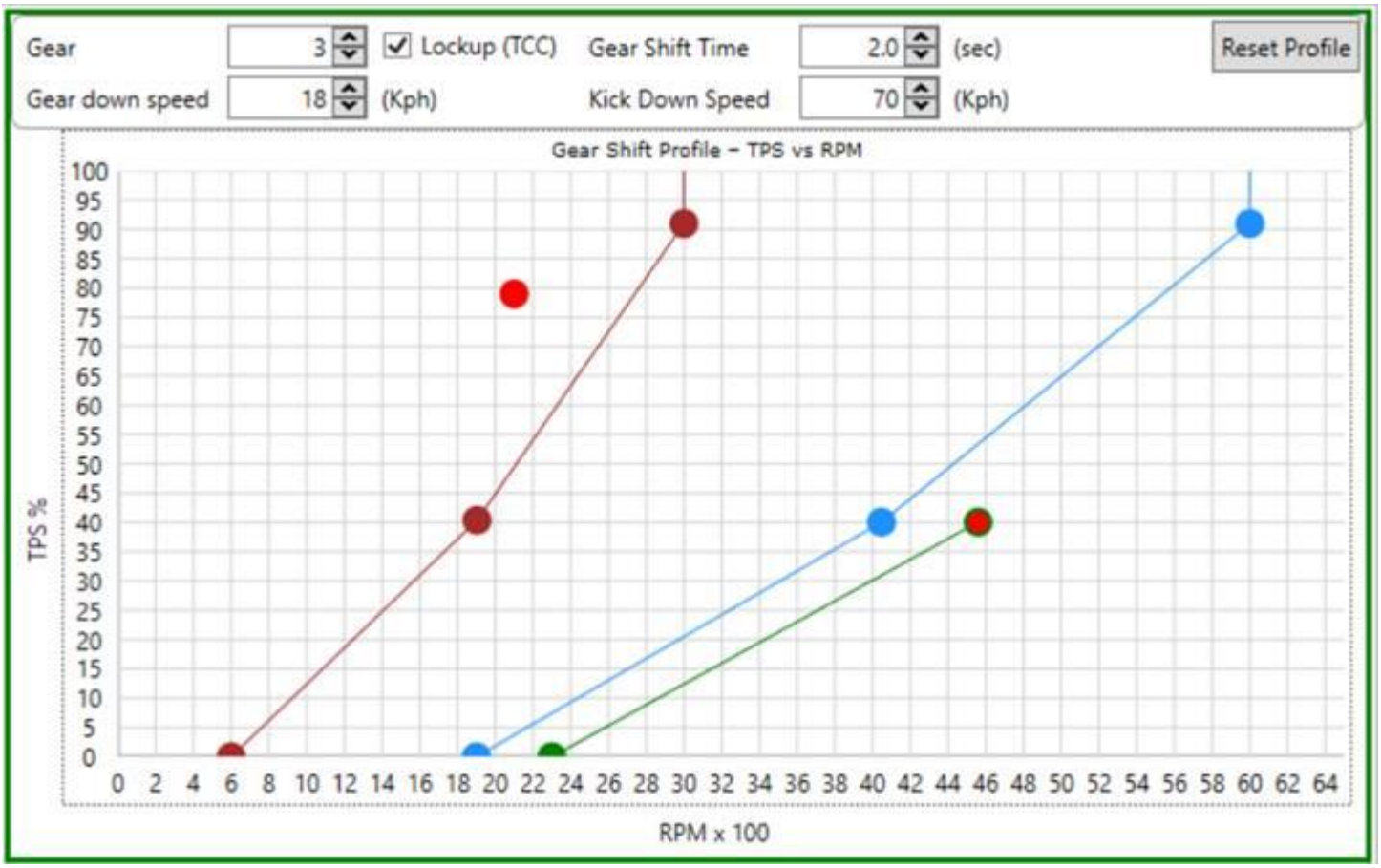
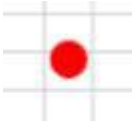
Gear Shift Profile



These profiles are used to set up each gear to shift on its own pattern and according to certain criteria. This feature will let the installer set up the TCU for custom drive trains to the desire of his customer. The up and down shift algorithms can be manipulated with ease.

Marker



This Red circle is called the Marker. It is a graphical point on the graph that indicates the crossing point of the vertical TPS signal with the horizontal RPM signal. It let the user see where the crossing point is and when it passes the shift lines.

Brown Down Shift Line

When the marker moves over to the left of this line a down shift will occur. This is usually when the RPM's drop too low in a gear or the throttle is pressed and the engine needs a lower gear to accelerate.

This line has 3 dots.

- The bottom dot will always stay on the 0% TPS line. This dot is used to shift down at closed throttle and low RPM's.
- The top dot is usually set at 90% throttle and more or less in the middle of the RPM range. This dot is used as a safety limit for the maximum RPM's where shift down may occur. If the marker is on the right side of this dot, even if it is lower in TPS, the TCU will not shift to a lower

gear. When you choose a RPM value for this dot, make sure that after the shift there is still RPM's to gain in the lower gear. Otherwise the TCU will have to shift up immediately causing hunting in the transmission.
- The middle dot is normally set on 40% TPS value and slightly to the right of a straight line between the top and bottom dot. This will let the transmission shift down at lighter throttles during acceleration from higher gears. This will to help get the vehicle move with ease without laboring the engine.

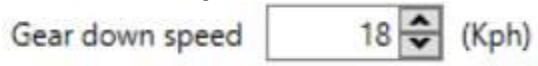
Blue Up Shift Line
When the marker moves over to the right of this line an up shift will occur. This is usually when the RPM's increase too high in a gear or the throttle is release after the required speed is achieved. Then the engine needs a higher gear to coast.

This line has 3 dots.
- The bottom dot will always stay on the 0% TPS line. This dot is used to shift up at light throttle and low RPM's.
- The top dot is usually set at 90% throttle and more or less at maximum RPM range. This dot is used as a safety limit for the maximum RPM's to prevent engine over revving. When you choose a RPM value for this dot, make sure that after the shift the engine did not reach the engine limiter due to the shift time. In 1st gear you may need to drop this value as the engine pick up revs very fast and the transmission take around 2 seconds to do the actual shift. This may cause the engine to over rev.
- The middle dot is normally set on 40% TPS value and slightly to the right of a straight line between the top and bottom dot. This will let the RPM increase more before shifting at low throttle position. This will to help get the vehicle move with ease without laboring the engine.

Gear Number and Lockup.

This block indicates which gear's profile are being adjusted. If you click the arrows it will select between the profiles. The lockup check box will indicate to the TCU that you want to engage lockup clutch in the torque converter for this gear. Note that lower gears normally have too little time to use this feature. The standard is usually the top 2 or 3 gears. You may in tiptronic off-road select it in each gear as you spend some time in it. Note that not all transmissions have the lockup available in lower gears.

Gear Down Speed



This block is used to force a down shift to the lower gear when the road speed falls below this value. The reason is that if a lockup clutch did not engage the RPM will fall to idle due to the slippage in the converter. Then the TCU will shift down causing the shift to be harsh. In this case lower the brown bottom dot to an RPM that is lower than idle. This will prevent downshift at low RPM and force down shift only if the rad speed is slow enough. This is also the case with Aisin transmissions where 1st and 2nd gear has free running clutches. If you go fast in the gear and release the throttle the engine will fall to idling.

Note that in first gear this value is used as an upshift limit. The reason is that if you are on a downhill and let the car coast by itself, it must engage second gear. Here a value of around 10km/h is

selected. As the road speed increase with closed throttle above this value, then 2nd gear will be selected. This will put the transmission in the correct ratio when the driver start to accelerate.

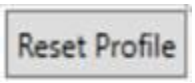
Gear Shift Time

This block is used to give the transmission time to complete a shift before the next shift will be made. The reason is that the transmission is mechanical and it takes up to 2 seconds to complete a shift procedure. If the time is too short the TCU will start comparing the marker and speed values for the next shift. The result will be that the transmission will skip gears. Note that the TCU cannot shorten actual shift times, it has to be modified by a transmission specialist.

Kick Down Speeds.

When the road speed is above this value, no down shift will occur. This acts the same as the top brown dot but just with a speed setting and with the exception that the shift time is ignored. The reason is that road speed is not influenced like RPM's due to torque converter slippages. The advantage of this setting is that it enables the TCU to shift 2 gears simultaneously during hard accelerating from a slow cruise in a higher gear. Like overtaking a car when the transmission was in a high gear coasting. The TCU will shift one gear down then wait for the shift time to time out. But if the road speed is lower than the kick down speed, the TCU will shift immediately to a lower gear. This happen very fast and the transmission will shift 2 gears.

Reset Profile



This helps the tuner to put all the dots on the tuning pallet if no map is loaded in the TCU. They are not necessary placed where they should be.