LIQUIDSPRING®

THE COMPLETE PICKUP SUSPENSION GUIDE

AFTERMARKET BUYER'S GUIDE

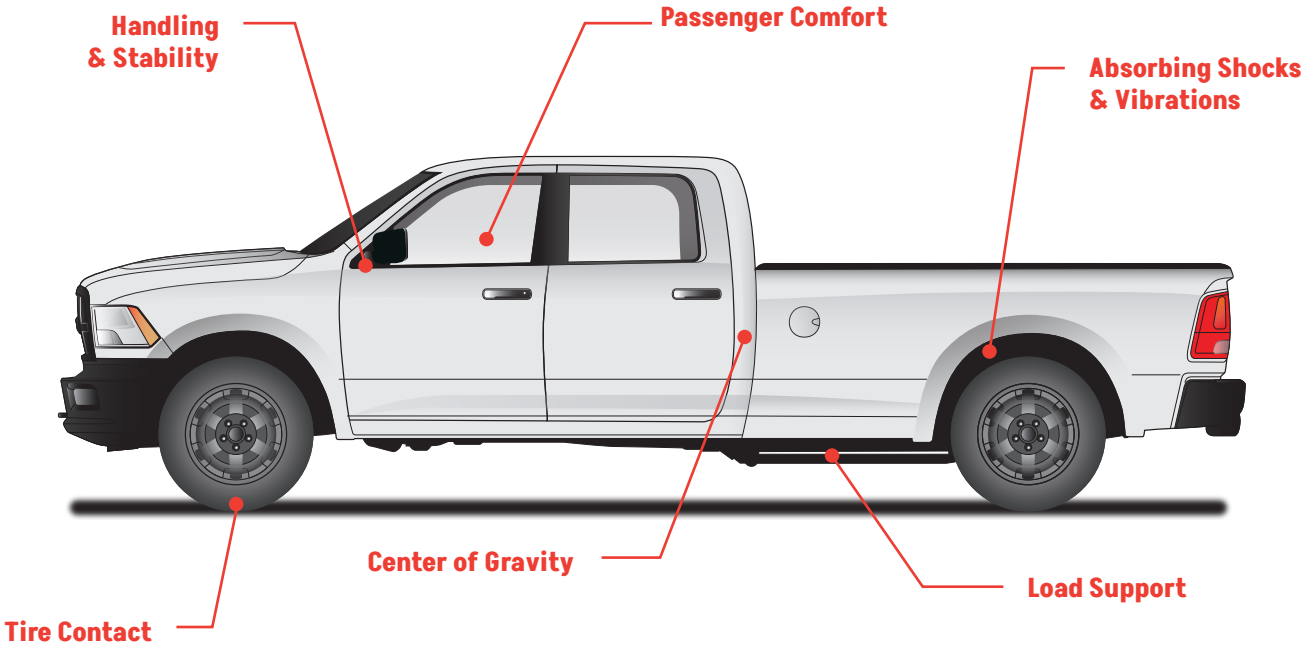
From the industry's most advanced active-suspension manufacturer

Choosing the right suspension for towing, hauling, and everyday driving.

WHY SUSPENSION MATTERS

Suspension isn't just about comfort. It's the system responsible for keeping your tires in contact with the road, managing weight transfer, and maintaining vehicle stability under dynamic conditions. Most pickup truck owners don't think about suspension until something feels wrong. By that point, you've been living with a compromised driving experience for years, without realizing it was compromised at all.

Understanding how suspension actually works makes you a better buyer. Whether you're evaluating factory options, shopping aftermarket upgrades, or just trying to understand what you already own, the knowledge matters.



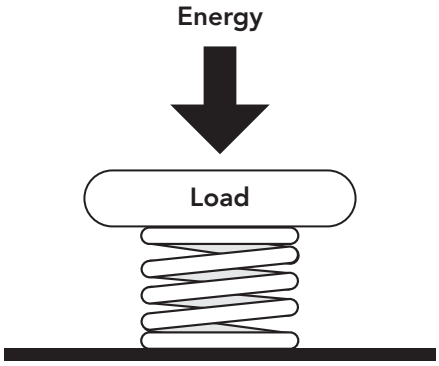
HOW A SUSPENSION SYSTEM WORKS

Every suspension system is built around two components working together.

1. Springs support the vehicle's weight and absorb energy from road inputs. The spring rate (how stiff or soft the spring is) determines how compliant the ride feels.
2. Dampers, also called shocks, control how quickly that stored energy dissipates. Without them, a truck would continue bouncing long after the bump is gone.

"Tuning" a suspension means choosing a spring rate and damping curve that balances ride quality, handling, and load capacity. Every factory tune is a deliberate compromise between those competing demands. There's no setting that's perfect for every condition, so manufacturers pick a middle ground, and you live with the tradeoffs.

Spring Compressing Under Load

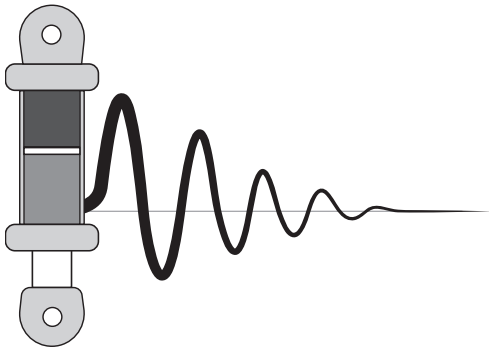


Spring = controls/calms things down

- Holds the weight of the vehicle
- Compresses when you hit a bump
- Stores that energy and then releases it
- That's what causes the "bounce"

Think of it like a mattress.
You push down, it pushes back.

Damper/Shock Dissipates Energy



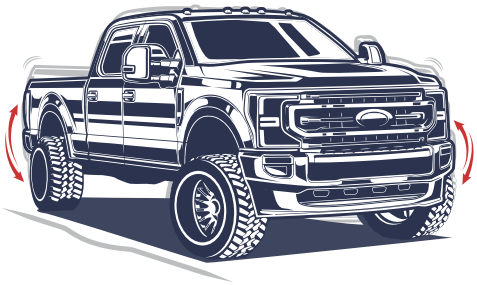
Damper = controls/calms things down

- Takes the bouncing energy and absorbs it
- Stops the continuous bounce
- Keeps tires planted and the ride controlled

Think of it like your hand pressing down on a bouncing spring to settle it.

THE FORCES YOUR TRUCK IS FIGHTING

A suspension isn't fighting one problem, it's managing three.
All at once, in real time. **Here's what your truck is up against.**

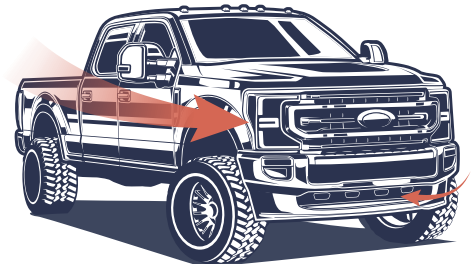


VERTICAL

Up-and-down motion

When the truck hits a dip or rise, the suspension compresses and rebounds. If it doesn't settle quickly, the truck rocks front to back even after the pavement is flat. This is why certain highways feel tiring even when they look smooth. And all this is amplified by the payload weight sitting above the suspension

The bumps ends. The motion doesn't.

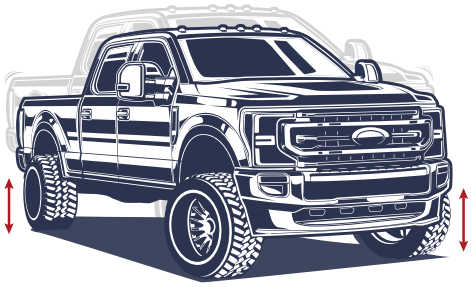


LATERAL

Up-and-down motion

A crosswind or passing semi pushes against the body and rotates the truck off its line. Or your trailer sways. You correct. Then correct again. It becomes a constant conversation between you and the steering wheel.

You're not changing lanes. You're keeping it in one.



OSCILLATION

Repeated bouncing.

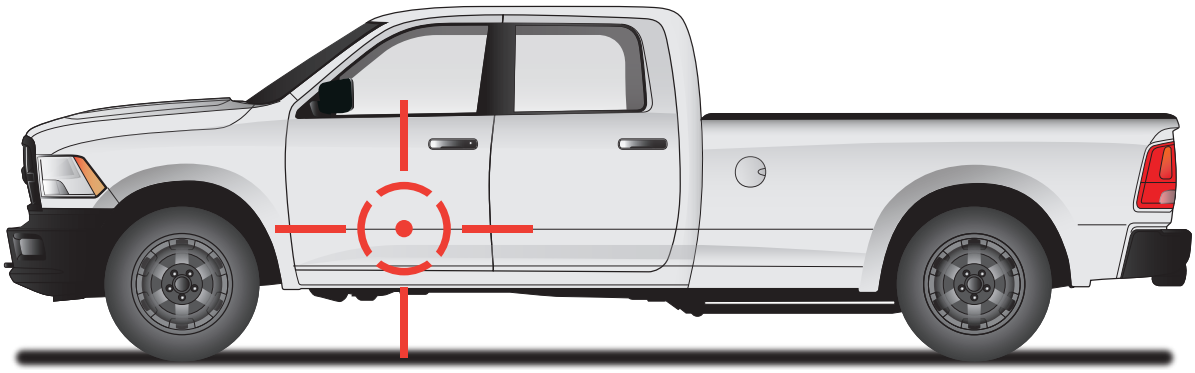
After a bump, the suspension releases stored energy. If it releases too slowly or too freely, the truck keeps bouncing instead of settling. Passengers feel this as a harsh, unsettled ride even at normal speeds. And all this accelerates fatigue and reduces control.

Comfort depends on how fast motion stops.

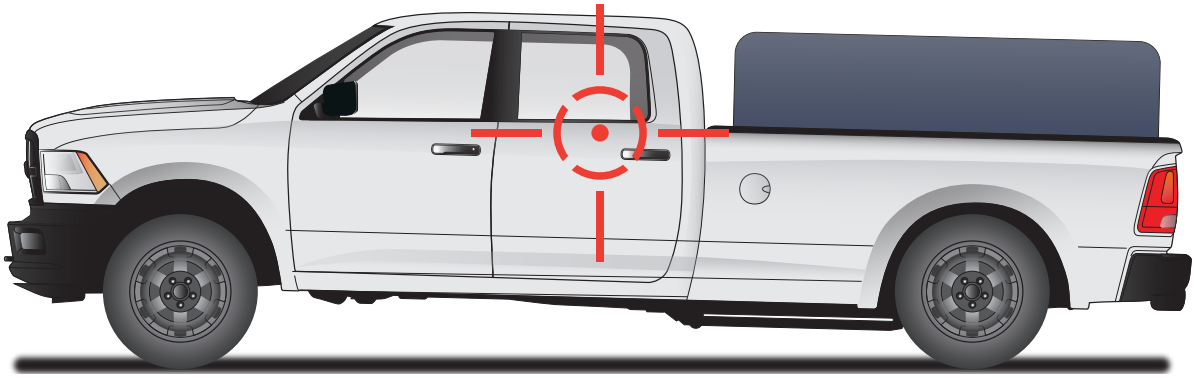
HOW LOAD CHANGES EVERYTHING

Adding weight changes everything the suspension has to do. Load the bed, hitch a trailer, or add a camper and the suspension compresses. Available travel decreases. The spring rate's effective behavior changes. The vehicle's center of gravity shifts rearward and upward, and the truck that felt predictable when empty starts to behave differently in ways most drivers just accept as normal.

A suspension tuned for a 7,000-lb empty truck behaves very differently when that same truck reaches 14,000 lbs GVWR. Geometry changes. Handling changes. Braking distances increase. This is why maximum tow rating and confident towing aren't the same thing. A truck can be rated for a load it isn't well-equipped to handle, comfortably or safely, at highway speed.



Center of gravity is lower and toward the front of the truck.
The truck feels balanced and predictable.



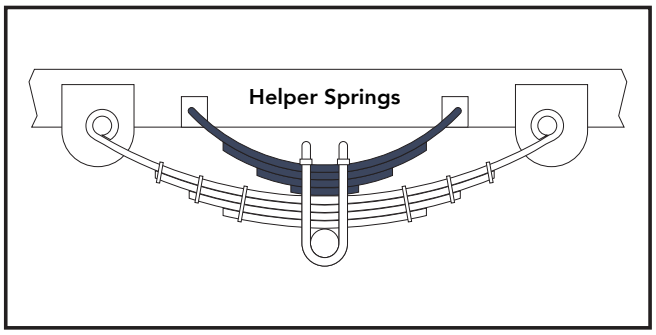
Center of gravity shifts higher and toward the rear.
Weight is now at the rear axle, increasing body roll, braking, and changing handling.

THE UPGRADE OPTIONS: WHAT EACH DOES

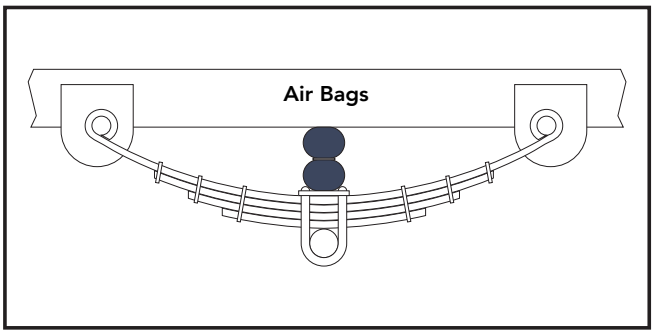
Three aftermarket upgrades dominate the pickup suspension market. Each one was engineered to solve a specific problem and knowing what that problem is matters more than anything you'll read in a review.

Air bags and helper springs are load-management solutions. They were built to address squat, restore ride height under weight, and improve stability at or near max capacity. Aftermarket shocks are a damping solution. They replace factory units with higher-quality components that better control suspension motion within a defined operating range.

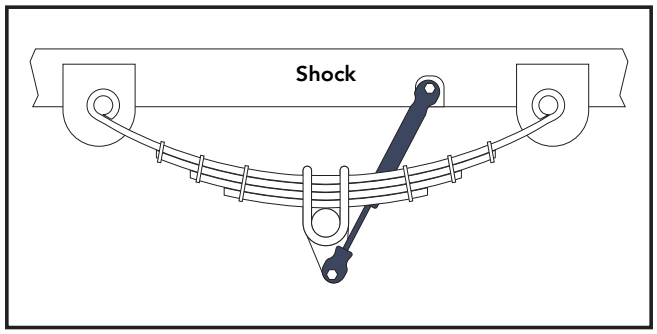
All three are legitimate products with real applications. The first step is understanding what each one was designed to do and whether that matches what you're trying to fix.



A load-management solution designed to support added weight, reduce squat, and help maintain proper ride height near capacity.



A load-management solution that uses adjustable air pressure to support varying loads, restore ride height, and improve stability.



A damping solution designed to control suspension motion and manage oscillations within a defined operating range.

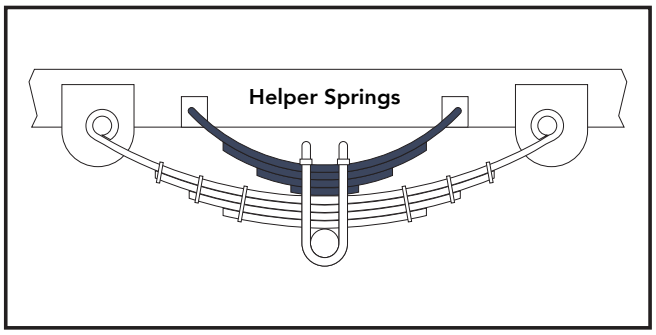
THE UPGRADE OPTIONS: WHERE EACH STOPS

Knowing what an upgrade was designed to do is only half the picture. The other half is knowing where it stops.

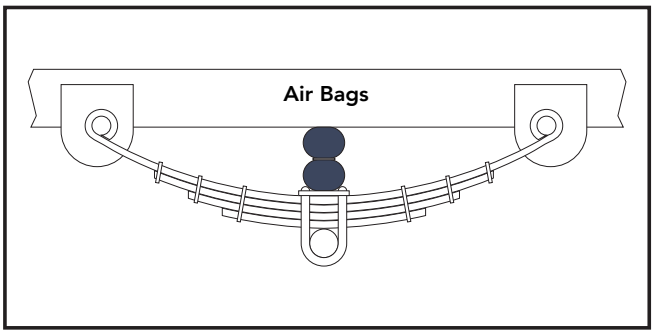
Air bags and helper springs restore ride height and manage squat. What they don't do is change how the suspension responds to road inputs. The truck sits level but it still bounces, sways, and oscillates. The stance is fixed. The dynamics aren't.

Aftermarket shocks improve damping within their calibrated range. The problem is that calibration is fixed at installation. A shock tuned for a loaded truck feels harsh when empty. A shock tuned for an empty truck feels vague when loaded. Either way, something is always being compromised.

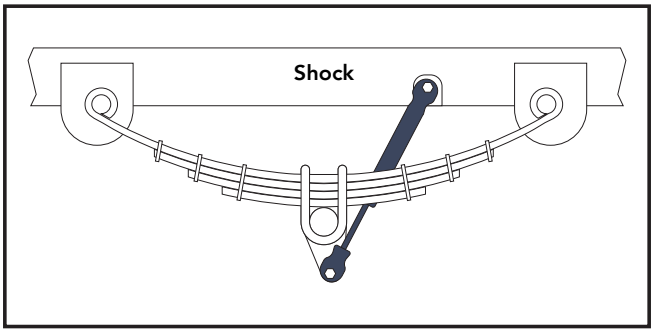
None of these upgrades adapt. They respond the same way every time regardless of load, road, or speed. That's not a flaw in the product, it's a fundamental limit of passive suspension design.



Do not adjust damping or actively control ride quality, handling dynamics, or changing load conditions.

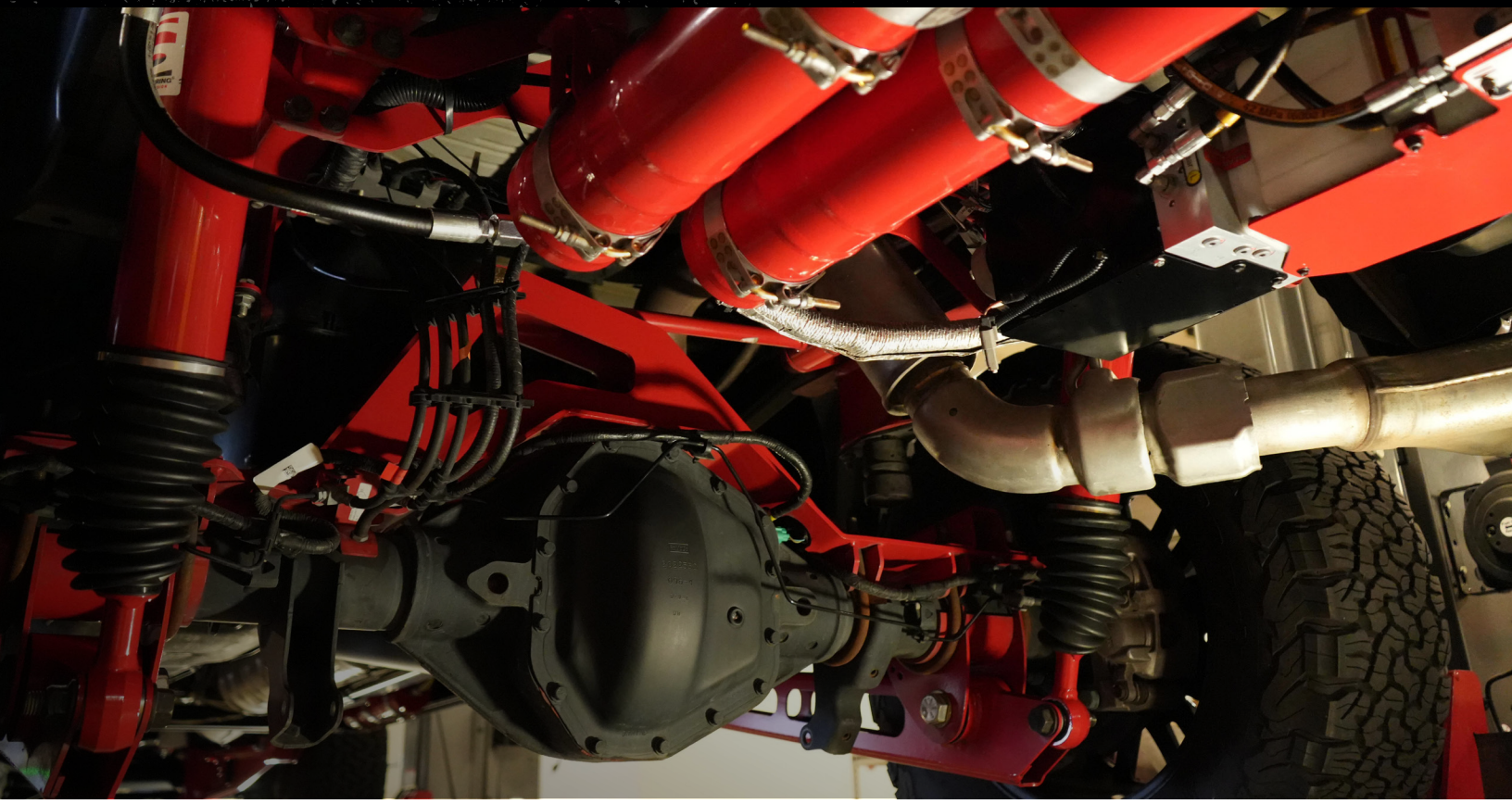


Do not provide damping control or actively manage ride quality, suspension response, or dynamic handling changes.



Do not provide load support, correct squat, or maintain ride height under changing weight conditions.

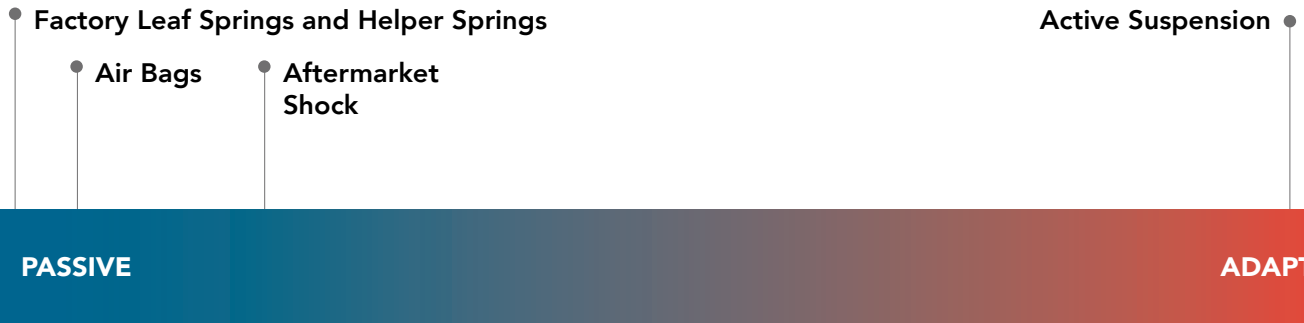
WHAT "ADAPTIVE" SUSPENSION MEANS



Every suspension system falls somewhere on a spectrum: from fully passive to fully adaptive. A passive suspension responds the same way to every input. It has no ability to distinguish between an empty truck on a smooth highway and a loaded truck on a rough road. The road changes. The suspension doesn't.

An active suspension does. It monitors real-time conditions and adjusts accordingly: changing spring rate, damping, or both based on what's actually happening at each corner, right now.

The practical difference: a passive system is always compromising between conditions it can't predict. An active system optimizes for the condition it's currently in.

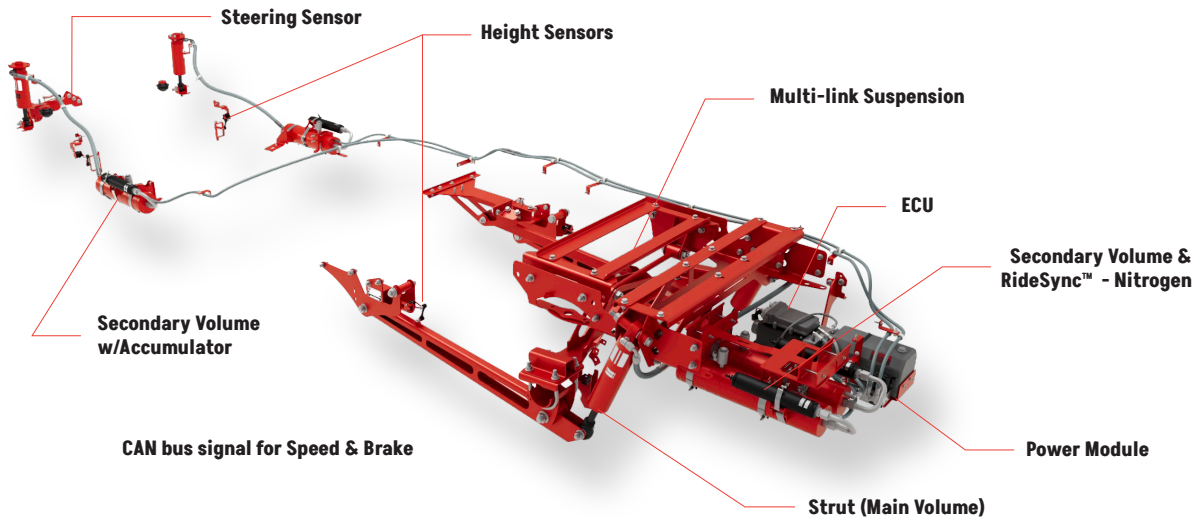


HOW LIQUIDSPRING WORKS

LiquidSpring replaces the traditional spring and shock combination with a computer-controlled hydraulic system. Fluid pressure adjusts the effective spring rate at each corner independently: not as a group, but corner by corner, in real time.

Five sensors monitor speed, steering, braking, ride height, and level. The system's computer monitors vehicle conditions 1,000 times per second with a 40ms response time. Faster than a blink.

The result is RideSync™, a smart control system that maintains a constant ride frequency, loaded or empty. Whether the truck is empty on a Tuesday commute or fully loaded pulling a trailer, the way it feels and handles stays consistent.



RideSync™: The Ride Feels the Same

Traditional Suspension

EMPTY TRUCK

Sharp. Fast. Busy

LOADED TRUCK

Slow. Heavy. Lazy.

The ride changes depending on weight.

LiquidSpring - RideSync™

EMPTY TRUCK

Controlled. Settled. Predictable.

LOADED TRUCK

Controlled. Settled. Predictable.

The ride character stays consistent.

THERE IS A REASON IT FEELS DIFFERENT

Factory suspension is a compromise. Every add-on addresses one problem at a time. LiquidSpring controls ride, stability, and comfort together across every condition, automatically.

Feature	Stock Suspension	Air Bags	Helper Springs	Shocks	LiquidSpring
Reduces Squat	Moderate	Yes	Yes	—	**Yes**
Improves Stability	Moderate	Limited	Limited	Some	**High**
Improves Unloaded Ride	—	—	—	—	**Yes**
Adapts Automatically	—	—	—	—	**Yes**
Reduces Driver Fatigue	Moderate	Low	Low	Moderate	**High**
Works in all conditions	—	—	—	—	**Yes**

Go beyond the limits of factory suspension.

Tow with confidence, drive with comfort.

LiquidSpring is built for the way your truck works, so you can focus on the road ahead.

30,000+ vehicles equipped across the globe
Recognized by Ford Pro® as Best In Class

Backed by rigorous engineering testing with independent analysis validation, LiquidSpring has the trust of industries where the stakes are the highest. 97% of ambulance OEMs specify LiquidSpring for upgraded suspension, because when a rough ride has direct consequences for a patient in transport, there's no room for compromise, and no margin for marketing claims that don't hold up in the real world.

The same technology. The same performance. Available in your truck.

Frequency Response Testing Based on controlled testing with identical 2024 Ram 3500 trucks using nine accelerometers and the same test course:	**Stock Ram 3500 Results:** • Empty truck: High frequency spikes (harsh ride) • Loaded truck: Lower, more controlled frequencies • 21% difference between empty and loaded ride characteristics	**LiquidSpring® Ram 3500 Results:** • Empty truck: Controlled, consistent frequencies • Loaded truck: Similar controlled frequencies • Only a 10% difference between empty and loaded ride characteristics

Vibration Reduction Data The testing measured vibration transmission using industry-standard Root Mean Square (RMS) acceleration and Vibration Dose Value (VDV) metrics:	**Empty Truck Performance:** • Stock suspension: High RMS acceleration and VDV readings • RideSync™: 50% reduction in RMS acceleration, 23% reduction in VDV	**Loaded Truck Performance:** • Stock suspension: Better performance, but still significant vibration • LiquidSpring w/RideSync™: 42% reduction in RMS acceleration, 42% reduction in VDV

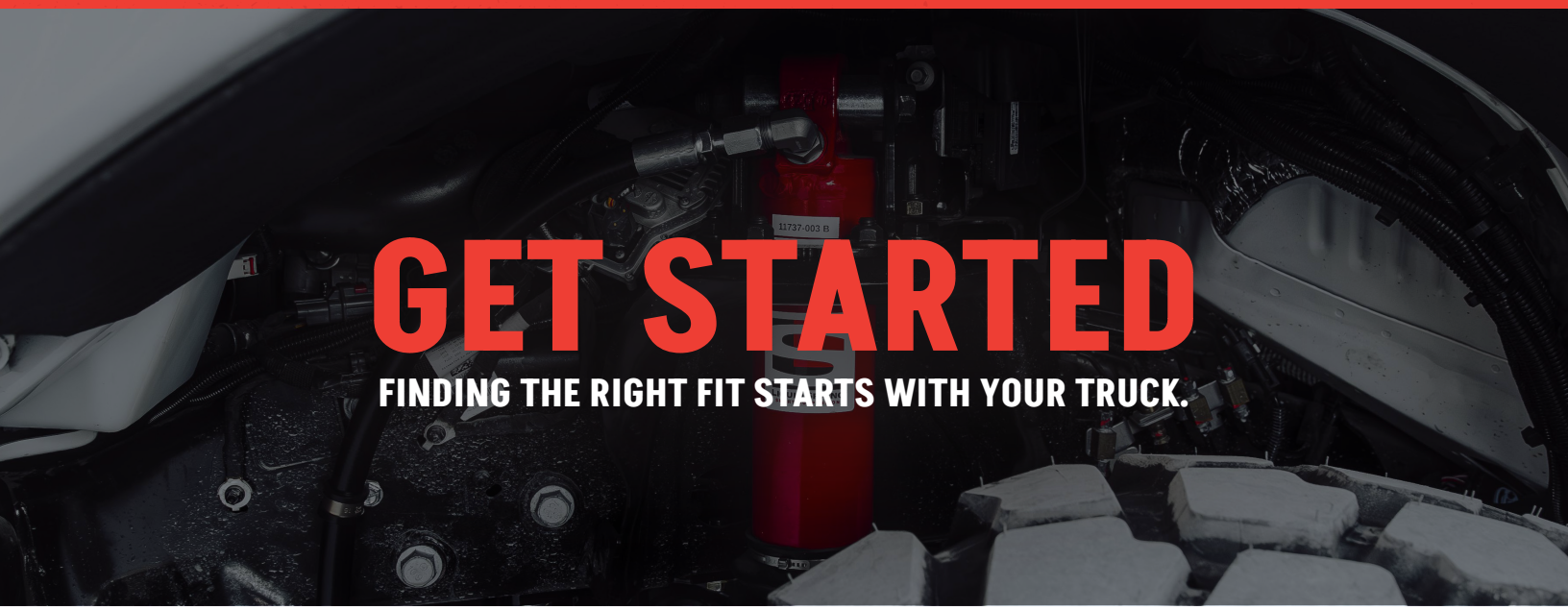
What Our Customers Are Saying:

We love ours. Quality build. Ram 5500. We have taken our Northern Lite places we should not have done. And the ride? My kidneys and my dogs and my camper love it. I'm not getting paid to say this, but I really am glad we installed LiquidSpring. – Clifford Wilson

Just amazing service. Oh, and the ride, what a difference. This product is amazing. We are convinced, for us, it was worth it. – Tom & Missy

Anywhere I want, in 100% comfort. – Otto

LIQUIDSPRING®



GET STARTED

FINDING THE RIGHT FIT STARTS WITH YOUR TRUCK.

LiquidSpring Smart Suspension is available for Ford® F-250, F-350, and F-450 superduty pickups, select RAM® 3500 pickups. LiquidSpring is also available on cab-chassis platforms for both Ford and RAM, bringing a more refined driving experience to the heavy-duty trucks people depend on every day.

We offer lift kit options for pickups at Stock Height, 2 inch, and 4 inch configurations. The right choice depends on how the truck is used, the tire size you plan to run, and the overall setup.

If you are unsure which option makes the most sense for your build, reach out to our sales team. We will walk through your goals, your truck, and your intended use to make sure you end up with the right setup the first time.

Installation typically takes 4 to 5 days through a certified LiquidSpring dealer.

EXPLORE PICKUP SUSPENSIONS

liquidspring.com/pickup-truck-suspensions