

Gas Charge Your Shocks To Make 'Em Perform

Without the right gas charge, shocks don't perform. They don't damp, they don't absorb shock.

As you know, shocks contain oil. The shock piston passes through this oil, producing a pressure differential across the piston. This pressure differential working on the area of the piston is what produces damping force ($\text{Force} = \text{Pressure} \times \text{Area}$).

This all works just fine as long as the piston is simply passing through plain oil.

However, you're in trouble if your shock's piston meets oil that's no longer a pure liquid.

You see, bubbles form (cavitation) in the oil of a shock that doesn't have enough gas pressure. These bubbles create voids in the oil that allow the piston to move through the oil without resistance.

This means **NO DAMPING FROM THE SHOCK!**

Here's how this works. Webster defines cavitation as, "the formation of low-pressure bubbles in liquids due to mechanical forces."

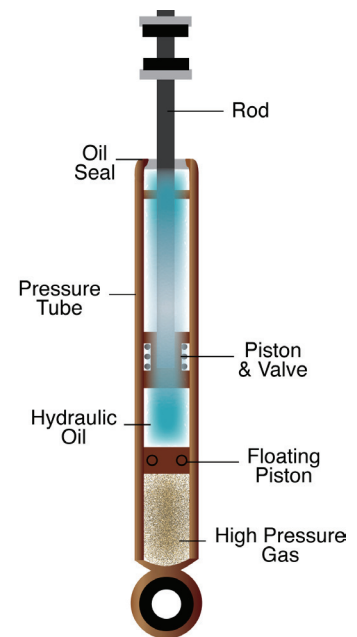
In the case of a shock, cavitation occurs when its pressure drops very close to, or below, absolute zero causing the oil to vaporize. This vaporization creates bubbles in the oil. Obviously, oil with bubbles is a whole different composition than oil without.

In essence, these bubbles make the oil "squishy." The piston isn't expecting "squishy." It is expecting to go through a firm liquid. So, just like a tire crossing an unexpected oil slick, the piston is caught off guard and erratically slides through this "squishy" oil without any resistance. Of course, this is going to cause "lag" in your shock's damping forces. Your shocks won't have the right force. The more gas pressure your shocks lose, the more force they'll lose.

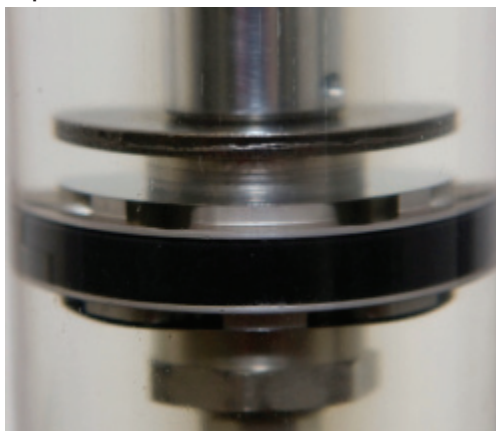
In other words, without the proper gas pressure in your shock, you will not get the damping you expect. Your shock won't damp the bumps on the track. Your car's suspension will move out of control!

This is **NOT** something you want to discover on the racetrack.

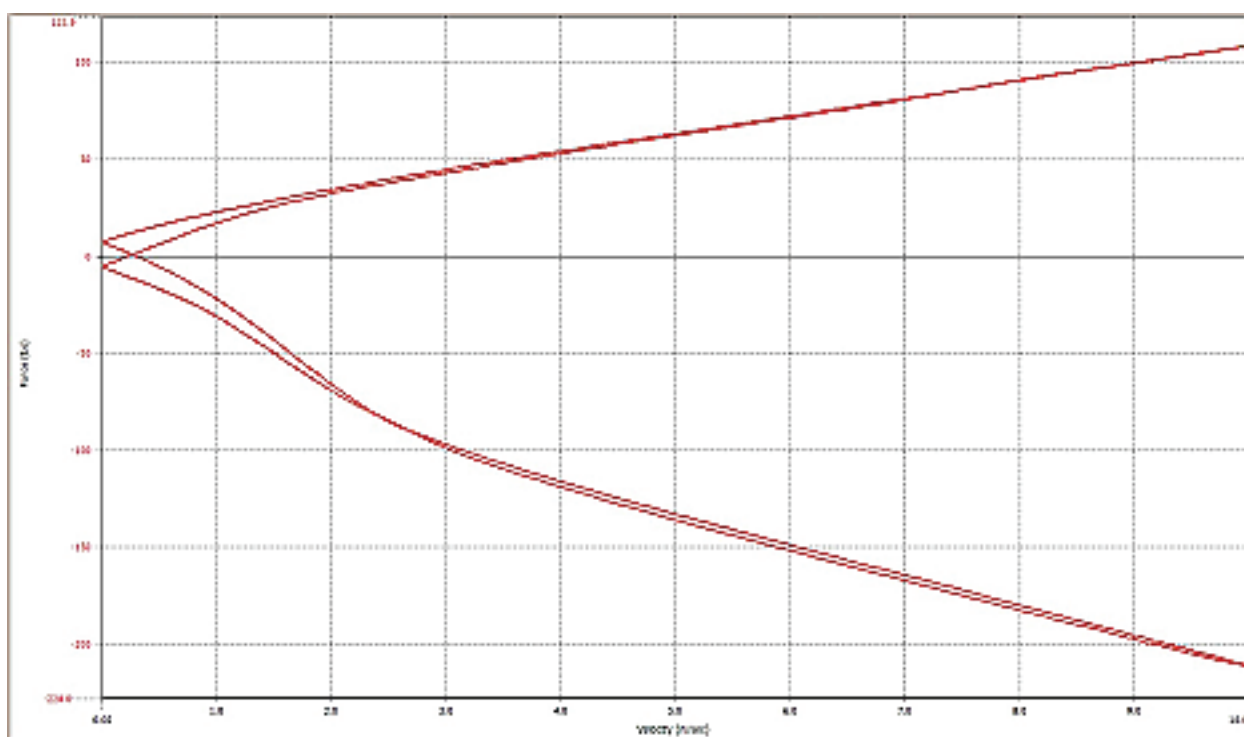
Let's look at it another way.



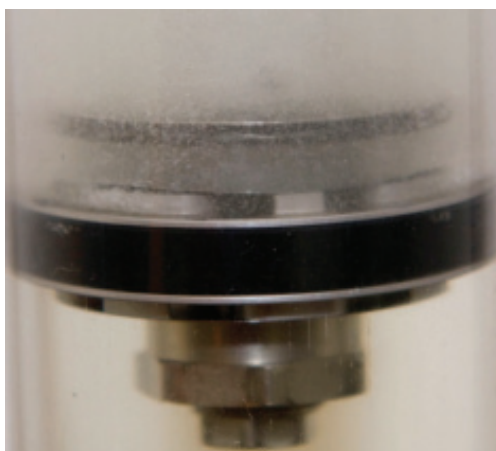
Here's what you'd see inside a properly performing shock—a shock with proper gas pressure. Optimally, the oil in the shock is clear—a pure liquid—with no bubbles.



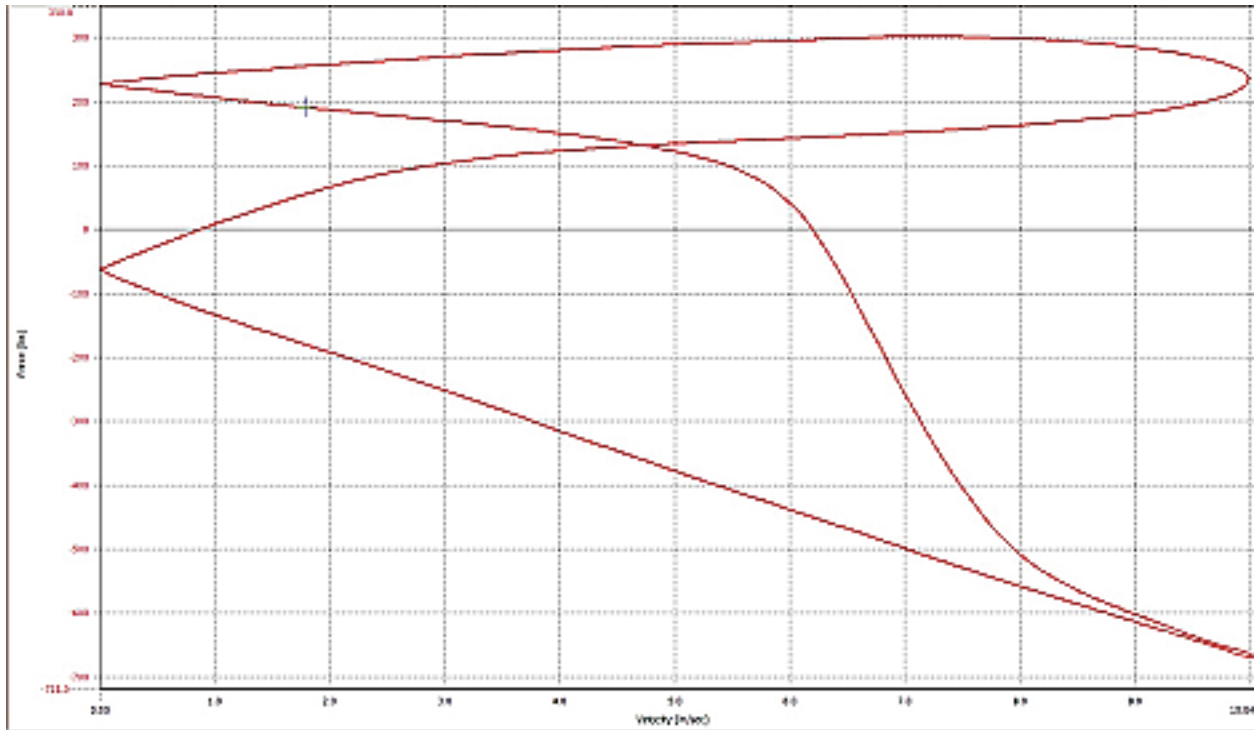
And this is what its performance test curve will look like.



OK. All good. However, if there is not enough gas pressure in your shock and cavitation occurs, here's what that will look like. Note the bubbles in the oil. This is definitely not the pure oil you are used to seeing.



And here is what the resulting performance curve will look like.



Holy cow! Look at that extreme dip in damping forces!

Guaranteed, this is NOT how you want your shocks to perform!

All caused by that pesky cavitation, and those tiny gas bubbles that formed in the oil just because you NEGLECTED TO GAS CHARGE YOUR SHOCKS.

Obviously, you are counting on a certain amount of damping force from your shocks. When you lose gas pressure your shocks don't give that to you.

Moreover, the long-term cavitation will also cause permanent, irreparable, damage to the internal components in the shock.

Who needs that added threat in the competition?

So here's the bottom line. Gas charge your shocks! Make sure they have the proper pressure. Do it EVERY DAY you run the car. And be sure to use the proper tool.

We just happen to have one that we highly recommend. It is the best solution we know of currently on the market. [The Kaz Tech Gas Charging tool.](#)

For your convenience, we're offering you another **Kaz Tech Tip**, ["How to Gas Charge Your Shocks."](#) This will show you the proper way to gas charge your shock. Be sure to check it out.

And let's keep those tires hugging the pavement, where they belong.