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MCS 3-Way Suspension Setup

Recommendations from James Clay - BimmerWorld

Alignment

- ☐ Set Front typically 1” to ½” gap above front tire between fender
- ☐ Rear 1/4" higher than front, measured to metal at front and rear jack points on bottom of rocker
- ☐ Front Camber -3.0 deg
- ☐ Front Toe 1/8" out total
- ☐ Rear Camber -1.8 deg
- ☐ Rear Toe 1/8" in total

MCS Basics

Clicks - Turn all the way (-), then let it settle into the first actual click - this is (0)

- Compression – knobs on canister (can = compression, Little knob = Low speed). Reference MCS document for adjustment procedure
- Rebound - knob on top of damper internal rod/shaft (rod = rebound)

Canister Pressure - Set and check canister pressure with the car in the air or on the ground - consistently. There is about 20psi difference with the weight of the car on the tires. Baseline setting is 175psi front and rear in the air. We recommend a minimum of 125psi and max of 250psi for most applications.

Shock Settings – Dry Track

L – Low Speed Compression (**L**ittle knob), H – High Speed Compression, R – Rebound (top of shock **R**od)
Front - L6H11R12
Rear - L5H7R10

Setup Changes – FULL Wet

List is in order of importance and ease of implementation – if it is a drying track, only do the shocks or even do a partial adjustment on the shocks. If the rain comes fast and you don’t have time, just make it through the list as far as possible. On these dampers, the compression is the most responsive way to adjust for rain and the rebound usually stays in the damper for the most part.

- ☐ Shocks – Front L4H3R6, Rear L2H2R4
- ☐ Disconnect rear bar
- ☐ Add rear wing (not past stall point) – a BW rear wing would go full attack angle on adjusters

Basic Tuning Thoughts

1. The MCS Dampers have a wide range of adjustability. Installing them on your car does not mean your car will be fast – it means that you now have the tools to make it fast.
2. The initial baseline settings are not perfect for every car, every driver, every track, and every condition, but they are a good starting point that should do fairly well everywhere.
3. To adjust the car to your preferences, start turning knobs – do this in a calculated manner and note your changes, as well as your starting and ending points. In a professional race team, we would keep this information in a notebook for review at future events with notes of what changes fixed what problems – having this information will allow you to make your car fast for all environments.
4. Don’t be afraid to experiment, just know your starting point and if it goes poorly, it will take you 5 minutes to turn the knobs back to where they were.
5. I generally go 2 clicks at a time if I am not sure of the direction I need to go. 1 click is noticeable to an experienced driver, but 2 clicks will make the change very pronounced and you can always go back 1 if it was too much.
6. Per #5 above, rebound is hard to know which way it should go sometimes – the car can exhibit the same bouncy symptoms due to either lack of or too much control – this is the one I sometimes have to guess on.
7. A fast car doesn’t always feel good – it will specifically feel slightly bouncy or twitchy. If softening the car makes you feel better and allows you to drive faster, then do it, but don’t assume just because the car feels high-strung, it needs to be softened – the stopwatch is your ultimate judge.
8. For compression, how the car goes over bigger bumps and curbing is a high-speed adjustment, and how the car transitions the platform in turns, under braking, etc is a low-speed adjustment.

Specific Tuning Thoughts

With a 3-Way damper set, the driver needs to dig deeper and learn how to give more specific feedback. General information like “the car is understeering” doesn’t give you direction on how to improve it. Try to answer all of the questions below when deciding what the car is doing and what it needs. Also, keep in mind that the driver can induce problems OR the driver can learn to drive around problems and never notice them – both of these are bad. As a driver you need to strive to drive the car as it should be driven and expect the proper amount of entry speed, realize you can only add throttle so early, etc. This part is hard and will take experience to learn “what the car should do” – following other cars and discussing with people at the track or our tech support will help you with this process.

Defining Car Handling Characteristics

These are the basic questions required for a driver to give feedback that can be used to make the car better. The better the feedback, the better the car can be, so this is a skill to learn and something to think about when driving:

1. Define the corner – **knowing a car understeers is good, but** rather than “understeer”, the feedback should say which corners it understeers in. Corners are very different and it will matter if it is high speed/low speed, cresting a hill/compressing into one, wide open entry/heavy braking, etc.
2. Break up the corner – **knowing a car is understeering in Turn 1 is good, but** knowing where it is happening is better – drill down deeper. Is it understeering (or oversteering) at entry, mid-turn, turn-exit and is it when you are braking, initiating turn-in, after the car has set into the corner, or when you are feeding in throttle?
3. Define the problem specifically – **knowing the car is understeering at the entry of Turn 1 is good, but** is it happening immediately when you turn the wheel (too much bar, or front compression or rebound) or is it turning in and then pushing after the weight sets (too little bar, or front compression or rebound) – two polar opposite changes for addressing “understeer” depending on what type of understeer.

Basic MCS Tuning Steps

- ☐ Understeer entering a turn initial turn of wheel, flat feeling - pull front compression (usually Low)
- ☐ Oversteer coming out of turn, typically a rear compression adjustment is needed (usually Low). Add if it is rolling, remove (pull out) if it is too flat.
- ☐ Adding canister pressure is like adding spring to some degree and will help you fine tune the steady-state balance of the car.
- ☐ Cars like to launch over curbs and we want them to in the proper manner. Just because your car hits a curb and lifts the wheel over, it is not doing a bad thing, as long as it lans smoothly where you intend it to. If it is so touchy that you can’t nudge a curb without the car flying up in the air and off the track, lower the high-speed compression.

Tuning a suspension is simple to rough it in and gets more intensive the more you want to extract from the suspension and car. The information above will get you started. We are available for more information as you go through the process and we offer driver coaching to teach you hands-on at the track how things work and show you differences – this is the best and fastest way to learn. Most importantly, don’t feel overwhelmed – you always have the baseline settings to go back to and the car will be fast with those, so experiment and enjoy!

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