

## OVERALL APPROACH RECOMMENDATIONS

### DSM Automatic Transmission

The DSM auto trans is a stout piece, but everything has its limits and anything can be broken if you try hard enough. The first limit is pressure application during shifts. Shifting with any of the full-manual methods like our wiring or a standalone shift box all fix this and have shifts occur at full line pressure. When shifted at full line pressure, a stock trans will live a decent life down into the 10's. A trans with a 5-friction front clutch and translab shift kit with the pressures cranked will live down into the high 8's or so. Anything quicker than this starts needing pressures cranked up higher. I've run over 300psi without problems, although I don't recommend much over 200psi for any mixed street plus racing usage.

**Trans Fluid** - a high film strength fluid is needed to keep the gears alive in these transmissions. It should also have very good high temperature breakdown resistance. I've had good luck with both John Deere Hy-Gard universal tractor fluid and Redline Racing ATF.

**Brakes** - use an electric vacuum pump in a racing application so you can stage the car consistently and also hold the brakes. Braking capacity should not be increased beyond this level as all you will do is then be able to easily hold enough torque to break transmission gears on the line.

**Launch Boost and RPM** - limit launch rpm to a level where a 'normal' tune coming up on the converter makes about 5psi for a 2.3l or about 10psi for a 2.0l. The rpm where this happens sets a really good start point for your launch 2-step. Anything above this is hard on the gears and will not be quicker to the 60ft mark. Running too much torque on the brakes is by far the most common cause of catastrophic transmission failures I've seen. The rpm on the 2-step is the torque through the trans and the initial hit off the line. Boost on the line sets how well it recovers from about 5ft to about 20ft out. Your boost on the line should be set by timing retard at the 2-step (anti-lag if you want to call it that). I'm usually running about 12-14psi off the line for 1.2x 60' times with a 4700rpm 2-step.

**Drive Gears** - inspect yours every 20 passes or so in a high power setup. The gears should also be shot peened, I have TRE do this. If you're in the low 1.3's or so, even more frequent inspection intervals are a good idea. There is no excuse not to inspect the center diff gear in an AWD car, it is just 6 bolts to pull the cover, drain the fluid, and remove and inspect that center diff gear. The inboard side of the gear (diff housing side) is where I've seen cracking start in every single failure. Look at the roots of each gear tooth for cracks and replace all three of the drive gears if you find any cracks. The center diff gear or this corresponding gear in the FWD always cracks first, but the rest are very soon to follow. If the drive gears break, it tends to explode the case and make a gigantic, dangerous mess.