



How will an XPR TUNED Vortex ECU improve my bike's performance? Will it make a noticeable difference?

One of the most frequently asked questions we receive is how noticeable the performance gains will be if a customer purchases an XPR tuned Vortex ignition for their bike. The short answer is that the performance gains are very noticeable in several ways. When XPR tunes the Vortex ignition module (or ECU), the engine will perform with a great balance of increased power, rideability, reliability and consistency. When the engine runs better, the chassis is able to perform at a higher level as well, bringing the overall performance to new levels. Decreased engine braking can help the chassis feel more planted when chopping the throttle. This is another great benefit of having a tuned ECU. In conclusion, there are two benefits of running an XPR Vortex: improved power characteristics and improved chassis feel.

Digging deeper: How do we make a bike perform better than the OEM manufacturer?

To answer this question, we need to look at the role of the ECU and what it does. The ECU or ignition control module is the "brains" of the bike's engine. The "brain" is constantly monitoring injector timing, intake manifold pressure, crank angle, water temperature and ignition timing many times a second. If any of these parameters are off, even a little, the engine performance can suffer.

Years of dyno testing in parallel with track testing has given XPR the ability to tweak these parameters to build powerbands that feel "more connected" and "easier to ride" while increasing overall power output by substantial margins. XPR is able to increase the performance of the bike by utilizing even more parameters which the Vortex ECU offers such as injector spray duration. OEM manufacturers try to offer a "one size fits all approach" to their stock mapping for many countries around the world. The only problem is that fuel quality, weather, and elevation vary from country to country. An OEM manufacturer must ship the bike with their best estimate on a universal ignition map. This can lead to decreased engine performance and consistency issues. We've all read reviews of a bike where the riders complain of "flame-outs" or stalling and a "herky jerky" feeling. These are symptoms of an ECU that is not tuned correctly.

XPR is able eliminate these variances and provide the ideal ignition mapping for each model. The end result is a bike that runs much cleaner, crisper and consistently compared to stock. Track testing also plays a huge

role in making the power much more useable. The adjustability of the Vortex ECU is almost limitless enabling the power to be customized for all riders, vet to pro.

How does an XPR mapped Vortex compare to a competitor's mapped Vortex?

This is another question we field frequently. The Vortex ECU is an incredibly powerful tuning tool, but it is only as good as the tuner's ability to make the correct changes to the ignition timing, fuel timing, injector spray duration etc. It is up to the tuner to customize the ECU to give the power characteristics the rider is looking for. This takes many years of experience and dyno testing to record data on how best to improve the engine characteristics. A competitor's tuned ECU may feel similar, but XPR goes to great lengths to provide the perfect balance of power gain, rideability, consistency and reliability. XPR also is constantly reviewing rider feedback to verify map settings and to continuously improve future ignition maps.

How does XPR create more power while also increasing rideability with the Vortex?

Dyno testing is only part of the equation to create a better powerband. Track testing is the other component needed to create not only more power, but a better power curve. XPR takes new bikes, breaks them in to ensure the test bike is representative of o the consumer's bikes and dyno tests them. This dyno testing will give us a power curve, torque curve and an air fuel mixture map. It's not uncommon to see a "dip" or a "hump" in the horsepower curve which correlates to an incorrect air-fuel mixture. That "herky jerky" feeling that you feel with a stock bike while riding in first gear in the pits could be a symptom that the stock ECU has a lean or rich spot at partial throttle opening.

XPR will focus on that area, make changes to the Vortex ECU parameters and provide the correct air-fuel mixture for that throttle opening. The result will be a seamless throttle transition that is less "jerky" and feels more natural. XPR continues this procedure to all points on the dyno graph to create a smooth, powerful power curve that allows riders to ride harder longer. The key to a perfect powerband is to find the balance of power increase to rideability which is XPR's specialty.

Can XPR provide custom Vortex ECU maps to suit my needs?

Absolutely! The beauty of the Vortex ECU system is that XPR can listen to a rider's power needs and create a custom map to give the rider exactly what they are after. Some riders want a hard-hitting, fire breathing

450. No problem! We can accommodate that! If you're a 450-vet rider looking for a slightly more mellow power delivery, we can create a custom map for you!

The possibilities are endless when creating the power curves using the Vortex ECU. Rider feedback also helps us create a library of custom maps to choose from. An XPR associate can gather the information needed to best determine the maps you need to ride to the best of your abilities.

Does a remapped Vortex ECU decrease reliability?

No. When XPR corrects the air-fuel mixture, bikes can run cooler WHILE making more power. XPR also detects signs of detonation that may have been overlooked at the factory and corrects the ignition timing to prevent damage to the engine. In many ways, an XPR tuned Vortex ECU increases reliability.

How exactly does an XPR Vortex help my bike handle better?

Four stroke motocross bikes have more "engine braking" than two strokes. Engine braking is when a rider abruptly chops the throttle, and the engine slows the bike down. Essentially this is like using the engine friction as a brake. The engine braking helps four stroke have a very "positive" feel at the front tire as the weight is shifted forward during engine braking. Two strokes have very little engine braking and tend to be steered more from the rear.

If the stock bike has too much engine braking, the chassis can become unsettled upon corner entrance as the weight shifts forward violently. This makes the rider get back on the throttle slightly to stabilize the bike. This "on-off-on-off" throttle application makes the bike stand up in the corner instead of tracing a smooth on-power corner arc.

XPR has the ability to decrease the engine braking to realize the perfect balance of front wheel traction and allowing the rider to apply the throttle once and accelerate through the corner. Correcting engine braking is one of the most noticeable changes to chassis dynamics that the riders feel. A smoother, broader power curve allows the rider to carry a gear higher which allows the rear suspension to work more freely.

Which is more bang for the buck between an XPR Vortex or aftermarket exhaust system?

A properly tuned Vortex ECU will increase performance more than just adding an aftermarket exhaust system. If the stock ECU has flat spots or incorrect air fuel map settings, The problem will not be resolved by adding an exhaust system. Step one to gaining performance on any modern four stroke bike is to correct

the air-fuel mixture, ignition timing and engine breaking. In short, the performance gains are more noticeable by adding a tuned ECU than just installing an exhaust system.

Will remapping my stock ECU give me the same performance gains as an XPR tuned Vortex?

Unfortunately, it will not. Many of the OEM stock ECU parameters are locked and cannot be changed. The Vortex ECU offers more adjustability than the stock ECU which gives much more noticeable performance gains.