

# Installation of a Dalton Clutch Kit on a KingQuad 700

By Don McNeilly

Dalton Industries, out of Nova Scotia, Canada, has long been known for its quality clutch components and makes clutches for ATVs as well as snowmobiles. Many pro racers use Dalton's clutches on their machines, but the kits are available for "civilian" use, too. We wanted to test one of these kits, and since my friend Jeff Christ happened to have two '06 Suzuki KingQuad 700s (nearly identical; there's only one digit difference in the VINs), it would be the perfect opportunity for a "before" and "after" comparison.

When the kit arrived I opened the box to inspect the contents. It included an orange secondary spring along with eight complete drop-in roller assemblies with 19.5-inch steel inserts. The good thing about the roller assemblies is that they come complete, so all you have to do is take the old rollers out and drop in the new ones. It doesn't get much easier than that. Also included is a very detailed installation sheet (prior to starting the installation I called Dalton Industries to ask a few questions. Amazingly, Dale Dalton was there and more than happy to answer any questions I had. I hadn't expected to actually *talk* to the company's owner, but one of the things he made sure to tell me was to read the instructions carefully prior to starting).

The installation sheet recommends that the clutch kit be installed by a factory-trained mechanic or service personnel

The Dalton Clutch Kit includes a torsion twist spring with eight complete drop-in rollers.





When taking the primary and secondary clutch out, it's helpful to have an impact wrench.

with a complete knowledge of ATV Variable Rate Belt transmissions. After thoroughly reading the instructions in addition to doing some research online, Jeff and I decided to do the installation ourselves in order to be able to give a full accounting of the entire process.

### INSTALLATION

Step 1 says to remove the ignition key. While this may seem like stating the obvious, the fact is that you don't want someone to inadvertently turn the engine on while you've got your hands on the clutch components. Next we had to disassemble the foot board vent lines and clutch cover. You'll notice quite a bit of black dust on the inside of the cover. This isn't unusual and is a result of normal belt wear. Jeff takes his clutch cover off every couple of months to clean out the dust, and if you do a lot of riding, this is a very good idea.

Now we're getting into the heart of the process. Take off the clutch guard from the front clutch, then remove the center nut (we had to use an impact wrench to remove the center nut from both the front and rear clutch). Remove the outer portion of the front clutch and disassemble the slide plate to access the roller weights. Remove the secondary clutch and belt. If you're going to put the same belt back on, make sure you

The Dalton spring is on the left. It's longer than the stock spring, and the ends are offset.





Primary clutch with new Dalton spring installed.

Primary clutch with rollers in place.



note the direction so you'll be able to re-install it the same way (we were putting on a new belt, but we did mark an arrow with a Sharpie on the belt, as Jeff was going to put it in his quad bag as a spare). With both clutches off, now is an excellent time to check all components for wear and give them a good cleaning. A non-residue substance like brake cleaner is normally used.

Now here's where it gets a little tricky. It's very important that you use a press to securely compress the secondary clutch spring before loosening the retaining nut. We used a punch to lightly tap the retainer nut loose, as the spring was compressed. We slowly released pressure on the spring and removed it completely. As we placed the two springs side-by-side, we noticed the Dalton spring was a little longer than the factory original, and the end tabs on the Dalton unit are offset rather than inline as on the original. The reason for this is to create more torsional twist force on the spring to help the belt engage better. Once again, this is a good time to thoroughly clean the unit.

The next step is equally important. Make sure the clutch is situated so that the retainer cap is up towards you. It needs to be twisted counterclockwise in relation to the clutch to load the spring properly. If you twist the spring the wrong direction it will enlarge instead of compressing; we had to try the spring a couple of ways to make sure it was installed properly. Now to install the retainer nut you have to twist the spring (counterclockwise) before compressing it. A press is recommended again at this point to reinstall the retainer nut.

Once this is all in place, you have to reverse the order to reinstall the clutches. Another important thing to remember is to make sure you get the belt part of the way down into the rear sheaves of the secondary to allow enough slack to install the primary clutch. We used two screws that hold the clutch cover on to spread the secondary clutch (this is actually in the owner's manual).

Now install the primary, making sure you hold pressure on the inner plate so the rollers don't move out of place (we had this happen). You need to

install the clutch brace to keep the inner plate from opening up too much and having the rollers fall out. At this point you'll need a torque wrench to torque the clutch bolts to the manufacturer's specifications. We then started the ATV and observed the clutch closely to make sure it worked properly before installing the cover and footrest.

### RIDE TEST

Now that we had the unit installed, we took the quad out for a ride. There's a desert area that's perfect for testing about 45 minutes from Jeff's house, so we loaded up his two quads and headed out there.

On the way to our ride I called Dalton Industries to let them know the installation went very well. Again, remarkably, Dale answered the phone, even though it was about 4:50 p.m. on a Thursday evening (I forgot about it being a different time zone in Nova Scotia; sorry about that, Dale). He also gave me some insight into the company's procedures for improving clutch performance on different models of ATVs. He noted that sometimes there's actually nothing wrong with the performance of a stock clutch, such as the one on the Polaris 800, so his company doesn't make a kit for that particular machine. Another machine Dalton doesn't make a clutch kit for is the Yamaha Rhino. Dale said that when they improved the bottom end of the Rhino it lost too much on the top end, so they decided not to make a kit for the machine at this point. It was actually kind of refreshing to have a company owner be so upfront and honest about his product.

### THE TESTING GROUNDS

Our test area has a long, fairly smooth dirt road that's straight for the first couple of miles. We ran both quads in a couple of drag races to get an idea of the difference between the Dalton-equipped machine and the stock one. The KingQuad with the new Dalton clutch kit beat the other one every time by 1-1/2 to two quad lengths in the first 300-400 feet. At that point the clutches were topped out, and they stayed about the same distance apart.



Dalton clutch kit installation complete except for clutch cover and foot rest.

An advertisement for Cobra UTV SportShield. The top half features the brand name 'COBRA' in a stylized font, followed by 'UTV SportShield' and a large 'NEW' graphic with a starburst effect. Below this, three bullet points list features: '- Available for Yamaha Rhino and Polaris RZR', '- Available in Tint and Clear', and '- Suggested retail \$199.<sup>95</sup>'. The bottom half of the ad shows a blue and white UTV with a clear shield installed. Text on the shield reads: 'The only UTV shield that is formed to push air up and over riders.' At the bottom, it says 'Contact your local dealer or online retailer.', 'POWERMADD', 'www.POWERMADD.com', and '800.435.6881'.

Next we went to a steep hill to test the backshifting, and this was where there was a very noticeable difference between the two. There was enough room for both machines to run side-by-side, and we put both in low four-wheel drive. The Dalton-equipped machine easily outperformed the stock one. Descending the steep hill on the Dalton-equipped quad wouldn't even require the use of the brakes, but on the uphill side it was difficult to feel much difference between the two. The one thing I did notice was that if you held the throttle at, say, one-quarter open, the Dalton machine would backshift slightly better, keeping the rpm steady, while the stock ATV would bog unless you applied more throttle. Still, it was not as noticeable as the engine braking.

We then went to one of our favorite boulder-crawling areas to get an idea of how smooth and steady throttle response was on rough terrain. The Dalton-equipped machine performed well, but in climbing through the boulders there wasn't a noticeable difference between the two quads unless you were going downhill through the nasty stuff (which we did), in which case there's a *huge* difference. In fairness, though, we have to say that the Suzuki King Quad 700's stock clutch is excellent for boulder-crawling in low four-wheel drive.

Unfortunately, due to the time of year in which we made the test—approaching summer—we couldn't test the performance of the Dalton clutch in mud. However, I researched many user websites and reviews, and the consensus is that the clutch performs well in mud and/or with larger tires.

### SUMMARY

We were pleased with the thorough installation instructions. The kit itself (MSRP \$169.00) worked very, very well, especially in the engine braking area. It also resulted in faster acceleration.

### CONTACT INFORMATION

For further information, check out Dalton's website at [www.dalton-industries.com](http://www.dalton-industries.com). (they're in the process of adding a video of the installation procedures). ■



The throttle response was steady and smooth even when rock crawling.

The biggest improvement that resulted from installing the Dalton clutch kit was in engine braking.

