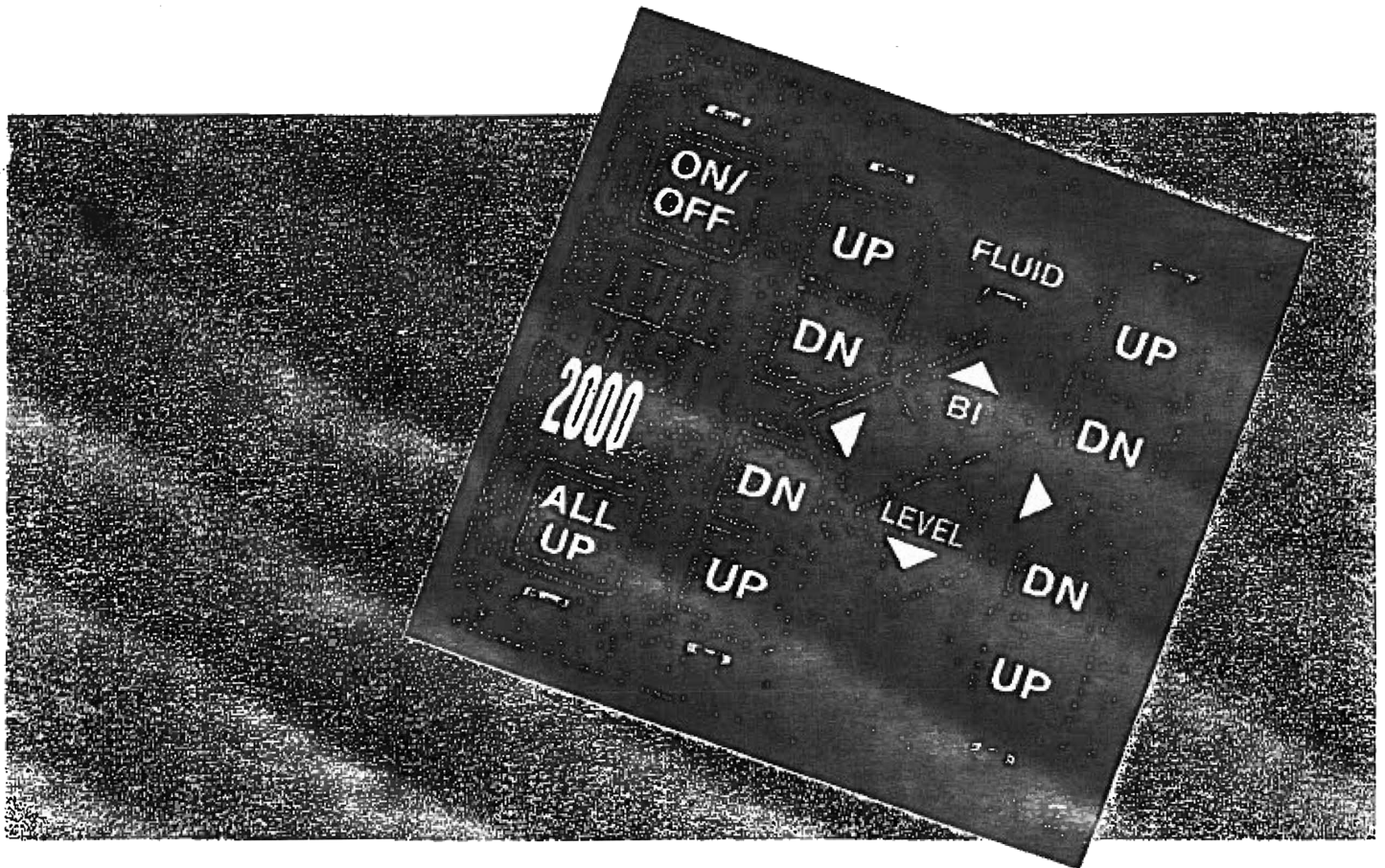


LEVEL BEST 2000

Kwikkee

OPERATION GUIDE



Kwikkee Products Company, Inc.

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INTRODUCTION

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The Level Best 2000® 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 motor control unit, switch panel, and an optional level sensor unit. It is designed to meet the varying requirements of vehicles ranging from class "C" motorhomes to the large class "A" motorhome.

If, after thoroughly reading this manual, you still have questions in regard to the operation and maintenance of the Level Best 2000® system, please contact the Lippert Components Service Department at 1- 574-312-7480.

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OPERATION

The Level Best 2000® 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.

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

WARNINGS

Do not use the Level Best 2000® system as a lift for changing tires or working under the vehicle.

Never check for hydraulic fluid leaks using your hands and/or any other body part. The leaking fluid is under pressure and is capable of cutting and penetrating your skin, resulting in severe injury.

When extending the rear stabilizers, do not lift the wheels beyond ground contact. This overrides the braking effect of both the transmission's park and the parking brake. Without this braking, it is possible for the vehicle to roll unexpectedly forward (or backward) off the jacks. This could cause severe injury, or even death.

Holding a control switch in the "extend" or "retract" position for a time period longer than necessary to fully extend or retract the hydraulic cylinders, can cause overheating and damage to the pump motor as well as the electrical components.

Do not use the leveler as an emergency brake, They are not designed for any type of vehicle braking purpose.

Do not use the levelers on icy or slick surfaces on which the foot pads may slip.

IN THE EVENT OF ACCIDENTAL EXTENSION

1. Bring the vehicle to a safe and complete stop as soon as possible.
2. Turn the leveling systems power switch on and press the all up switch.
3. Visually inspect the vehicle undercarriage for any problems.

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 pads. These pads can be from 3/4" plywood, cut into 12" squares.

NOTE: Occasionally, in 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.

CAUTION: Do not compensate for uneven terrain by using pads that are thicker than 3". Pads that are thicker than the leveler's vertical ground clearance can prevent breaking contact with the ground when retracting. This can result in damage to both the levelers and the vehicle.

LEVEL BEST 2000® CONTROL PANEL LAYOUT

The control panel consists of seven switches and seven light emitting diode indicators (See Figure 1). The seven switches include main power on/off, all jacks retract, a diamond shaped switch for bi-lateral leveling, and four switches for independent operation of leg extension and retraction. The position of the four independent leg leveling switches are representative of the leveling jack positions on your motor home, with the front of the vehicle being indicated by the fluid level LED.

LEVEL BEST 2000® CONTROL PANEL FUNCTIONS

The "ON/OFF" switch, located in the upper left hand corner, controls the supply of power for all panel functions, activation of this switch is indicated by its green LED.

The "ALL-UP" (leg retract) switch is located in the lower left hand corner of the control panel. Activation of this switch causes all legs to retract to the travel position, this action is indicated by a flashing red LED. When the retract sequence is completed the all up LED will turn green to indicate that it is now safe to move the motor home.

The diamond shaped "BI-LEVEL" leveling switch, located in the center of the panel, activates the extension of the leveling jacks in pairs. Use of this switch greatly simplifies the leveling process and significantly reduces the amount of stress created by the leveling process on the motor home. Operation of this switch illuminates the yellow LED's corresponding to the jacks that are being activated.

The four "UP/DOWN" switches control the leveling jacks independently. Activation of this switch operates the corresponding jack causing it to retract (UP) or extend (DN) depending upon the

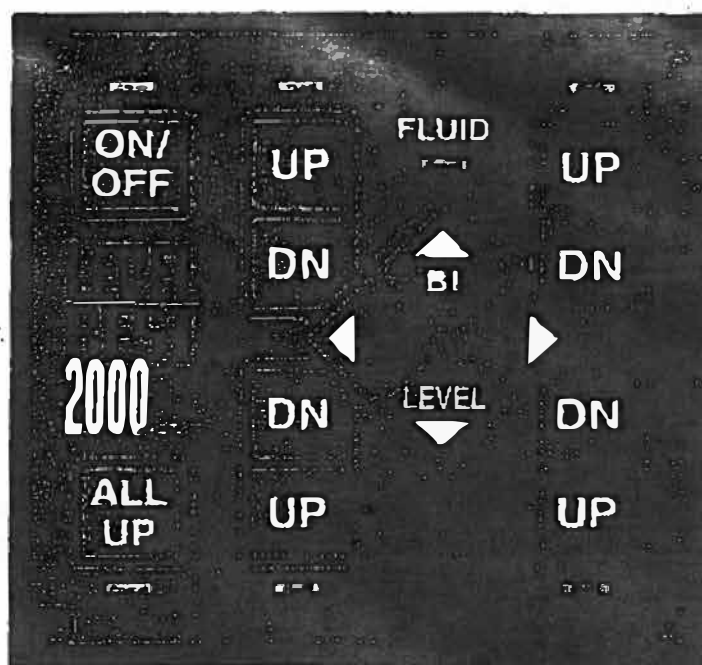


Figure 1

portion of the switch depressed. Operation of this switch will illuminate the yellow LED corresponding with the jack being activated.

The fluid level monitor is a bi-colored LED that is used to indicate if the leveling system has the proper amount of hydraulic fluid. A green color indicates that the fluid level is correct while an orange color indicates a low fluid condition. The fluid level monitor will only illuminate, when the leveling jacks are in the fully retracted position, during the time between turning on the power switch and activation of the next switch on the "Level Best" panel. This sequence has been developed to insure that the leveling jacks and hydraulic fluid are in the proper position for a correct reading.

LEVEL SENSOR (OPTIONAL)

Installation of the optional level sensor resets the functions of the four yellow, leg activation, LED's. These LED's are transformed into level indicators that correspond to the four corners of your RV. These indicators assist you in, and simplify the motor home leveling process.

LEVELING AND STABILIZING YOUR MOTOR HOME

Observing the precautions set forth on the previous pages of this manual, you are now ready to begin leveling your motor home. With the vehicle engine running, place the transmission in park and set the parking brake. Securely block the wheels using wheel chocks.

Locate the "ON/OFF" button on the upper left of the control panel. Momentarily depress this switch to activate the leveling system. The LED will light up and be a steady green, which indicates that the system is ready. If the LED lights up and is flashing, it is an indication that the parking brake is not completely engaged or the transmission is not in park.

Reference you're leveling tool and determine which corner of the motor home is the lowest. Now using one of the "BI-LEVEL" switches which represent the front and rear of the motor home, (use the switch, which corresponds to the low end of the motor home), depress and hold the switch to raise the sides of the motor home until level. Now find and depress the "BI-LEVEL" switch which represents the low side of the motor home, and hold it until the front and rear of the motor home are level.

Your motor home should now be in a level plane, if the coach has settled slightly, you should now fine-tune your position by using the individual leg leveling switches. Push the "DN" portion of the switch to raise the vehicle and the "UP" portion to lower the vehicle.

STABILIZING

To stabilize the vehicle once it has been leveled, any unused leveler must be extended into firm contact with the ground. Accomplish this by using the appropriate individual leg leveling switch so as not to affect the level of the coach.

OPERATION WITH LEVEL SENSOR

Depending on the position of your vehicle, any combination of leveler indicator LED's may be lit. A yellow LED that is not lit indicates a location that is below the level plane of the vehicle. Now by using one of the "BI-LEVEL" switches which represent the front and rear of the motor home, (use the switch which corresponds to the low end of the motor home), depress and hold the switch to raise the sides of the coach until level. The lighting of the LED adjacent to the switch you are operating indicates that the sides of the motor home are now level from the front to the back.

Next depress the "BI-LEVEL" switch which represents the low side of the motor home (side with unlit LED's) and hold it until the front and rear are level. The lighting of the final two LED's indicates this as the level position. All four level indicators should now be lit, if not some fine-tuning will be necessary using the independent leg leveling switches. Push the "DN" portion of the switch to raise the vehicle and the "UP" portion to lower the vehicle. With the leveling of the motor home now complete you may proceed to stabilizing your motor home (see stabilizing instructions above).

After leveling and stabilizing your vehicle again momentarily depress the "ON/OFF" switch to deactivate the leveling system, and then turn off the vehicle engine.

CAUTION: Overextending the levelers during stabilizing will cause the vehicle to become unlevel and result in a loss of stability. If a leveler has been overextended, press the up portion of the respective switch until the vehicle lowers into the level plane again - do no attempt to use the other levelers to raise the vehicle to a higher level plane.

RETRACTING THE LEVELERS

1. Start the chassis engine and turn the control panel power switch on. If any levelers are ex-

APPENDIX A - TROUBLE SHOOTING GUIDE

1. Panel does not function (buttons and lights on panel do not work and system is not responding).
 - Ignition needs to be on with engine running.
 - Transmission needs to be in park and parking brake applied.
2. Red indicator light will not go out when legs are retracted.
 - Reed switch(es) not grounded.
 - Reed switch(es) not set close enough to the magnet - needs adjustment.
 - Reed switch is defective.
3. The action of one cylinder will not operate in one direction (i.e.. it will go down, but not up, or vice versa).
 - Hydraulic hoses are crossed.
 - Wiring connections are crossed.
 - Valve not operating.
4. Jacks won't extend after they had been working previously.
 - Directional valve is not shifting positions - possibly due to foreign object obstructing the valve itself, or the solenoid is not working properly.
5. Level light(s) not coming on when the coach is level.
 - Level sensor is out of adjustment.
6. Pump continues to run after switch is released.
 - The white ground wire to the manifold is not grounded properly.
 - Pump motor solenoid is stuck - tap solenoid to unstick it or replace the solenoid.

This list represents a cross section of some possible problems and their corresponding solutions. If, after reviewing this manual, you still have problems or questions in regard to the operation of the Level Best 2000® system, please contact the Lippert Components Service Department at 1-574-312-7480.

tended, the control panel will emit a warning beep and the red "ALL UP" LED will light up and flash.

2. To retract all levelers simultaneously, press the "ALL UP" switch. To retract each leveler individually, press and hold the "UP" side of the respective leg switch. Using the "ALL UP" switch is the recommended method of retracting the levelers to assure even retraction at all four leveler locations and eliminate the possibility of twisting the chassis frame.

CARE AND MAINTENANCE

The Level Best 2000® hydraulic leveling system should be routinely checked as part of a regular periodic vehicle maintenance program. Kwikkee recommends checking the system twice a year: in the spring prior to the heavy travel season and in the winter, prior to storage. The following checklist has been provided as a guideline for maintenance:

NOTE: During periods of vehicle inactivity and/or storage, the leveling system should be activated and cycled through the leveling/retracting procedures on a monthly basis to keep the levelers in good operating condition.

1. Be sure the leveling jacks are in the retracted position, remove the breather cap on the reservoir and check the fluid level in the reservoir. The fluid level should be approximately 1" below the top of the reservoir. This standard provides an adequate amount of fluid for the levelers to operate efficiently.

3. When all leveler legs retract to a horizontal position, the red "ALL UP" LED will turn green, and the pump will shut off. You can now turn off the power switch and the vehicle is ready to travel.

NOTE: To prevent the possibility of damaging the leveler(s) and/or the vehicle, it is good common sense to confirm the retracted position by visual inspection.

If the fluid is below this level, add a sufficient amount to bring the level up to the operating standard. When filling the reservoir with fluid, use transmission fluid only. We recommend Dexron III; do not mix fluids.

2. Check the wire connections at the motor and valve manifold; these should be tight and secure.

3. Check the valve manifold for any evidence of hydraulic fluid leakage. Replace any seals as necessary.

4. Examine the Hydraulic hoses for any damage and/or leakage. Replace and resecure as necessary.

5. Check the hydraulic cylinders and leg assemblies for any damage and/or leakage. Replace and/or repair as necessary. Verify that all mounting bolts have been tightened to 80ft/lbs.



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