

VALVESPRINGS

4G63 Engine Details

Valvesprings - we found the best valvetrain stability during bench testing and in real-life applications with beehive springs. We tested many spring designs in the 4g63 while developing this kit, including other beehives, while selecting these as the best. We were the first to market with a beehive spring kit for the 4g63 and are in more 8-second cars than any other spring out there. The same exact springs are used in both our steel street and titanium retainer high pressure beehive spring kits. Cam-profile dependent, the high pressure kit has been used beyond 11,000rpm and was stable on the bench as high as we tested it, which was 12,600rpm. Sustained 11,000rpm usage on the bench was dead stable, but the high sliding speeds at the rocker to valve tip interface started causing some wear and galling. To go this high, something like a DLC coating may need to be employed.

Valve Float vs Boost -at very high boost levels, more seat pressure is required due to mistimed pressure pulses bouncing back off the valves and potentially popping them open. This is highly dependent on each combination and setups that breathe poorly seem to have worse problems. In general, about 95lbs on the seat seems to be good for about 45-50psi worst-case. If you're going to be running more than this, you may need more seat pressure. I have seen other similar engines that breathe very well work fine with 45-50lbs on the seat for 40psi boost, so it is highly dependent on the engine's pulse action and header/exhaust tuning. The steel street springs are about 85lbs on the seat and the titanium high pressure beehives are about 97lbs on the seat. If you plan to go past 40psi for the steel streets or 50psi for the high pressure beehives, you may want to add some shims. In drag racing applications we've had great luck shimmed down to 0.040" from coil bind at full lift (0.910" min height, 0.870" bind) and still seeing great spring life (no reduction).