Bolt-On Coil-Over Conversion for GM A-Arms, QuickSet 2

VAS 162MN-350 / VAS 162MN-425

Installation and Tuning Guide

VAS 162MN-350: Use with OEM-positioned shock mounts at stock or aftermarket lower A-arm.
VAS 162MN-425: Use with lowered shock mounts at lower A-arm to achieve correct ride height.

Description: Bolt-on threaded body shock directly replaces factory shock in various GM and custom applications. Additional components included with VAS 862MN-350 or VAS 862MN-425 enable removal of the factory positioned coil springs for conversion to 2-1/2" coil-over springs.

Note: Installation requires verification by the customer that this product meets the specific shock-length and travel-range requirements of the vehicle and performance application.

Shock Specifications

Part Number	Valving	Mounting Upper	Mounting Lower	Total Travel	Compressed Length*	Extended Length*	Ride Height*		Spring Length
							Min.	Max.	
VAS 162MN-350	Double	Spherical Stem	Closed Crossbar or, 1/2 or 5/8 Poly Bushing	3.50”	9.63”	13.13”	11”	11.75”	7”
VAS 162MN-425	Double	Spherical Stem	Closed Crossbar or 1/2 or 5/8 Poly Bushing	4.25”	10.38”	14.63”	12”	13”	9”

*Measured from bottom of stem washer to center of lower eye

PART LISTS

VAS 862MN-350 or -425 – Bolt-on VariShock Coil-Over for GM A-Arms

Part Number	Qty.	Description
899-012-201	1	Spanner wrench, 2.80” diameter spring-seat slot pattern
VAS 162MN-XXX	1 pr.	VariShock coil-over, spherical stem / urethane-eye crossbar, QuickSet 2
VAS 21-07XXX	1 pr.	VariSpring 2-1/2” ID x 7” length (XXX = 200 to 650 lb/in rate)

VAS 162MN-XXX – VariShock Coil-Over, QuickSet 2

Part Number	Qty.	Description
3102-056-18RC	2	Jam nut 9/16-18 RH, clear zinc
871DXXX-CD0C	2	Coil-over shock assembly
899-012-HEX7/64	1	Ball driver 7/64 hex screw driver
899-013-63-1.50	2	Bumper pad .632 bore x 1.520 diameter
899-020-208	2	Ballstud top mount assembly
899-020-216	1 pr.	Upper spring seat, 3/4” extended
899-061-303	1	Lower crossbar mount hardware pack

899-061-303 – Lower Crossbar Mount Hardware

Part Number	Qty.	Description
3101-038-16C	4	Locknut 3/8-16 nylon insert
3106-50FK1.00B	2	Set screw 1/2-20 x 1” cup point
3120-038S-Y	4	Washer , 3/8 hardened flat SAE
3122-038C1.25B	4	12-point flange bolt 3/8-16 x 1-1/4"
3140-1624-40	2	Sleeve 1/2 ID x 3/4 OD x 1-1/4” long
3140-2024-40	2	Sleeve 5/8 ID x 3/4 OD x 1-1/4” long
3141-2436-1.25	4	Poly bushing .750 ID x 1.125
3151-5ML	1	Poly lube 5ml squirt tube
3157-063S-C	4	Washer 5/8” flat SAE plated
899-042-2.19	4	Crossbar (D) 2.18 to 2.50 bolt centers closed style
899-044.51-0.70	2	Aluminum Washer .510 ID x .700

INSTRUCTIONS

Read these instructions in their entirety prior to beginning installation.

Coil-Over Shock Assembly

1. Apply anti-seize to threads of lower spring seat and shock body, then screw spring seat onto shock until nearly in contact with adjustment knobs. The spanner wrench notches in spring seat should face toward lower shock eye. Ball-locks may need to be loosened to easily turn spring seat.
2. Install optional spring seat thrust bearing (PN 899-020-217) onto shock at this time. Bearings must be lightly greased before use.
3. Install spring onto shock, then place upper spring seat into position. The threaded lower spring seat will need to be very near its lowest setting.
4. Once upper spring seat is in place, thread lower seat upward until spring just starts to compress. Installed spring length should measure 7” for the 3.5 travel shock and 9” for the 4.25 travel shock. Spring compressor P/N VAS 200 may be necessary to install the springs. DO NOT REMOVE THE BALL STUD ASSEMBLY IN ORDER TO INSTALL THE SPRING.

Install the Lower Shock Mount Crossbar (OEM-Style Lower A-Arms ONLY)

5. Start by pressing the eyelet bushings into the shock base one from each side. After they are pressed in put some of the lube inside the bushings.
6. Thread the 1/2” set screw into one of the crossbar halves. Slide one of the aluminum washers onto the set screw and insert this assembly into the shock eyelet bushing.
7. Insert the second crossbar half into the eyelet bushings and thread them together until tight. You should be able to rotate the crossbar when installed with a wrench. Use two adjustable wrenches to tighten the crossbar halves keeping them parallel to each other.

Install the Lower Eyelet Bushings (Aftermarket Coil-Over Lower A-Arms ONLY)

8. Start by pressing the eyelet bushings into the shock base one from each side. After they are pressed in put some of the lube inside the bushings.
9. Press the 1/2” or 5/8” ID sleeve, depending on your bolt size, into the bushings, this can be easily done in a vise.

Install the Coil-Over Conversion

10. Raise front of vehicle off ground and place jack stands under chassis so front suspension hangs freely.
11. Remove wheels and then disconnect sway bar from lower A-arm. This allows the shock assembly to fully extend so it can be removed.
12. Disconnect the two lower-shock-mounting bolts and the nut on the upper stud mount. You can then remove OEM shock assembly through the lower A-arm.
13. Using a spring compressor, compress the coil spring. Follow the tool manufacturer’s instructions for proper use of the spring compressor.
14. Remove cotter pin and castle nut from lower balljoint.

15. Using a pickle fork or balljoint separater, separate lower balljoint from spindle. A large hammer can also be used to strike upright near balljoint. The jarring force will unseat the balljoint stud.

16. Remove the OEM spring and spring compressor, this will not be reinstalled. Let the lower A-arm hang down.

17. Use a piece of heavy wire to tie the upper A-arm and spindle out of the way.

18. Trial fit the coil-over into the OEM coil-spring seat on the frame. In some cases you will need to enlarge the center opening so there is enough clearance between the coil-over spring and the hole in the frame. You should have at least 1/2” of clearance all the way around the coil-over spring when installed.

19. Place the larger stem washer onto the shock pivot stud, and then insert the stem into the OEM upper shock mount hole in your frame.

20. Place the smaller stem washer on the top and thread the locknut onto the pivot stud.

21. Tighten the upper pivot stud by holding the locknut with a 15/16” open end wrench and the pivot stud turned counter clockwise using a 7/16” deep well socket. Torque to 45-50 lb/ft.

22. Place a floor jack under the lower A-arm near the balljoint. Raise the A-arm until it contacts the lower shock crossbar.

Attach the Coil-Over to the A-Arm

23. OEM-Style Crossbar Mount ONLY – Secure the lower shock crossbar to the A-arm using the 12-point bolts, washer and locknut provided. Place one flat washer underneath the locknut. Torque to 45-50 lb/ft.

    Note: The crossbar attaches <u>on top</u> of the lower A-arm to place the weight of the vehicle on the crossbar. DO NOT attach the crossbar underneath the lower A-arm; like the OEM shock is mounted. The mounting bolts are not intended to carry the weight of the vehicle.

24. Aftermarket-Style Eye Mount ONLY – Use the hardware you received with the kit to secure the lower shock eye to the A-arm. The steel washers may or may not be used depending on the manufacture of the A-arm.

25. Lower the upper A-arm and spindle down onto the lower balljoint.

26. Install the balljoint castle nut and torque to 55-60 lb/ft.

27. Install the cotter pin and bend the ends over the balljoint stud.

28. Repeat this for the other side of the car.

29. Once you have the coil-over installed make sure to check the ride height. It is very important that you have the shock at the correct installed height.

IMPORTANT: The shock must be at full extension whenever making preload adjustments with the lower spring collar.

VariShock Adjustment and Tuning Guide - QuickSet 2

This guide covers adjustment features and tuning procedures for VariShock QuickSet 2, double-adjustable, shock absorbers. The information contained has been greatly simplified and is only intended to get you started in the right direction. Suspension tuning involves multiple variables such as: spring rates, antiroll bar rates, vehicle weight distribution, tire sizes, tire pressures, suspension geometry, and track conditions. We highly recommend thoroughly researching suspension tuning and vehicle dynamics, or consulting an experienced professional.

*Refer to Shock Specifications on page 2.

Travel Limiters

Shocks are not to be used as travel limiters. An extension travel limiter, such as a strap or cable, should be used to prevent topping out and damaging the shocks. The installed compression bumper protects the shock if bottomed out during normal use. If the bumper shows signs of wear or damage it must be replaced immediately. Never operate a vehicle with a missing or damaged bumper. Vehicles that consistently bottom out shocks or land harshly from wheel stands should use a higher rate spring along with some form of suspension stop to limit compression travel without directly impacting the shock body. Any shock will be damaged if the car is dropped from a wheel stand.

Ride Height

When a shock is at ride height a certain amount of travel is available in either direction. Depending upon performance application, shock travel will be reserved in different percentages for compression or extension.

Street Baseline: 60-percent Bump, 40-percent Rebound

Street vehicles require more available compression (bump) travel for improved ride quality and unexpected road hazards. At baseline ride height, the shock and spring should collapse 40-percent from their installed heights. This results in 40-percent of travel available for extension and 60-percent for compression travel.

Handling Baseline: 50-percent Bump, 50-percent Rebound

Handling performance applications are usually limited to smooth prepared road-course- or autocross-tracks, therefore less compression travel is required. Suspension geometry or track conditions may require the travel percentages to be shifted to prevent topping- or bottoming-out the shock.

Drag Race Baseline: 40-percent Bump, 60-percent Rebound

Drag race vehicles generally require more extension (rebound) travel to help weight transfer, and because the drag strip is very flat, less compression travel is needed. The amount of extension travel available in the shock will drastically affect how the car works. At baseline ride height, the shock and spring should collapse 60-percent from their installed heights. This results in 60-percent of travel available for extension and 40-percent of compression travel.

Spring Selection Guidelines

A good spring rate baseline for mid-size cars with an iron small block would be 500-550 lb./in., 500 being more suited for street and 550 leaning more towards sporty handling.

Differences that alter desired spring rate:

- Weight Reduction -50 lbs
- Big Block +50 lbs
- Larger Car +50 lbs
- Race Use +50 lbs

Spring rate affects ride quality, ride height and roll rate characteristics. Differences in vehicles such as aluminum engine components, fiberglass body parts and chassis stiffening should be taken into consideration. Additional springs can be purchased for tuning purposes.

9" VariSprings

Rate (lb/in)	Part Number
400	VAS 21-09400
450	VAS 21-09450
500	VAS 21-09500
550	VAS 21-09550
600	VAS 21-09600
675	VAS 21-09675
750	VAS 21-09750
850	VAS 21-09850

7" VariSprings

Rate (lb/in)	Part Number
400	VAS 21-07400
450	VAS 21-07450
500	VAS 21-07500
575	VAS 21-07575
650	VAS 21-07650

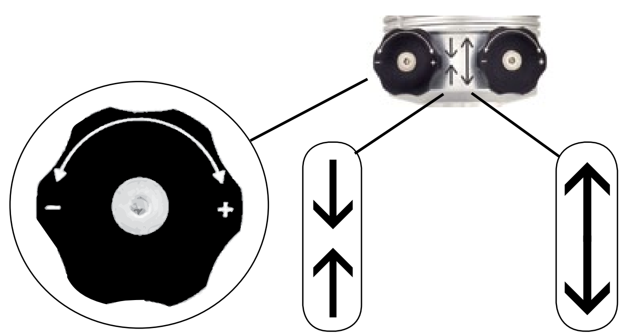
Baseline rates of 500-550 lb/in. are given for 9" springs. Add 50 lbs., to rate for 7" springs.

Spring Preload

The threaded lower spring seat is used to adjust spring preload. Compressing the coil spring to any length shorter than it's free height, with the shock fully extended, is considered preloading the spring. If you adjust the spring seat to change the vehicle's ground clearance, be aware that you will be adding or subtracting travel in the shock. Usually when lighter-than-baseline spring rates are used it is necessary to add preload to achieve the correct balance of travel and ride height. If preload has been added make sure there is adequate spring travel remaining to prevent coil bind before the shock is fully collapsed.

Tuning Front Suspension with Spring Rate (Drag Race)

A drag race car should run the lightest front spring rate possible, without letting the shocks bottom out when making a pass. As a general guideline, lighter springs allow the car to easily transfer weight, and settle faster down track. Changing spring rate affects ride height and the rate at which weight is transferred to the rear tires. A softer rate makes the front easier to raise during acceleration. A stiffer rate makes the front harder to raise during acceleration. If you are having trouble getting the front end to rise, you can soften shock rebound valving or change to a softer spring. When using lighter rate springs preload must be added by screwing the lower spring seat upward, compressing the spring to achieve proper ride height. In general terms, the worse a car hooks the more shock extension travel it will need. If you need more extension travel, preload can be removed to lower ride height. Using this method will cause the car to have less ground clearance and reduce the amount of compression travel. If you are going to operate the shock at a ride height shorter than recommended, the upper chassis mounts must be relocated to correct any major vehicle ride height issues. It may take some work with spring rates and upper mount relocation to get the correct combination of vehicle ride height and front suspension travel for your application.



Adjustment Features

The QuickSet 2 valve system features dual adjustment knobs that independently control bump- and rebound-damping stiffness of the shock. Dual-arrow symbols engraved into the shock body demonstrate the function of each knob. Arrows pointing toward each other designate bump (compression) adjustment; the shock collapsing. Arrows pointing away from each other represent rebound (extension) adjustment; the shock extending. Knobs are clearly etched indicating the correct direction of rotation to decrease (-), or increase (+) damping stiffness. There are 16 specific adjustment positions for each knob, with a total of 256 unique combinations possible.

Symbol	Direction	Effect
+	Clockwise	Increase Stiffness
-	Counter-Clockwise	Decrease Stiffness
↓↑	Bump (compression) Adjustment	
↕	Rebound (extension) Adjustment	

Position 1, the softest setting, is found by turning the knob in the counter-clockwise direction until the positive stop is located. Rotating the knob in the clockwise direction increases damping stiffness. Each of the 16 settings is indicated by a detent that can be felt when turning the knob, and an audible click as the knob gently locks into position. Only very light force is necessary to rotate the knob past each detent. If access to the adjustment knobs is limited, a 5/64 or 7/64 (depending upon model) ball-drive Allen wrench can be used to adjust the knob. Do not force the knob beyond its intended stop, doing so will damage the valve mechanism.

Note: VariShocks have a substantial range of adjustment with very little bypass or internal bleed. Due to our minimal-bleed design, shocks will feel extremely stiff at some settings when operated by hand, whereas other shocks with excessive bleed will move more freely. Manual comparison should not be performed. A person cannot manually operate the shock at a rate anywhere near real life conditions and any results found in this manner will be meaningless. Prior to shipping, every VariShock is dynamometer (dyno) tested and calibrated throughout an accurate range of shaft speeds and cylinder pressures found in real-world operation.

The Truth About 16- vs. 24-Clicks

Don't be fooled by shocks offering more adjustment clicks. They are actually 1/2-click adjustments. The manufacturer merely added more detents to the mechanism without increasing the range of adjustment. This practice gives more clicks, but the adjustment is so slight that your vehicle will not respond to the change.
A 16-position VariShock actually has a broader range of adjustable force with the added benefit of a more manageable number of adjustments to try.

Tuning Procedures - QuickSet 2

VariShock shock absorber's broad range of adjustment is suitable to the three categories of suspension tuning: ride quality, handling performance, and drag racing. All three tuning categories have the common goal of controlled weight transfer, but have greatly differing vehicle-dynamic requirements. Each will be discussed in the following text. Before proceeding verify that all suspension components, such as control arms, balljoints, and bushings are in acceptable condition and that tire pressures are correctly set.

Tuning for Ride Quality - QuickSet 2

Tuning for ride quality generally involves lighter spring rates matched with softer shock settings to achieve a smooth and comfortable ride. Testing and adjustment is required to attain desirable results. When properly adjusted the vehicle should feel settled without continued bouncing (too soft), excessive harshness (too stiff), or fore/aft pitching.

Prior to Testing

Begin with the shocks adjusted to the number 3 position for both bump and rebound. The first two settings are generally too soft for street use and are normally used in drag racing applications.

Find Harshness Threshold

The bump setting mainly controls the rapid upward movement of the suspension as the tire travels over rough or bumpy surfaces. Increase shock bump stiffness by one, then test again. Continue increasing stiffness and testing until the vehicle begins to feel harsh over bumps. From this setting, decrease shock bump stiffness by two. The harshness threshold setting may differ from front to rear.

Excessive Chassis Movement **(compression)**	Increase Bump Stiffness	The bump setting also affects larger downward chassis movements such as brake dive, squatting, and body roll. Increase shock bump stiffness by one, then test again. Note: As bump stiffness is increased, road noise and vibration will also increase.

Excessive Chassis Movement **(extension)**	Increase Rebound Stiffness	The rebound setting mainly controls vehicle weight transitions such as front end rise during acceleration, rear end rise during braking, body roll. If vehicle exhibits rapid weight shifts or continues to oscillate more than one suspension cycle before settling, increase shock rebound stiffness by one, then test again. Note: Stiffening rebound does not reduce the amount of lean or dive in a sustained turn or braking maneuver, but does slow the rate of weight transfer to minimize unexpected changes in the cars handling.
Fore/Aft Pitching **(constant speed 50-70 mph)**	Alter Front-to-Rear Stiffness Difference	If vehicle exhibits fore/aft pitching at highway speeds, rear shock rebound should be stiffened or conversely, front shock rebound softened. Ideally the rear suspension should oscillate at a slightly quicker rate than the front to minimize pitching.

Tuning for Handling Performance - QuickSet 2

Heavier spring rates matched with stiffer shock settings generally contribute to improved handling performance by reducing chassis movement. Stiffer tuned suspension increases vibration transferred to the vehicle and passengers, but is usually tolerated for performance gains. When properly adjusted the vehicle should feel responsive, exhibit balanced cornering grip, and maintain traction over irregular surface conditions. Extensive testing and adjustment is critically important when operating your vehicle at or near its performance limits. Testing must be done in a safe and controlled environment, such as a dedicated motorsports facility.

Prior to Testing

Begin with the shocks adjusted to the number 5 position for both bump and rebound. The first four settings are generally too soft for performance applications and are normally used in drag racing or street applications.

Find Harshness Threshold

The bump setting mainly controls the rapid upward movement of the suspension as the tire travels over rough or bumpy surfaces. Increase shock bump stiffness by one, then test again. Continue increasing stiffness and testing until the vehicle begins to feel harsh over bumps, or a reduction of traction, cornering, braking or acceleration ability is experienced. From this setting, decrease shock bump stiffness by one. The harshness threshold setting may differ from front to rear.

Excessive Chassis Movement **(compression)**	Increase Bump Stiffness	The bump setting also affects larger downward chassis movements such as brake dive, squatting, and body roll. Increase shock bump stiffness by one, then test again. Note: As bump stiffness is increased, road noise and vibration will also increase.
Excessive Chassis Movement **(extension)**	Increase Rebound Stiffness	The rebound setting mainly controls vehicle weight transitions such as front end rise during acceleration, rear end rise during braking, and body roll. If vehicle exhibits rapid weight shifts or continues to oscillate more than one suspension cycle before settling, increase shock rebound stiffness by one, then test again. Note: Stiffening rebound does not reduce the amount of lean or dive in a sustained turn or braking maneuver, but does slow the rate of weight transfer to minimize unexpected changes in the cars handling.
Shocks Bottoming Out **(body roll, brake dive or squatting)**	Increase Bump Stiffness	If chassis movement during cornering or braking allows shocks to bottom out, increase shock stiffness by one, then test again. The urethane bump stop can be used to gauge shock bump travel by sliding it down the piston rod, against the shock body, then checking its position after testing. If increasing bump stiffness cannot extend weight transfer duration long enough a higher rate spring should be installed.

Understeer Condition **(Neutral throttle)** **Car turns less than expected; commonly referred to as push, plow, or tight.**	Change Bump Stiffness Bias Toward Rear	If vehicle exhibits understeer when cornering at neutral throttle, rear shock bump should be stiffened or conversely, front shock bump softened. A slight amount of understeer is considered safe and reduces the chances of spinning.
Oversteer Condition **(Neutral throttle)** **Car turns more than expected; commonly referred to as tail-happy or loose.**	Change Bump Stiffness Bias Toward Front	If vehicle exhibits oversteer when cornering at neutral throttle, front shock bump should be stiffened or conversely, rear shock bump softened. Oversteer increases the vehicles tendency to spin when cornering and requires driver experience and skill to manage safely. This condition should be avoided by novice drivers.

Tuning for Drag Racing - QuickSet 2

Required settings for drag racing applications vary greatly depending upon, vehicle weight, weight distribution, suspension geometry and travel, horsepower, and available traction. A properly tuned drag race suspension enables the vehicle to launch straight while transferring weight to the rear tires in an efficient, controlled manner. Extensive testing and adjustment is critically important when operating your vehicle at or near its performance limits. Testing must be done in a safe and controlled environment, such as a dedicated motorsports facility. It is generally better to tune shocks according to improvements in ET's (Elapsed Times) rather than for specific occurrences such as the amount of wheel stand. Due to differences in weight distribution, wheel base, tire size, and horsepower, not all vehicles leave the starting line in the same manner once their suspension has been optimized. Watch your ET's and if your times start to get slower return to the prior adjustment. Once you have completed the following procedures, only fine adjustments may be needed to tune for specific track conditions.

Prior to Testing

Make certain that wheelie bars are raised as high as possible while maintaining control and eliminating their influence as much as possible on damper settings. Begin with shocks adjusted to the number 3 position for bump and rebound.

Initial Testing

First verify that the vehicle tracks straight before aggressively launching from the line. Begin with light acceleration and low speeds. If the vehicle tracks and drives acceptably at this level, make incremental increases in acceleration and top speed until the vehicle is safe at higher speed. Vehicles not tracking straight at speed should verify all chassis settings including but not limited to alignment, bump steer, tire pressures, etc. Once the vehicle drives in a safe manner at speed, move on to test launching.

Test launches should consist of only the initial launch with no subsequent gear changes. Begin with low rpm launches and gradually increase rpm and severity if the car launches acceptably. At this time we are only determining that the car launches in a controlled manner to avoid damaging components or the vehicle. The vehicle should leave in a straight line without extreme wheel standing or harsh bounces. Sudden, uncontrollable front end lift should be corrected by making suspension instant center adjustments, if possible. More gradual front end lift can be corrected by adjusting the shock valving. If the car gradually wheel stands or bounces violently, adjust front suspension first, then rear. If there is rear tire shake, wheel hop or excessive body separation, adjust rear suspension first, then front. If your car is launching severely to the right or left, first check that the rear end is centered and there is no preload adjusted into the rear suspension. If the car still launches severely to the right or left, you will have to add preload to the rear suspension. If everything checks out okay and the car only minimally drives to the right or left, you can stagger the rear shock valving to correct this.

When a vehicle launches slightly toward the right, rebound (shock extension) stiffness is added to the driver side and bump (shock compression) stiffness is added to the passenger side. A vehicle launching slightly toward the left would make the opposite adjustments. It is not recommended to have more than two clicks difference side to side for either bump or rebound. Rear shock adjustments are only applicable to correcting the launch and will have little to no affect on down track performance.

After the car has been adjusted to launch straight, test launch and include the first gear change. Make any required adjustments and add the next gear change. Repeat until the car can be launched straight and driven at speed safely. The car is now ready for fine tuning to optimum results.

Front Shock Adjustment

Pay close attention to what is happening to the front end during launch. Your goal is to eliminate all jerking or bouncing movements during launch and gear shifts. Ideally the front end should rise in a controlled manner, just enough to keep the rear tires loaded, then continue the pass with smooth transitions at all times. Front end rise without any appreciable traction gain is wasted energy that should be used to propel the vehicle forward instead of up. While testing, document your ET's along with any changes made. If ET does not improve, return to previous settings.

Front Rebound (Extension) Adjustment Overview

Too light of a rebound (extension) setting allows excessive front end chassis separation and may result in the front wheels jerking violently off the ground during launch. Also, during gear change, too light a setting allows the car to bounce off its front rebound travel limiter and then bottom out in an oscillating manner. Too firm a setting will prevent the front end from rising sufficiently, limiting the amount of weight transferred to the rear tires. Adjust the rebound setting in one click increments to control the rate at which the front end rises at launch and during gear changes. While testing, document your ET's along with any changes made. If ET does not improve, return to previous settings.

Front Wheels Lose Contact with Ground	Increase Rebound Stiffness	Violent chassis separation and may result in jerking the front wheels off the ground. Increase shock rebound stiffness by one, then test again.
Rear Tires Hook Then Lose Traction	Increase Rebound Stiffness	If weight transfer occurs too quickly the rear tires may hook then lose traction as the front end begins to travel downward. Slowing the rate at which the front end rises prevents the shocks from topping out too quickly and increases the duration of time that the rear tires benefit from the weight transfer. Increase shock rebound stiffness by one, then test again.
No Front End Rise	Decrease Rebound Stiffness	Too firm of a shock setting limits the amount of weight transferred to the rear tires, resulting in poor traction. Decrease shock rebound stiffness by one, then test again.

Front Bump (Compression) Adjustment Overview

After the launch or during a gear change, a firm bump setting will cause the chassis to bounce off the front tire as the chassis settles down. Too light of a bump setting allows the shock to bottom out and bounce off the stop travel bumper. Adjust bump in one click increments to control the amount and rate at which the front end settles during gear change. While testing, document your ET's along with any changes made. If ET does not improve, return to previous settings.

Front "Bottoms Out" After Launch	Increase Bump Stiffness	If front suspension settles too fast after launch or gear change it may cause the front suspension to bottom out at the end of its downward travel. If the suspension bottoms out hard enough, rear traction may be lost. Increase shock bump stiffness by one, then test again. If increasing bump stiffness cannot extend weight transfer duration long enough, a higher rate spring should be installed.
Hard Front End Bounce (After Launch or Gear Change)	Decrease Bump Stiffness	If the tires cause the front end to bounce upon landing, the shocks are too stiff. The front end should settle in a single, smooth motion. Decrease shock bump stiffness by one, then test again. This can be a very subtle problem. Watch the front tire sidewall as it contacts the ground.

Rear Shock Adjustment (Double Adjustable)

Maintain traction by controlling the rate at which torque and weight is transferred to the rear tires. Ideally the rear suspension should be as firm as possible before a loss of traction occurs. Changes to the vehicle such as ride height, tire size, weight distribution, or suspension link adjustments will alter the instant center location in relation to the vehicle's center of gravity. Any shift of either the instant center or center of gravity will usually require a shock setting adjustment to optimize traction. While testing, document your ET's along with any changes made. If ET does not improve, return to previous settings.

Rear End Squats	Increase Bump Stiffness	Some vehicles will squat during launches instead of pushing the vehicle forward. To assist in planting the tires, increase shock bump stiffness by one, then test again.
Vehicle Separates from Rear End	Increase Rebound Stiffness	Some suspension geometries plant the tires so forcefully that the rear end of the vehicle rises away from the housing too rapidly. The vehicle may hook initially, then spin the tires once the shocks are topped out. Slowing the rate at which the rear end rises increases the duration of time that the rear tires benefit from the improved traction. Increase shock rebound stiffness by one, then test again.
Loss of Traction with Minimal Chassis Movement	Decrease Bump/ Rebound Stiffness	A suspension system that is too stiff can hit the tires too hard, causing a loss of traction. Softening the suspension slows the transfer of weight and reduces the initial tire shock. Minimal chassis movement makes if very difficult to visually tell if the bump or rebound needs to be decreased. We suggest adjusting bump first and watch for a gain or loss in the ET. If ET does not improve, return to previous setting, then adjust rebound instead and test again.

Completion of Testing

When all adjustments have been completed, reset your wheelie bars as low as possible without affecting your ET.

WARRANTY NOTICE:
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