Tuning AST Shocks by Brian Hanchey (hancheyb@ast-usa.com)

This is a handy "cliff notes" version of how to setup your car. It is by no means the "end all, be all" manual to setting up a car for the track, but is a way to get started when you're new to adjustable shocks. Cars are systems that operate with many variables. Depending on the car (fwd, awd, rwd) or high horsepower or low horsepower you may have to do unconventional things to achieve the goals you want. This document outlines some of the basics to get you on your way.

NOTE: This article assumes your car has quality bushings in all locations. If you have not checked or replaced all your bushings STOP READING THIS ARTICLE. You must have properly inspected bushings before beginning to setup a car's shocks.

The following applies to all AST shocks (4100, 4200, 4300, Sportline 1, etc)

Rebound Adjustment (top knob for most models)

ASTs have detents or clicks when you turn the knob. Usually they have 12 clicks, sometimes 13. So here is what you do at the track OR autocross, same applies.

AST uses the terms "opened" and "closed" because what you're doing is opening and closing a bleed valve in the piston assembly. Turn the adjuster to fully closed. This is the same as screwing a bolt in ("righty tighty") and is labeled "H" on the orange adjuster knob. This may or may not wind up on an exact click so turn it clockwise until you feel a resistance then turn it back to the nearest click. This becomes the reference point we'll call "fully closed". When you discuss setups with AST dealers, use these terms (opened and closed).

Do this for all four shocks/struts. Drive the car on the track and notice if you feel it understeer at turn-in or oversteer at turn-in. If either of those conditions exist do the following.

For understeer at turn-in: Turn the front shocks 2 clicks softer or towards open. Drive it again, and repeat if the condition continues to exist. If you get to fully opened and it still occurs you'll need to soften the front bar, add more front camber, or check your tire pressures.

For oversteer at turn-in: Turn the rear shocks 2 clicks softer or towards open. Drive it again, and repeat if the condition continues to exist. If you get to fully opened and it still occurs you'll need to stiffen the front bar or check your tire pressures.

Shocks do not affect handling in steady state cornering in perfect conditions. That is to say they *could* affect handling if you hit a big bump in a corner, but in steady state, over- or under-steer is caused by spring rate, sway bars, tire pressure, camber, camber of the turn, toe, etc. So if this happens, don't blame the shocks. Something else is going on. That helps you rule out one thing!

WARNING: To those that have ever said "my car is so low it is tight!" If your car understeers, you are most likely "riding on the bumpstops". RAISE YOUR CAR because going fast at the track looks much cooler than having the car too low and understeering. Lower is not always the answer in car setup.

For understeer at corner exit: Turn the front shocks 2 clicks towards closed. Drive it again, and repeat if the condition continues to exist. If you get to fully closed and it still

occurs you'll need to soften the front bar, stiffen the rear, add more front camber, or check your tire pressures. You might have to experiment with both because it may depend on many things.

For oversteer at corner exit: Rebound adjustment has little effect on corner exit. You can disconnect the rear bar if you need to. Alternatively you can close the rebound on the front shocks too to transfer weight. Also, consider adding more rear toe. We run 1/4" of rear toe-in to put the power down. Also, on BMWs things like the condition of the RTAB bushings will change this as well. Make sure they are new or in good shape AND we don't recommend poly.

These are the basics I use to set a car up. This gets you most of the way there. As stated, the vehicle dynamics is extremely complex. Depending on your level of car preparation you might need to consult someone for additional information. Enjoy!

Low Speed Compression Adjustment for AST 4200 and 4300s
Rebound adjustment is the most critical component to car setup. Compression adjustment gives you that fine tuning ability to change the damper under new conditions such as a new surface or track. Compression adjustment is a little more tricky than rebound adjustment. You want to run just enough compression that the tire doesn't "skip" over bumps. On a perfectly smooth surface this may mean a fully closed setup, while a bumpy surface may require you to run very little compression. Leave compression fully opened while you experiment with rebound. Once you're happy with the rebound settings, begin playing with compression setup.

After rebound adjustment is complete, set all four dampers at 6 clicks from fully closed. Follow the procedures listed in the above section to determine where this is on the adjustment range. As you drive notice several things:

1. Do you feel the car skipping over bumps?
    1. If yes, decrease compression on the end of the car skipping by two clicks. Repeat as required.
2. Does the car put power down well on corner exit?
    1. If no, increase compression at the rear of the car by two clicks *unless the surface is bumpy*. Repeat as required.
3. Does the car porpoise under braking?
    1. If yes, increase compression of the front dampers by two clicks. Repeat as required.

Out of adjustment? Ask us about revalving options.

Brian