Rekluse Motor Sports

The z-Start™ Clutch

KX 250F

RMZ 250

Installation Guide

z-Start Revision 3.000

RMS161 KX250F - RMZ250 z-Start Clutch

191-261
Manual Revision: 012005

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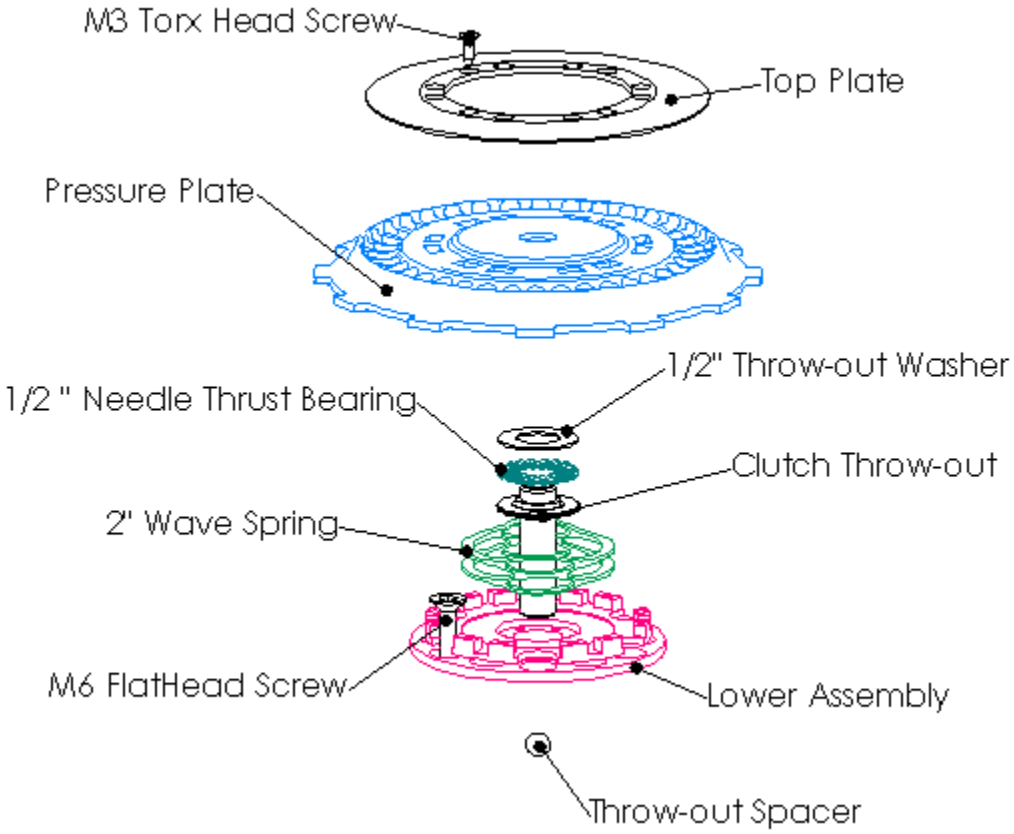
Required Tools

8mm socket	Fine tooth metal file
10mm socket	2 Sets of feeler gauges
27mm socket	Inch Pound Torque Wrench
4mm allen key socket	Torx T10 driver tip (included)
3mm allen	Blue Loctite 243 (oil resistant)
1/4 inch driver (for included Torx T10 driver tip)	

z-Start Overview



Note: The Lower Assembly is packaged underneath the Pressure Plate and held in place with two screws through the Top Plate.

Included Parts for the z-Start Clutch

Note: spare screws, balls and shims may be included with your clutch

Top Plate	5 x M6 Flat Head Screws
Pressure Plate	1.375” (35mm) Wave Spring (C137L1)
Lower Assembly	40 x 5/16" (7.94mm) steel balls
1.75” x 0.789” Guide Puck	10 x 5/16" (7.94mm) Tungsten Carbide balls
Slotted Center Clutch Guide Plate	10 x M3 #10 torx screws
8 Rekluse .055” (1.4 mm) steel drive plates	2 x Clutch Cover Gasket
Clutch Throw-out	External Adjuster Bolt and 2 External Adjuster Nuts
½” (12.7mm) Throw-out Needle Thrust Bearing	Light External Extension Spring
½” (12.7mm) Flat Throw-out Thrust Washer	Medium External Extension Spring
5/16 HSS Countersink Tool	5 X M6 – 1.52mm washers (to go back to stock)

Basic z-Start Clutch Operation

The z-Start Auto Clutch functions through centrifugal force. As engine RPM increases, the balls contained in the z-Start Pressure Plate travel up the ball ramps and push against the Top Plate. This action forces the Pressure Plate to engage the clutch pack.

Installation Tips

In order for the z-Start Clutch to perform properly, it must be mounted properly.

- Measuring and maintaining the Installed Gap is **critical**. If the Installed Gap is too big the clutch will slip excessively and cause rapid clutch wear. If the Installed Gap is too small, the clutch will drag and cause engine stall.

- Recognize that the Pressure Plate travels along the tabs of the Lower Assembly as it engages and disengages. Anything preventing this travel will prevent full engagement and cause the clutch to slip excessively.

- If you will be installing the Rekluse *Perch Adjuster* as a manual override for your z-Start Clutch, it is critical to have the cable slack adjusted properly. First complete the installation of the z-Start Clutch using this manual and ensure proper installed gap. Then refer to the Rekluse *Perch Adjuster* manual to ensure proper cable slack adjustment.

- ***Be very careful not to drop any screws, washers, balls, or springs into the crankcase opening!*** It is surprisingly easy to drop a little screw or washer down into your crankcase. It is not always so easy to get it out. Make sure all parts going in and coming out are accounted for before you finish the installation. A strong magnetic probe can often be used to retrieve little parts if you happen to drop something in.

Bike Preparation and Disassembly

1. If you did not purchase the *z-Start External Perch Adjuster*, remove the clutch cable, clutch lever and rubber clutch perch cover. If you have an after-market hot-start lever your can remove your clutch perch. If you did purchase the External *Perch Adjuster* only disconnect your clutch cable at your clutch lever and **remove the stock perch adjuster**.

2. Turn the gas petcock to the off position and route the gas cap vent tube into the air. When you lay the bike over on it’s side, the gas in the bowl will drain out of the overflow tube. Be prepared to catch the gas in a suitable container to prevent a fire hazard.

3. Lay the motorcycle over on its left side. Remove the rear brake lever bolt so you can rotate the rear brake lever away from the clutch cover.

4. Remove the clutch cover bolts with an 8mm socket and carefully remove the clutch cover.

5. Using a 10mm socket, remove the bolts holding the pressure plate to the inner clutch hub. Remove the pressure plate and the clutch lifter assembly. The clutch lifter assembly consists of the *Clutch Throw-out*, a bearing, and a *washer*.

Stock Pressure plate, clutch throw-out, 5 bolts, and 5 springs are not reinstalled.

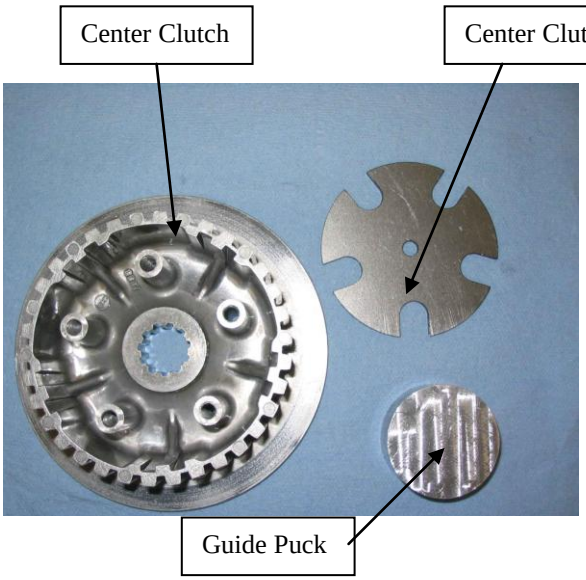
6. Remove your clutch pack and set it aside. Try to keep it in order because it will be re-installed.

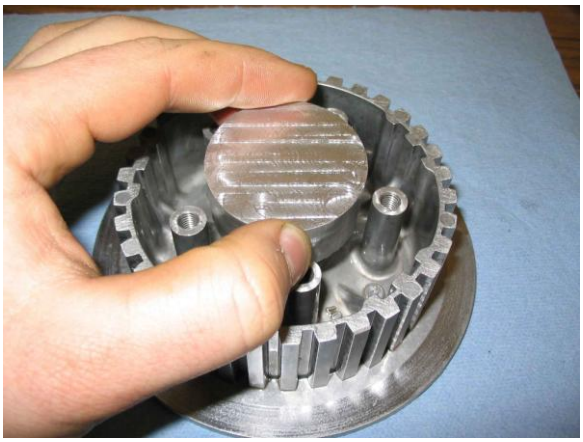
Modifying the Stock Center Clutch

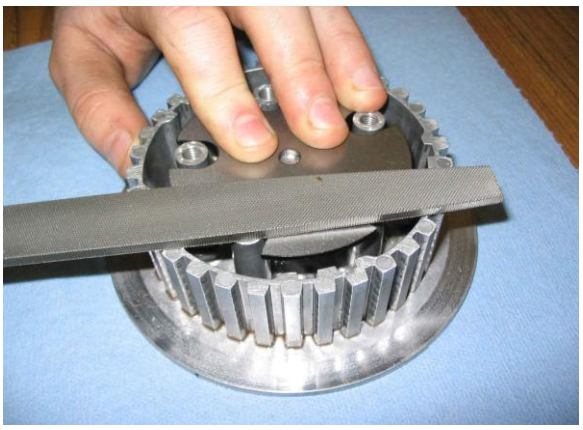
7. Remove center clutch with 27mm socket and keep track of the nut and thrust washers because they will be re-installed later.

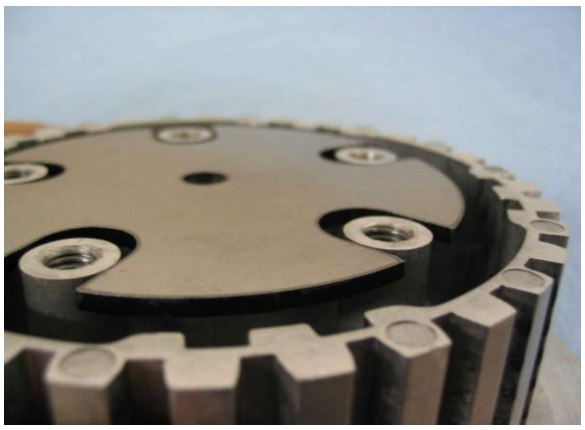
8. Take the center clutch to a place where no filings can be dropped into the crankcase opening. Place the included *Guide Puck* into the center clutch followed by placing the *Center Clutch Guide Plate* over the *Guide Puck*.

   Index the center clutch standoffs into the slots in the *Center Clutch Guide Plate* and use a fine tooth file to file the standoffs down smooth with the *Center Clutch Guide Plate*. Remove the guide and use some emery cloth to smooth the studs' edges. **See following pictures.**









File studs down so they are flush with the included Center clutch guide.

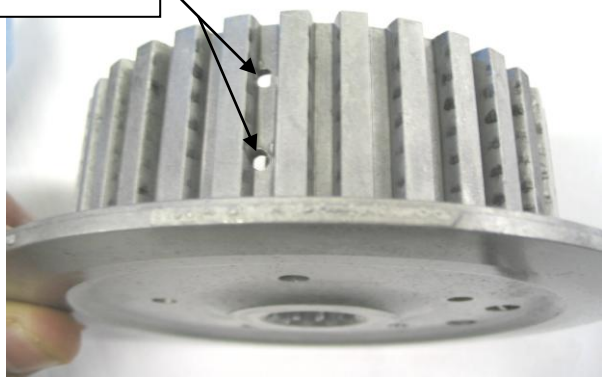
Warning: Insure that all standoffs are filed down level to insure proper z-Start performance.

Note: 5 x M6 x 0.06" washers are provided so the clutch can be re-assembled to the stock configuration.

Increasing Oil Flow

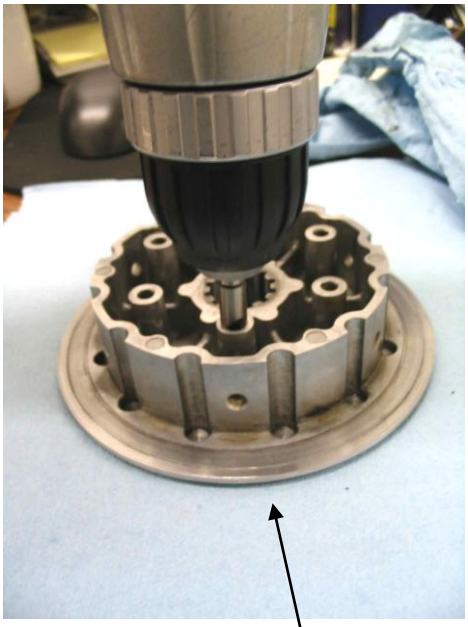
9. In order to increase the oil flow to your clutch pack, we feel it is necessary to drill some holes through the wall or "ring" of the center clutch. We recommend five sets of 2 evenly space holes be drilled in line with the 5 standoffs, between the ribs and through the ring of the center clutch using a #36—0.106" or 2.70 mm—drill. **Do not use a drill greater in diameter than 0.110" (2.80 mm)**. A center punch works well for marking and centering the hole locations to be drilled. **See following pictures.**

Preferred hole configuration

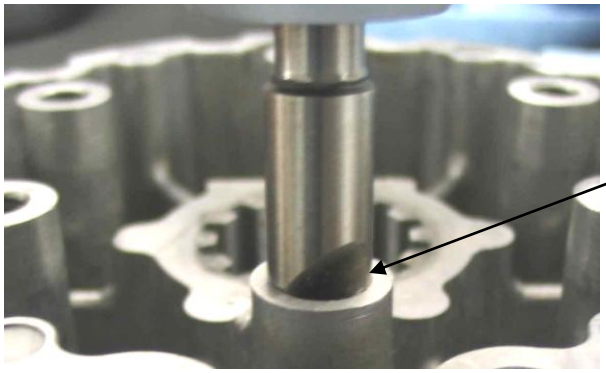


Preferred hole locations designated by arrows.

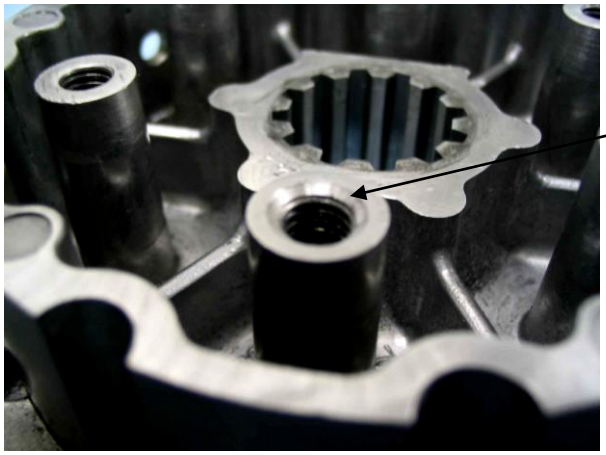
10. It is necessary to counter sink the threaded holes of the standoffs so that they will accept the M6 Flat Head screws. Using the included 5/16" HSS Counter Sink and an electric drill, slowly counter sink each of the holes to the depth of the counter sink tool**. At low speeds and low downward force**, this should take about 4-5 revolutions of the counter sink tool. **See following pictures.**



Using electric drill at low speed to countersink the 5 threaded holes.



Countersink threaded hole to depth of Countersink tool.



Finished counter sunk hole.

11. Re-install the center clutch insuring that thrust washers are in proper configuration and torque the center clutch nut to 50 ft-lbs. Make sure the center clutch is free of any shavings

12. Place the z-Start *Lower Assembly* over the 5 center clutch standoffs. There are two sets of 5 countersunk holes in the lower assembly—use the inner set.

13. Install M6 Flat Head Screws. **Apply a small amount of blue Loctite 243 to each screw** and torque to 96 inch pounds with a torque wrench. After the screws are torqued-down, check to ensure the top part of the *Lower Assembly* spins freely.

Drive Plate Configuration

14. Remove the top three stock steel drive plates from the clutch pack and replace them with three of the *Rekluse 0.055" steel drive plates*. Re-install the clutch pack with the above configuration.

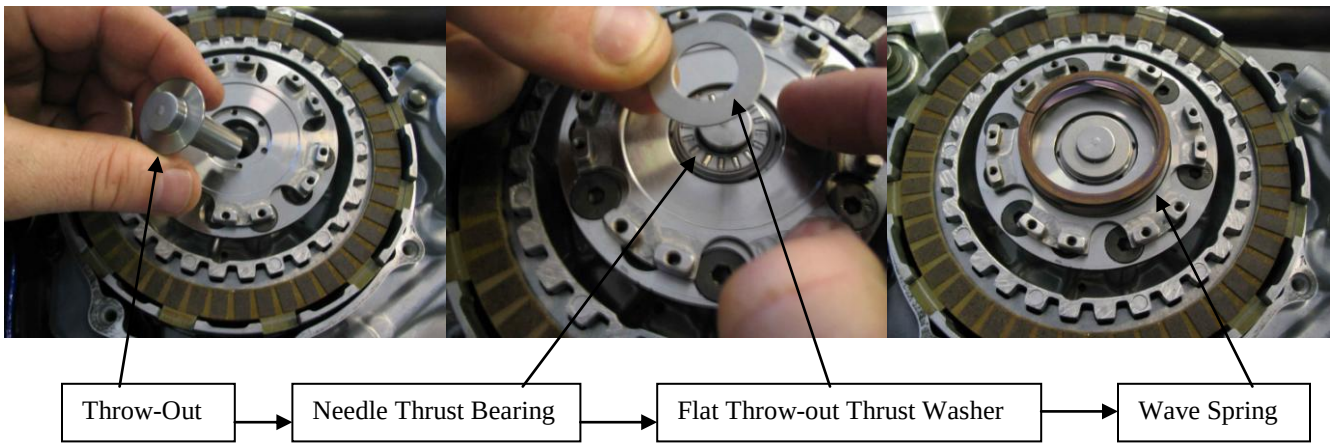
Warning: The top of the clutch pack must be a friction disk

Assembling the Rekluse Throwout, Pressure Plate, and Top Plate

15. Guide the ***Rekluse Clutch throw-out*** into the hole in the transmission input shaft. Be sure that the stock spacer ball is in place.

NOTE: '07-'08 RMZ250 does ***not*** have stock spacer ball. Instead, use one of the 10 remaining 5/16" ***steel*** balls. Ensure that it is placed between the Rekluse throw-out and stock throw-out rod.

Place the *½" Needle Thrust Bearing* on top of the *Rekluse Throw-out* followed by the *½" Throw-out Thrust Washer*. Place the *Wave Spring* on top of the Lower Assembly. **See following pictures.**



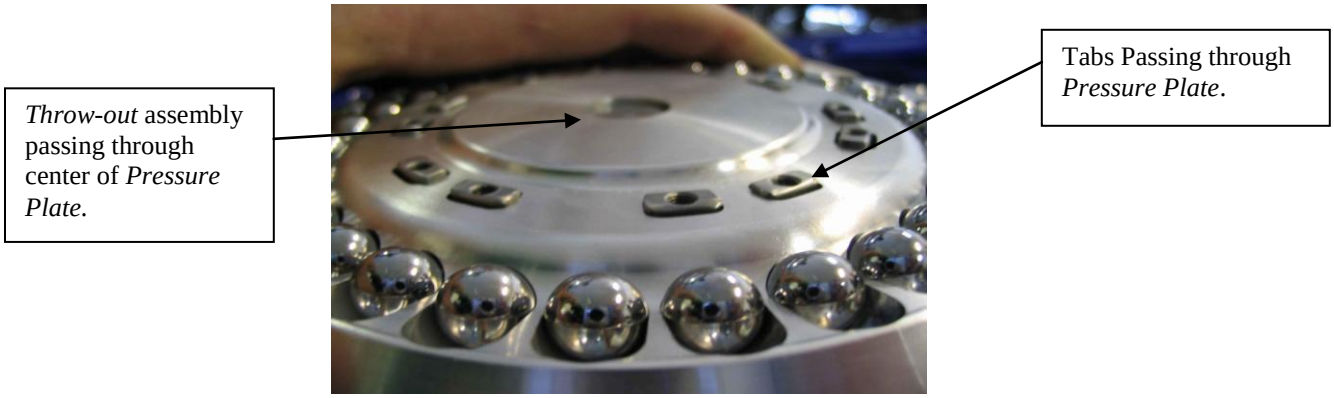
Warning: Perform the next step away from the bike to keep the balls from falling into the transmission.

16. Place a small amount of oil in each of the *Pressure Plates* ball grooves. Place 1 *Tungsten Carbide ball* followed by 3 *steel balls*. Repeat the pattern until all slots contain a ball. **It is very important to have the *Tungsten Carbide* balls spaced evenly around the pressure plate.**

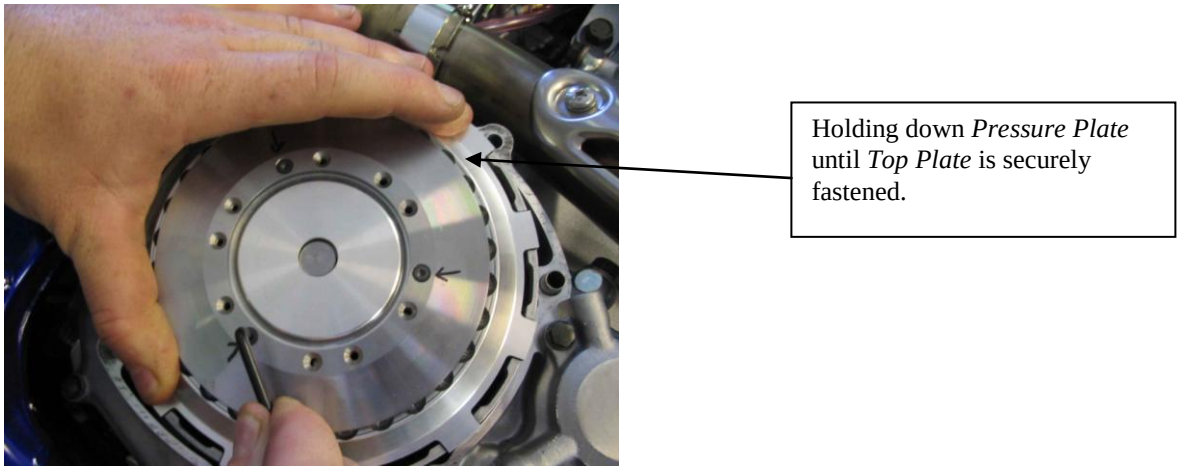
Note: Tungsten carbide balls are about twice as heavy as the regular steel balls and also have a slightly duller gray color.

17. Place the *Pressure Plate* with the 40 Balls in place over the z-Start *Lower Assembly*. Index the outer tabs of the *Pressure Plate* into the windows of the clutch basket. **The outer tabs of the Pressure Plate must rest in the same clutch basket windows that the outer tabs of the friction disks do.**

    Also insure that the tabs of the *Lower Assembly* pass through the associated cut-outs in the *Pressure Plate.* Make sure the top of the *Rekluse Throw-out* assembly passes through the hole in the center of the z-Start *Pressure Plate*. **See following picture.**



18. While holding the *Pressure Plate* down place the *Top Plate* over the *Pressure Plate* and fasten it to the tabs of the Lower Assembly with three of the M3 screws, through the three marked holes in the *Top Plate.* Lightly tighten each screw using a 1/4 inch driver and the included Torx T10 driver tip. **See following picture.**

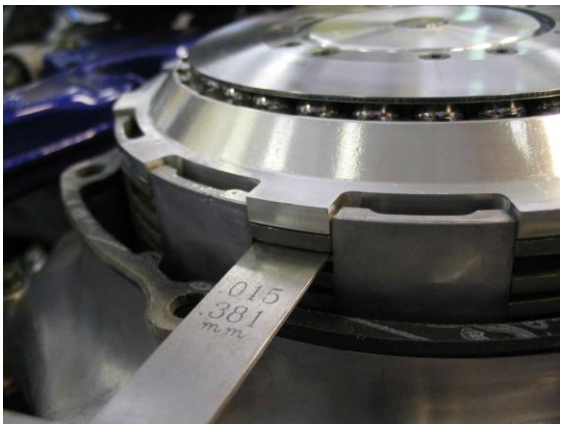


Note: You will have to overcome the z-Start *Wave Spring* and hold the Pressure Plate down until the 3 screws are securely fastened in order to tighten the Top Plate down properly.

Determine the installed gap of the Z-Start

19. Measure the installed gap of the z-Start. Two sets of feeler gauges are required to measure the Installed Gap. The feeler gauges must be placed between the top most **friction disk** and the top-most **steel drive plate** in the clutch pack 180 degrees apart. **See following pictures**.

    Note: Insert the 2 sets of feeler gauges directly across from one another (180 degrees apart) to avoid the clutch pack from rocking resulting in an inaccurate measurement. Find the thickest feeler gauge that still slides back and forth with slight resistance.



The installed gap should be between .035" (0.89mm) and.045" (1.14mm). If the gap is correct, move on to the next step. If the installed gap measurement is off, then the installed gap needs to be adjusted due to manufacturing variances in the bike's center clutch. . If the measurement is *greater than .045"* replace one *Rekluse .055" (1.4mm) drive plate* with a *Stock .062" (1.6mm) drive plate*.

Note: Be sure to review the included Break-in and Maintenance Guide for clutch pack wear adjustments.

Final Installation Steps

20. Using a small amount of Blue Loctite 243, install the rest of the M3 torx head screws and torque to 10 inch/pounds. 10 inch-pounds requires a good crank with the included Torx T10 driver tip, but be careful not to bend the head of the T10 driver tip. Remove the three marked M3 screws, add Loctite, and tighten.

    Note: Use 243 Loctite (Blue, oil resistant) to secure all M3 Torx screws

21. Re-install your clutch cover with the 2 included Rekluse *Clutch Cover Gaskets* (stacked together). Hand-tighten each of the clutch cover bolts, then torque to 6 to 8 foot/pounds in 2 steps.

    Warning: Both gaskets must be used or considerable clutch damage will result.

22. Stand the bike up and disconnect the wire to the neutral switch. The switch is located on the left side of the case directly behind the shift lever. A good way to disable the neutral switch is to simply remove the rubber cover, disconnect the wire and wrap it in electrical tape, then replace the rubber cover.

23. If you did **NOT** purchase the z-Start Perch Adjuster continue on to **step 24**.

    If you purchased the z-Start External Perch Adjuster, follow the instructions included with it and skip the rest of the instruction steps.

WARNING: After a 20 minute break-in period, the clutch plates will seat in and you must re-measure the Installed Gap to guarantee the Installed Gap is within the prescribed range—make drive plate adjustments if necessary. See step 18. Clutch break-in re-measurement of the Installed Gap is necessary whenever new clutch plates are installed.

WARNING: Refer to the "Safety Warnings" and "Break-in Tuning and Maintenance Guide" before operating the z-Start clutch.

24. Basic External Adjuster Install outlined below.

Basic External Adjuster Install

Note: Insure the return spring on the actuator arm is unhooked and no longer applying force to the actuator arm.

An extension spring is used to set the resistance on the pressure plate, which sets the engagement RPM of the z-Start Clutch. Two extension springs are provided in your kit:

- The light spring will give a narrow adjustment range for RPM engagement settings and will engage the clutch rapidly.

- The medium spring will allow for a wider range of RPM engagement settings and a medium engagement rate.

Slip one end of the spring into the portion of the bike's clutch actuator arm that holds the clutch cable. Thread the other end of the spring into the *External Adjuster Bolt*. Slide the *External Adjuster Bolt* into the clutch bracket and screw down one of the nuts onto the adjuster bolt.
-Continued on next page
Adjust your engagement by loosening the nut for a lower RPM Engagement or tighten the nut for a higher RPM Engagement. After making your initial adjustments, use the other nut to lock the *External Adjuster Bolt* into place.

Note: After adjustment is complete and spring anchor is set correctly remove spring and anchor, tighten lock nut against adjustable nut and put spring and anchor back in place, attach spring to clutch arm, see pictures above.

Long-term Wear Adjustment

As your clutch wears you will eventually exchange your 3 stock 0.062” drive plates back into the clutch pack for the 3 Rekluse 0.055” drive plates. Once this happens your next adjustment point will require you to configure the clutch pack as follows:

Addition Wear Adjustment Clutch Configuration from top to bottom:

Friction Plate
.055" Rekluse Steel Drive Plate
Friction Plate
.055" Rekluse Steel Drive Plate
Friction Plate
.055" Rekluse Steel Drive Plate
Friction Plate
.055" Rekluse Steel Drive Plate
.055" Rekluse Steel Drive Plate
Friction Plate
.055" Rekluse Steel Drive Plate
Friction Plate
.055" Rekluse Steel Drive Plate
Friction Plate
.055" Rekluse Steel Drive Plate
Friction Plate

Top (outer most)

Bottom (inner most)