

The Shocking Truth About Suspension Basics

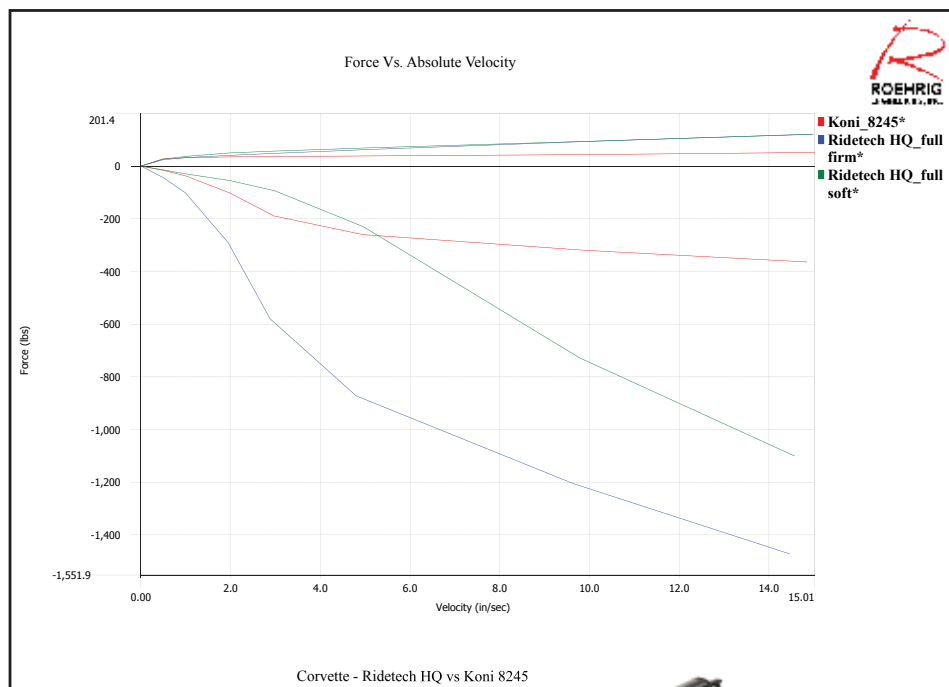
Your Suspension is the system that links your Corvette to its wheels, creating motion. At Mid America Motorworks, we know that all Corvette suspension is not created equal. You will want different components for different applications, from daily driving and club cruises to all-out racing. Knowing how you'll use your Corvette is the first step. The second is knowing what parts to use for the best performance.

The Brains of Your Suspension

Nothing influences your Corvettes ride and handling more than shock absorbers. If you could pick only one thing to change to get the most overall improvement, upgrade the brains of your suspension: the shocks!

The weight of your Corvette is designed to rest evenly on 4 tires, but when the weight shifts during driving, the weight distribution to each tire also changes. That's where shocks come in. Shocks are designed to absorb and slow down the energy that is released when your Corvette brakes, accelerates or takes corners on a normal drive—and especially when you hit that inevitable bump in the road.

Shocks operate in terms of compression and rebound. Compression is the action in which the shock compresses and is resistant to the vehicle moving downward. Rebound is the action in which the shock overcomes the weight of the vehicle and returns to its uncompressed state. Basically, compression and rebound work together to ensure that you enjoy the smoothest ride possible.





Compression & Rebound – The Key To A Smooth Ride

Compression controls nose pitch, or the amount of force and weight that pull your Corvette's front end toward the ground during harsh braking conditions. Rebound ensures that your shocks readjust at the correct speed based on your current driving situation, so you're not lurching through bumps or feeling every imperfection in the road.

Firm vs. Soft Shocks

There is no perfect combination of compression and rebound. It all depends on your Corvette and how you plan to use it. Typically, firmer shocks are better suited for performance and racing, while softer shocks are great for street applications and show cars.

Mid America Motorworks' suspension experts put 2 popular shocks to the test to see how well they each perform. In the graph you will see that the RideTech shocks maintained the same of compression while the Koni shock had a little softer ride. The negative numbers in the graph represent the rebound. You may notice that the blue line (firm RideTech) has a more abrupt curve downward. This means this shock is going to rebound to its uncompressed state faster than the Koni or a RideTech shock on the soft setting.

Shocked By The Options

Just as there is no perfect universal shock for every Corvette owner, there is also not one single shock for every application. The choices vary based on preference and function. One thing that is standard is the basic structure. The upper mount of the shock connects to the frame of your Corvette, while the lower mount connects to the axle near the wheel.





Twin-Tube

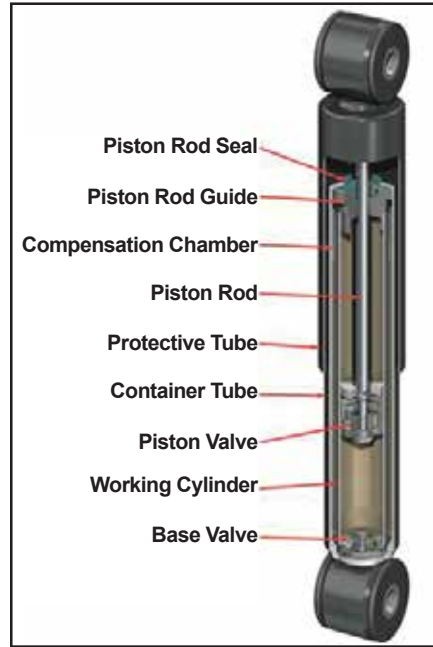
The Twin-Tube Shock has been around for more than 60 years and is still popular today for inexpensive shocks. The shock is designed with the upper mount is attached to piston, which is enclosed by the outer, reserve tube. An inner, pressure tube is full of hydraulic fluid, which works with the piston to absorb kinetic energy as the shock is engaged.

Advantages

- Low Cost
- Wide Range Of Fitments
- Adequate Performance On Civilian Cars

Disadvantages

- Uses A Smaller Piston
- More Complex Oil Flow Path
- Insulated Pressure Tube Creates Heat & Reduces Performance



Monotube

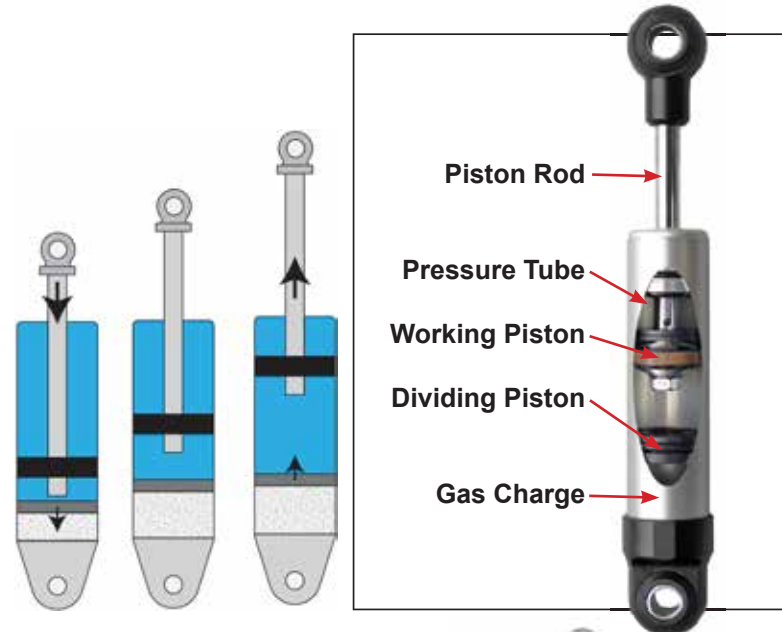
The Monotube Shock is the current choice for nearly all OEM and performance shock manufacturers. Designed with a single cylinder divided into a fluid area and a gas chamber, the Monotube Shock allows the piston and shaft to move in a fluid motion.

Advantages

- Uses A Larger Piston
- More Efficient Oil Flow
- More Consistent Performance In Extreme Environments

Disadvantages

- Tend To Be More Expensive
- Longer Than Twin-Tube Shocks



Coil-Overs

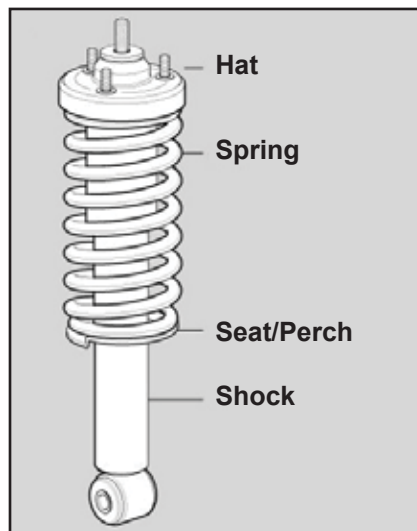
Coil-Over Shocks, or “coil spring over shocks,” are shock absorbers that have the spring assembled with them as a single unit before installation. This enables optimal function for unmatched tuning and versatility.

Advantages

- Adjustability Of Height
- Adjustability Of Firmness & Softness
- Performance Handling & Looks

Disadvantages

- Tend To Be More Expensive
- May Need To Replace Tires More Frequently



Rebound Adjustable

Rebound Adjustable Shocks are designed to give you control of how your Corvette's chassis responds to the road surface. In the rebound, the entire weight of your Corvette and suspension relies on your shocks to maintain control. The rebound controls the chassis and has a far greater influence on handling and performance than the compression.

Advantages

- Better Control Of Shock Performance
- Quick Tuning For Improved Handling
- Optimal For Handling Corners

Disadvantages

- Tend To Be More Expensive
- Adjustable Rebound With Fixed Compression May Lead To Poorer Ride Quality

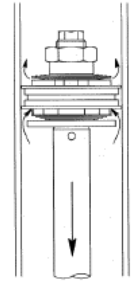
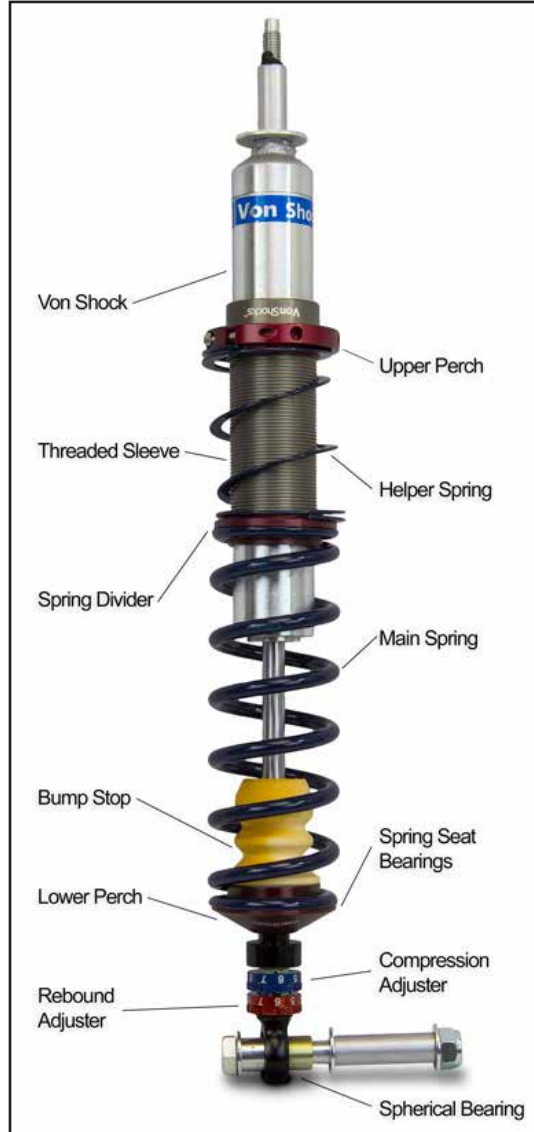
The truth is, there is no 'best' shock absorber for Corvettes. It all comes down to how you drive your Corvette and what you hope to achieve with your shocks. The good news is, whatever your driving preference, there are shocks to ensure that your suspension is ready for the challenge.

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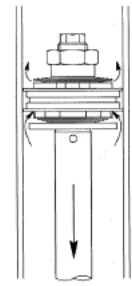
On the Rebound: Scientists invent regenerative shocks

Scientists at Tufts University have patented a shock absorber that converts compressive energy into electricity, which can then be stored in a hybrid vehicle's batteries. Called the Power-Generating Shock Absorber (PGSA), actually an electromagnetic linear generator, it uses "magnet arrays, high magnetic permeability spaces, coil winding arrays," and a linear electric motor to capture the energy of its motion and use it to charge the batteries.

[Check out the story?](#)



Compression is the upward movement of the shocks shaft (**See A**). It is controlled by Spring Rates, Oil Moving through an orifice, and oil moving through a valving shim stack. The compression valving is located on the underside of the valving piston.



Rebound is the downward movement of the shocks shaft (**See B**). It is controlled by: Spring Rates, Oil Moving through an orifice, and oil moving through a valving shim stack. The rebound valving is located on the top side of the valving piston.

