



Understanding Preload

The preload is the distance the user pulls the damper down from full extension when installed on the dynamometer.

Long before Roehrig Engineering had computer controlled dynamometers, we had to use the key pad of the inverter to stop and start the dyno manually. This meant the crank could stop at any point in the rotation. If it happened to stop at top dead center and you loaded a shock absorber and did not preload it enough, then you could effectively pull the shock apart when you did your next collection. Since that time, Roehrig has developed all of its dynamometers to stop at bottom dead center and thus keeping the user from maybe pulling the shock apart.

Now, all Roehrig dynamometers stop at bottom dead center so the user can preload their damper in two different formats and not worry about pulling the damper apart. The first option is to have one set preload for all shocks. This way the user has a baseline with which to compare everything. We have used 2" preload for years now on Nextel cup style shocks. We used this 2" based on the past: if the dynamometer stopped at top dead center, a 2" preload would prevent the user from pulling the shock apart accidentally. The second option is to relate the preload to the corners of the car or in the case of road racing, the front and rear. If at static ride the shock is preloaded 3", set the preload on the dynamometer to 3". On a Nextel Cup car, the front dampers are compressed quite a bit more than the rear dampers. Perhaps the user could compress the front shock 3.5" and the rears only 1". This would better represent the gas pressure the damper is seeing on the car. The gas test would remove the static differences in the gas force, but the dynamic affects of the gas force would show up on the graph.

Further Study:

If you were trying to get the gas pressure as low as possible and keep the shock from cavitating, compressing it 1" or 3" would have a big effect on the available gas force. You might be able to go even lower on the gas force if your shock was compressed more at static ride height. Remember, it does not matter what the shock does when you hold it in your hands, the only thing that matters is what the car sees.

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Michael's Messages
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