

DO YOU REALLY NEED AN AIR RIDE HITCH?

All of us that have an air suspension hitch know the value of it. However, I still have people who have a solid mount hitch telling me they do not have any problems with how their 5th wheel RV rides. I'm not sure they know if they do or not. Just because the TV stays in place does not necessarily mean they do not have problems but don't know it. In talking about the suspension systems you hear words like inertia, mass, sine waves, kinetic energy, etc. We are taking a simple problem that has been around since there have been trucks and making it much more complicated than it really is. There is **ONE** word to describe why we need additional suspension for our 5th wheel. It's **BUMP!** As in **1. To strike or collide with. 2. To cause to knock against an obstacle.** BUMP is also known as Kinetic Energy. If we look at the suspension system on the MDT we can see why it rides rougher than a pickup truck.

Lets look first at the suspension on a pickup truck. Its suspension from the factory is leaf or coil springs and shock absorbers. When we hit a BUMP the tire is the first thing to make contact. The tire in itself, if properly inflated, will absorb approximately 25% of the BUMP, but what is not absorbed by the tire is transmitted to the springs and shock absorbers. The springs bend to dissipate the BUMP and the shocks move in conjunction with the springs to dampen the movement of the springs and also absorb some of the BUMP. If the BUMP is so big as to when the tires, springs, and shocks can't absorb it, then the remainder of the BUMP is transmitted into the frame of the vehicle, which absorbs the remainder of the BUMP. However, when this happens, the portion of the BUMP that is transmitted into the frame of the vehicle is called stress and fatigue.

The suspension system on light duty vehicles is designed for a given weight load. This load usually will not vary more than 500-1200 pounds. Given that factor, the suspension is designed to absorb most all of the BUMPS the vehicle comes in contact with, making for a smooth ride most all of the time in most all conditions. A factor, which is often overlooked, is the weight ratio between the pickup and the trailer it is pulling. When the trailer grossly outweighs the pickup there will be adverse effects on the ride of the pickup. When the trailer tires come in contact with a BUMP that is large enough so that the trailer suspension cannot dissipate the energy, it is transferred to the bed of the pickup via the connection of the stationary hitch. This energy is then dissipated in the jerking action felt in the truck. When a separate suspension system is installed in the bed of the truck (an air ride hitch) the energy from the bump is now dissipated in the movement of the hitch through the air springs in the hitch. By using an air ride hitch most all of the jerking action is removed from the ride in the truck.

Medium and Heavy Duty Trucks on the other hand have a completely different design in their suspension system. It is mandatory to maintain a proper height between the frame and the axle in order to assure a proper driveline angle. If this is not done, major problems will soon become apparent with vibrations, u-joint failure, bearing failure, etc. The angle of the driveline must be the same whether the truck is static or is loaded to its

capacity, which can be several tons. The constant alignment is accomplished by the means of an "automatic leveling valve". When weight is added to the truck, the automatic leveling valve senses the change in height adds air to the air springs in order to maintain the proper height and it lets air out when the weight is removed. The suspension system on a MDT is designed to work best at approximately 90% to 100% of its designed weight capacity. So when the truck is loaded it will ride somewhat better than when it is empty. However, because the suspension is designed for maintaining the proper height, the ride quality is very secondary. Unlike a light duty vehicle, where the primary concern is the ride quality. When you hit a bump with a MDT the tire if properly inflated will still absorb approximately 25% of the BUMP. In order for the air spring to absorb the BUMP, the walls of the air spring must flex or stretch to allow someplace for the BUMP to go. The more capacity the air spring has to carry weight, the heavier the construction is, which makes it less flexible to absorb the BUMP. Another way the air spring can absorb the BUMP is to have the air exit the air spring when a BUMP occurs. One thought to achieve this is to install a ping tank. In its simplest form it is an expansion tank piped to the air springs, which gives more air capacity to the air springs. When the air spring can't flex to dissipate the BUMP, the BUMP transmits into the frame of the truck and all components attached to the truck, such as your 5th wheel and you the passenger. When it comes to the passengers, what do we do? We install AIR RIDE SEATS so we do not have to absorb the BUMP with our body. By installing an air suspension hitch for the 5th wheel, we now have a means of absorbing the BUMP before it gets to the trailer. When the BUMP travels up to the air springs on the hitch, the air springs expand or stretch because they are sized small enough to be able to flex easily. If we don't put the absorbing means under the pin of the trailer, its frame and pin box must absorb the BUMP. This again is added stress and fatigue that is not designed into the trailer. We all know it takes time for stress and fatigue to show up as breakage. So if you think you do not have a problem with your trailer's ride just because the TV stays in place, isn't necessarily true.

Remember, when your truck rides too rough you cannot just remove air from the air springs on your truck thinking it will give you a softer ride. What it will do is it will change your driveline angle and cause you more problems...problems you do not want. So the proper way to solve the hard ride your trailer is getting is to install an air suspension system between your truck bed and your 5th wheel trailer and in this case it's an air suspension hitch, as it will prevent damage to your 5th wheel RV.