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Trouble Shooting Bunk Lift Control Box 1510000199 For In-wall Slim Rack Systems

 #82-S0530, Rev. OA

Read, understand and follow all instructions in Installation and Service Manual 3010002675 before starting. This trouble shooting is for the In-wall Slim Rack Bunk Lift with control box part number 1510000199.

⚠ WARNING

Always make sure that the bunk path is clear of people and objects before and during operation of the bunk lift. Always keep away from the bunk lift rails when bunk is being operated. The gear assembly may pinch or catch on loose clothing.

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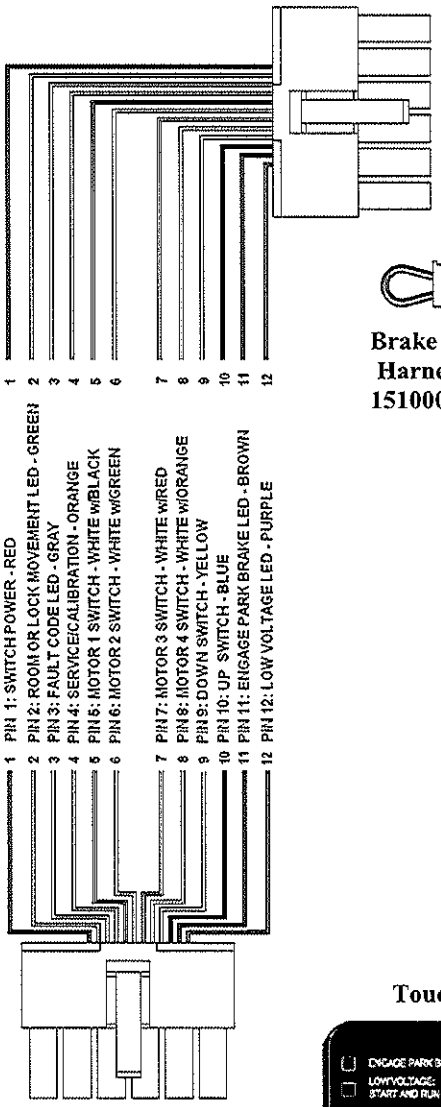
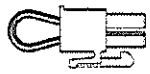
Wiring Diagram

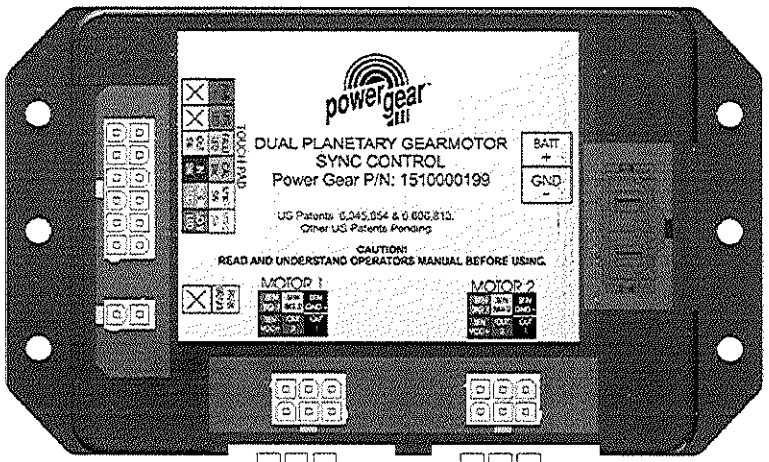


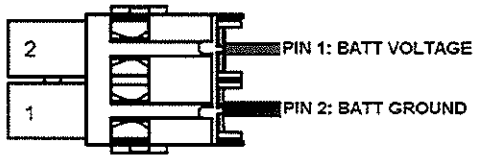
Control to Touch Pad Harness 1510000195



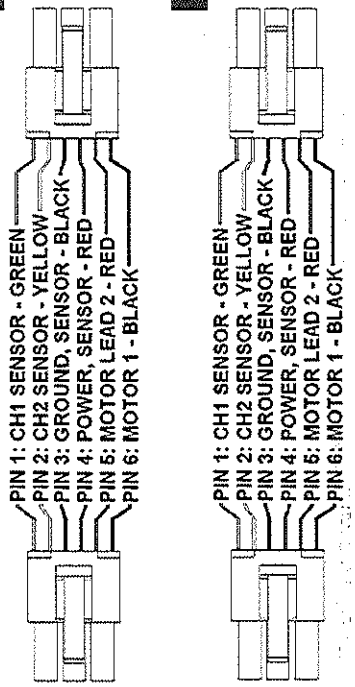
Brake Jumper Harness 1510000237-00

Bunk Lift Control Box 1510000199



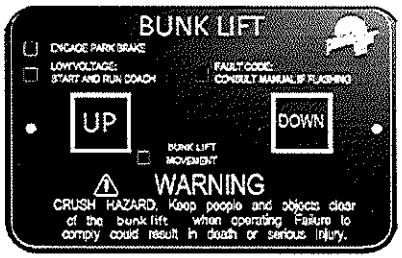


Power Harness 1510000233

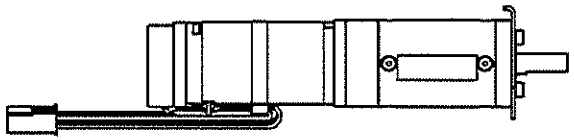


Control to Motor Harnesses 1510000194

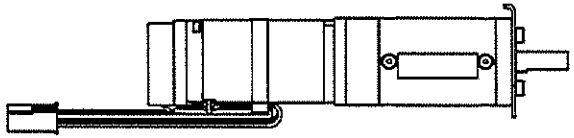
Touch Pad 1510000177

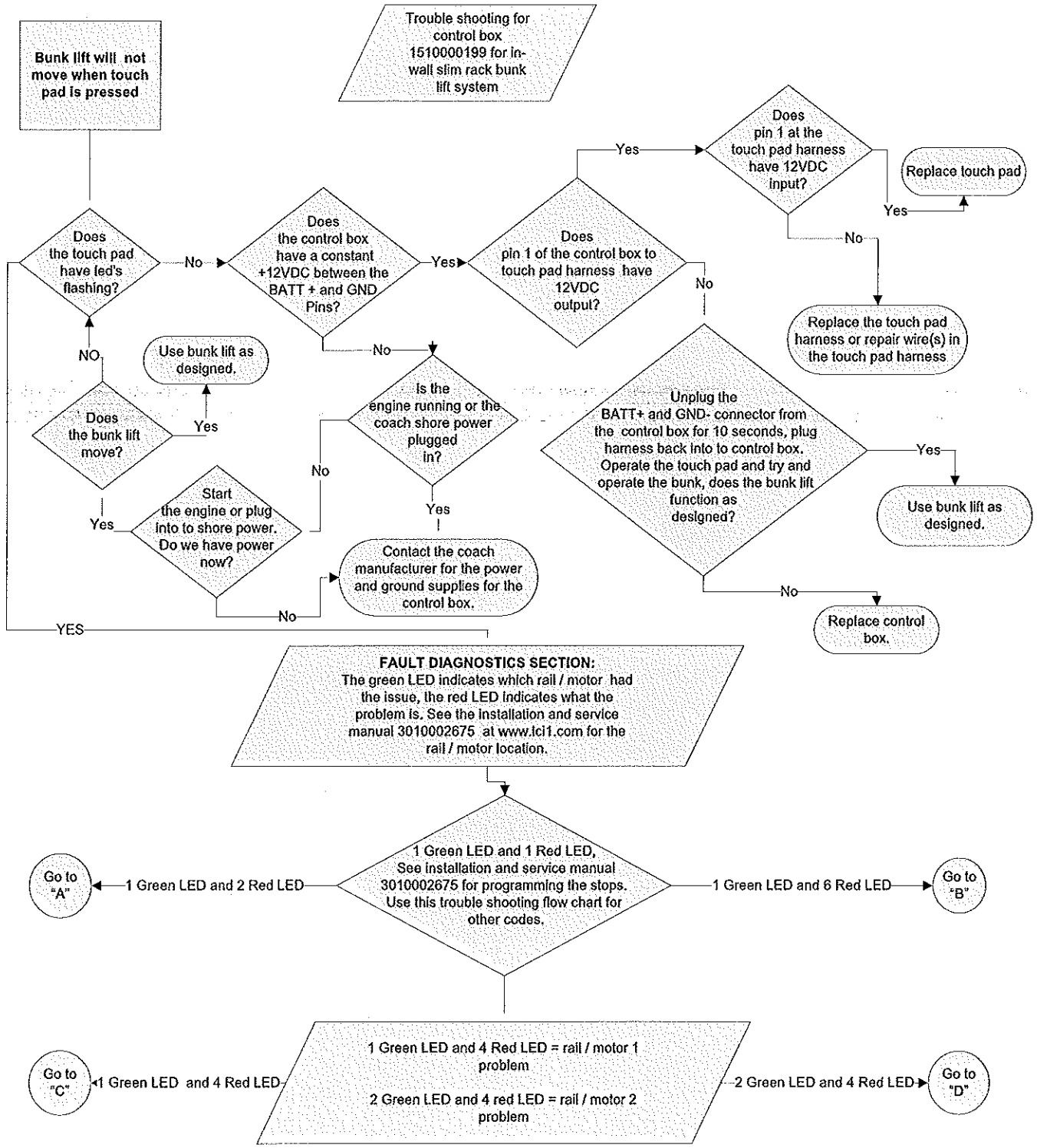


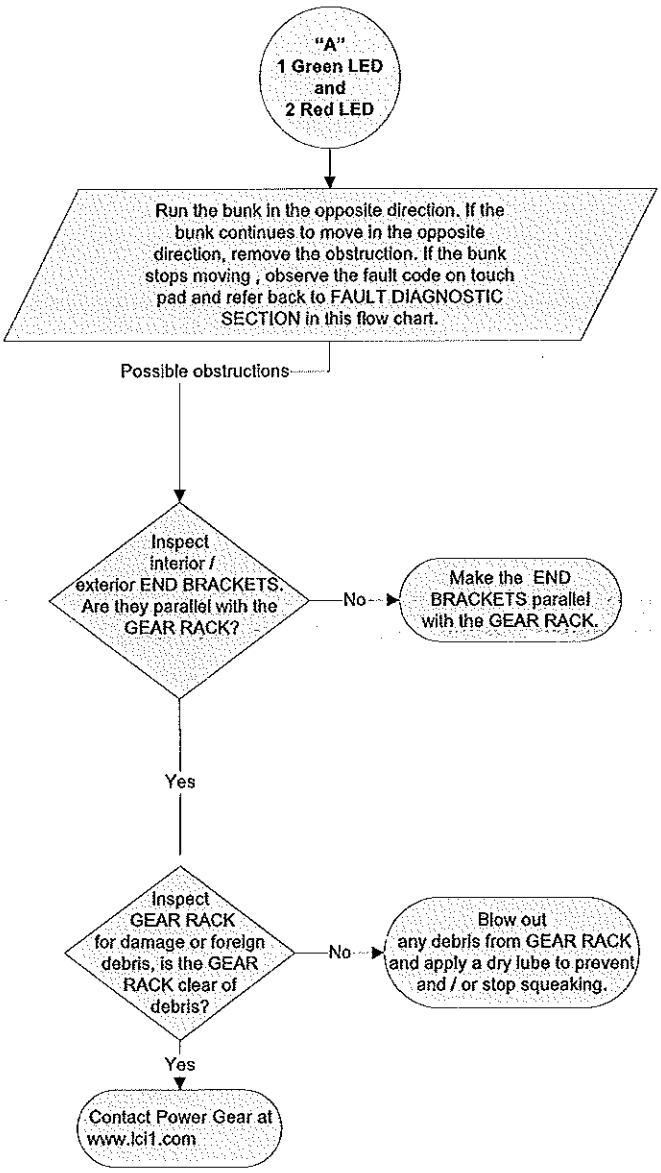
In-wall Motor 2

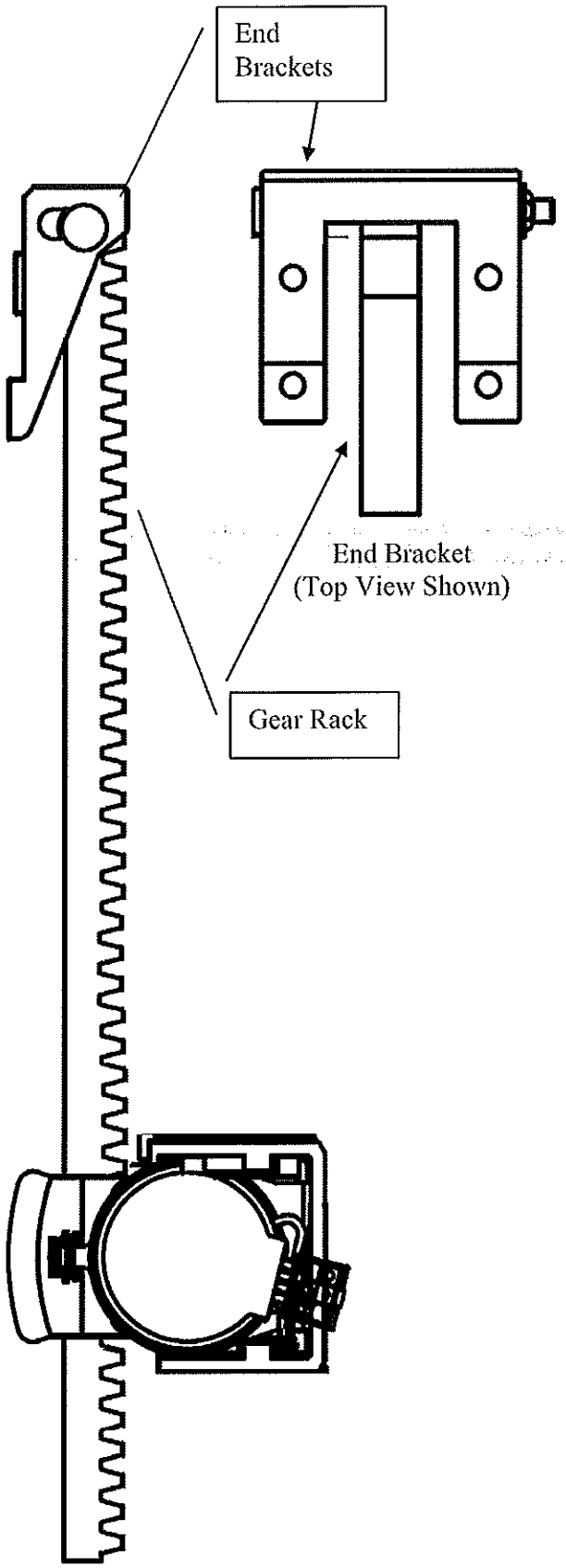


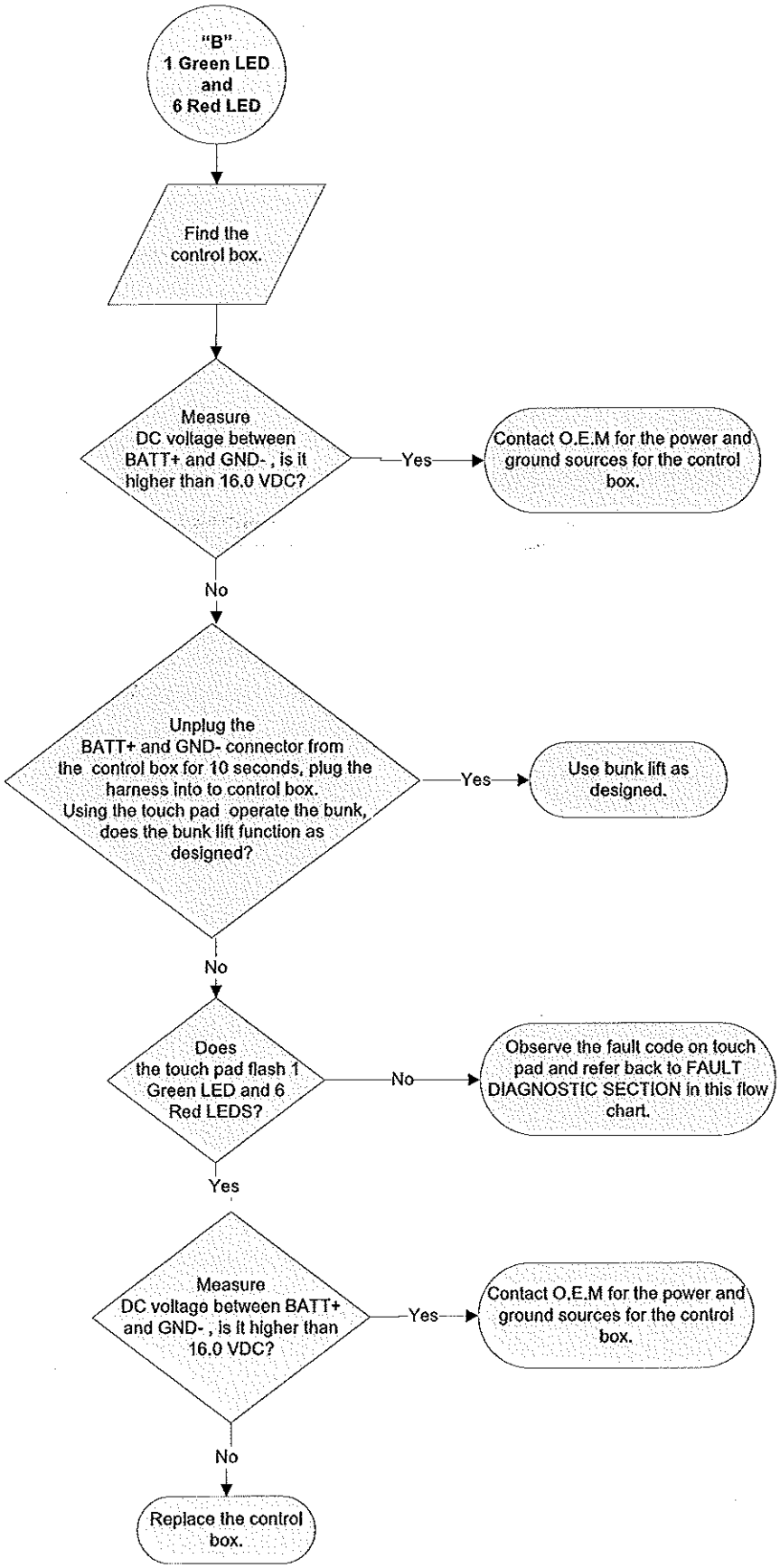
In-wall Motor 1

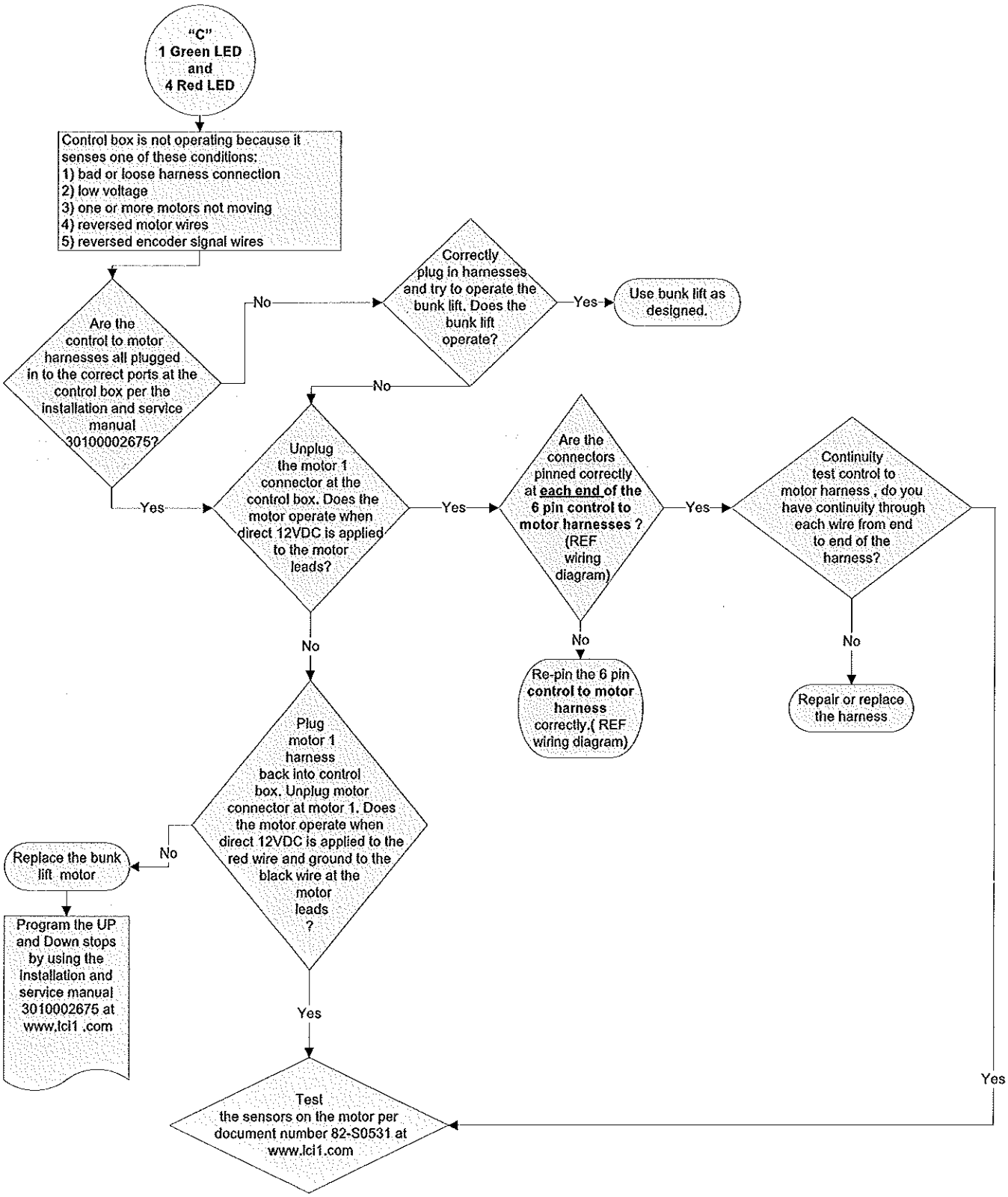


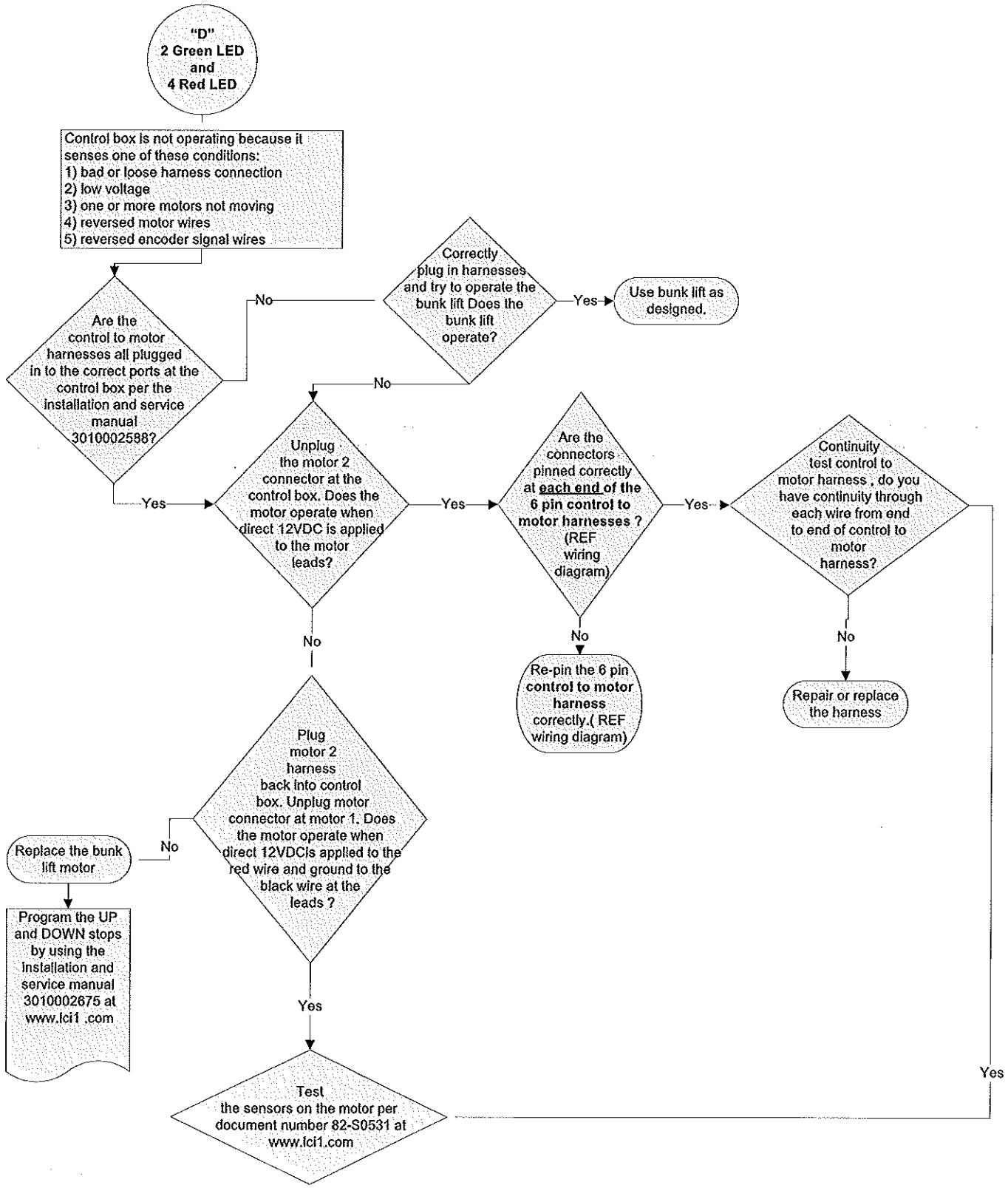

Trouble shooting for control box 1510000199 for in-wall slim rack bunk lift system
Bunk lift will not move when touch pad is pressed
Does the touch pad have led's flashing?
No
Does the control box have a constant +12VDC between the BATT + and GND Pins?
Yes
Does pin 1 of the control box to touch pad harness have 12VDC output?
Yes
Does pin 1 at the touch pad harness have 12VDC input?
Yes
Replace touch pad
No
Replace the touch pad harness or repair wire(s) in the touch pad harness
No
Unplug the BATT+ and GND- connector from the control box for 10 seconds, plug harness back into to control box. Operate the touch pad and try and operate the bunk, does the bunk lift function as designed?
Yes
Use bunk lift as designed.
No
Replace control box.
NO
Use bunk lift as designed.
Does the bunk lift move?
Yes
Yes
Start the engine or plug into to shore power. Do we have power now?
No
Is the engine running or the coach shore power plugged in?
No
Yes
Contact the coach manufacturer for the power and ground supplies for the control box.
YES
FAULT DIAGNOSTICS SECTION:
The green LED indicates which rail / motor had the issue, the red LED indicates what the problem is. See the installation and service manual 3010002675 at www.lci1.com for the rail / motor location.
1 Green LED and 1 Red LED, See installation and service manual 3010002675 for programming the stops. Use this trouble shooting flow chart for other codes.
1 Green LED and 2 Red LED
Go to "A"
1 Green LED and 6 Red LED
Go to "B"
1 Green LED and 4 Red LED = rail / motor 1 problem
2 Green LED and 4 red LED = rail / motor 2 problem
1 Green LED and 4 Red LED
Go to "C"
2 Green LED and 4 Red LED
Go to "D"

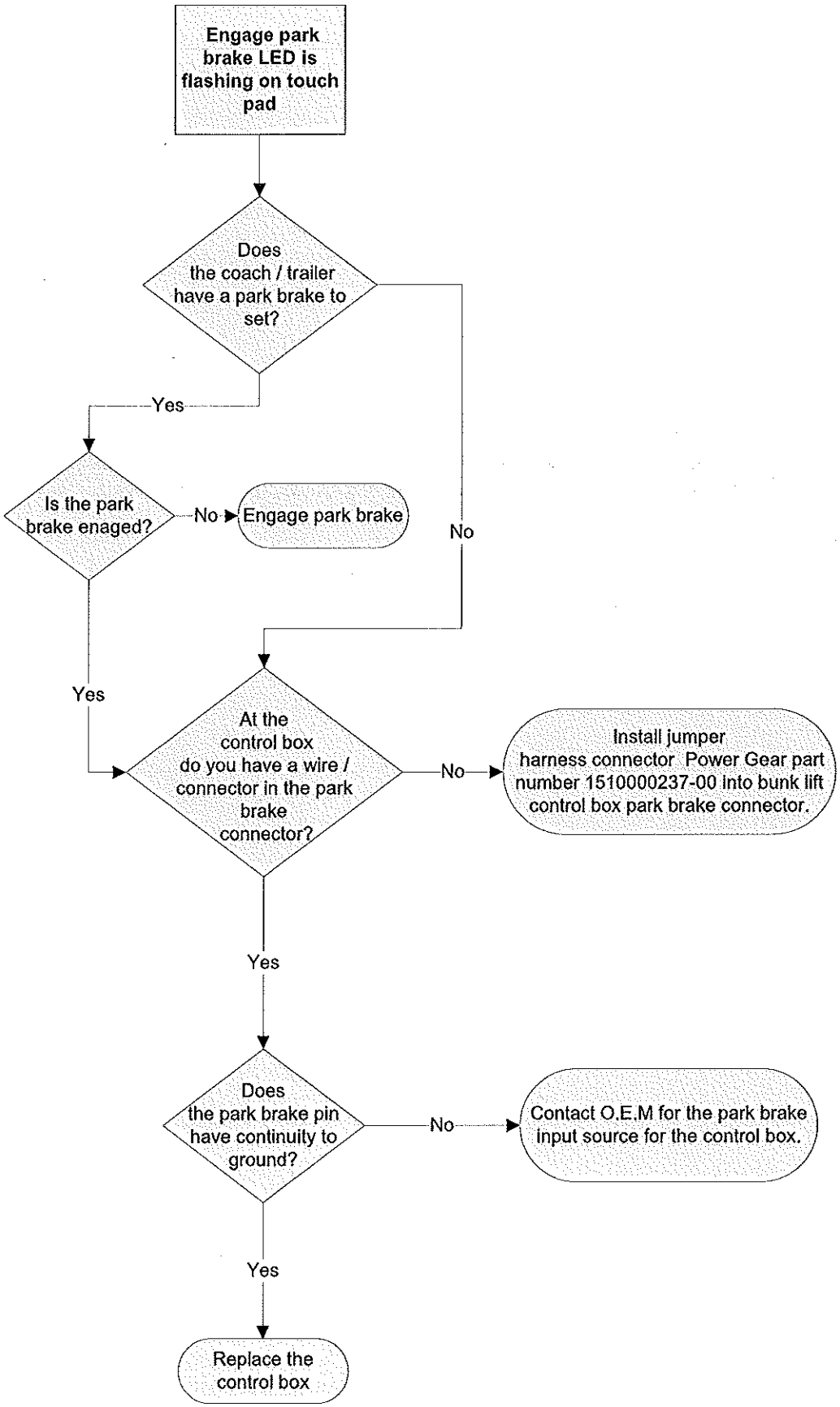

"A"
1 Green LED
and
2 Red LED
Run the bunk in the opposite direction. If the bunk continues to move in the opposite direction, remove the obstruction. If the bunk stops moving , observe the fault code on touch pad and refer back to FAULT DIAGNOSTIC SECTION in this flow chart.
Possible obstructions
Inspect interior / exterior END BRACKETS. Are they parallel with the GEAR RACK?
No
Make the END BRACKETS parallel with the GEAR RACK.
Yes
Inspect GEAR RACK for damage or foreign debris, is the GEAR RACK clear of debris?
No
Blow out any debris from GEAR RACK and apply a dry lube to prevent and / or stop squeaking.
Yes
Contact Power Gear at www.lci1.com

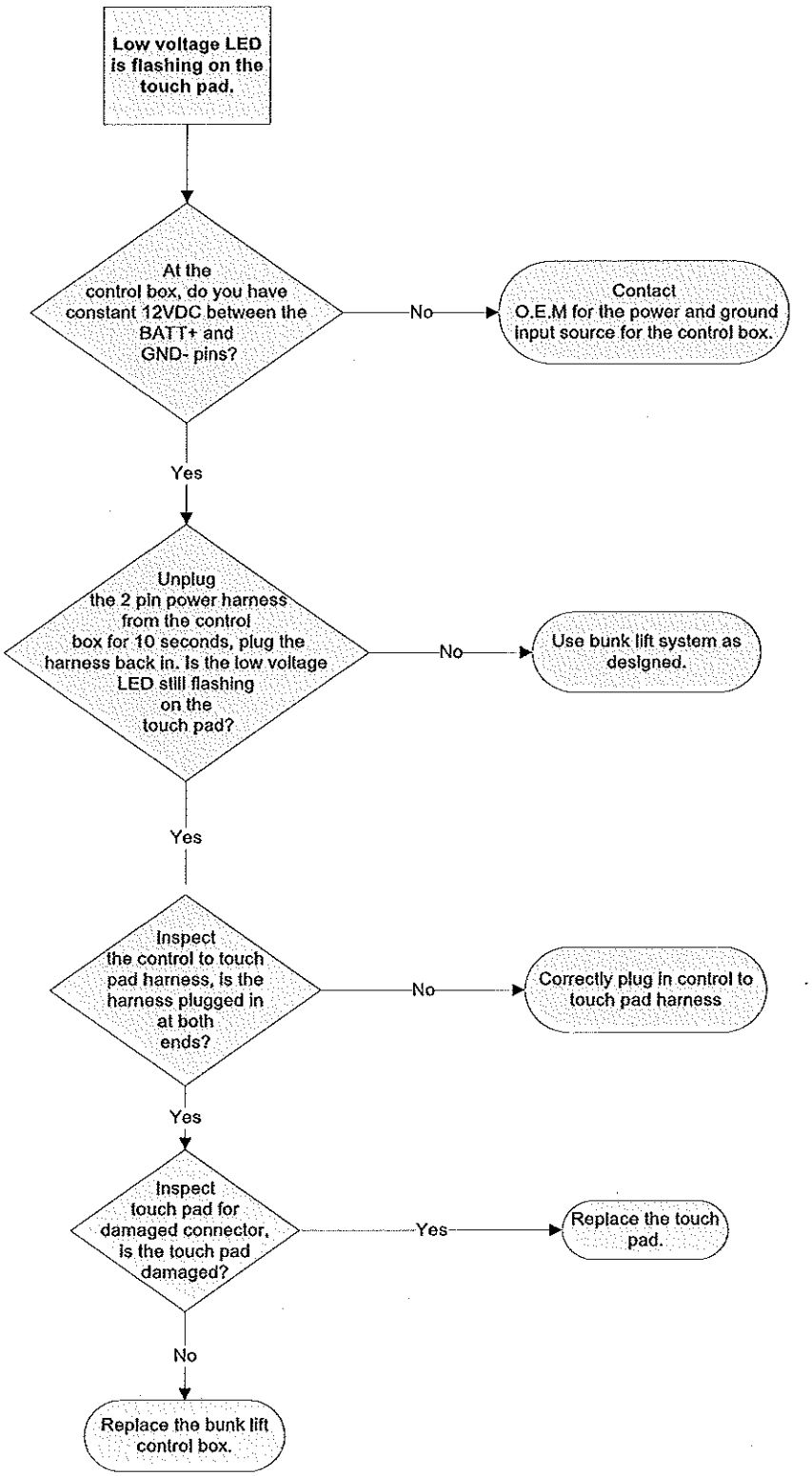

End Brackets
End Bracket
(Top View Shown)
Gear Rack


"B"
1 Green LED
and
6 Red LED
Find the
control box.
Measure
DC voltage between
BATT+ and GND- , is it
higher than 16.0 VDC?
Yes
Contact O.E.M for the power and
ground sources for the control
box.
No
Unplug the
BATT+ and GND- connector from
the control box for 10 seconds, plug the
harness into to control box.
Using the touch pad operate the bunk,
does the bunk lift function as
designed?
Yes
Use bunk lift as
designed.
No
Does
the touch pad flash 1
Green LED and 6
Red LEDS?
No
Observe the fault code on touch
pad and refer back to FAULT
DIAGNOSTIC SECTION in this flow
chart.
Yes
Measure
DC voltage between BATT+
and GND- , is it higher than
16.0 VDC?
Yes
Contact O.E.M for the power and
ground sources for the control
box.
No
Replace the control
box.


"C"
1 Green LED
and
4 Red LED
Control box is not operating because it senses one of these conditions:
1) bad or loose harness connection
2) low voltage
3) one or more motors not moving
4) reversed motor wires
5) reversed encoder signal wires
Are the control to motor harnesses all plugged in to the correct ports at the control box per the installation and service manual 30100002675?
No
Correctly plug in harnesses and try to operate the bunk lift. Does the bunk lift operate?
Yes
Use bunk lift as designed.
No
Yes
Unplug the motor 1 connector at the control box. Does the motor operate when direct 12VDC is applied to the motor leads?
Yes
Are the connectors pinned correctly at each end of the 6 pin control to motor harnesses ? (REF wiring diagram)
Yes
Continuity test control to motor harness , do you have continuity through each wire from end to end of the harness?
No
Re-pin the 6 pin control to motor harness correctly.(REF wiring diagram)
No
Repair or replace the harness
No
Plug motor 1 harness back into control box. Unplug motor connector at motor 1. Does the motor operate when direct 12VDC is applied to the red wire and ground to the black wire at the motor leads ?
No
Replace the bunk lift motor
Program the UP and Down stops by using the Installation and service manual 3010002675 at www.lci1 .com
Yes
Test the sensors on the motor per document number 82-S0531 at www.lci1.com
Yes


"D"
2 Green LED
and
4 Red LED
Control box is not operating because it senses one of these conditions:
1) bad or loose harness connection
2) low voltage
3) one or more motors not moving
4) reversed motor wires
5) reversed encoder signal wires
Are the control to motor harnesses all plugged in to the correct ports at the control box per the installation and service manual 3010002588?
No
Correctly plug in harnesses and try to operate the bunk lift Does the bunk lift operate?
Yes
Use bunk lift as designed.
No
Yes
Unplug the motor 2 connector at the control box. Does the motor operate when direct 12VDC is applied to the motor leads?
Yes
Are the connectors pinned correctly at each end of the 6 pin control to motor harnesses ? (REF wiring diagram)
Yes
Continuity test control to motor harness , do you have continuity through each wire from end to end of control to motor harness?
No
Repair or replace the harness
No
Re-pin the 6 pin control to motor harness correctly.(REF wiring diagram)
No
Plug motor 2 harness back into control box. Unplug motor connector at motor 1. Does the motor operate when direct 12VDCis applied to the red wire and ground to the black wire at the leads ?
No
Replace the bunk lift motor
Program the UP and DOWN stops by using the installation and service manual 3010002675 at www.lci1 .com
Yes
Test the sensors on the motor per document number 82-S0531 at www.lci1.com
Yes


Engage park brake LED is flashing on touch pad
Does the coach / trailer have a park brake to set?
Yes
No
Is the park brake enaged?
No
Engage park brake
Yes
At the control box do you have a wire / connector in the park brake connector?
No
Install jumper harness connector Power Gear part number 1510000237-00 into bunk lift control box park brake connector.
Yes
Does the park brake pin have continuity to ground?
No
Contact O.E.M for the park brake input source for the control box.
Yes
Replace the control box


Low voltage LED is flashing on the touch pad.
At the control box, do you have constant 12VDC between the BATT+ and GND- pins?
No
Contact O.E.M for the power and ground input source for the control box.
Yes
Unplug the 2 pin power harness from the control box for 10 seconds, plug the harness back in. Is the low voltage LED still flashing on the touch pad?
No
Use bunk lift system as designed.
Yes
Inspect the control to touch pad harness, is the harness plugged in at both ends?
No
Correctly plug in control to touch pad harness
Yes
Inspect touch pad for damaged connector, is the touch pad damaged?
Yes
Replace the touch pad.
No
Replace the bunk lift control box.

Additional Reference Documents Located At www.lci1.com.

Document #	Description
3010002678	Owner's manual slim rack in-wall bunk lift system control box part number 1510000199
3010002675	Installation & service manual slim rack in-wall bunk lift system control box part number 1510000199
82-S0531	Encoder test 1 Dual planetary gear motor sync with control box 1510000199
82-S0532	Encoder test 2 Dual planetary gear motor sync with control box 1510000199

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POWER GEAR BUNK LIFT

OWNER'S MANUAL

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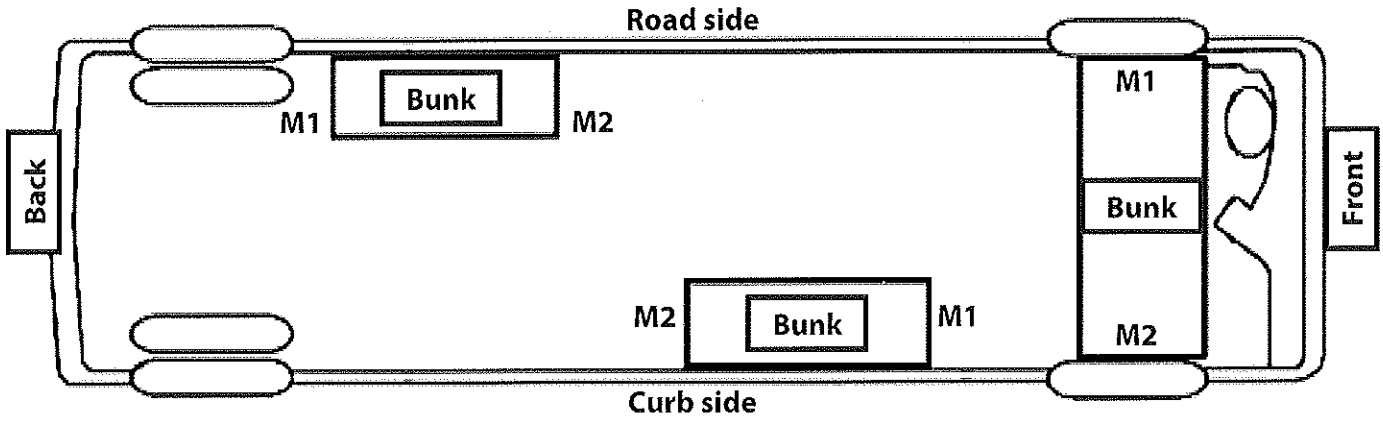
Introduction

System Description

The Power Gear Slim Rack Bunk Lift System with Controller 1510000199 or 1510000260 is a rack and pinion design operated by a pair of 12V DC electric motors. The system is designed to move a bunk of no more than 100 pounds vertically. Bunk lift systems rated for higher weight or longer strokes can be obtained. Please contact Lippert Components Customer Service by phone at (574) 537-8900 or by email at customerservice@lci1.com for application assistance.

Figure 1 indicates possible bunk lift and motor locations.

Fig. 1



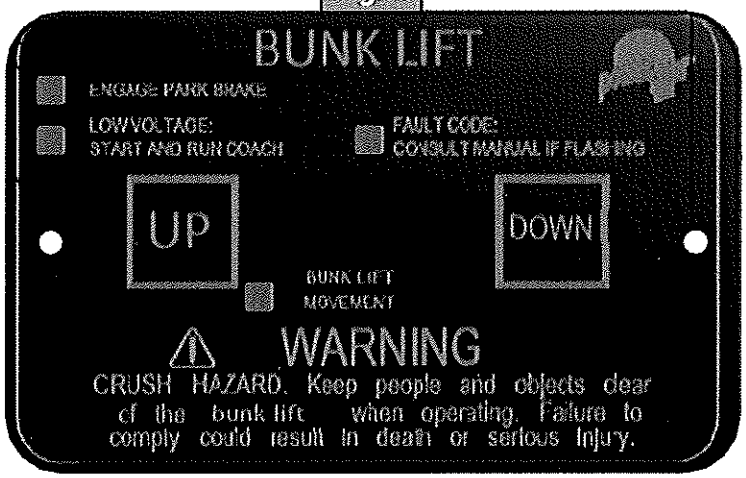
Proper designation of motor locations

M1 = Motor 1
M2 = Motor 2

Major Components

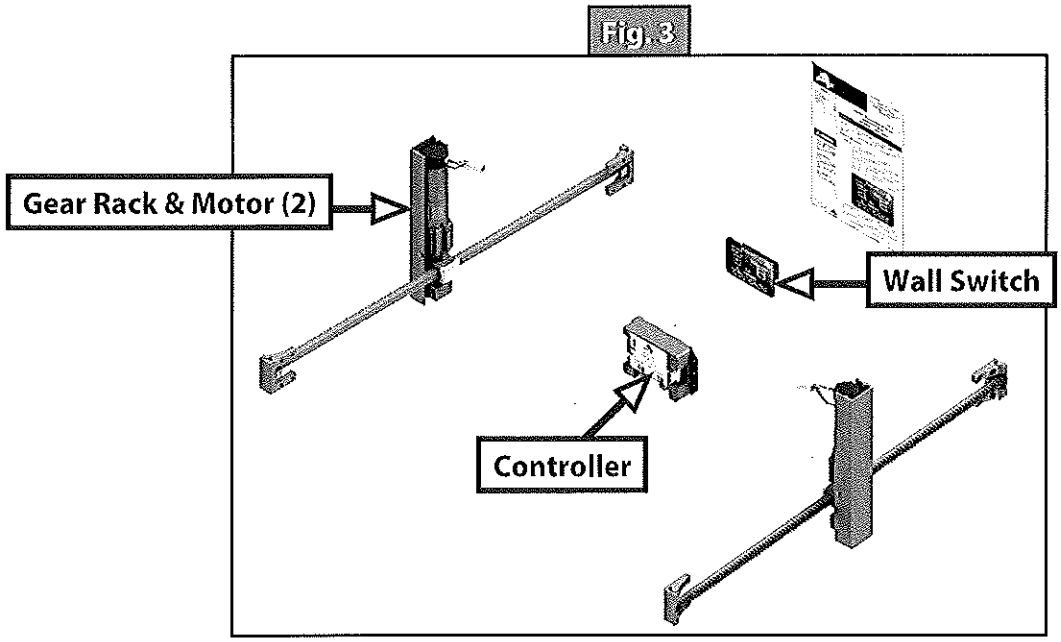
1. Wall switch with indicator LEDs that mounts to the wall (Fig. 2). The wall switch communicates with the controller to allow bunk movement and provides end user feedback via LEDs.

Fig. 2



   - **A.** "UP" and "DOWN" buttons (Fig. 2) move the bunk lift in the corresponding direction when button is pressed. Push and hold until bunk reaches pre-programmed stop point.
   - **B.** "ENGAGE PARK BRAKE" will light red if park brake is not engaged when trying to operate the bunk lift.
   - **C.** "LOW VOLTAGE" LED will light red when the voltage is below the operating threshold of the controller.
   - **D.** "FAULT CODE" LED will flash red a certain number of times to alert user of specific fault conditions. Refer to the Troubleshooting Chart.
   - **E.** "BUNK LIFT MOVEMENT" LED will flash green when the bunk lift is moving.
2. A specially-designed controller that gives the user full control of the bunk movement, up or down. The controller has programmed stops that control the motor when the bunk is fully raised or lowered, and the ability to detect faults for ease in troubleshooting (Fig. 3).
3. Two to four channels with 12V DC gear motors, which mount to the bunk, and gear rack arms that mount to the vertical structure (Fig. 3).
4. Harnesses (not shown) to connect wall switch and motors to controller.

Fig. 3



⚠WARNING

Obstructions in the bunk lift's path can cause severe property damage, serious personal injury or death. Always make sure that the bunk lift path is clear of people and objects before and during operation of the bunk lift.

⚠WARNING

Always keep away from the gear racks when the bunk lift is being operated. The gear assembly may pinch or catch on loose clothing causing personal injury.

⚠WARNING

Do not operate bunk lift with anyone physically lying or sitting in the bunk. Obstructions in the bunk lift's path can cause severe property damage, serious personal injury or death.

Operation

NOTE: The bunk lift system will not function until the stops are properly programmed, or faults are cleared. OEM coach manufacturer will complete programming during installation.

1. The GREEN LED (Fig. 2) indicates the system operation.
2. A solid GREEN LED indicates bunk movement.
3. The RED LED (Fig. 2) indicates a fault or a problem with the system. Refer to the Troubleshooting Chart for additional information.

Lowering the Bunk

1. The engine or generator must be running, or plugged in to shore power.
2. Transmission must be in PARK or NEUTRAL (if equipped.)
3. Level the unit (if equipped).
4. Remove the locking pins (if equipped).
5. Turn on the on/off switch or key (if equipped).
6. Press and hold the "DOWN" button on the wall switch (Fig. 2). A slight delay is normal before the bunk begins to move.
7. Release the button when the bunk is fully lowered and stops moving.
8. Turn on the on/off switch or key (if equipped).

Raising the Bunk

1. The engine or generator must be running or plugged in to shore power.
2. Transmission must be in PARK or NEUTRAL (if equipped).
3. Remove locking pins (if equipped).
4. Turn on the on/off switch or key (if equipped).
5. Press and hold the "UP" button on the wall switch (Fig. 2). A slight delay is normal before the bunk begins to move.
6. Release the button when the bunk is fully raised and stops moving.
7. Turn on the on/off switch or key (if equipped).
8. Install the locking pins (if equipped).

Maintenance

The Power Gear Slim Rack Bunk Lift System has been designed to require very little maintenance. To ensure the long life of the bunk lift system, read and follow these few simple procedures:

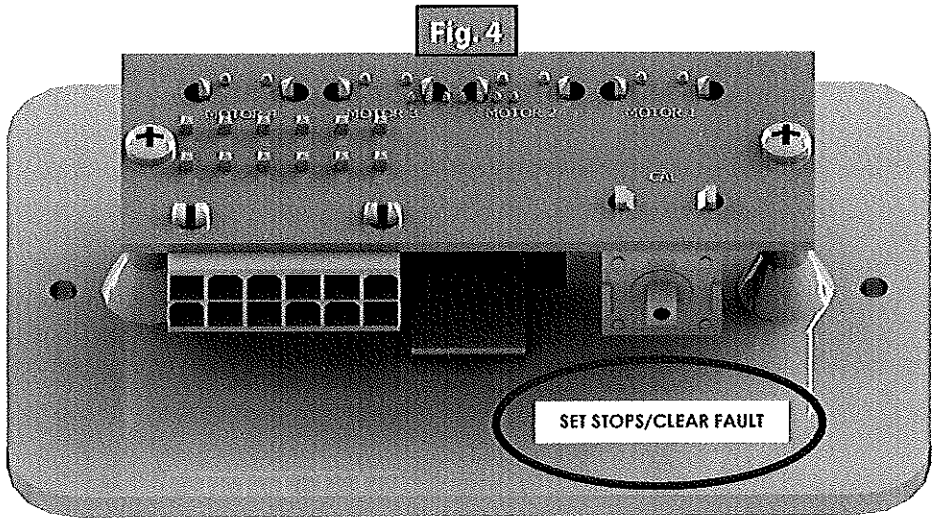
1. When the bunk is in the down position, visually inspect the gear rack assemblies. Check for excess build up of dirt or other foreign material; remove any debris items that may be present.
2. If the system squeaks or makes any noises, blow out any debris from the gear rack arms and apply a non-silicone based dry lubricant to prevent and/or stop squeaking.

Troubleshooting

1. The controller has the ability to detect several faults, which will be displayed by the wall switch. When a fault is detected, the bunk movement will stop and two different LEDs will flash in a pattern.
   - **A.** The "FAULT CODE" LED (Fig. 2) on the wall switch will flash RED a number of times corresponding to a specific fault code.
   - **B.** The "BUNK LIFT MOVEMENT" LED on the wall switch (Fig. 2) will flash GREEN a number of times corresponding to which motor had the associated fault.
     - **I.** For example: if four RED flashes and two GREEN flashes are seen, it means that there is a motor fault on Motor 2.
2. There are two types of faults, MINOR and MAJOR, and fault must be cleared in order for the bunk to operate. Refer to the Troubleshooting Chart to best determine what caused the fault.
   - **A.** MINOR faults can be cleared by pushing and releasing the "UP" or "DOWN" buttons on the wall switch (Fig. 2).
   - **B.** After the problem has been repaired, MAJOR faults must be cleared by pushing and releasing the "SET STOPS/CLEAR FAULTS" button located on the back of the wall switch (Fig. 4).

NOTE: For MAJOR faults, the controller must be overridden by following one of the "Emergency Bunk Movement" procedures. The controller will then have to be re-programmed by an OEM-authorized dealer when the problem is repaired.

Fig. 4



Troubleshooting Chart				
Fault Code	Fault Type	Description	Possible Cause	Possible Solutions
1	Major	Stops Not Programmed	• Stops have not been set • Stops were cleared • Stops were improperly set	Stops need to be programmed.
2	Minor	System Fault	• Obstruction present • Excessive system drag	Run bunk lift in opposite direction. If bunk continues to move in the opposite direction, remove obstruction, excessive weight in bunk or repair damaged component. If bunk stops moving in opposite direction, observe fault code and refer to this chart.
4	Major	Motor Fault	• Bad wire connection • Bad motor	• Check all connections at controller and motor. • Check the harness for broken wires. • Put 12V DC to the motor. If it does not run, replace the motor.
6	Minor	Excessive Battery Voltage	Supply voltage to the controller is 17V DC or greater.	Consult manufacturer of charging system for troubleshooting assistance.

Override Modes

⚠WARNING

Obstructions in the bunk lift's path can cause severe property damage, serious personal injury or death. Always make sure that the bunk lift path is clear of people and objects before and during operation of the bunk.

⚠WARNING

Always keep away from the gear racks when the bunk lift is being operated. The gear assembly may pinch or catch on loose clothing causing personal injury.

In the event of component failure or loss of system power, the bunk can be manually overridden and bunk moved for travel.

NOTE: At any time during the override procedure, the system will exit this mode if the bunk has not been moved for two minutes or if a fault is detected during bunk movement. The "FAULT CODE" and "BUNK MOVEMENT" LEDs will flash rapidly for 10 seconds to indicate that the override procedure failed. After the 10 seconds of flashing, the controller will automatically default to "FAULT CODE 1" (see Troubleshooting Chart) and programming must be restarted.

NOTE: The bunk controller must be re-programmed by an OEM-authorized dealer after the system has been overridden.

Emergency Bunk Movement to 'UP' Position

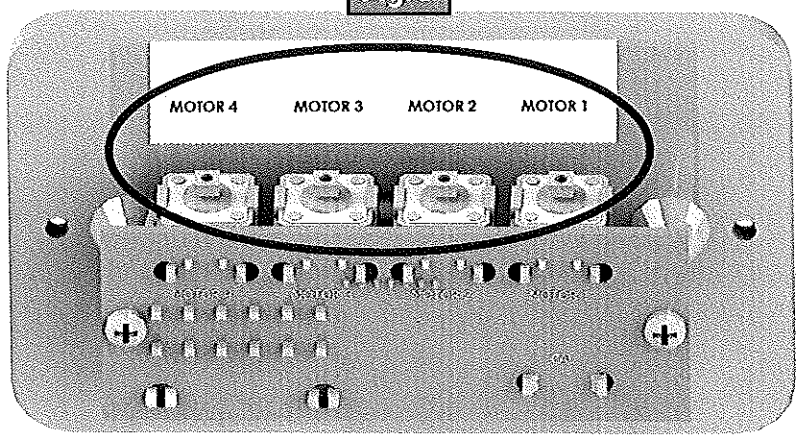
Use this procedure when there is NO loss of power or electrical problem with the system.

1. Remove the wall switch (Fig. 2) from the wall.
2. Prior to clearing the MAJOR fault, record the number of RED and GREEN flashes observed on the wall switch. This information will help the dealer/service center in troubleshooting the bunk lift system.
3. Press and hold the "SET STOPS/CLEAR FAULTS" button (Fig. 4) on the back for the wall switch for five seconds. Both RED and GREEN LEDs will be on solid while this button is pressed. After five seconds, the GREEN LED will begin flashing and the RED LED will remain lit.
4. The system is now ready to raise the bunk. Press and hold the BUNK LIFT MOTOR buttons 1 and 2 on the back of the Wall Switch (Fig. 5).

⚠CAUTION

It is very important to note that during this procedure, the bunk lift controller has NO stop locations. Damage to the bunk lift can occur if the bunk is raised or lowered too far.

Fig. 5



5. Press the "UP" button on the front of the wall switch until the bunk is in the fully raised position. If one side of the of the bunk needs to be raised further in order to fully raise, press and hold the motor button corresponding to only the motor you want to move. Press the "UP" button on the front of the wall switch to raise the bunk the remainder of the way. Install lock pins (if equipped).
6. Re-install the wall switch.
7. Take the unit to an OEM-authorized dealer for repairs.

Manual Emergency Bunk Movement to 'UP' Position

In the event that power is lost to the bunk motor(s) or the "Emergency Bunk Movement to 'UP' Position" procedure does not work, use the following steps to manually raise the bunk.

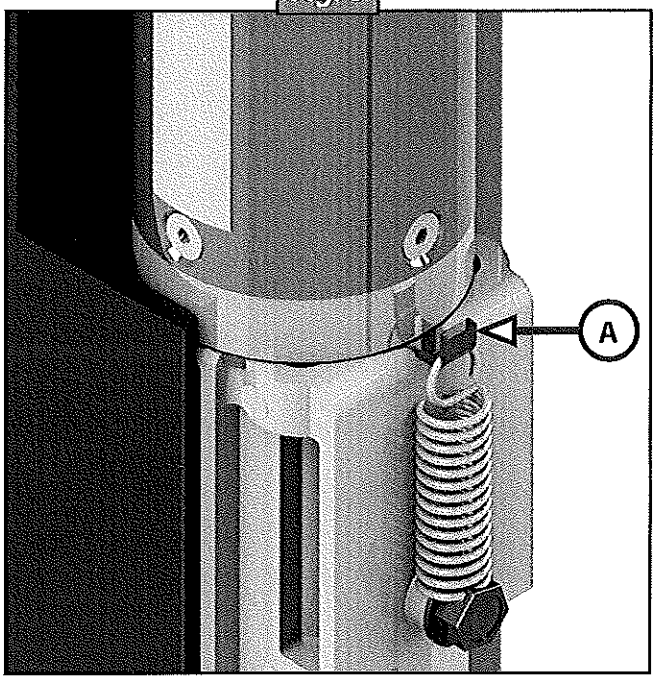
1. Use a voltmeter and check to see if power is being delivered to the controller.
2. If no DC power is being delivered from coach, use another 12V DC battery power source to power the module and retract the bunk using the "UP" button on the wall switch.
3. If power source is not available, use the following steps:
   - **A.** Gain access to channel assemblies on each side of the bunk by first contacting the OEM manufacturer for access details.
   - **B.** Once access is gained, remove the top cover plate of each channel assembly.
   - **C.** Unhook the motor retention spring (Fig. 6A).

NOTE: Some older systems may have a motor retention screw instead of a motor retention spring. Loosen the motor retention screw. Do not remove the screw.

   - **D.** Remove each motor from the channel assembly. Bunk will drop if in the raised position.
   - **E.** Disconnect motor connectors and place motors in a safe location. They will be needed when bunk lift is serviced.
   - **F.** Manually push up bunk lift.
4. When bunk is in the fully raised position, install pins to keep it in place. Contact bunk lift OEM for details.

NOTE: The bunk lift must be inspected at an OEM-authorized dealer for troubleshooting and repairs. The bunk controller must be re-programmed by an OEM-authorized dealer after the system has been overridden.

Fig. 6



Installation & Service Manual
Slim Rack In Wall Slide Out
System With Control Box
1510000236 or 1510000276

#3010002813, Rev. 0D

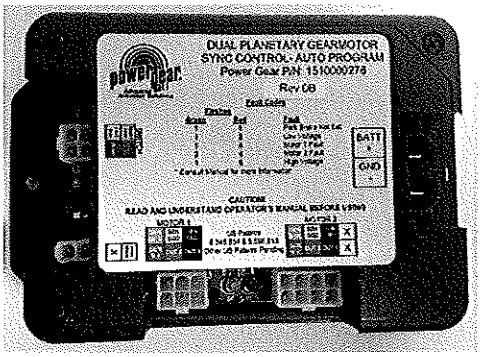


Figure 1 Control Box 1510000276

Installation and Service Manual Dual Planetary Gearmotor Auto Programming Slim Rack Slide out System

Introduction

SYSTEM DESCRIPTION:

The Power Gear Slim Rack Slideout System is a rack and pinion design operated by a 12 Volt DC gearmotor. The system is designed to actuate rooms up to 1500 pounds and 30" stroke. Room slide out systems rated for higher weight or longer strokes can be obtained. Please contact Power Gear for application assistance.

MAJOR COMPONENTS:

- Rocker switch that mounts to the wall. It allows room movement and provides end user feedback.
- A specially designed control box that gives the user full control of room movement, in or out. The control has programmable stops that stop the motor when the room is fully extended or retracted and the ability to detect faults for ease in troubleshooting.
- Vertical channel with 12V DC gearmotor and gear rack arms that mount into the side wall opening and slide out room.
- Harnesses to connect the touch pad and motors to control box.
- Floor rollers (not supplied by Power Gear) that support the rooms weight while extending and retracting the room. Only floor rollers approved by Power Gear can be used with the system. Contact Power Gear for recommended rollers.

CONTENTS

⚠ NOTE

Slide out systems are engineered to provide years of trouble free service. Changes to weight, stroke, weight distribution, rail position, controller, power supply, seals, slide toppers, ramps, rollers, etc. all have an effect on the performance of the system. In order to secure warranty coverage, each new application or changes to existing applications must be audited and approved by Power Gear with a signed document. Audits can be arranged by contacting your account representative.

Installation

GENERAL REQUIREMENTS:

- Power and wiring must be such that there is **not less than 10.5 running volts** supplied at the motor leads under maximum load.
- Slide system controls must come from Power Gear. Controls supplied by other companies will void warranty.
- Voltage supply must come from a 12VDC automotive/RV type battery.

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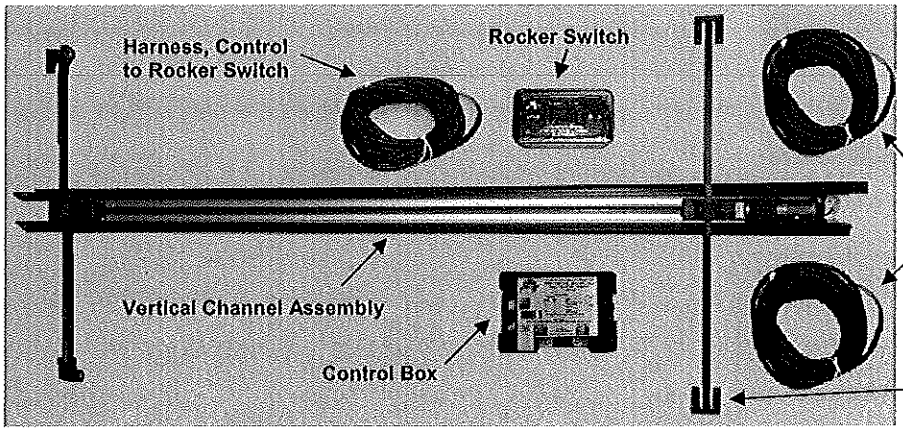

Figure 2 *Power Gear Slim Rack® Slideout System Components*

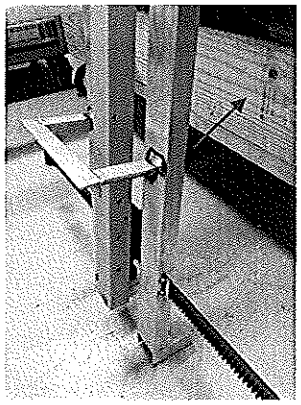

Figure 3 *moving assy into position*

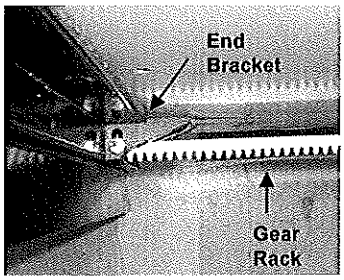

Figure 4

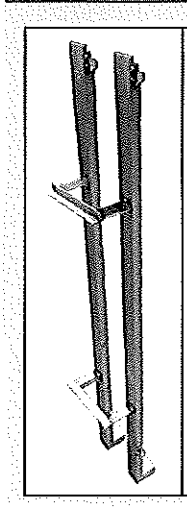

Figure 4a *Install Fixture*

Installation (Continued)

Mechanical Components:

1. Install Power Gear approved floor rollers. Consult roller manufacturer for proper installation procedures and location.
2. For sealing the screws used to attach end brackets, Power Gear recommends RTV silicone, rubber gasket, or closed cell foam gasket. **DO NOT** use any type of sealant putty as this can intrude into the mechanism and possibly cause the system to malfunction.

OPTION A - WITH INSTALLATION FIXTURE:

1a. An Installation Fixture **(FIG 4a)** is used to maintain even spacing between the upper and lower gear rack arms and the location of the end brackets. Even spacing between the gear rack arms and the location of the end brackets is critical for proper operation of the slide out. Installation Fixtures are reusable from system to system. Installation Fixtures are not supplied with system and must be purchased from Power Gear to aid in assembly and reduce installation time.

2a. Place the slide out mechanism into the installation fixture **(FIG 4a)** and bring the assembly up to the side of the slide room box **(FIG 3)**, making sure that the end brackets are flush to the wall and up against the outer flange of the room. Be sure to keep the gear rack and the end brackets level when mounting **(FIG 4)**.

3a. Secure each end bracket with four (4) flat head #10 screws **(FIG 6, pg 3)**. A flat head screw must be used.

4a. Repeat steps 1a-4a for the other side of the slide out room. **Proceed to step #3.**

OPTION B - WITH DRILL FIXTURE:

1b. A Drill Fixture **(FIG 6a, page 3)** is used to pre-drill the mounting holes for the end brackets and maintain even spacing between the upper and lower gear rack arms. Even spacing between the gear rack arms and the location of the end brackets is critical for proper operation of the slide out. Drill Fixtures are reusable from system to system. Drill Fixtures are not supplied with system and must be purchased from Power Gear to aid in assembly and reduce installation time.

2b. Position the drill fixture so that the bottom flange of the fixture is pulled up against the bottom of the room.

3b. Move the drill fixture out so that it is up flush against the outer room flange.

4b. Drill all 16 holes (4 per end bracket) with a #25 drill bit.

5b. Place the slide mechanism up to the side of the room and secure end brackets with flat head #10 screws **(FIG 6, pg 3)**. A flat head screw must be used.

6b. Repeat steps 1b-6b for the other side of the slide out room. **Proceed to step #3.**

Continued:

3. Lift the slide room box into coach opening and push in until mounting flange meets exterior wall. **NOTE:** *In some applications and interior mounting flange may be used. Install mounting flange once C-channel assemblies are properly installed.*
4. Verify that the weight of the room is supported by the floor rollers and not the slide out mechanism **(FIGURE 5)**. **NOTE:** *If the room is not completely supported by the floor rollers, you will hear a slight "popping" sound as the room settles on to the rollers. This is normal, and there is nothing wrong with the system or the install.*
5. Secure the mounting flanges to the unit's side wall **(FIGURE 6, page 3)**.

Alternate Installation Instructions for VERTICAL CHANNEL ASSEMBLIES with two flanges:
After steps 1-5 above are complete, it will be necessary to remove the inner flange **(FIGURE 7, page 3)** from each side of the **VERTICAL CHANNEL ASSEMBLIES** before lifting the room into position. Once room is in position, reinstall removed flanges.

Installation of the **VERTICAL CHANNEL ASSEMBLY** is now complete.

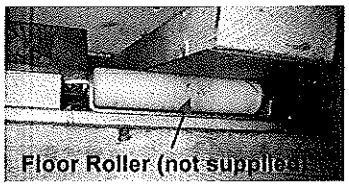

Figure 5

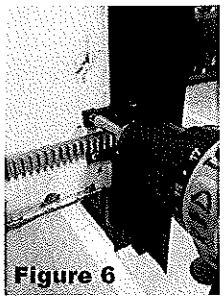

Figure 6

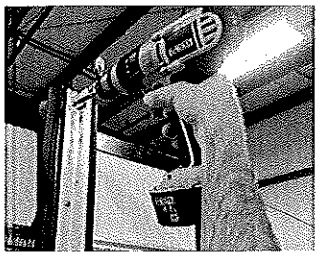

Figure 7

Wire Gauge	Maximum Length
16	10 feet
14	15 feet
12	25 feet
10	40 feet

Wire must be sized so that a minimum of 12.5 VDC is measured at the control while under a load.

Figure 8 *Information is given as reference only*

Installation (Continued)

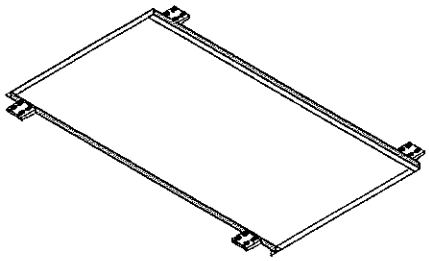

Figure 6a *Drill Fixture*

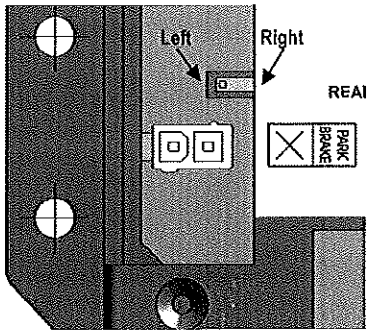

Figure 9A Park Brake Dip Switch on Control Box

Electrical Components:

1. Mount the **CONTROL BOX (FIGURE 1, page 1)** in a clean and dry, weather tight location that will keep it from being damaged, but is easily accessible for service. **The control is not waterproof.**
2. Determine location to mount **the rocker switch (FIGURE 12, page 4)**. Location needs to be in view of slideout room and have minimum depth of 1" inside the wall.
3. Route and attach the harness to where the rocker switch will be mounted, and mount the rocker switch with two (2) screws.
4. Label the motor leads at both ends to aid in connections at the control box and motors. Route the motor/sensor harnesses from the slideout room motors to the control box.
5. Route the park brake input harness from the park brake signal source to the control box or to bypass the park brake input signal, move the dip switch at the park brake connector on the control box to the left (**FIGURE 9A**).

Note: *It is important that the slideout motors be plugged in to the proper receptacle at the control box. Please see the **FIGURE 9** below for proper slide out motor designation. Failure to properly connect the motors to the control will result in problems for future troubleshooting. (The control will identify the incorrect motor during a fault).*

5. Route and attach the **proper gauge wire** from the control to the 12V DC battery. See **FIGURE 8** to the left. It is recommended that this circuit be protected with a 30 amp fuse.

Installation of the In Wall Slideout is now complete. You are now ready to operate the slideout room.

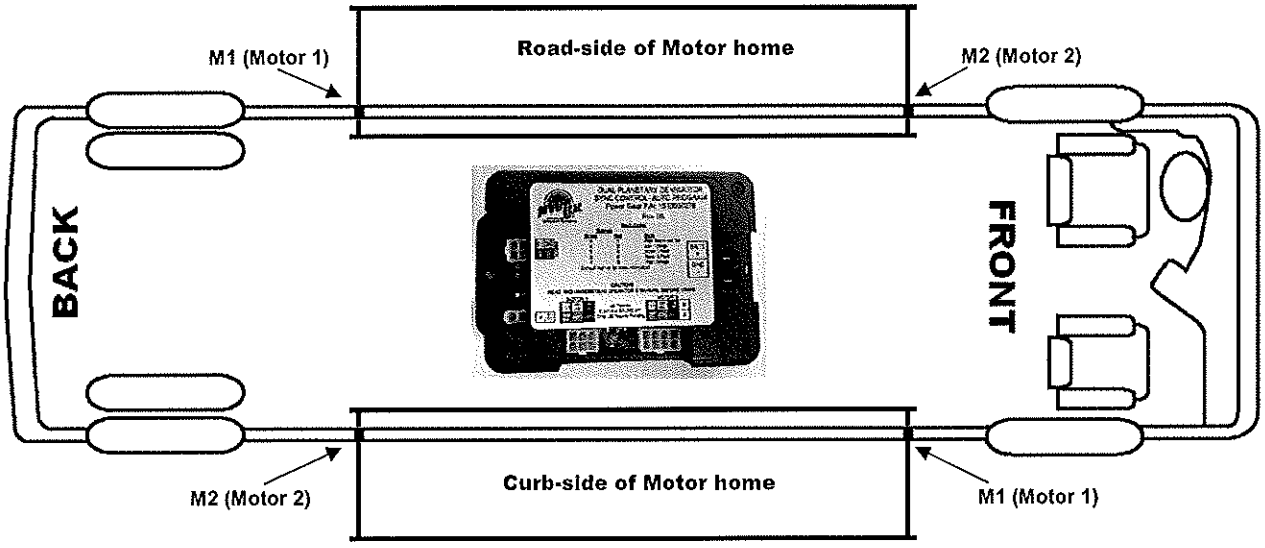

Figure 9 ***Proper designation of motors as M1 or M2***

⚠ WARNING

- Always make sure that the slideout room path is clear of people and objects before and during operation of the slideout room.
- Always keep away from the slide rails when the room is being operated. The gear assembly may pinch or catch on loose clothing causing personal injury.

⚠ NOTE

The switch will need to be depressed and held down for 2 seconds after the room stops moving to correctly set the stop locations. This applies to both the IN stop (retracted) and OUT stop (extended). Failure to do so will cause the stops to NOT be set.

Program Mode

Use this procedure to SET the IN and OUT stops.

Note: To correctly set the stops. First fully retract the room to set the **IN stop** and then fully extend the room to set the **OUT stop. The switch will need to be depressed and held for 2 seconds after the room stops moving**. Failure to do so will cause the stops to NOT be set.

1. Press and hold the IN button on the wall rocker switch (**FIGURE 12**).
2. Move the room to the fully retracted position. Press and hold the **IN** button for 2 seconds after the room stops moving. Release the wall switch.
3. Visually inspect the room seal to make certain the room is fully retracted. If it is not, push and hold the **IN** button until fully retracted. This procedure may need to be repeated until both sides of the slide out are fully retracted.
4. You are now ready to set the **OUT** stop.
5. Press and hold the **OUT** button on the wall rocker switch (**FIGURE 12**).
6. Move the room to the fully extended position. Press and hold the **OUT** switch for 2 seconds after the room stops moving. Release the wall switch.
7. Visually inspect the room seal to make certain the room is fully extended. If it is not, push and hold the **OUT** button until fully extended. This procedure may need to be repeated until both sides of the slide out are fully extended.

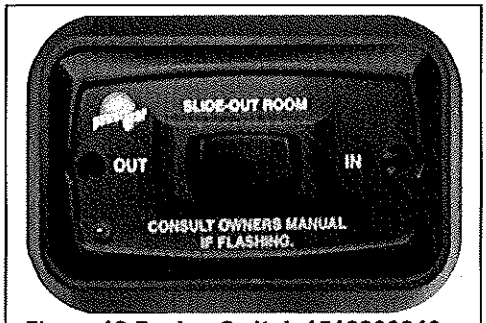

Figure 12 Rocker Switch 1510000240

Installation Issues

The control box is equipped to help troubleshoot the system during installation. Count the number of LED flashes and refer to the **FAULT DIAGNOSTICS/TROUBLESHOOTING** section starting on **page 6** of this manual or on the label of the control box.

Note: *It is important that the slide out motors be plugged in to the proper receptacle at the control box. Please see the **FIGURE 9** for proper slide out motor designation. Failure to properly connect the motors to the control will result in problems for future troubleshooting. (The control will identify the incorrect motor during a fault).*

If you are still having difficulties programming the system (and prior to replacing the control), verify that the system has been wired correctly and that the **IN** stop location was programmed before the **OUT** stop location. See **FIGURE 9, page 3** for proper connection of the motors to the slideout control.

⚠ WARNING

- Always make sure that the slideout room path is clear of people and objects before and during operation of the slideout room.
- Always keep away from the slide rails when the room is being operated. The gear assembly may pinch or catch on loose clothing causing personal injury.

Operation Mode

Prior to moving the slide out room:

- Make sure the engine or generator is running to ensure ample voltage is being supplied to the slide out control box.
- Set the parking brake, if applicable.

Extending the room:

1. The engine or generator must be running, or coach is plugged into shore power.
2. Transmission must be in park or neutral (if applicable).
3. Set the park brake (if applicable) and level the unit.
4. If equipped, remove the transit bars.
5. If equipped, turn "on" the on/off switch or key.
6. Press and hold the **OUT** button (**FIGURE 12, page 4**). There will be a slight delay before the room will begin to move, this is normal.
7. Release the button when the room is fully extended and stops moving.
8. If equipped, turn "off" the on/off switch or key.

Retracting the room:

1. The engine or generator must be running, or plugged into shore power.
2. Transmission must be in park or neutral (if applicable).
3. Set the park brake (if applicable) and level the unit.
4. If equipped, turn "on" the on/off switch or key.
5. Press and hold the **IN** button (**FIGURE 12, page 4**). There will be a slight delay before the room will begin to move, this is normal.
6. Release the button when the room is fully retracted and stops moving.
7. If equipped, turn "off" the on/off switch or key.
8. If equipped, install the transit bars.

Preventative Maintenance

Your Power Gear slideout system has been designed to require very little maintenance. To ensure the long life of your slideout system, read and follow these few simple procedures:

- When the room is extended, visually inspect the slide rail assemblies. Check for excess build up of dirt or other foreign material; remove any debris items that may be present.
- If the system squeaks or makes any noises, blow out any debris from the gear rack arms and apply a dry lubricant to prevent and/or stop squeaking.

If you have any problems or questions, see the contact tab on our website at www.powergearus.com

Fault Diagnostics/Troubleshooting

This control has the ability to detect and display several faults. When a fault is detected, the room movement may stop and two (2) different LED's on the control box will flash in a pattern.

- The **FAULT CODE** LED (**FIGURE 12, page 4**) on the rocker switch will flash **RED** a number of times corresponding to the number of red flashes on the control box (**FIGURE 12A**). Refer to the **TROUBLESHOOTING** chart on **page 6** to best determine what caused the fault.
- The **MOTOR** LED (**FIGURE 12A**) on the control box will flash **GREEN** a number of times corresponding to which motor had the associated fault.
  - For example: if you are seeing two (2) **GREEN** flashes and four (4) **RED** flashes, it means that there is a motor fault on motor 2.

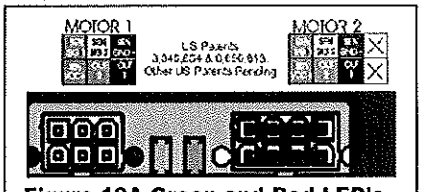

Figure 12A Green and Red LED's on control box

<u>Note:</u> *For major faults, the control will automatically enter "**Emergency Jog**" mode when motor movement is not detected by the control box in either direction during room actuation. When in "**Emergency Jog**" mode, the control will jog both motors in the direction the rocker switch is pressed **(IN or OUT).** The rocker switch may need to be pressed multiple times to fully retract or extend the room. Take the unit to an O.E.M authorized dealer for service.* ***NOTE: The control box will return to normal operation mode after 5 minutes of inactivity or by cycling power to the control box.***

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Fault Diagnostics/Troubleshooting (continued)

FIGURE 13 *FAULT CODES*

Fault Code Number of Flashes		Fault Type	Description	Possible Cause	Possible Solutions
Green Flash	Red Flash				
1	1	Minor	Park Brake not set	• Park Brake not set (if applicable) • Ground signal lost at park brake receptacle at control box.	• Set parking brake (if applicable). • Check for continuity to ground on wire plugged into park brake receptacle at control box.
1	2	Minor	Low Voltage	Incoming voltage to control is below 12.0 VDC. **The room will NOT move if the voltage is 10.5 VDC or below.**	Start vehicle, generator, or ensure plugged into shore power. Check 2-pin power connector at control box at BATT + and GND -. Consult manufacturer of unit charging system for troubleshooting assistance.
1	4	Major	Motor 1 Fault	• Bad wire connection • Bad motor	• Refer to TIP Sheet 82-S0533 for troubleshooting.*
2	4	Major	Motor 2 Fault	• Bad wire connection • Bad motor	
1	6	Minor	High Voltage	Supply voltage to control box is 17 VDC or greater.	Consult manufacturer of unit charging system for troubleshooting assistance.

*This tip sheet and other updated troubleshooting information can be found on our website at www.powergearus.com.

# of RED flashes	# of GREEN flashes

Figure 14

Override Mode

In the event of component failure or loss of system power, your slideout can be manually overridden and retracted for travel.

Note: *At any time during the override procedure, the unit will exit this mode if the room has not been moved for five (5) minute.*

Note: *For major faults, the control will automatically enter "**Emergency Jog**" mode when motor movement is not detected by the control box in either direction during room actuation. When in "**Emergency Jog**" mode, the control will jog both motors in the direction the rocker switch is pressed **(IN or OUT).** The rocker switch may need to be pressed multiple times to fully retract or extend the room. Take the unit to an O.E.M authorized dealer for service.*
NOTE: The control box will return to normal operation mode after 5 minutes of inactivity or by cycling power to the control box.

MANUAL EMERGENCY RETRACT MODE

In the event that power is lost to the slide out motor(s) the room can be manually retracted by following these steps:

1. You will need to gain access from either the inside or outside (which ever is more convenient) of the coach to the **VERTICAL CHANNEL** assembly. The motors are currently located at the top of channel.
2. If applicable, remove the top screw from the bulb seal at the top of the **VERTICAL CHANNEL (FIGURE 15)**.
3. Pull down the bulb seal and remove the motor cover (**FIGURE 16**). The motor cover may stick to the bulb seal.
4. Using a pick tool, remove the end of the retaining spring from the motor spring clip (**FIGURE 17**).
5. Unplug the motor from the harness and remove the motor by lifting it up and out.
6. Repeat steps 1-4 for the other side.
7. Push the room into the retracted position.
8. Secure the room in place by either re-installing the motors (making sure the end of the retaining spring is rehooked to the motor spring clip and the motor retainer is fully engaged) or using a travel lock, 2 x 4 (cut to size) etc.
9. Have the slide out room serviced by the O.E.M. authorized dealer as soon as possible. Do not operate room until service is complete as damage to the room may result.

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⚠ WARNING

- Always make sure that the slideout room path is clear of people and objects before and during operation of the slideout room.
- Always keep away from the slide rails when the room is being operated. The gear assembly may pinch or catch on loose clothing causing personal injury.

Override Mode (continued)

Note: *For major faults, the control will automatically enter "**Emergency Jog**" mode when motor movement is not detected by the control box in either direction during room actuation. When in "**Emergency Jog**" mode, the control will jog both motors in the direction the rocker switch is pressed **(IN or OUT).** The rocker switch may need to be pressed multiple times to fully retract or extend the room. Take the unit to an O.E.M authorized dealer for service.* ***NOTE: The control box will return to normal operation mode after 5 minutes of inactivity or by cycling power to the control box.***

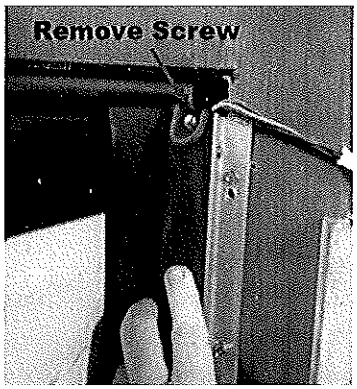

Figure 15 *Removing the bulb seal screw*

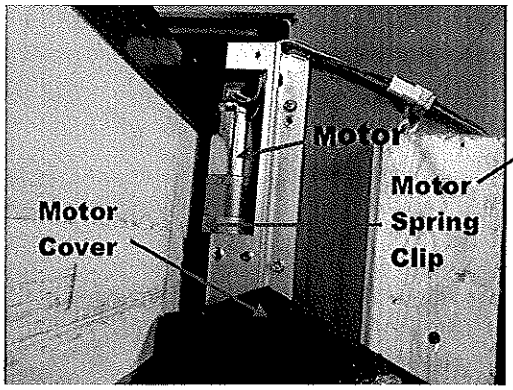

Figure 16

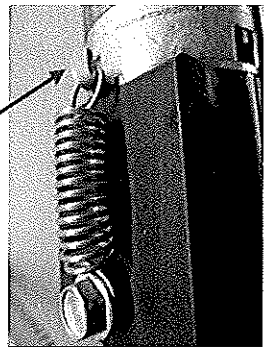

Figure 17

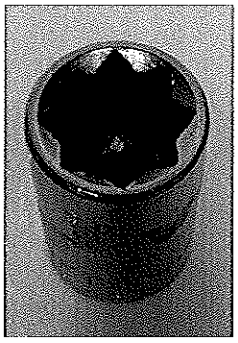

Figure 18 *8-point star socket*

Note: It may be possible to manually retract the room by accessing the ½" square drive tube at the bottom of each vertical channel assembly. This will only be possible if there is access to this area.

1. You will first need to follow steps 1-6 as detailed above.
2. Using a ½" 8-point star socket (**FIGURE 18**) and alternating from one side to the other, turn the ½" square drive tube to bring the room in. A 15 mm 12-point socket is an option if the ½" 8-point star socket is not available. Use caution, as the 15 mm 12-point socket does not fit as snug as the ½" 8-point socket.
3. When the room is retracted, secure the room per step 8 shown on page 6.
4. Have the slide out room serviced by a dealer as soon as possible. Do not operate room until service is complete as damage to the room may result.

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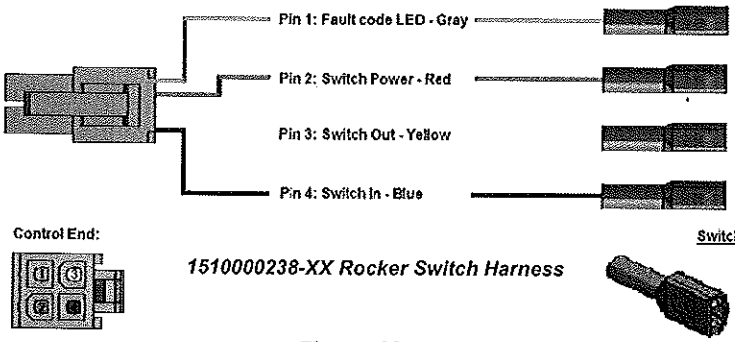
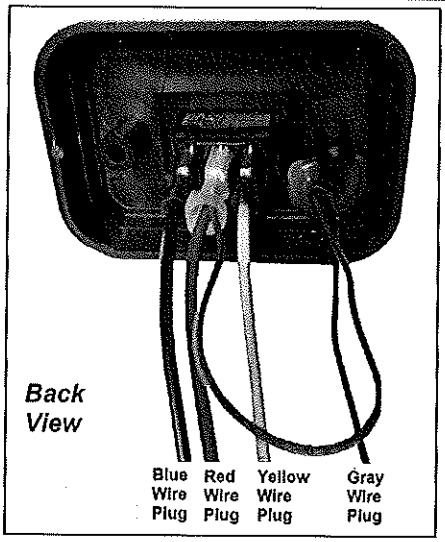
Wiring Information



1510000238-XX Rocker Switch Harness

Figure 19



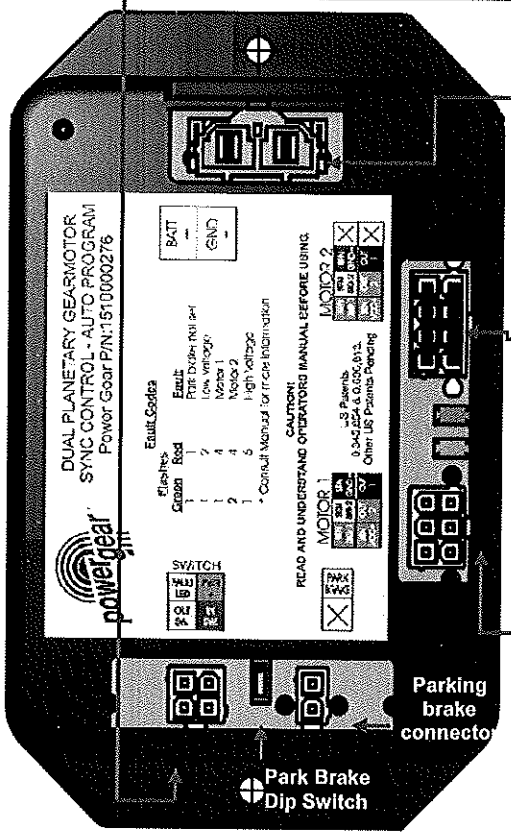
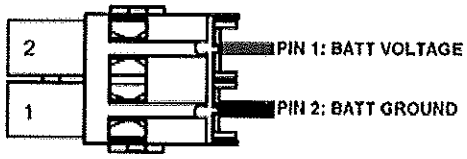


Figure 22 *Control Box 1510000276*



Power Harness 1510000233

Figure 20 *1510000233 Power Harness*

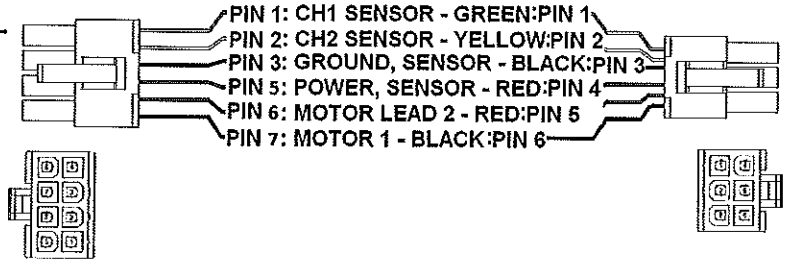


Figure 21 *1510000277 control to motor harness*

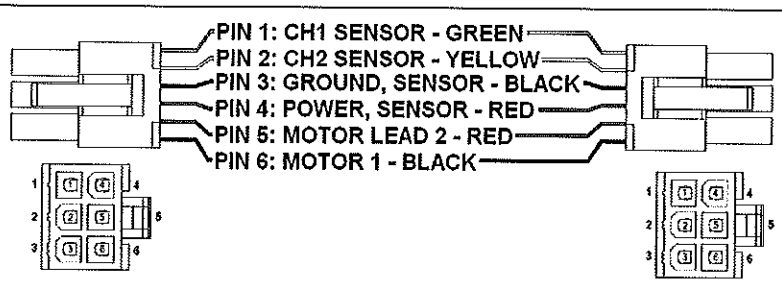


Figure 21 *1510000194 control to motor harness*

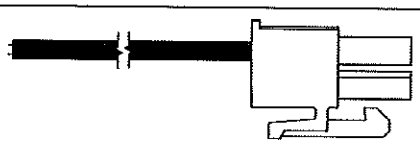


Figure 24 *Park Brake Harness 1510000237-XX*

ADDITIONAL REFERENCE PUBLICATIONS LOCATED AT WWW.POWERGEARUS.COM

Document #	Description
3010002814	Owner's Manual Slim Rack In Wall Slide out System
82-S0533	Trouble Shooting Slide Out Control Box 1510000236 or 1510000276 For In-Wall Slim Rack Systems
82-S0534	Encoder Test 1 Dual Planetary Gear Motor Sync with Control Box 1510000236 or 1510000276
82-S0535	Encoder Test 2 Dual Planetary Gear Motor Sync with Control Box 1510000236 or 1510000276

Power Gear Limited Warranty

Power Gear Limited Warranty Policy
(Original equipment)

Power Gear warrants its manufacturer installed Power Gear and Kwikee brand products to be free of material and workmanship defects for two (2) years from the date of the original sale of the motor vehicle/recreation vehicle (RV) in which they are installed, provided that these products are installed and operated according to the purpose for which they were intended, designed and specified. This warranty does not cover product that is incorrectly installed, or upon examination has been misused or abused by the vehicle owner.

Warranty coverage includes:

- Repair or replacement of the defective component(s) of the malfunctioning system. Entire systems are not replaced unless either the faulty component is not replaceable or all components comprising the system are defective.
- Labor costs for the diagnosis and repair work associated with the repair or replacement of the defective component(s) by a licensed servicing center.

This warranty does not include payment or reimbursement of:

- Normal system maintenance and preventive maintenance.
- Mobile service or towing expenses related to field repairs and/or the transportation of the vehicle to a repair facility.
- Living or travel related expenses incurred in the repair of the vehicle.

By filing a warranty claim in accordance with Power Gear's Warranty Administration Procedure, service providers agree that the replacement part(s) will be provided to the vehicle owner at no cost and that the total labor charges for the completion of warranty repairs will be billed to Power Gear. Accordingly, under no circumstances will Power Gear reimburse the vehicle owner directly for costs covered under this warranty policy.

Warranty coverage runs concurrently with any vehicle warranty period provided by the manufacturer, and is transfer-able to subsequent owners. Proof of original date of purchase of vehicle, and if applicable subsequent owner's proof of purchase, is required to confirm coverage.

Power Gear reserves the right to change the terms of our warranty policy at any time. For the most current information on product warranty and our warranty claim procedure, visit our website at www.powergearus.com.

Encoder Test 1

Dual Planetary Gear Motor Sync with Control Box 1510000236 or 1510000276

 #82-S0534, Rev. 0C

Read, understand, and follow all instructions in this test before starting.

Encoder Test 1 for In-Wall slide out system with Auto- Program control box 1510000236 or 1510000276

Test 1: Use this test only if the slide out room can be moved at least 12" of travel (see manual #3010002813).

1. Write down the number of flashes indicated by the red and green led's on the control box for reference later.
2. Press the wall switch to move the room in or out for 12" of travel or more.

3. If the room will not operate in emergency retract mode, proceed to Test 2 (document number 82-S0535), or contact Power Gear at www.powergearus.com.

Note: All the harnesses need to stay plugged in during this test.

⚠ WARNING

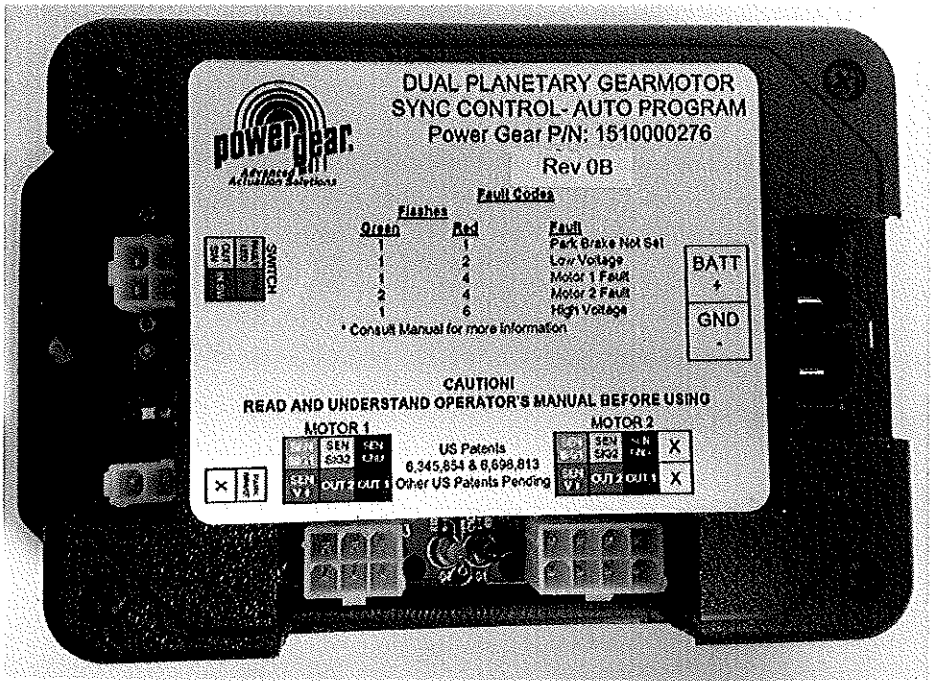
Always make sure that the slide out room path is clear of people and objects before and during operation of the slide out room. Always keep away from the slide out rails when room is being operated. The gear assembly may pinch or catch on loose clothing

⚠ CAUTION

Damage to the room can occur during over travel of the slide out rails. Do not allow rails to become too far out of sync with each other. This will cause the room to bind and may cause damage to the slide out rail.

⚠ WARNING

If the room was moved while the encoder was unplugged, the room stops will need to be reset. Consult the correct manual or TIP Sheet for the proper procedure.



NOTE

Note: All the harnesses need to stay plugged in during this test.

CAUTION

Damage to the room can occur during over travel of the slide out rails. Do not allow rails to become too far out of sync with each other. This will cause the room to bind and may cause damage to the slide out rail.

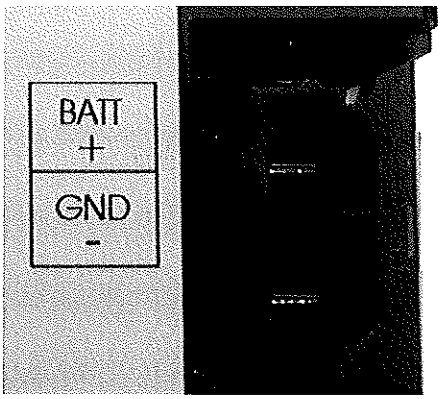
WARNING

If the room was moved while the encoder was unplugged, the room stops will need to be reset. Consult the correct manual or TIP Sheet for the proper procedure

Step 1: Verifying incoming voltage and ground to the control box.
The slide out control main power connector needs a minimum of +12 VDC and a good ground to operate correctly. **This requires the coach engine to be running.** See note to left.
To test the 1510000236 control, back probe the power connector using a multi-meter and check for a minimum of +12 VDC at the main power connection. Probe between the "BATT +" and "GND –" See Figure 1

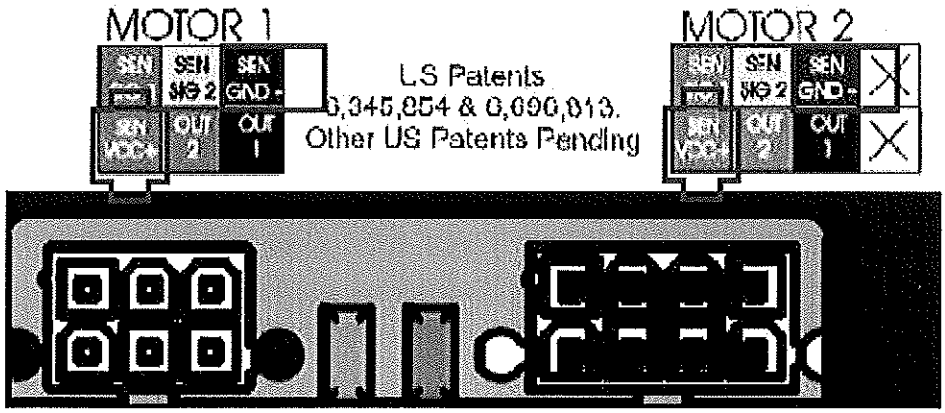
If no power or ground or less than 12 DC Volts is measured between the pins, contact the OEM for the power and ground sources.

Figure 1



Step 2: Verifying the control box is sending power and ground to the encoder. See note to left. Set multi-meter to DC volts, and back probe at the "motor 1" and "motor 2" connectors. To test motor 1 encoder, probe between "SEN-VCC" (power) and "SEN-GND" (ground) at motor 1 connector. To test motor 2 encoder, probe between "SEN-VCC" (power) and "SEN-GND" (ground) at motor 2 connector. This voltage should read 10-12VDC. See Figure 2

Figure 2



NOTE

Note: All the harnesses need to stay plugged in during this test.

WARNING

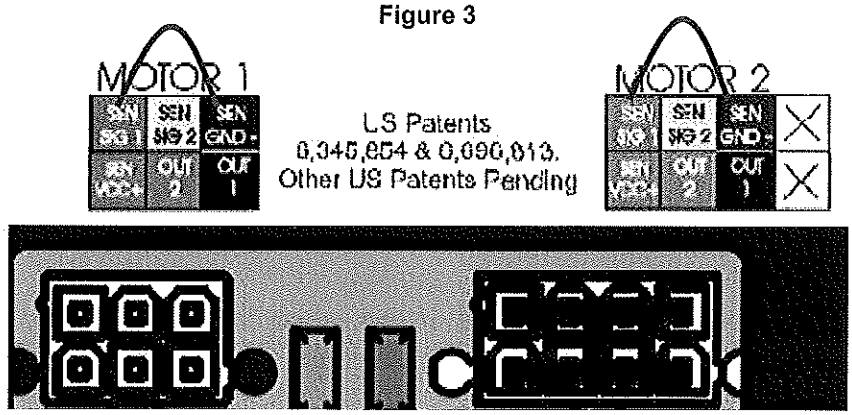
Damage to the slide out can occur during over travel of the slide out. Do not allow the rails to become too far out of sync with each other. This will cause the slide out to bind and may cause damage to the slide out rails.

WARNING

If the slide out was moved while the encoder was unplugged, the room stops will need to be reset. Consult the correct manual or TIP sheet for the proper procedure.

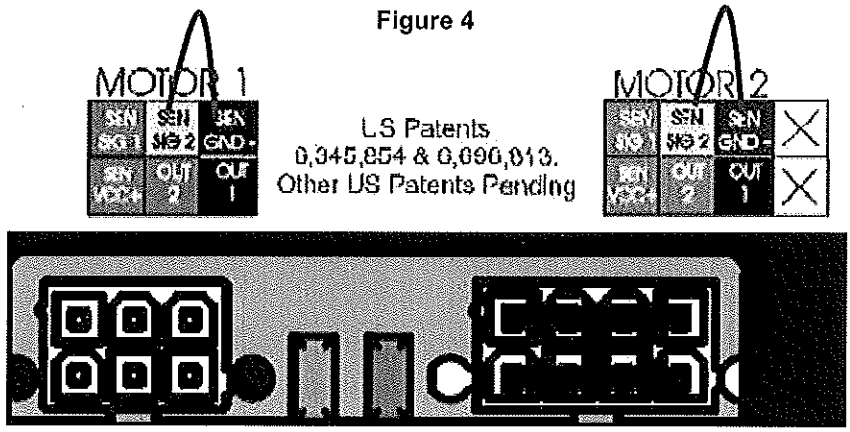
Step 3: Checking the first encoder signal. There are 2 signal wires per encoder. See note to left.
Set multi-meter to AC Volts, and while the room is moving back probe at the controller sensor connection. For the motor 1 encoder, probe between the "SEN-GND" and "SEN SIG 1" at motor 1 connector. For the motor 2 encoder probe between the "SEN -GND" and "SEN SIG 1" at motor 2 connector.
See Figure 3. This should be a steady AC signal. If there is a steady AC Voltage, proceed to step 5.

Figure 3



Step 3 Continued: Checking for the second encoder signal.
Set multi-meter to AC Volts, and while the room is moving, back probe at the controller sensor connection. For motor 1 encoder probe between the "SEN-GND" and "SEN SIG 2" at motor 1 connector. For motor 2 encoder, probe between the "SEN-GND" and "SEN SIG 2" at motor 2 connector. See Figure 4. This should be a steady AC signal. If there is a steady AC Voltage, proceed to step 5.

Figure 4



Step 4: Checking the harness continuity and all connections.
If there is no voltage reading from the encoder or the AC Voltage reading was **NOT** steady, check the following:
A: Check the continuity of the harness between the control box encoder pins and the motor encoder pins. If the harness does not have continuity, then replace the bad wire, or the harness. The harness can also be checked from pin to pin for continuity, and from each pin to ground. There should not be continuity to ground, or pin to pin.

B: Check the connections at the motor and control box. Repair any loose connections or loose pins. If the continuity of all the harness wires tests good, and connections are good, then replace the motor assembly. See the motor label for the Power Gear part number for replacement.

Step 5: If the tests in step 3 show a steady AC Voltage at the controller sensor connection, please contact Power Gear at www.powergearus.com for further diagnostic.

Additional Reference Information located At www.powergearus.com

Document #	Description
3010002813	Owner's manual slim rack in-wall slide out system control box part number 1510000236 or 1510000276
3010002814	Installation and service manual slim rack in-wall slide out system control box 1510000236 or 1510000276
82-S0533	Trouble shooting slide out control box 1510000236 or 1510000276 for in-wall slim rack systems
82-S05535	Encoder test 2 dual planetary gear motor sync control part number 1510000236 or 1510000276

Encoder Test 2

Dual Planetary Gear Motor
Sync with Control Box
1510000199

 Tip Sheet # 82-S0532, Rev. OB

Bunk Lift In-wall Encoder Testing

Read, understand, and follow all instructions in this test before starting.

Test 2: This is to be used when the bunk lift will not operate normally with the touch pad or if the bunk is already retracted up and the override mode (see owner's manual # 3010002675for override mode) cannot be performed. If the bunk will operate with the touch pad or the bunk is down and the override mode can be performed, proceed to Test 1 (Document # 82-S0531), available on our website at www.lci1.com.

⚠ WARNING

Always make sure that the bunk lift path is clear of people and objects before and during operation of the bunk lift. Always keep away from the bunk lift rails when the bunk is being operated. The gear assembly may pinch or catch on loose clothing.

When the encoder is unplugged and the motor shafts moving, the bunk stops will need to be reset. Consult the correct manual or TIP sheet for the proper procedure.

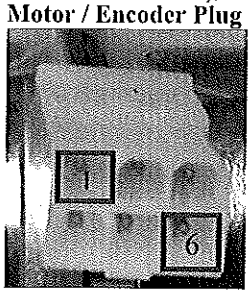
⚠ NOTE

Power Gear will not be liable for excessive labor time required to gain access to Power Gear components.

⚠ Warning

12 volt automotive batteries contain sulfuric acid which can cause severe burns. Avoid contact with the skin, eyes and clothing. 12 volt automotive batteries produce hydrogen gas which is explosive; keep cigarettes, open flames and sparks away from the battery at all times.

Motor / Encoder Plug



Fault Code: Code 4 on control 1510000199
4 Wire Internal Encoder Testing

Indicates bad or loose connection on motor to control harness, defective motor to control harness, open or shorted slide out motor, or open or shorted slide out motor encoder. On the touch pad, the Green LED flashes to identify which motor encoder is in fault (see owner's manual 3010002679).

Complete Motor Assembly

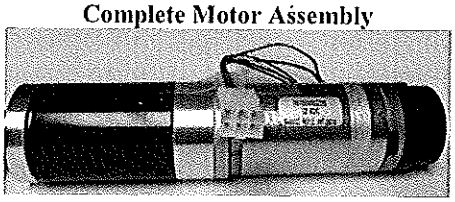


Figure 1

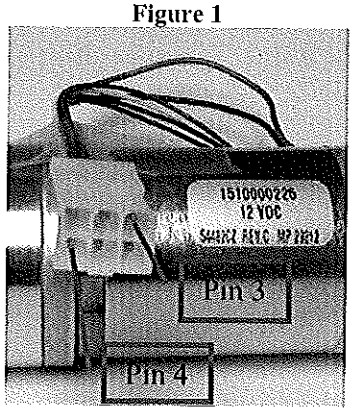
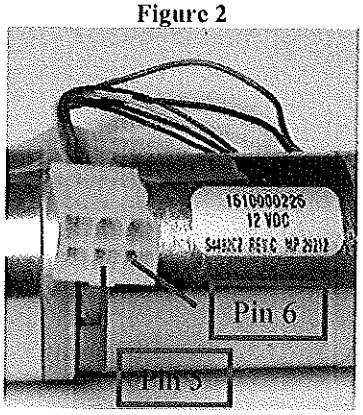


Figure 2



STEP 1: Removing the Motor/Encoder Assembly from the rail assembly.

NOTE: *Depending on the accessibility, it may be necessary to remove the interior motor cover. The motor is located near the gear rack on the wall.*

For questions on supporting the bunk or accessing the rail assembly, contact the OEM.

STEP 2: Applying 12VDC and Ground to the Motor / Encoder Plug.

Using a fully charged +12V DC battery: Apply 12V DC to the motor / encoder plug pin 4 (red thinner gauge wire).

Apply a good ground to the motor/encoder plug pin 3 (black thinner gauge wire).

See Figure 1. This will provide power to the encoder.

Using a multi-meter, back probe between Pin 4 and Pin 3 at the motor / encoder plug to verify there is 12V DC and Ground going to the encoder. ***See Figure 1.***

Apply 12V DC to the motor/encoder connector on the red wire pin 5. Apply a good Ground to the motor/encoder connector on the black wire. This will provide power to the motor and will cause it to operate. ***See figure 2.***

Caution: The motor shaft will turn when the motor is operating.

⚠ WARNING

Always make sure that the bunk lift path is clear of people and objects before and during operation of the bunk lift. Always keep away from the bunk lift rails when the bunk is being operated. The gear assembly may pinch or catch on loose clothing.

⚠ NOTE

Power Gear will not be liable for excessive labor time required to gain access to Power Gear components.

⚠ Warning

12 volt automotive batteries contain sulfuric acid which can cause severe burns. Avoid contact with the skin, eyes and clothing. 12 volt automotive batteries produce hydrogen gas which is explosive; keep cigarettes, open flames and sparks away from the battery at all times.

STEP 3: Checking for the encoder signal.

Using a multi-meter set on AC Volts, back probe between pin 3 and pin 1 at the Encoder Connector. **See Figure 3** Check for a steady AC voltage reading.

Using a multi-meter set on AC Volts, back probe between pin 3 and pin 2 at the Encoder Connector. **See Figure 4** Check for a steady AC voltage reading.

If there is a steady AC voltage, proceed to ***Step 4***.

If there is NOT a steady AC voltage reading, or there is no voltage reading, replace the motor assembly. See the motor label or the rail assembly label for the Power Gear part number for replacement.

Figure 3

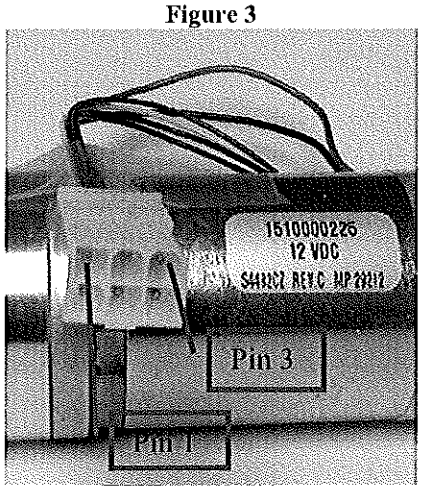
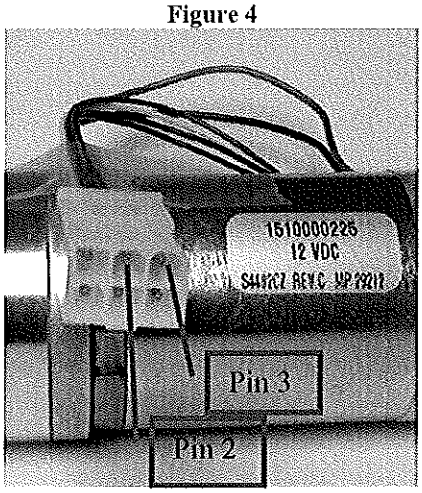


Figure 4



Step 4: If the test in STEP 3 showed a steady AC Voltage at the Encoder Connector, contact Lippert Components Technical Service at www.lci1.com for further diagnostic before proceeding.

Additional Reference Information located At www.lci1.com

Document #	Description:
3010002678	Owner's manual slim rack in-wall bunk lift control 1510000199
3010002675	Installation and service manual slim rack bunk lift 1510000199
82-S0530	Trouble shooting bunk lift control box 1510000199 Slim Rack
82-S0531	Encoder test 1 dual planetary motor sync control 1510000199

Encoder Test 2

Dual Planetary Gear Motor
Sync with Control Box
1510000236 or 1510000276

 Tip Sheet # 82-S0535, Rev. OB

⚠ WARNING

Always make sure that the slide out room path is clear of people and objects before and during operation of the slide out room. Always keep away from the slide out rails when the room is being operated. The gear assembly may pinch or catch on loose clothing.

When the encoder is unplugged and the motor shafts moving, the room stops will need to be reset. Consult the correct manual or TIP sheet for the proper procedure.

⚠ NOTE

Power Gear will not be liable for excessive labor time required to gain access to Power Gear components.

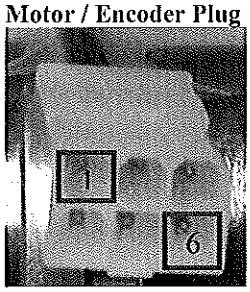
⚠ Warning

12 volt automotive batteries contain sulfuric acid which can cause severe burns. Avoid contact with the skin, eyes and clothing. 12 volt automotive batteries produce hydrogen gas which is explosive; keep cigarettes, open flames and sparks away from the battery at all times.

Read, understand, and follow all instructions in this test before starting.
Encoder Test 2 for In-Wall system with Auto-Program control box 1510000236

Test 2: This is to be used when the slide-out room will not operate normally with the wall switch or room will not move 12" of travel. If the room will operate with the wall switch or the room will travel 12", proceed to Test 1 (Document # 82-S0534), available on our website at www.powergearus.com.

Motor / Encoder Plug



Fault Code: Code 4 on control 1510000236 or 1510000276

4 Wire Internal Encoder Testing

Indicates bad or loose connection on motor to control harness, defective motor to control harness, open or shorted slide out motor, or open or shorted slide out motor encoder. On the control box, the Green LED flashes to identify which motor encoder is in fault (see owner's manual 3010002813).

Complete Motor Assembly

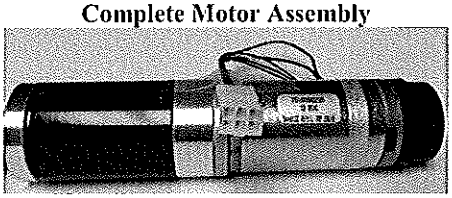
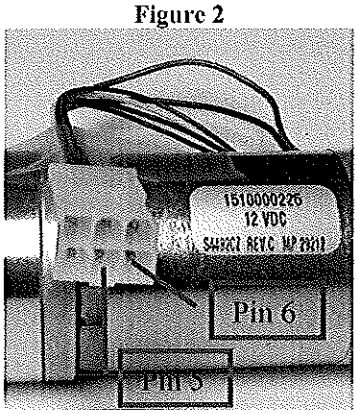


Figure 1

Figure 2



STEP 1: Removing the Motor/Encoder Assembly from the rail assembly.

NOTE: *Depending on the accessibility, it may be necessary to remove the interior motor cover or the exterior motor cover. The motor is located at the top of the in-wall rail.*

For questions on supporting the room or accessing the rail assembly, contact the OEM.

STEP 2: Applying 12VDC and Ground to the Motor / Encoder Plug.

Using a fully charged +12VDC battery:
Apply 12VDC to the motor / encoder plug pin 4 (red thinner gauge wire).

Apply a good ground to the motor / encoder plug pin 3 (black thinner gauge wire).

See Figure 1. This will provide power to the encoder.

Using a multi-meter, back probe between Pin 4 and Pin 3 at the motor / encoder plug to verify there is 12VDC and Ground going to the encoder. ***See Figure 1.***

Apply 12VDC to the motor / encoder connector on the red wire pin 5. Apply a good Ground to the motor / encoder connector on the black wire. This will provide power to the motor and will cause it to operate. ***See figure 2***

Caution: The motor shaft will turn when the motor is operating.

1217 E. 7th St.
Mishawaka, IN 46544
www.powergearus.com

⚠ WARNING

Always make sure that the slide out room path is clear of people and objects before and during operation of the slide out room. Always keep away from the slide out rails when the room is being operated. The gear assembly may pinch or catch on loose clothing.

⚠ NOTE

Power Gear will not be liable for excessive labor time required to gain access to Power Gear components.

⚠ Warning

12 volt automotive batteries contain sulfuric acid which can cause severe burns. Avoid contact with the skin, eyes and clothing. 12 volt automotive batteries produce hydrogen gas which is explosive; keep cigarettes, open flames and sparks away from the battery at all times.

STEP 3: Checking for the encoder signal.

Using a multi-meter set on AC Volts, back probe between pin 3 and pin 1 at the Encoder Connector. **See Figure 3** Check for a steady AC voltage reading.

Using a multi-meter set on AC Volts, back probe between pin 3 and pin 2 at the Encoder Connector. **See Figure 4** Check for a steady AC voltage reading.

If there is a steady AC voltage, proceed to ***Step 4***.

If there is NOT a steady AC voltage reading, or there is no voltage reading, replace the motor assembly. See the motor label or the rail assembly label for the Power Gear part number for replacement.

Figure 3

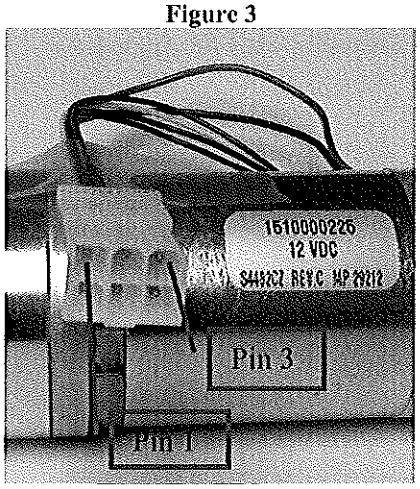
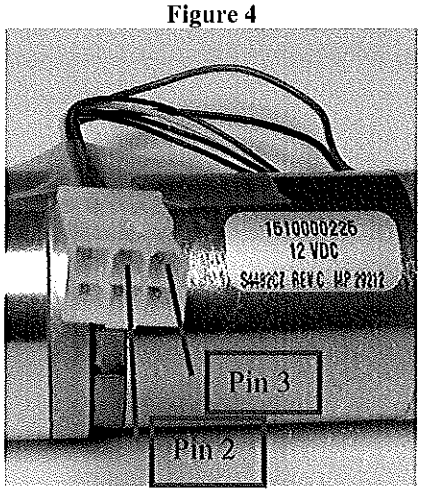


Figure 4



Step 4: If the test in STEP 3 showed a steady AC Voltage at the Encoder Connector, contact Power Gear Technical Serviced at www.powergearus.com for further diagnostic before proceeding.

Additional Reference Information located At www.powergearus.com

Document #	Description:
3010002814	Owner's manual slim rack in-wall slide out system 1510000236 or 1510000276
3010002813	Installation and service manual slim rack slide out 1510000236 or 1510000276
82-S0533	Trouble shooting slide out control box 1510000236 or or 1510000276
82-S0534	Encoder test 1 dual planetary motor sync control 1510000236 or 1510000276

1217 E. 7th St.
Mishawaka, IN 46544
www.powergearus.com

DESIGN SPECIFICATION:

1. APPLICATION IS TO CONTROL A 12 VDC REVERSIBLE PERMANENT MAGNET GEAR MOTOR WITH POSITIONAL FEEDBACK CAPABILITIES. ONE CONTROL FOR ANY SIZE GEAR MOTOR FOR ANY APPLICATION. SIZE AND WEIGHT MAY VARY, GEAR MOTOR SUPPLIERS MAY VARY.
2. CONFORMABLY COATED PC BOARD.
3. RELAY RATED TO HANDLE 30A FOR 1 HOUR.
4. MUST IGNORE MOTOR INRUSH AND INDUCTIVE DISCHARGE CURRENTS.
5. LOW VOLTAGE SHUTDOWN SET AT 11.5 VOLTS.
6. RFI IMMUNITY PER CE 801-3.
7. TRANSIENT IMMUNITY PER CE 801-4.
8. CONTROL MUST BE COMPATIBLE WITH POWER GEAR ROCKER SWITCH (P/N 1510000240-XX) OR EQUIVALENT.
9. ESD IMMUNITY PER CE 801-2.
10. MUST OPERATE BETWEEN 8.5 AND 16 VDC MEASURED AT CONTROL TERMINALS.
11. CAN BE FULLY ENCLOSED OR PC BOARD BASE ONLY WITH MOUNTING SCREW PROVISION.
12. VENDOR IDENTIFICATION SYMBOL IMPRINTED ON BOARD. VENDOR ID TO BE VISIBLE WITH BACK OF CONTROL REMOVED.
13. REVERSE POLARITY PROTECTION.
14. FAILURE MODE: BOTH RELAY CONTACTS OPEN OR GROUNDED.
15. MUST HAVE LIPPERT DECAL.
16. REFER TO POWER GEAR ENGINEERING CONTROLS FILE FOR CALIBRATION PROCEDURE AND FAULT CODES.
17. CONTROL MUST BE ABLE TO DETECT SEVERAL FAULTS. THESE FAULTS ARE LISTED IN THE SERVICE / INSTALLATION MANUAL P/N 3010002588
18. MOTOR STALL PERIOD FOR 2 SECONDS.
19. FULL POWER TO MOTOR FOR 3 SECONDS.

FUNCTIONAL DESCRIPTION:

-+12VDC SWITCHING USING ROCKER SWITCH (P/N 140-1197) OR EQUIVALENT.
-THE CONTROL WILL DRIVE A REVERSIBLE 12V DC GEAR MOTOR.
-WHEN THE SWITCH IS DEPRESSED, THE CONTROL WILL ENERGIZE THE MOTOR SO THE OUTPUT SHAFT ON THE GEAR BOX WILL ROTATE UNTIL:

1. THE SWITCH IS RELEASED -OR-
2. THE END OF ROOM TRAVEL IS REACHED AND AS LONG AS THE SWITCH REMAINS DEPRESSED THE CONTROL WILL HOLD THE MOTOR IN THE OFF STATE. THE CONTROL WILL BE RESET WHEN THE BUTTON IS RELEASED. THE CONTROL WILL RESPOND TO THE NEXT SWITCH INPUT IMMEDIATELY.

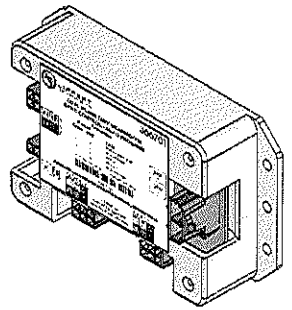
VENDOR ADVISORY NOTES:

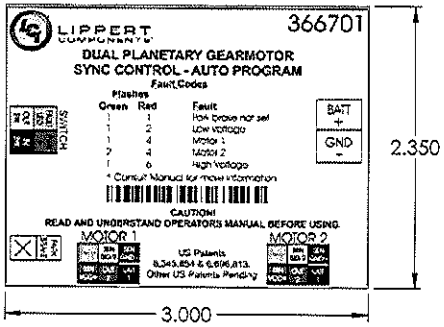
1. VENDOR TO FUNCTIONALLY TEST 100% OF CONTROLS.
2. DYNAMICS OF LOAD MAY VARY WITH SIZE, WEIGHT, AGE AND NORMAL WEAR OF MECHANISM.
3. ALL REVISIONS MUST BE APPROVED BY "LIPPERT ENGINEERING"

NOTES:

1. ALL DIMENSIONS FOR REFERENCE ONLY.
2 APPROVED VENDOR: IDS

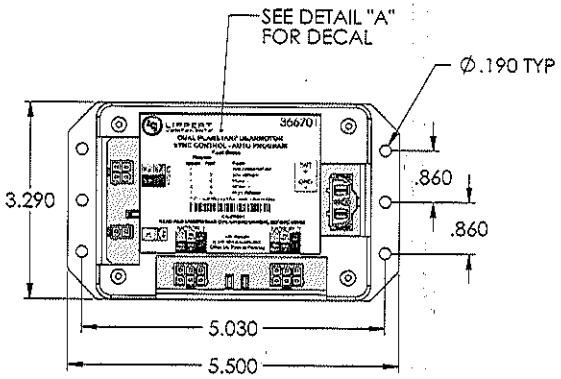
REVISION HISTORY					
REV	DATE	DESCRIPTION	CA	DWR	APVD
B	9/22/2016	CHANGE LABEL TO SHOW LCI PART NUMBER	CA-0044423	MLL	MW
C	11/6/2017	UPDATED WEIGHT & DESCRIPTION.	CA-0095760	KWL	VL

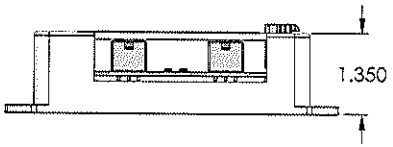




DETAIL "A"

DECAL MATERIAL: 41006 WHITE VINYL (4 MIL) OR EQUIVALENT.
ADHESIVE: PERMANENT ACRYLIC.
COLOR AND FINISH: WHITE BACKROUND WITH BLACK ARTWORK, LAMINATED .001 THICK POLYESTER TO GIVE .004/.005 TOTAL THICKNESS PLUS ADHESIVE AND BACK SPLIT.





REFERENCE NUMBER:	PG 1510000236
MATERIAL TYPE:	
SURFACE QUALITY:	
DECIMAL:	
FINISH GOOD WEIGHT:	0.216
BLANK WEIGHT:	0.035
BLANK SIZE:	X

TITLE: ELEC CNTLR IN WALL AUTO PRGMG SWITCH

UNLESS OTHERWISE SPECIFIED:
1. ALL DIMENSIONS ARE IN INCHES
2. BREAK SHARP EDGES & DEBURR
3. MATERIAL & FINISH TO BE AS NOTED OR SUBSTITUTED WITH AN APPROVED AND TESTED EQUIVALENT

FILLETS R.015 | FINISH √

THIRD ANGLE PROJECTION

TOLERANCES (EXCEPT AS NOTED)
DECIMAL .X ±.1 .XX ±.03 .XXX ±.015
FRACTIONAL ±1/16
ANGULAR ±1°

LIPPERT COMPONENTS

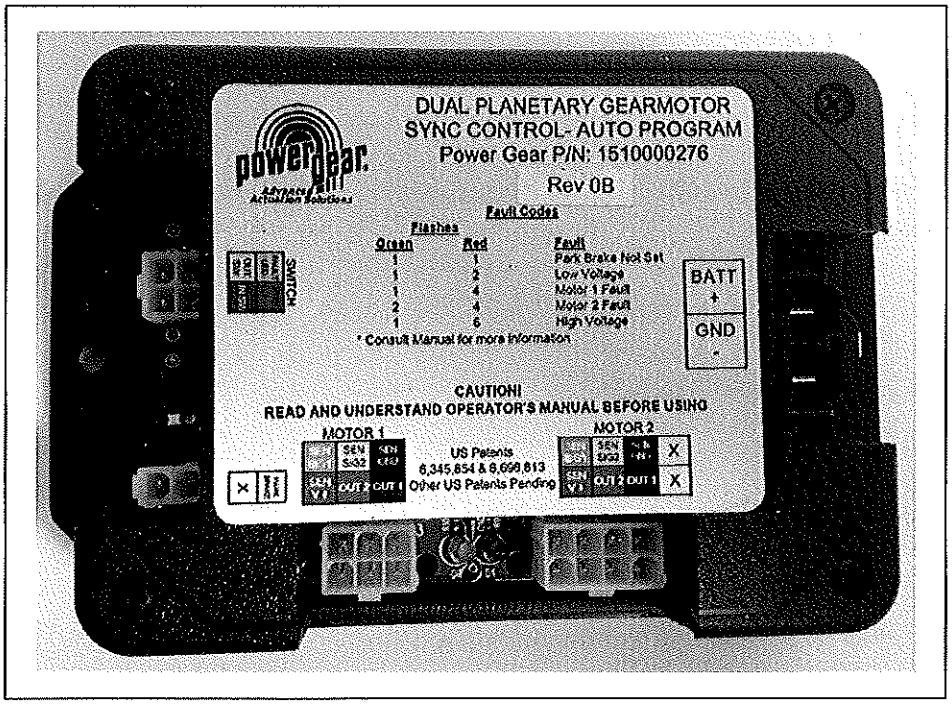
DWG. NO.	SIZE	DATE:	REV.
366701	B	12/17/2014	C
		SCALE: 1:1	

DRAWN BY	CHECKED BY	APPROVED BY	SHEET	OF
VJO	VJO		1	1

Trouble Shooting Control Box 1510000236 or 1510000276 For In-Wall Slim Rack Systems

 #82-S0533, Rev. OD

Read, understand and follow all instructions in Installation and Service Manual 3010002813 before starting. This trouble shooting is for the In-Wall Slim Rack Auto-Program Slide Out System with control box part number 1510000236 or 1510000276



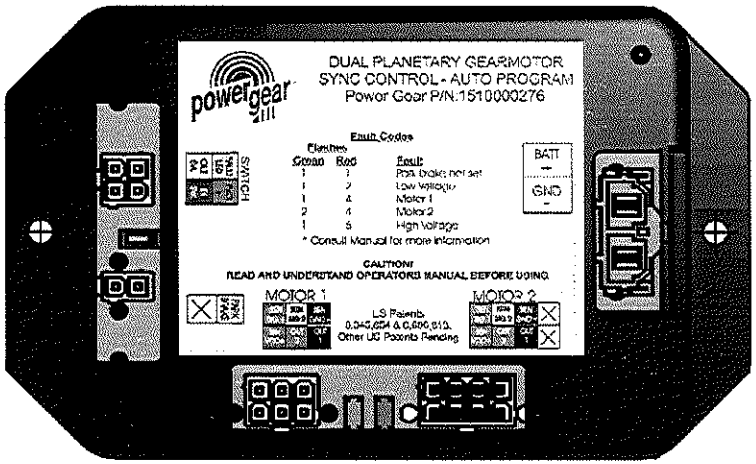
⚠ WARNING

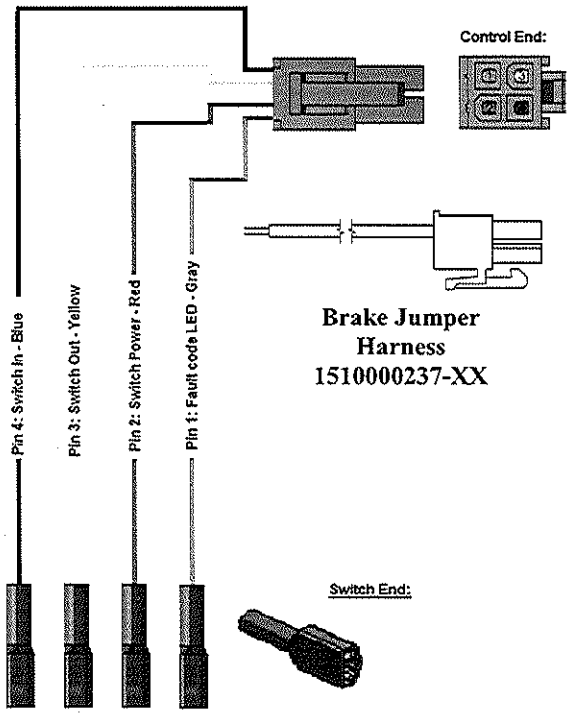
Always make sure that the room path is clear of people and objects before and during operation of the slide out room. Always keep away from the slide out rails when room is being operated. The gear assembly may pinch or catch on loose clothing.

1217 E. 7th St.
Mishawaka, IN 46544
www.powergearus.com

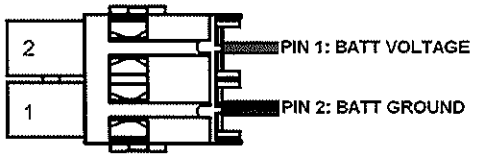
Wiring Diagram

Slide Out Control Box 1510000236



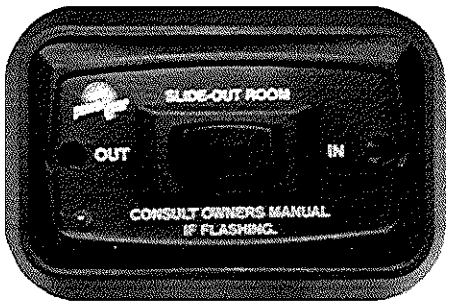


Brake Jumper Harness 1510000237-XX

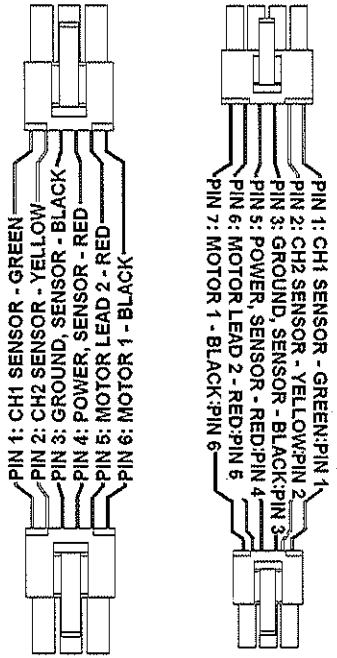


Power Harness 1510000233

Control to Touch Pad Harness 1510000238

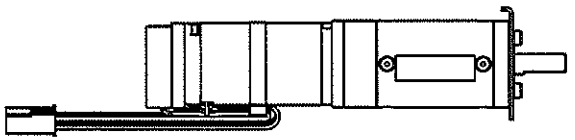


Wall Switch 1510000240

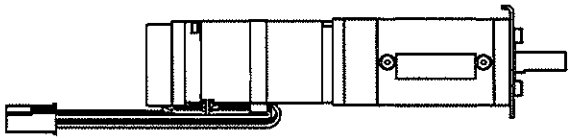


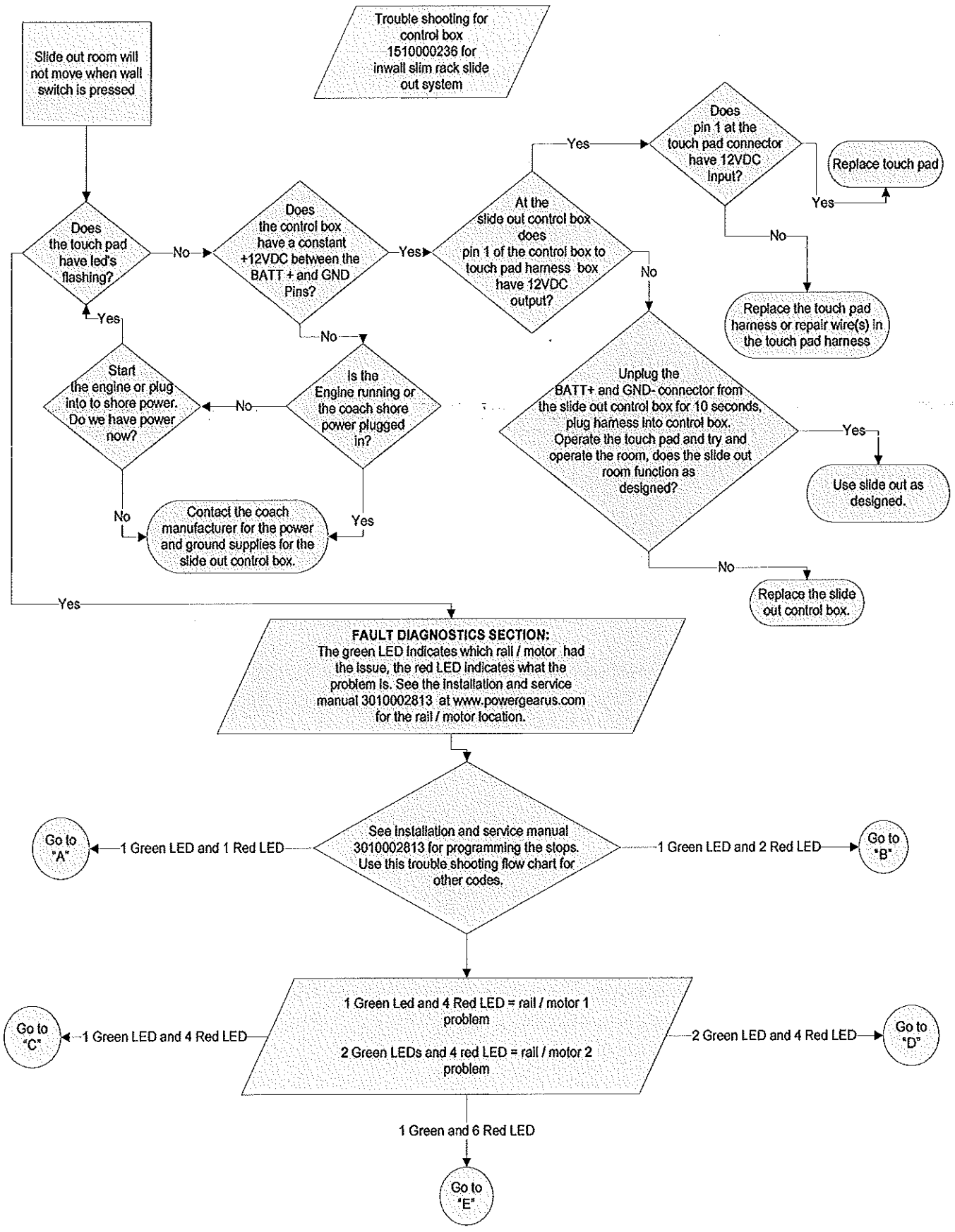
Control to Motor Harnesses
1510000194 shown left,
1510000277 shown right

In-wall Motor 2



In-wall Motor 1




Trouble shooting for control box 1510000236 for inwall slim rack slide out system
Slide out room will not move when wall switch is pressed
Does the touch pad have led's flashing?
No
Does the control box have a constant +12VDC between the BATT + and GND Pins?
Yes
At the slide out control box does pin 1 of the control box to touch pad harness box have 12VDC output?
Yes
Does pin 1 at the touch pad connector have 12VDC Input?
Yes
Replace touch pad
No
Replace the touch pad harness or repair wire(s) in the touch pad harness
No
Unplug the BATT+ and GND- connector from the slide out control box for 10 seconds, plug harness into control box. Operate the touch pad and try and operate the room, does the slide out room function as designed?
Yes
Use slide out as designed.
No
Replace the slide out control box.
Yes
Start the engine or plug into to shore power. Do we have power now?
No
Is the Engine running or the coach shore power plugged in?
No
Yes
Contact the coach manufacturer for the power and ground supplies for the slide out control box.
Yes
FAULT DIAGNOSTICS SECTION:
The green LED indicates which rail / motor had the issue, the red LED indicates what the problem is. See the installation and service manual 3010002813 at www.powergearus.com for the rail / motor location.
See installation and service manual 3010002813 for programming the stops. Use this trouble shooting flow chart for other codes.
1 Green LED and 1 Red LED
Go to "A"
1 Green LED and 2 Red LED
Go to "B"
1 Green Led and 4 Red LED = rail / motor 1 problem
2 Green LEDs and 4 red LED = rail / motor 2 problem
1 Green LED and 4 Red LED
Go to "C"
2 Green LED and 4 Red LED
Go to "D"
1 Green and 6 Red LED
Go to "E"

Run the room in the opposite direction. If the room continues to move in the opposite direction, remove the obstruction. If the room stops moving , observe the fault code on touch pad and refer back to FAULT DIAGNOSTIC SECTION in this flow chart.

Possible obstructions

Inspect interior / exterior END BRACKETS , are they parallel with the gear rack?

No → Make the END BRACKETS parallel with the GEAR RACK.

Yes

Inspect Interior /exterior BULB SEAL for damage by the gear rack, is the bulb seal damaged?

Yes → Replace BULB SEAL or adjust BULB SEAL(S) clearance to GEAR RACK.

No

Inspect Interior / exterior WIPER SEAL for damage by gear rack, is the wiper seal damaged?

Yes → Replace WIPER SEAL or adjust WIPER SEAL(S) clearance to GEAR RACK.

no

Verify the FLAT FLANGE and the C-CHANNEL do not have any separation between them, are they tight to each other?

No → Loosen FLAT FLANGE screws and remove obstruction, tighten FLAT FLANGE screws back down.

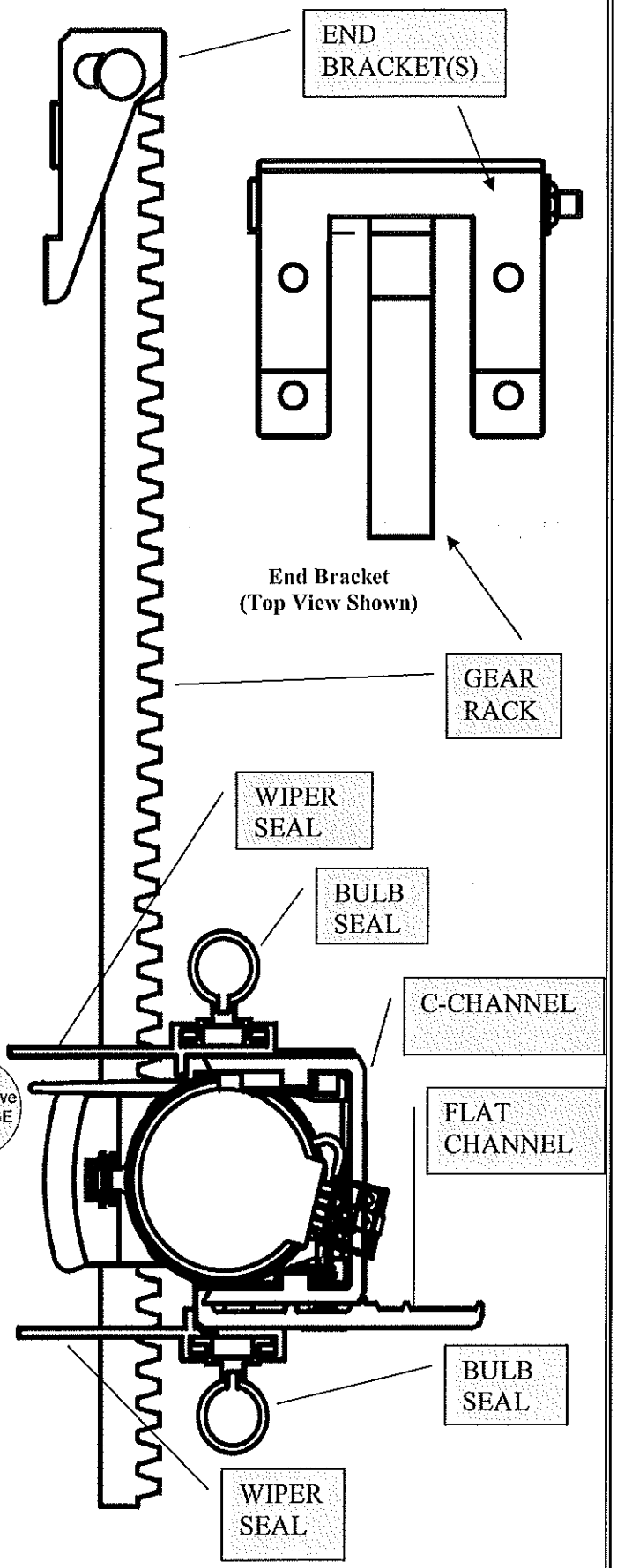
Yes

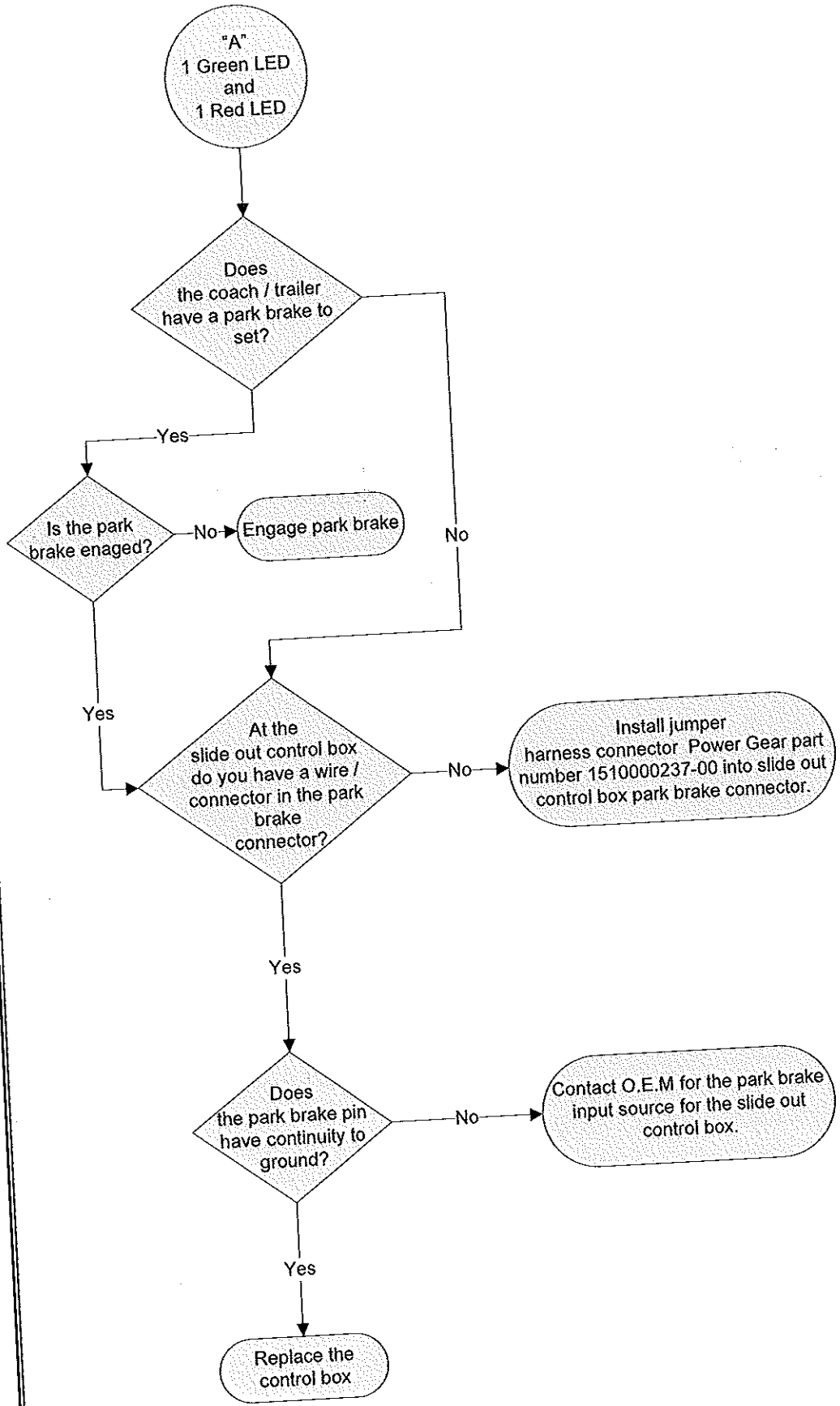
Inspect GEAR RACK for damaged or foreign debris, is the GEAR RACK clear of debris?

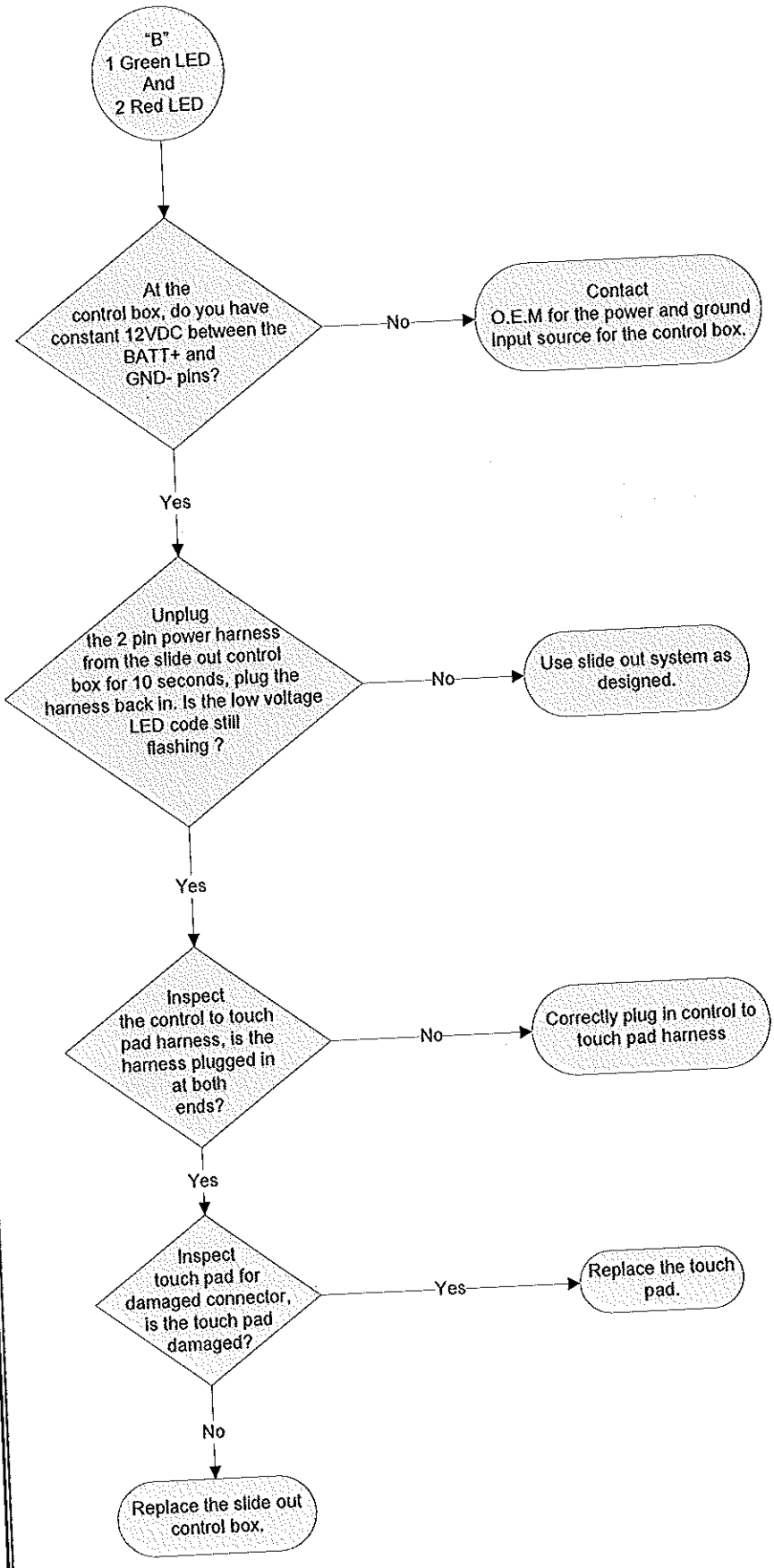
No → Blow out any debris from GEAR RACK and apply a dry lube to prevent and / or stop squeaking.

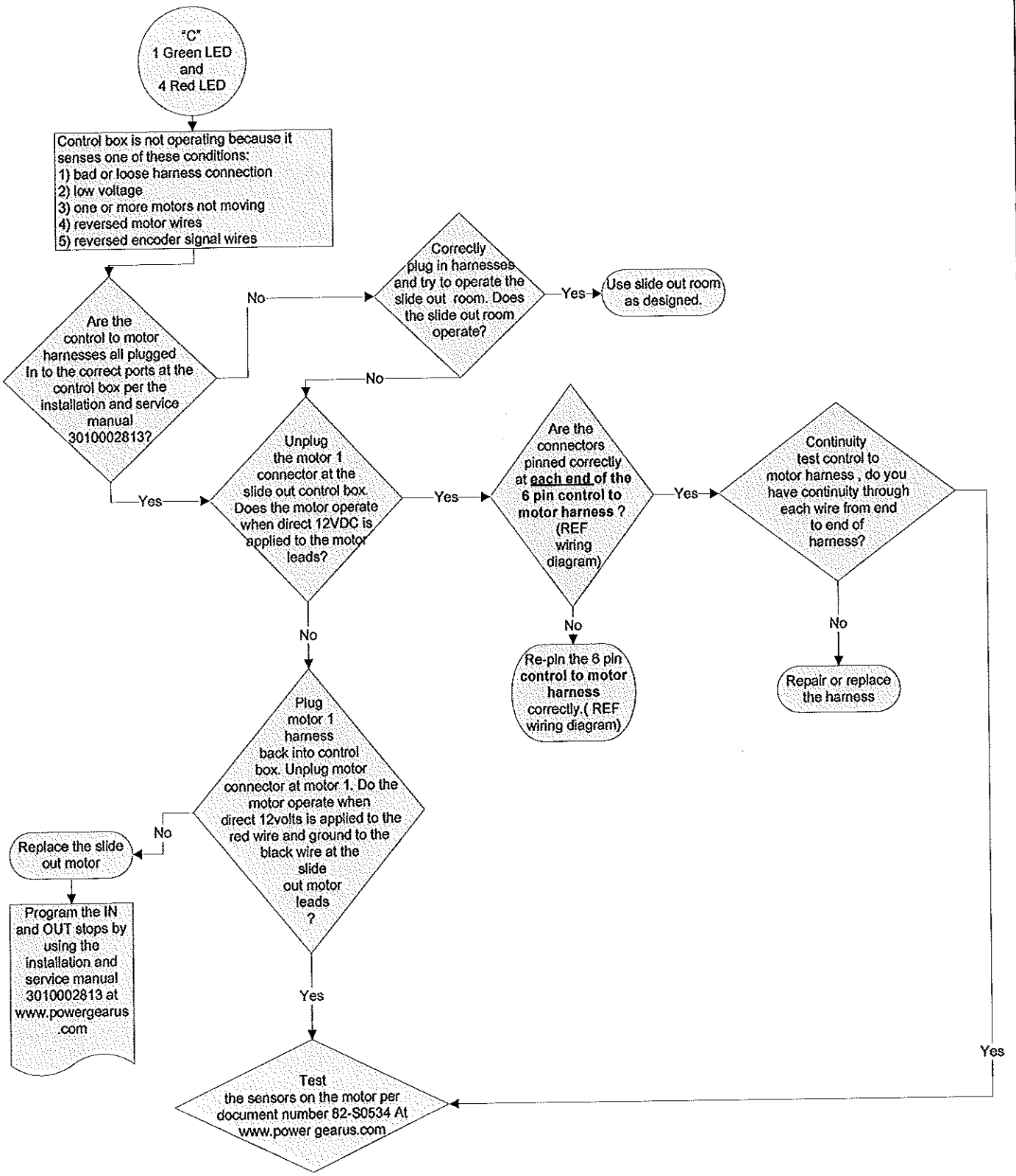
Yes

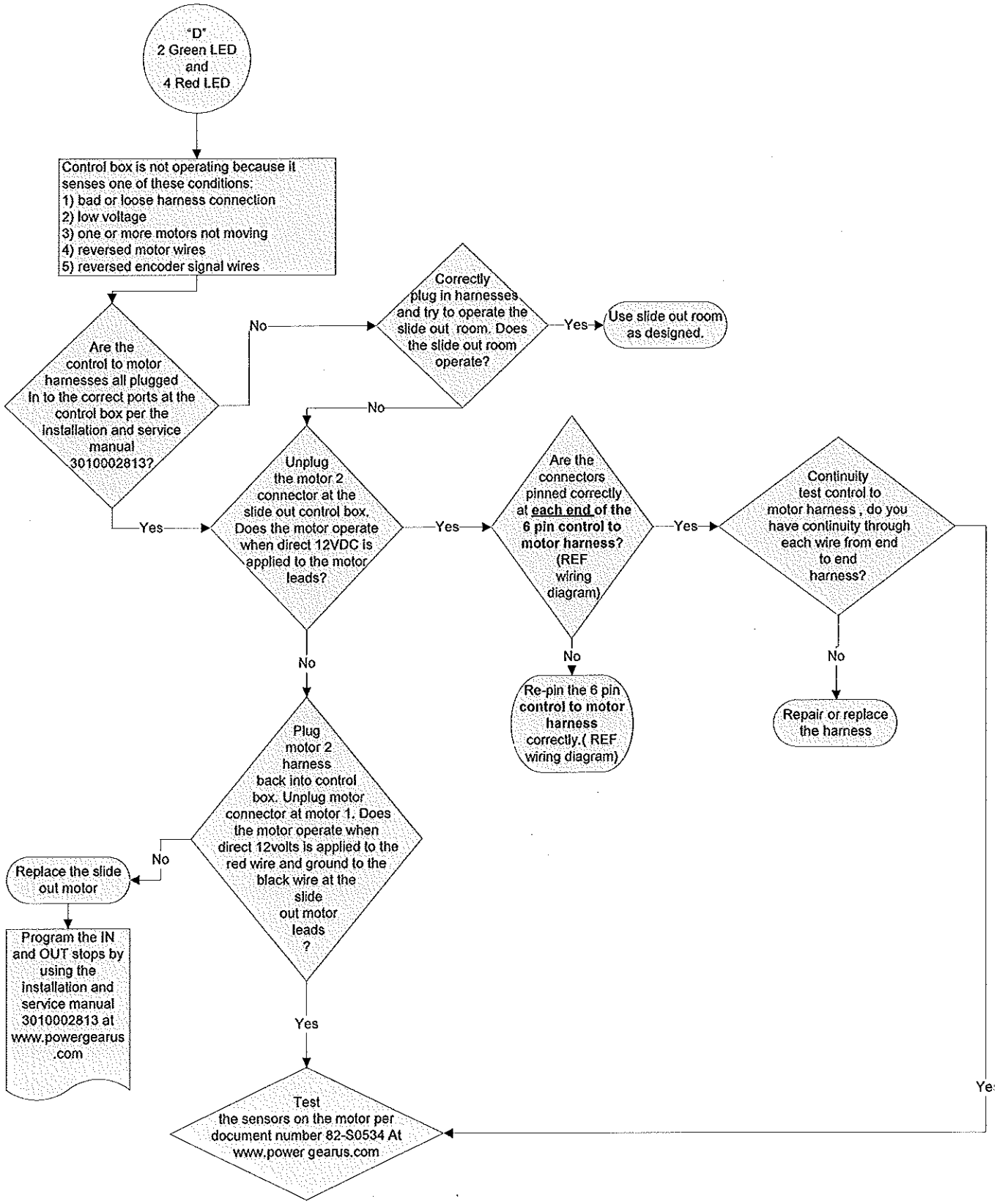
Contact Power Gear at www.powergearus.com

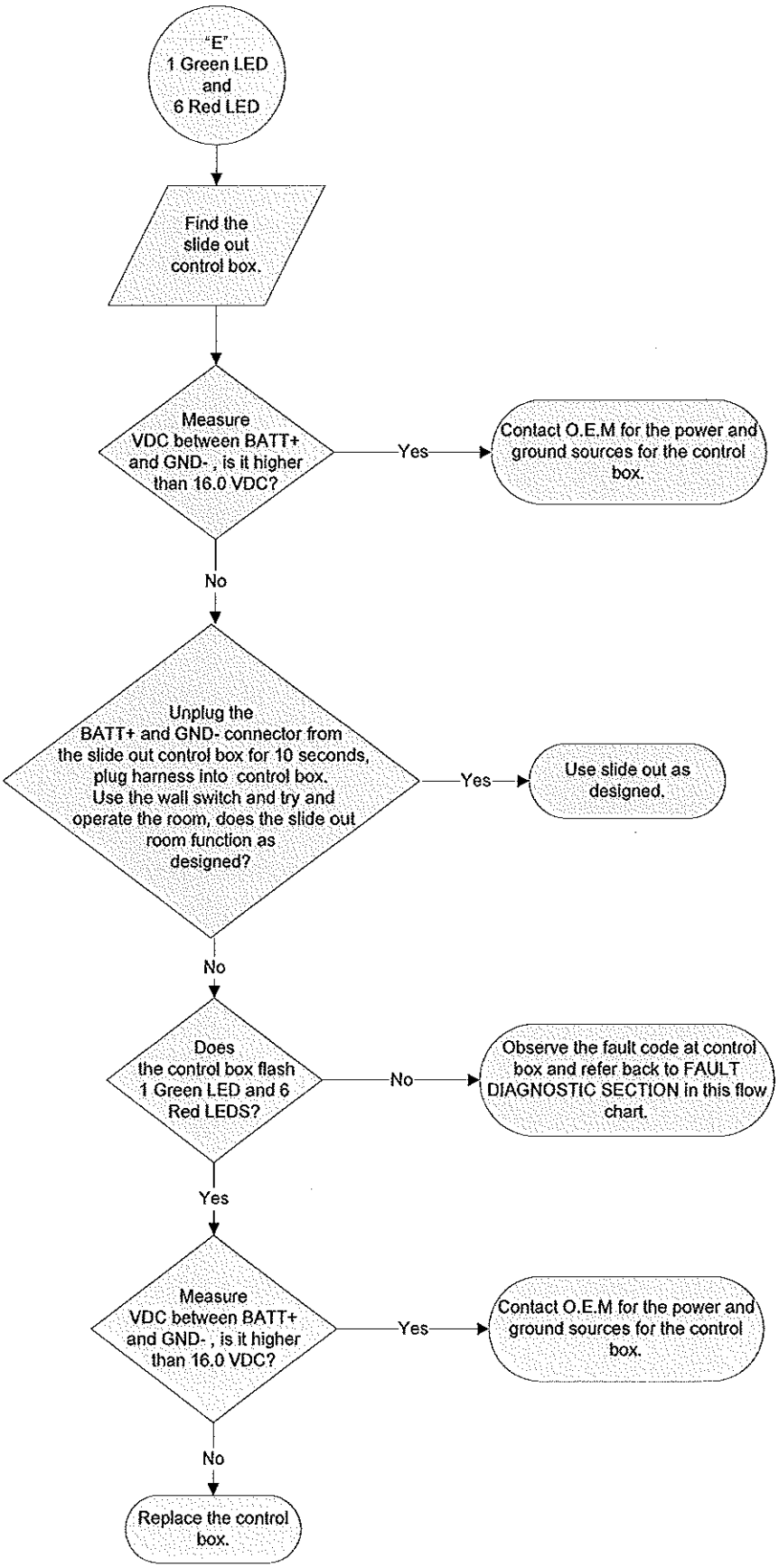



"A"
1 Green LED
and
1 Red LED
Does the coach / trailer have a park brake to set?
Yes
No
Is the park brake enaged?
No
Engage park brake
Yes
At the slide out control box do you have a wire / connector in the park brake connector?
No
Install jumper harness connector Power Gear part number 1510000237-00 into slide out control box park brake connector.
Yes
Does the park brake pin have continuity to ground?
No
Contact O.E.M for the park brake input source for the slide out control box.
Yes
Replace the control box


"B"
1 Green LED
And
2 Red LED
At the control box, do you have constant 12VDC between the BATT+ and GND- pins?
No
Contact O.E.M for the power and ground Input source for the control box.
Yes
Unplug the 2 pin power harness from the slide out control box for 10 seconds, plug the harness back in. Is the low voltage LED code still flashing ?
No
Use slide out system as designed.
Yes
Inspect the control to touch pad harness, is the harness plugged in at both ends?
No
Correctly plug in control to touch pad harness
Yes
Inspect touch pad for damaged connector, is the touch pad damaged?
Yes
Replace the touch pad.
No
Replace the slide out control box.


"C"
1 Green LED
and
4 Red LED
Control box is not operating because it senses one of these conditions:
1) bad or loose harness connection
2) low voltage
3) one or more motors not moving
4) reversed motor wires
5) reversed encoder signal wires
Are the control to motor harnesses all plugged In to the correct ports at the control box per the installation and service manual 3010002813?
No
Correctly plug in harnesses and try to operate the slide out room. Does the slide out room operate?
Yes
Use slide out room as designed.
No
Yes
Unplug the motor 1 connector at the slide out control box. Does the motor operate when direct 12VDC is applied to the motor leads?
Yes
Are the connectors pinned correctly at each end of the 6 pin control to motor harness ? (REF wiring diagram)
Yes
Continuity test control to motor harness , do you have continuity through each wire from end to end of harness?
No
Repair or replace the harness
No
Re-pin the 6 pin control to motor harness correctly.(REF wiring diagram)
No
Plug motor 1 harness back into control box. Unplug motor connector at motor 1. Do the motor operate when direct 12volts is applied to the red wire and ground to the black wire at the slide out motor leads ?
No
Replace the slide out motor
Program the IN and OUT stops by using the installation and service manual 3010002813 at www.powergearus .com
Yes
Yes
Test the sensors on the motor per document number 82-S0534 At www.power gearus.com


"D"
2 Green LED
and
4 Red LED
Control box is not operating because it senses one of these conditions:
1) bad or loose harness connection
2) low voltage
3) one or more motors not moving
4) reversed motor wires
5) reversed encoder signal wires
Are the control to motor harnesses all plugged In to the correct ports at the control box per the installation and service manual 3010002813?
No
Correctly plug in harnesses and try to operate the slide out room. Does the slide out room operate?
Yes
Use slide out room as designed.
No
Yes
Unplug the motor 2 connector at the slide out control box. Does the motor operate when direct 12VDC is applied to the motor leads?
Yes
Are the connectors pinned correctly at each end of the 6 pin control to motor harness? (REF wiring diagram)
Yes
Continuity test control to motor harness , do you have continuity through each wire from end to end harness?
No
Repair or replace the harness
No
Re-pin the 6 pin control to motor harness correctly.(REF wiring diagram)
No
Plug motor 2 harness back into control box. Unplug motor connector at motor 1. Does the motor operate when direct 12volts is applied to the red wire and ground to the black wire at the slide out motor leads ?
No
Replace the slide out motor
Program the IN and OUT stops by using the installation and service manual 3010002813 at www.powergearus .com
Yes
Test the sensors on the motor per document number 82-S0534 At www.power gearus.com
Ye


"E"
1 Green LED
and
6 Red LED
Find the
slide out
control box.
Measure
VDC between BATT+
and GND- , is it higher
than 16.0 VDC?
Yes
Contact O.E.M for the power and
ground sources for the control
box.
No
Unplug the
BATT+ and GND- connector from
the slide out control box for 10 seconds,
plug harness into control box.
Use the wall switch and try and
operate the room, does the slide out
room function as
designed?
Yes
Use slide out as
designed.
No
Does
the control box flash
1 Green LED and 6
Red LEDS?
No
Observe the fault code at control
box and refer back to FAULT
DIAGNOSTIC SECTION in this flow
chart.
Yes
Measure
VDC between BATT+
and GND- , is it higher
than 16.0 VDC?
Yes
Contact O.E.M for the power and
ground sources for the control
box.
No
Replace the control
box.

Additional Reference Documents Located At www.powergearus.com.

Document #	Description
3010002813	Owner's manual slim rack in-wall slide out system control box part number 1510000236 or 1510000276
3010002814	Installation & service manual slim rack in-wall slide out system control box part number 1510000236 1510000276
82-S0534	Encoder test 1 Dual planetary gear motor sync control part number 1510000236 or 1510000276
82-S0535	Encoder test 2 Dual planetary gear motor sync control part number 1510000236 or 1510000276