

Roadtesting ROD SHOCKS from Bilstein®



... seal-of-the-pants driving impressions

Suspension is a word we are all familiar with... our vehicles are "suspended" on some type of springs – be they leaf, coil, torsion bar, or air bag. The link between the "sprung" and "un-sprung" part of the vehicle, and its function is to cushion the roughness of the roadway from the main part of the vehicle. Motor vehicle suspension springs are designed to support a specific weight, and to deflect to allow the wheels to move with the irregularities of the roadway and return to their previous position. While the springs do this quite well, the thing they do not do is return to the neutral position and stop there without going through several cycles. A shock absorber (or damper) is used to control the amount and severity of the spring's rebound cycles. The shock is probably the single most complex and critical component in the suspension.

Motor vehicle shock absorbers have taken a variety of forms over the years.

Some of the earliest were friction-based and their damping quality could be "adjusted" by changing the pressure on the friction material.

Another early version was the lever style which incorporated fluid-filled chambers that damped the springs' action... some of these were also adjustable. Somewhere around the late 40's, early 50's, tubular shock absorbers started to be widely used on motor vehicles, and while they have gone through all sorts of refinements, they have remained the mainstay for the past 50 plus years. Even the "struts" found on many of the currently manufactured motor vehicles are based on the tubular shock absorber design and principles.

Bilstein's Rod Shocks come in both non coil-over (14 part numbers) and coil-over (10 part numbers) styles, depending on the mounting dimensions and type of ride (comfort or sport) desired. They also have a long list of part numbers to cover muscle cars and classics.



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The Bilstein front shocks we used on the solid axle car (right) were a perfect match for the ones we replaced, with the added advantage of a bit more travel.

As you'd expect, being around for a half century has meant

the tubular shock absorber has gone through many refinements.

For more than 50 years, Bilstein has been a force in the automotive suspension industry. From racing and testing in all types of competition including on pavement and off, to being a supplier of original equipment on BMW, Jaguar, Mercedes-Benz, Porsche, GM trucks and others, Bilstein Gas Pressure Shock Absorbers have proven their quality.

The majority of conventional twin tube shocks are made with bodies cut from a piece of steel tubing, stamped internal parts and consequently tolerances are compromised. Bilstein's shock bodies are precision formed through a unique seamless extrusion process which provides superior strength along with high finish tolerances. The finished body is mated with a solid, induction hardened steel chrome plated and polished shaft, machined valving components and highest quality seals. Combined with attention to detail, Bilstein provides the closest thing to a hand built shock available.

Heat is one of the major detractors to the performance and longevity of any shock absorber. Conventional designed shocks trap the heat within the shock body and do not let it adequately dissipate, making them prone to heat build up, fade and eventual failure.

Bilstein's unique monotube design allows the excessive heat from the oil to transfer to the outer

surface of the shock body and dissipated more efficiently. The dividing piston also permits the oil to expand as heat builds, preventing aeration (foaming) and viscosity loss and allows the shock to maintain full damping as temperatures rise.

Ride, handling and control are what a shock absorber provides. Compromise in one area may create a problem in another, but Bilstein's patented digressive valving eliminates any compromise. The rising rate valving of the Bilstein shock provides the necessary damping to react quicker to road conditions without sacrificing ride comfort. This combination of valving and the high pressure Nitrogen gas keeps your tires in constant contact with the road helping to ensure safety through better control.

Most shock absorber manufacturers provide a minimum selection of shocks to cover a broad range of applications. Bilstein shocks are built for each specific application... luxury car, sports car, sport utility, pickup, motor home, and more recently street rods and other special interest vehicles have been added.

Bilstein engineers take into account everything from external dimensions, internal valving, mounting hardware to weight and type of vehicle. The Bilstein Rod Shocks, as example, come in both non coil-over (14 different part numbers) and coil-over (10 different part numbers) styles, depending on the mounting dimensions and type of ride (comfort or sport) desired. They also have a long list of part numbers to cover muscle cars and classics.

Bilstein's explanation

The Mustangs from Bilstein (right) are a direct replacement item also.

One piece alloy rod guide & seal system.

Rising rate self-adjusting digressive working piston.

Patented Nitrogen chamber & "floating" dividing piston.

Patented Nitrogen chamber & "floating" dividing piston.



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tion of the types of ride characteristics are: comfort: for the driver who wants maximum ride comfort, with the virtual elimination of "bottoming out" and vehicle sway, and sport: for the performance-minded driver, Bilstein "Sport" shocks deliver absolute mastery of the road surface. Designed to push a car's suspension to its performance peak, these super-firm shocks are well suited for use with special springs, anti-sway bars or other suspension upgrades.

All of this said and having heard the claims made by the Bilstein representatives at various trade shows, including the NSRA Street Rod Nationals, we thought an independent "road test" of their shocks on a couple of street rods would be definitive. Having two mid-30's era street rods equipped with the two more usual types of street rod front suspension (one a Mustang II and the other

their products would give a significant improvement in the way these types of vehicles would perform... and they were right on.

Before installing the Bilstein Gas Pressure Shocks, both vehicles had a tendency to "dance" over irregular (washboard-like) surfaces. It was as if the front ends were too heavily sprung, and therefore there was little suspension movement. They were even sensitive to small irregularities like a man-hole cover... not a harsh jolt, but it felt like the tires had considerably too much air pressure. Both vehicles are equipped with anti-roll (commonly referred to as sway) bars, so neither exhibited a tendency to lean excessively during cornering.



Conventional twin tube shocks trap heat.

The road tests proved the claims of the folks at Bilstein to be true... the ride of both vehicles was notable improved. The improvement in the solid

axle car was more obvious, but that is understandable as that type of suspension is inherently less forgiving than the independent (Mustang II) type suspension. The overall ride of neither vehicle was compromised as it was still firm as I like it, but both vehicles seemed to float over irregular, washboard-like road surfaces. And, at cruising speed (on the Interstate), neither vehicle had as much "launch" as before when crossing a bridge section.

The one claim that the Bilstein folks made that we are not able to prove or disprove is the claim to longer life of the shocks... this, of course, will have to come with time. But from what I've experienced so far, I will be able to comment on that at some time in the future as I'm planning to stick with the Bilstein shocks on the front of both cars for a good, long time – perhaps I'll be able to wear them out. But whether I do or not, I'm going to enjoy the ride while trying.

Source Guide

ThyssenKrupp Bilstein of America
14102 Stowe Drive
Poway, CA 92064-7147
phone 858-386-5900
or www.bilstein.com.



The Bilstein Gas Pressure Shock Absorber's monotube design (left) allows excessive heat to dissipate more efficiently, eliminating fade and prolonging shock life over a conventional twin tube shock (right).

a solid axle riding on a transverse spring), both of which I have driven for several thousand miles, they would provide great platforms for getting impressions of the change Bilstein shocks would make with each type of vehicle. I know very well how both cars perform as presently equipped, and would be able to offer a good driving impression / evaluation of them both after converting to Bilstein Monotube Gas Pressurized Shock Absorbers.

The fact that the folks at Bilstein were so willing to go for our idea told us they had confidence that

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