



## **Gen II Multistage Clutch Installation for Harley Davidson**

MTC Engineering's Gen II multistage is designed to provide you with improved reaction times and better E.T.'s. This new generation of multistage clutch runs on motor RPM instead of input shaft RPM. This unit is designed to work on a belt driven system. All MTC Gen II multistage clutches and components are covered under U.S. Patents.

There are several things that need mentioning before you use this Gen II Multistage clutch so you will not make any mistakes.

1. This lock up clutch operates on engine RPM. Make sure you have set up the dynamic springs so that the engine RPM's do not try to pull the clutch lever out of your hand at the line.
2. Always make sure you put the spacer in the bottom of the basket or you will instantly break fibers and the clutch will not lock up.
3. Make sure the air gap between the hat and pressure plate buttons is between 0.100'-0.120" so that the arms will engage correctly and apply repeatable pressure.
4. At high engine RPM's there is a lot of force on the pressure plate. Do not try to pull in the clutch until the engine RPM's have dropped.
5. Make sure that you can reach an ignition kill switch without removing your hands from the controls.
6. Make sure you remove the static spring compression bolts before operating the clutch.

### **1-B. INSTALLATION OF GEN II CLUTCH IN A HARLEY DAVIDSON**

- A. When installing a Gen II basket into a Harley Davidson, it will require you to check clearance of the cases and or covers to prevent the O.D. of the basket and the top of the unit from touching, a minimum of 1/32" is required.
- B. Installing the clutch basket and inner hub to the transmission shaft and installing the clutch cover is the same as with the stock/aftermarket engine. Please use stock recommendations on torque values.
- C. Install the bottom spacer into the basket making sure the aluminum locators fit into the holes in the bottom of the basket. These locators are used to keep the bottom spacer from spinning freely and do not need to be a press fit. Check to make sure the spacer is sitting flat on the bottom of the inside of the basket. This is critical to make sure the clutch stack up is correct. Install friction and steel plates the same as with stock procedure, except start with a fiber, then a steel, then fiber, then a steel plate, continue till you end with a fiber. The amount of steels and fibers will vary depending on the thickness you use in your stack up. The total clutch pack thickness will vary based on basket height and design.

- D. Insert the pressure plate, with attached spacer and floater plate, on top of the last fiber. Hold the hat assembly on top of the basket while putting pressure against the pressure plate and measure the air gap between the top of the pressure plate and the bottom of the hat assembly. Target air gap is 0.100"-0.120". This air gap is necessary to allow the arms to swing out past center to generate lock up force. If the air gap is too large or too small, remove hat and pressure plate and adjust clutch pack thickness as needed. Repeat procedure until target air gap is achieved.
- E. Place the hat assembly on the basket and tighten the twelve (12) allen head cap screws to secure it.
- F. After the hat assembly is attached, the air gap between the arms and the pressure plate buttons can be measured using the thin bottom section of a caliper. Stick the caliper rod into the slot opening just behind the arm (See Fig. 1) until it hits the top of the button on the pressure plate. Take a height reading to the top of the Gen II hat, this reading should be between 0.490"-0.510". This gives an air gap of 0.100"-0.120". It is better to start with an air gap of 0.100" to compensate for clutch wear. This technique can be used to maintain the air gap, after repeated runs, without removing any part of the clutch.
- G. **Remove the six bolts which were holding the static springs in compression.** Failure to remove these bolts will result in a nonfunctioning clutch. Keep these bolts to use when you disassemble the clutch. They compress the static springs so that they do not interfere with attaching the hat.
- H. Check all clearances of outer covers or pull mechanisms to make sure they do not hit the hat assembly or the arms that rotate out when the engine starts.
- I. Before starting the engine, turn engine over by hand, and make sure that the basket and/or the inner hub is not binding.

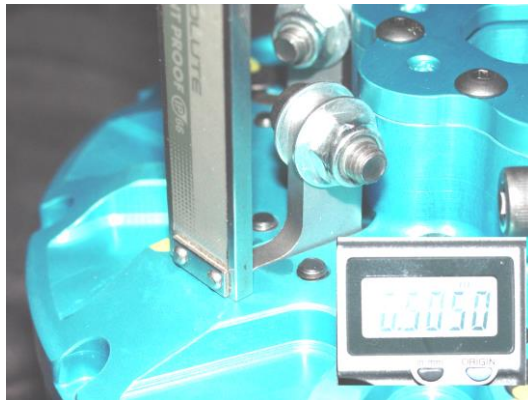


Fig. 1



## MULTI-STAGE USER GUIDE

- 1) Use the shims in your lockup kit to increase static spring pressure. Shims should be placed between the bottom of the spring and the spring compressor.
- 2) The small springs included with your lockup are to adjust when the arms apply. The lower the number, the softer the spring, and the arms will apply at lower engine RPMs. The higher the numbers, the stiffer the springs, and the arms will apply at a higher engine RPM. These springs will lose some length after being installed over time. Always replace all the same number springs when replacing springs.
- 3) We recommend that you keep equal weight on all the arms. If you add or remove weight, do it to all of the arms.
- 4) To run a lockup, you will need to run either an air shifter or electric shifter.
- 5) Should you require any additional support, please feel free to call us or email us at [ClutchSupport@mtceng.com](mailto:ClutchSupport@mtceng.com).

Spring Number	Free Length (inches) (+/- 0.015")
3	.935
5	.990
7	1.040
9	1.083
11	1.134
13	1.192
15	1.224
18	1.321
21	1.385
23*	1.395
25*	1.425
27*	1.480

\* Larger wire diameter

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