With Heavy Vehicle Highway Safety Foremost In Mind

All heavy over-the-road vehicles have a critical need for greatly improved directional stability so they will be far less fatiguing to operate and safer on the nation's highways.

Time Is Of The Essence

Even though the proven technology is here for the asking, it will require some time after a mandatory requirement becomes effective before all new production heavy over-the-road vehicles will be available with the new low-fatigue drivability . Further more, it will take several years for all of the high-fatigue drivability vehicles to be replaced by the safer new production models.

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RIVER CITY PRODUCTS, INC.
HOWARD
PRECISION STEER WHEEL
CONTROL SYSTEM™

An Introduction Of Advanced Thinking On Heavy Vehicle Highway Safety

The Time Has Come To Get Honesty On The Table About The Critical Need To Mandate That All Heavy Vehicles Meet Stringent Directional Stability Regulations That Will Result In A Dramatic Reduction In Driving Fatigue And The Many Related Catastrophic Heavy Vehicle Highway Accidents.

All heavy over-the-road vehicles are, beyond question, lacking directional stability because of the imperfect on-center control inherent to the geometry of the steer wheels. A hundred years of steering geometry experimentation by the industry's most creative designers has proven beyond question that the steering geometry cannot be expected to prevent the unstable behavior of the steer wheels in the on-center straight driving position, thereby the inherent lack of steer wheel directional stability must be solved by repetitive driver steering corrections in order to maintain directional control of heavy over-the-road vehicles, that result in excessive driving fatigue and related catastrophic heavy vehicle highway accidents. A breakthrough in Precision Steer Wheel Control Technology has been achieved that does away with the lack of heavy vehicle directional stability and the excessive amount of repetitive steering corrections required to keep a heavily loaded vehicle tracking straight and under control. The new Precision Steer Wheel Control Technology automatically keeps a heavy vehicle tracking exceptionally straight so the drivers are able to rest their hands on the steering wheel when going straight, instead of making the constant steering corrections required to keep the vehicle tracking straight and under control.

There is a reason why flying on an airliner is twenty-two times safer than driving on the highway. No stone has been left unturned in the design regulations for commercial aircraft that require directional stability and controllability, as a primary consideration. While on the other hand, the dire need for heavy vehicle directional stability is not a requirement for heavy over-the-road vehicles. This nation can no longer justify the lack of suitable regulations for achieving heavy vehicle directional stability that will make the direly needed improvement in heavy vehicle highway safety, now that the proven technology is here for the asking, that is more than paid for by a verifiable reduction in operating costs.

For example, the new Precision Steer Wheel Control System completely does away with the costly long-standing accelerated steer wheel tire wear problem that was caused by the inherent unstable behavior of the steer wheels.

The Development History Of The Howard Precision Steer Wheel Control System

The Design Objective

To advance the state of the art in heavy vehicle directional stability to greatly reduce driving fatigue and related catastrophic heavy vehicle highway accidents.

Design Assumptions and Problems That Needed to be Overcome

It was considered that over the many years the very creative heavy vehicle design community had made amazing technical contributions in the function and reliability of heavy over-the-road vehicles. It was also considered that the same creative talent had achieved virtually all that could be achieved to improve the heavy vehicle drivability with variations in the geometry of the steer wheels. For example, to achieve steering wheel returnability after turning a corner, the spindles (king pins) were slanted aft at the top to achieve a turning-lift effect so that when the vehicle driver released the steering wheel, the weight of the vehicle would return to the lower most position. Thereby, returning the steer wheels to the on-center straight-ahead position where the turning-lift effect is diminished and does not provide the direly needed stabilizing effect on the steer wheels. Slanting the spindles aft at the top end, also creates a steer wheel castering effect that results in highly adverse crosswind driving characteristics. Because with each crosswind gust the lateral force of the wind caused the steer wheel to caster steer the vehicle downwind, requiring almost continuous driver steering corrections to maintain directional control, resulting in a major cause of driving fatigue. Because slanting the king pins aft at the top end to achieve the turning-lift effect also creates steer wheel castering, the term caster angle was used, thereby giving rise to the mistaken belief that steer wheel castering was beneficial to the directional stability of a motor vehicle, when in fact steer wheel castering makes no contribution to directional stability. In addition to the lack of stability, there are two additional major operational problems related to the unstable behavior of the steer wheels. The long-standing puzzling excessive steer wheel tire wear problems, and the loss of directional control during a steer wheel tire blowout.

It was reasoned that a suitable heavy vehicle precision steer wheel control component would make a major contribution to solving all of the steering and controllability problems that simply could not be solved by the geometry of the steer wheels. The time had come for advancing the state of the art in safer heavy vehicle stability and control technology. Tests were conducted on heavy trucks, buses, and recreational vehicles using precision instrumentation. It was observed that with a highway speed of sixty-five miles per hour, when the center line of the steer wheel contact patch was off-center by as little as ten one-thousandths of an inch, the vehicle would make a lane change in ten to twelve seconds. From this, it was reasoned that the steer wheels needed to be controlled in the on-center position with great precision, except when the vehicle driver was intentionally steering away from center. When the driver releases the steering wheel, the Howard Power Center Precision Steer Wheel Control System returns the steer wheels to the on-center position with enough force to maintain directional stability in all driving modes, especially during adverse driving conditions such as strong crosswinds and rutted and slanted road conditions.

Over the many years, aftermarket providers have attempted to improve heavy vehicle drivability with so called stabilizer devices that only nibbled at the problem and simply did not provide precision steer wheel control and directional stability.

The Heavy Vehicle Operational Problems That Are Solved By The New Technology:

- Heavy vehicle operators that are now using the new Precision Steer Wheel Control System, are reporting a seventy-five thousand mile increase in steer wheel tire life, that will pay for the new technology several times over during the normal service life of the vehicle.

- The Precision Steer Wheel Control System achieves an amazing level of steer wheel tire blowout controllability, verified by numerous documented steer wheel blowouts where drivers report excellent vehicle controllability, without fighting the steering wheel for control.

- The Precision Steer Wheel Control System makes a major improvement in crosswind drivability, by preventing the steer wheels from caster steering downwind, in response to wind gusts.

- The Precision Steer Wheel Control System completely eliminates the typical heavy vehicle road wander problem that is responsible for a major amount of driving fatigue.

- The Precision Steer Wheel Control System does away with steering wheel pull on crowned or slanted roads, that is caused by steer wheels caster steering to the low side of the road.