



The Infinity Semi-Active Suspension was designed for heavy duty transit market accessibility to reduce whole body vibration, so as to protect occupation bus drivers. The Infinity Suspension addresses the prime issues that operators face on the road: major bump events and whole body vibration. The Infinity Suspension provides a smooth “isolated from the road” feeling while mitigating large disturbances from bumps, bridge gaps, pot holes, etc. To accomplish these improvements over conventional passive suspension seats, the Infinity Semi-Active seat uses a computer controlled suspension system as well as an advanced computer-aided height adjust system.

Benefits include:

- A safer, smoother and more comfortable ride
- Easier and computer controlled seat adjustability
- Reduction in back and neck pain
- Less driver fatigue

The Infinity Suspension achieves these benefits by reducing operator movement over bumps and attenuating whole body vibrations that are normally transmitted from the vehicle up through a passive suspension to the operator.

When driving over typical U.S. roads, unwanted large magnitude acceleration and motion stems from bumps, pot-holes, and bridge gaps and this road content is described as having acceleration frequencies less than 2 Hz. Unwanted whole body vibration stems from rough road surfaces and vehicle design, and this road content is described as having acceleration frequencies greater than 2Hz.

For road content less than 2 Hz the acceleration transmissibility magnitude is targeted to be 0 dB, meaning the Infinity Suspension does not introduce unwanted motion over bump disturbances, does not resonate, and ensures the operator’s seated position tracks the road surface well.

For road content greater than 2 Hz the acceleration transmissibility magnitude is targeted to be less than 0 dB, meaning that the Infinity Suspension attenuates whole body vibrations before they are felt by the operator.



To maximize the improvement in ride quality experience by users of the Infinity Semi-Active seat, it also features 3 height adjustment modes:

- Centering mode or “Automatic Mode” automatically adjusts the driver to the center position of travel for optimum seat performance. No user input is needed and if ride conditions or operators change, the seat automatically readjusts to the new conditions and recenters the driver.
- Wide band mode or “Semi-Automatic Mode” allows the driver to adjust seat height within a 4” window at the center of seat travel. This allows for almost all drivers to achieve desired sight lines and pedal reach while still providing optimized whole body vibration reduction and near ideal end stop control.
- Conventional seat height adjust mode or “Off Mode” allows the driver to adjust the seat to any position the desire. The semi-active suspension controller is still fully in operation, but if the driver chooses to adjust the seat to full down or full up, he or she is allowed to do so. This mode is not recommended, but it is provided for drivers who believe they must ride in full up or full down position for safe bus operation. It is hoped that, with time, such drivers will realize the benefits and comfort improvements of Wide band mode and change to this mode.

The 1st demonstration experience:

The Infinity Suspension controls the operator movement over bumps and pot-holes, controlling acceleration frequencies less than 2 Hz.

The 2nd demonstration experience:

The Infinity Suspension reduces vibrations felt by the operator compared to a typical passive suspension, attenuating acceleration frequencies greater than 2Hz.

