

Why You Should Extend Slides at Ride Height

(If your Owner's Manual instructs to do so)

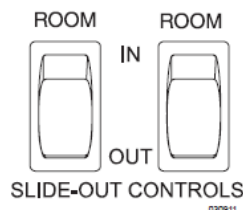
There has been a lot of discussion on various forums around the question **“Should I level my motorhome before extending my slides?”**.

In my particular case (2006 Monaco 42-DSQ), my manual tells me to extend or retract the slides with the air suspension fully pressured.

Main Room Slide-out

To Extend the Main Slide-out Room:

- Move the cab seat(s) forward.
- Confirm that there is at least 5" of clearance outside the motorhome for the slide-out room to extend.
- Be sure the bay doors under the slide-out room are closed.
- Ensure the ignition key is **OFF**.
- The park brake must be applied.
- The house batteries are fully charged.
- Be sure all people, pets and objects are clear of slide-out room path.
- The control switch for the slide-out room is on the system monitor panel.
- Press and hold the front slide-out room switch **OUT**. The slide-out room slowly moves **OUT**. Release the switch to stop room movement. To continue the room movement, push and hold the switch in.
- Release the slide-out switch when the room is fully extended (a change in motor sound indicates extension). The slide-out drive motor will not stop automatically; the switch must be released.
- If equipped, extend additional slide-out rooms.
- Level the motorhome with the leveling system.



NOTE: Perform the slide-out room operation with the air suspension system full. Extensive damage could occur to the slide-out room and awning when extending the slide-out room in snow, sleet, ice or freezing rain. In such conditions, if the slide-out room is extended, clear the awning and ensure free movement prior to operating the slide-out room.

CAUTION: Dirt and grit trapped under the slide-out room could result in damage to the floor. Continuous operation of the slide-out could cause a drain on the house batteries and damage to the slide-out motor from overheating.

To Retract the Main Slide-out Room(s):

- Check for sufficient clearance inside the motorhome before retracting the slide-out room.
- Clean the floor, if applicable, to ensure there is no dirt that could result in floor damage during operation.
- Move the cab seat(s) forward.
- Inspect the exterior to ensure there are no sags in the awning material.
- Remove any debris from the top of the slide-out room.
- Be sure the bay doors under the slide-out room are closed.
- Start the motorhome before retracting the slide-out room. Allow air bags to inflate to normal travel height.
- Retract the leveling jacks prior to operating the slide-out.
- Turn the ignition switch **OFF**. The slide-out room will not operate with the engine running.
- The house batteries should be fully charged.
- The park brake must be applied.
- Ensure all people, pets and objects are clear of slide-out room path.

CAMELOT 2006

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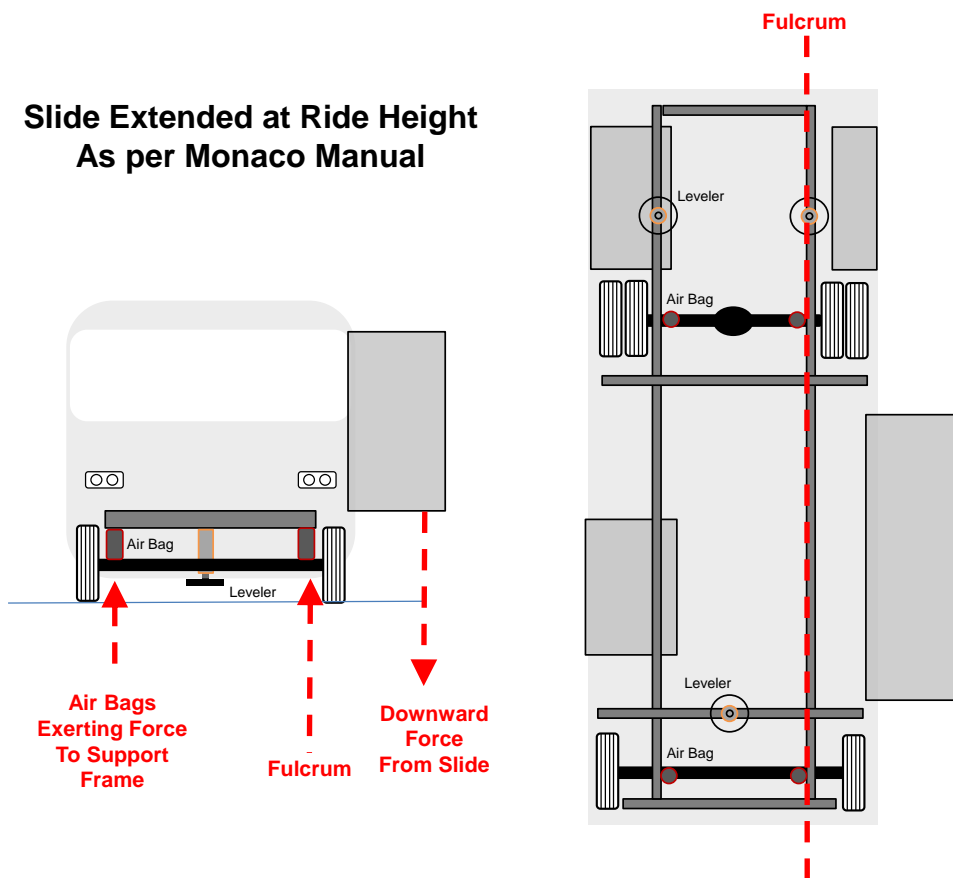
It seems intuitive that it would be better to level the motorhome first, and then extend the slides. I therefore decided to analyze the reason behind the instructions in the manual *(with input from one member of the Monaco Owners Group)*.

Applying some basic engineering, I now understand why Monaco says to extend slides first. And... it *does not* appear to be the often mentioned reason that the slides were installed on a level floor. Although, that is true and may play some small role.

It all has to do with the balance point (Fulcrum) acting on the frame when you extend the slide. Referring to the following picture:

- ❑ When the air bags are fully pressured and the hydraulic levelers are retracted, the frame is balanced on the wheels/suspension at the outside edges.

- ❑ Even on uneven ground, the frame is balanced. There might be some minor twisting forces, but the air bags share the load and minimize it to a large extent.
- ❑ As the slide is extended, it applies a downward force on that side (*in this case the right side*).
- ❑ The frame pivots on the effective **Fulcrum** which is parallel to the frame.
- ❑ The air bags on the other side (curb side) are exerting a force upwards that reduces the strain on the frame. Depending on the weight of the slide, and its center of gravity, there may be some minor imbalance, but it is mitigated by the air bags.



On the other hand, extending the slide after the coach is levelled is shown on the next drawing.

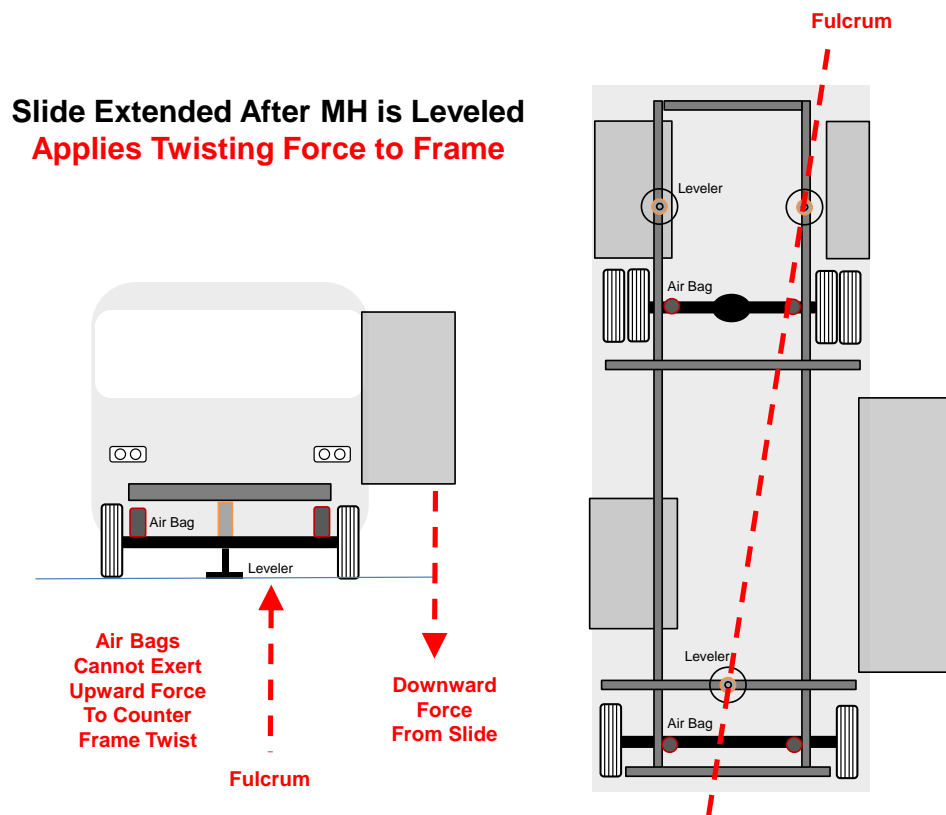
- ❑ With the hydraulic levelers extended and the air bags deflated by the levelling system, the frame is now held rigidly in position.
- ❑ The air bags can no longer exert any upward force.
- ❑ The balance point or **Fulcrum** moves diagonally across the frame, forming a line defined by the front center jack and the rear roadside jack.

Note: This would also be true for many 4 jack systems that have the 2 front jacks interconnected. These units would work the same as the single front jack forming a balance point in the center.

- ❑ Now as the slide is extended, it again exerts a downward force. However, now it would tend to twist the frame because there is no counter balancing force on the opposite side, as the air bags are no longer exert any upward forces.

The end result is the frame will now twist as the slide pushes down on one side and the dead weight of the curb side rear 3/4 pushes down on the other side. To resist this, the frame would have to be much

stronger which would have added both weight and costs which is something Monaco would have avoided. The simple answer of course would be to provide instructions to extend slides before levelling.



I realize that this really applies more to the heavier front slides than the rear slides which are both lighter and have their center of gravities over the rear jacks. I would not expect Monaco to provide different instructions for front and back slides so their instructions make sense to me.

Now that I understand the physics, in the future, I will continue to:

When arriving in my site:

1. Park in as level a spot as possible. If it is too far out of level, I will place blocks under the lowest wheel(s) to provide some semblance of level to the coach.
2. Shut down the engine, pull the park brake and then extend the slides.
3. Level the coach as normal.

When getting ready to leave:

1. Start the engine and air up to normal pressure. I will of course limit running the engine so as not to disturb my neighbors.
2. Shut down the engine as soon as possible and then retract the levelling jacks.
3. Retract the slides.