

# **Rekluse Motor Sports**

## **The z-Start™ Clutch**

### **DRZ400 KLX400**

#### **Installation Guide**

Copyright 2002 Rekluse Motor Sports  
z-Start Revision 3.000

RMS160 – KLX400 DRZ400 z-Start Clutch

191-260

Manual Revision: 103105

Rekluse Motor Sports, inc.

110 E. 43<sup>rd</sup> Street

Boise, Idaho 83714

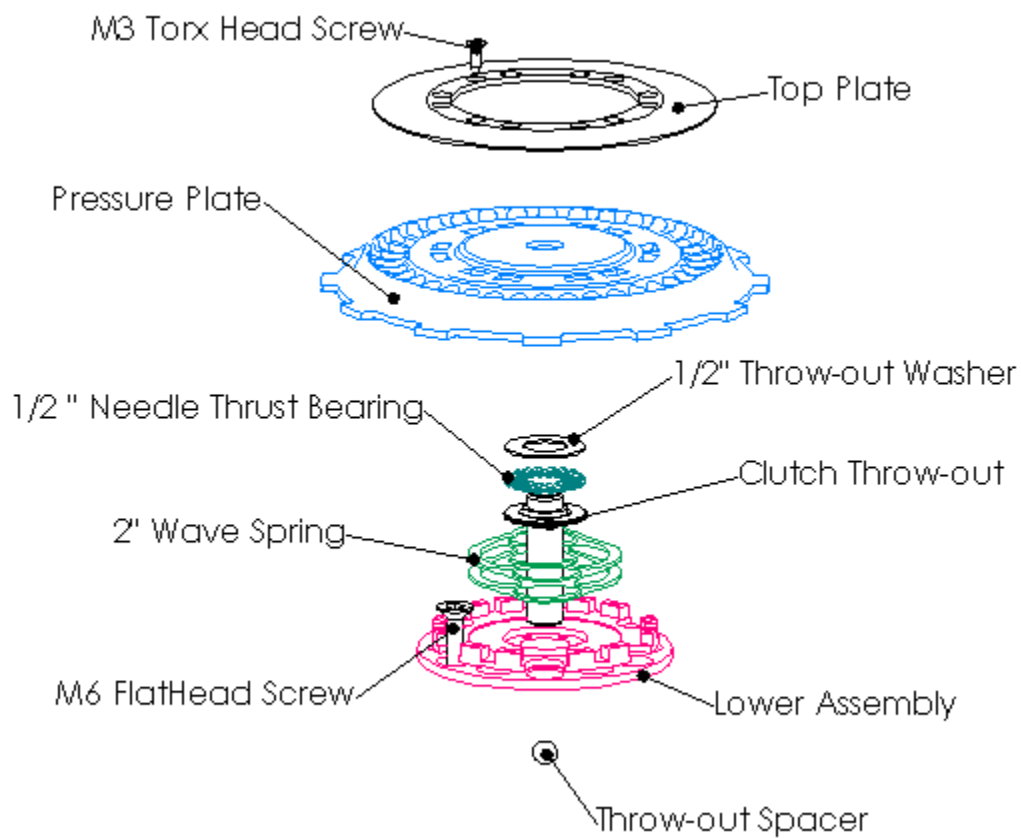
208-426-0659

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 Flat Head Screws
Pressure Plate	18 x .010" (0.25mm) Mounting Shims
Lower Assembly	2" (51mm) Wave Spring (C200L1)
Clutch Throw-out	2" (51mm) Wave Spring (C200L2)
7 x .047" (1.2mm) Drive Plates	2 x 2" (51mm) Spring Adjustment Washers
1 x .055 (1.4mm) Drive Plate – for wear adjustment	12 x M3 #10 torx screws
½" (12.7mm) Throw-out Needle Thrust Bearing	30 x 3/8" (9.53mm) balls
½" (12.7mm) Flat Throw-out Thrust Washer	10 x 3/8" (9.53mm) Tungsten Carbide balls
6 x M6 Threaded Studs (to assist mounting)	1 Clutch Cover Gasket
Quick Splice	

## 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

**Note:** 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.



1. Disconnect your clutch cable at your clutch lever.
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 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.
3. Lay the motorcycle over on its left side.
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 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**.

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

## Clutch Pack Configuration

6. Remove the clutch boss spring from the bottom of your clutch pack. This will require you to pull out your entire clutch pack, but keep it in order because once you've removed the clutch boss spring you need to re-insert your clutch pack in the exact same order.

**Note:** The clutch boss spring consists of two rings, one bevel shaped and one flat, that locate in the inner diameter of the bottom friction disk. **You must remove both rings.**

7. Remove 7 of the stock .062 steel drive plates from the clutch pack and replace them with 7 of the provided *Rekluse .047 steel drive plates*.

**Note:** At this point you will have 7 stock drive plates removed from your clutch pack.

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

## Installing the Lower Assembly

8. Place the included M6 studs into the bike's center clutch standoffs and place 2 Mounting Shims over each standoff. **See picture below.**

**Install M6 studs and carefully place exactly 2 Mounting Shims over each stud.**



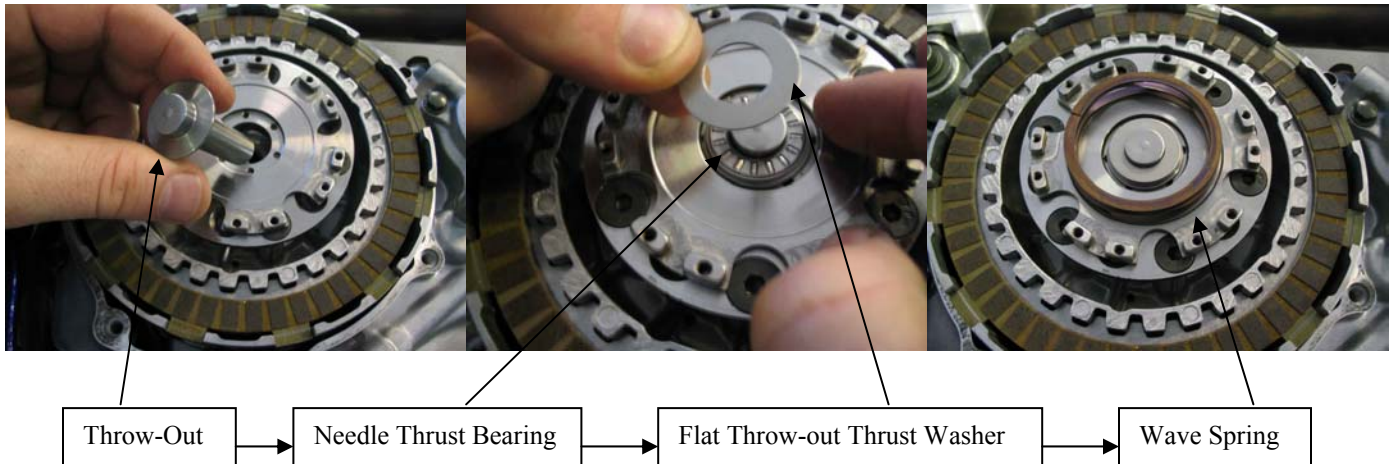
9. Place the z-Start *Lower Assembly* over the M6 Threaded Studs so the Threaded Studs pass through the corresponding set of 6 countersunk holes in the z-Start *Lower Assembly*.
10. Carefully remove M6 Threaded Studs one at a time and replace them with M6 Flat Head Screws. **Apply a small amount of blue Loctite 243 to each screw** and torque to 96 inch pounds with a torque wrench. **Make sure none of the Mounting Shims fall out from under the z-Start Lower Assembly.** After the screws are torqued-down, check to ensure the top part of the *Lower Assembly* spins freely.

## Assembling the Rekluse Throwout, Pressure Plate, and Top Plate

11. Guide the **Rekluse Clutch throw-out** into the hole in the transmission input shaft.

Place the  $\frac{1}{2}$ " *Needle Thrust Bearing* on top of the *Rekluse Throw-out* followed by the  $\frac{1}{2}$ " *Throw-out Thrust Washer*.

Place the 2" *C200L2 Wave Spring* on top of the Lower Assembly. The C200L2 Wave Spring is the one that came packaged inside the z-Start and it is the taller of the 2 Wave Springs included. Refer to the Spring Adjustment chart at the end of this manual for setting descriptions and options. **See following pictures.**



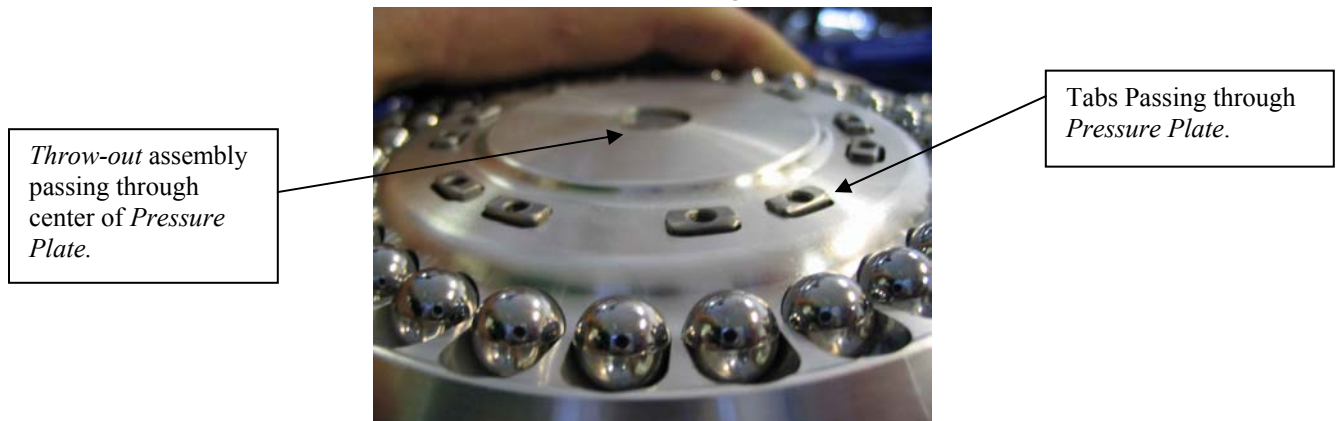
**Warning:** Perform the next step away from the bike to keep the balls from falling into the transmission.

12. Place a small amount of oil in each of the *Pressure Plates* ball grooves. Place 1 *Tungsten Carbide ball* followed by 2 *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:** The extra steel balls are available for further clutch engagement adjustment—see chart at end of this manual.

13. 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.**



14. 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.**



Holding down *Pressure Plate* until *Top Plate* is securely fastened.

**Note:** You will have to 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

15. 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 measure between .030" (0.76mm) and .042" (1.07mm).** 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 .047" (1.2mm) drive plate* with a .062" (1.6mm) stock drive plate.

**Note:** 1 x .055" Drive Plate is included to make finer wear adjustments between stock and Rekluse .047" drive plates.

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

## Final Installation Steps

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

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

**Warning:** Rekluse gasket must be used or considerable clutch damage will result.

- Re-attach the clutch cable to the clutch lever. It is necessary to adjust the slack in the clutch cable so that there is 5-10 mm of play at the end of the clutch lever when the engine is revved to at least 4500 RPM. **Start the engine and ensure the transmission is in neutral, rev the engine to 4500 RPM's, and adjust the clutch cable so that when the engine is revved there is 5-10 mm of play at the end of the clutch lever.**

**Warning:** The z-Start allows the bike to idle in gear just like if it were in neutral. Quickly revving the engine with the transmission in gear will cause the bike to lunge forward unexpectedly—always ensure the transmission is in neutral before adjusting the clutch cable slack.

**Warning:** Improper clutch-cable slack adjustment can cause excessive clutch slip and ultimately clutch failure.

**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 15. 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.**

### 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 is a 2" *Wave Spring* and two 2" *Spring Adjustment Washers* to fine tune the z-Start stall speed. The *Wave Spring* and *Spring Adjustment Washers* locate 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 Spring Adjustment Washer* configuration.

**Use the following chart on the next page** 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	1 x Flat Washer	Low Stall Speed (typically just above idle)
CS200L1 Wave Spring	2 x Flat Washers	Medium Stall Speed
C200L2 Wave Spring	0 x Flat Washers	Medium Stall Speed (very near previous setup)
C200L2 Wave Spring	1 x Flat Washers	High Stall Speed

**Note:** do not use more than 1 Flat Washer with the *C200L2 Wave Spring*.

**Further Adjustment Option:** If you would like to adjust more clutch slip than the above chart allows, you can reduce the number of Tungsten Carbide balls. Your Tungsten Carbide options are 3,5,6,and 10 balls. Always maintain 30 total balls in the z-Start Pressure Plate and always maintain equal spacing between the Tungsten Carbide balls inside the z-Start Pressure Plate.