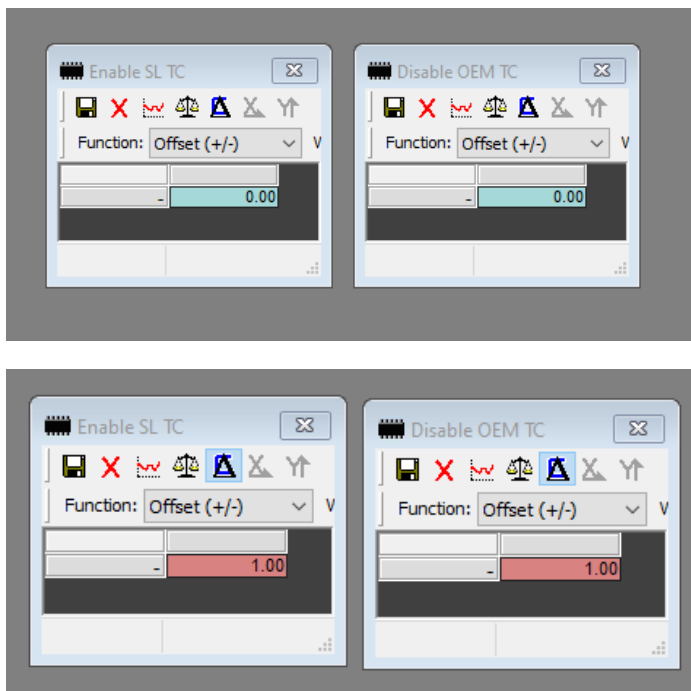
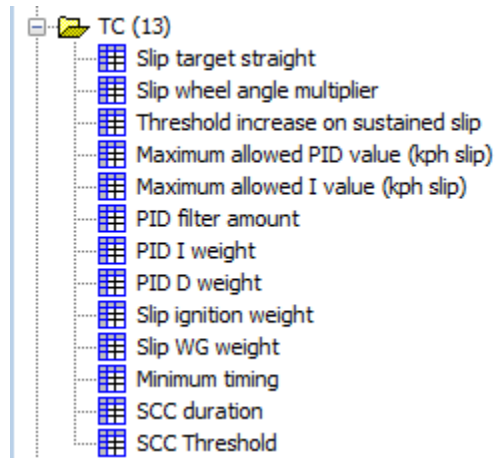


SwitchpaTCh® Traction Control

The stock traction control system detects wheelspin and pulses the brakes to help keep the offending wheel(s) from spinning. MK7s and MK7.5s have varying abilities to defeat this system, some more successful than others. While curtailing spinning can be a good thing the overly aggressive nature of the stock setup can be improved upon. A little bit of spin isn't always a negative and having the ECU intervene unnecessarily will just needlessly slow your car's acceleration. Rather than use the brakes to modulate spin why not modulate power instead? This is where SwitchpaTCh® Traction Control comes in. YOU decide the amount of allowed slip before intervention. Rather than have the ECU be poorly reactive you can be proactive so that it gradually pulls power via timing and boost cut to help intervene. In addition, traction control is adjustable per map, so those in snowy climates can have a map that does not have this intervention where they want as much stability control as needed. Within each of the 5 Mapswitching maps is are tables for disabling the OEM traction control and enabling Switchpatch traction control. 0=disabled and 1=enabled. To enable SwitchpaTCh® Traction Control set both tables to 1.



There are 13 tables available to help you achieve the amount of correction you desire:



Slip Target Straight - Wheelspin in km/h where Switchpatch TC will intervene when steering wheel is straight. A good number to start with is 5. When the front wheels are spinning >5km/h faster than the back it will start to intervene.

Slip Wheel Angle Multiplier - Multiplier of slip target when wheels are turned. 1=use Slip Target Straight. Start with 1.

So we've set when it will intervene, now we have to decide what we want to intervene (timing reduction, boost reduction, or both) and how much we want it to intervene.

Threshold Increase on Sustained Slip – As slip persists the threshold will increase incrementally. Leave this at 1 for now.

Maximum Allowed PID Value – maximum amount of PID intervention. 10 is a good value to start. This value will be later used in our calculation for how much timing and WG intervention is applied.

Maximum Allowed I Value – maximum value for I. Wheel slip is not linear. The amount of timing or WG opening needed is not linear. As the state of wheel slip worsens, I increases. Eventually the wheel slip stops and we no longer need to pull timing or open the WG past its normal setpoint. Now we've overshoot and slowed acceleration until it can recover. Setting a max I value will tell the PID controller to ignore I (clamped) when I hits this value preventing a horrible overshoot. 5 is a good starting point.

PID Filter Amount – Smoothing applied to the D value. As with any sensor there is always some noise present. The wheelspeed sensor will have some noise that could throw off a reading. We don't want this noise to affect our PID so we smooth out the input. 4-5 is a good starting value here.

PID I and D Weight – You can set how much weight is given to the I and D in the PID independently. The I value is basically saying "Hey, based on data I've been recording

we need to adjust timing to X and WG to Y to reduce wheelspin." The D value is basically saying "Hey, yes we do need to adjust timing to X and WG to Y to reduce wheelspin but we are rapidly approaching our target state (no wheelspin). I predict we should actually do $x+2$ and $Y+2$ so we don't overshoot". You can give more weight to one of these to get the wheelspin to stop quickly while also not killing too much power. Just leave these as 1 for now (no manipulation).

Slip Ignition Weight/Slip WG Weight – Multiplier of the Maximum Allowed PID Value to determine how much timing to pull and how much wastegate % to open. A good starting point would be 2 for IGN and 2.5 for WG. If you need more intervention try increasing these by 0.5 (or try being a better tuner).

Minimum Timing – Minimum amount of timing the ECU can pull down to. This is your safety map, you don't want it pulling 35* timing on you. -12 to -15 is a good place to start.

SCC duration - duration of spark cut in ms once SCC Threshold has been surpassed. 10ms is a good starting point

SCC Threshold - SCC will start once P passes this value. 10 is a good starting point.