Gen II Multistage Clutch Installation

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. The unit operates wet and is totally enclosed in the stock clutch cavity with the addition of a specially designed cover plate. 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 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. 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.
3. 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.
4. Make sure that you can reach an ignition kill switch without removing your hands from the controls.
5. **Make sure you remove the static spring compression bolts before operating the clutch.**

1. INSTALLATION OF GEN II CLUTCH IN A HARLEY DAVIDSON

A. When installing a Gen II multistage basket, it will require you to check the clearance of the cases to prevent the O.D. of the basket from touching the inside of the clutch cavity, a minimum of 1/32" required.
B. Installing the clutch basket to the transmission shaft and installing the primary cover is the same as with the stock engine. The primary cover will need to be modified for clearance.
C. You will need to modify a pusher rod for this clutch based on your current model HD. Use a modified pusher rod with the bearing and the thrust washer to move the pressure plate. Make sure the thrust washer is next to the pressure plate.
D. Insert the pressure plate on top of the last fiber. The height from the top of the tang, on the pressure plate to the top of the basket should be approximately 0.110" (See Fig. 1). This will give you an air gap below your arms to the buttons of 0.110".
E. Place the hat assembly on the basket and tighten the twelve (12) allen head cap screws to secure it.
F. 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. 2) 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. **<u>Remove the six bolts which were holding the static springs in compression.</u>** Failure to remove these bolts will result in a nonfunctioning clutch. Keep these bolts to use when you disassemble the clutch.

H. If you are using an aftermarket primary cover or a modified stock primary cover, make sure it clears the arms on the clutch, when they swing out, when you install the cover.

I. Before starting the engine, turn the engine over by hand to make sure that the basket is not binding and the hat is not hitting the cover.

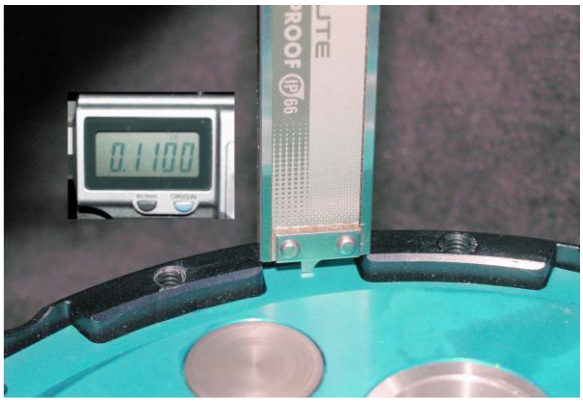

Fig. 1

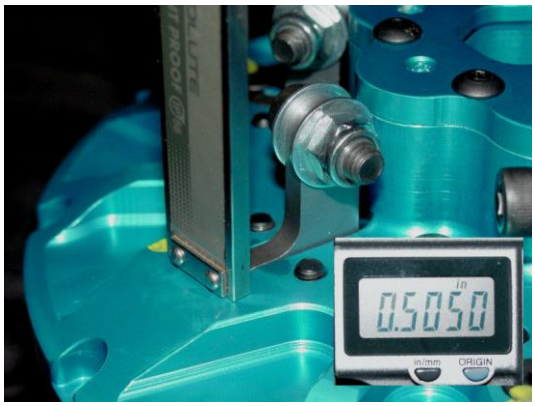

Fig. 2

MULTI-STAGE USER GUIDE

1) If you want to get aggressive with the clutch lever, you will need to soften up the amount of clutch clamping force at launch. On the Gen II, the launch pressure is a combination of the static pressure and arm pressure. The biggest cause of burnt plates is riding the lever too far, because the clutch pressure is too high. You want to rely on arm pressure, more so than static pressure since static pressure is just that, static. The arms provide progressive increase in clamping force as RPM increases. Static adjustments are made to provide minor tweaking of the clutch pressure without changing the curve of the arm pressure.

2) Unlike the regular Multistage Lockup, the arms assist in the launch of the bike, so you must manage the clutch pressure to get the best launch. Example, if you spin the tire instantly or wheelie, take clutch pressure out. If it seems lazy, add pressure. This can be done simply by altering the launch RPM by 100-200, up with increase the launch pressure, down will lower it slightly.

3) A great tuning tool is our Clutch Graph 2010 Simulation software. This program allows you to plug in your current Gen II clutch setup and then make an alternate setup. These will be displayed together on the screen so you can see how the clutch clamping force will be affected without making a run. It will show you if you are making the right changes to soften or stiffen the setup. Please contact Sales for more information.

4) The small springs included with your lockup are to adjust when the arms apply. The lower the number, the softer the spring, the sooner the arms will apply. The higher the numbers, the stiffer the springs, the later (higher RPM) the arms will apply. These springs will lose some length after being installed over time. Always replace all the same number springs when replacing springs.

5) We recommend that you keep equal weight on all the arms. If you add or remove weight, do it to all of the arms.

6) To run a lockup, you will need to run either an air shifter or electric shifter.

7) Should you require any additional support, please feel free to call us or email us at 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	1.295
21	1.385
23*	1.395
25*	1.425
27*	1.480

* Larger wire diameter

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