**Product Information Bulletin**

<table>
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<tr>
<th>Date Issued</th>
<th>PIB #</th>
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<tr>
<td>01/24/11</td>
<td>009</td>
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</tbody>
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**Atwood Level Legs Service Training Manual**

**YEAR / BRAND / TYPE / MODEL #**

This information is for all Newmar models that currently have Atwood’s Auto Position Levelegs system installed.

**Product Information**

These current Newmar models include:
- 2007 - Current Bay Star, Class A
- 2007 – Current Canyon Stars Class A, under 38’ of length
- 2006 – Current Dutch Star, Diesel Pusher
- 2006 – 2011 Ventana, Diesel Pusher, under 39’ of length

Please reference the attached instructions from Atwood when installing, programming, operating or troubleshooting their Auto Position Levelegs system.

If you have any questions regarding this P.I.B., please contact a Warranty Service Representative at Newmar Corporation.
Atwood Mobile Products

Auto Position
Levelegs™
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What is the Atwood Leveleg System?

- **Class A Auto Position Electromechanical Jack System**
  - **Electric Ball Screw Jacks**
    - 66280 - 7.5K Lifting capacity jack w/ 15” of travel
    - 66302 - 7.5K Lifting capacity jack w/ 13” of travel
    - 66334 - 7.5K Lifting capacity jack w/ 15” of travel, 4” taller
    - 66070 - 10K Lifting capacity jack w/ 15” of travel
  - **Auto Position Controls**
    - 66272 - Auto position controls kit for Ford chassis
    - 66276 - Auto position controls kit for Workhorse chassis
  - **Jack Mounting Bracket Kits**
    - One of the following for each Jack
      - 61023 - Bolt on universal kit, 7.5K (same as 61025 but has bolts)
      - 61025 - Weld on universal kit, 7.5K (61011 jack bracket side slots)
      - 61030 - Weld on universal kit, 7.5K (61031 jack bracket front slots)
      - 66031 - Weld on P chassis rear kit, 7.5K
      - 66032 - Weld on P chassis front kit, 7.5K
      - 61039 - Bolt on ’06 F53 chassis front kit, 7.5K
      - 66060 - Bolt/Weld on universal kit, 10K
Leveleg System Components

Components List
A – Front Leveleg (2)
B – Front Leveleg mounting bracket kit (2)
C – Rear Leveleg (2)
D – Rear Leveleg mounting bracket kit (2)
E – Auto Position control module
F – Keypad
G – 120 Amp circuit breaker
H – 4-Pin connector cable (wire harness)
J – 8-Pin connector cable (wire harness)
K – Front Leveleg harness
L – Rear Leveleg harness
M – Power wiring
Leveleg Components Continued

A,C – Leveleg
- 7.5K or 10K rating per Leveleg
- Two brackets Frame and Jack
- Square tube, ball screw system
- Typically matched fronts and matched rear levelegs based on axle rating

B,D – Mounting Bracket Kits
- Frame Bracket can be Welded or Bolted
- Four Bolts to Remove Leveler
- Built in Vertical Adjustment in Leveler Bracket
- Four Inches in 7.5K System
- Three Inches in 10K System
Leveleg Components Continued

E - Control Module
- Either 66274 used on Ford Chassis or 66275 used on Workhorse Chassis (difference in transmissions signals)
- Contains Electrolytic Fluid for Auto Position
- Must Mount Up and Forward
- Connections are Molex Style

F - Key Pad
- User Interface with System
- Screw Mounts to Dash Board
- Shows Safety State of System
- Shows Jack Position
Leveleg Components Continued

G - 120 Amp Breaker – On (+) battery Lead(2 gage wire recommended)
H - Keypad Wiring – (4) pin connector at control board and keypad
J - Coach Wiring – (8) pin connector at control board and to coach for Ignition, Transmission signal, Parking brake, and Foot brake
K/L - Leveleg Wiring – 10 gage wire connecting to leveler motor with watertight connector and to control board with quick connector for both front or both rear levelegs
Recommended Tools and Equipment

**Equipment and tools**

- Welder and welding supplies (optional bracket mounting method)
- (2) 3/4 Inch wrenches
- 3/4 Inch socket and ratchet
- Torque wrench (65 foot lbs. min.)
- 7/16 Inch nut driver
- Wire cutters
- Wire strippers and crimpers
- Phillips screwdriver
- Standard screwdriver
- 20 feet of red #2 wire
- 20 feet of black #2 wire
Installation

- **Mounting Brackets**
  - (4) $\frac{1}{2}''$-13 x 1-1/2'' Grade 8 bolts (at widest spread possible) or weld to frame (min. 6” of weld per side)
  - Brackets reversible for Leveleg height adjustment
  - 7.5K has reversible Leveleg bracket which holds Leveleg and bolts to mounting bracket with (4) $\frac{1}{2}''$-13 bolts
  - 10K Bolts directly to mounting bracket with (4) $\frac{1}{2}''$-13 x 1-1/2'' Grade 8 bolts
  - Some frames do require specific mounting bracket kit

- **Levelegs™**
  - Motor mounted toward front or rear of coach also available for motor to face out from frame
  - Recommended 3” of clearance to outside of leg for service removal
  - Ground clearance requirement is 7”-10” on a loaded coach.
  - 7.5K Leveleg 2.5” square tube and 10K Leveleg 3” square tube
Installation Continued

- **Control Module**
  - Mount securely by (4) mounting holes in corners in a dry stable compartment. For best leveling results mount over frame between front and rear axles of coach.
  - Control must be mounted face up within 8 degrees of level and the arrow pointing toward the front of the coach.

- **Keypad**
  - Mount near driver using (4) mounting holes in corners. Snug tight only, use of air tools could damage keypad.
  - Single 4-pin connector from control board to keypad.
Power and Leveleg Wiring

- Connect watertight connector for each 2-wire Leveleg harness to each of the Leveleg motors. Route harness back to control module leaving some disconnect slack and avoiding sharp edges and moving parts.
- Cut, and strip wires at control board. Crimp to appropriate molex connector lead as marked on short wires. (DR, PR, DF, PF and match lead color)
- If installing system with air dump connect fill lead to extra connection point of rear harness and dump lead to extra connection point of front harness.
- Snap Molex™ connectors into control module as marked on control module.
- 2 gage power wires with ring terminal connections recommended for supplying power and ground. The Battery (+) side connects to the P1 post on the board using a nut. The 120 amp breaker is required in this (+) line approximately 18 inches from the battery. Ground wire connects to the P2 post. Both lines are recommended directly from the battery.
Installation Continued

- **Signal Wiring**
  - Coach wiring, 8-pin connector
    - Connect at control module and coach
    - Signal Wiring:
  - **All signals are ground except “Workhorse” transmission is positive.**

<table>
<thead>
<tr>
<th>Wire Color</th>
<th>Ford Connection</th>
<th>Workhorse Connection</th>
<th>Wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>#3 IP (-)</td>
<td>F-6 (-)</td>
<td>Foot Brake</td>
</tr>
<tr>
<td>Yellow / White</td>
<td>#15 IP (-)</td>
<td>D-4 (-)</td>
<td>Park Brake</td>
</tr>
<tr>
<td>Blue / Green</td>
<td>14401 Crank enable”(-)</td>
<td>C-9 (+)</td>
<td>Transmission</td>
</tr>
<tr>
<td>Black</td>
<td>#5 IP (&amp; 3 amp fuse) (+)</td>
<td>F-5 (&amp; 3 amp fuse) (+)</td>
<td>Ignition</td>
</tr>
</tbody>
</table>

- **Keypad wiring, 4-pin connector**
  - Connect at control module (right) and keypad (pg.10)
  - (1) Ground wire
  - (1) 12 volt wire
  - (2) Signal wires (0 – 12 volts)
Initial Setup

- Insure Three Green Lights on Key Pad
  - Engine Running
  - Park Brake Set
  - Park/Neutral Engaged
- No Low Voltage Light
- Control Module Shipped in Error State
  - All Leveler Lights Blinking
- Press ALL and RET to get out of Error Mode
Initial Setup Continued

- Press and Release EXT and ALL
  - All Levelegs will go down and Touch Ground
- Press and Release EXT Button
- Press and Hold Leveler Buttons
  - Levelers always work in Pairs
  - For every 6 seconds of extension opposite pair will retract for 2 seconds
- Press and Release RET Button to put into Retract Mode if Needed.
Initial Setup Continued

- To Set Auto Position Memory - Once Coach is in Desired Position
  - Press On to Turn Key Pad Off
  - Press EXT Button 5 Times
  - Press RET Button 5 Times
    - All Lights will Blink
  - Press ALL 3 Times
    - All Lights will Turn Off
Initial Setup Continued

- Diesel Auto Air Dump Setup
  - Once Auto Position is set up for the First Time
    - Levelers’ Lights will Scroll Back and Forth
    - Press PASS Button 3 Times to Turn Off
    - Press DRIVER Button 3 Times to Turn On
    - This will only happen the first time the Auto Position is set.
  - To Return to Air Dump Setup mode:
    - Turn keypad off
    - Press EXT (10) times
    - Press RET (10) times
    - Leveleg lights will scroll back and forth
    - Press DRIVER (3) times to turn on or PASS (3) times to turn off
To Retract Levelegs
- Press and Release the ALL and RET Buttons Together
- All Levelegs will come up and turn off

Emergency Stop
- Press any Button While Levelegs are Moving
- All Levelegs will Stop Moving
- Must Retract Levelegs Once Emergency Stop is Pressed
Operating Procedure – Auto Mode

**Ready to Level:**
- Turn Keypad ON and Press AUTO
- Levelegs will go down and touch ground
- Then they will Auto Position the Coach
- Once Positioned – System will insure all levelegs are on the ground
- Turn unit off, or the unit will go off on its own after 5 minutes

**Ready to Leave:**
- Turn Keypad on and Press RET and ALL
- Levelegs will come up to fully retracted position and lights will indicate fully retracted
- Turn unit off, or the unit will go off on its own after 5 minutes
1.) Turn Level Leg Key pad off.
2.) The engine is running depress foot brake.
3.) The park brake is released.
4.) The transmission in gear (Drive or Reverse).
5.) The following three buttons push simultaneously on the key pad, Front, Rear, and All.
6.) This will momentarily dump the air bags to allow the vehicle to be driven through a doorway that was too low for the vehicle to be driven through with the air bags filled.
**Leveleg Trouble Shooting**

### No LED’s and no response from keypad

- **Check 120 amp fuse, Check 3 amp fuse**
  - **OKAY**
  - **Check battery voltage. (12.5 Volts minimum)**
    - **OKAY**
    - **Check ignition wire voltage. (12 volts on pin 7 w/ RV on)**
      - **12V to board**
      - **Check 4 Pin connector voltage at keypad. (3 w/ 12 volts, 1 ground)**
        - **OKAY**
        - **Check for moisture on or near control board or keypad.**
          - **NO**
          - **Replace keypad, see Determining Service Kit**
        - **YES**
          - **Replace control board, see Determining Service Kit**
    - **NO**
      - **Check 4 Pin connector voltage at control board (3 w/ 12 volts, 1 ground)**
        - **NO**
          - **Replace control board, see Determining Service Kit**
        - **YES**
          - **Allow control board/keypad to dry**
      - **YES**
        - **Correct low battery issue. (System required voltage)**
          - **YES**
            - **Fix or Replace 8 Pin connection cable**
          - **NO**
            - **Fix or Replace 4 wire cable**
      - **NO**
        - **Fix or Replace 4 Pin connection cable**

- **Reset 120 amp breaker, Or change 3 amp fuse**
Leveleg Trouble Shooting

Some LED’s light with no operation of keypad

- All LED’s blinking
  - YES: Retract All, then Configure Level Point
  - NO: Configure Air Dump, or wait 30 sec. for no Air Dump

- Red/Green LED’s bouncing side to side
  - YES: System Requires a minimum of 12.5 Volts to operate
  - NO: Motor overheat – Wait ½ hour and try again

- Low Voltage LED lit
  - YES: Check connections, change 8-pin wire
  - NO: Check connections, change control module

- (4) Vertical LED’s blinking, not “wait”
  - YES: Check Park Brake signal at coach connection (12 Volts, see pg. 12)
  - NO: Check Park Brake signal at control module (12 Volts, see pg. 12)

No “Park Brake Engaged” LED, but others lit

- Brake set, Check Park Brake signal at control module (12 Volts, see pg. 12)
  - YES: Check connections, change control module
  - NO: Contact RV service, System requires signal

Continued next page
Leveleg Trouble Shooting

Some LED’s light with no operation of keypad, Continued

No “Park/Neutral” LED, but others lit

- NO
- YES

- NO
- YES

(5) Vertical LED’s blinking

- NO
- YES

In Park/Neutral, Check Trans. signal at control module, see pg. 12 (12 Volts-Workhorse / Ground-Ford)

Check Trans. signal at coach connection, see pg. 12 (12 Volts-Workhorse / Ground-Ford)

Check Trans. Signals in/out of gear to determine correct control module

12V- Park/Neutral
Gnd- In gear

Workhorse board, 66274

12V- Park/Neutral
Gnd- In gear

Ford board, 66275

Check connections, change control module

NO

Reconfigure 8-pin wire

Check connections, change 8-pin wire

YES

Check Trans. Signals in/out of gear to determine correct control module

Check connection, change control module

Check connections, change control module

YES

Replace with other control module

Press RET+ALL to clear mode

Check 4-pin signals at control module, see pg. 12 (3 leads 12V, 1 ground)

Check connection, change 4-Pin conn. Lead

Check connections, change control module

Check connections, change 4-Pin conn. Lead

Contact RV service, System requires signal

Check connections, change control module

YES

NO

Check 4-pin signals at control module, see pg. 12 (3 leads 12V, 1 ground)

Check connections, change control module

YES

NO

Check connections, change control module

NO

Check connections, change control module

YES

Check connections, change control module

NO

Check connections, change control module

YES

Check connections, change control module

NO

Check connections, change control module

YES

Check connections, change control module

NO

Check connections, change control module

YES

Check connections, change control module

NO

Check connections, change control module

YES

Check connections, change control module

NO

Check connections, change control module
Leveleg Trouble Shooting

**Jack Continues to Clutch and will not Turn Off**

- **NO ALARM**
  - Press any button to stop clutching
  - Send into error mode, disconnect a Leveleg, press RET+ALL

- **W/ ALARM**
  - Press ON to shut warning alarm off
  - Press FRONT+DRIVER+REAR+PASS+ALL to reset internal timers
  - Complete a RET+All to return to normal operation

SEE PAGE 23 TO CLEAR ERROR
Leveleg Trouble Shooting

Red and Green Lights come on for a Leveler Location (Error Mode)

W/ ALARM

Press ON to shut warning alarm off

Extend each leg 3-4 seconds if close to retraction. Press EXT+(Leg position buttons)

ALL LEVELEGS EXTEND/RETRACT

Press FRONT+DRIVER+REAR+PASS+ALL to reset internal timers

Check voltage at motor connection during Ext./Ret. (12volts)

NO

YES

Replace Leveleg, Part number label on lower front of leveler

Replace Harness wiring to problem leveler

Replace Control Board

Replace Leveleg, Part number label on lower front of leveler

 ANY LEVELEG WILL NOT MOVE WHILE MOTOR RUNNING

Check voltage at Control Board connection during Ext./Ret. (12volts)

YES

NO

Hold RET+ALL until retract begins (2-3 seconds) to return to normal operation

Check voltage at Control Board connection during Ext./Ret. (12volts)
Leveleg Trouble Shooting

**Auto Level does not level coach**

- **SYSTEM REACTION, BUT NOT LEVEL**
  - **Check the mounting of the control board to be solid and reasonably horizontal (<10 degrees)**
  - **Send into error mode, disconnect a Leveleg, press RET+ALL**
  - **MANUALLY LEVEL COACH**
    - **Extend each leg to ground and manually level coach. Press EXT+(Leg position buttons until level)**
  - **RESET LEVEL INTO MEMORY**
    - **Press ON (turn keypad off), Press EXT (5) times, Press RET (5) times, (all lights will blink), Press ALL (3) times, (all lights will stop blinking)**
  - **Press RET+ALL to send system to home position, then Press AUTO to level**

- **DID NOT LEVEL**
  - **Press AUTO to level**
Leveleg Trouble Shooting

Notes: ___________________________________
Wiring Diagram

WIRING DIAGRAM KEY

A – Driver Front Leveleg
B – Passenger Front Leveleg
C – Driver Rear Leveleg
D – Passenger Rear Leveleg
E – 120 Amp reset breaker
F/G – Motor leads
H – Keypad wiring, 4-Pin connector
I – Coach wiring, 8-Pin connector
J – 4-Pin connection at control module
K – 8-Pin connection at control module
L – Keypad
M –
N – Power Leads, 2 Gage
P – Wire harness Molex connector
Q – Motor Molex connector
R – Air Bag dump connection point (opt.)
S – Air Bag fill connection point (opt.)
# Replacement Parts List

## Single Pack Levelers

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Quantity</th>
<th>Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>66331</td>
<td>Single Screw, Sq Tube, 15&quot; 15&quot; Travel. Boxed 66280.</td>
<td>7,500</td>
<td></td>
</tr>
<tr>
<td>66335</td>
<td>Single Screw, Sq Tube, 13&quot; 13&quot; Travel. Boxed 66302</td>
<td>7,500</td>
<td></td>
</tr>
<tr>
<td>66324</td>
<td>Ford Relay Control Service Kit (includes control module and IOM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>66330</td>
<td>Workhorse Relay Control Service Kit (includes control module and IOM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>66323</td>
<td>Keypad Service Kit Rev. 4 and before (includes keypad/IOM; for either Ford or Workhorse)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>66342</td>
<td>Keypad Service Kit Rev. 5 and after (includes keypad/IOM; for either Ford or Workhorse)</td>
<td></td>
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</tr>
</tbody>
</table>

## Accessories

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>66017</td>
<td>Wiring Harness for 5th wheels</td>
</tr>
<tr>
<td>66021</td>
<td>Control Board Bracket Kit</td>
</tr>
<tr>
<td>66023</td>
<td>Wiring Harness for motorhomes</td>
</tr>
<tr>
<td>66024</td>
<td>Cross Brace Kit</td>
</tr>
<tr>
<td>66026</td>
<td>8 pin Signal Wire</td>
</tr>
<tr>
<td>66027</td>
<td>4 pin Control Pad Wire</td>
</tr>
<tr>
<td>66341</td>
<td>Wiring Harness for Diesel Air Dump/Fill</td>
</tr>
<tr>
<td>71600</td>
<td>Cross brace - 5th Wheel, outboard</td>
</tr>
<tr>
<td>71610</td>
<td>Cross brace - 5th Wheel, inboard</td>
</tr>
</tbody>
</table>
Replacement Parts Board/Keypad Determination

- **Does customer need control board, keypad, or both?**
  - **BOTH**
  - **CONTROL BOARD**
  - **KEYPAD**
  - **Does the keypad have a revision # sticker on the back?**
    - **NO**
    - **Does the keypad have two LED's(lights) between the EXT and RET buttons?**
      - **NO**
      - **YES**

**SERVICE KIT**

- Workhorse/66274
  - #66276
  - #6630
  - #66342
  - #66323
  - #66323
  - #66342
  - #66323
Atwood warrants that our products will be free of defects of material or workmanship for a period of two years from the original date of purchase. Our liability is limited to the replacement of the product, repair of the product, or replacement with a reconditioned product at our discretion.

In the event of a warranty claim, you must contact, in advance, either an authorized Atwood Service Center, or the Atwood Service Department at 564-262-2655.

Return parts must be shipped prepaid to Atwood Mobile Products, 800 Hwy 150 S, West Union, IA 52175. The Return Goods Number (RGN) must be clearly marked on the paperwork and on the carton. No returns will be accepted without an RGN.

The returned parts become the property of Atwood. We will inspect the parts and determine causality. If it is a defect in material or workmanship, Atwood will replace the product at no charge, pay all reasonable labor charges in accordance with our Hardware Flat Rate Schedule, and freight. Damage or failure resulting from misuse (including failure to seek proper repair service), misapplication or alterations are the owner’s responsibility.
Auto Position
Levelegs

Questions