

Rider Education Report

Vibration is the result of energy (force) being input into an elastic medium. Modern vehicles are built with elastic (flexible) materials to survive life on the street. The most flexible parts like body panels, mirrors, and light assemblies are often mounted in a way to isolate them from the road, but it is impossible to prevent all vibration. Motorcycles, trikes, and other small vehicles are subject to the effects of vibration more than cars and trucks because of their nature to be of small size and mass.

As a vehicle moves down the road, many opportunities exist to cause vibration. Tires have a tread pattern to allow for water and other road debris to be displaced from the road surface to provide the best possible traction. But every tread pattern will cause a vibration due to the tread blocks intermittent contact with the road. An irregular road surface will cause the suspension to move up and down to smooth the ride and keep the vehicle isolated from changes in the roadway. And of course, every piston engine makes vibration from the piston's rise and fall, and the intermittent rapid combustion process inside the cylinder.

Engineers plan for the input of energy and try to control the effects, but no system is perfect, and no system can anticipate every scenario. Tires can wear from improper inflation and/or overloading and exasperate the tire noise and energy of the vibration this causes. Suspension systems have shock absorbers designed specifically to handle the effects and energy input from rocks, random debris, and potholes by transferring the energy into the damping fluid inside. And piston engines have firing orders and counterweights arranged so the energy created from some of the moving parts will be redirected in the opposite direction of other moving parts.

The Law of Conservation of Energy states that energy cannot be created or destroyed, only transformed from one form to another, and the total energy in an isolated system remains constant. This means for us that all the different forces acting on the vehicle must be controlled. The smoother the ride, the better the design of the vehicle. But no design is perfect. Any vibration felt by the operator means there are parts moving that should not be moving.

Proper maintenance can help to minimize the vibration you and your vehicle experience. But things happen. I know of several people that have had the clamp bolts of their steering head assemblies (triple-tree) come loose. I know of others that have had body panels come free after riding a rough road. This is why it is so important to establish a regular T-CLOCS routine. When was the last time you spent some quality time with your vehicle checking its nuts and other fasteners?

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