Rekluse Motor Sports

The z-Start™ Clutch

Husqvarna

2006
TE450/TC450
TE510/TC510

Installation Guide

z-Start Revision 3.000
RMS156 – Husqvarna TE/TC450 06

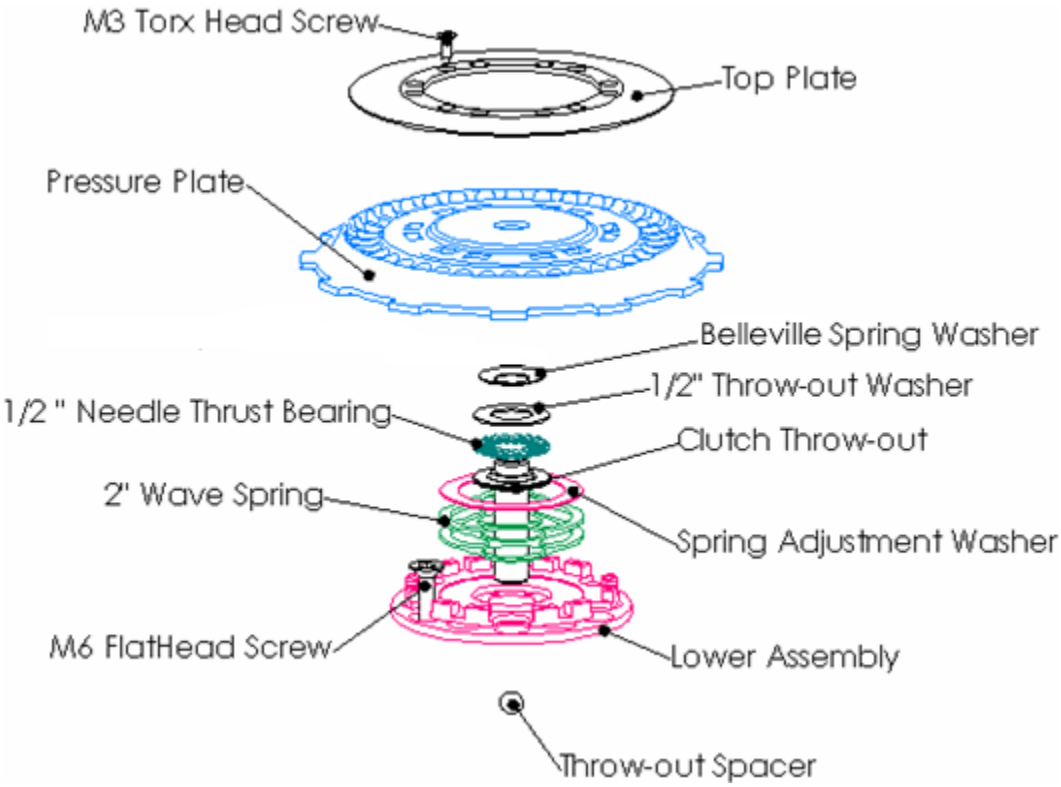
191-256
Manual Revision: 071906

Rekluse Motor Sports, inc.
110 E. 43rd Street
Boise, Idaho 83714
208-426-0659
support@rekluse.com

Required Tools

8mm socket	2 Sets of feeler gauges
10mm 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	6 x M6 Threaded Studs (to assist mounting)
Pressure Plate	6 x M6 Flat Head Screws
Lower Assembly	2" (51mm)Wave Spring (C200L2)
Clutch Throw-out	2" (51mm) Wave Spring (CS200L1)
1/4" Throw-out Spacer	2 x 2" (51mm) Wave Spring Adjustment Washer
½" (12.7mm) Throw-out Needle Thrust Bearing	12 x M3 #10 torx screws
½" (12.7mm) Flat Throw-out Thrust Washer	30 x 3/8" (9.53mm) balls
1 x 0.625" (15.9mm) Bellville Spring Washer	5 x 3/8" (9.53mm) Tungsten Carbide balls
7 x .055 (1.4mm) Drive plates	2 x Clutch Cover Gasket
24 x .010" (0.25mm)Mounting Shims	Quick Splice
6 x 0.26" (6.6mm) Mounting Spacers	

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.

- The z-Start only applies pressure to the hydraulic clutch system when the engine is running. **Pulling the clutch lever repeatedly during the install, or when the motorcycle is off and the z-Start is installed can damage your clutch system.**

- ***Be very careful not to drop any screws, washers 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

Note: Skip to step 1 if not installing the z-Start Brake Kit. Electric start equipped models with a clutch lever safety switch, need to complete the following steps if the clutch perch is going to be removed. The clutch lever safety switch requires the operator to pull the clutch lever in before the electric start will function.

- Bypass the safety switch activated by the clutch lever. Use the included *quick splice* (a) to connect the two wires (b), effectively bypassing the switch. Wrap the exposed ends with electrical tape and secure to the handle bars (c). See pictures (a) (b) (c) below.

Warning: Use caution when the wires are disconnected from the switch as one of them is hot. If the hot wire makes contact with any metal part of the motorcycle it will short out and blow the main fuse. Disconnecting the battery while completing this step will eliminate this from happening.

a  b  c 

1. 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 its 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.

2. Carefully lay the bike on its left side so the clutch-cover faces up.

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

4. Using a 5mm allen key or 10mm socket, remove the 6 bolts holding the stock pressure plate to the inner clutch hub. Lift off the pressure plate and the clutch lifter assembly. The clutch lifter assembly consists of the ***Clutch Throw-out***, a **bearing**, and a ***washer.***

   Pressure plate, 6 bolts and springs, and stock clutch lifter assembly are not reinstalled.\

Clutch Pack Configuration

5. Remove 5 of the stock .062 (1.6mm) steel drive plates from the clutch pack and replace them with 5 of the provided *Rekluse .055 (1.4mm) steel drive plates*.

   Note: At this point you will have 5 stock drive plates removed from you clutch pack.

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

Installing the Lower Assembly

6. Insert the included *M6 Threaded Studs* into the bike's center clutch stand-offs 2-3 turns. Carefully place 1 of the **0.26" *Mounting Spacers*** over each of the studs on top of the 6 center clutch stand-offs. **See picture below.**

Note: The following picture does not show the 0.26" Mounting Spacer—the 0.26" Mounting Spacers must be installed over each of the Standoffs.

Install M6 studs and carefully place the exact amount of spacer(s) over each stud.

7. Place the z-Start *Lower Assembly* over the M6 studs. (There are two sets of 6 holes in the L*ower Assembly.* Use the outer set of holes.

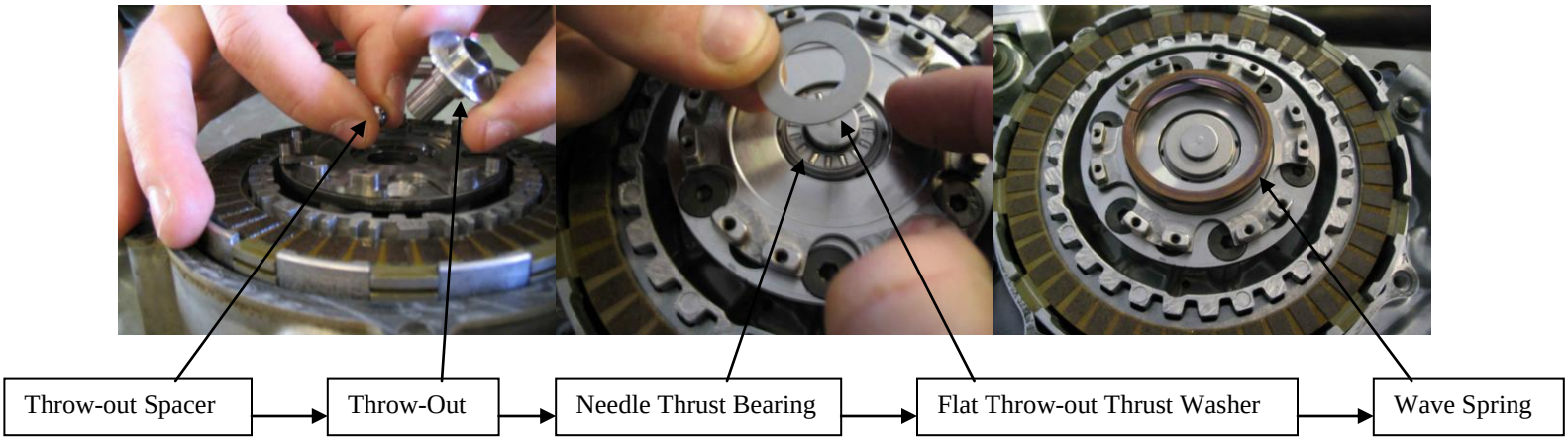
8. Carefully remove M6 studs one at a time and replace them with an *M6 flat head* ***screw*—apply blue Loctite 243 to each screw when installing**. Make sure none of the M*ounting Shims* fall out from under the z-Start *Lower Assembly*. Torque the M6 screws to 96 inch pounds. After the screws are torqued-down, the *Rotating Hub* should spin freely.

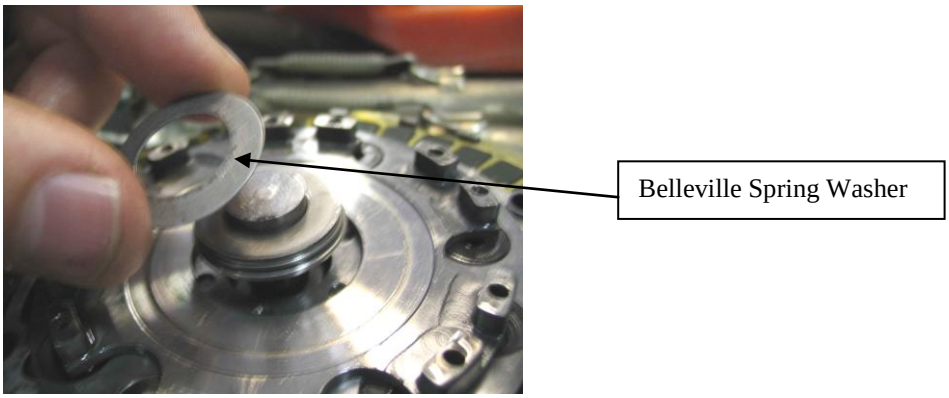
Assembling the Rekluse Throwout, Pressure Plate, and Top Plate

9. Guide the 1/4" ***Rekluse throw-out spacer ball*** followed by the ***Rekluse Clutch throw-out*** into the hole in the transmission input shaft. Be sure that the spacer is in place between the Rekluse Clutch throw-out and the throw-out shaft.

   Place the *½" Needle Thrust Bearing* on top of the Rekluse *Throw-out* followed by the *½" Throw-out Thrust Washer*. Place the Belleville Spring washer, curve side down, on top of the flat Thrust Washer.

   Place the *2" C200L1 Wave Spring* on top of the Lower Assembly. The *C200L Wave Spring* is the shorter of the two wave springs provided with the kit. This is our recommended setting for a low engagement RPM—refer to the chart on the last page of these instructions for other adjustment settings. **See following pictures.**





Warning: Perform the next step away from the bike to prevent balls form being dropped into the engine case.

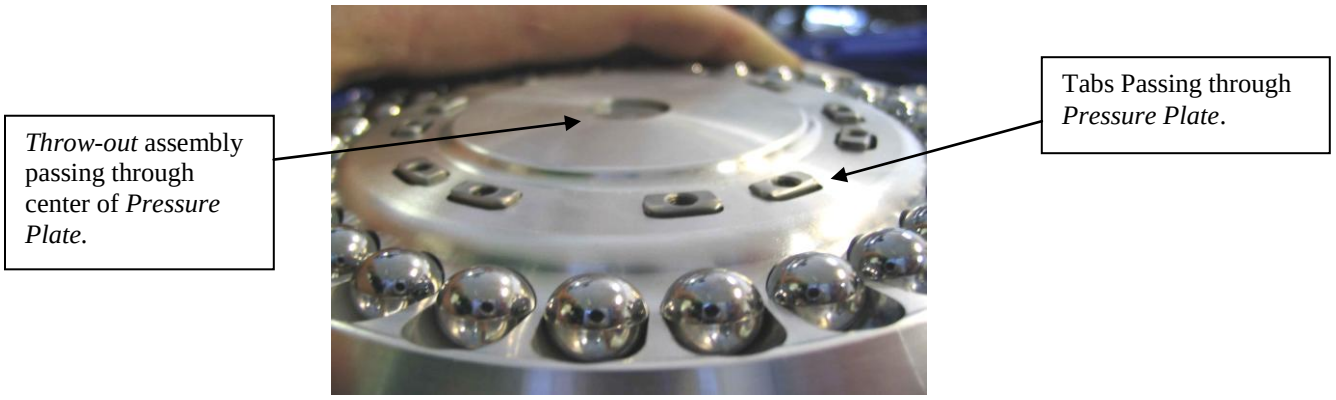
10. Place a small amount of oil in each of the *Pressure Plates* ball grooves. Place 1 *Tungsten Carbide ball* followed by 5 *steel balls*. Repeat the pattern until all slots contain a ball. **It is very important to have the *Tungsten Carbide* balls spaced evenly around the pressure plate.**

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

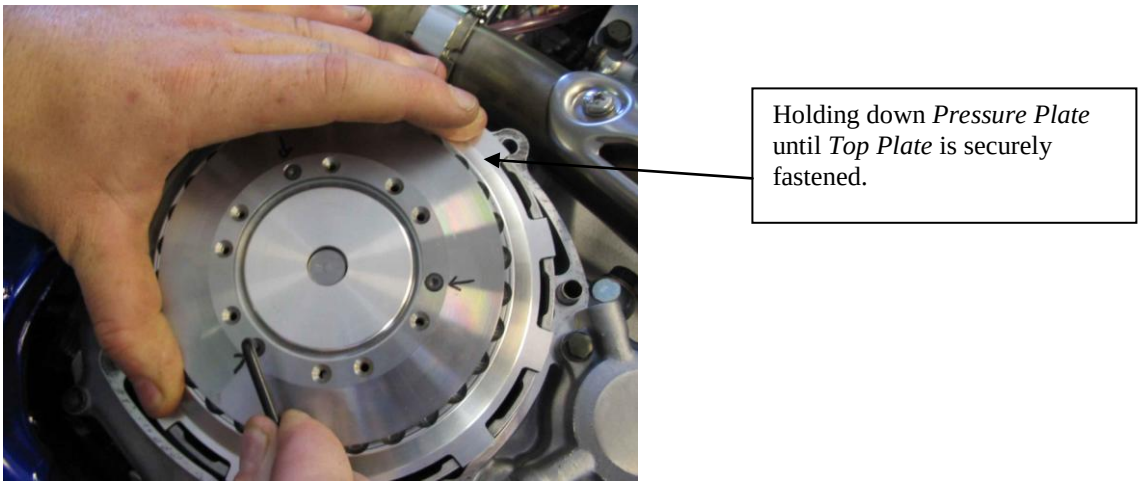
Note: The remaining steel balls are used for adjustment.

11. Place the *Pressure Plate* with the 30 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.**



12. 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.**

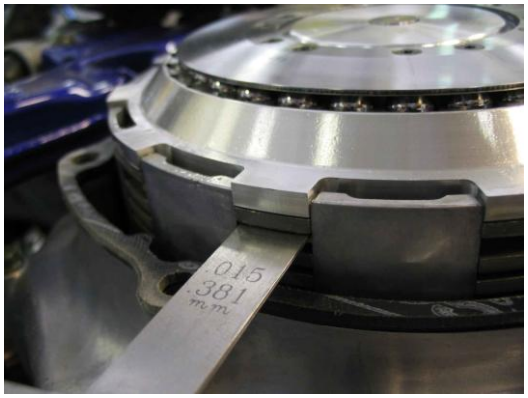


Note: You will have to overcome the z-Start *Wave Spring* and hold the Pressure Plate down until the 3 screws are securely fastened in order to tighten the Top Plate down properly.

Determine the installed gap of the Z-Start

13. 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 .030" (0.76mm) and .042" (1.07mm). The ideal installed gap for this model is .030"-.035". 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 .042"* replace one *Rekluse .055" (1.4mm) drive plate* with a stock .062 (1.6mm) drive plate. If the measurement is *less than.029"* replace one stock .062 (1.6mm) drive plate with a *Rekluse .055" (1.4mm) drive plate***.**

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

Final Installation Steps

14. 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 Loctite 243 (Blue, oil resistant) to secure all M3 Torx screws

15. Re-install your clutch cover with the included thicker Rekluse gaskets. **Rekluse gasket must be used or clutch damage will result.** Hand-tighten each of the clutch cover bolts, then torque to 6 to 8 foot/pounds in 2 steps. Replace the brake pedal.

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 13. 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.

Refer to the next page for adjustment recommendations for the z-Start.

Adjusting the z-Start Engagement RPM

The engine speed at which the z-Start begins to engage the clutch, also called the stall speed, can be adjusted. Included with the z-Start are two *2" Wave Springs* and two *2" Spring Adjustment Washers* to fine tune the z-Start stall speed. The *Wave Springs* and *Flat Steel Washers* are located inside the z-Start between the *Pressure Plate* and *Lower Assembly*. To adjust the stall speed, it is necessary to remove the engine side cover and the M3 screws holding the z-Start *Top Plate* to access the *Wave Spring and Flat Steel Washers.* Refer to the z-Start Parts View and the installation instructions for detailed information on how to change the *Wave Spring and Flat Steel Washer* configuration.

Use the following chart as a guideline for setting the stall speed. Remember many factors can affect the stall speed from bike to bike so the following chart is only a guideline. You can also make fine tuning adjustments by adjusting your idle speed.

CS200L1 Wave Spring	0 x Flat Washer	Lowest Stall Speed
CS200L1 Wave Spring	1 x Flat Washers	Low Stall Speed
C200L2 Wave Spring	2 x Flat Washers	Medium Low Stall Speed
C200L2 Wave Spring	0 x Flat Washers	Medium Stall Speed
C200L2 Wave Spring	1 x Flat Washers	Higher Stall Speed
C200L2 Wave Spring	2 x Flat Washers	Highest Stall Speed

Note: Going to 30 Steel balls and no Tungsten Carbide balls will give a slower engagement (less hit).

It is very important to have the *Tungsten Carbide* balls spaced evenly around the Pressure Plate.