THROTTLE CONTROLLERS

Today, modern engines still work on the same principles as their predecessors from over 100 years ago, however in the pursuit of power and, in more recent times, efficiency and emission control, what were once simple mechanical controls have now been replaced by modern computers and electronics. Gone are carburettors, throttle linkages or cables, ignition distributors and mechanical fuel pumps. These have been replaced with fuel injection, electronic throttles, crank angle sensors and high-pressure common rail fuel delivery systems.

Since the early 2000's, new vehicles have been manufactured with electronic throttle control pedals that pass their position information to the ECU (engine control unit) in the form of small voltage changes. The ECU then processes that information before opening the throttle and controlling ignition timing and fuel injection duration to give a driver the power increase they are asking for. Although this information passes quickly from driver input to engine reaction, and is far more efficient than cables or linkages, due to the need for emission controls and a "one setting suits most" design, this can often make the engine less responsive than desired and in the case of modern diesel vehicles, can produce a delayed reaction referred to as throttle lag.

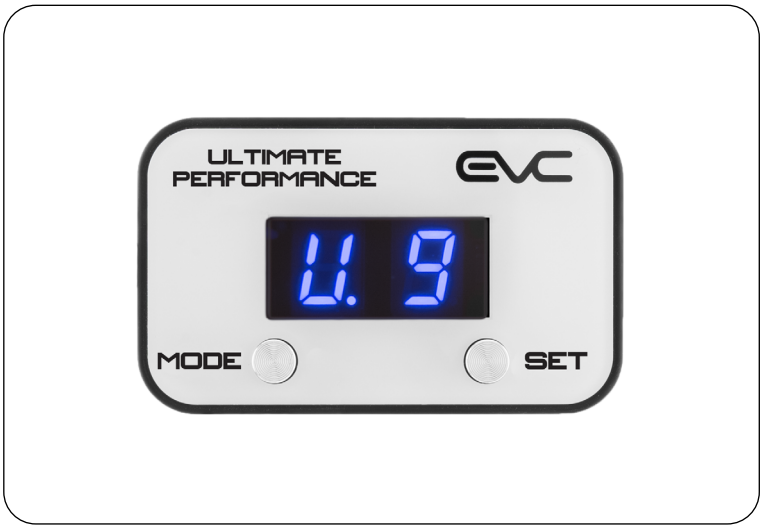
There are many ways to improve the power of modern engines. Larger turbos, cold air intakes, free flowing exhausts, ECU upgrades and remaps to name a few. But what if you could increase the pedal response and unleash the power that already lurks within your standard engine without the costs of expensive modification?

Aftermarket throttle controllers do just that and are a cost-effective performance modification that can be fitted by the home DIY mechanic in as little as 5 minutes. Although a throttle controller does not affect the peak torque and power of an engine, they are capable of shortening the throttle response time, therefore reducing throttle lag while sharpening the throttle curve, effectively unleashing the engine's power lower in the rev range.

The following pages include Ultimate9's throttle controller models, each developed and tuned for individual vehicle makes and models including applications for on and off road as well as a range of UTV vehicles.

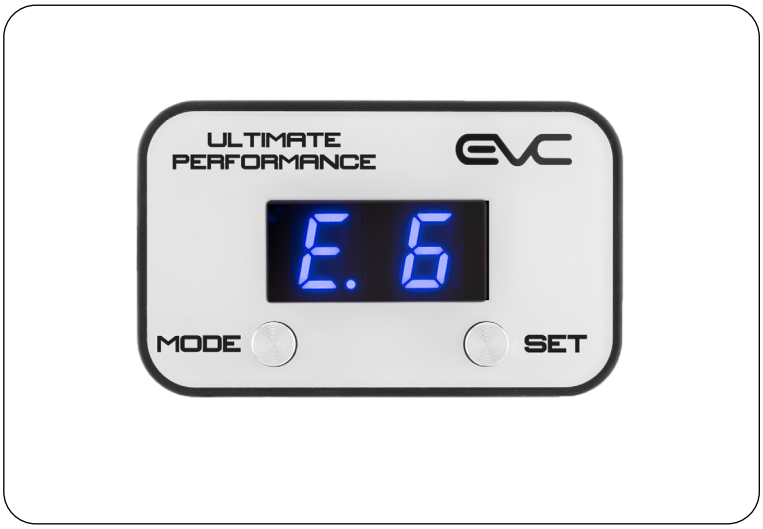
Ultimate Mode:

Ultimate Mode sharpens your throttle response, the higher the setting, the more aggressive your throttle becomes. Featuring 10 levels of adjustment for user refinement, Ultimate mode is great for everyday driving, towing, overtaking, or highway driving.



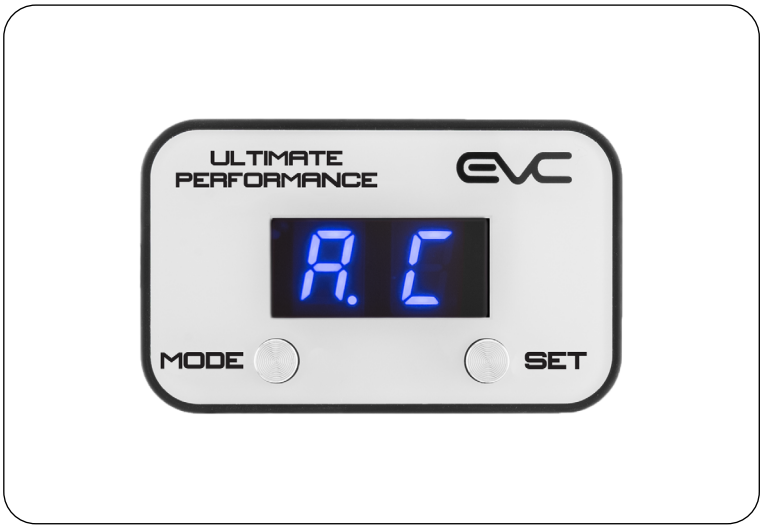
Economy Mode:

Economy Mode subdues your throttle response below factory levels and features 10 levels of adjustment. The higher the setting, the more subdued your throttle response becomes. Great for off road, heavy traffic, or low-speed towing maneuvers.



Automatic Control Mode:

Automatic Control Mode is essentially a set and forget mode, blending all 20 performance levels of Ultimate and Economy mode and delivering the appropriate throttle response depending on your current driving behavior. For example, if you're in heavy traffic and only moving up 2-3 metres at a time it may deliver around Economy Mode 2-3. If you start to accelerate it will increase that response to around Ultimate 3-4 mark, then if you plant your foot on the accelerator to overtake someone it will deliver Ultimate 8-9 for maximum performance.



INSTRUCTIONS

INTRODUCTION

Congratulations on your purchase of an EVC Throttle Controller. This Quick Start Guide allows you to self install and set up your EVC to unleash the power of your engine and eliminate throttle lag. However if you decide not to install yourself please contact Ultimate9 or your place of purchase for a recommended installer in your area.

The EVC Throttle Controller has been thoroughly tested to ensure it will not adversely effect your vehicle or void new car warranty. If you have any questions concerning the performance or suitability of the product please contact Ultimate9 or your place of purchase.

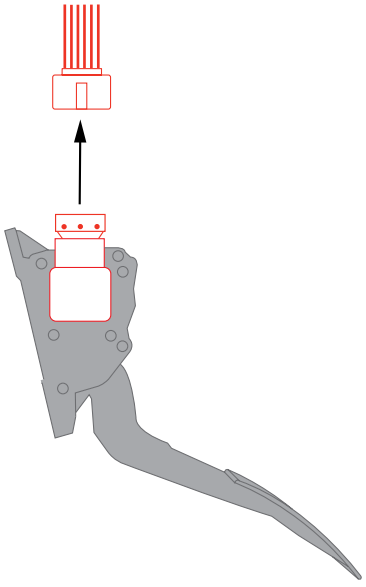
INSTALLATION

Prior to installation, ensure the vehicle ignition is switched off. Allow 10 minutes before proceeding to ensure the vehicle electronics have powered down. This will reduce the likelihood of creating an engine fault code.

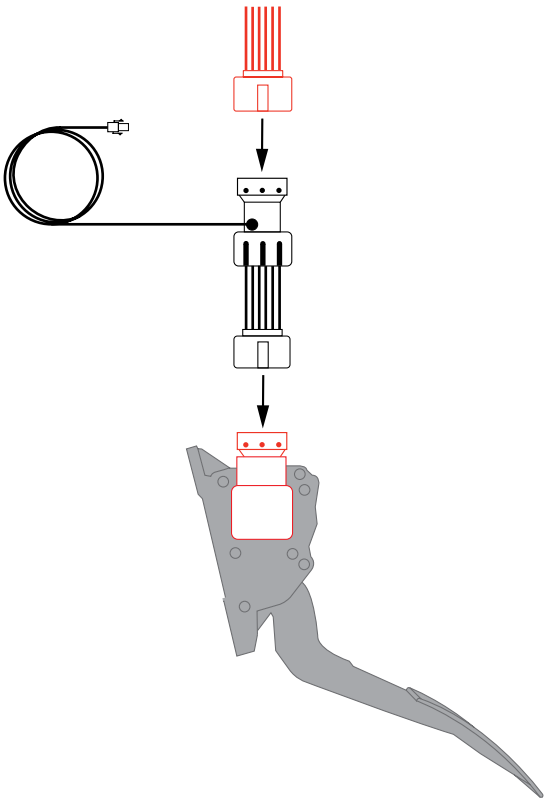
NOTE: For vehicles with push button start feature, ensure the key fob is moved >10m away from the vehicle so as not to activate accessory power.

Locate the pedal assembly and the factory plug (usually on the top of the pedal assembly). Disconnect the factory plug. It may be necessary to remove the pedal assembly if access is limited.

Note: The plug on your EVC and pedal assembly may differ from the illustration. Take care to not damage the locking clip. Plugs should be removed by hand without the need for tools.



Orientate the male & female ends of the EVC unit so that they match the factory loom and plugs.

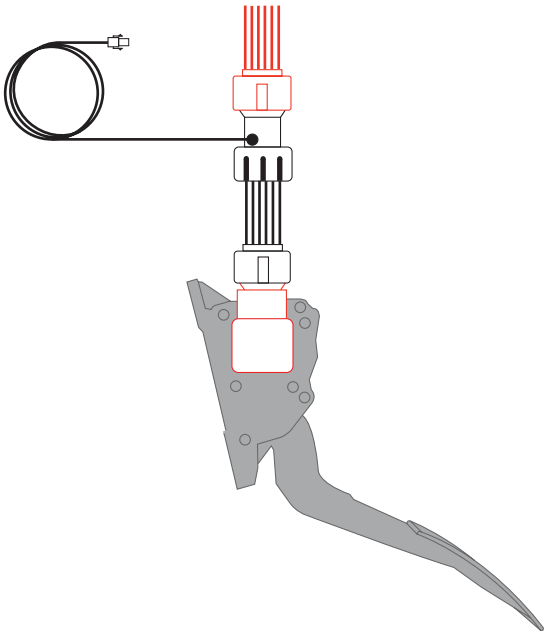


Factory connector plug

Pedal assembly

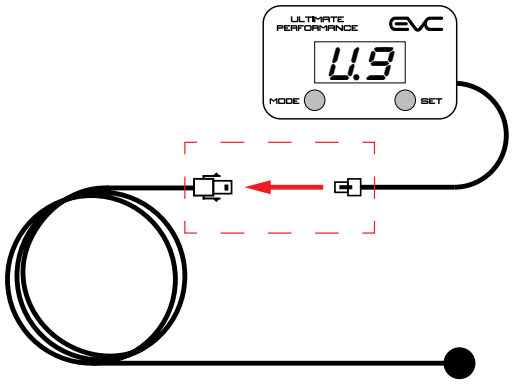
EVC assembly

Connect the EVC unit in-line between the factory plug and pedal assembly. Ensure the plugs are aligned correctly to prevent damage to the internal pins. Do not use excessive force to push the connectors together. Any resistance may indicate there is a pin missalignment which may cause damage to the unit.

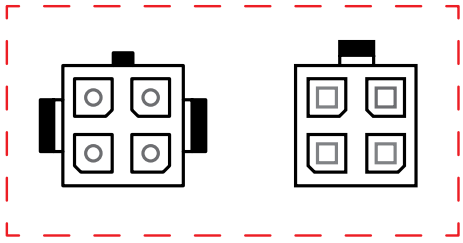


Locate a suitable position on the dash or console for the EVC driver interface. Be aware that the LED display is bright and should be positioned so as not to distract the driver.

Route the cable so as not to cause any obstruction.



NOTE: Take care when connecting the 4 pin plugs to ensure correct orientation. They should not be forced as damage will result.
(See image detail)



4 Pin Plug detail

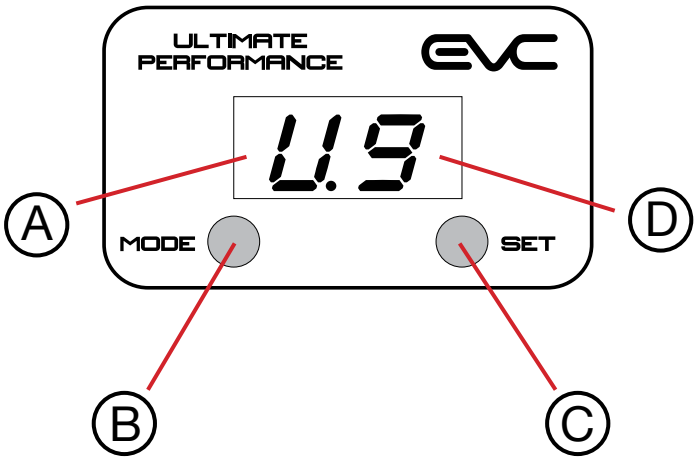
DRIVER INTERFACE

Ⓐ Mode indicator LED:
Shows current operating mode: **-**, **U**, **E**, **A**.

Ⓑ Mode selector button:
Press to cycle through modes.

Ⓒ Setting selector button:
Shows current fine tune level within the mode. Cycles through level 0-9.

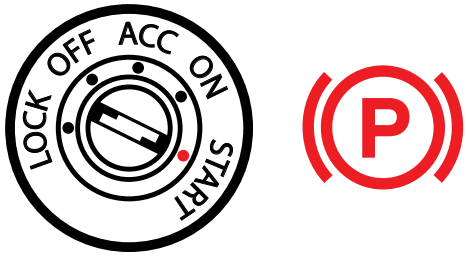
Ⓓ Setting indicator LED:
Shows current level setting.



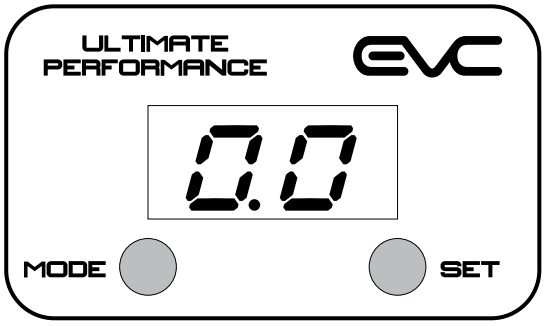
TRANSMISSION SET-UP

Start the vehicle.

For safety, ensure the vehicle is in Neutral (manual transmission) or Park (automatic transmission) and that the Park Brake is on.

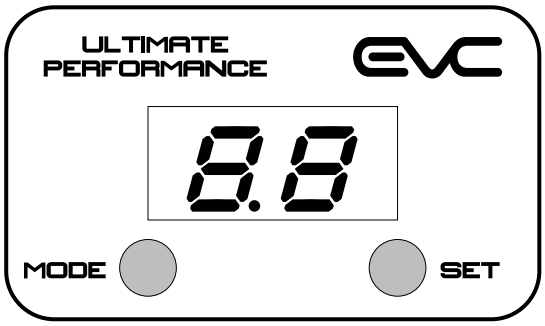


Press and hold the Mode button Ⓑ for 3 seconds to enter the transmission setup mode



Use the Set button Ⓒ to cycle through manual/auto settings.
For manual transmissions the display must be set to 00.

For automatic transmissions the display must be set to 88.

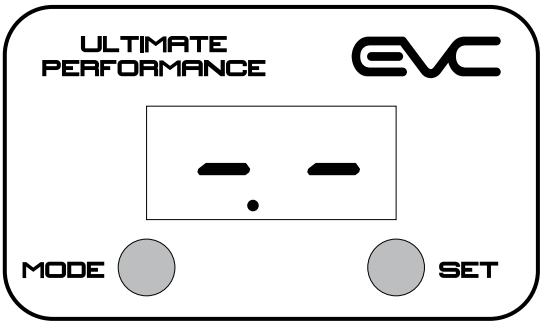


Once the desired setting is chosen, exit the transmission set up mode by pressing the Mode button Ⓑ once.

OPERATION

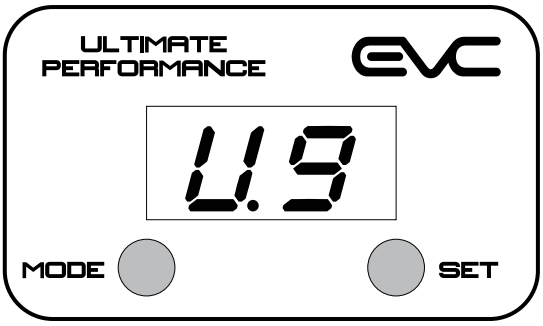
Factory Mode:

Designed to replicate the factory throttle settings - ideal for sharing the vehicle with an unfamiliar driver.



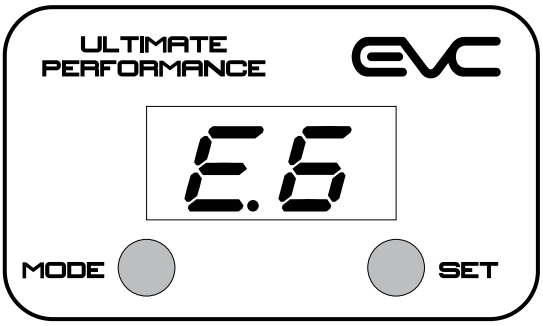
Ultimate Mode:

For enhanced throttle response, choose from 10 available settings (0-9) to fine tune your throttle response.



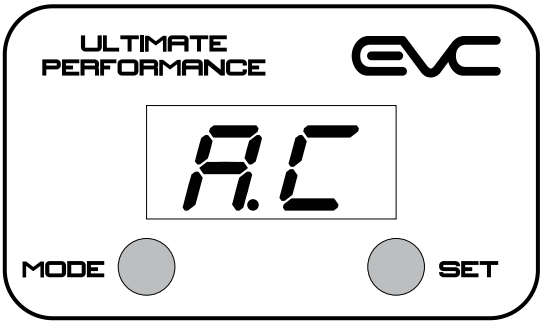
Economy Mode:

Subdued initial throttle response for greater control on loose or uneven surfaces such as when off road. Choose from 10 available settings (0-9).



Automatic Control Mode:

Sets the EVC apart from all other throttle controllers. AC automatically chooses the Ultimate throttle response based on the amount of pedal pressure.



HOW TO

Increase fuel economy

Set the EVC to either Economy mode or Automatic Control mode. This ensures efficient use of the throttle which may result in fuel savings.

Control when towing

Experiencing wheel spin on the boat ramp, or need more control when backing and parking the van? Set your EVC to Economy mode for a reduced throttle response, allowing the vehicle to ease off the mark with reduced wheel spin or to back a van gently into position.

Mud, sand & loose surfaces

Low settings in Economy mode can help reduce wheel spin on soft or loose surfaces such as mud and sand, enhancing available traction. High settings in Economy mode are perfect for low range 4WDriving where the subdued throttle response offers more control over undulating terrain preventing unnecessary jerking and bouncing. Need quick bursts of acceleration to get you out of a sticky situation? Use higher settings in Ultimate mode for greater throttle response.

Overtaking and first at the lights

Unleash the power of your engine for overtaking and reduce lag from a standing start by setting the EVC to Ultimate mode and fine tuning from settings 0-9.

Loaning your vehicle

You may be sharing your vehicle with a learner or inexperienced driver. For those unfamiliar with using the EVC, set to Factory mode to return throttle operation to standard.

THROTTLE CONTROLLER FAQ's

What is throttle lag?

Modern vehicles are equipped with electronic pedals rather than traditional cable throttles that had a direct physical linkage to the throttle. The cable throttle was more rudimentary but also more efficient, you pushed the pedal and the throttle responded. Any delay was usually due to a slack cable or an out of tune carburettor.

In a modern throttle system (also known as drive-by-wire or fly-by-wire), pedals rely on sensors to measure the action of how far and how fast the driver pushes the pedal, this action creates a torque request which is sent to the Electronic Control Unit (ECU). The ECU then sends this request to the Throttle Position Sensor (TPS) which adjusts the butterfly position and actuates the throttle accordingly.

Throttle lag is the dead spot you feel in top 5-10% of pedal travel where nothing happens. You hit the gas, there is a noticeable hesitation and then the throttle responds. This is an inherent electronic lag that is programmed from factory and which physical input (i.e. stomping your foot harder) cannot overcome.

Why do cars have throttle lag?

There's a number of reasons why modern cars have throttle lag:

- First of all, compromised drivability. Car manufacturers need to tune their vehicles from factory to suit a range of different drivers and driving styles. The factory tune for a new car is not overly aggressive, it's not overly underwhelming, it kind of just sits in the middle, to try and tailor for the wide variety of potential customers they may have.

- There are also issues along the lines of emissions testing, each manufacturers vehicle must meet strict emissions testing prior to being released. A part of the emissions testing procedure is a snap acceleration smoke test which monitors smoke opacity at different rev ranges, so if a vehicle is producing too many pollutants at a certain RPM, the manufacturer may need to restrict the vehicles performance.

- Manufacturer fuel economy claims. We all know the fuel efficiency claims by car companies are almost impossible to replicate, however somewhere along the line they do have to provide evidence of their figures. If a car manufacturer cannot get decent fuel efficiency figures with a new prototype vehicle or updated model, they may have to restrict the performance of the vehicle to improve fuel efficiency figures. Part of this restriction could potentially be dampening the vehicles factory throttle response.

How does the EVC Throttle Controller work?

The EVC is a throttle response controller that gives you complete control over the responsiveness of your vehicle. The EVC does this by providing new points of reference for your vehicles throttle mapping, either introducing an enhanced or subdued throttle curve depending on what mode/ setting you have the EVC set to. The EVC connects between your pedal assembly and factory pedal wiring plug, overriding your factory set throttle parameters and providing its own parameters to your vehicle's ECU.

Introducing an enhanced throttle curve (Ultimate Mode) increases your throttle response, bringing the throttle curve in quicker and getting rid of the lag from when you hit the gas and the throttle responds. Ultimate mode 2-3 is perfect for everyday driving, while Ultimate mode 5-8 is great for towing, overtaking, hill climbing, sand driving, charging through a bog hole etc. where you need to stay on the gas and power through.

Introducing a subdued throttle curve (Economy Mode) reduces your throttle response below factory levels and is great for low traction situations where more finesse control over the power applied to the wheels is required, such as rock crawling, water crossings etc. Economy mode 2-3 is perfect for when you need a less aggressive response and don't want to be constantly spinning the wheels.

Why can't I just push my foot down harder?

Your factory pedal has set parameters, these parameters cannot be overridden by physical input i.e. pushing your foot harder or faster. It doesn't matter how fast you push your foot down, your factory parameters will always deliver the same throttle response.

The only way to alter your throttle response is to electronically override it by adding new sets of throttle parameters with the EVC, to get to wide open throttle at a faster rate.

By introducing a sharper throttle curve with the EVC in Ultimate Mode, you are modifying the torque request that is sent through to the throttle tables in your vehicles ECU, this, in turn, actuates the throttle faster. While the EVC doesn't add top end HP, it does improve acceleration ramp up power which is the amount of accessible power when you plant your foot, from either a stopped start or rolling speed.

Likewise, with the EVC set to Economy mode you are introducing a duller throttle curve and dampening your throttle response past factory levels. This is also something that your foot cannot replicate as it doesn't matter how lightly you ease the throttle on, you are still guided by your factory set parameters. Without electronically overriding these parameters there is no way for you to physically alter your vehicles throttle response, throttle mapping or throttle actuation.

Is the EVC Throttle Controller safe to use?

The EVC is 100% safe to use.
As part of the EVCs' development, we ensure the EVC cannot override any of a vehicles safety functions or parameters.

We also test the EVC on every new vehicle model to ensure that the current model EVC works effectively with any late model vehicle, whether it is a revised, updated model or completely new vehicle release.

The EVC is also backed up with a lifetime replacement warranty which also extends to your vehicle and covers any costs that arise from the installation and use of your EVC. That is how confident we are in our product and as far as we know we're the only throttle controller company in the world that offers this level of product cover, confidence and peace of mind for their customers.

Will the EVC Throttle Controller impact my new car warranty?

The EVC, like any aftermarket accessory (bull bars, snorkels, driving lights etc.) can potentially impact your new car warranty if it has caused the issue you are seeking warranty on.

At Ultimate9 we back our products 100%, that is why we offer a lifetime replacement warranty with every EVC Throttle Controller sold. This warranty also extends to the vehicle the EVC is installed on. So, if our product does cause an issue on a customer's vehicle, we will cover any costs involved under Ultimate9's comprehensive liability insurance.

Can the EVC Throttle Controller be used with other performance products?

The EVC can be used with any ECU Tune, Dyno Tune, ECU Remap, Power Chip or ECU Reflash as the EVC works on a different internal system and if anything will complement the positive effects of other aftermarket performance modifications.

The benefit of the EVC is its adjustability, with 4 driving modes and 20 adjustable settings you can fine-tune your throttle response to any driving style or situation. This enables you to also manually adjust the strength and effectiveness of your other performance accessories with the EVC.

If your custom tune/chip/remap is great for everyday driving but lacks a bit of punch when towing, you can use the EVC to sharpen your throttle response and compensate for the extra added weight behind your vehicle.

On the flip side, if your tune/chip/remap is too aggressive when driving off-road or in wet conditions, you can use the EVC to dampen your throttle response and have more finesse control over the application of power to your wheels.

Is the EVC Throttle Controller good for towing?

The EVC is a throttle response controller that gives you the power to tune your vehicles throttle response for any towing application or situation.

The EVC Throttle Controller does this by providing new points of reference for your vehicles throttle mapping, allowing you to either enhance or subdue your vehicles throttle response.
Enhancing your throttle response has a range of benefits for towing, by getting rid of low-down lag and having a sharper take off you're able to get up to speed quickly and with less effort, improving the overall towing ability of your vehicle.

On the flip side, a subdued throttle response is also very handy in a variety of towing situations. By softening your throttle you can have a far more controlled application of power to your wheels which is great for any low speed towing maneuverer where you don't want to be jerking on the throttle every-time you hit the gas and potentially over-correct yourself, such as when backing a caravan into a tight camping spot or garage..

Will the EVC increase my fuel consumption?

Fuel consumption largely comes down to how you drive with the EVC Throttle Controller installed. Generally speaking around 50% of our customers get far greater throttle response with no impact on fuel economy, around 40% get better economy along with far greater throttle response, while a small percentage see slightly worse fuel economy (usually due to a heavier right foot from the extra throttle response!).

The beauty of the EVC Throttle Controller is the 30-day money back guarantee, so you have 4 weeks to try the EVC out for yourself risk free and can return the unit if you're not 100% satisfied, we'll even pay for shipping.

Why does my EVC interface remain on/turn off?

The EVC Throttle Controller utilises power supplied through the vehicle's throttle loom. It is normal for the EVC interface to remain on for some time after engine shuts down, or to power off when the throttle is inactive, such as when using cruise control.

Whilst driving, the EVC interface will power on instantly as the throttle senses driver input and when the engine is shut down it will usually power off within 30 seconds or when the vehicle central locking is activated.