



Operation Guide for Class C Leveling System



Introduction

The Power Gear Class C leveling and stabilizing system is an electronically controlled/hydraulically operated unit that consists of a 12 volt DC powered motor/pump/manifold assembly with fluid reservoir, hydraulic hoses, four hydraulically operated jacks, a control unit with switch panel, and optional level sensor unit. It is designed to meet the varying requirements of class "C" motorhomes.

If, after thoroughly reading this manual, you still have questions in regard to the operation and maintenance of this PowerLevel system, please contact.

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CAUTION

**READ ALL
OPERATING INSTRUCTIONS
FIRST BEFORE USING YOUR
LEVELING SYSTEM.**



WARNINGS

- Do not use the vehicle's suspension or leveling jacks to support the vehicle for servicing or inspection. Instead, install adequate blocking before working under any vehicle. The system is designed as a 'leveling' system only.
- Keep people clear of the coach while leveling system is in use.
- Never lift the wheels off the ground to level the coach. Doing so may create an unstable condition.
- Never expose hands or other parts of the body near hydraulic leaks. High pressure oil leaks may cut and penetrate the skin, causing serious injury.
- Do not use a high pressured wash/rinse system on any of the components associated with the leveling system. This includes the pump, pump motor, wiring harness, control, and touchpad. The use of a high pressure wash/rinse system will void the warranty.



CAUTIONS

- Park the coach on a reasonably solid surface or the jacks may sink into the ground. On soft surfaces, use load distribution pads under each jack.
- Check that potential jack contact locations are clear of obstructions or depressions before operation.
- Read and understand the entire operator's manual before using or servicing your leveling system.
- Do not use the leveler as an emergency brake. They are not designed for any type of vehicle braking purpose.
- Your leveling system should be serviced only by qualified personnel.
- Leaks in a vehicle's hydraulic system can cause the vehicle to lower over time regardless of whether the leveling system is operational.



Note: To prevent improper operation of the leveling system, which could result in damage to the levelers and/or the vehicle itself, read the operating instructions carefully before using the leveling jacks.

NOTE: In occasional adverse driving conditions, it is possible for mud, ice and other debris to accumulate around the leveler units. This debris may interfere with the operation and should be cleaned off prior to using the system.

Operating Instructions

The PowerLevel Class C system performs the dual function of leveling the vehicle and, once a level plane has been achieved, stabilizing the vehicle. When leveling the vehicle, it may not be necessary to use all of the leveling jacks however, to stabilize the vehicle, all jacks should be extended to contact the ground.

SITE SELECTION

1. When selecting a site for parking the vehicle, choose a spot that is as flat as possible - this will minimize the extent of leveling.
2. Check that the area under the vehicle is free from any obstacles that might interfere with the operation of the levelers. Check the ground surface to assure the leveler feet have a flat solid surface for contact. When parking on grass, soft dirt and/or uneven terrain, it is advisable to extend the surface area of the leveler feet by using leveling pads. These pads are included with your purchase.

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.

Note: The engine must be running for the leveling system to operate.

2. Push the "On/Off" button on control panel. The system is now operational and the "On/Off" LED will turn on. (On some controls, there will be a 10 second wait period before the operation is allowed. During this time, the "wait" light will flash.)
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.

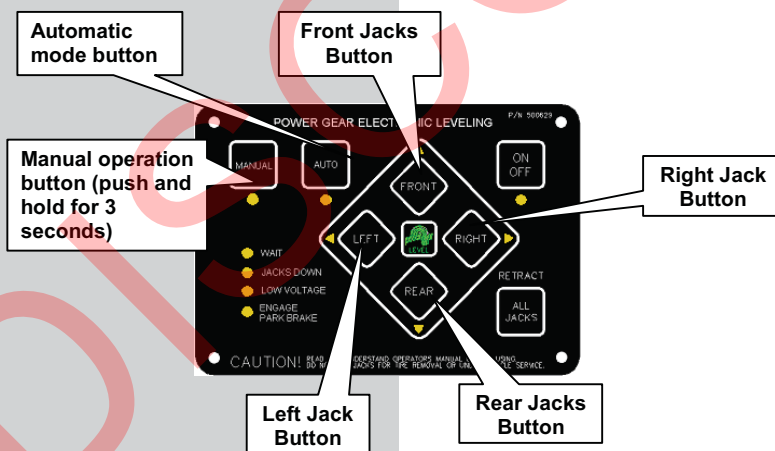
5. You can then turn the system off by pushing the on/off button again.

RETRACTING YOUR LEVELING JACKS

1. Turn on the ignition

Note: The engine must be running for the leveling system to operate.

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.



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.

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.



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.

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 3 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 jacks touch the ground.
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.
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.

Preventative Maintenance

1. Check and/or fill the reservoir with the jacks and room(s) in the fully retracted position, each month. The fluid should be one inch from the top of the reservoir.
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. Do not use a high pressured wash/rinse system on any of the components associated with the leveling system. This includes the pump, pump motor, wiring harness, control, and touchpad. The use of a high pressure wash/rinse system will void the warranty.

Preventative Maintenance, cont'd

Recommended Hydraulic Fluids for Your Hydraulic Pump

- The fluids listed here are acceptable to use in your pump assembly. Contact coach manufacturer or selling dealer for information about what specific fluid was installed in your system.
- It is not recommended that hydraulic fluid and automatic transmission fluids be mixed in the reservoir.
- In most applications, Type A automatic transmission fluid (ATF, Dexron III, etc.,) will work satisfactorily. Mercon V is also recommended as an alternative fluid for Power Gear hydraulic systems.
- If operating in cold temperatures (less than -10° F) the jacks may extend and retract slowly.
- For cold weather operation, fluid specially-formulated for low temperatures may be desirable. Mobil DTE 11M, Texaco Rando HDZ-15HVI, Kendall Hyden Glacial Blu, or any Mil. Spec. H5606 hydraulic fluids are recommended for cold weather operation.

Please consult factory before using any other fluids than those specified here.

Troubleshooting

Locations of breakers, fuses, fuse panels, etc. are coach specific. Consult your coach owner's manual or the coach manufacturer for locations of these components.

The following information on the next three pages will guide you to repairs that may be made on site. For problems not covered here, contact your service center or our website for more extensive troubleshooting information in the service manual for your system.



Troubleshooting Tips

Trouble Shooting Tips

The following chart contains troubleshooting tips if your system is not operating properly, and the touch pad *is not* giving you a trouble code

Description	Probable Cause	Corrective Action
Touch Pad will not turn ON	Coach ignition not in run position.	Turn on the ignition and start the coach. The engine must be running for the jacks to operate.
	Blown fuse or tripped circuit breaker	Replace fuse or reset breaker
	Auto Shut Off has	Push On/Off button to turn the control back ON.
Jacks will not extend. Pump <i>is not</i> running	Blown fuse or tripped circuit breaker	Replace fuse or reset breaker
	Batteries are weak.	Turn on the ignition and start the coach. Wait a few minutes to allow the batteries some time to charge. The engine must be running for the jacks to operate.
Jacks will not extend (or are extending slowly), pump <i>is</i> running	Fluid level low.	Fill tank to proper level with automatic transmission fluid, see tip sheet 140.
	Batteries are weak.	Turn on the ignition and start the coach. Wait a few minutes to allow the batteries some time to charge. The engine must be running for the jacks to operate.
Jacks will not retract fully	Air in the system	Check for coils in hose. Remove the coil if present then extend all jacks to full extension, then retract fully. Repeat 4 cycles waiting a few minutes between cycles, check fluid level in between cycles.



Troubleshooting Tips, cont'd

Normal Operation: Description of Flashing Lights

The following chart contains information about different sets of flashing lights you will see during normal operation

Flashing Lights	Mode	Description of operation	Reason
<i>Wait</i>	Wait	Will not allow operation while the wait light is flashing	The system is busy. The wait light will go out within one minute. At that time operation can be resumed.
<i>Power Gear Logo</i>	Already Level	The <i>Power Gear Logo</i> is flashing indefinitely	The coach is already level as it sits. However leveling can still be executed as normal (to stabilize the coach)
Any two of: <i>Front, Right, Rear & Left</i>	Not Level	These two lights could be ON solid or Flashing	This is normal anytime the coach is not already level. The arrows indicate the side of the coach that would need to be raised to reach level, if manual mode is used.
<i>Left, Right, Front, Rear & the Power Gear Logo</i>	Diagnostic Check	For approximately 5 seconds, the <i>Front, Right, Rear & Left</i> lights flash in a clockwise pattern, along with the <i>Power Gear Logo</i>	This is a normal diagnostic check anytime the ignition is turned ON. The control will either turn back OFF after this diagnostic check, or a trouble code will start to flash.
All lights are flashing	Emergency Retract	All of the lights are flashing, <i>and the jacks are retracting</i> . A buzzer sounds for the first 10 seconds of retract	While the jacks were extended, either the parking brake was released or the transmission was put into gear. This is normal behavior as a safety feature. This is to prevent damage to the coach or leveling system due to driving away with your jacks down.
All lights are flashing	Program Mode	All of the lights are flashing indefinitely. No buzzer is sounding.	This mode was intentionally entered, and cannot be entered by accident. See TIP Sheet # 153 for a description of operation in program mode.



Trouble Codes: Description of Flashing Lights

The following chart contains troubleshooting tips if your system is not operating properly, but the touch pad *is* giving you a trouble code

Flashing Lights	Fault Code	Description of operation	Probable Cause	Corrective Action
Low Voltage	Low Voltage	Low Voltage light is ON solid or flashing. May or may not allow operation	Batteries are weak.	Turn on the ignition and start the coach. Wait a few minutes to allow the batteries some time to charge. The engine must be running for the jacks to operate.
On/Off and Wait	Transmission	Will not allow operation	Transmission is in gear	Place the transmission in Park (or Neutral for diesel coaches).
Park Brake	Park Brake	Will not allow operation	Parking Brake is not engaged	Engage the parking brake
Left, Right, Front, Rear & the Power Gear Logo	Excessive Slope	The lights are flashing indefinitely, but leveling is possible	1) Too steep/uneven terrain 2) The control was improperly programmed	1) Move coach to ground that is more level 2) See TIP Sheet # 153 to reprogram control
Jacks Down & Wait	Pressure Loss	Will not allow operation	The leveling system has a pressure leak and needs service	Take your coach to an authorized service center for repair. Note: The electronics are fine and do not need service. Only the hydraulic portion of the system needs service.
On/Off, Jacks Down & Park Brake	Communication Error	Will not allow operation	Faulty wiring, poor connections, or faulty component	Check to make sure that all connections are tight and properly connected. Cycle the ignition power to reset. If that does not work, try replacing components individually, in the following order: a) Harness (between the touch pad and control) b) the touch pad c) the control
All of the Lights are on Solid, indefinitely	Internal Error	Will not allow operation	This is an internal error	A new control box is needed. However, a touch pad <i>is not</i> needed.
Left, Right & the Power Gear Logo	Timeout Error	Leveling operation was aborted. There are several internal timers that could have tripped. These timers are built-in to protect the hydraulic pump or the coach from being damaged. The most common are a) Jacks took too long to retract or b) Jacks took too long to finish auto leveling	Batteries are weak.	Turn on the ignition and start the coach. Wait a few minutes to allow the batteries some time to charge. The engine must be running for the jacks to operate.
			Too steep/uneven terrain	Move the coach to ground that is more level
			Thick hydraulic fluid caused by cold weather	See Page 4 for recommended cold weather hydraulic fluid
			Air in the Leveling System	Check for coils in hose. Remove the coil if present then extend all jacks

ZERO POINT: The zero point is the stored level position — the orientation the control sees as level. This can only be set when you are in calibration mode. This mode is indicated by all of the lights flashing. *If the control is in this mode already, you can skip the recalibration procedure and move straight to the set-up procedure.*

Recalibration 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 touch the ground.
 - 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 level.
 - After front to rear level is achieved, turn level 90° & 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. Do not push any buttons during the 20 seconds.

Warranty

This document has been modified from the original Power Gear Rev. 0D NOV12 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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