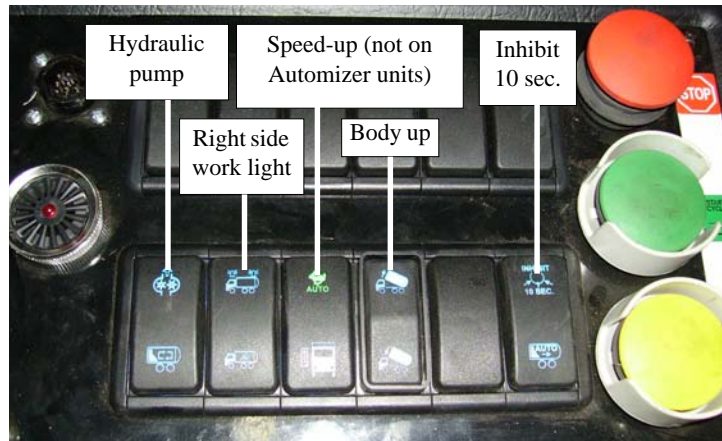
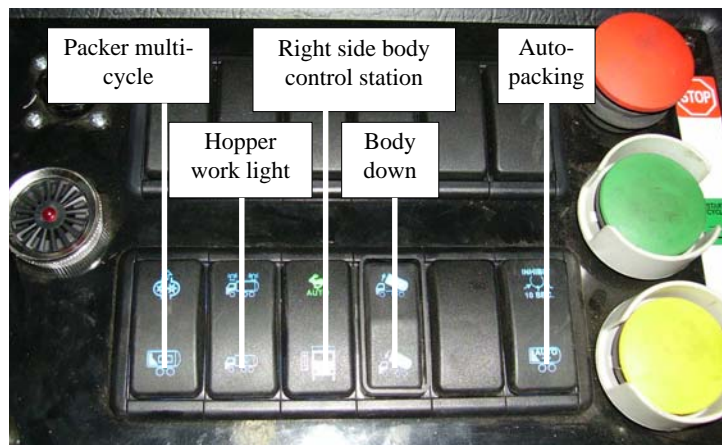


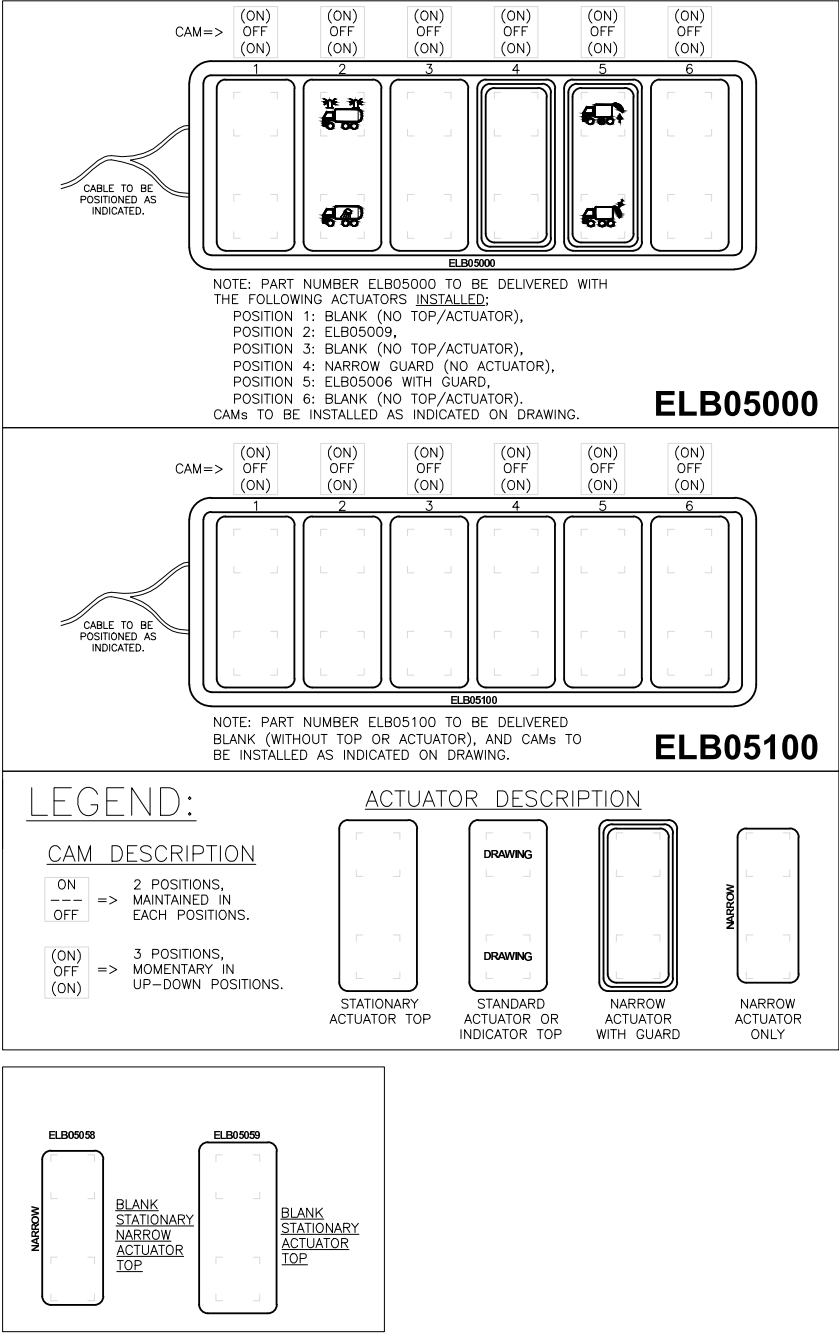
Figure 3-26 Control panel (part 2)



NOTE: The switches and controls found on the panel vary according to the options installed on the vehicle.

Multiplex Switch Actuators (2)

NOTE: This illustration and the preceding one were taken from PDF file no 159535.



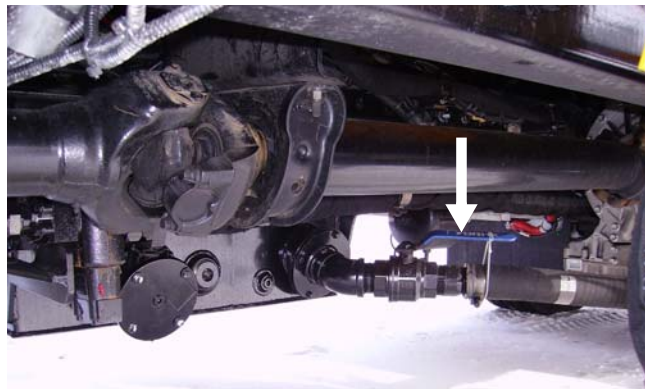
Pump Switch

This switch (see Figure 3-25), also known as PTO switch, engages and disengages the hydraulic pump, all the body functions (packer, body hoist, tailgate) and the joystick that controls the arm. Note that the switch turns green when the pump is engaged.

- ♦ Press the switch to activate the hydraulic pump.
- ♦ Press the same switch again to deactivate the hydraulic pump.

NOTE: Do not close the main shut-off valve on the hydraulic tank even if the PTO switch is turned off. The pump is always turning whatever the engine RPM. It is very important not to let the pump run dry or without oil. Otherwise, the pump will be seriously damaged or even destroyed.

Figure 3-27 Main shut-off valve



IMPORTANT: In case of a leak in the hydraulic system, and if the vehicle has to be driven somewhere else, take off the drive shaft between the pump and the engine. Call maintenance facility and refer to the *Maintenance Manual*.

Body Up Switch

This control switch (see Figure 3-25) is used to raise the body. Press and keep down this switch to raise the body to the desired height.

Before using this switch, make sure that the truck is parked on safe level ground.

When the body is raised a buzzer sounds.

Danger!



Always use body safety prop when performing maintenance under a raised body. Failure to do so may result in severe injury or even death.

Body Down Switch

This control switch (see Figure 3-26) is used to lower the body. Press and keep down this switch to lower the body to the desired height. When the body touches the rod of the limit switch, the buzzer stops sounding.

Tailgate Up Switch

This control switch is used to raise the tailgate. Press and keep down this switch to raise the tailgate to the desired height.

Before using this switch, make sure that the truck is parked on safe level ground.

IMPORTANT: Remove both tailgate-locking pins before using this control switch.

Warning! Do not drive the vehicle when the tailgate is not fully closed.



When the tailgate is unlocked, the TAILGATE UNLOCKED or BODY RAISED warning lamp turns on and a buzzer sounds.

Tailgate Down Switch

This control switch is used to lower the tailgate. Press and keep down this switch to completely close the tailgate or to lower it until it rests on the tailgate safety prop.

IMPORTANT: When the tailgate is completely closed, put the tailgate-locking pins back to their place.

Packer Multicycle Switch

This switch (see Figure 3-26) allows the packer to run a preset number of cycles (from 2 to 8, 3 being the default setting) by pressing the green button once (see Figure 3-30). Cycles can be stopped anytime by pressing the red button or by turning off the multicycle control switch. When turning off the multicycle control switch, the packer completes the ongoing cycle in order to get back to the fully retracted position, and then stops.

Right-Hand Side Work Light Switch

This switch (see Figure 3-25) activates and deactivates the right-hand side work light.

- ◆ Press the switch once to turn on the right-hand side work light (switch turns green).
- ◆ Press the switch again to turn off the right-hand side work light (switch turns blue).

Hopper Work Light Switch

This switch (see Figure 3-26) activates and deactivates the hopper work light.

- ♦ Press the switch once to turn on the hopper work light (switch turns green).
- ♦ Press the switch again to turn off the hopper work light (switch turns blue).

Crusher Panel Down Switch (optional)

Press and keep down this switch to lower the crusher panel to the desired position.

The crusher panel is an option that may be installed on an AUTOMIZER™ vehicle. If your unit is equipped with this option, we suggest you to use it only for bulky items. In many cases, unnecessary use will slow down the operation. Bulky items can be maintained in place with the crusher panel while the packer crushes them.

The crusher panel can be lowered upon the refuse to prevent it from popping up in front of the packing ram, thus increasing the compaction effect during the load breaking sequence.

To help during the unloading process, a good amount of garbage should be left in front of the packer and under the lowered crusher panel as you finish your collection route. Once the body is raised at landfill, you can activate the packing ram to help clear whatever could be jammed in the hopper. This procedure can also be done without the crusher panel.

Crusher Panel Up Switch (optional)

Press and keep down this switch to raise the crusher panel to the desired position.

Figure 3-28 Crusher panel



Right-Hand Side Body Control Station Switch (optional)

In order to use the optional right-hand side body control station, the operator must press this switch (see Figure 3-26).

- ♦ A green switch means this feature is active.
- ♦ A blue switch means this feature is not active.

10-Second Inhibit Switch

This switch (see Figure 3-25), also known as grabber auto-close override, allows the operator to open the grabber when it is in the hopper in order to drop the grabbed object in it. It also allows the operator to pick up elevated carts.

To enable this feature, press the inhibit switch. This switch will then turn from blue to green.

When pressing this switch, the grabber opens for 10 seconds, then closes automatically.

Caution!



The inhibit feature overrides all safety features. The operator must be aware of all applicable safety instructions as well as all potential consequences related to its misuse. Major equipment damage and/or injury may occur.

Auto-Packing Switch

The auto-packing switch (see Figure 3-26) enables the packer to automatically start cycling 2 seconds after the grabber reaches the mid-height position on its way up. If the packer is cycling at the time the arm moves a container towards the hopper, the packer retracts immediately to its fully retracted position no matter where it was in the hopper. This is to prevent waste from being dumped onto the packer. The only exception is that the packer will not retract if, for 3 consecutive packer cycles, the fully extended limit switch is not reached.

When the auto-packing feature is used simultaneously with the multicycle feature (refer to “Packer Multicycle Switch” on page 36), the packer will run the preset number of cycles until the arm lifts a new container towards the hopper. The multicycle feature is then reset.

When a cycle has been interrupted and the packer has returned to its home position, cycling resumes 2 seconds after the grabber reaches the mid-height position on its way up.

In-Cab Packer Control Station

The AUTOMIZER™ has a packer control station located on the in-cab control panel. Here is a description of all three buttons that are found on the packer control station.

Stop Push-Button (red)

The Emergency Stop button will stop all hydraulic functions on the truck (body, tailgate, packer, etc.). By pressing the red button, the packer will stop where it is. The red button has to be manually pulled back to reactivate the hydraulic system.

Figure 3-29 Stop push-button



Pack Push-Button (green)

The packer start cycle button activates the packer for one complete cycle. A complete cycle takes about 20 seconds.

Figure 3-30 Pack push-button



Retract Push-Button (yellow)

The packer retract button will retract the packer at the beginning of its stroke. This control is useful when the body is full and the material prevents the packer from reaching the end of its stroke. Manual retraction of the packer is necessary to bring back the packer.

Figure 3-31 Retract push-button

Joystick Controls

Arm Joystick

The joystick is used to control the Right Hand™ arm of the Automizer™ as well as the grabber. It can be located either on the console at the center of the cab or near the right-hand side door. In some units, two joysticks are installed in the cab: one on the console, the other near the right-hand side door.

NOTE: On units equipped with a chute, the same joystick is used to position it correctly.

The controls on the joystick are the handle, the buttons on the front, top and backside of the handle, and the deadman switch (see Figure 3-32).

- ♦ The handle is used to control the horizontal and vertical movements of the arm's two main components.
- ♦ The backside buttons are used to control the opening and closing of the grabber: the right button is used to open the grabber, the left button to close it.
- ♦ The top buttons are used to control the positioning of the optional chute. The right button is used to position the chute to the right; the left button to position it to the left.

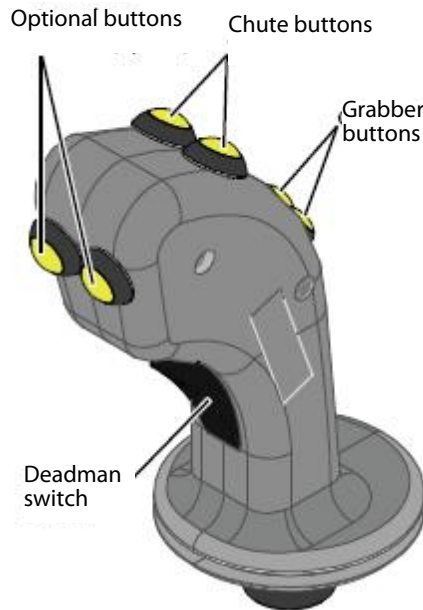
NOTE: The chute is an optional piece of equipment that may come with a comingle type body.

- ♦ The buttons on the front are optional or customized buttons.

The deadman switch is used as a safety device to ensure that every movement of the arm is absolutely wanted and controlled by the operator. That is, if the operator is not pressing the deadman switch while trying to move the arm with the joystick, no movement will occur. With such a safety feature, an accidental movement of the joystick will not be transmitted to the arm.

Joysticks operate at 45° and 90° angles. As a result, you can perform two functions at the same time; for example, you can move the arm and the grabber simultaneously.

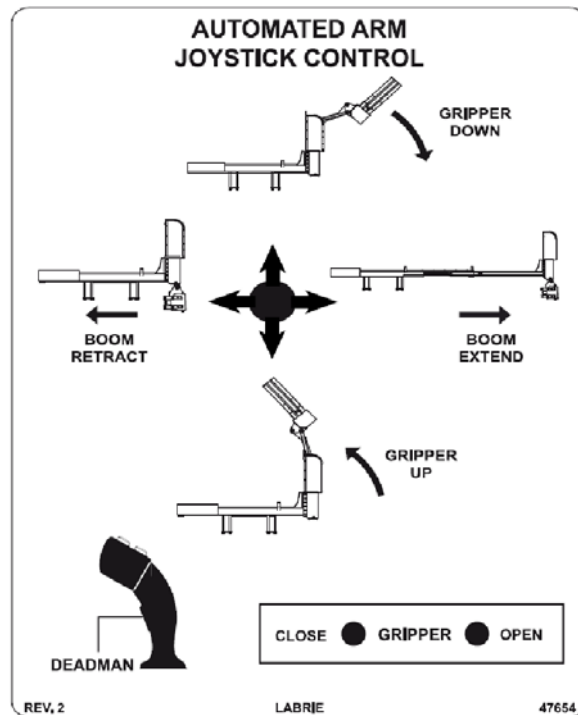
Figure 3-32 Automated arm joystick



IMPORTANT: Deadman switch must be depressed to activate in/out and up/down commands.

- ◆ Shift the joystick forward at 90° toward the grabber down lettering (see Figure 3-33) to lower the grabber.
- ◆ Shift the joystick forward at 45° between the grabber down and arm extend lettering to lower the grabber and extend the arm.
- ◆ Shift the joystick toward the streetside at 90° to the arm retract lettering to retract the arm only.
- ◆ Shift the joystick backward at 45° between the grabber up and arm retract lettering to raise the grabber and retract the arm at the same time.
- ◆ Shift the joystick backward at 90° to the grabber up lettering to raise the grabber only
- ◆ Shift the joystick toward the curbside at 90° to the arm extend lettering to extend the arm only.

Figure 3-33 Automated arm joystick control decal



Cab Dashboard

The following is a description of the controls and buttons found on the dashboard.

Parking Brake

The parking brake must be used every time the AUTOMIZER™ is stopped on idle position except at regular traffic stops.

Figure 3-34 Parking brake



Arm Extended Warning Lights

There are two Arm Extended warning lights on the dashboard. When they are flashing, they indicate that the arm is not completely retracted alongside the hopper. Do not move the vehicle in such a situation. Completely retract the arm until these lights stop flashing before moving the vehicle.

Figure 3-35 Arm Extended warning lights



Warning!



Never drive this vehicle if the automated arm is not parked alongside the truck. This unit would be too high and/or too wide to be driven safely. Failure to retract the arm could result in unit and/or property damage, personal injury or even death. Arm Extended warning lights flash when the arm is not completely retracted.

4

Multiplex Diagnostic Guide

The following Multiplex Diagnostic Guide has been developed to facilitate the resolution of problems with Labrie's Multiplex System, whether in the field or at a repair facility. It includes ways to troubleshoot diagnostic codes that may appear on the monitor display (see Figure 3-1).

Each code relates to a particular warning or caution message that is issued by the Multiplex System. Use the Multiplex Diagnostic Guide to learn how to correct the situation that generated such message. Follow the procedure that is provided to guide you through the resolution process.

Pump: Trans Not OK

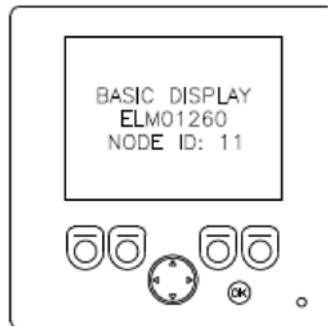
This code indicates an issue with the signal voltage coming from the transmission control module (TCM) to module (Node) 10 along with the pump relay.

While a variety of inputs and outputs are required to operate the pump circuit, only two wires can cause this specific failure: wire 104o and wire 149i.

NOTE: This is not to be confused with the sister code **PUMP: PTO NOT OK**.

Diagnostic Procedure:

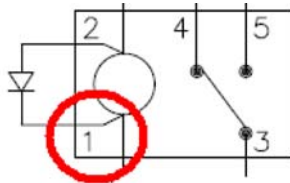
1. Using the Labrie multiplex display (for instruction, please reference maintenance and operator manual section 3), verify you have the following input:
Module (Node) 10 “Cabine”
IN14 Wire 149 (i_pump running chassis)



Is the input highlighted in green?

- 1 a. YES, go to STEP 3.
- 1 b. NO, go to STEP 2.
2. Using the Labrie wiring schematic, measure voltage (DC) at the following location:
Pump relay pin 1
Wire 149

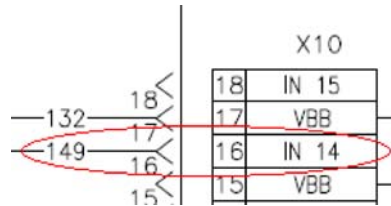
NOTE: Schematics are unit serial number specific, if you are unsure if you have the correct schematic contact **LabriePlus**.



Do you have 12 volts?

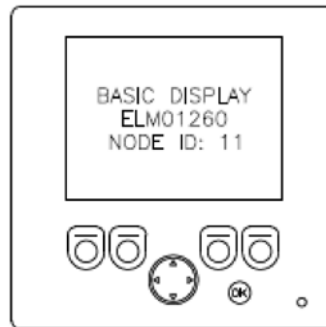
- 2 a. YES, go to STEP 3.

- 2 b.** NO, go to STEP 3.
- 3.** Locate module (Node) 10 inside cab, and back-probe connector X10.
Measure voltage (DC) at the following location of the connector:
Pin 16
Wire 149



Do you have 12 volts (DC)?

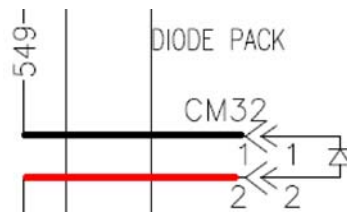
- 3 a.** YES, contact Labrie*Plus* customer support.
- 3 b.** NO, go to STEP 4.
- 4.** Using the Labrie multiplex display, verify you have the following output:
Module (Node) 10 “Cabine”
OUT12 Wire 104o (o_pump request chassis)



Is the output highlighted in green?

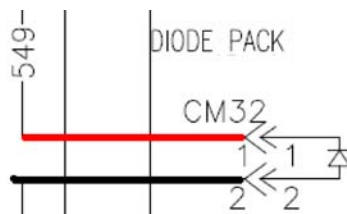
- 4 a.** YES, go to STEP 5.
- 4 b.** NO, contact Labrie*Plus*.
- 5.** Using a digital multimeter, remove diode from the connector and perform the following test:

NOTE: Connector CM32 & wire 549 on the illustrations are for reference only; the specific connector & wire numbers may vary. To find the diode on the wiring schematic, locate wire #149 and trace it to the diode pack, typically on page 1.



- A) Set multimeter to diode setting.
- B) Place red lead on pin 2.
- C) Place black lead on pin 1.

An audible signal indicating continuity for the diode will sound.

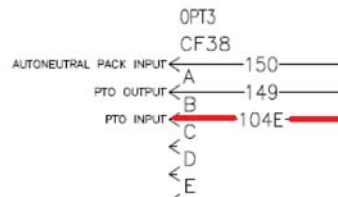


- D) Place red lead on pin 1.
- E) Place black lead on pin 2.

No audible signal indicating continuity for the diode should sound.

Did diode pass above listed tests?

- 5 a. YES, go to STEP 6.
- 5 b. NO, replace diode.
6. Using a digital multimeter, measure voltage going from the Labrie Node 10 to the chassis TCM by measuring voltage (DC) at connector CF38, WIRE 104e, (o_pump request chassis) and a good battery ground.



Do you have 12VDC present?

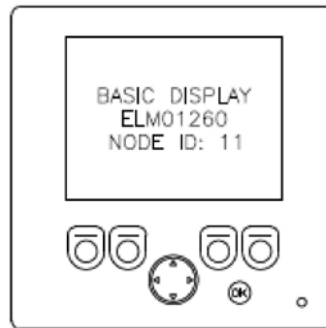
- 6 a. YES, using the Labrie wiring schematic, locate and repair short/break in wire 149.
- 6 b. NO, contact LabriePlus.

Pump Not Started: Main Air Pressure

This code indicates a loss of the input for the main air pressure switch located inside the MACS valve box. Failure to receive this input will prevent the unit from enabling 123o to allow the pump relay to latch.

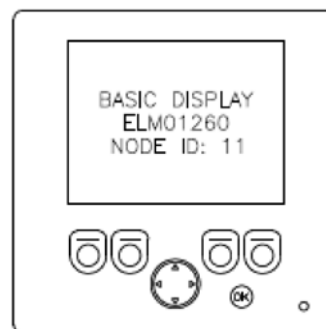
Diagnostic Procedure:

1. Using the Labrie multiplex display, verify you have the following input:
Module (Node) 50
I02 Wire 208i (i_MainAirPressure_Switch)



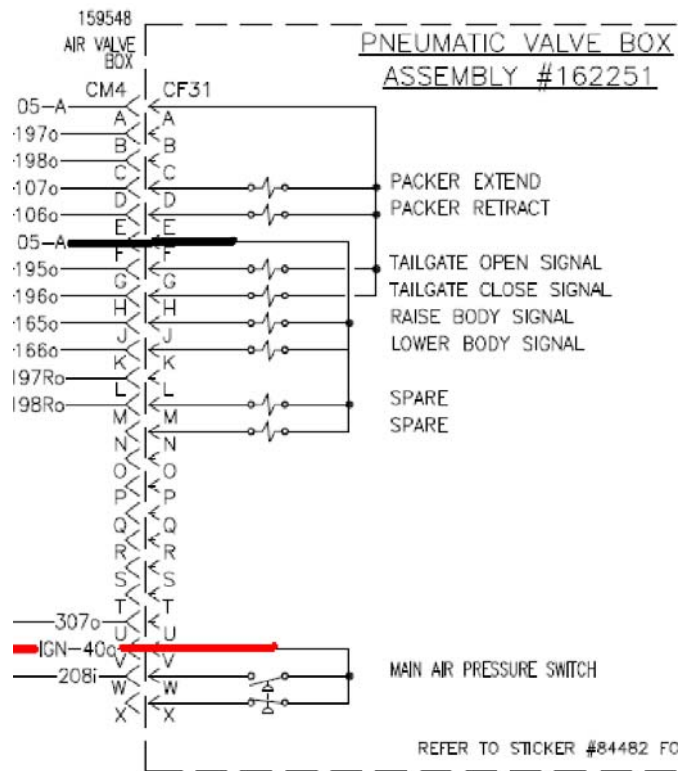
Is the input highlighted in green?

- 1 a. YES, go to STEP 6.
- 1 b. NO, go to STEP 2.
2. Using the Labrie multiplex display, verify you have the following output:
Module (Node) 50
144 Wire IGN_50o (o_Power50_enable)



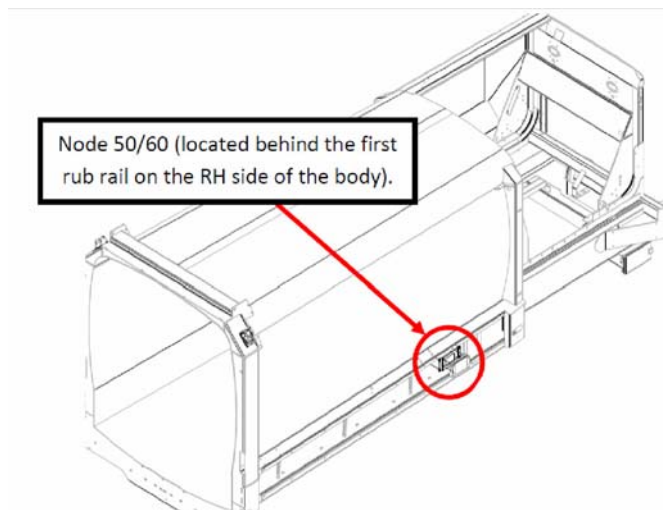
Is the output highlighted in green?

- 2 a. YES, go to STEP 3.
- 2 b. NO, go to STEP 4.
3. Using a digital multimeter, measure voltage (DC) at the MACS valve box, at the following pin location and a designated battery ground.



Do you have 12VDC at pin V of the MACS valve box?

- 3 a.** Yes, go to STEP 5.
- 3 b.** NO, go to STEP 4.
- 4.** Locate Node 50 at the street side of the body and remove the connector backshell cover.

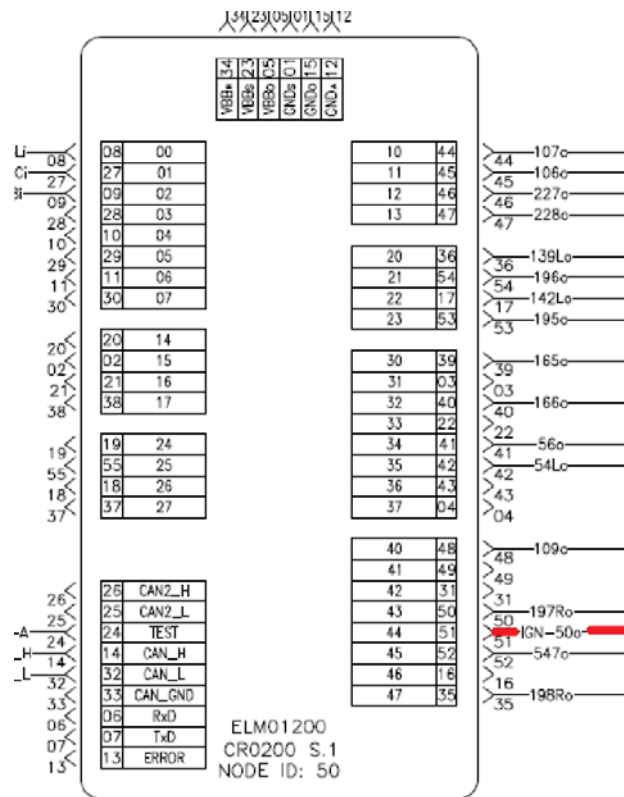


Using a digital multimeter set to the voltage (DC) scale, measure at the following location:

Node 50 main connector (CM1)

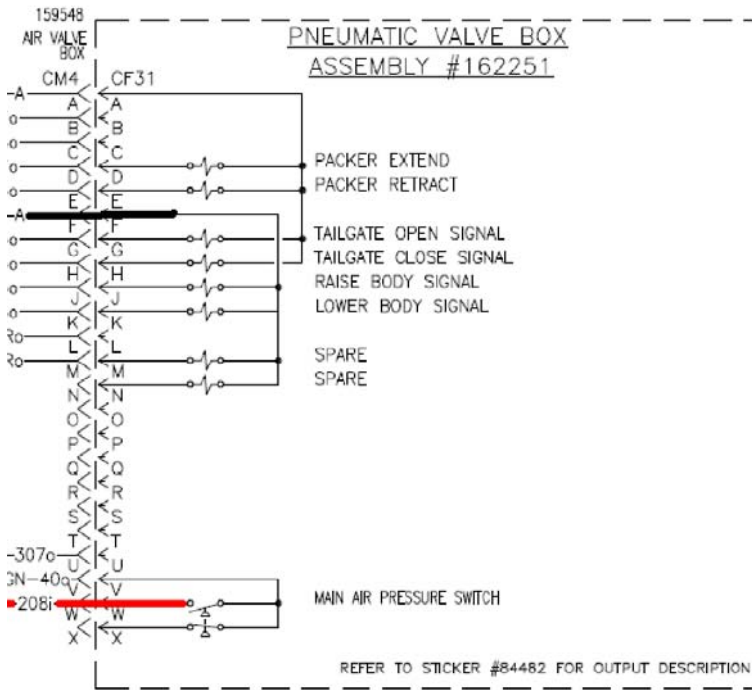
Red lead on pin 51 (IGN-50o)

Black lead on pin designated battery ground.



Do you have 12 volts DC?

- 4 a. Yes, using the Labrie wiring schematic, repair open wire from Node 50 to the MACS valve box (IGN-50c).
- 4 b. NO, contact LabriePlus.
5. Using a digital multimeter set to the voltage (DC) scale, measure at the following location:
Main air pressure switch at Mac valve box.
Disconnect connector CM4
Red lead on pin W (208i)
Black lead on pin F (105a)



Do you have 12 volts DC?

5 a. YES, replace pressure switch.

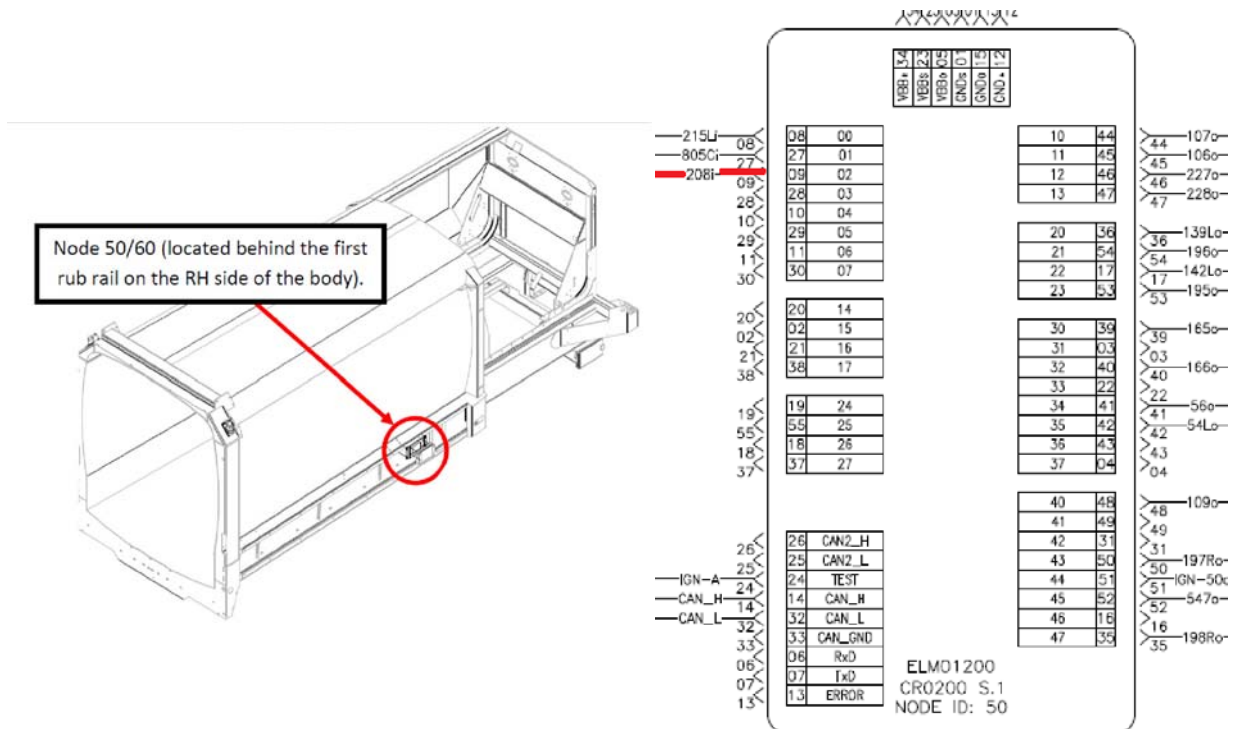
5 b. NO, go to STEP 6.

6. Using a digital multimeter set to the voltage (DC) scale, measure at the following location:

Node 50 main harness connection (CM1)

Red lead on pin 09 (208i) (i_MainAirPressure_Switch)

Black lead on designated battery ground



Do you have 12 volts DC?

- 6 a.** YES, replace pressure switch.
- 6 b.** NO, using the Labrie schematic, repair open circuit between pressure switch and Node 50 for wire 208i.

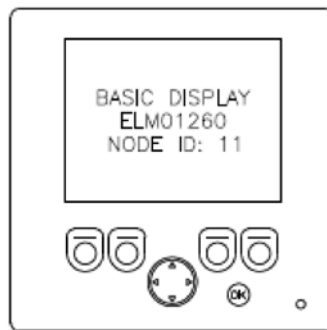
Pump Not Started: Cab EStop

This code indicates that the input voltage (DC) from the emergency stop switch is not returning back to Node 10 via wire 125i.

NOTE: Prior to troubleshooting steps below, ensure the cab EStop is pulled up or engaged.

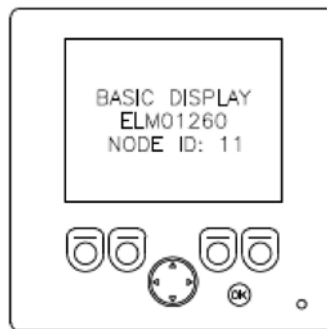
Diagnostic Procedure:

1. Using the Labrie multiplex display, verify you have the following input:
Module (Node) 10
IN03 Wire 125i (i_EStop_Switch)



Is the input highlighted in green?

- 1 a. YES, go to STEP 5.
 - 1 b. NO, go to STEP 2.
2. Using the Labrie multiplex display, verify you have the following output:
Module (Node) 10
OUT01 Wire IGN-10o (o_Power10_Enable)

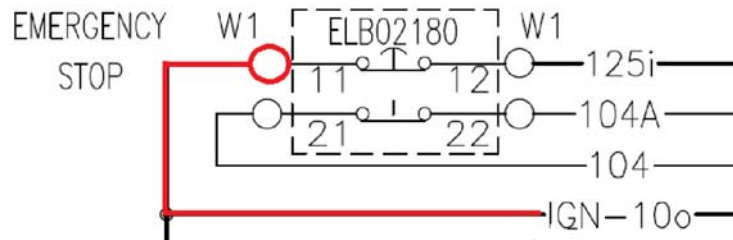


Is the output highlighted in green?

- 2 a. YES, go to STEP 3.
 - 2 b. NO, contact LabriePlus.
3. Using a digital multimeter, set to the (DC) scale, perform the following checks at the specified location.

Red lead on terminal 11 of the cab EStop switch.

Black lead on a designated battery ground.



Do you have 12(VDC) present?

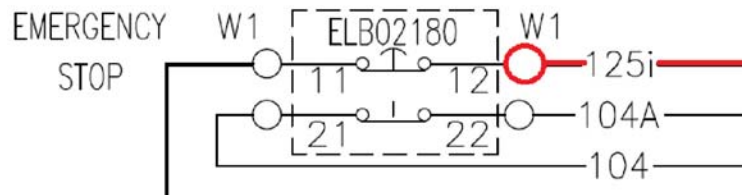
3 a. YES, go to STEP 4.

3 b. NO, using Labrie wiring diagram, repair open circuit between Node 10 output wire IGN-10o and the cab emergency stop switch.

- 4.** Using a digital multimeter, set to the (DC) scale, perform the following checks at the specified location.

Red lead on terminal 12 of the cab EStop switch.

Black lead on a designated battery ground.



Do you have 12(VDC) present?

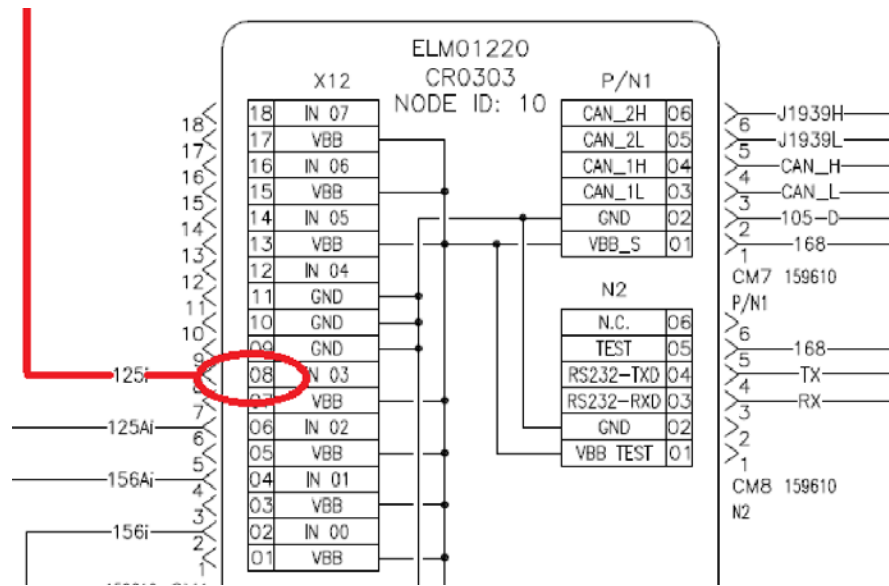
4 a. YES, go to STEP 5.

4 b. NO, replace defective EStop switch.

- 5.** Using a digital multimeter, set to the (DC) scale, perform the following checks at the specified location:

Red lead packprobed into Node10, IN03, Wire 125i, Connector X12.

Black lead on designated battery ground.



Do you have 12VDC present?

- 5 a.** YES, contact LabriePlus.
- 5 b.** No, using the Labrie wiring diagram, repair open circuit in wire 125i between the cab EStop and Node 10.

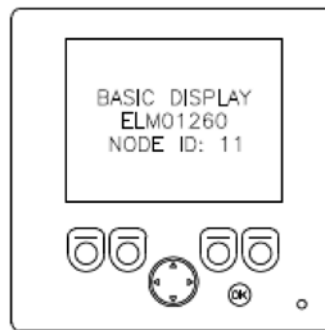
Pump Not Started: Aux Cab EStop

This code indicates that the input voltage (DC) from the auxiliary emergency stop switch is not returning back to Node 10 via wire 125Ai.

NOTE: Prior to troubleshooting steps below, ensure the auxiliary cab EStop is pulled up or engaged.

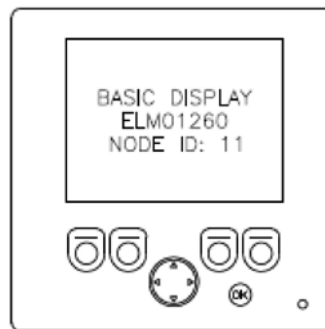
Diagnostic Procedure:

1. Using the Labrie multiplex display, verify you have the following input:
Module (Node) 10
IN02 Wire 125Ai (i_AuxEStop_Switch)



Is the input highlighted in green?

- 1 a. YES, go to STEP 5.
- 1 b. NO, go to STEP 2.
2. Using the Labrie multiplex display, verify you have the following output:
Module (Node) 10
OUT01 Wire IGN-10o (o_Power10_Enable)

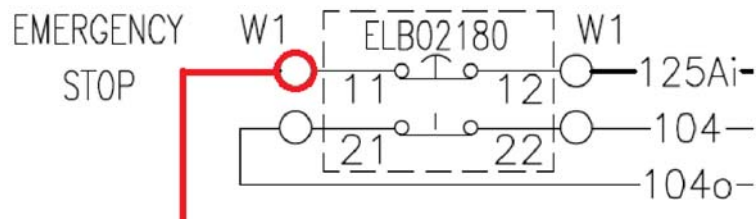


Is the output highlighted in green?

- 2 a. YES, go to STEP 3.
- 2 b. NO, contact LabriePlus.
3. Using a digital multimeter, set to the (DC) scale, perform the following checks at the specified location.

Red lead on terminal 11 of the auxiliary cab EStop switch.

Black lead on a designated battery ground.



Do you have 12(VDC) present?

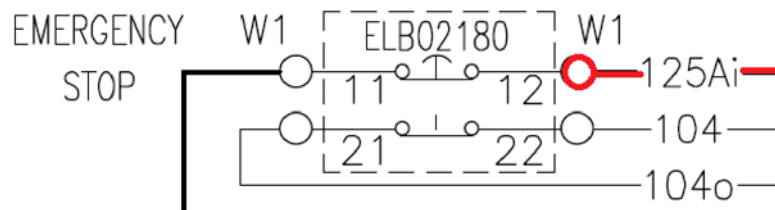
3 a. YES, go to STEP 4.

3 b. NO, using Labrie wiring diagram, repair open circuit between Node 10 output wire IGN-10o and the cab emergency stop switch.

- 4.** Using a digital multimeter, set to the (DC) scale, perform the following checks at the specified location.

Red lead on terminal 12 of the auxiliary cab EStop switch.

Black lead on a designated battery ground.



Do you have 12(VDC) present?

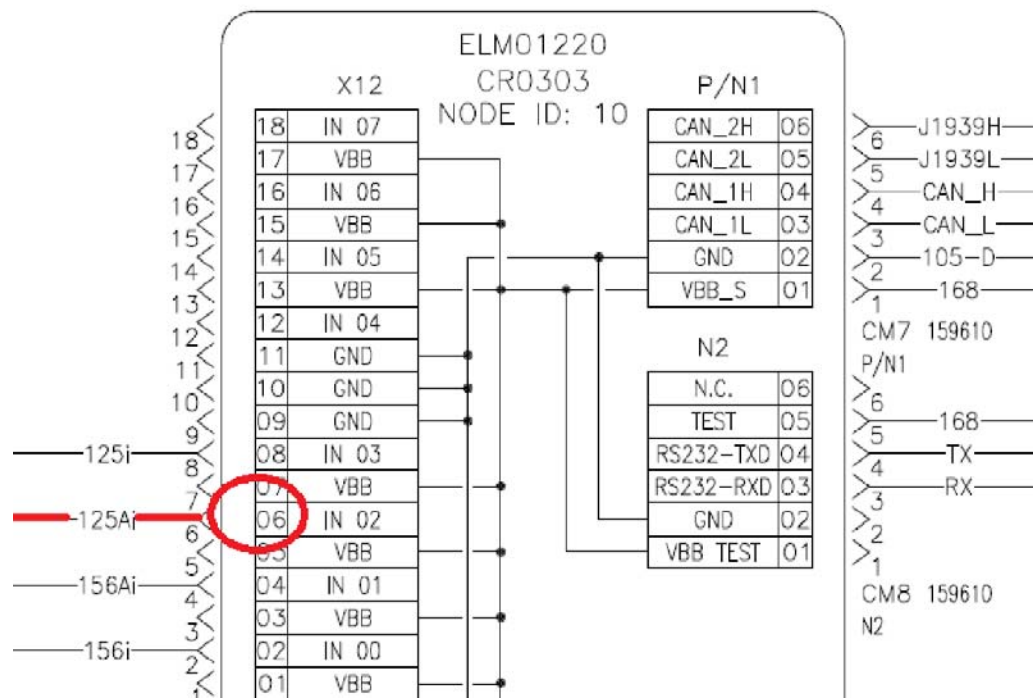
4 a. YES, go to STEP 5.

4 b. NO, replace defective EStop switch.

- 5.** Using a digital multimeter, set to the (DC) scale, perform the following checks at the specified location:

Red lead packprobed into Node10, IN02, Wire 125Ai, Connector X12.

Black lead on designated battery ground.



Do you have 12VDC present?

5 a. YES, contact LabriePlus.

5 b. No, using the Labrie wiring diagram, repair open circuit in wire 125Ai between the cab auxiliary EStop and Node 10.

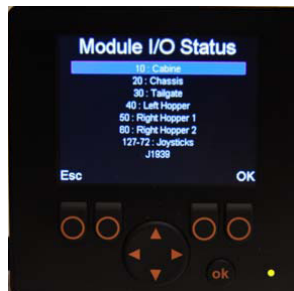
Pump Not Started: RPM Too High

This code is generated when the engine is sending an RPM signal to the Labrie system via J1939 at too high a value.

Using Node 11, we can view J1939 data incoming from the chassis to the Labrie multiplex system using the I/O screen.

Diagnostic Procedure:

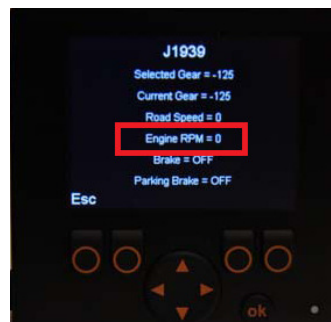
1. Using the Labrie multiplex display, verify which value you have coming in.
 - a) Go to I/O status screen of multiplex display.



- b) Using the directional pad, navigate to highlight the J1939 screen option and depress ok.



- c) Verify engine RPM value coming in from the chassis to the Labrie multiplex system.



Is the value below 900 RPM?

- 1 a. YES, contact LabriePlus.
- 1 b. NO, lower RPM to correct speed OR contact LabriePlus.

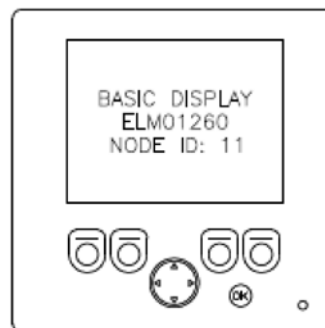
Pump: PTO Not OK

This code indicates an issue is present with the PTO circuit pertaining directly to the PTO solenoid activation feedback input wire 148i, to master module Node 20.

NOTE: This is not to be confused with the sister code **PUMP: TRANS NOT OK**.

Diagnostic Procedure:

1. Using the Labrie multiplex display, verify you have the following input:
Module (Node) 20
I24 Wire 148i i_PTOPressureNotOK_Switch



Is input status green?

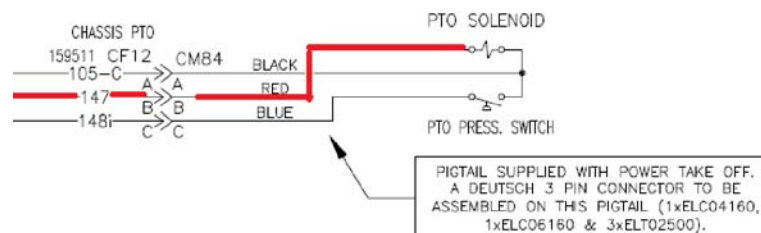
- 1 a. YES, contact LabriePlus.
- 1 b. NO, go to STEP 2.
2. Using a digital multimeter set to the voltage (DC) scale, perform the following measurements as outlined in the steps below.

Connector CF12

Pin B wire 147

Red lead on pin B

Black lead on dedicated battery ground.



Do you have at least 12VDC?

- 2 a. YES, go to STEP 3.

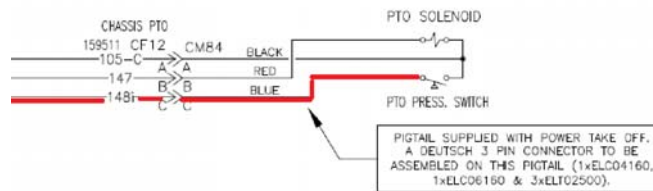
- 2 b.** NO, using Labrie wiring schematic, repair open circuit in wire 147 from pump relay to connector CF12.
- 3.** Using a digital multimeter set to the resistance (OHMS) scale, perform the following measurement as outlined in the steps below:

Connector CF12

Pin c wire 148i

Red lead on pin C

Black lead on a dedicated battery ground

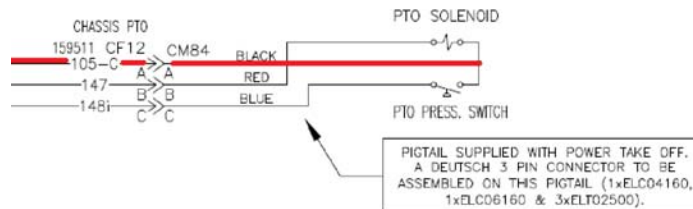


Do you have continuity?

- 3 a.** YES, go to STEP 4.
- 3 b.** NO, repair or replace defective PTO pressure switch.
- 4.** Using a digital multimeter set to the resistance (Ohms) scale, perform the following measurement as outlined in the steps below:

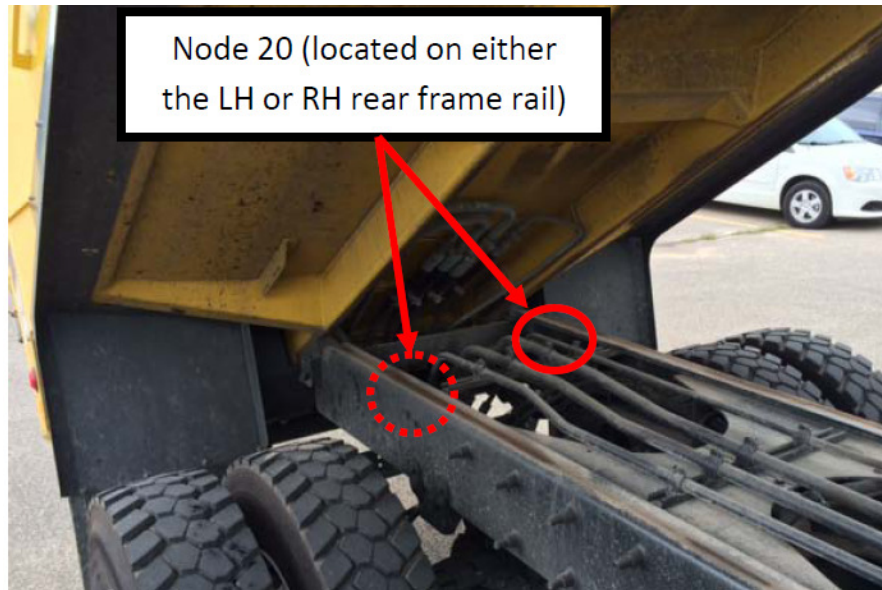
Red lead on pin A wire 105-C.

Black lead on a dedicated battery ground.



Do you have between 0-2 Ohms?

- 4 a.** YES, go to STEP 5.
- 4 b.** NO, using Labrie wiring diagram, repair damaged ground wire 105-C.
- 5.** Locate Node 20 module at rear of chassis frame rail.

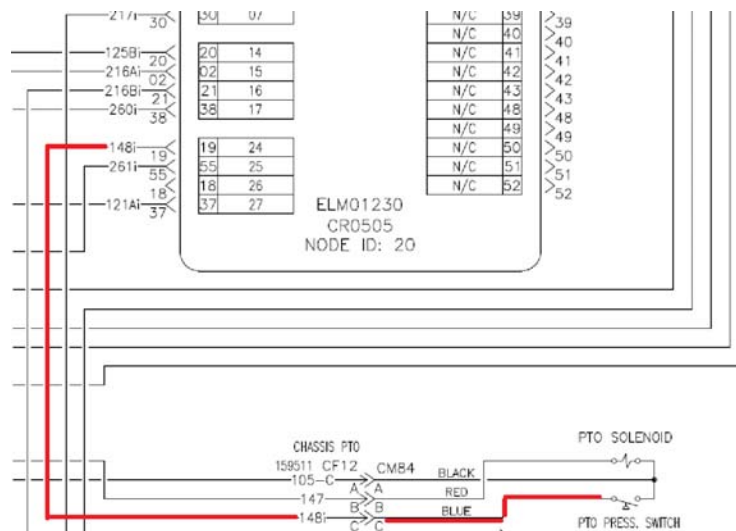


Using a digital volt multimeter, locate connector CM20 (main Node 20 module connector) and perform tests as outlined below:

With your multimeter set to the voltage (DC) scale

Red lead backprobed into Node 20 CM20 connector pin 19 wire 148i.

Black lead on dedicated battery ground.



Do you have 12VDC?

5 a. YES, contact LabriePlus.

5 b. NO, using Labrie wiring schematic, repair open wire between PTO pressure switch and Node 20 via wire 148i.

Pump Not Started: Hopper Door Open

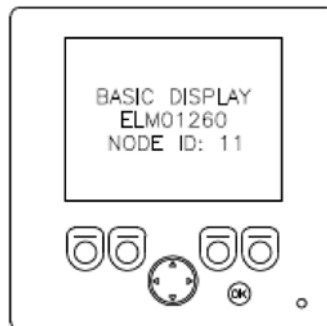
This code indicates that node 60 has lost its feedback via voltage input on wire 121Ci (i_RHDoorClose_sensor) from the hopper door proximity switch.

When this code sets, it causes module (Node) 10 to cut power to the TCM (wire 104o) as well as output 123o which latches the pump relay.

The first step a technician must verify is whether or not the hopper door is closed and the switch is present and/or not damaged. He must also verify the ground wire 105 has good continuity to battery ground.

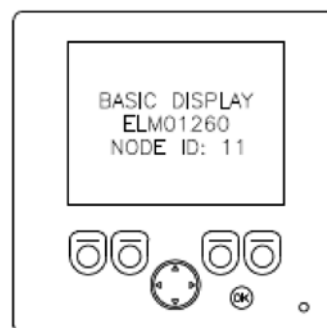
Diagnostic procedure:

1. Using the Labrie multiplex display, verify you have the following input:
Module (Node) 60
I01 Wire 121Ci (i_RHDoorClose_sensor)



Is the input highlighted in green?

- 1 a. YES, go to STEP 4.
- 1 b. NO, go to STEP 2.
2. Using the Labrie multiplex display, verify you have the following output:
Module (Node) 60
I42 Wire IGN-60o



Is the output highlighted in green?

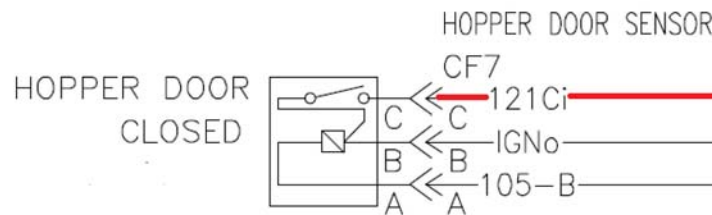
- 2 a. YES, go to STEP 3.

- 2 b. NO, contact Labrie*Plus*.
3. Using a digital multimeter set to the voltage (DC) scale, perform the following measurement as outlined below:

At the hopper door sensor connector (CF7), connect your meter as follows:

Red lead on pin C, wire 121Ci, (i_RHDoorClose_sensor)

Black lead on a dedicated battery ground.



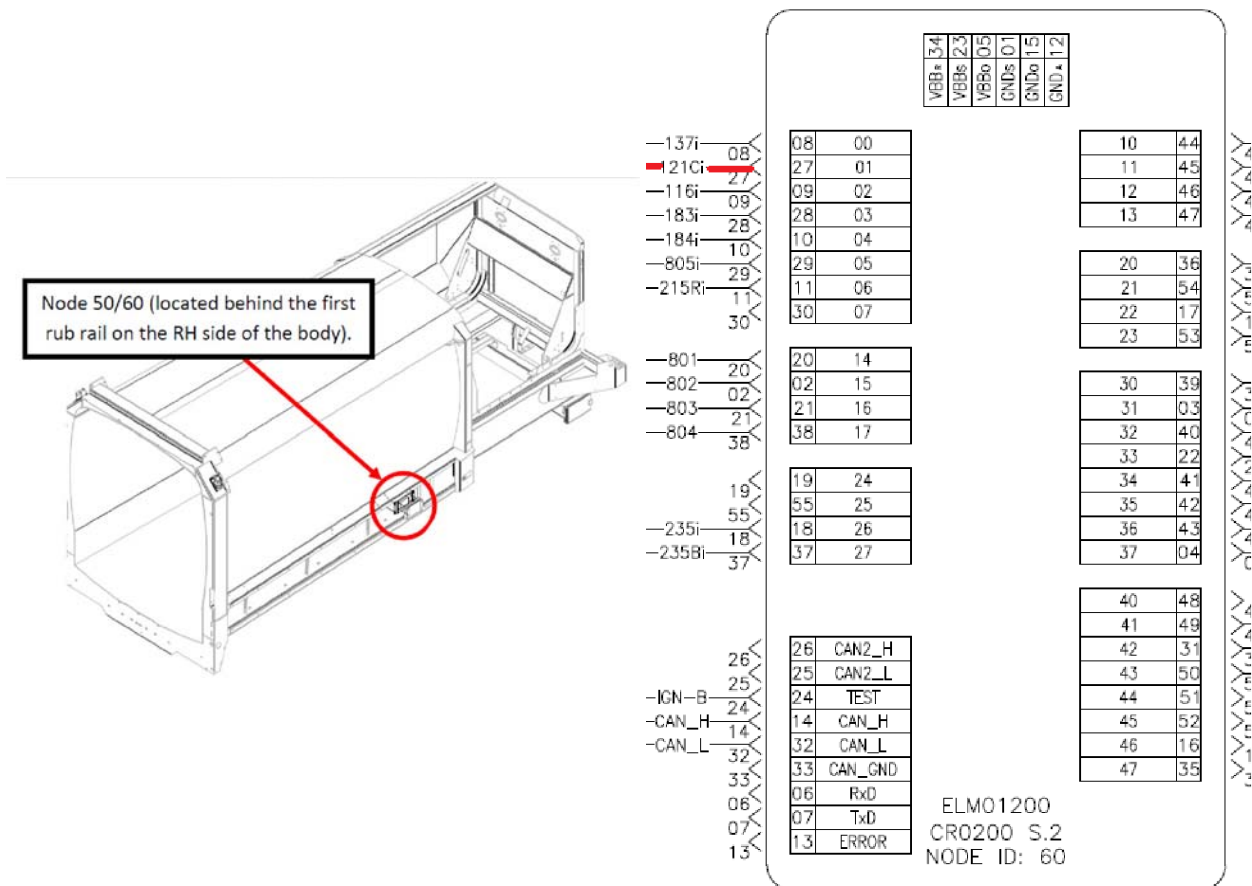
Do you have 12VDC?

- 3 a. YES, go to STEP 4.
- 3 b. NO, go to STEP 5.
4. Using a digital multimeter set to the voltage (DC) scale, perform the following tests as outlined below:

NOTE: This test is performed at Node 60.

At connector CM33 with the connector backshell removed, place your red lead to pin 27, wire 121Ci, (i_RHDoorClose_sensor).

Black lead on a dedicated battery ground.



Do you have 12VDC?

4 a. YES, contact LabriePlus.

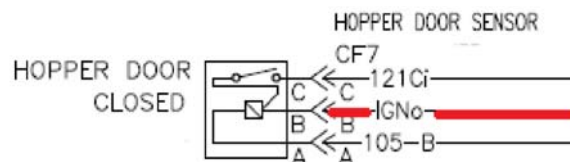
4 b. NO, go to STEP 5.

- 5.** Using a digital multimeter set to the voltage (DC) scale, perform the following measurement as outlined below:

At the hopper door sensor connector (CF7), connect your meter as follows:

Red lead on pin B, wire IGN-60o (o_Power60_enable)

Black lead on a dedicated battery ground.



Do you have 12VDC?

5 a. YES, replace/repair defective hopper door sensor.

5 b. NO, using Labrie wiring diagram, repair open/damaged wire IGN-o from module (Node) 60 to the hopper door proximity switch.

Node XX Disconnected

This code is generated when a module (Node) XX on the Labrie system is failing to communicate with module (Node) 10 over the CAN (Communication Area Network).

NOTE: For Node Not Connected, use **NODE XX NOT CONNECTED** troubleshooting tree.

Use the appropriate NODE ID below to follow correct module diagnostic steps.

Modules (Nodes) which can be affected by either above listed issue on the Wittke frontloader are:

STANDARD

10 (Cabine) Located inside the cab.

11 (Display) Located inside the cab next to main console.

12 (Switch bank *primary*) Located inside the cab as part of the main console.

20 (Chassis) Located at the inside rear of the chassis frame rail.

30 (Tailgate controller) Located inside the rear of the body.

50/60 (Body front) This is a dual module and is located on the front packer bulkhead of the body.

OPTIONAL

13 (Switch bank *secondary*) Located inside the cab as part of the main console.

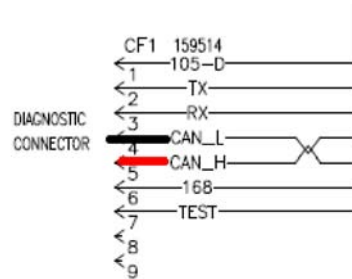
Node 10 Disconnected

Diagnostic Procedure:

1. With the ignition and battery disconnect turned off (where applicable), use a digital multimeter set to the Ohms scale and measure as follows at the Labrie diagnostic connector located inside the cab:

PIN 4 Wire CAN L (black lead)

PIN 5 Wire CAN H (red lead)



Do you have 60 Ohms resistance?

1 a. YES, go to STEP 2.

1 b. NO, go to STEP 3.

2. With the ignition and battery disconnect turned off (where applicable), use a digital multimeter set to the Ohms scale and measure as follows at the Labrie diagnostic connector located inside the cab:

a) PIN 4 Wire CAN L (red lead)

b) BATTERY GROUND (black lead)

Was any resistance indicated?

2 a. YES, repair short to ground on CAN L wire.

2 b. NO, continue to CAN H test.

a) PIN 5 Wire CAN H (red lead)

b) BATTERY GROUND (black lead)

Was any resistance indicated?

2 c. YES, repair short to ground on CAN H wire.

2 d. NO, connect all previously disconnected connections and proceed to STEP 6.

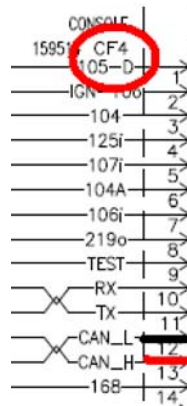
3. Using a digital multimeter set to the Ohms scale, perform the following checks:

a) Locate connector CF4 (located inside the cab) and disconnect it.

b) Connect your multimeter as follows:

a. PIN 12 Wire CAN L (black lead)

b. PIN 13 Wire CAN H (red lead)



Do you have 120 Ohms?

3 a. YES, proceed to STEP 4.

3 b. NO, proceed to STEP 5.

4. Using a digital multimeter set to the Ohms scale, perform the following checks:

NOTE: Connector CF4 from STEP 3 should still be disconnected.

a) Locate module (Node) 50 *dual module* and remove connector CM1

b) Connect your multimeter as follows:

a. PIN 14 Wire CAN H (red lead)

b. PIN 32 Wire CAN L (black lead)

Do you have 120 Ohms?

4 a. YES, connect all previously disconnected connections and proceed to STEP 6.

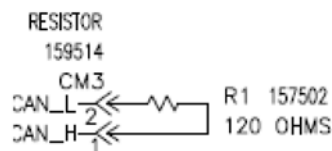
4 b. NO, continue to STEP 7.

5. Inside the cab, locate module (Node) 10 and locate connector CM3.

Follow the outlined steps using a digital multimeter:

a) Disconnect end line resistor and measure using the Ohms scale of your multimeter.

b) *NOTE* this is not polarity sensitive!!!!



Do you have 120 Ohms?

5 a. YES, continue to STEP 4.

5 b. NO, replace terminating end line resistor.

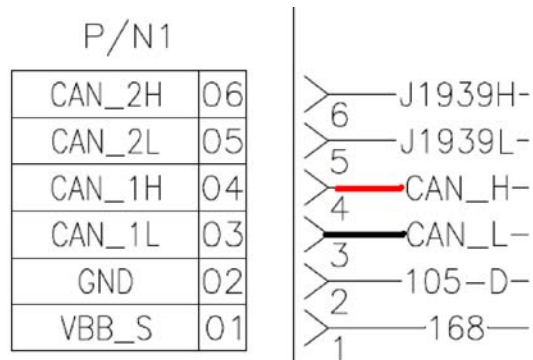
6. Locate module (Node) 10 and locate connector P/N1.

Follow the outlined steps using a digital multimeter:

a) Disconnect connector P/N1.

b) Measure resistance (Ohms) placing the leads as follows:

- a. PIN 4 CAN H (red lead)
- b. PIN 3 CAN L (black lead)



Do you have 60 Ohms?

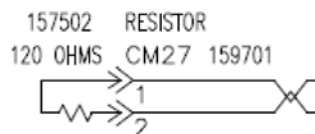
6 a. YES, contact LabriePlus.

6 b. NO, repair open connection in harness.

7. Inside the body locate module (Node) 30 and locate connector CM27.

Follow the outlined steps using a digital multimeter:

- c) Disconnect end line resistor (connector CM27) and measure using the Ohms scale of your multimeter.
- d) *NOTE* this is not polarity sensitive!!!!



Do you have 120 Ohms?

7 a. YES, connect all previously disconnected connections and proceed to STEP 6.

7 b. NO, replace terminating end line resistor.

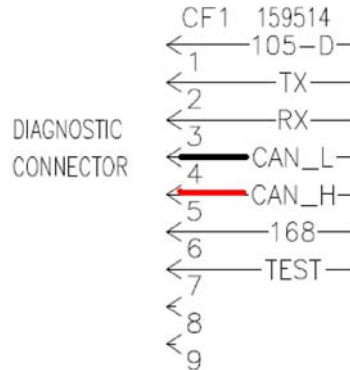
Node 11 Disconnected

Diagnostic Procedure:

1. With the ignition and battery disconnect turned off (where applicable), use a digital multimeter set to the Ohms scale and measure as follows at the Labrie diagnostic connector located inside the cab on the console:

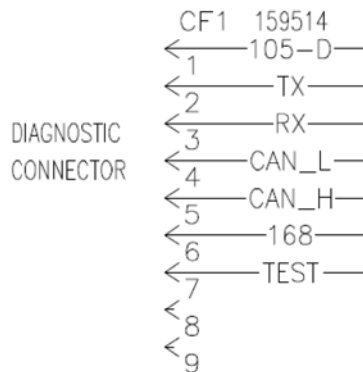
PIN 4 Wire CAN L (black lead)

PIN 5 Wire CAN H (red lead)



Do you have 60 Ohms resistance?

- 1 a. YES, go to STEP 2.
- 1 b. NO, go to STEP 3.
2. With the ignition and battery disconnect turned off (where applicable), use a digital multimeter set to the Ohms scale and measure as follows at the Labrie diagnostic connector located inside the cab:
 - c) PIN 4 Wire CAN L (red lead)
 - d) BATTERY GROUND (black lead)



Was any resistance indicated?

- 2 a. YES, repair short to ground on CAN L wire.
- 2 b. NO, continue to CAN H test.
- c) PIN 5 Wire CAN H (red lead)

d) BATTERY GROUND (black lead)

Was any resistance indicated?

2 c. YES, repair short to ground on CAN H wire.

2 d. NO, connect all previously disconnected connections and proceed to STEP 6.

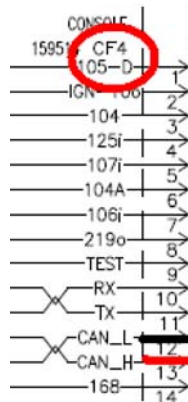
3. Using a digital multimeter set to the Ohms scale, perform the following checks:

c) Locate connector CF4 (located inside the cab) and disconnect it.

d) Connect your multimeter as follows:

a. PIN 12 Wire CAN L (black lead)

b. PIN 13 Wire CAN H (red lead)



Do you have 120 Ohms?

3 a. YES, proceed to STEP 4.

3 b. NO, proceed to STEP 5.

4. Using a digital multimeter set to the Ohms scale, perform the following checks:

NOTE: Connector CF4 from STEP 3 should still be disconnected.

c) Locate module (Node) 50 *dual module* and remove connector CM1.

d) Connect your multimeter as follows:

a. PIN 14 Wire CAN H (red lead)

b. PIN 32 Wire CAN L (black lead)

Do you have 120 Ohms?

4 a. YES, connect all previously disconnected connections and proceed to STEP 6.

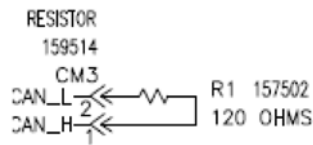
4 b. NO, continue to STEP 7.

5. Inside the cab, locate module (Node) 10 and locate connector CM3.

Follow the outlined steps using a digital multimeter:

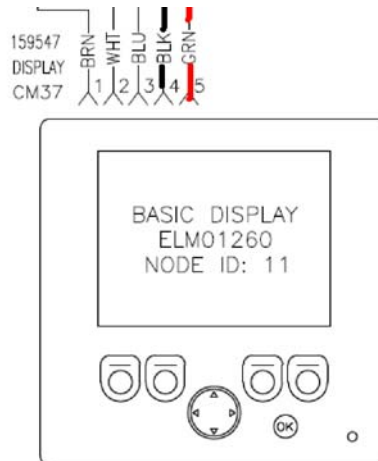
e) Disconnect end line resistor and measure using the Ohms scale of your multimeter.

f) *NOTE* this is not polarity sensitive!!!!



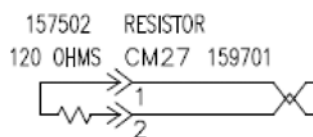
Do you have 120 Ohms?

- 5 a.** YES, continue to STEP 4.
 - 5 b.** NO, replace terminating end line resistor.
 - 6.** Locate module (Node) 11 and locate connector CM37.
- Follow the outlined steps using a digital multimeter:
- c) Disconnect connector CM37
 - d) Measure resistance (Ohms) placing the leads as follows:
 - a. PIN 4 CAN H (red lead)
 - b. PIN 5 CAN L (black lead)



Do you have 60 Ohms?

- 6 a.** YES, contact LabriePlus.
 - 6 b.** NO, repair open connection in harness.
 - 7.** Inside the body, locate module (Node) 30 and locate connector CM27.
- Follow the outlined steps using a digital multimeter:
- g) Disconnect end line resistor (connector CM27) and measure using the Ohms scale of your multimeter.
 - h) *NOTE* this is not polarity sensitive!!!!



Do you have 120 Ohms?

- 7 a.** YES, connect all previously disconnected connections and proceed to STEP 6.
- 7 b.** NO, replace terminating end line resistor.

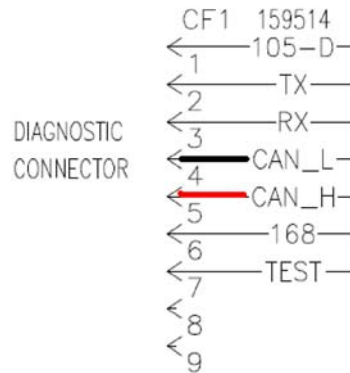
Node 12/13 Disconnected

Diagnostic Procedure:

1. With the ignition and battery disconnect turned off (where applicable), use a digital multimeter set to the Ohms scale and measure as follows at the Labrie diagnostic connector located inside the cab on the console:

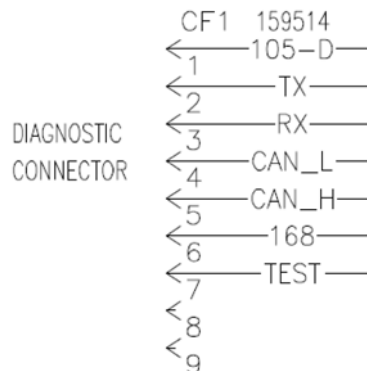
PIN 4 Wire CAN L (black lead)

PIN 5 Wire CAN H (red lead)



Do you have 60 Ohms resistance?

- 1 a. YES, go to STEP 2.
- 1 b. NO, go to STEP 3.
2. With the ignition and battery disconnect turned off (where applicable), use a digital multimeter set to the Ohms scale and measure as follows at the Labrie diagnostic connector located inside the cab:
 - e) PIN 4 Wire CAN L (red lead)
 - f) BATTERY GROUND (black lead)



Was any resistance indicated?

- 2 a. YES, repair short to ground on CAN L wire.
- 2 b. NO, continue to CAN H test.
 - e) PIN 5 Wire CAN H (red lead)

f) BATTERY GROUND (black lead)

Was any resistance indicated?

2 c. YES, repair short to ground on CAN H wire.

2 d. NO, connect all previously disconnected connections and proceed to STEP 6.

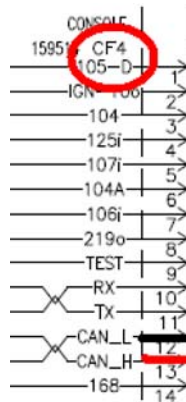
3. Using a digital multimeter set to the Ohms scale, perform the following checks:

e) Locate connector CF4 (located inside the cab) and disconnect it.

f) Connect your multimeter as follows:

a. PIN 12 Wire CAN L (black lead)

b. PIN 13 Wire CAN H (red lead)



Do you have 120 Ohms?

3 a. YES, proceed to STEP 4.

3 b. NO, proceed to STEP 5.

4. Using a digital multimeter set to the Ohms scale, perform the following checks:

NOTE: Connector CF4 from STEP 3 should still be disconnected.

e) Locate module (Node) 50 *dual module* and remove connector CM1.

f) Connect your multimeter as follows:

a. PIN 14 Wire CAN H (red lead)

b. PIN 32 Wire CAN L (black lead)

Do you have 120 Ohms?

4 a. YES, connect all previously disconnected connections and proceed to STEP 6.

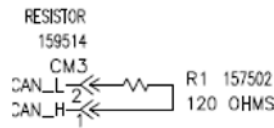
4 b. NO, continue to STEP 7.

5. Inside the cab, locate module (Node) 10 and locate connector CM3.

Follow the outlined steps using a digital multimeter:

i) Disconnect end line resistor and measure using the Ohms scale of your multimeter.

j) *NOTE* this is not polarity sensitive!!!!

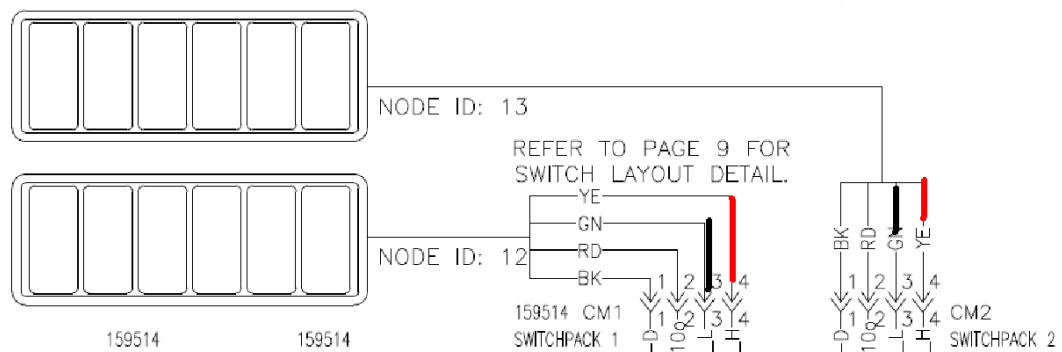


Do you have 120 Ohms?

- 5 a.** YES, continue to STEP 4.
 - 5 b.** NO, replace terminating end line resistor.
- 6.** Locate module (Node) 12/13 and locate the following connector:
(Node 12) CM1
(Node 13) CM2

Follow the outlined steps using a digital multimeter:

- e) Disconnect connector for appropriate Node
- f) Measure resistance (Ohms) placing the leads as follows:
 - a. PIN 4 CAN H (red lead)
 - b. PIN 3 CAN L (black lead)

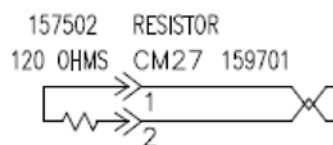


Do you have 60 Ohms?

- 6 a.** YES, contact Labrie*Plus*.
 - 6 b.** NO, repair open connection in harness.
- 7.** Inside the body, locate module (Node) 30 and locate connector CM27.

Follow the outlined steps using a digital multimeter:

- k) Disconnect end line resistor (connector CM27) and measure using the Ohms scale of your multimeter.
- l) *NOTE* this is not polarity sensitive!!!!



Do you have 120 Ohms?

- 7 a.** YES, connect all previously disconnected connections and proceed to STEP 6.
- 7 b.** NO, replace terminating end line resistor.

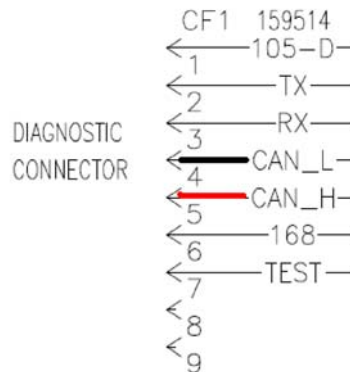
Node 20/30 Disconnected

Diagnostic Procedure:

1. With the ignition and battery disconnect turned off (where applicable), use a digital multimeter set to the Ohms scale and measure as follows at the Labrie diagnostic connector located inside the cab on the console:

PIN 4 Wire CAN L (black lead)

PIN 5 Wire CAN H (red lead)

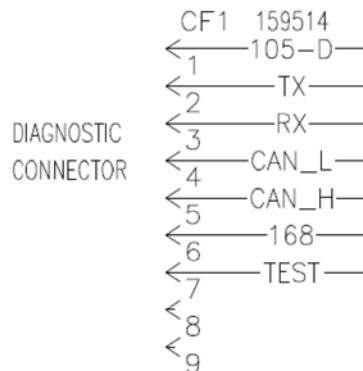


Do you have 60 Ohms resistance?

- 1 a. YES, go to STEP 2.
- 1 b. NO, go to STEP 3.
2. With the ignition and battery disconnect turned off (where applicable), use a digital multimeter set to the Ohms scale and measure as follows at the Labrie diagnostic connector located inside the cab:

g) PIN 4 Wire CAN L (red lead)

h) BATTERY GROUND (black lead)



Was any resistance indicated?

- 2 a. YES, repair short to ground on CAN L wire.
- 2 b. NO, continue to CAN H test.
- g) PIN 5 Wire CAN H (red lead)

h) BATTERY GROUND (black lead)

Was any resistance indicated?

2 c. YES, repair short to ground on CAN H wire.

2 d. NO, connect all previously disconnected connections and proceed to STEP 6.

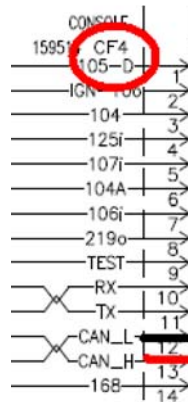
3. Using a digital multimeter set to the Ohms scale, perform the following checks:

g) Locate connector CF4 (located inside the cab) and disconnect it.

h) Connect your multimeter as follows:

a. PIN 12 Wire CAN L (black lead)

b. PIN 13 Wire CAN H (red lead)



Do you have 120 Ohms?

3 a. YES, proceed to STEP 4.

3 b. NO, proceed to STEP 5.

4. Using a digital multimeter set to the Ohms scale, perform the following checks:

NOTE: Connector CF4 from STEP 3 should still be disconnected.

For module 20 use connector CM20

For module 30 use connector CM1

For module 40 use connector CM1

g) Locate module (Node) XX; see chart above and remove corresponding connector.

h) Connect your multimeter as follows:

a. PIN 14 Wire CAN H (red lead)

b. PIN 32 Wire CAN L (black lead)

Do you have 120 Ohms?

4 a. YES, connect all previously disconnected connections and proceed to STEP 6.

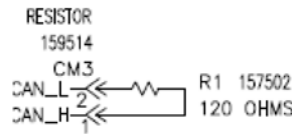
4 b. NO, continue to STEP 7.

5. Inside the cab locate module (Node) 10 and locate connector CM3.

Follow the outlined steps using a digital multimeter:

m) Disconnect end line resistor and measure using the Ohms scale of your multimeter.

n) *NOTE* this is not polarity sensitive!!!!



Do you have 120 Ohms?

5 a. YES, continue to STEP 4.

5 b. NO, replace terminating end line resistor.

6. Locate module (Node) 30 and locate connector CM1.

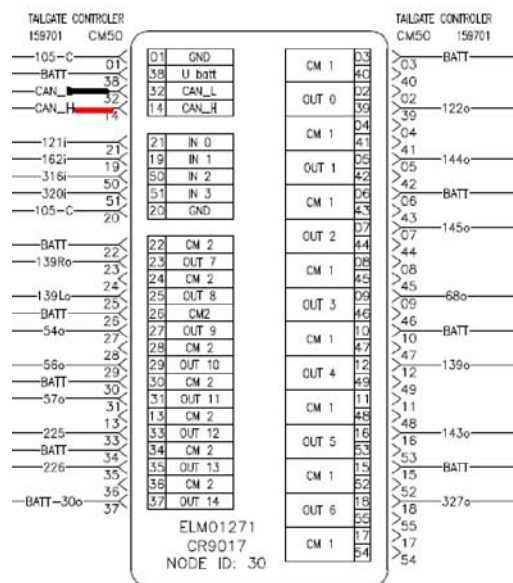
Follow the outlined steps using a digital multimeter:

g) Disconnect connector CM1

h) Measure resistance (Ohms) placing the leads as follows:

a. PIN 14 CAN H (red lead)

b. PIN 32 CAN L (black lead)



Do you have 60 Ohms?

6 a. YES, contact LabriePlus.

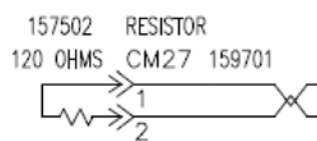
6 b. NO, repair open connection in harness.

7. Inside the body, locate module (Node) 30 and locate connector CM27.

Follow the outlined steps using a digital multimeter:

o) Disconnect end line resistor (connector CM27) and measure using the Ohms scale of your multimeter.

p) *NOTE* this is not polarity sensitive!!!!



Do you have 120 Ohms?

- 7 a.** YES, connect all previously disconnected connections and proceed to STEP 6.
- 7 b.** NO, replace terminating end line resistor.

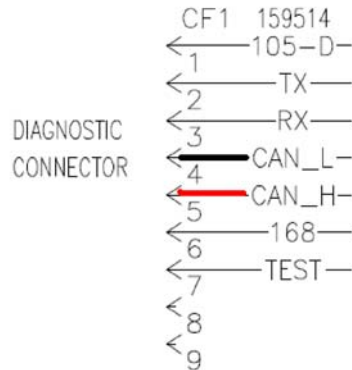
Node 50/60 Disconnected

Diagnostic Procedure:

1. With the ignition and battery disconnect turned off (where applicable), use a digital multimeter set to the Ohms scale and measure as follows at the Labrie diagnostic connector located inside the cab on the console:

PIN 4 Wire CAN L (black lead)

PIN 5 Wire CAN H (red lead)

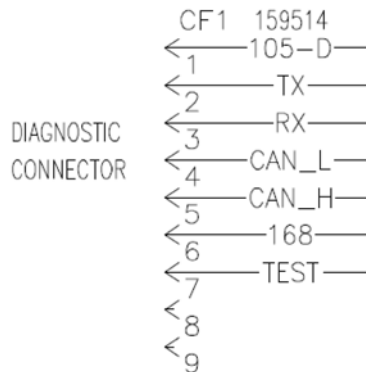


Do you have 60 Ohms resistance?

- 1 a. YES, go to STEP 2.
- 1 b. NO, go to STEP 3.
2. With the ignition and battery disconnect turned off (where applicable), use a digital multimeter set to the Ohms scale and measure as follows at the Labrie diagnostic connector located inside the cab:

i) PIN 4 Wire CAN L (red lead)

j) BATTERY GROUND (black lead)



Was any resistance indicated?

- 2 a. YES, repair short to ground on CAN L wire.
- 2 b. NO, continue to CAN H test.
- i) PIN 5 Wire CAN H (red lead)

j) BATTERY GROUND (black lead)

Was any resistance indicated?

2 c. YES, repair short to ground on CAN H wire.

2 d. NO, connect all previously disconnected connections and proceed to STEP 6.

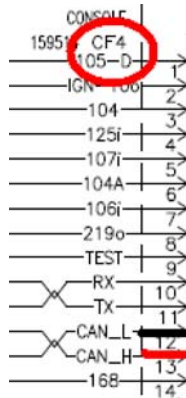
3. Using a digital multimeter set to the Ohms scale, perform the following checks:

i) Locate connector CF4 (located inside the cab) and disconnect it.

j) Connect your multimeter as follows:

a. PIN 12 Wire CAN L (black lead)

b. PIN 13 Wire CAN H (red lead)



Do you have 120 Ohms?

3 a. YES, proceed to STEP 4.

3 b. NO, proceed to STEP 5.

4. Using a digital multimeter set to the Ohms scale, perform the following checks:

NOTE: Connector CF4 from STEP 3 should still be disconnected.

i) Locate module (Node) 50 *dual module* and remove connector CM1

j) Connect your multimeter as follows:

a. PIN 14 Wire CAN H (red lead)

b. PIN 32 Wire CAN L (black lead)

Do you have 120 Ohms?

4 a. YES, connect all previously disconnected connections and proceed to STEP 6.

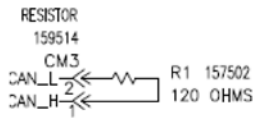
4 b. NO, continue to STEP 7.

5. Inside the cab locate module (Node) 10 and locate connector CM3.

Follow the outlined steps using a digital multimeter:

q) Disconnect end line resistor and measure using the Ohms scale of your multimeter.

r) *NOTE* this is not polarity sensitive!!!!



Do you have 120 Ohms?

- 5 a.** YES, continue to STEP 4.
- 5 b.** NO, replace terminating end line resistor.
- 6.** Locate module (Node) 50/60 and locate the following connector:
 (Node 50) CM1
 (Node 60) CM2

Follow the outlined steps using a digital multimeter:

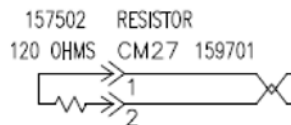
- i) Disconnect connector for appropriate Node.
- j) Measure resistance (Ohms) placing the leads as follows:
 - a. PIN 14 CAN H (red lead)
 - b. PIN 32 CAN L (black lead)

Do you have 60 Ohms?

- 6 a.** YES, contact LabriePlus.
- 6 b.** NO, repair open connection in harness.
- 7.** Inside the body, locate module (Node) 30 and locate connector CM27.

Follow the outlined steps using a digital multimeter:

- s) Disconnect end line resistor (connector CM27) and measure using the Ohms scale of your multimeter.
- t) *NOTE* this is not polarity sensitive!!!!



Do you have 120 Ohms?

- 7 a.** YES, connect all previously disconnected connections and proceed to STEP 6.
- 7 b.** NO, replace terminating end line resistor.

Node XX Not Connected

This code is generated when a module (Node) XX on the Labrie system is failing to communicate with module (Node) 10 over the CAN (Communication Area Network) on the first 10 seconds of power up.

NOTE: For Node disconnected, use **NODE XX DISCONNECTED** troubleshooting tree.

Use the appropriate NODE ID below to follow correct module diagnostic steps.

Modules (Nodes) which can be affected by either above listed issue on the Wittke frontloader are:

STANDARD

10 (Cabine) - Located inside the cab.

11 (Display) - Located inside the cab next to main console.

12 (Switch bank *primary*) - Located inside the cab as part of the main console.

30 (Tailgate controller) - Located inside the rear chassis frame rail.

50/60 (Body front) - This is a dual module and is located on the front packer bulkhead of the body.

OPTIONAL

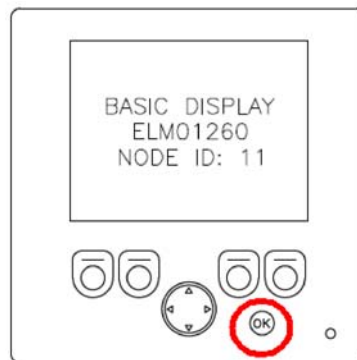
13 (Switch bank *secondary*) - Located inside the cab as part of the main console.

25 (Switch bank *outside controls*) - Located on side of unit outside the cab for external arm/packer operation.

Use this one-step diagnostic procedure listed for any and all modules displaying this code.

Diagnostic Procedure:

1. 10 seconds after power up, use the Labrie multiplex display to depress the “OK” button.



Code should disappear at this time.

Did all active codes clear from the display?

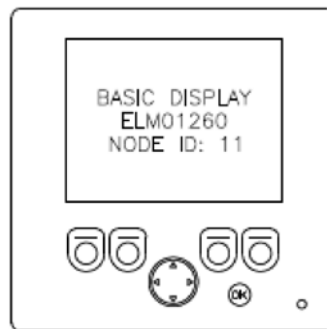
- 1 a. YES, issue resolved.
- 1 b. NO, contact LabriePlus.

Packer: Already Extended

This code indicates that the Labrie multiplex system is receiving an input from the packer fully extended sensor indicating the packer is fully extended.

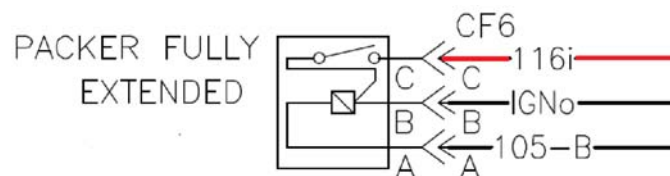
Diagnostic Procedure:

1. Using the Labrie multiplex display, verify you have the following input:
Module (Node) 60
I02 Wire 116i (i_packerfullyextended_sensor)



Is the input highlighted in green?

- 1 a. YES, go to STEP 2.
- 1 b. NO, contact LabriePlus.
2. Using a digital multimeter set to voltage (DC) scale, perform the following test at the packer fully extended sensor.
Red lead on pin C, wire 116i, at connector CF6.
Black lead on dedicated battery ground.



Do you have 12VDC?

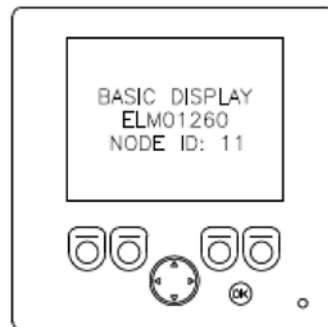
- 2 a. YES, ensure nothing foreign of metallic nature is causing the switch to close, or replace proximity switch complete.
- 2 b. NO, repair short circuit between Node 60 and packer fully extended sensor wire 116i.

Packer: Already Retracted

This code indicates that the Labrie multiplex system is receiving an input from the packer fully retracted sensor indicating the packer is fully retracted.

Diagnostic Procedure:

1. Using the Labrie multiplex display, verify you have the following input:
Module (Node) 60
I00 Wire 137i (i_packerfullyretracted_sensor)

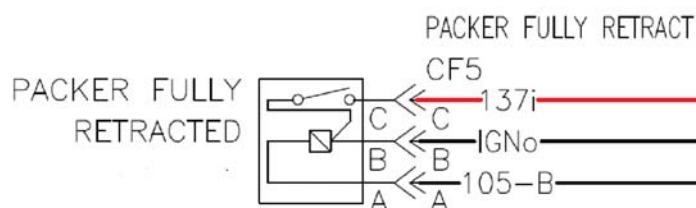


Is the input highlighted in green?

- 1 a. YES, go to STEP 2.
- 1 b. NO, contact Labrie*Plus*.
2. Using a digital multimeter set to voltage (DC) scale, perform the following test at the packer fully retracted sensor.

Red lead on pin C, wire 137i, at connector CF5.

Black lead on dedicated battery ground.



Do you have 12VDC?

- 2 a. YES, ensure nothing foreign of metallic nature is causing the switch to close, or replace proximity switch complete.
- 2 b. NO, repair short circuit between Node 60 and packer fully retracted sensor wire 137i.

Packer: Retract Too Long

This code identifies that the packer panel has been retracting for too long to complete the cycle and the Labrie multiplex system has turned off the output to the packer retract coil. This code typically occurs when the packer fully retracted switch is not met or a mechanical bind or obstruction is present within the hopper preventing the panel from reaching the retracted switch.

Diagnostic Procedure:

1. Operate the Labrie Expert packer system by sending the packer to full extend position allowing it to return on its own. When packer stops travel, engage EStop and turn vehicle off.

Verify location of packer panel.

Is the packer panel fully retracted?

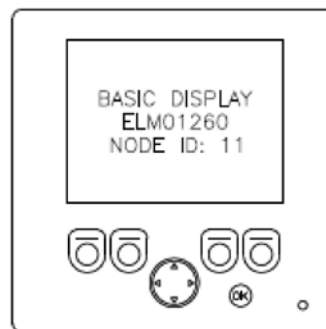
1 a. YES, go to STEP 2.

1 b. NO, consult the Labrie Automizer service manual to diagnose or repair the cause of mechanical bind.

2. Using the Labrie multiplex display, verify you have the following input:

Module (Node) 60

I00 Wire 137i (i_packerfullyretracted_sensor)



Is the input highlighted in green?

2 a. YES, contact LabriePlus.

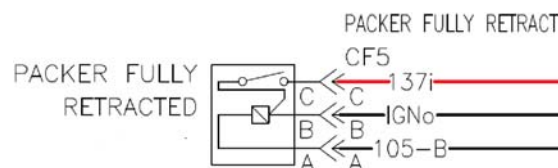
2 b. NO, go to STEP 3.

3. Using a digital multimeter set to voltage (DC) scale, perform checks as outlined below:

Place red lead on pin C of connector CF5.

Place black lead on pin A of connector CF5.

Measure voltage (DC)



Do you have 12VDC?

3 a. YES, go to STEP 4.

3 b. NO, go to STEP 5.

- 4.** Using a digital multimeter, set to the voltage (DC) scale measure for power at the following location:

Module (Node 60)

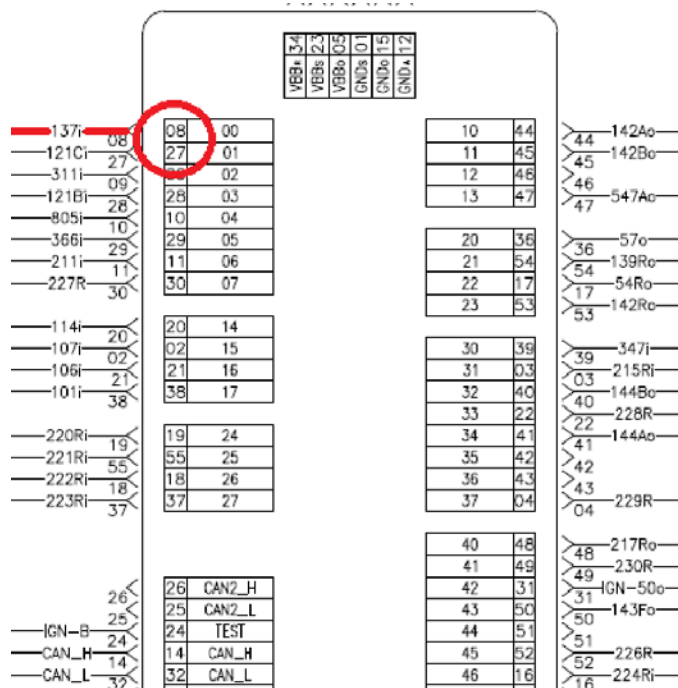
Connector CM33

Pin 08

I00 input.

Place the red lead on the above listed terminal by safely backprobing the module.

Place the black lead on a designated battery ground.



Do you have 12VDC?

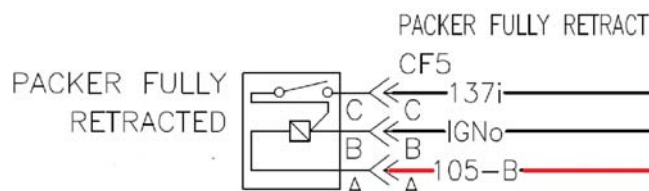
4 a. YES, contact LabriePlus.

4 b. NO, using Labrie wiring schematic, repair broken/open circuit from Node 60 to packer fully retracted switch wire 137i.

- 5.** Using a digital multimeter set to the OHMS scale, perform the following resistance check as indicated.

Place the red lead on pin A, wire 105-B.

Place the black lead on a dedicated battery ground.



Do you have below 1 OHM?

- 5 a.** YES, replace the defective packer fully extended sensor.
- 5 b.** NO, repair the defective ground circuit from wire 105B and battery ground.

Arm: Wrong Driver Position

This code indicates that Node 10 of the Labrie Multiplex System is not seeing feedback via a voltage (DC) signal from the chassis on wire 140i. (i_DriverPosition_Switch).

Due to the wide variety of available chassis options for controlling this system, step by step can only be taken as far as the Labrie system typically continues.

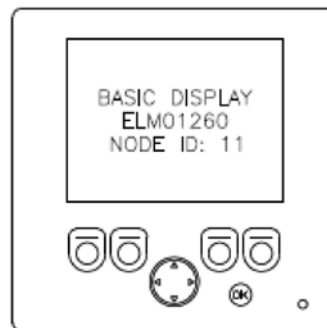
For further assistance in diagnostic information, contact Labrie*Plus*.

Diagnostic Procedure:

1. Using the Labrie multiplex display, verify you have the following input:

Module (Node) 10 (cabine)

IN13 Wire 140i (i_DriverPosition_switch)



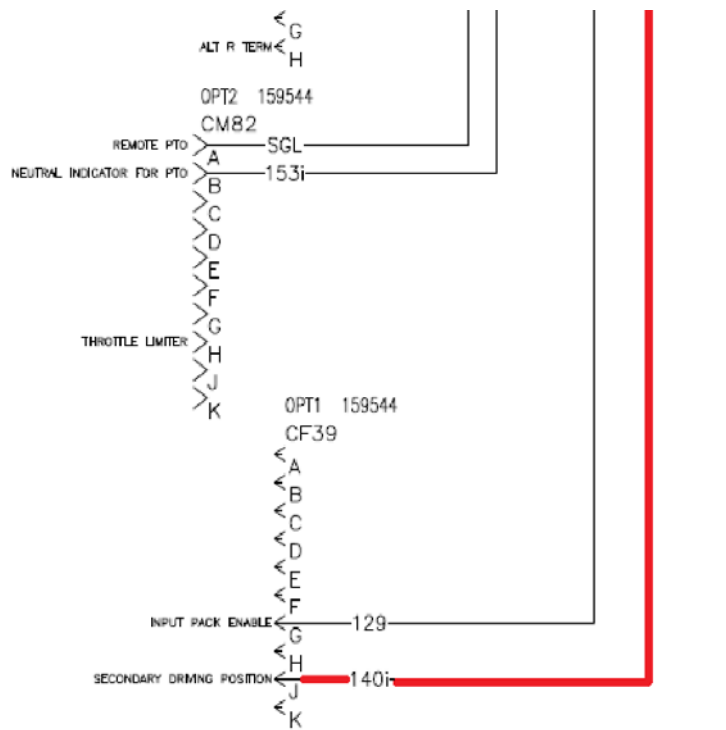
Is the input highlighted in green?

- 1 a. YES, go to STEP 3.
 - 1 b. NO, go to STEP 2.
2. Using a digital multimeter set to the voltage (DC) scale, perform the following tests as outlined below:

NOTE: Typical connector locations for circuit are on page 1 and 3 of the Labrie schematic to trace up to the chassis connections.

Red lead on pin location for wire 140i *may vary depending on type of chassis specified by customer.*

Black lead on dedicated battery ground.



Do you have 12VDC?

2 a. YES, go to STEP 3.

2 b. NO, contact LabriePlus.

- 3.** Using a digital multimeter set to the voltage (DC) scale, perform the following measurements as listed below:

Red lead on connector X10 at Node 10 pin 14.

Black lead on dedicated battery ground.

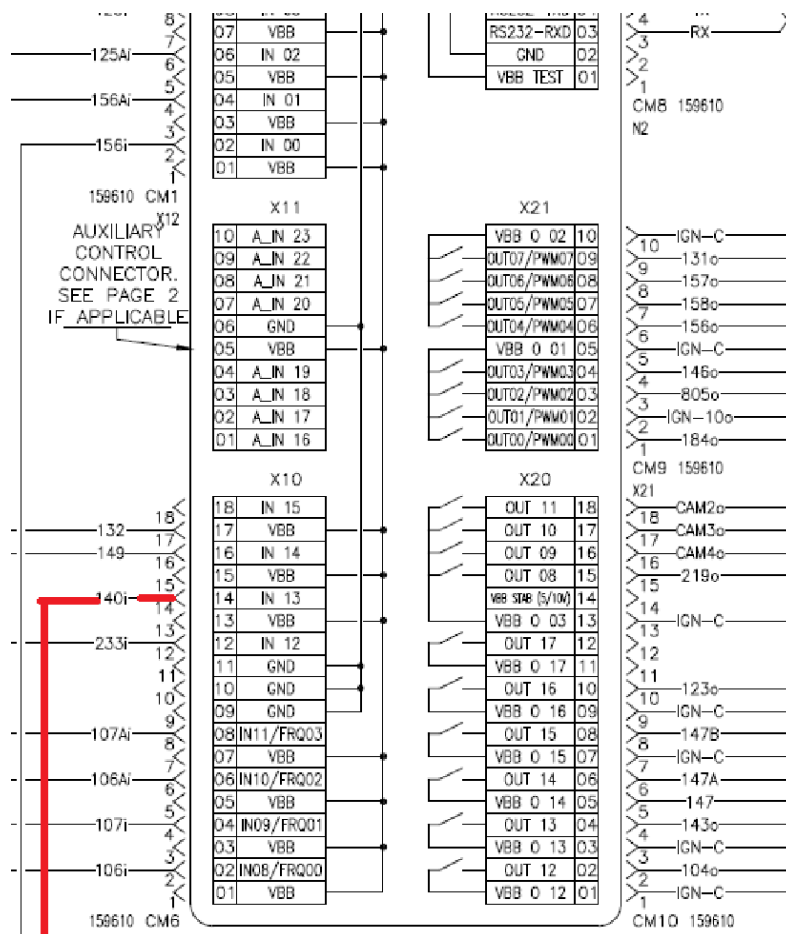


Figure 4-1 Example of a Mack chassis node 10 installation



Do you have 12VDC?

3 a. YES, contact LabriePlus.

3 b. NO, using the Labrie wiring diagram, locate and/or repair open/broken wire issue with wire 140i.

Arm Up: Crusher Not Raised

This code indicates that the operator is attempting to raise the arm inside the hopper while the crusher panel feedback wire 215i.

NOTE: Some units may have more than 1 crusher panel, in which case a wire will indicate which is specific to the fault.

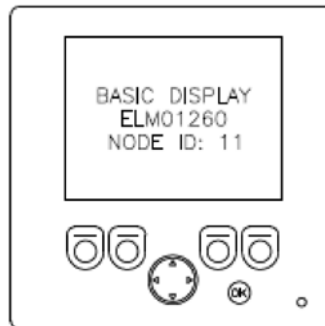
On dual crusher panel units, left crusher is controlled by Node 40 while right crusher is controlled by Node 50.

Also note the diagnostic steps below are an example of the steps necessary for diagnosing the **left crusher**.

Single Crusher Panel	215i
Left Crusher Panel	215Li
Right Crusher Panel	215Ri

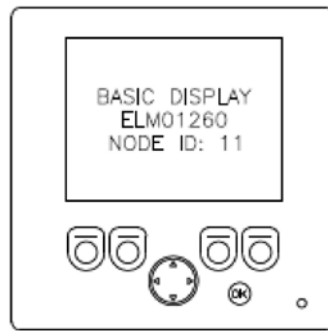
Diagnostic Procedure:

- Using the Labrie multiplex display, verify you have the following input:
Module (Node) 50
I00 Wire 215i (i_LeftCrusherPanel_Switch)



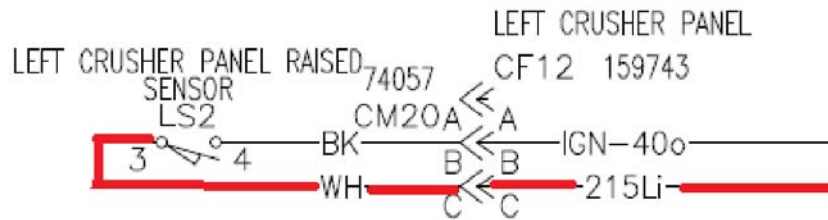
Is the input highlighted in green?

- YES, go to STEP 4.
 - NO, go to STEP 2.
- Using the Labrie multiplex display, verify you have the following output:
Module (Node) 50
I44 Wire IGN-50o



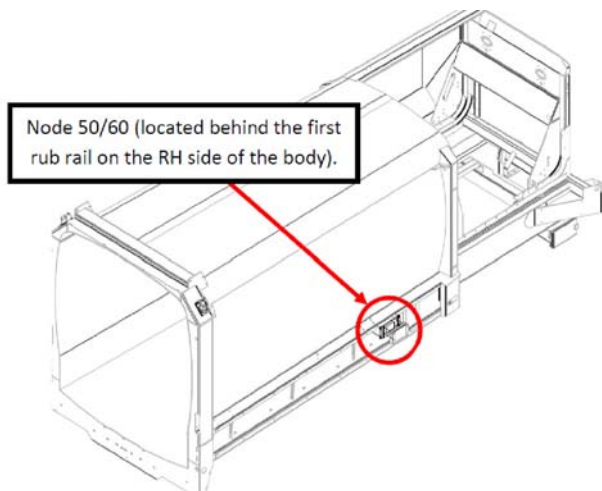
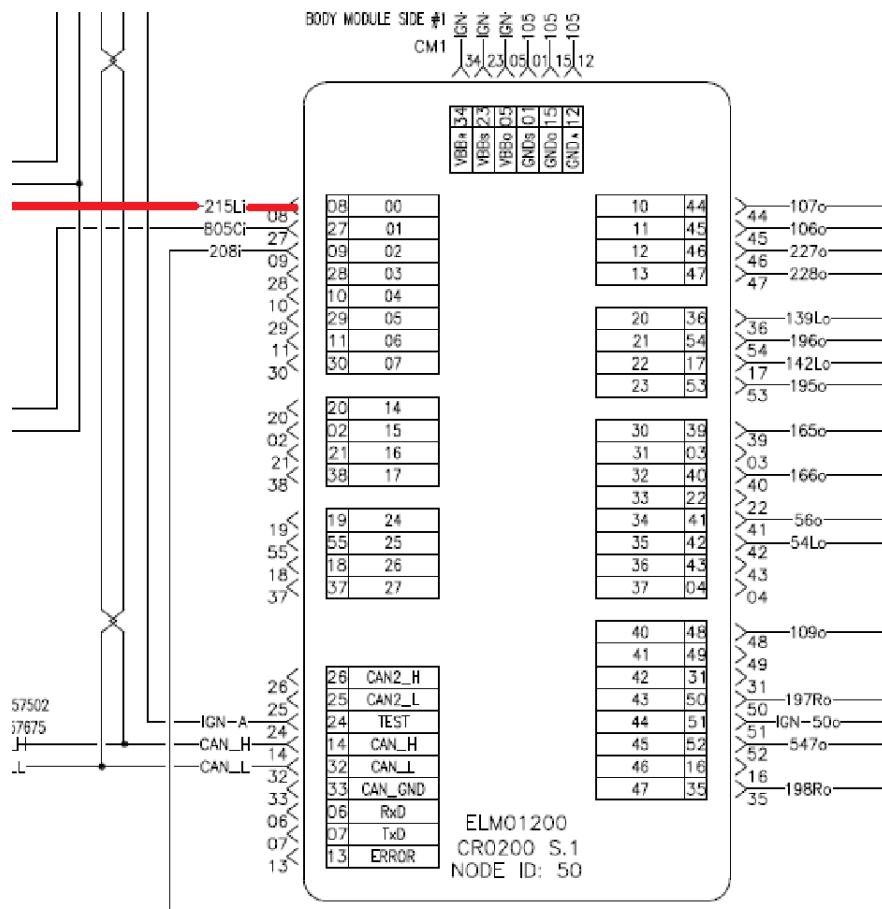
Is the output highlighted in green?

- 2 a.** YES, go to STEP 3.
- 2 b.** NO, contact Labrie*Plus*.
- 3.** Using a digital multimeter set to the voltage (DC) scale, perform the following test as outlined below:
 Red lead on connector CF12 pin C wire 215Li.
 Black lead on a dedicated battery ground.



With the panel in the full retracted (raised) position, do you have 12VDC?

- 3 a.** YES, go to STEP 4.
- 3 b.** NO, go to STEP 5.
- 4.** Using a digital multimeter set to the voltage (DC) scale, perform the following test as indicated below:
 Red lead on Node 50 connector CM1 backprobed on pin 08, wire 215Li.
 Black lead on a dedicated battery ground.
 With the crusher panel in the fully open (raised) position, verify whether or not you have 12VDC.



Do you have 12VDC?

4 a. YES, contact LabriePlus.

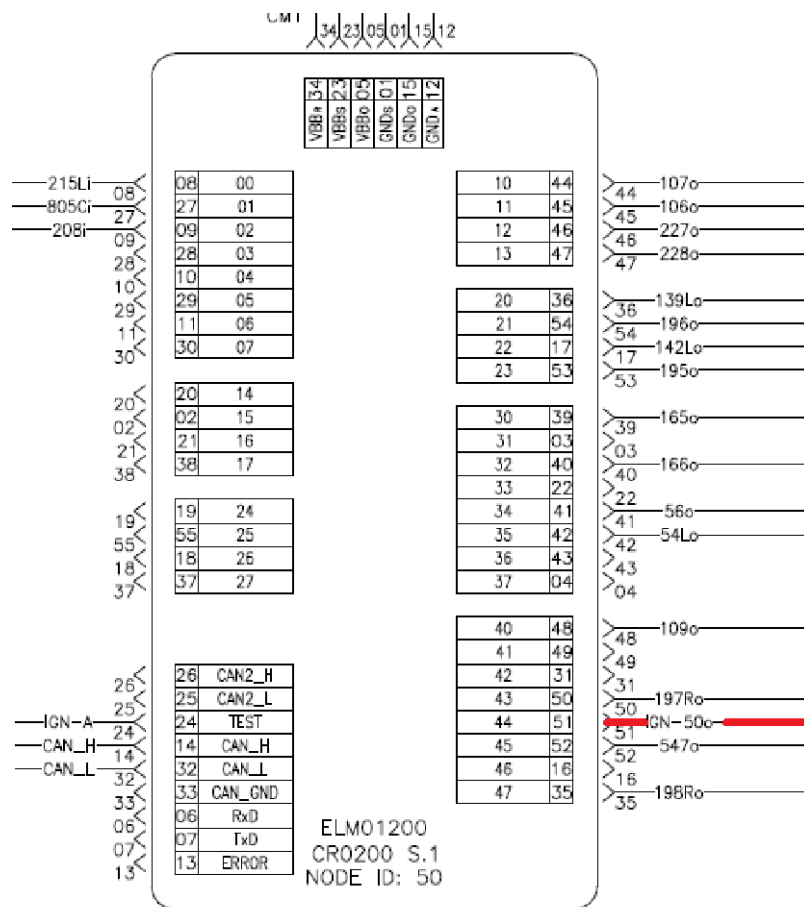
4 b. NO, repair open on switch feedback wire 215Li from switch to Node 50.

- 5.** Using a digital multimeter set to the voltage (DC) scale, perform the following test as outlined in the steps below:

Locate Node 50 and test as follows.

Red lead on connector CM1 backprobed to pin 31 IGN-40o.

Black lead on dedicated battery ground.



Do you have 12VDC?

5 a. YES, replace defective crusher panel switch.

5 b. NO, contact LabriePlus.

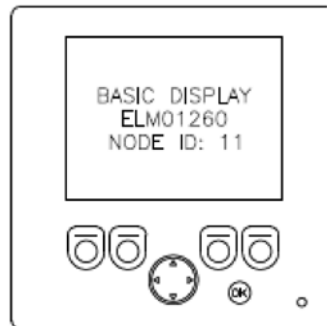
Crusher: Arm Too High

This failure code indicates that the crusher panel digital command input from Node 12/13/72/127 is being commanded to lower atop the packer. However, Node 60 believes the arm is too high preventing the crusher from possibly contacting the arm.

Wire 235i sends a voltage (DC) input signal to Node 60 when the arm is in the lowered or parked position. When the arm raises, input voltage (DC) from 235i is cut turning the input off, therefore telling the computer the arm is raised.

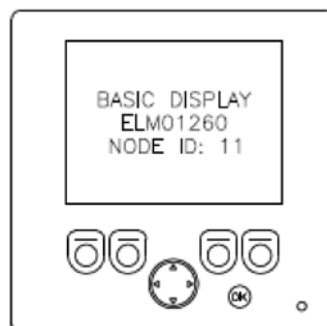
Diagnostic Procedure:

1. Using the Labrie multiplex display, verify you have the following input:
Module (Node) 60
I26 Wire 235i (i_ArmMidHeight_sensor)



Is the input highlighted in green?

- 1 a. YES, go to STEP 4.
- 1 b. NO, go to STEP 2.
2. Using the Labrie multiplex display, verify you have the following output:
Module (Node) 60
I42 Wire IGN-60o



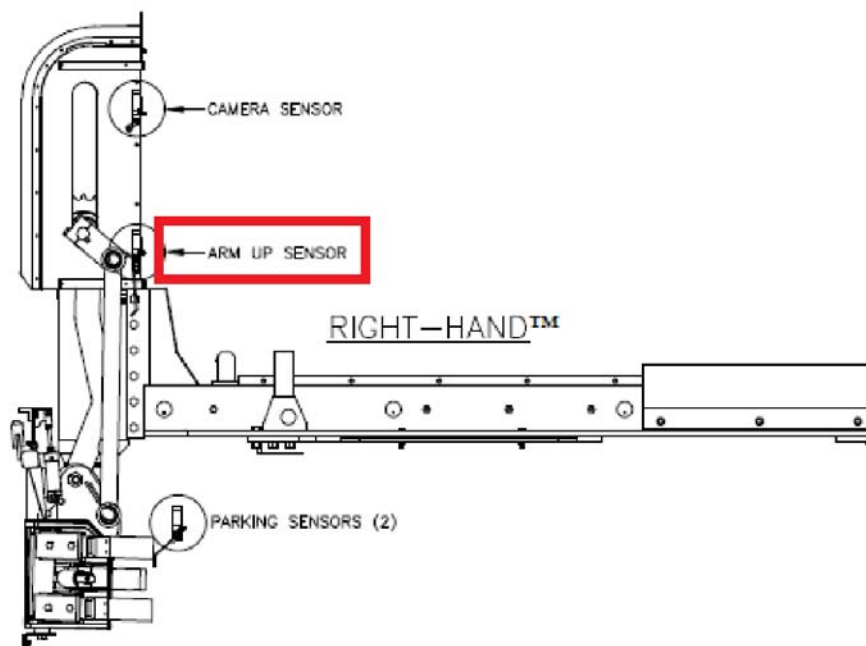
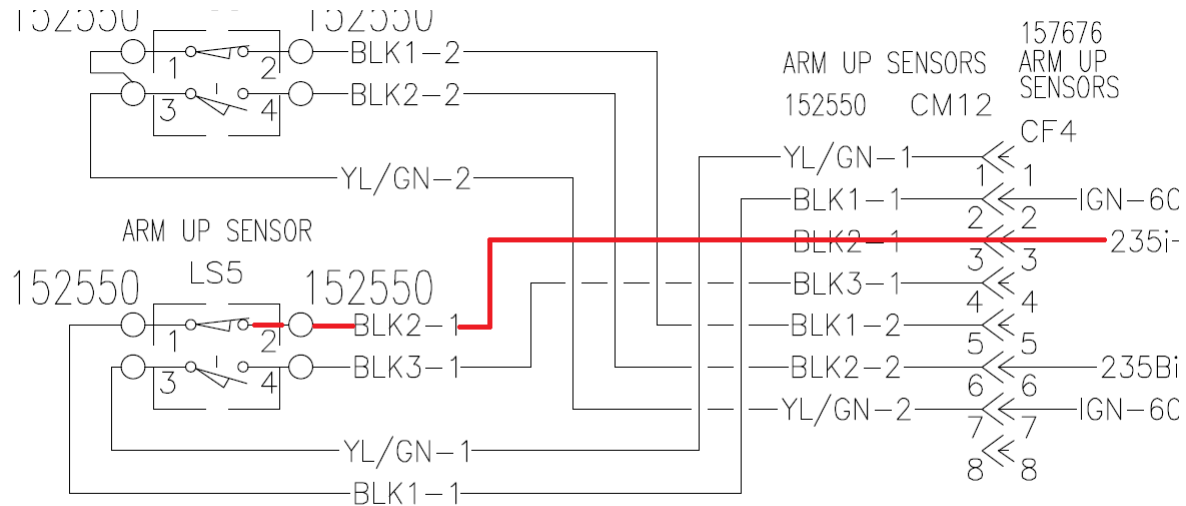
Is the output highlighted in green?

- 2 a. YES, go to STEP 3.
- 2 b. NO, contact LabriePlus.

3. Using a digital multimeter set to the voltage (DC) scale, perform the following test as outlined below:

Red lead on connector CM12 pin C wire 235i

Black lead on a dedicated battery ground



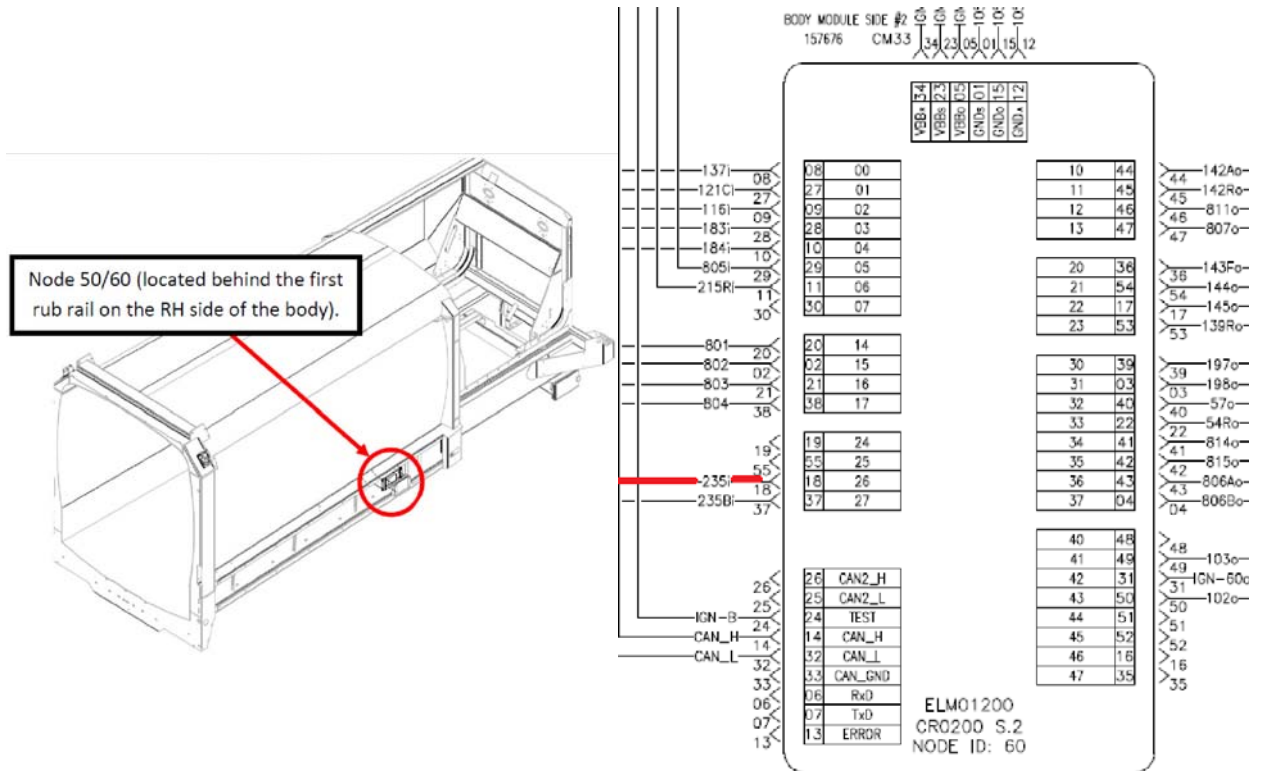
With the arm in the fully lowered position, do you have 12VDC?

- 3 a. YES, go to step 4.
- 3 b. NO, go to step 5.
4. Using a digital multimeter set to the voltage (DC) scale, perform the following test as indicated below:

Red lead on Node 60 connector CM33 backprobed on pin 18, wire 235i

Black lead on a dedicated battery ground.

With the crusher panel in the fully open (raised) position, verify whether or not you have 12VDC.



Do you have 12VDC?

4 a. YES, contact LabriePlus.

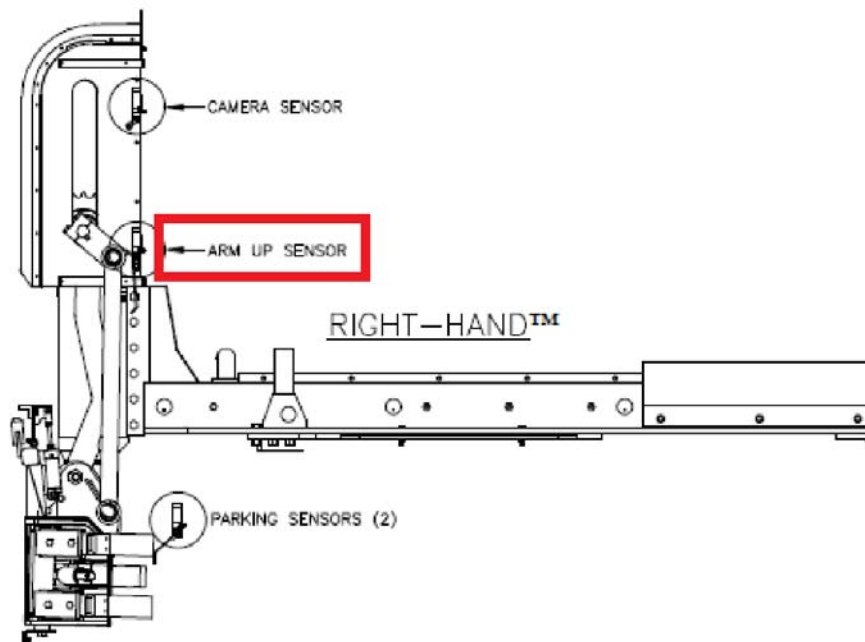
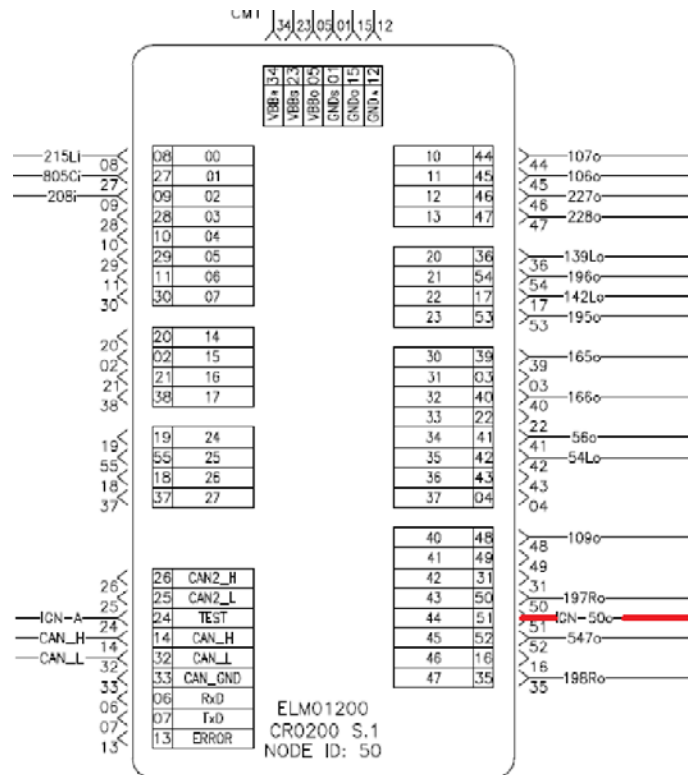
4 b. NO, repair open on switch feedback wire 235i from switch to Node 60.

- 5.** Using a digital multimeter set to the voltage (DC) scale, perform the following test as outlined in the steps below.

Locate Node 60 and test as follows:

Red lead on connector CM33 backprobed to pin 31 IGN-60

Black lead on dedicated battery ground



Do you have 12VDC?

- 5 a.** YES, replace defective arm mid-height switch.
5 b. NO, contact Labrie*Plus*.

Crusher: Packer Not Retracted

This failure code indicates that the crusher panel digital command input from Node 12/13/72/127 is being commanded to lower atop the packer. However, Node 60 believes the packer panel is not in the fully retracted position via wire 137i.

Prior to beginning any diagnostics, ensure the packer panel is in the fully retracted position and the proximity switch is functioning correctly.

Verify the ground wire to the proximity switch (105-B) has good continuity to a dedicated battery ground.

If issue persists, follow diagnostic procedure for Packer: Already Retracted failure code (see *Packer: Already Retracted* on page 88).



Our office in the U.S.

1981 W. Snell Road
Oshkosh, WI 54904

Toll Free: 1-800-231-2771
Telephone: 1-920-233-2770
General Fax: 1-920-232-2496
Sales Fax: 1-920-232-2498

Mailing Address

P.O. Box 2785
Oshkosh, WI 54903-2785

Parts and Warranty

During business hours:
7:00 AM to 7:00 PM Central Standard Time

Technical Support Service

Toll Free: 1-800-231-2771
(24 hours)

Our office in Canada

175 Route du Pont
St-Nicolas, QC G7A 2T3

Toll Free: 1-877-831-8250
Telephone: 1-418-831-8250
Service Fax: 1-418-831-1673
Parts Fax: 1-418-831-7561

Mailing Address

175 Route du Pont
St-Nicolas, QC G7A 2T3

Parts and Warranty

During business hours:
8:00 AM to 5:00 PM Eastern Standard Time

Technical Support Service

Toll Free: 1-877-831-8250
(24 hours)

