

DIRTY LITTLE SECRET

SMR SHOP: STM SLIPPER CLUTCH

Nothing better than reliving a few playground antics, “You show me yours and I’ll show you mine,” or “You first, and then I will tell you second.” We are talking about the elusive slipper clutch. In the old days they called them sleepers—hot rods that looked like everyday drivers but had a few dirty little secrets under the hood. The STM slipper is a supermoto sleeper. Their numbers are out there but their owners aren’t admitting they have one mounted up under the hood in fear the competition may discover the modern marvel of SM. The slipper isn’t a brand-new concept since they run rampant in the world of road racing.

The concept is simple—rear wheel control under hard braking and downshifting. There are two ways to regulate severe engine braking that causes the rear wheel to hop and chatter. First is to manually feed the clutch out to control rear wheel traction while downshifting, or the alternative is to install a slipper clutch. What occurs during hard braking and downshifting is the engine braking affect is too great and the engine speed is slower than the ground speed. This, in turn, causes an uncontrolled skid and hop since the rear shock is partially unloaded.

Learning to feed the clutch out, underbraking and downshifting can be mastered but it takes time and can be inconsistent—especially for bikes with cable-actuated levers. Hydraulic levers are a little easier since they never fade or alter their engagement position. Controlling the rear wheel speed with the clutch is one of the most important elements of entering a corner on a supermoto or road race bike. Since too much engine braking had become a problem in motocross as well, they too are

looking into alternatives.

The slipper clutch is not for everyone or the cure-all to learning to become a better rider. We even suggest a rider grasp the concept and technique of feeding and slipping a standard clutch before they venture into the world of the slipper. The STM regulates the clutch to provide just the right amount of engine braking to the rear wheel at any speed. The clutch is fully adjustable in order to tune the amount of slip based on the rider’s needs. Some like more engine braking than others and this can be achieved with the clutch.

In a nutshell, a slipper removes one operation while entering a corner so the rider can focus on everything from body position, brake modulation, rear brake pressure and so on. The downfall of the STM is the current cost—nearly a grand.

HOW TO USE THE CLUTCH

There are two theories on using the clutch. One is to avoid using the clutch while braking and just start banging down gears. If you know you are entering a second gear turn and you are in fourth, as soon as you start to jump on the brakes, start downshifting. Personally, we have found another approach that seems to work for the masses. We prefer using the clutch and doing all of our shifts in one action. Since the clutch slips as soon as it detects a certain amount of reverse force on the plates, you can just dump the clutch as soon as you make your downshifts. The idea is as soon as you hit your braking point you chop the throttle, get on the binders, pull in the clutch and bang down the desired gears. Once on the brakes, the faster a rider can make their shifts and let the clutch

out, the quicker they can starting setting up to for the turn. Unbelievably you can actually go from fifth to first gear in a split second and just dump the clutch, no matter how fast you’re going. The clutch will slip and keep the rear wheel from hopping or skidding. During deceleration, the bike’s ground speed eventually winds down to the engine speed and the clutch re-engages.

We have tested the clutch for nearly a year on a CRF450R and we can’t live without it. There are some complaints that the clutch feels odd and you get a clicking sensation in the lever. The click occurs when the clutch starts to slip and the rider pulls in the clutch and interrupts the action and the clutch’s bearing ramp jumps back into its normal position. Don’t worry, it’s nothing. The idea is to just make all of your downshifts in one motion. Over time, a rider with a slipper almost gets spoiled and has problems riding bikes with standard clutches. The investment is great so be sure that you really want a slipper and can benefit from what it offers. The following is a pictorial diagram of how to install a STM slipper. STM slipper clutches are available through supermoto parts outlets such as Motostrano and Moto-Connection or any authorized FMF dealer. For product information, you should contact FMF Racing at 310.631.4363 or www.fmfacing.com.

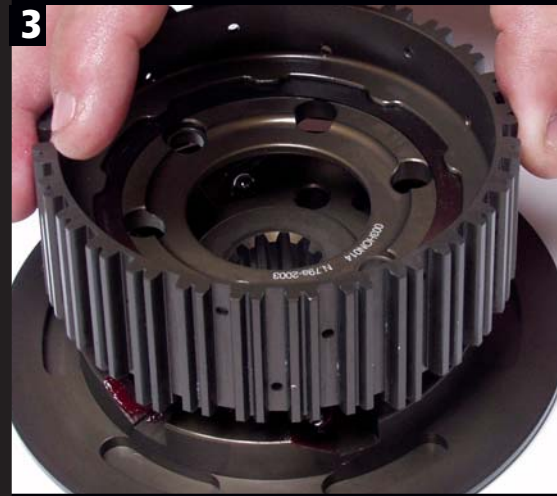


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On the CRF, the first step is to remove the clutch access cover, the pressure plate and all six springs and the clutch actuation shaft bearing. Tap the lock washer plate and using an impact driver or clutch-locking plate tool remove the main shaft nut and remove the inner basket. With the STM clutch you will not be using the inner basket, six springs, six spring bolts, locking washer and washer just behind the lock washer.

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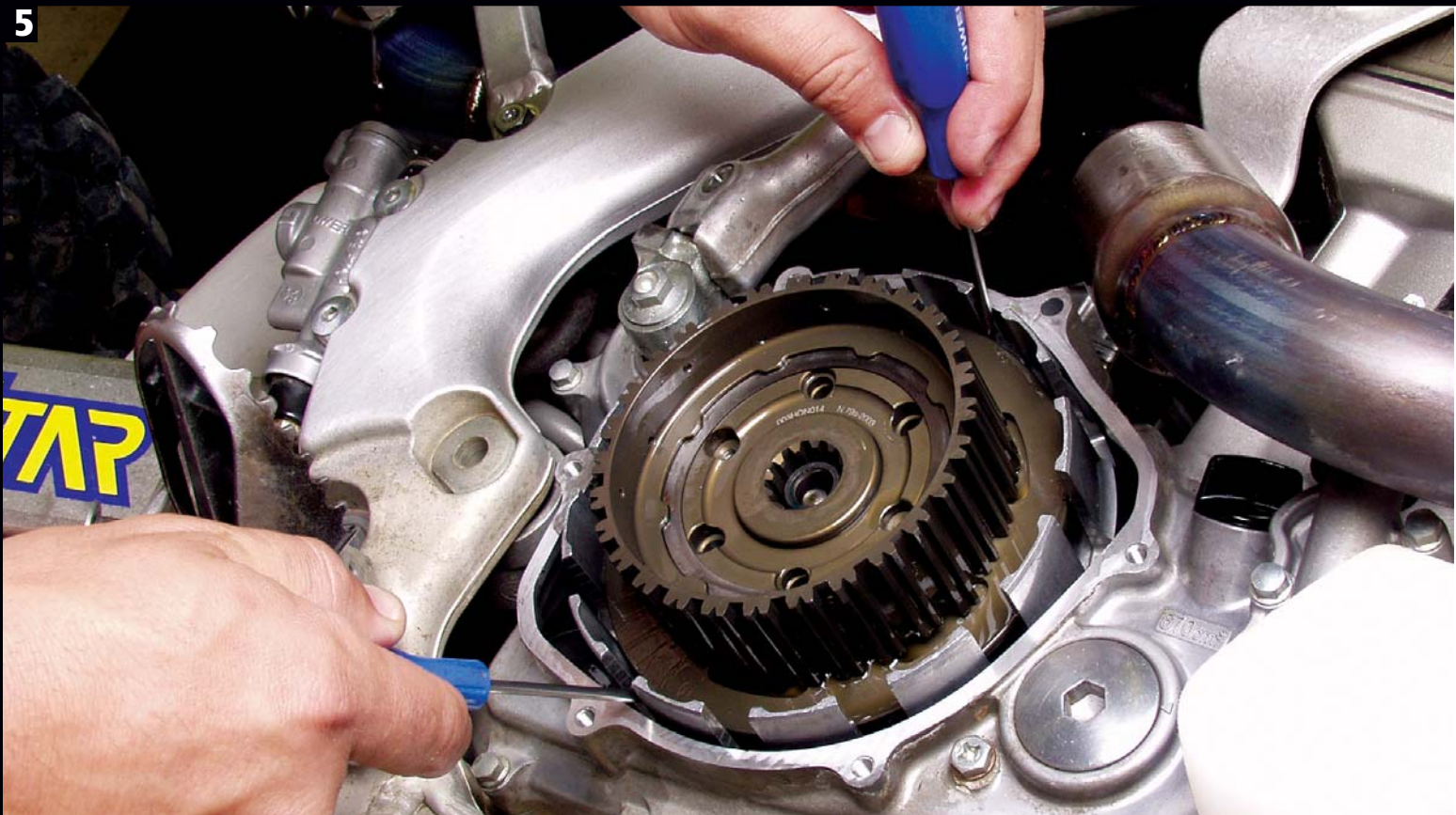


The next step is to lay out the STM slipper clutch components. Follow the diagram and schematic to insure that the parts are assembled properly. Be aware that KTM and Yamaha slippers look different and may require a slightly different order of operation.

Unlike the stock inner basket, the slipper is a two-piece. The bearings are what allow the slip mechanism to work. The best way to assemble the clutch is to apply a small dollop of grease to hold each bearing in place.

With the bearing seated, place the inner basket on the backing plate and be sure to line up the four holes when merging the two components. To avoid problems, hold the base in your right hand and turn the inner basket counterclockwise to make sure the basket ramps up on the bearings. It's then ready for assembly.

Placing the prepared inner basket on the shaft can be a little tricky. Don't grab the basket just by the inner-splined section. If the grease lets loose while placing the part on the shaft, the bearing could easily fall into the engine and cause you a world of hurt. Double check that the large thrust washer is placed on the shaft. Sometimes the washer sticks to the stock basket and people forget all about it. Carefully place the basket onto the shaft holding the base and use two small hooked tools to lower the basket onto the main shaft.





Now it's time install the clutch plates. Always start with a fiber plate followed by a steel or aluminum-driven plate. If the plates are new, soak them in transmission oil before installation. Once the plates are intact, locate the sharp-toothed wave spring and place it in the basket as shown right above the limiter washer illustrated in the schematic.

Secure the pressure plate, second wave spring and the bearing plate. The wave spring goes in first followed by the bearing plate, bearing and outer cover. Refer to photo 7a to locate the proper components. Install the STM locking washer (bowl up), followed by the stock clutch hub nut. Although it isn't in the instructions, we recommend applying a few drops of a thread-locking agent to the nut for added insurance.

Place the nut on the shaft and secure it with an impact driver. Be advised that when the nut tightens on the shaft it also applies pressure to the springs at the same time. It may take several rotations until the nut is tight. About 70-80 foot-pounds of pressure is what we suggest to secure the nut on the clutch.

Place the clutch actuation shaft bearing into the clutch and make sure it spins freely. Again, be sure there is a thrust washer on the outer bearing. Oftentimes the bearing sticks to the stock pressure plate and has to be removed.

Locate the outer basket cover and place it into the clutch. The spring clip fits into the grooves to secure the cover. If the spring clip is difficult to secure, add additional slack at the clutch lever to allow the cover to seat further into the clutch.

Before you button up the other cover, work the clutch lever to guarantee clutch plates are disengaging. With the cover secure, add the recommended type and amount of oil, adjust the clutch lever slack and you are RTG (ready to go). ♦