V. *ACTIVAN* MAJOR SYSTEMS REPAIR

This chapter contains operational verification, adjustment, plus repair and replacement procedures for major systems of the General Motors minivan that has been converted by RICON. Each section includes a brief description of system function.

A. GENERAL SAFETY PRECAUTIONS AND WARNINGS

The following general safety precautions must be followed during service and maintenance:

1. Under no circumstances should maintenance, repair or adjustment of the Activan be attempted without the immediate presence of an individual capable of rendering aid.
2. An injury, no matter how slight, should always be attended. Always administer first aid or seek medical attention immediately.
3. Protective eye shields and appropriate clothing should be worn during maintenance, repair and adjustment of the Activan.
4. To avoid injury, the user must always exercise caution when operating the ramp and be certain that hands, feet, legs, and clothing are not in the path of its movement.
5. Batteries contain acid that can burn. Wear protective clothing and eye protection at all times. If acid comes in contact with skin, flush affected area with water and wash with soap immediately. Do not place anything on top of battery. Do not smoke or use an open flame near a battery.
6. Vehicle must be safely parked with ignition turned OFF, on level ground, parking brake set, and tires safely blocked before jacking vehicle up.
7. Always work in a properly ventilated area.
8. Read and understand all instructions before attempting to operate the Activan ramp or other components.
9. Inspect the ramp prior to each use. If an unsafe condition or unusual noises or movements exists, do not use it. Return the vehicle to an authorized Ricon dealer.
10. Keep others clear of the ramp when it is being operated.
11. Ricon recommended that the ramp be operated with the Activan parked on level ground. It is dangerous to operate the ramp if the vehicle is parked on a slope.
12. The Activan ramp and other system components required regular periodic maintenance. Ricon recommends a thorough vehicle inspection by an authorized Ricon dealer at least once every six months. To provide maximum safety the ramp and other components should always be maintained at their highest level of performance.

B. PROGRAMMABLE CONTROLLER REMOVAL

Refer to **Figures [5-1]** through **[5-4].** The following instructions remove the Ricon Programmable Controller for service or replacement. The Ricon programmable controller interfaces with the factory power sliding door, factory self-leveling suspension, transmission, factory remote control, various factory switches and buttons, and the Ricon ramp. The controller accepts input commands, notes the status of the components it controls, and then activates those components in a safe and efficient manner.

WARNING
THIS RICON PRODUCT IS HIGHLY SPECIALIZED. ONLY AN AUTHORIZED RICON DEALER MAY PERFORM MAINTENANCE AND REPAIRS. REPAIRS MUST BE MADE USING RICON REPLACEMENT PARTS. MODIFYING OR FAILING TO PROPERLY MAINTAIN THIS PRODUCT MAY RESULT IN UNSAFE OPERATING CONDITIONS AND MAY VOID THE WARRANTY.

1. Refer to **Figure [5-1]**. Remove Fuse F1 from the Ricon fuse block (located above the factory fuse block).

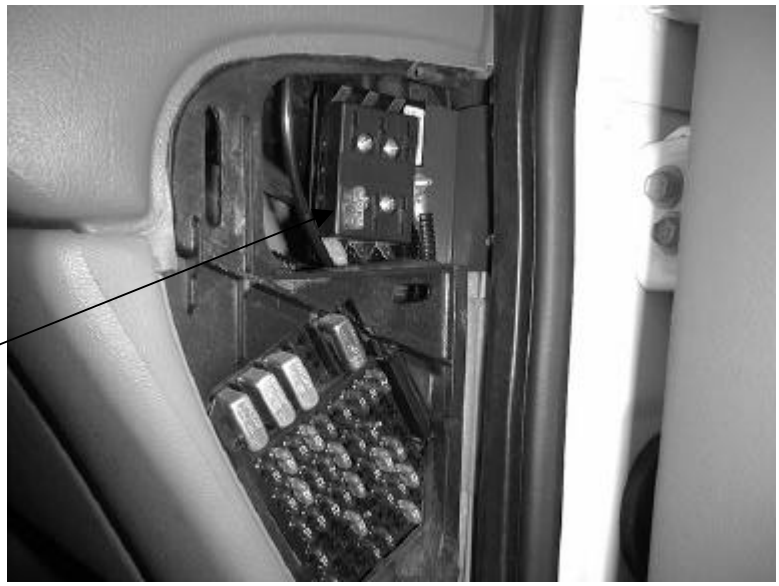


FIGURE [5-1]: RICON FUSE BLOCK

2. Refer to **Figure [5-2]**. Remove the access cover to the vehicle jack, located on the right rear panel in the cargo compartment.

FIGURE [5-2]: JACK ACCESS COVER

3. Refer to **Figure [5-3]**. Locate the 31–pin connector. Twist the serrated locking collar clockwise and pull connector apart (note the position of keyed notches for re-assembly).

FIGURE [5-3]: MAIN HARNESS CONNECTOR

4. Refer to **Figure [5-4]**. Locate the four plastic standoffs. Compress one standoff base with needle nose pliers and gently pry board away. Repeat this process on the three remaining standoffs to remove board.

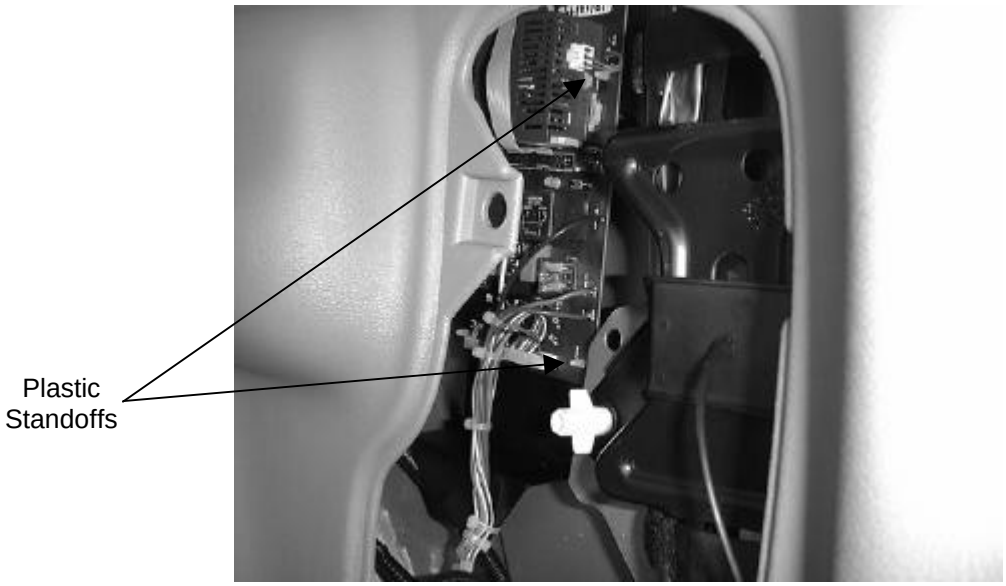


FIGURE [5-4]: CONTROLLER MOUNTING

C. PROGRAMMABLE CONTROLLER INSTALLATION

Refer to **Figures [5-1]** through **[5-4]**. The following instructions install the Ricon Programmable Controller. Refer to **Section B** for an overview of the controller.

1. Refer to **Figure [5-1].** Verify that Fuse F1 is removed from the Ricon fuse block (located above the factory fuse block).
2. Refer to **Figure [5-2].** Remove the access cover to the vehicle jack, located on the right-side panel in the cargo compartment.
3. Refer to **Figure [5-3].** Locate the 31-pin connector. Align the connectors using the three keyways on each connector. Insert the male connector into the female connector and twist the serrated collar clockwise to lock the two connectors together.
4. Align the circuit board with the four plastic standoffs on the Controller mounting plate. If the standoffs are broken, replace them before mounting the controller to the mounting plate.
5. Carefully snap the circuit board onto the mounting plate. Verify that the board is not coming into contact with any surface of the mounting plate.
6. Replace vehicle jack cover.
7. Replace 20-amp fuse into F1 on Ricon fuse block.

D. BYPASS PLUG INSTALLATION

The following instructions install the 6-pin Bypass Plug on the ***Activan*** main harness. The Bypass Plug has two purposes. The first allows the factory Power Sliding Door and ELC (Electronic Leveling Control; rear height adjustable suspension) to be diagnosed with the Ricon Programmable Controller disconnected. The Bypass Plug bypasses all modifications performed by Ricon and returns the two systems to an unmodified state, allowing the factory components to be diagnosed independently of the Ricon components. The second purpose of the Bypass Plug is to allow removal of the Programmable Controller (for service or repair) without affecting operation of the Power Sliding Door and Automatic Level Control. Refer to **Figures [5-5]** and **[5-6].**

WARNING
DO NOT CONNECT THE BYPASS PLUG IF THE PROGRAMMABLE CONTROLLER IS CONNECTED. USING THE BYPASS PLUG AND THE PROGRAMMABLE CONTROLLER TOGETHER WILL CAUSE ERRATIC OPERATION, AND POSSIBLE DAMAGE TO THE VEHICLE OR RAMP.

1. Refer to **Figure [5-5]**. Remove fuse F1 (20 amp) from the Ricon fuse block (located above the factory main fuse block).

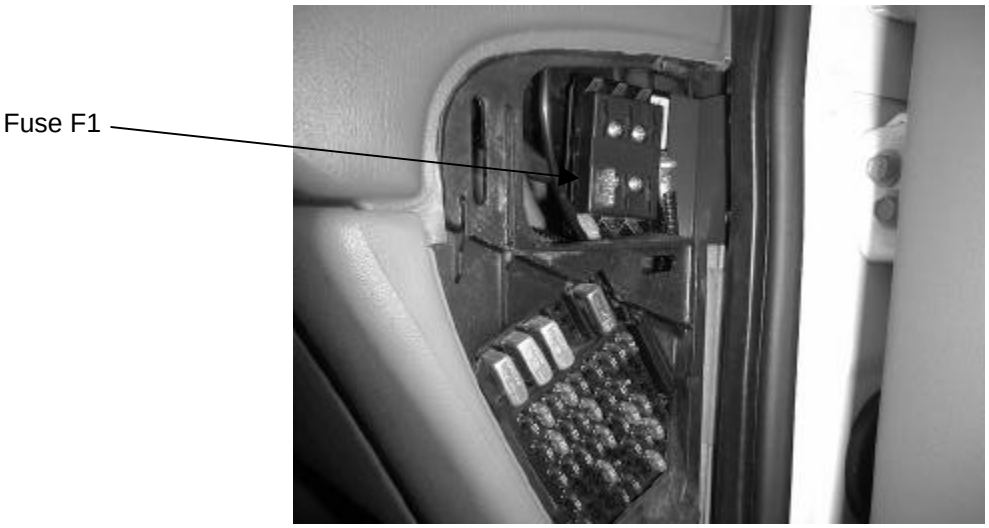


FIGURE [5-5]: RICON FUSE BLOCK

2. Refer to **Figure [5-6]**. Locate the 31-pin connector. Twist the serrated locking collar counter clockwise and pull the connector apart (note position of keyed notches for re-assembly).

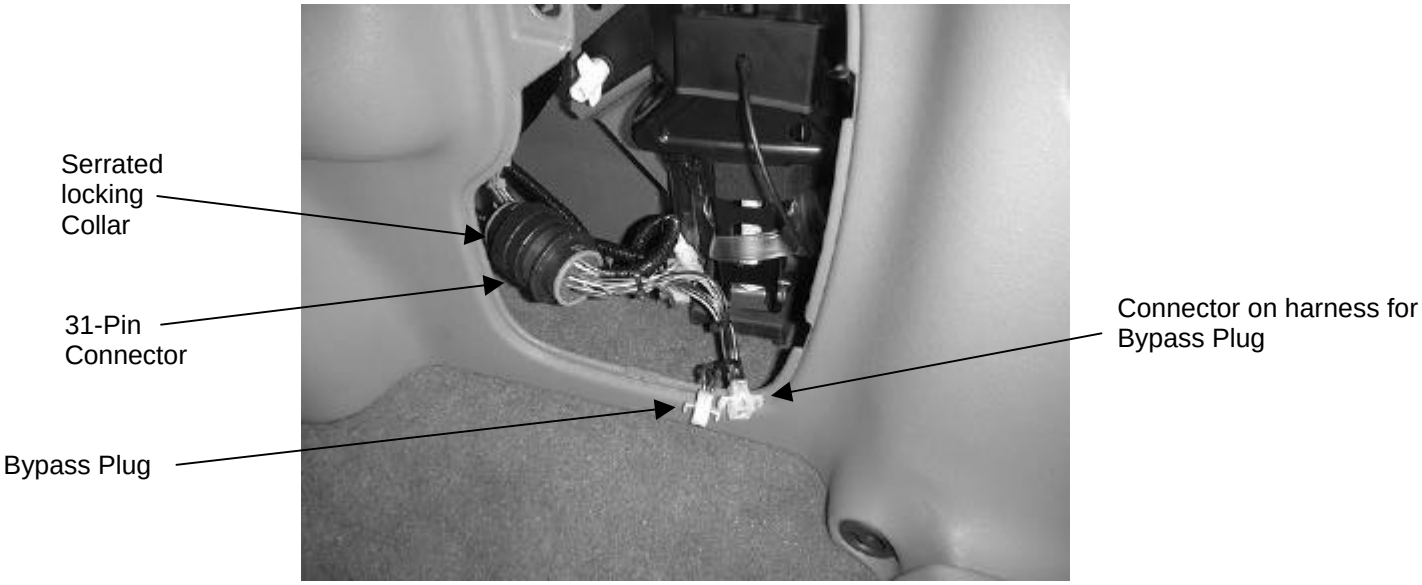


FIGURE [5-6]: 31-PIN CONNECTOR AND BYPASS PLUG

3. Insert the Bypass Plug into its mating connector. You may have to cut a plastic wire tie to free the Bypass Plug.
4. The vehicle is now restored to original factory configuration. The Power Sliding Door and Automatic Leveling Control should operate per GM specifications. Note that the power ramp and kneeling feature will not operate.

E. "DOOR FULLY OPEN" SWITCH REPLACEMENT

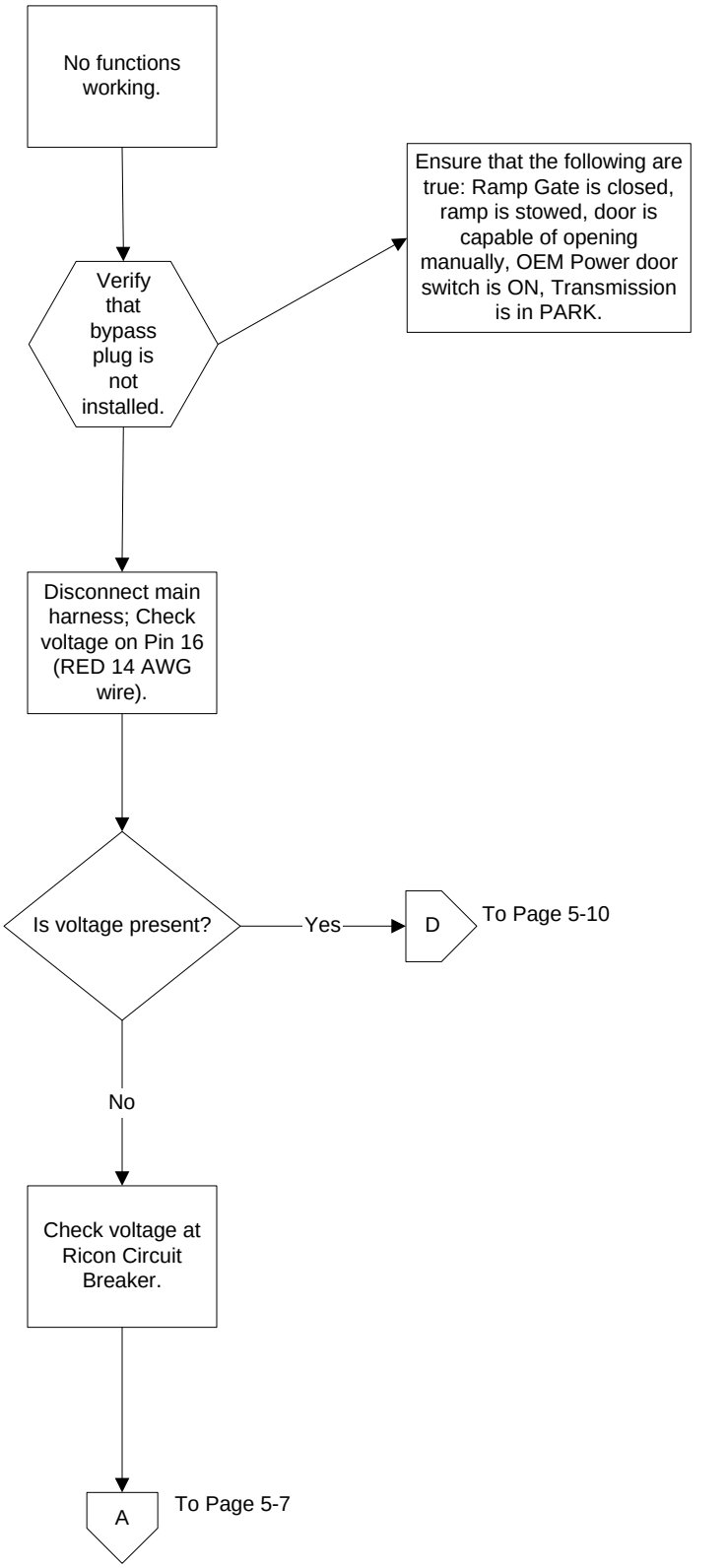
The following instructions remove and replace the switch that is activated when the Power Sliding Door is opened fully. The switch is located at the rear of the sliding door middle track, adjacent to the right-side tail light. A body panel covers the middle track and must be removed to access the switch.

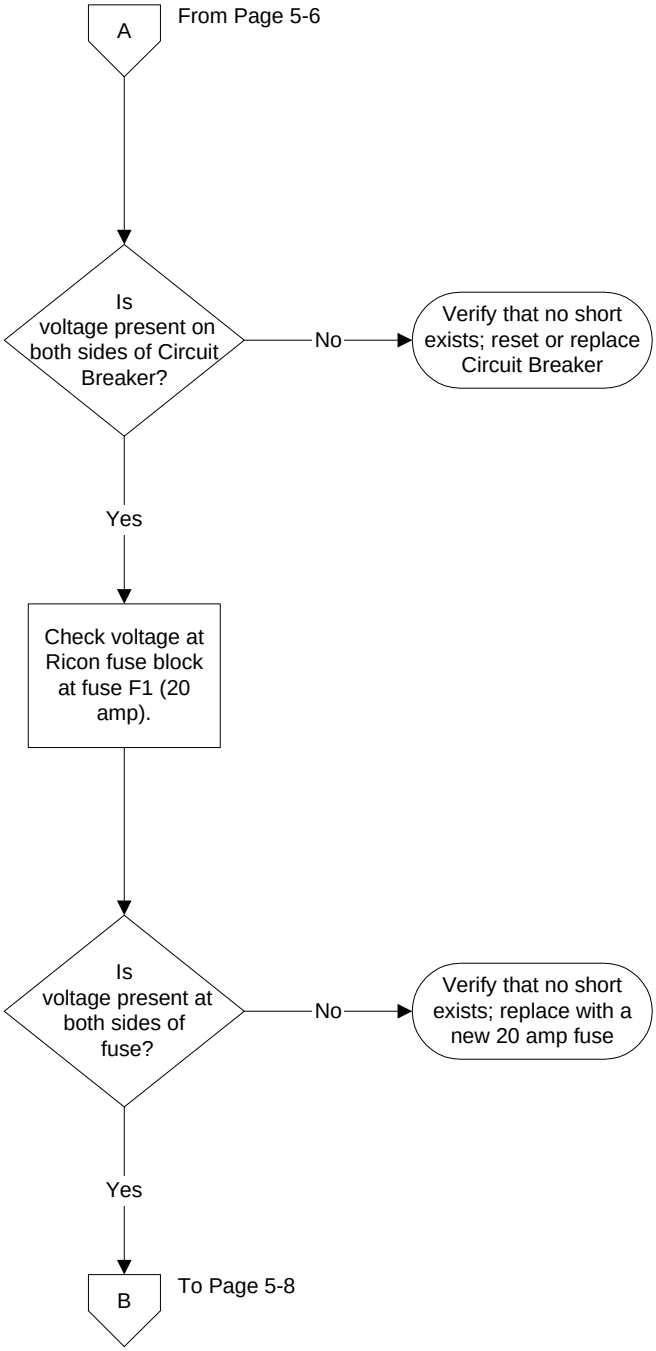
1. Remove the right rear taillight.
2. Remove the two Torx head bolts holding the rear of the track cover.
3. Open the sliding door and remove the Phillips screw that holds the front of the track cover.
4. Carefully pull the track cover away from the vehicle.
5. Remove the two Phillips screws holding the Door Fully Open switch to the end of the door track.
6. Disconnect the 3 pin connector. Carefully remove the harness from the grommet that the tail light harness passes through.
8. Route the new switch harness through the grommet and then mount the switch.
9. Replace track cover and taillight.

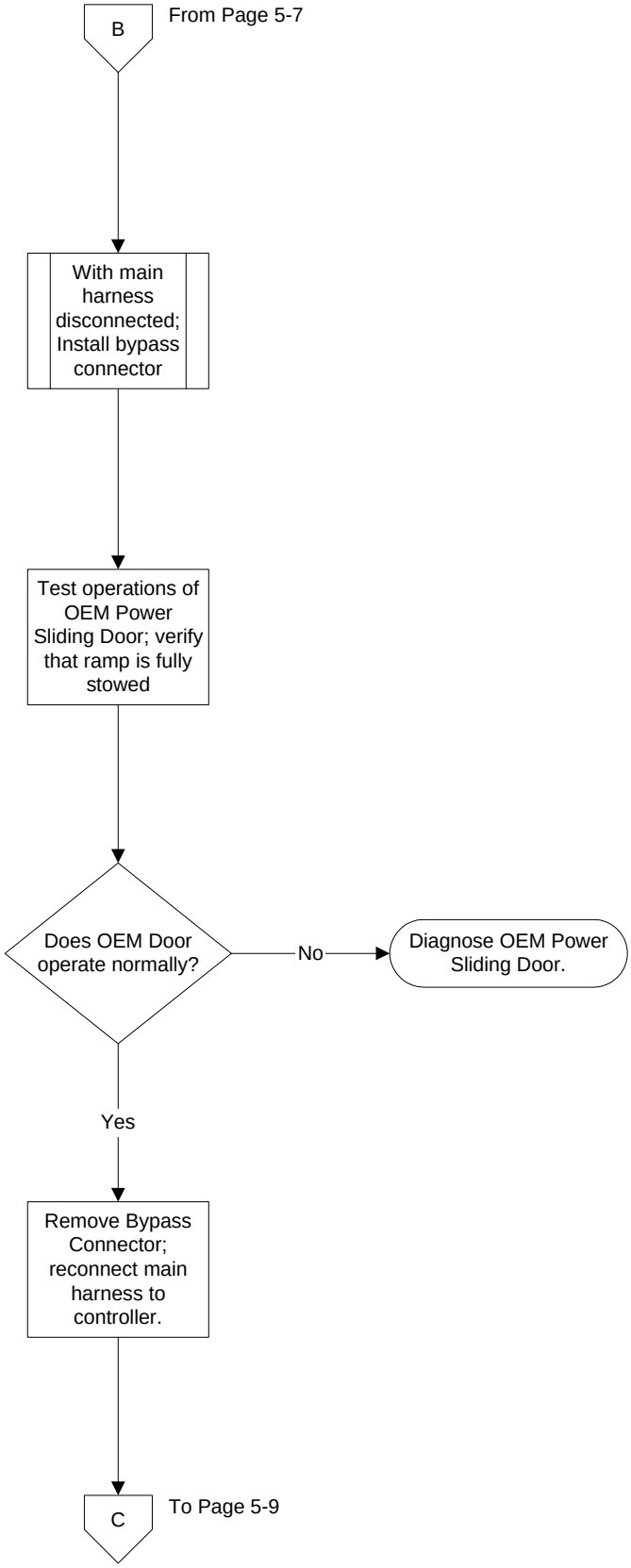
F. DIAGNOSTIC FLOW CHART

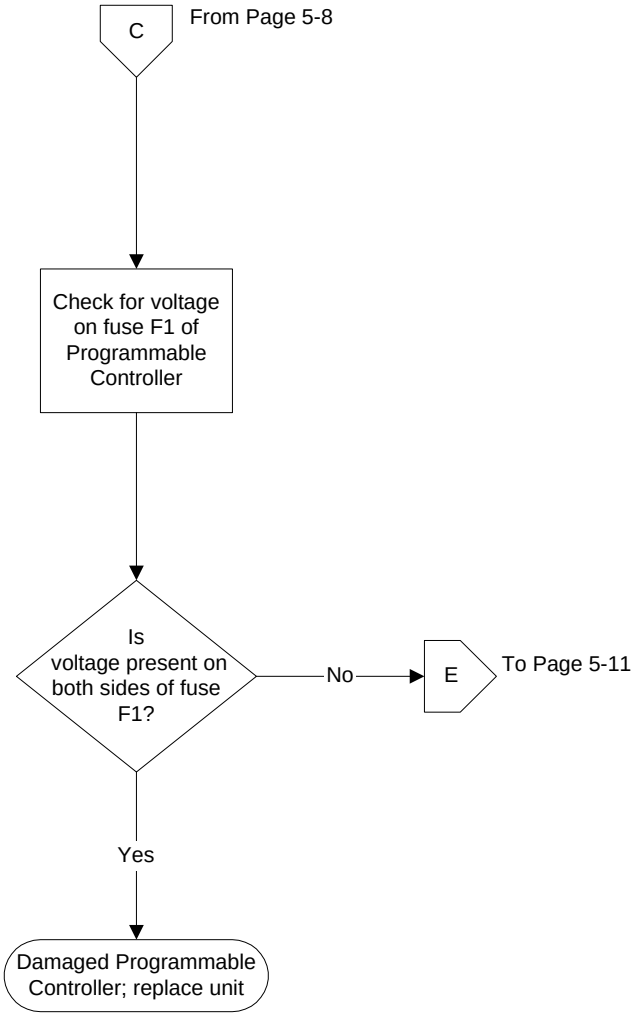
Refer to **Chart [5-1]**. The flow chart diagnoses general failures of the ramp, kneeling system, and power sliding door. In addition, the chart provides information for determining if factory systems are operating properly.

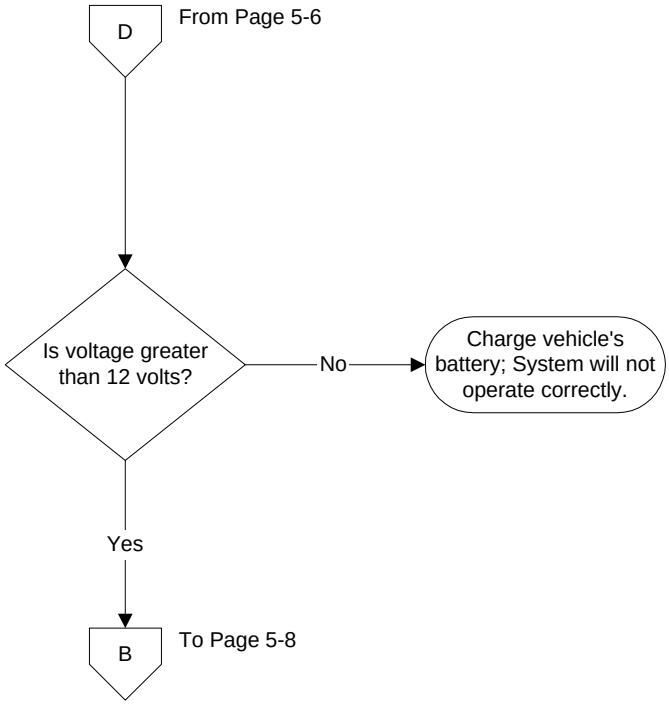
CHART [5-1]: DIAGNOSTIC FLOW CHART

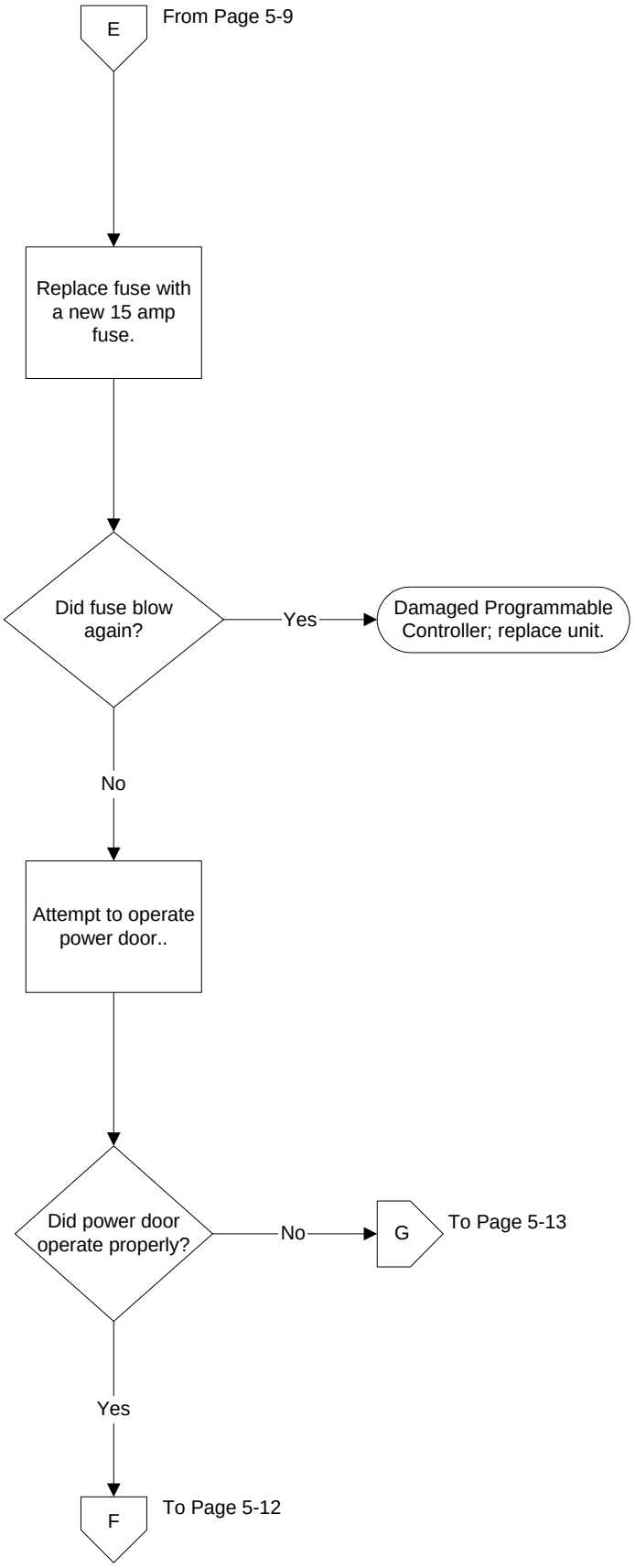


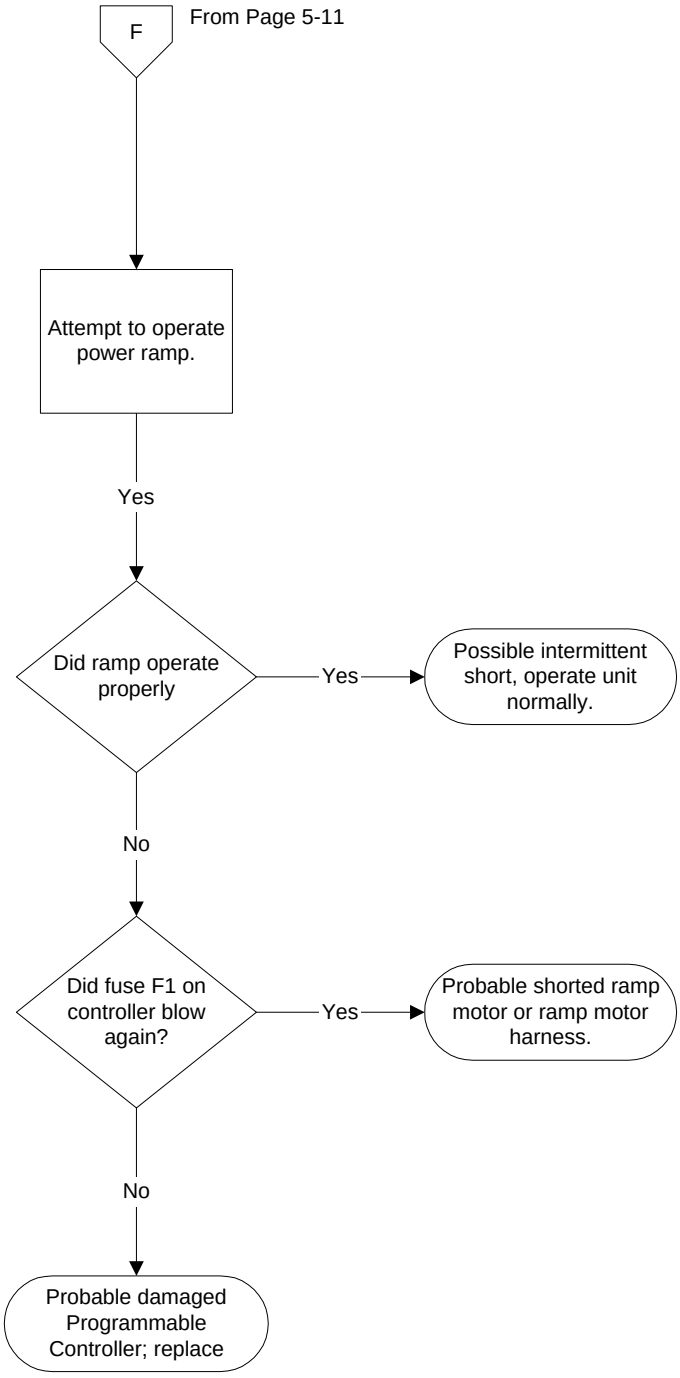

A
From Page 5-6
Is voltage present on both sides of Circuit Breaker?
No
Verify that no short exists; reset or replace Circuit Breaker
Yes
Check voltage at Ricon fuse block at fuse F1 (20 amp).
Is voltage present at both sides of fuse?
No
Verify that no short exists; replace with a new 20 amp fuse
Yes
B
To Page 5-8

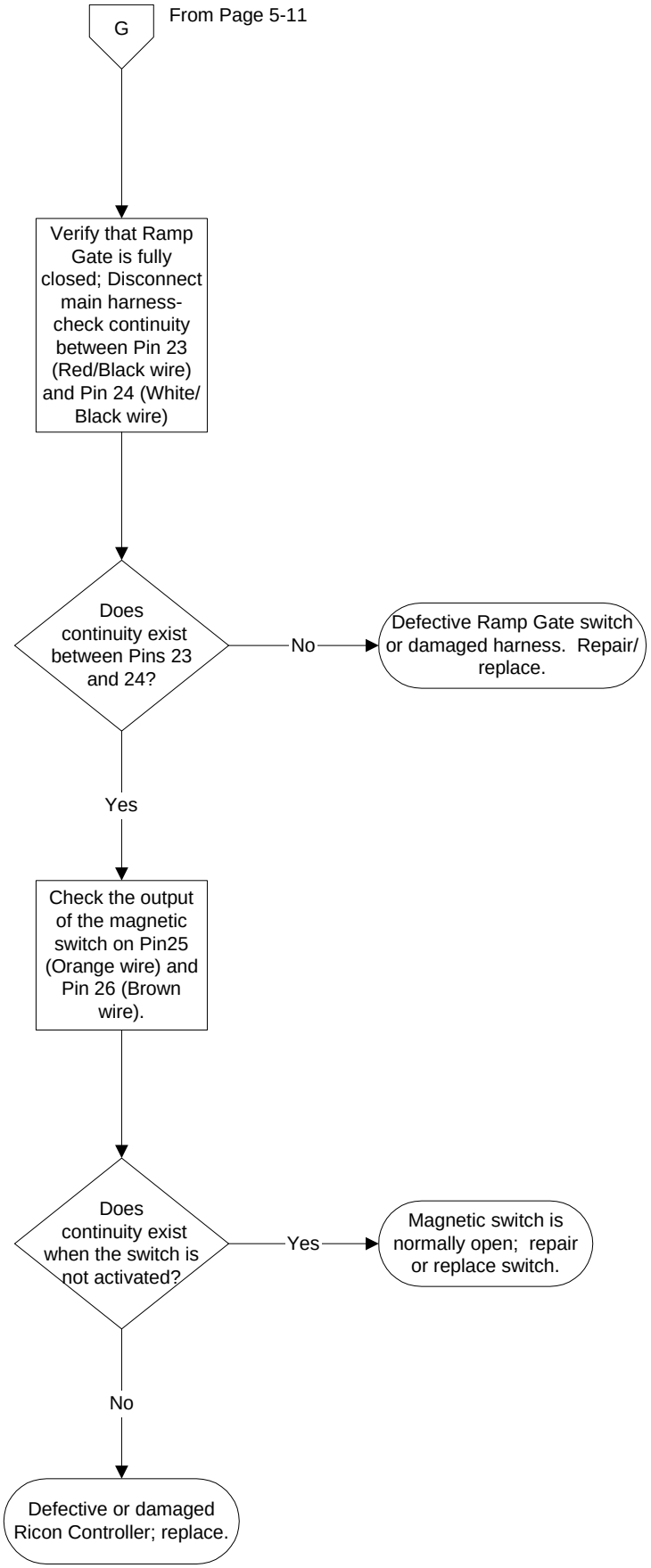

B
From Page 5-7
With main harness disconnected; Install bypass connector
Test operations of OEM Power Sliding Door; verify that ramp is fully stowed
Does OEM Door operate normally?
No
Diagnose OEM Power Sliding Door.
Yes
Remove Bypass Connector; reconnect main harness to controller.
C
To Page 5-9

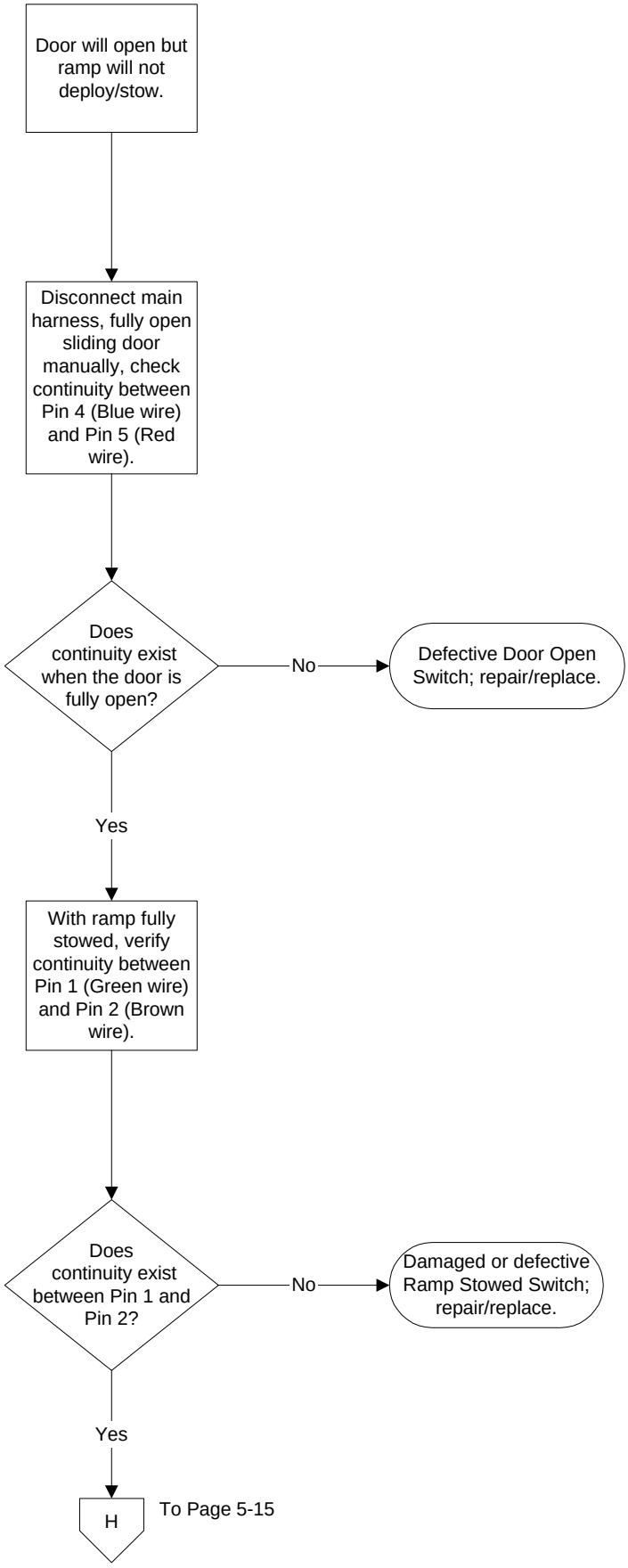

C
From Page 5-8
Check for voltage on fuse F1 of Programmable Controller
Is voltage present on both sides of fuse F1?
No
E
To Page 5-11
Yes
Damaged Programmable Controller; replace unit

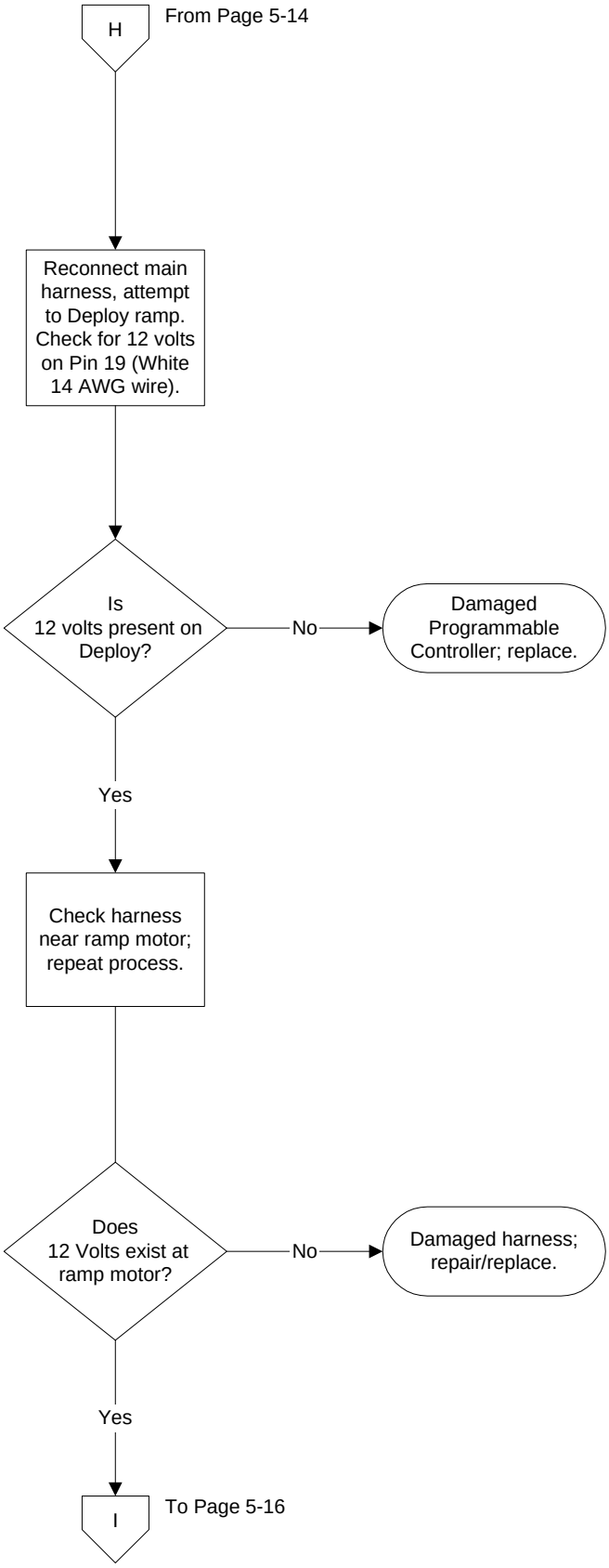

D
From Page 5-6
Is voltage greater than 12 volts?
No
Charge vehicle's battery; System will not operate correctly.
Yes
B
To Page 5-8

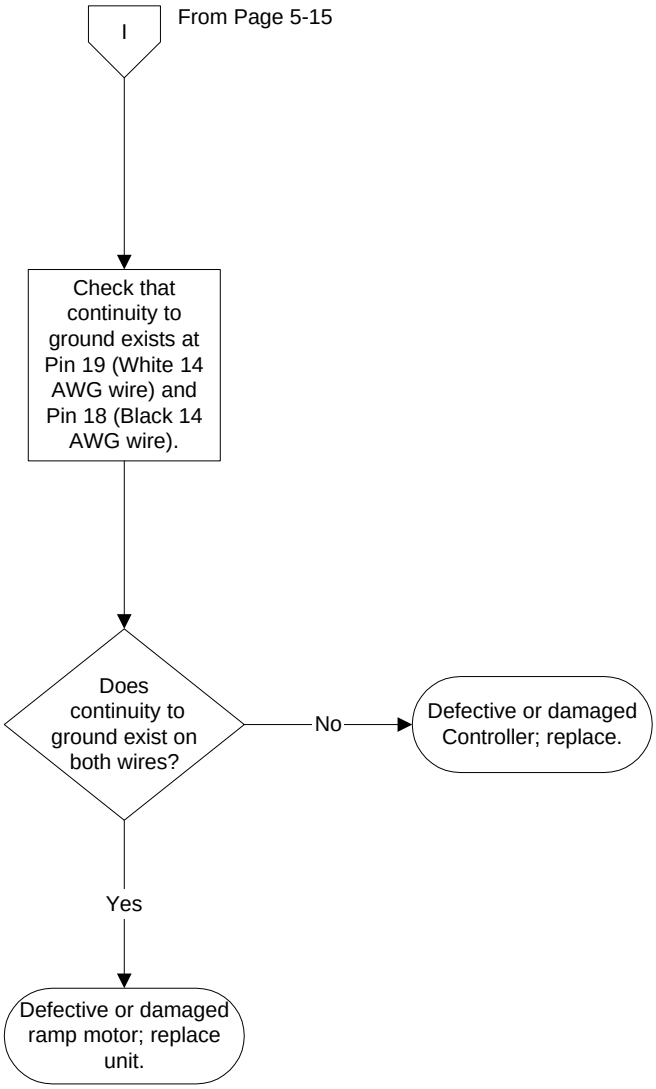

E
From Page 5-9
Replace fuse with a new 15 amp fuse.
Did fuse blow again?
Yes
Damaged Programmable Controller; replace unit.
No
Attempt to operate power door..
Did power door operate properly?
No
G
To Page 5-13
Yes
F
To Page 5-12

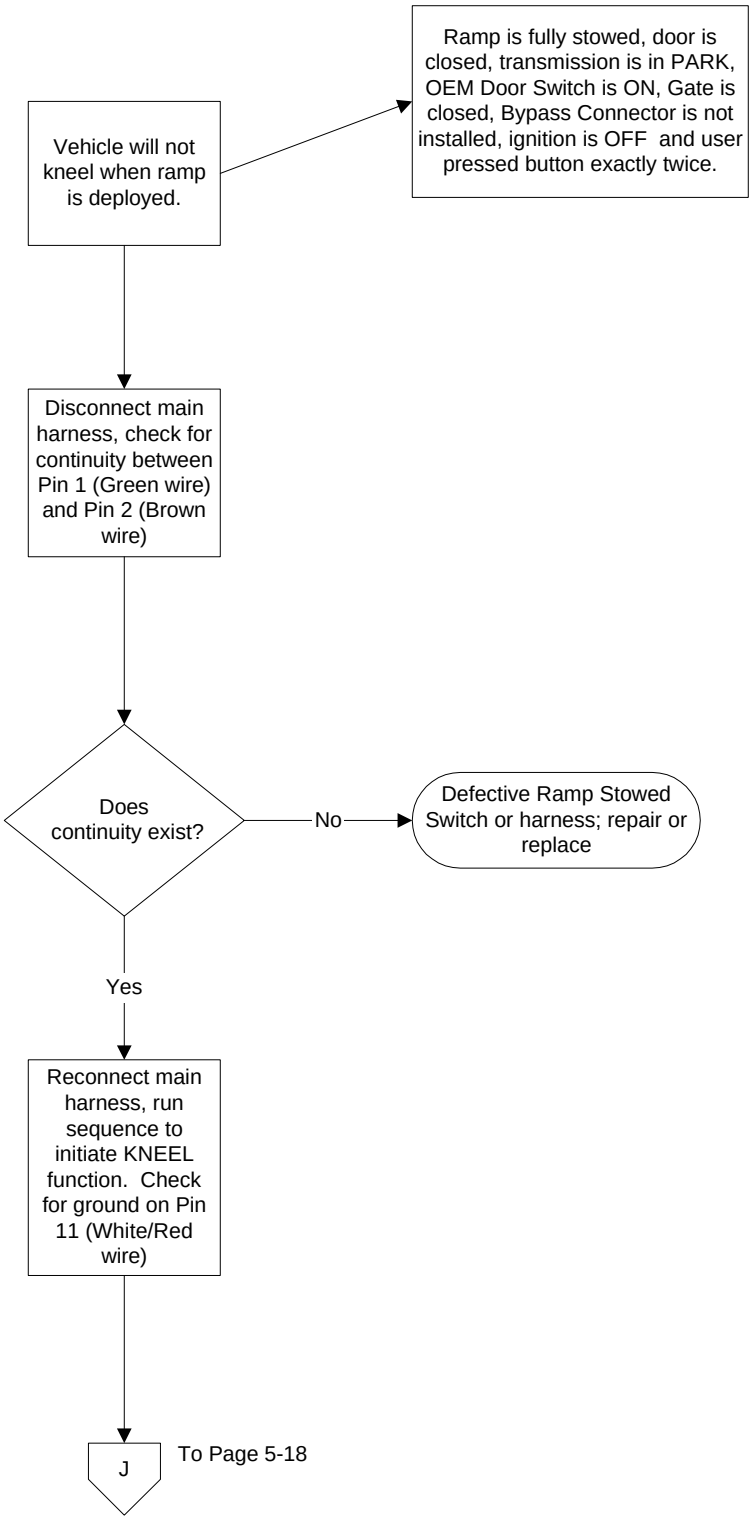

F
From Page 5-11
Attempt to operate power ramp.
Yes
Did ramp operate properly
Yes
Possible intermittent short, operate unit normally.
No
Did fuse F1 on controller blow again?
Yes
Probable shorted ramp motor or ramp motor harness.
No
Probable damaged Programmable Controller; replace

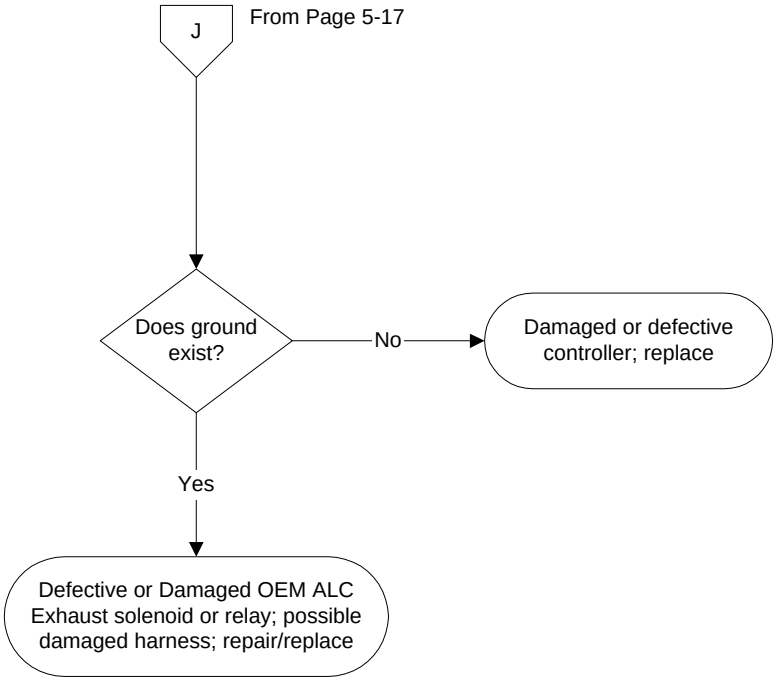

G
From Page 5-11
Verify that Ramp Gate is fully closed; Disconnect main harness- check continuity between Pin 23 (Red/Black wire) and Pin 24 (White/ Black wire)
Does continuity exist between Pins 23 and 24?
No
Defective Ramp Gate switch or damaged harness. Repair/ replace.
Yes
Check the output of the magnetic switch on Pin25 (Orange wire) and Pin 26 (Brown wire).
Does continuity exist when the switch is not activated?
Yes
Magnetic switch is normally open; repair or replace switch.
No
Defective or damaged Ricon Controller; replace.

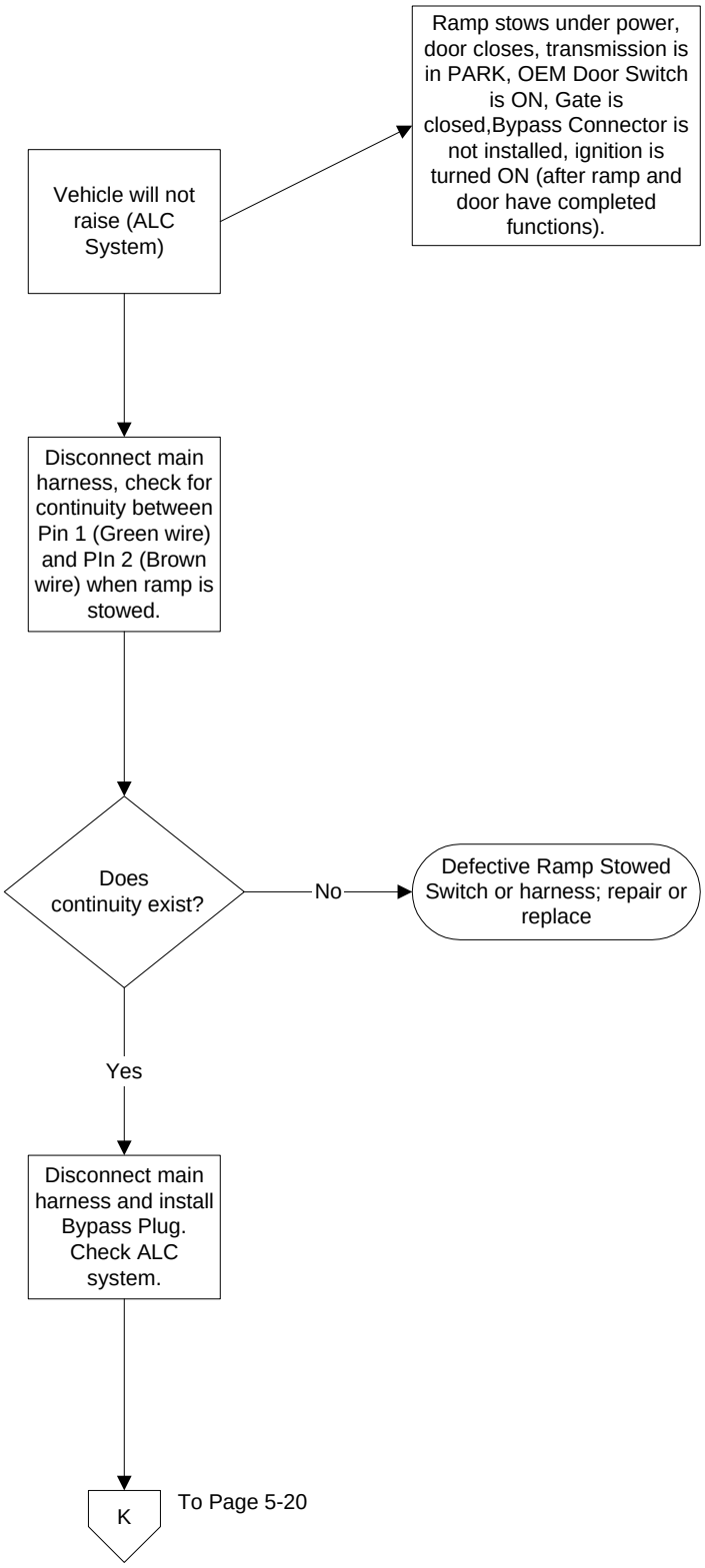

Door will open but ramp will not deploy/stow.
Disconnect main harness, fully open sliding door manually, check continuity between Pin 4 (Blue wire) and Pin 5 (Red wire).
Does continuity exist when the door is fully open?
No
Defective Door Open Switch; repair/replace.
Yes
With ramp fully stowed, verify continuity between Pin 1 (Green wire) and Pin 2 (Brown wire).
Does continuity exist between Pin 1 and Pin 2?
No
Damaged or defective Ramp Stowed Switch; repair/replace.
Yes
H
To Page 5-15

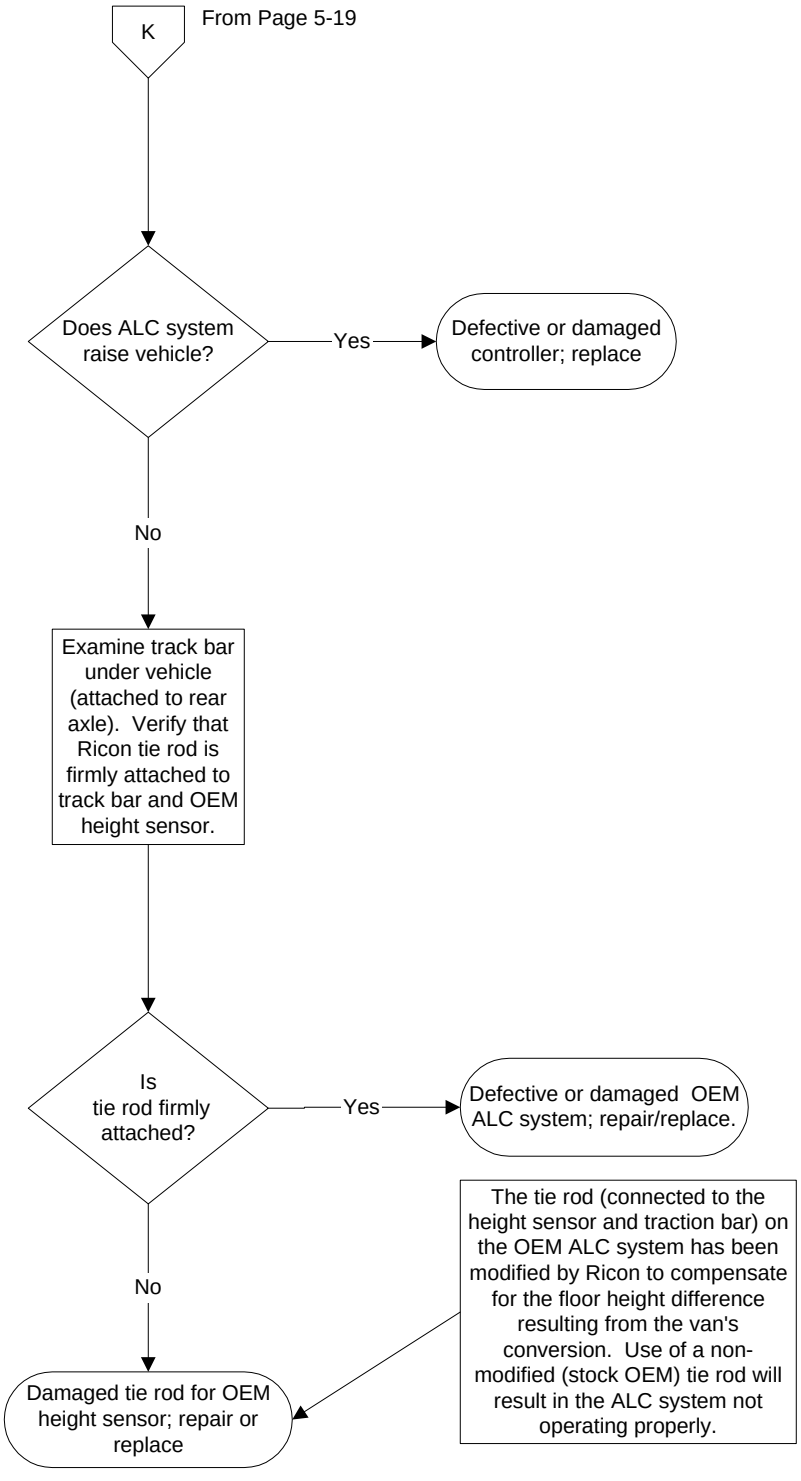

H
From Page 5-14
Reconnect main harness, attempt to Deploy ramp. Check for 12 volts on Pin 19 (White 14 AWG wire).
Is 12 volts present on Deploy?
No
Damaged Programmable Controller; replace.
Yes
Check harness near ramp motor; repeat process.
Does 12 Volts exist at ramp motor?
No
Damaged harness; repair/replace.
Yes
I
To Page 5-16


I
From Page 5-15
Check that continuity to ground exists at Pin 19 (White 14 AWG wire) and Pin 18 (Black 14 AWG wire).
Does continuity to ground exist on both wires?
No
Defective or damaged Controller; replace.
Yes
Defective or damaged ramp motor; replace unit.


Ramp is fully stowed, door is closed, transmission is in PARK, OEM Door Switch is ON, Gate is closed, Bypass Connector is not installed, ignition is OFF and user pressed button exactly twice.
Vehicle will not kneel when ramp is deployed.
Disconnect main harness, check for continuity between Pin 1 (Green wire) and Pin 2 (Brown wire)
Does continuity exist?
No
Defective Ramp Stowed Switch or harness; repair or replace
Yes
Reconnect main harness, run sequence to initiate KNEEL function. Check for ground on Pin 11 (White/Red wire)
J
To Page 5-18


J
From Page 5-17
Does ground exist?
No
Damaged or defective controller; replace
Yes
Defective or Damaged OEM ALC Exhaust solenoid or relay; possible damaged harness; repair/replace


Ramp stows under power, door closes, transmission is in PARK, OEM Door Switch is ON, Gate is closed,Bypass Connector is not installed, ignition is turned ON (after ramp and door have completed functions).
Vehicle will not raise (ALC System)
Disconnect main harness, check for continuity between Pin 1 (Green wire) and PIn 2 (Brown wire) when ramp is stowed.
Does continuity exist?
No
Defective Ramp Stowed Switch or harness; repair or replace
Yes
Disconnect main harness and install Bypass Plug. Check ALC system.
K
To Page 5-20



END OF CHART

Go to next chapter- -Back to index