Ride Test: Hinson Racing's BTL Series Slipper Clutch
By Ben Horgen

Hinson has developed a new clutch packaged aimed at helping quad riders get the most out of their ATV. The Slipper clutch technology first appeared on the motorsport racing scene in the MotoGP circuit. As is often the case, the best technology is first developed on those million dollar race machines. The design is utilized by MotoGP racers to reproduce the positive engine characteristics of 2-stroke engines.

The pinnacle of MotoGP motorcycle racing is the testing ground for major motorsport manufactures. Yamaha, Honda, Kawasaki and Ducati are just a few of the companies pouring big bucks into perfecting their racing equipment. Five years ago MotoGP machines were primarily 500CC 2-stroke racers, but as development progressed four strokes took over.

Titanium valves used in pro-level race quads were the last modern marvel ATV racers received from MotoGP development. While racing motorcycles on pavement might not seem relevant to ATV racing, the motor, chassis and suspension knowledge manufactures gain from their research makes its way to all realms of motorsports, including our beloved YFZ, 450R, LTR and Kawasaki's new KFX race quads. With riders like Nicky Hayden, Valentino Rossi and Kenny Roberts Jr. in control of the handlebars you can bet the world's best test riders are helping discern what technology works and what doesn't.

To complete the package we opted to bolt on a Hinson clutch cover.

We were able to get our hands on the hottest new product from Hinson, their new BTL Slipper Clutch package. The installation was a breeze. The clutch kit installs by removing the stock pressure plate and inner hub and replacing them with the BTL inner hub and pressure plate. The kit is 100% compatible with the rest of the stock components, making the kit more affordable for budget racers. For our installation and testing we utilized the stock steal plates and stock clutch basket already in the machine. While we were at it we ordered stock Yamaha fibers to replace the slightly used ones already in the machine. Hinson is known for delivering a smoother more positive clutch engagement, with better clutch plate life, that is less affected by heat buildup. Combining these benefits with their new slipper technology had us pretty excited about the upgrade.

Our BTL "slipper" clutch installation was completed by bolting on a Hinson clutch cover, not included in the kit. While the stock clutch cover will work just fine, the Hinson cover gave the project that finished look. The only installation note made was the requirement of a Universal Clutch tool. While it is a standard tool listed in the Yamaha YFZ450 shop manual, the clutch tool may not be standard in every trackside mechanic's toolbox.

The Hinson BTL clutch package includes different torque limiter springs which vary the amount of "slip" the clutch has. The torque limiter spring indicated for motocross still allows for some feeling of engine braking. Other spring rates are included. So regardless of your specialty, whether it be dirt tracking, supermoto, ice racing, dune riding or whatever - you'll be able to experiment and end up with your ideal feel. Changing the spring requires removing the BTL pressure plate and main spring which exposes a torque limiter spring located in the BTL inner hub. Removing the BTL pressure plate is simple as removing a few 10mm screws which exposes the main spring retained by a circlip. The Hinson BTL clutch does not have standard clutch springs to mess with or to wear out. The main spring replaces the clutch springs. The best part is you dont have to disassemble the entire clutch to do so. Hinson makes it easy, you'll be able to swap out a different release spring in about five minutes. What's more, you can now easily inspect and swap out your plates by removing six 5mm bolts.

Anytime you want to get at your clutch, do yourself a favor and put the quad on its side like this.

Ride Test
Testing Hinson's new slipper clutch was a lot of fun! We gave three differently skilled motocross racers time on the machine. Our primary test rider for this demo was extremely impressed. Having raced half a season on our test machine, he was the most familiar with how the machine handled. His impressions were all positive. His notes include a solid feel of the clutch and better handling when correcting the machine in the air. He commented on an enhanced confidence to tap the rear brake in the air. Because of the new slipper characteristic, killing the engine by stabbing the rear brake is not as easy; however don't get too lazy, a clutch pull is still required. The improvement can be a real asset in helping racers raise their level of mid-air handling.

The best way to describe the difference is the feeling noticed when jumping the more nimble 250R versus a 450R. With each of our test riders actively racing modern four stroke ATVs, the time it took to adjust and gain confidence in the air varied. However it took no more than 10 laps for all of our test riders to gain the confidence they needed to complete all the jumps on the track.

The biggest benefit of running the slipper clutch, especially for less experienced riders, is the machine's new lack of engine braking in the corners. With the switch to four stroke engines, many new motocross racers tend to let their quad's engine slow them when approaching a corner. This is not the quickest way to negotiate a turn in the track. One of our test riders noted he was blowing corners with the BTL clutch installed even though he was very familiar with the track. This exposed a weakness in his riding and identified cornering as place to improve his lap times.

Here all that is needed is the cover. After that, it's time to test this baby out! After doing so we improved our riding with better braking control and better mid-air maneuverability.

Each of our test riders warmed to the feel of the new slipper clutch and by the end of the day everyone agreed it helped their lap times. One test rider noted he would need both his practice bike and race bike equipped with the slipper clutch if he was to use the slipper clutch for competition. Our advice for those concerned about this subject is two fold. For those practicing on the same ATV they race, you'll likely adjust to the difference quickly. For those who race one bike and practice on another, put the BTL clutch on your practice bike and slowly save up for a second one on your race machine. Trust us, you'll quickly start to miss it on your race bike.

Overall the conclusion is slipper clutch technology works for quad motocross and the Hinson BTL "slipper" clutch package delivers. What's more, after installing the package, the YFZ450 clutch performed better when feathering out of corners, provided an improved feel during motocross starts and provided training benefits by exposing rider weaknesses and increasing bike control. The slipper clutch technology eliminates rear wheel hop with hard braking. Now you can go from full throttle in a high gear, brake hard and downshift several gears all at once without the feel of the rear wheels holding you back.

On the down side of this incredible product, clutch pull resistance is slightly increased over stock. The good news is this can easily be fixed. Just mount a good aftermarket clutch perch assembly and you won't notice the increased resistance one bit.

Conclusion
Hinson has a long proven record of producing great clutch packages for quad racing applications, so we knew we would be getting a top notch product. The BTL Series Slipper Clutch exceeded our expectations. From ease of clutch maintenance, to longer clutch life, to improving lap times, Hinson's Slipper Clutch delivers.