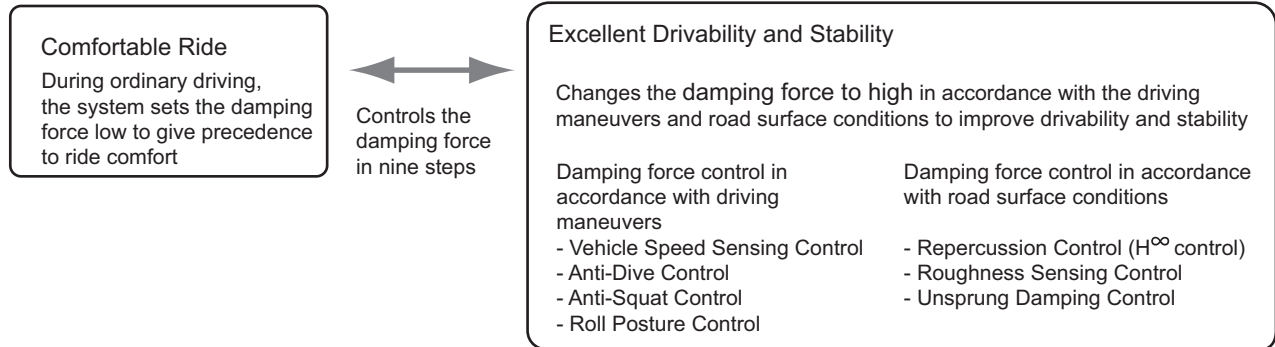

SUSPENSION CONTROL

AVS System Outline

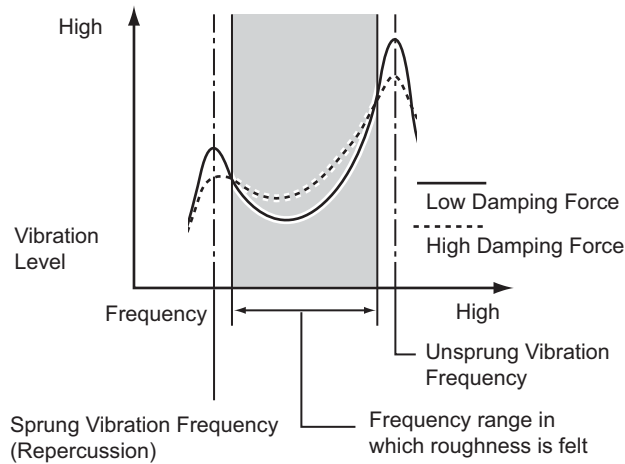
- The 3UZ-FE engine models use the AVS (Adaptive Variable Suspension System) as standard equipment.
- The AVS operates with computer control to independently change the damping force of the newly developed, high-response monotube type shock absorbers at the four wheels, in accordance with the driving maneuvers and road surface conditions. Thus, it realizes a comfortable ride and excellent drivability and stability at high levels.
- Generally speaking, shock absorbers with a lower damping force are able to absorb the vibrations of rough road surfaces and give a more comfortable ride. However, when the vehicle body makes a large movement, such as during high-speed driving, braking, or cornering, or when the vehicle is driven on a winding road or over a large bump, those shock absorbers will be unable to handle the vibrations very well. During ordinary driving in urban areas, the AVS gives precedence to ride comfort by setting the damping force low. Furthermore, the AVS enhances drivability and stability by changing the damping force to a higher level in accordance with the driving maneuvers, such as increased vehicle speed, braking, or steering operation. In addition, the AVS changes the damping force to a higher level if repercussions (sprung vibrations) are created in the vehicle due to the road surface conditions.
- The system determines the presence of repercussions by processing the signals provided by the G sensor. The system uses a leading-edge, nonlinear H_∞ (H infinity) control logic to control the damping force in order to realize a "natural and smooth driving experience".
- The shock absorbers used in the AVS change the damping force in nine steps.
- An absorber control switch is provided to enable the driver to select from two types of modes.

AVS : Realizes a "comfortable ride", "excellent drivability and stability", with a "natural feel"



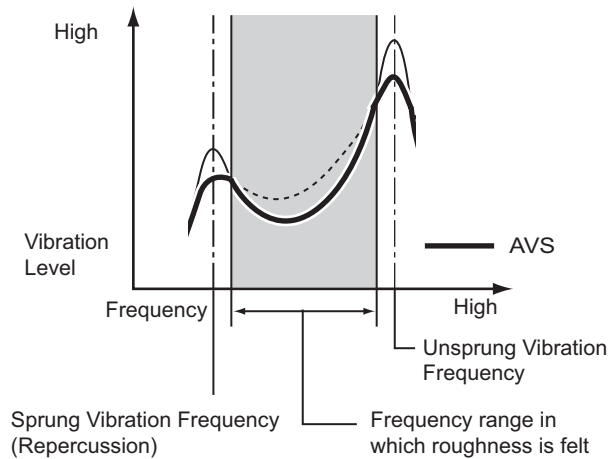
Conventional Suspension

In a frequency range in which roughness can be felt, a low damping force can keep the vibration level low and improves ride comfort. Conversely, the vibration level will increase if the damping force is low in the vicinity of the sprung and unsprung vibration frequency.



AVS

In the frequency range in which roughness is felt, the AVS sets the damping force low. In the vicinity of the sprung and unsprung vibration frequency, it sets the damping force high. Thus, it ensures ride comfort by constantly suppressing vibrations.



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