Calibration Procedures - Touchpad

This document provides detailed calibration procedures for LiquidSpring® **Smart Suspensions**. This procedure is required to establish suspension ride heights and steering center.

Driver Interface — Ride Mode Indication Green LED's, Ride Height Indication Green LED's, Red LED Warning Light, ON/OFF Button, Ride Mode Adjustment Buttons, Steering Centering Indication Amber LED's, Ride Height Adjustment Buttons

WARNING: Do not run vehicle in an enclosed building without adequate ventilation or without ducting exhaust fumes outside. Operation of a vehicle inside an enclosed building can lead to serious injury or death.

IMPORTANT: Proper calibration of the system must be conducted with the vehicle loaded to the as-delivered condition with body installed. The calibration procedure may be performed on an empty chassis; process must be repeated for vehicle loaded to as-delivered condition. Vehicle engine needs to be running or shore power connected to provide sufficient power for calibration procedure.

Bluetooth, Ride Mode Indication Green LED's, Ride Height Indication Green LED's, Ride Mode Adjustment Buttons, ON/OFF Button, Red LED Warning Light, Steering Centering Indication Amber LED's, Ride Height Adjustment Buttons

Calibration Procedures

1. Verify that the vehicle is on level ground. Remove jack stands and/or any other obstructions from under vehicle.

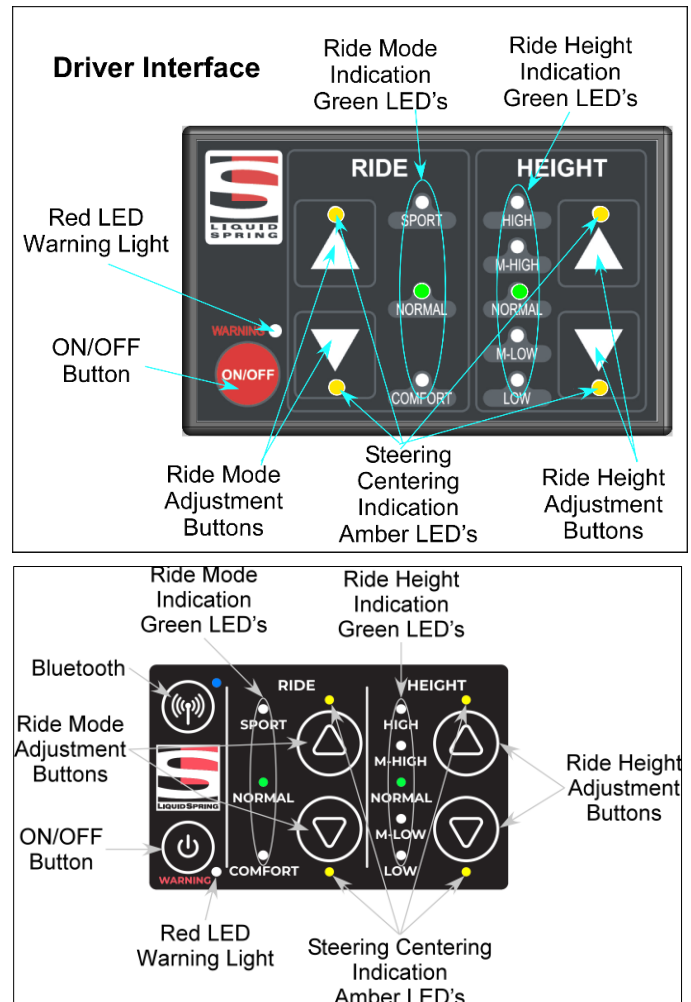NOTE: Vehicles equipped with generators must shut them off before starting the calibration process.

2. Start engine. If shore power is utilized, place ignition key in "Run" position.

3. Verify the following:

   a. The front wheels are steered straight ahead.

   b. LiquidSpring Driver Interface is illuminated.

   c. Red "Warning" LED is not lit or flashing.

   d. Green LED indicator for HEIGHT is set to NORMAL.

   NOTE: If any of the above conditions are not met, contact LiquidSpring Customer Service.

4. To start calibration, simultaneously press and hold both HEIGHT adjustment buttons until the SPORT, COMFORT, HIGH, and LOW green LEDs begin to flash (about 5 seconds). Release buttons once flashing begins. The suspension system will begin to raise or lower to the full travel position and will then cycle to the opposite position.

IMPORTANT: On vehicles equipped with a LiquidSpring front suspension, the initial calibration will not begin to raise or lower to the full travel position and requires step 4 to be repeated.

5. Verify the following while calibration is in process:

   a. Vehicle raises and lowers to full travel positions and is level at those positions.

   b. Vehicle remains in Park and payload/occupancy is not changed.

6. When the four green LEDs are no longer flashing, calibration is complete.

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7. After calibration verify the following:

   a. Four amber LEDs are illuminated with front wheels steered straight ahead; amber LEDs turn off when steering wheel is rotated approximately 20° off-center in either direction.

   b. NORMAL green ride height LED is illuminated, and vehicle appears at normal ride height.

NOTE: If any of the above conditions are not met, contact LiquidSpring Customer Service.

Initial Front Suspension Calibration

If a LiquidSpring front suspension is newly installed, a calibration is required. Follow steps 1-7 under *Calibration Procedure*.

Steering Calibration Only

NOTE: The amber lights only light up when the steering sensor indicates the approximate center location. They will not be lit if the steering wheel is rotated more than 20° off-center in either direction.

IMPORTANT: The LiquidSpring Smart Suspension system includes an automatic self-centering routine. In conditions such as driving on the highway with significant side wind, the amber lights may temporarily not be lit when the steering wheel is exactly centered.

To check steering: With the vehicle parked and running, rotate the wheel slowly from center to full steering stop, then repeat in the opposite direction. The amber LEDs should be lit with the vehicle steered approximately straight ahead and should turn off when steering wheel is rotated past 20° off-center in either direction. If both conditions are met, continue operating normally. If the amber lights do not light up, remain lit while turning the steering wheel past 20° off-center, or are always lit, following the instructions below:

1. Verify that the front wheels are steered straight ahead.

2. To begin the calibration, turn the ignition key to "Run" and ensure that the LiquidSpring Driver Interface lights up and that the red "Warning" LED is not lit or flashing.

3. Press and hold both HEIGHT adjustment buttons simultaneously until the SPORT, COMFORT, HIGH, and LOW green LEDs begin to flash.

4. As soon as the four green LEDs begin to flash, press the ON/OFF button to stop the process.

5. Press the ON/OFF button to turn system back on.

6. Verify that the four amber LEDs are lit with the vehicle steered straight ahead, and then turn off when steering wheel is rotated more than 20° off-center in either direction.

7. Steering calibration is completed.

NOTE: If the amber LEDs are not operating correctly, contact LiquidSpring Customer Service.

Disable High Height

The following process is intended to allow the disabling of the HIGH Ride Height feature on the LiquidSpring suspension.

1. Initiate a *Calibration Procedure* per LiquidSpring guidelines.

2. During Calibration, while the green LEDs are still flashing, press Ride Mode Adjustment Button DOWN and release.

3. Allow calibration to finish.

Calibration Procedures - Touchpad

Enable High Height

The following process is intended to allow the enabling of the HIGH Ride Height feature on the LiquidSpring suspension if the HIGH HEIGHT has previously been disabled.

1. Initiate a *Calibration Procedure* per LiquidSpring guidelines.

2. During Calibration, while the green LEDs are still flashing, press Ride Mode Adjustment Button UP and release.

3. Allow calibration to finish.

Updating Software

NOTE: To receive updated software, contact LiquidSpring customer service. The updated software will be sent by email and will be located inside a ZIP file.

1. Insert a USB drive into the computer.

NOTE: USB must be 16GB or smaller and formatted as FAT or FAT32 to be recognized.

2. After inserting the USB drive, right mouse click on the drive from file explorer and select properties to see how it is formatted. Refer to **Figure 1**.
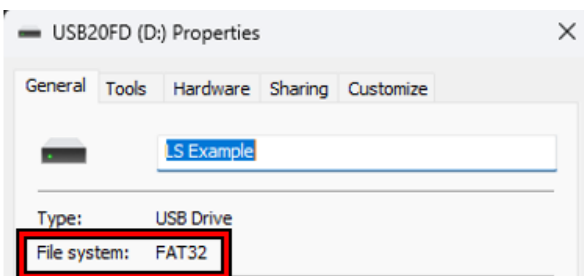

Figure 1. USB Drive Properties

3. If the USB drive is not formatted as FAT32, right mouse click on the drive again and select Format.

4. Select FAT32 from the drop down menu under File system and select start. Refer **to Figure 2**.
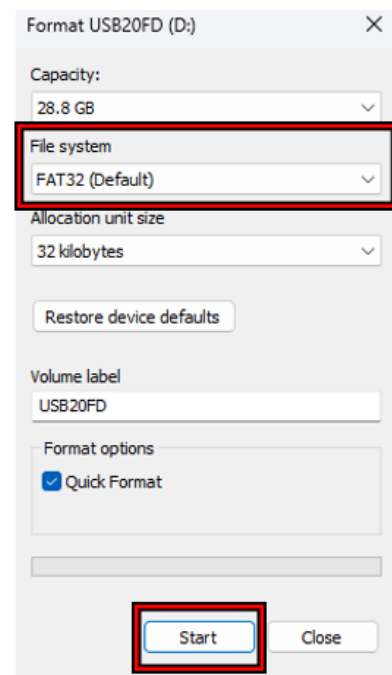

Figure 2. Formatting USB Drive

5. Once finished, open the ZIP file and copy the "LS" folder to the USB drive.

NOTE: LiquidSpring suspensions have unique software based on the application it is used on, contact LiquidSpring customer service if unsure on whether or not the ZIP file being used is the correct one.

6. Remove the USB drive from the computer.

7. Remove the rubber plug from the bottom of the driver interface as shown in **Figure 3**.

Figure 3. Removing Plug from Touchpad

8. Insert the USB drive with the correct ECU and parameter files in the LS directory into the USB-C port (a USB-A to USB-C adapter may be required).

9. Start engine. If shore power is utilized, place ignition key in "Run" position.

10. The driver interface will flash a sequence of lights, then only the red warning light will flash for approximately 30-60 seconds, followed by another sequence of flashing lights.

11. Once the NORMAL ride mode and NORMAL ride height lights are illuminated, remove the USB and adapter if used.

12. Insert the rubber plug back into the driver interface.

13. Perform an autocalibration. Refer to the *Calibration Procedures* section listed above.

    NOTE: Once the vehicle has finished the calibration process completed, vehicles with generators may resume operation.