

Launch Control

Operation

The Launch Control feature will spin a turbo to higher RPM's while the vehicle is stationary. This is done by adjusting the RPM limiter, enrich the fuel mixture and retard the ignition timing. This will create boost pressure so that when the driver launches, there will be no turbo lag.

Launch Recover Delay will bring the launch limiter slowly back to normal revs which will gradually add power to maximum. This will improve traction during pull off.

It will also activate RapidFire for audible limiters of choice. This feature will keep the engine on power while spinning and make exhaust sounds like a machine gun.

Settings

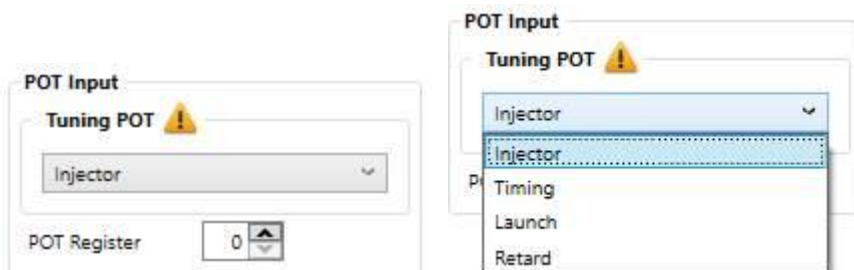
Tuning POT

☒ Tuning Pot.

The Tuning POT input is used as a universal feature input.

POT Input

The following functions can be selected.



NB! This is a Critical setting that alters wiring connections. Do not change it on a running vehicle. It could damage drivers or components on the engine.

Injector

Injector setting will change the injector time with the set % richer or leaner. The POT needs to be in the middle to have no effect on current fuelling. This is handy in a race car if the driver has an A/F Ratio gauge installed. Then he can manipulate fuelling and remember under which conditions he has to lean or richen the mix. Then he can make adjustments on the graph at a later stage.

Timing

Timing will advance or retard the ignition timing by 5 degrees in this example. The POT needs to be in the middle to have no effect on current timing. It is useful in racing for tuning time while driving. Ensure that the driver has a knock sensor and light fitted to the engine.

Launch

The Launch Control feature will spin a turbo to higher RPM's while the vehicle is stationary. This is done by adjusting the RPM limiter, enrich the fuel mixture and retard the ignition timing. This will create boost pressure so that when the driver launches, there will be no turbo lag. See the

Hyperspace Ver 3.6 manual for complete explanation as there are many different ways to set this up.

Transmission Retard

This feature is for automatic transmissions to retard the engine timing during gear shift. This will make the shift smoother and protect the transmission. The launch control circuit will be used and this system will disable launch control.

POT Register

Some tasks requires a value input. The pot register is used for user values.

Launch Control

The screenshot shows a software interface for configuring Launch Control. It is divided into several sections: 'Launch Control' with 'RPM Limiter' (5500), 'Timing' (-10 °BTDC), and 'Fuel Enrichment' (15 %); 'Launch Deactivation' with a 'Clutch' dropdown; 'Anti Lag' with an 'Enabled' checkbox and 'Min RPM' (2000); 'Launch Recover Delay' (35); 'Rapid Fire Frequency' (2); 'Flat Shift' with a 'Delay' (44 ms); and 'Driver Output' set to 'GP Output 2'.

RPM Limiter

This is the maximum RPM that the engine will reach in launch control. The moment engine revs reaches this value minus 500RPM timing and fuel compensation will be implemented. Example: If the limiter is set as 5000RPM then the timing and fuel compensation will only start above 4500RPM. This will help the engine to rev up to launch effortlessly. Should the engine revs go above 5000RPM the fuel or spark will be cut to limit the engine from over revving. If the engine limiter is set to Soft or Hard Cut, then fuel will be cut. If it is set to Spark Only, then the RapidFire feature will come in place and only spark will be cut.

Timing

When launch is activated, timing will be retarded to this value. If you have ultimate class hardware then you can adjusted this value from -30 to 30 degrees. Advance and lower class can only be adjusted from 0 to 30 degrees.

Fuel Enrichment

To spin the Turbo requires more fuel to burn through the Turbo and spin it up. This setting will add a percentage value.

Launch Recover Delay

This feature allows for a slow increase in Launch limiter RPM when the clutch is released. It will help with traction because then engine power is slowly returned to normal. For this feature to operate Tuning POT must be set to Launch and Launch Activation must be set to Clutch so that a launch button can be used.

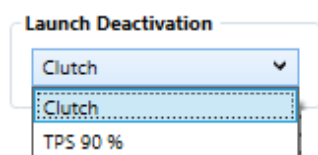
This value is adjustable in 100 milliseconds resolution. A value of 30 will result in 3 seconds delay to rise 2000 rpm. Ex. If launch rpm is 4000 and you release the clutch, then the limiter will increase over 3 seconds to 6000 rpm. Another example if the value is 23 then it will take 2.3 seconds to raise the limiter from 4000 to 6000 RPM. It can be used during shifts to higher gears by touching the launch button. The rise time will be the same for all the gears.

RapidFire

This feature will randomly spark coils when you go above the Launch Limiter for up to 500 RPM above it. Example if the launch limiter is set at 5000RPM, then it will be active from 5100 to 5500 RPM. The advantage is that the occasional adjusted spark will ignite the fuel in the exhaust making a sound like a machinegun. To get this feature to work you need to put the engine limiter on **Spark Only**. This is ideal for the spinning guys when you want to keep power at a maximum. Note that your exhaust and silencers must be modified to accommodate the explosions in them. Normal systems will be damaged.

A value of 1 in the RapidFire block will then spark once in 2 rpms. A value of 2 will spark once in 4 rpms and so on till a maximum value of 10. The spark will be alternated so that each cylinder gets a spark in turn to clear the plugs from getting wet. Always go for the lowest count that makes the desirable effect. If the engine revs go to 5500 in this example, then increase the RapidFire setting to minimize engine power.

Launch Deactivation



There are 2 methods to deactivate the Launch feature. **Clutch** is with hardwire switches and **TPS 90%** is for a semi-automatic method.

Tuning

Launch Control



Launch

The Launch parameters are implemented in different ways to suit the driver. These Launch settings will only be implemented the moment engine revs reaches Launch revs minus 500RPM. Example: If the limiter is set as 5000RPM then the timing and fuel compensation will only start above 4500RPM. This will help the engine to rev up to launch effortlessly. Should the engine revs go above 5000RPM the fuel or spark will be cut to limit the engine from over revving. If the engine limiter is set to Soft or Hard Cut, then fuel will be cut. If it is set to Spark Only, then the RapidFire feature will come in place and only spark will be cut.

See the Product Hardware description for different wiring options for the different activation methods like Clutch or TPS 90% options.

There are 2 methods to implement the Launch feature. One is with hardwire switches and the other, semi-automatic. For both methods set the Tuning POT selection on Launch.

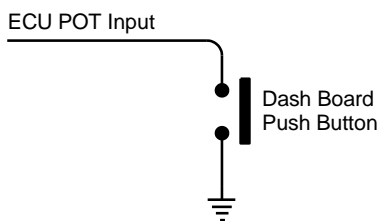


Method 1 (Switch or Clutch and switch)

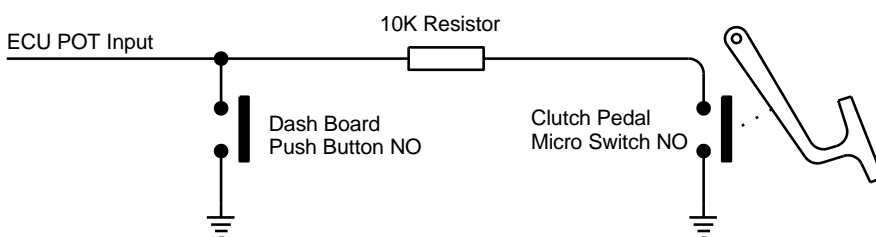


Select **Clutch** and set the desired **RPM limit**. This is variable depending on the grip at the racing track. **Timing** is set from 0 to 10 degrees depending of the turbo characteristics. **Fuel enrichment** is set from 10 to 20% to create more burning fuel in the exhaust which will spin the turbo.

Now to activate this feature. If you have only wired the dashboard switch you only need to press the switch and press the accelerator pedal. The moment you need to launch just release the switch with the clutch.



If you have wired the dashboard switch and the clutch pedal switch with resistor combination, then press the clutch in to make the clutch pedal switch, press the dashboard switch once and launch is activated. No need to keep the dashboard switch pressed. Press the accelerator. The launch parameters will be activated. The moment the clutch is released the launch switch will break and launch is deactivated. To activate this feature again you need to repeat the procedure. This feature lets the driver concentrate on his pull-off and free his hands for other tasks.



Method 2 (TPS 90% - Semi-Automatic)

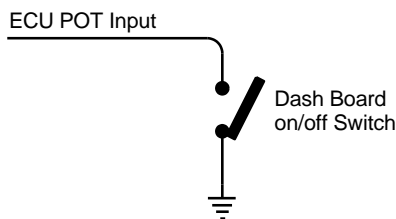
With this method there is no need for a clutch pedal switch. You do however need to install the dashboard On/Off switch or the Tuning POT. This method requires the driver not to press the pedal over 90% during launch activation. Pressing it deeper will deactivate launch to normal settings. The driver may need to practice this. He may also use a GP output to switch a light on at 80% TPS to ensure that he does not press it too deep. Both methods require the engine to rev lower than 3000RPM before activating the launch feature for the next launch. This will prevent the feature from activating during gear shift.

With the Dash Board switch do the following settings:



Select *TPS 90%* under *Launch Deactivation*. Set the desired *RPM limit Timing* and *Fuel Enrichment*.

Now to activate this feature, put the switch to 'On' position. Now press the accelerator no more than 90%. The launch parameters will spin the turbo. When the driver releases the clutch he also presses the accelerator 100%. This will deactivate the launch feature. To activate this feature again, the revs must be lower than 3000RPM. **Note:** To deactivate this feature put switch off.



With the tuning POT do the following settings:

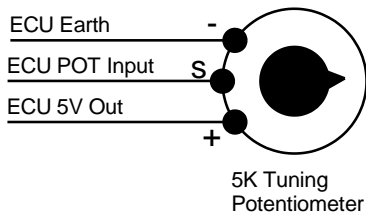


Set the desired *RPM limit* to 0. This will indicate to the ECU that it must use the POT value to calculate a RPM limit value. Set the desired *Timing* and *Fuel Enrichment*.



Now set the *POT register* to the maximum allowable launch RPM. Example: 55 means 5500RPM. This will set the POT maximum clockwise value as 5500 RPM.

This feature is useful as different race tracks give better traction and allows for higher launch PRM's. To activate this feature, the driver simply presses the clutch and applies the accelerator till just below 90%. Now he adjusts the tuning POT till he sees the desired RPM on his rev-counter. When he releases the clutch he presses the accelerator 100%. Launch will then deactivate. This feature will activate automatically once the revs falls below 3000RPM because it does not have the Dash Board switch. If you want to cancel this feature set the launch revs 500RPM above the normal engine limiter. Then turn the POT fully clockwise. You can make increments on his tuning POT to calibrate it to his engines' revs.



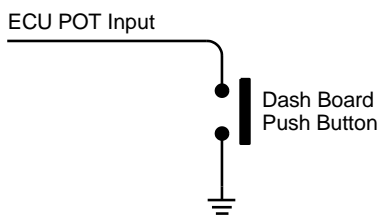
Launch Recover Delay

Launch Recover Delay

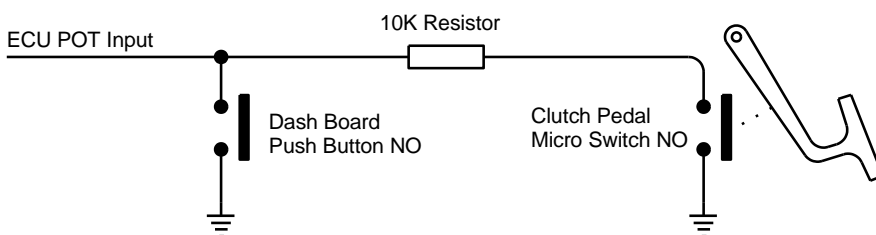
This feature allows for a slow increase in Launch limiter RPM when the clutch is released. It will help with traction because then engine power is slowly returned to normal. This value set can be adjusted in 100 milliseconds resolution. A value of 30 will result in 3 seconds delay to rise 2000 rpm. Ex. If launch rpm is 4000 and you release the clutch, then the limiter will increase over 3 seconds to 6000 rpm. Another example if the value is 23 then it will take 2.3 seconds to raise the limiter from 4000 to 6000 RPM. It can be used during shifts to higher gears by touching the launch button. The rise time will be the same for all the gears.



For this feature to operate Tuning POT must be set to Launch and Launch Activation must be set to Clutch so that a launch button can be used.



or



RapidFire

Rapid Fire Frequency

This feature will randomly spark coils when you go above the Launch Limiter for up to 500 RPM above it. Example if the launch limiter is set at 5000RPM, then it will be active from 5100 to 5500 RPM. The advantage is that the occasional adjusted spark will ignite the fuel in the exhaust making a sound like a machinegun. To get this feature to work you need to put the engine limiter on Spark Only. This is ideal for the spinning guys when you want to keep power at a maximum. Note that your exhaust and silencers must be modified to accommodate the explosions in them. Normal systems will be damaged.

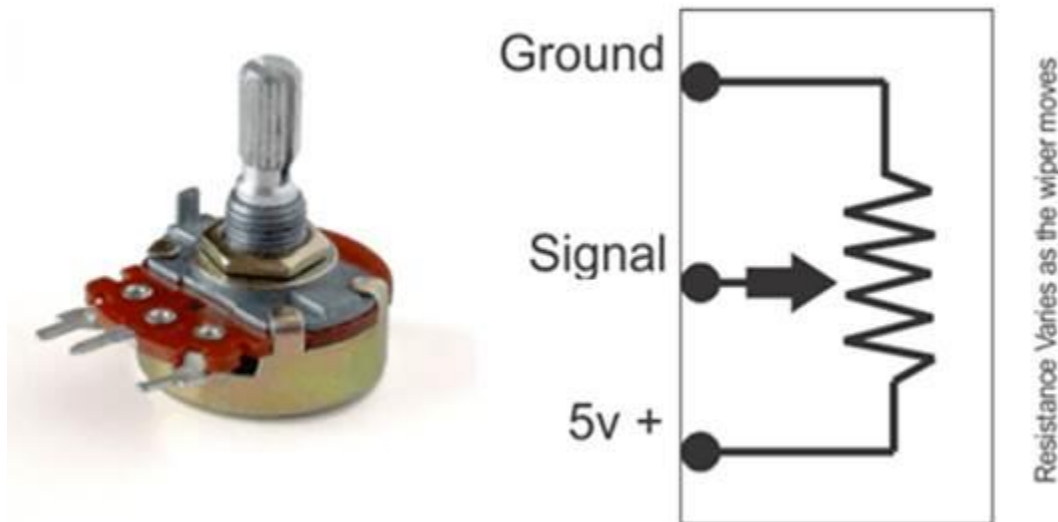


A value of 1 in the RapidFire block will then spark once in 2 rpms. A value of 2 will spark once in 4 rpms and so on till a maximum value of 10. The spark will be alternated so that each cylinder gets a spark in turn to clear the plugs from getting wet. Always go for the lowest count that makes the desirable effect. If the engine revs go to 5500 in this example, then increase the RapidFire setting to minimize engine power.

Sensor Hardware Description

Tuning POT

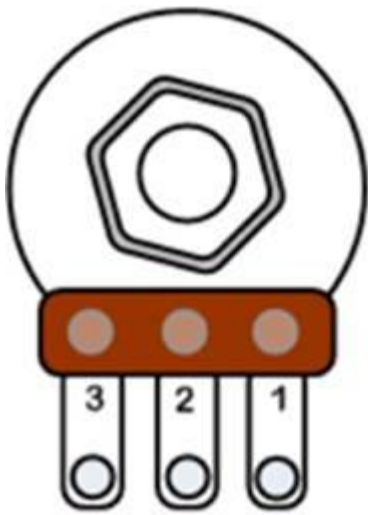
The multi-function variable resistance potentiometer can be configured in the software to perform numerous features. These features include making changes to the fueling, ignition angle or adjusting the launch RPM without having to connect a laptop computer.



Operation

The POT is a variable resistor normally around 5K ohms. The signal voltage varies as the wiper moves. It is connected to 5 volts from the ECU and then the wiper signal will produce a voltage between 0 and 5 volts, proportional to the angle of the throttle plate.

Sample sensor Pin out



Spitronics Potentiometer

Pin 1 - 5v+

Pin 2 - Signal

Pin 3 - Ground

The launch control input is an analogue input that combines a digital switch with a resistor to make a dual function input. It is used for Launch and Retard functions. There are different ways to activate launch but most methods use the switch on the dashboard. Some cases a push button is used and other an on/off switch. This function is mainly used on racing applications to keep the engine RPM at the desired RPM before taking off. It also helps to spin the turbo before taking off or during cornering. This increases boost pressure at startup.

Clutch Switch

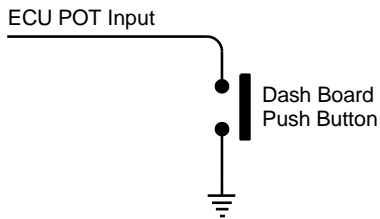
The clutch switch is a whisker switch that will deactivate launch the moment the clutch pedal is released.



Wiring

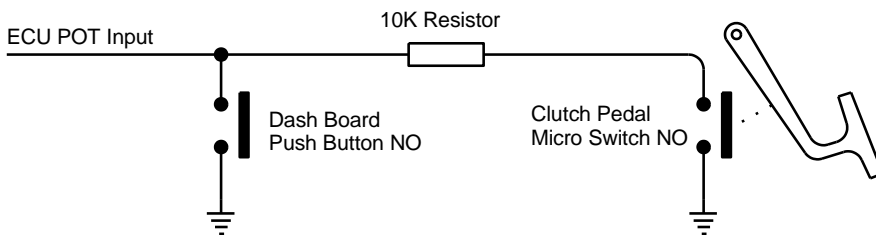
Push Button

Dashboard launch will only be activated as long as the button is pressed.



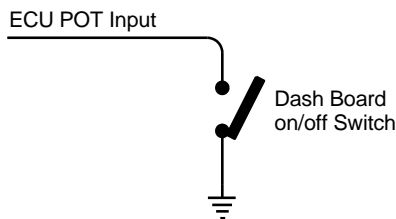
Push Button & Clutch Switch

Dashboard pushbutton with resistor and clutch pedal switch. This method will latch the launch action and deactivate it the moment the clutch pedal is released. This method is more automatic and will let the driver focus on other things.



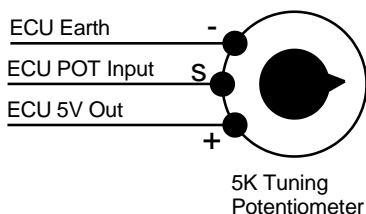
On/Off Button

Dashboard on/off switch is used for the TPS 90% method. When switched on, this method will activate Launch up to 90% TPS value, and cancel it above 90% TPS value. Revs must fall below 3000 RPM to re-activate the launch feature.



Potentiometer

Use the tuning POT with TPS 90% to make an adjustable Launch RPM for different traction. To disable this function turn it clockwise so that launch RPM is very high.



Tuning Adapter Harness

On products like Orion2 and Venus3 the pot inputs is placed on the 6 way communication connector. you may need a adapter harness to extend the wires and connect the Dual Map and

Tuning POT input while tuning the car. this harness could be left in place permanently.

