



Replacement of semi-auto controls with replacement kit # 500643

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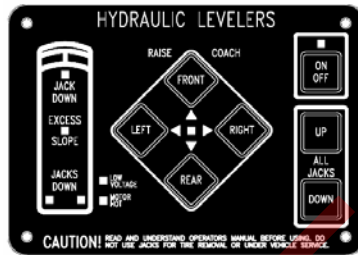
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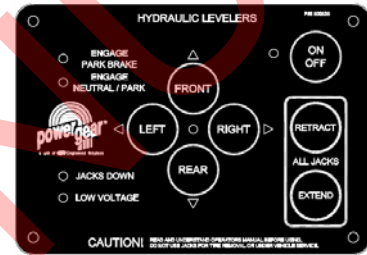
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REPLACEMENT OF OBSOLETE SEMI-AUTO CONTROLS WITH KIT # 500643

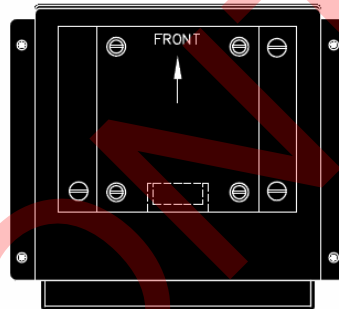
500105



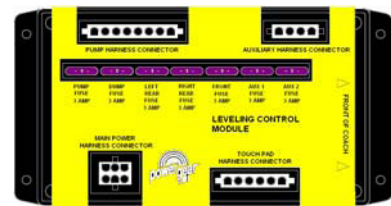
500535



500106



500647 & 500645



Original Semi auto controls 1993-1999
Touch pad (top), control box (bottom)

Updated Semi auto controls 2000-2003
Touch pad (top), control box (bottom)

From 1993 until 2003, some Power Gear leveling systems utilized a semi-automatic leveling control system. The original controls were in use from 1993 until 1999, with updated versions of these controls used from 2000 until 2003. These semi-auto controls are now obsolete and replaced with fully automatic leveling control kit # 500643. This kit consists of automatic touch pad control # 140-1226, automatic leveling control box # 140-1227, and communication harness # 141-0045420. When installing this kit, some wiring changes are necessary at the pump assembly and possibly at the 4-pin auxiliary harness connector on the control box. This manual will guide you through these changes and the set up and use of the new automatic controls.



CAUTION

Before starting any repairs, please be sure and disconnect the power cable at the chassis battery. Failure to ensure that power is disconnected could lead to personal injury or even death.

If at anytime during the installation a question arises or further assistance is needed, please call.

CONTROL KIT REPLACEMENT

The Power Gear leveling control kit (#500643) that you have received is a replacement for the leveling controls originally installed in your motor home. The control kit consists of a touch pad controller, the leveling system control box, and communication harness for these two components. The controls will operate the system in the same manner as the old controls, however there are a couple of wiring changes at the pump assembly that have to be made before the system will operate. This document will guide you through the changes to be made. If you are unsure of your ability to make these changes, we strongly suggest that you take your coach to a Recreational Vehicle dealer or repair shop to have the upgrade kit installed.

1. At the leveling system pump assembly, find the starter solenoid. It will be a 3 or 4 post solenoid looking similar to the one shown in Figure 1.

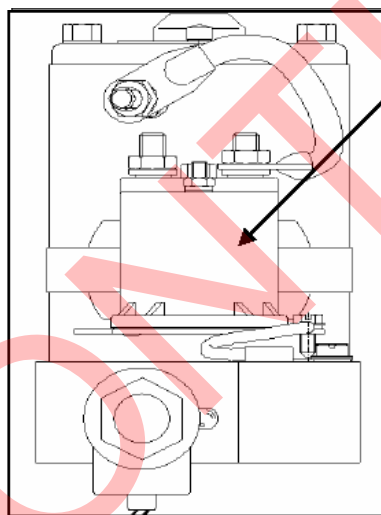


Figure 1

MOTOR SOLENOID

One post of this solenoid will have two wires connected to it. The smaller of the two wires (usually orange in color) currently feeds a constant +12V to the leg valve coils, the dump valve coil, and the float switch (see Figure 2). This voltage is put to ground when system is in operation. The new controls you have received operate exactly opposite of this. The coils and float switch need to receive a constant ground signal and then receive a +12V signal from the control box when the system is operated. You will need to follow the small, orange wire back until you find the 10 amp inline mini-fuse (you may or may not have to cut into the wiring loom to follow this wire).

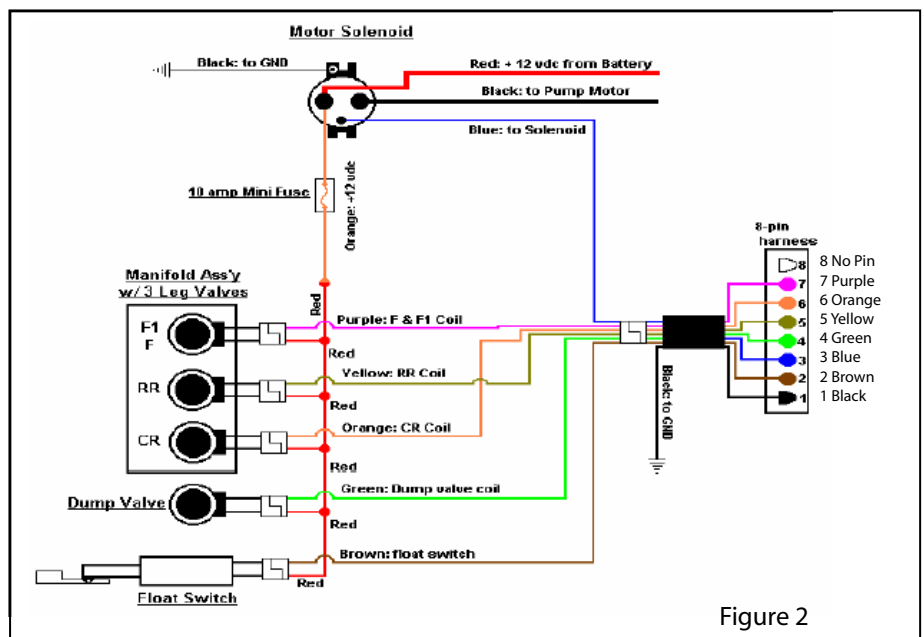


Figure 2

NOTE

Leveling systems on American Heritage coaches utilized a pressure switch at the pump assembly. When installing this upgrade kit, simply eliminate the wiring for the pressure switch. It will not be necessary with the new controls. See page

2. Cut the orange wire as indicated in Figure 3.

3. Splice the solenoid side of this wire to a length of 12 gauge wire long enough to reach the new control box. This constant +12V will need to be connected to pin #8 of the 8-pin pump harness.

4. If a wire currently exists in pin # 8, then cut and splice your new power wire to this existing wire. If pin # 8 is empty, then you will need to crimp a new male connector to your wire and insert it into pin #8 of the 8-pin amp connector.

5. The pump side of the small orange wire needs to be connected to chassis ground.

This completes the wiring changes necessary at the pump assembly.

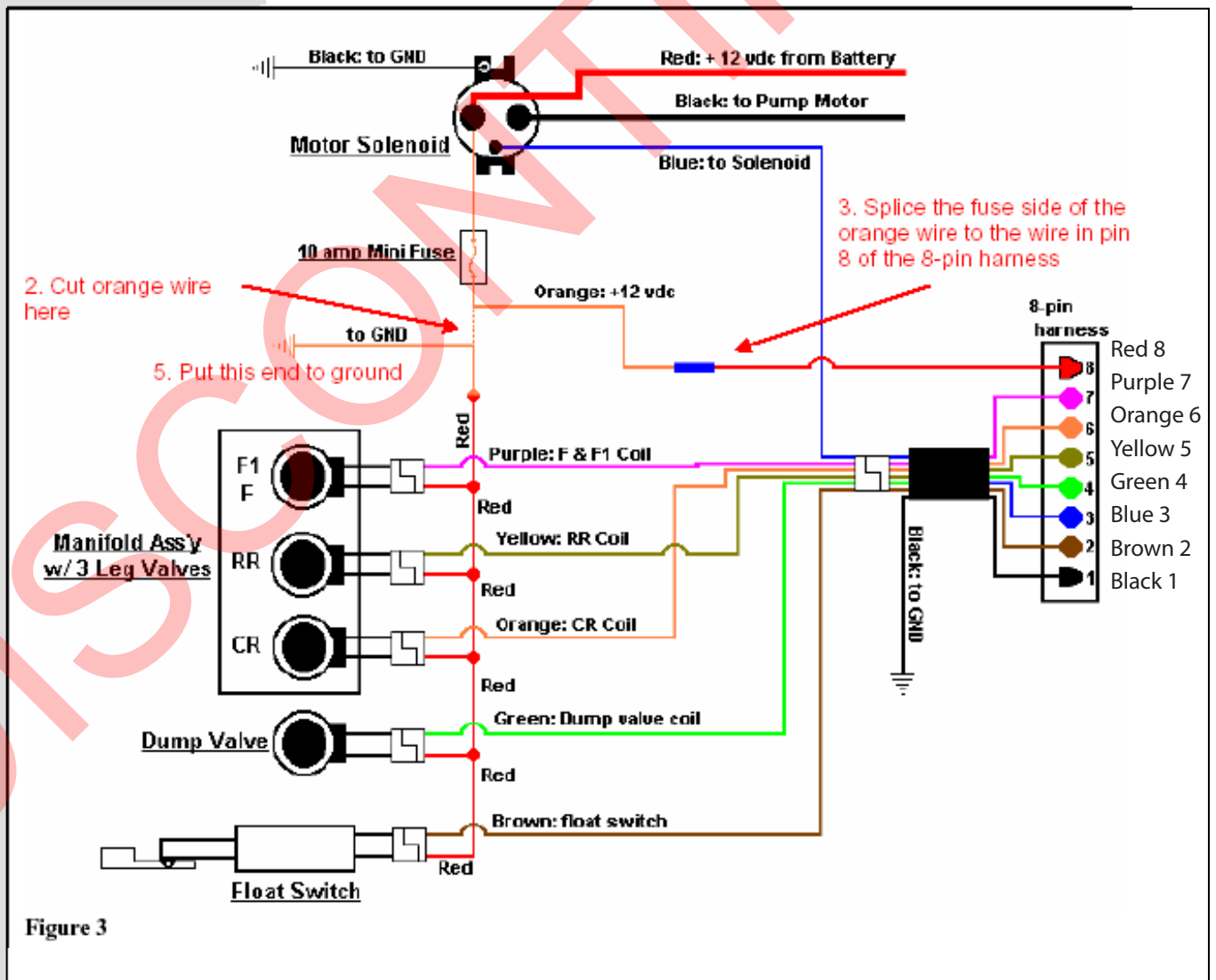
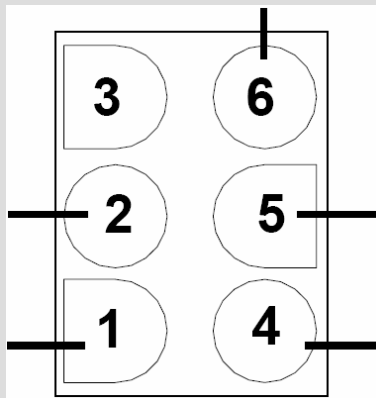


Figure 3

NOTE

Step 7: When plugging in the remaining harnesses into the new control box, inspect the 6 pin safety interconnect harness. If a wire exists in pin 4, simply eliminate it. Leaving this wire can cause the "engage park brake" light to flash even when park brake is engaged.



6 pin safety interconnect harness

6. Mount the new control box in the same location as the old control, noting that the control must be mounted upside down, with the directional arrow on the label pointing to the front of the coach. It is not necessary to level the control box.

7. See note on this page. Plug in the supplied harness to the appropriate 4-pin connector on the control box. This harness will then need to be routed through the coach to where the touch pad is installed. Plug in the remaining harnesses that were removed from the old control box, into the new one.

8. Remove the old touch pad.

9. Unplug the connector from the back of the touch pad. You will not reuse this connector. Bring the end of the new harness through the touch pad mounting location and plug into the back of the new touch pad. Install the new touch pad.

Testing the system:

1. Set the parking brake, make sure that coach is in park or neutral, and start the engine. The lights on the new touchpad should illuminate in a circular pattern for a few seconds and then shut off.

2. Press the ON button to power up the touch pad. All of the lights on the touch pad should be blinking to indicate that the control box is in calibration mode.

3. Calibrate the new control box using Power Gear Tip Sheet #153 (see page 5) to properly calibrate the new controls to a known level position.

4. Once the calibration process is complete, push the ON button to power up the touch pad.

5. Push the AUTO button to initiate the auto level sequence. While the control is going through this process it is very important to minimize any movement in the coach. Excessive movement can disrupt the leveling sequence, causing unfavorable leveling results.

6. The touch pad will signal that it has completed the process by illuminating the center green LEVEL light.

7. Press the ALL JACKS retract button to return the jacks to the fully retracted state.

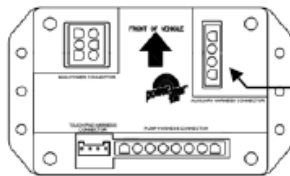
8. Once the JACKS DOWN light has extinguished, press and hold the MANUAL button until the light below it illuminates (this usually takes 5 to 7 seconds). You can now level the coach manually as you wish by depressing the button for the jacks you want to extend.



T.I.P. Troubleshooting Information on Power Gear

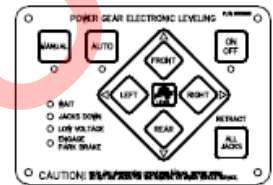
AUTOMATIC LEVELING SYSTEM SET UP & RE-CALIBRATION PROCEDURE

Note: The following set up and recalibration procedure is for control 500630, 140-1227, 140-1170, 140-1228 (used with touch pad 500629 or 140-1226).



Note: The auxiliary receptacle is a four-pin connector on the control box, not the touch pad.

CONTROL BOX



TOUCH PAD

Zero Point: The zero point is the stored level position; the orientation that the control senses as level. This can only be set when it is in calibration mode. Zero mode is indicated by all of the lights flashing on the touch pad.

If the control is in this mode, you will skip the recalibration procedure and move straight to the set-up procedure.

Recalibration Procedure - Use these steps to put the control into calibration mode.

1. Turn the ignition on and the touch pad on.
2. Push the front button 5 consecutive times. Within ten seconds, push the rear button 5 consecutive times.
 - All of the lights on the touch pad will begin flashing. This indicates that you have successfully returned the control box to calibration mode.

Set-up Procedure - Follow this procedure to reprogram a new zero point.

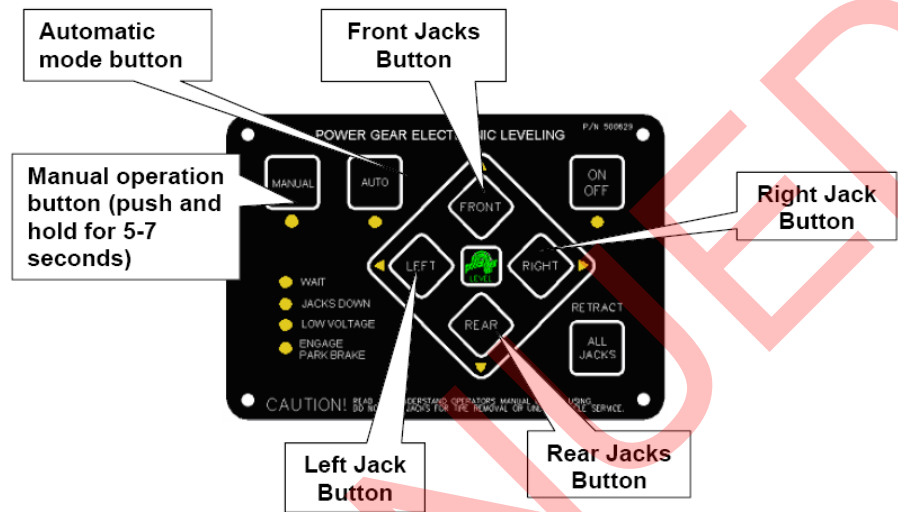
1. Place a carpenter's level on the floor in the center of the coach.
2. Manually level the coach:
 - Push the front button until the front jacks contact the ground. Once they contact the ground, hold your finger on the button until the front jacks have lifted the front of the coach by approximately 2 or 3 inches.
 - Push the rear button until the jacks contact the ground. Once the rear jacks are on the ground, get the coach level from front to rear using the carpenter's level.
 - After front to rear level is achieved, turn level ¼ turn and level coach from side to side.
3. To store the zero point into the leveling controls:
 - Push the retract button three consecutive times to store the zero point.
 - After the retract button has been pushed 3 times, all of the lights on the touch pad will stop flashing except the ON/OFF light. The ON/OFF light will flash for 20 seconds. This mode is prompting the user to tell the control if the auxiliary receptacle will be used. **Within this 20 second time period you must execute one of the next two instructions:**
 - If there is a harness plugged into the auxiliary receptacle or you are going to plug a harness into it, then press the RETRACT button three times.
 - If there is *not* a harness plugged into the auxiliary receptacle, DO NOT touch any buttons until the ON/OFF light stops flashing.

This completes the set-up and recalibration process

NOTE

The complete operating instruction manual, tips sheets #153 (page 5) and #180 (page 8), can be viewed and/or printed off of our website.

OPERATING INSTRUCTIONS



LEVELING YOUR COACH

1. Turn on the ignition and start the coach. Your leveling control will start a self check sequence indicated by the lights on the panel blinking in a rotating pattern. It will turn off when it has finished its self check.
2. Push the "On/Off" button on control panel. The system is now operational and the "On/Off" LED will turn on.
3. Check to see that the engage park brake light is not illuminated. If so, engage the parking brake. (Your coach will have to be in neutral or park to operate the system).
4. Push the "AUTO" button. The automatic leveling system will begin its leveling procedure. Please avoid movement in the coach during automatic leveling as it can cause errors in the results. It will signal that it has completed the process by illuminating the center green "LEVEL" light. Check to make sure that all jacks are on the ground. Also check to make sure that no tire is off the ground. If so, your leveling process is complete. If further adjustments are needed, refer to the "Manual Operation" section.
5. You can then turn the system off by pushing the on/off button again.

RETRACTING THE JACKS

1. Turn on the ignition
2. Turn on the system by pushing the "on/off" button. The system is now operational and the "On/Off" LED will turn on.
3. Push the "RETRACT-ALL JACKS" button. When the "JACKS DOWN" light turns off, visually check to make sure that all jacks have fully retracted. If so, your coach leveling system is ready to travel.

MANUAL OPERATION

There are certain conditions where manually leveling your coach may be desirable. Conditions where large amounts of side to side leveling are necessary may work better using the manual leveling procedures that follows.

1. Turn on the ignition and start the coach.
2. Push the "On/Off" button to turn on the system.
3. Push and hold the "MAN" button for 5-7 seconds in order for the system to switch to the manual mode. It will signal that it is in the manual mode when the light under the "MAN" button is illuminated.
4. Push "FRONT" button until the front of the coach rises at least 3". This is important and necessary to allow the coach to pivot when leveling side to side. If there is insufficient jack stroke to lift the front of the coach at least 3 inches the coach will have to be moved to an area with less front to back slope, or a weight distribution block will have to be placed under the jack.

MANUAL OPERATION (continued)

5. Push the "REAR" button until jacks contact the ground.
6. Level the coach from front to rear by pushing the "REAR" button if the light under the "REAR" button is illuminated. If the light is illuminated above the "FRONT JACKS" button, push the "FRONT" button. In either case, keep button depressed until the green center "LEVEL" light is illuminated, or both front and rear lights are dark.
7. Level the coach from side to side by pushing the "RIGHT" button if the light beside the "RIGHT" button is illuminated. If the light beside the "LEFT" button is illuminated, push the "LEFT" button until the "LEVEL" light is illuminated.

NOTE: The right and left rear jacks are used to level the coach side to side. Pushing the "LEFT" button on the control panel will extend the left rear jack. Pushing the "RIGHT" button on the control panel will extend the right rear jack. There is no individual control of the right or left front jacks on 4 jack systems. The automatic pressure equalization built into the system automatically shifts the front jacks.

8. Repeat steps 6 and 7 if needed.
9. Turn power off to leveling system by pushing "ON/OFF" button.
10. Visually inspect jacks to ensure all pads are touching ground. Should one of the rear jacks not be touching the ground, press the corresponding left or right rear jack buttons to lower the appropriate jack to the ground. Never lift the wheels off the ground to level the coach. This can lead to an unsafe condition and damage to the leveling system or coach.

NOTE: If the "Wait" LED is ever flashing by itself, it means the control is busy and you cannot operate the jacks. After a short period of time (from 5 to 30 seconds), the "Wait" LED will go off again, and you can resume operation as normal.

PREVENTIVE MAINTENANCE

WARNING

Your coach should be supported at both front and rear axles with jack stands before working underneath, failure to do so may result in personal injury or death.

1. Check and/or fill the reservoir with the jacks and room(s) in the fully retracted position, each month. The fluid should be $\frac{3}{4}$ " onto the dipstick (on models so equipped) or to the bottom of the fill port on models without dipsticks.
2. Change fluid every 24 months.
3. Inspect and clean all hydraulic pump electrical connections every 12 months.
4. Remove dirt and road debris from jacks as needed.
5. If jacks are down for extended periods, it is recommended to spray exposed leveling jack chrome rods with a silicone lubricant every 5 to 7 days for protection.
6. If your coach is located in a salty environment (within 60 miles of coastal areas), it is recommended to spray the rods every 2 to 3 days with a silicone lubricant.
7. Grease the fitting on the bottom of each jack cylinder with Lithium grease every 20-30 uses.



T.I.P. Troubleshooting Information on Power Gear

Auxiliary Output Pin Voltage Levels On Power Gear Leveling Controls

The pins referred to in this Tip Sheet are based on the diagram below. This is a view looking at the Mate-N-Lok Connector mounted on the control itself (not the wire harness).



The following voltages apply to controls 500645, 500647, 500536 & 500548:

Jack Actuation	Pin 1	Pin 2	Pin 3	Pin 4
Extend	12V	Ground	12V	Open
Retract	12V	Open	12V	Ground
Idle	12V	Open	12V	Ground

The following voltages apply to controls 500630, 500674 & 500731:

Jack Actuation	Pin 1	Pin 2	Pin 3	Pin 4
Extend	12V	Ground	Ground	Ground
Retract	Ground	Ground	12V	Ground
Idle	Ground	Ground	Ground	Ground

It is important to note that regardless of which control you have (see exception below), the following chart is correct:

Jack Actuation	Pin 1	Pin 2	Pin 3	Pin 4
Extend	12V	Ground		
Retract			12V	Ground

Note: There was a small batch of 500630 controls and 500674 controls with different voltage levels manufactured in early 2001. The change was made to the present voltage levels soon after its initial release. In order to tell if your control is one of these initial few, check for continuity between pins 1 & 2 with the controller off and all wires disconnected. (Similarly, there could be continuity between pins 3 & 4). If continuity exists, then your control has the following voltage levels:

Jack Actuation	Pin 1	Pin 2	Pin 3	Pin 4
Extend	Ground	Ground	12V	12V
Retract	12V	12V	Ground	Ground

This document has been modified from the original Power Gear Rev. 0C OCT09 release. All former references to the Power Gear warranty and contact information were removed.

**For all concerns or questions, please contact
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