4-5 Leveling System

4-5 Leveling System

4-5.1 Introduction

4-5.1.1 What it Can Do

Your motorhome is equipped with a Hadley Air Leveling System which has two operational modes: Ride Mode and Parked Mode. The Ride Mode uses the Hadley Smart Air Management System (SAMS). The Parked Mode uses the Hadley Self-Leveling System (SLS). This microprocessor based system controls the inflate/deflate operation of the individual suspension air bags in accordance with the respective operational mode.

The Ride Mode, SAMS, is selected when the Park Brake is released. This mode automatically adjusts the ride height when the Ignition switch is ON and the engine driven air compressor is running.

With SAMS, the user can change the vehicle height by selecting one of several predetermined settings from the operator's control panel. This is useful when departing from a steep driveway; the rear end can be raised to increase the departure angle.

With SAMS, the user can also inflate/deflate the tag axle air bags when the vehicle is stationary or is traveling at slow speeds. By deflating the tag axle air bags, the turning radius can be reduced or additional traction can be transferred to the drive axle.

The Parked Mode, SLS, is selected when the Park Brake is engaged. This allows the user to level the vehicle when parked on an uneven surface. After the vehicle is leveled, the SLS can be placed into the Standby Mode to reduce House battery drain.

The transition from the Parked Mode to the Ride Mode occurs when the Park Brake is released. The vehicle attains ride height within 5-10 seconds after the engine is started.

4-5.1.2 What it Cannot Do

Many of the user settings are available only when operating below certain speeds or when the parking brake is applied.

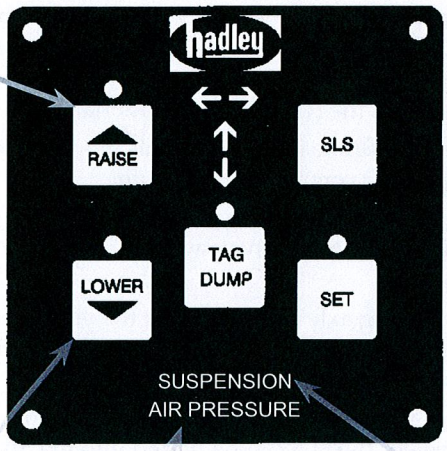
4-5.1.3 User Interface

The Hadley operator's panel is located on the left side of the driver position. The user has the ability to select the predetermined ride height settings, SLS functions, and tag axle control. The indicator lights provide feedback to the operator.

4-5.2 Operation Instructions

4-5.2.1 Location of Raise, Lower and Tag Axle Buttons and Indicator Lights

Ride Mode - Raise, Lower, and Tag Control



RAISE Button

HEIGHT RAISE - REAR
Press once to raise the rear of the RV for increased bumper clearance. (The Raise light flashes) [Speed < 20 MPH]
Raised Height ≈ 2.75"

HEIGHT RAISE - TOTAL
Press and hold button until raise light remains "on" to raise entire vehicle for increased ground clearance. [Speed < 10 MPH]
Raise Height ≈ 2.75"

HEIGHT - NORMAL
Press "LOWER" switch once to return vehicle to normal height. (Raise light off).

TAG DUMP Button

TAG DUMP MODE
Press once to exhaust the air in the rear tag axle to low pressure. The LED indicator is ON while this axle is in dump mode. [Speed < 20 MPH]

TAG NORMAL MODE
Press button again to refill tag axle to normal pressure. The LED indicator is OFF while this axle is in normal mode.

LOWER Button

HEIGHT #1 - LOWER TOTAL
Press once to partially lower the vehicle to decrease overall height. [Speed < 10 MPH] (The Lower light flashes)
Lower Height #1 ≈ 2.0"

HEIGHT #2 - LOWER TOTAL
Press and hold button until the lower light remains "on" to lower the vehicle to lowest overall height. [Speed < 5 MPH]
Lower Height #2 ≈ 3.75"

HEIGHT - NORMAL
Press "RAISE" switch once to return to normal height (Lower light off)

Air Pressure Indicator

AIR - LOW
This indicator will flash when the air pressure is insufficient to properly operate the air suspension control system.

AIR - NORMAL
Indicator LED ON, not flashing.

Suspension Indicator

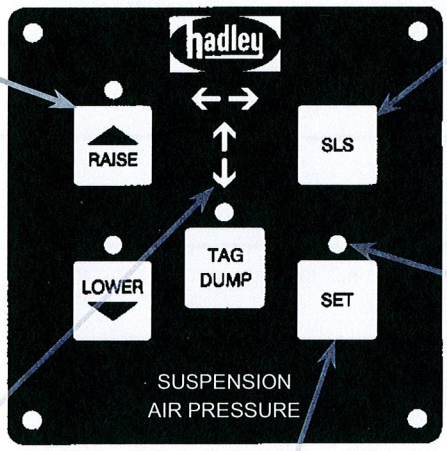
SUSPENSION FAULT - LED ON
This indicator will be ON when a suspension fault has occurred.

SUSPENSION NORMAL - LED OFF
This indicator will be OFF when there is no suspension fault.

Parked Mode Buttons and Indicators

Note: The "Level Find Mode" is used to help locate a level surface on which to park before the SLS "SET" button is used.

Level Indicator Light "Y" or Long Axis
Y-LEVEL - DONE
Solid Green - RV is near level
Y-LEVEL - NORMAL RANGE
Flashing Green - Adjustment is possible and within range.
Y-LEVEL - MARGINAL RANGE
Flashing Amber - Marginal conditions - possible self-level.
Y-LEVEL - OUT-OF-RANGE
Solid Amber - Excessive slope - Self-leveling may not be possible.



AIR LEVEL - ON
Press once to activate the SLS System and initiate the "Level Find Mode"
AIR LEVEL - OFF
Press once again to turn the SLS off and return to normal height.
NOTE: This function may be used at low speeds to locate a level parking surface.

LEVEL - IN PROCESS
Indicator flashes as system levels the motorhome.
LEVEL - DONE
The indicator stays "on" after leveling is done.

Level Indicator Light "X" or Short Axis
X-LEVEL - DONE
Solid Green - RV is near level.
X-LEVEL - NORMAL RANGE
Flashing Green - Adjustment is possible and within range.
X-LEVEL - MARGINAL RANGE
Flashing Amber - Marginal conditions - possible self level.
X-LEVEL - OUT-OF-RANGE
Solid Amber - Excessive slope - Self-leveling may not be possible.

SELF LEVEL - ACTIVATION
Press once to activate the "Self-Leveling" process.
SELF LEVEL - STANDBY
Press once again to switch the self-leveling to "standby". This will cancel leveling and maintain current position.
SELF LEVEL - RE-ACTIVATE
Press again to re-activate "Self-Leveling" process.
See Parking Brake Note.

SLS Control Functions and Indicators

**Note: The parking brake must be applied before the SLS "SET" feature can be used.*

4-5.2.2 Power ON

When the vehicle is first turned on, the Hadley SAMS will gather information from the sensors. This period of time will be approximately 5 seconds. The system will not make any adjustments during this time. See the troubleshooting section if the Suspension Light stays on or starts blinking.

4-5.3 Hadley SAMS Pressure Requirements - Ride Mode

4-5.3.1 Switch ON

Electrical power must be "ON" and system air pressure above 90 PSI.

▲**WARNING:** Failure to operate the vehicle without sufficient air pressure may cause vehicle damage or personal injury.

4-5.3.2 Switch OFF

The electrical power must be switched "OFF" when jacking, hoist towing or during designated service procedures.

▲**WARNING:** Failure to power off electrical system power and release air pressure may cause vehicle damage or personal injury.

4-5.4 Ride Height Mode Definitions

4-5.4.1 Normal Ride Height

This is the standard height for the vehicle during normal driving operation.

4-5.4.2 Raised Mode

The vehicle is raised to increase the clearance between the ground surface and the underside of the frame. The vehicle can be raised approximately 2.75 inches.

4-5.4.3 Lowered Mode

The vehicle is lowered to increase clearance above the vehicle. This mode will reduce the clearance between the ground and the vehicle frame. By pushing the Lower Button once, it will lower vehicle approximately 2.0 inches. If Lower Button is held down vehicle will lower approximately 3.75 inches.

4-5.4.4 Tag Dump

This button controls the air pressure in the tag axle air bags. This feature allows the user to reduce load on the rear axle to decrease turning radius and improve maneuverability. The dump feature is also used to increase traction on the drive axle.

4-5.4.5 Vehicle Height Change Procedures

IMPORTANT: The vehicle's engine should be running when changing heights. This allows the vehicle to provide sufficient air supply to the air suspension system.

4-5.4.6 Normal Driving Mode to Raised Rear Mode

Press the "Raise" button once to enter the "Raise Rear Mode". This mode is used to increase the clearance between the bumper and the ground.

The "Raise Rear Mode" may be activated at speeds up to 20 MPH, the vehicle will return to normal ride height mode when your speed exceeds 20 MPH or if the "Raise Rear Mode" has been on for more than 40 seconds.

The "Lower" button may be pressed once to return to the normal ride height mode.

4-5.4.7 Normal Driving Mode to Raise Mode

Press and hold the "Raise" button (about 3 seconds) until the indicator remains "on" to activate the "Raise Mode". This mode is used to increase the clearance between the entire vehicle and the ground.

The "Raise Mode" may be activated at speeds up to 10 MPH, the vehicle will return to normal ride height mode when your speed exceeds 10 MPH or if the "Lower button" is pressed once.

4-5.4.8 Normal Driving Mode to Lower Mode

Press the "Lower" button once to enter the "Partial Lower Mode". This mode is used to decrease the overall height of the vehicle to clear obstructions.

The "Lower Mode" may be activated at speeds up to 10 MPH, the vehicle will return to normal ride height mode when your speed exceeds 10 MPH or if the "Raise" switch is pressed once.

4-5.4.9 Normal Driving Mode to Full Lower Mode

Press and hold the "Lower" button (about 3 seconds) until the indicator light remains "on" to activate the "Full Lower Mode". This mode is used to decrease the overall height of the vehicle to minimum to clear obstructions.

The "Full Lower Mode" may be activated at speeds up to 5 MPH, the vehicle will return to normal ride height mode when your speed exceeds 5 MPH or if the "Raise" button is pressed once.

4-5.4.10 Tag Dump Mode

The "Tag Dump" button controls the air pressure in the tag axle air bags. This feature allows the user to reduce the load on the rear axle to decrease turning radius and to improve maneuverability. This feature is also used to increase traction on the drive axle.

When the "Tag Dump" is active and the speed is less than 12 MPH, the system will reduce the tag axle pressure from normal pressure to about 5 PSI, if the speed increases above 12 mph the tag axle pressure will increase to about 30 PSI, when above 20 mph the tag axle will return to normal operating pressure and the "Tag Dump" mode indicator will switch off.

The "Tag Dump" button can be pressed at any time to either activate or switch off the "Tag Dump Mode".

4-5.5 SLS/SET Controls - Parked Mode

The "SLS" and "Set" buttons are used to control the self leveling feature.

The SLS button is used to activate the system and two indicator arrows located to the left of the SLS button.

The SLS feature can be turned on when operating at slow speeds to help find a level location ("Level Find Mode").

Refer to the information on page 6 regarding the arrow indicators.

Note: The "Set" button activates the self leveling feature. The SLS system must be switched ON and the parking brake applied before the "Set" button can operate.

The "Set" command levels the RV by first adjusting the "Y" axis and then adjusting the "X" axis. The "Set" indicator flashes while the RV is leveling and then stays "ON" when the leveling is complete.

By pressing the "Set" button after leveling is complete, the SLS is placed into "Standby" State. The "Standby" State disables the automatic leveling process and reduces the battery power consumption.

4-5.6 Roadside Emergencies and Service

4-5.6.1 Jacking or Towing

The electrical power to the Hadley SAMS system must be turned OFF whenever jacking or towing this vehicle.

4-5.6.2 Tire Replacement

The electrical power to the Hadley SAMS system must be turned OFF whenever jacking or towing this vehicle.
See *Section 3.2 Towing* for instructions on how to tow the motorhome.

THIS PAGE WAS INTENTIONALLY LEFT BLANK