



MSR off-road tuning guide.

Mugen Seiki Racing spends a lot of time developing the kit setup and it's always a great place to start and a good place to go back to if you get lost. For updates and the latest setups please visit www.mugenracing.com and feel free to email Adam Drake at adrake@mugenracing.com if you have any questions regarding Mugen Seiki off-road vehicles.

Tires:

It's extremely important to make sure you have the correct tire thread pattern and compound before you start making changes on your Mugen Seiki Racing vehicles. Tires are the single most important element of your setup. Take a moment to observe a few of the fast cars at the track and take note of the type of tire and compound they are running.

Drivetrain:

When your vehicle is new or if you install new outdrives and driveshafts it will have a lot of chassis roll and be a

little loose on throttle. Allow 45–60 minutes of running for your drivetrain to break-in before making adjustments to your set-up. After 45-60 minutes of running the vehicle will gain traction and stability.

Brake bias:

The best starting point for brake bias is 50% (front)- 50% (rear). This setting will make the vehicle easy and controllable under braking. If the vehicle is too aggressive under braking you should increase the front brakes or decrease the rear brake strength. If the vehicle feels too lazy entering the turn and you want more rotation, you should decrease the amount of front brake or increase the strength of the rear brakes.

Front diff fluid:

Mugen Seiki Racing highly recommends using Mugen diff oil in your Mugen Seiki vehicle. Thinner front differential fluid will increase off-power steering and decrease on-power steering. If the front diff fluid is too light it can make the vehicle twitchy and difficult to drive. Thicker front differential fluid will have smoother off-power steering and increase on-power steering. If the front diff is too thick, it can make the rear of the vehicle loose on throttle.

Center diff fluid:

Thinner differential fluid in the center differential will increase on-power traction, but decrease acceleration and increase off-power steering. Thicker center differential

fluid will have more acceleration, more on power steering and smoother off power steering.

Rear diff fluid:

Thinner differential fluid in the rear will have more rotation in the middle of the turn and will make the rear end looser on throttle. Thicker rear differential fluid will increase off power steering slightly, have smoother steering in the middle of the turn, and more rear traction on throttle.

Shock oil:

Mugen Seiki Racing highly recommends using Mugen shock oil in your Mugen Seiki vehicle. Lighter shock will increase traction and be better in the bumps. It will have more overall traction and be more responsive. Thicker oil will have less overall traction and be less responsive when changing directions. On high bite/smooth tracks, thicker oil is easier to drive. Make sure you adjust the oil when there is a drastic temperature change (+ or - 20 degrees). If it gets cold outside, go to lighter shock oil. If it gets hot outside, go to thicker shock oil.

Springs:

Stiffer front springs will support the front of the vehicle better and have less steering. Softer front springs will roll more and increase steering. Stiffer rear springs will have more support, but decrease rear traction on the exit of the turn. Softer rear springs will have more initial grip and forward traction. On high grip tracks, running stiffer front

and rear springs will have more corner speed and increase stability. On low grip tracks, softer springs front and rear to increase the overall grip of the vehicle and improve handling in bumps.

Pistons:

More pack or smaller holes require lighter oil and have slower weight transfer, less responsive, and will land large jumps better. Less pack or larger holes pistons require heavier oil and have more weight transfer, increased traction, more responsive, and absorb bumps better.

Shock location:

Moving the shocks in on the tower will have softer initial damping, less responsive, and be more forgiving. Moving the shocks out on the tower will make the car more responsive, jumps better and will be better on technical tracks. Moving the shocks in on the arm will make the suspension softer and increasing grip. The outside holes on the arm will be more stable and easier to drive.

Ackerman:

Running the ackerman position forward will be more responsive initially and then have a smoother feel on exit of the turn. Running the ackerman position back will have smoother off power steering and increase on-power steering.

Lower front arm position:

The lower arm position adjusts the roll center. Running a lower roll center will have more overall grip and steering. Running a higher front roll center will have more support less overall steering. When running more kick, the vehicle will have more steering entering the turn, more forward traction and be better in bumps. Less kick will decrease off-power steering and increase on-power steering, but is less forgiving in bumps.

Front upper arm position:

Lowering the front upper arm location will increase off-power steering and have a softer feel on the track. It will also increase camber gain and be better in bumps. This is recommend for lower grip tracks. Raising the front upper arm position will have smoother off-power steering and increase on power steering. This is recommended for higher grip tracks. Moving the front upper arm forward will have less overall castor which will increase steering through the middle and exit of the turn. Moving the front upper arm back will have more castor, less on-power steering and better in low grip bumpy conditions.

Rebound stop (travel):

Always measure the rebound stop of your Mugen Seiki vehicles with the shocks on the vehicle. Rebound stop is the distance from the center of the top shock mount screw to the center of the bottom shock screw. More travel in

the front will increase on-power steering. More travel in the rear will increase off-power steering. More travel in the front and rear will land better and be easier to drive on rough tracks. If you have too much travel it can cause the vehicle to traction roll on tracks with bumps and ruts in the middle of the turn. Less travel will have less grip and will slide over small bumps.

Sway Bars:

Thinner front sway bar will increase off-power steering and have less on-power steering. Thicker front sway bar will decrease front off-power steering and make the steering smoother entering the turn and increase on-power steering. A thinner rear sway bar increases rear traction and decreases on-power steering. A thicker rear sway bar increases stability in the middle of the turn and increases on-power steering. Thicker sway bars are more stable on high-speed, high-traction tracks.

Camber:

More negative camber in the front will have less steering and be smoother in bumps. Less negative camber in the front will have more steering. More negative camber in the rear will have less forward traction, increase on-power steering, and be better in bumps. Less negative camber in the rear will have more forward traction, but can cause the vehicle to traction roll. Mugen Seiki Racing recommends setting your vehicle's camber using the Mugen camber gauge. Part number: MUGB0510

Track width:

Standard wheel hubs work best on low grip and dusty conditions. The +1 or +2mm wheel hubs will have slightly less initial grip, but will increase stability on higher grip tracks.

Rear Camber Links:

Using a longer rear camber link, you will have less roll and improve stability and traction. A shorter rear camber link will have more roll and increase steering and better handling in the bumps. Running a shorter position on the rear hub will generate more corner rotation entering the turn, but decrease steering on exit. Running the camber link deeper into the wheel will be more stable entering the turn and increase steering on exit.

Wheel Base:

Shorter wheelbase (spacers behind hubs) will increase on-power traction and off power steering. Shorter wheelbase is better on tight or slick tracks. Longer wheelbase (spacers in front of the hubs) decreases off-power steering, but is more stable, better in bumps, and will have more on-power steering.

Anti squat:

Less anti-squat will have less off-power steering and less support on throttle. More anti-squat will have more support and more forward traction. More anti squat will also jump better.

Clutch break-in:

When replacing the clutch shoes or clutch bell you need to break-in the clutch. To break-in your clutch you'll need to start your vehicle and let the engine get up to operating temperature. With the engine at operating temperature, place the vehicle on the ground and firmly holding the vehicle down, apply ½ throttle for two to three seconds. Repeat this three times to fully seat in your new clutch shoes.

Clutch:

Softer springs engage at a lower rpm and have a smoother powerband. If the engine doesn't have enough low-end power, you'll need to run stiffer clutch springs. Stiffer springs engage at a higher rpm and will increase low-end acceleration. If the clutch springs are too stiff it will cause the clutch to slip and can make the vehicle difficult to drive.

Ride Height:

We recommend setting your ride height before every run. When setting your ride height, always make sure your vehicle is complete with body shell and a full tank of fuel. Also make sure you set your ride height on a flat surface or set-up board. Mugen Seiki Racing recommends running the front of your vehicle 1-2mm lower than the rear of the vehicle. Please refer the the specific vehicles set-up sheet for our recommended ride height.

** When fine tuning your setup, you should always make one change at a time. Making more than one change at a time can make fine tuning your setup very difficult.