

# **Rekluse Motor Sports**

## **The z-Start™ Clutch**

**KTM**

**250sx/exc/mxc/xc/xc-w**

**300exc/mxc/xc/xc-w**

### **Installation Guide**

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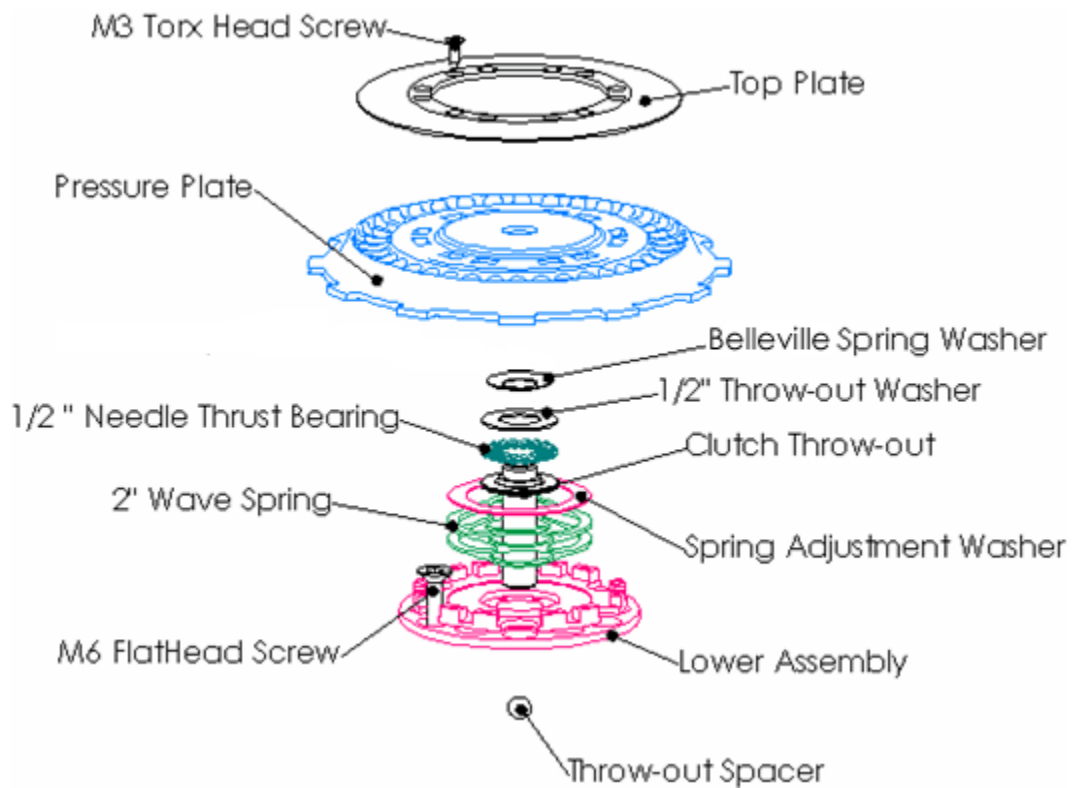
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## Required Tools

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	2" (51mm) Wave Spring (CS200L1)
Lower Assembly	2 x 2" (51mm) Wave Spring Adjustment Washer
Clutch Throw-out	2" (51mm) Wave Spring (C200L2)
7 x .055 (1.4mm) Drive Plates	12 x M3 #10 torx screws
9/32" (7.15mm) ball Throw-out Spacer	6 x M6 Threaded Studs (to assist mounting)
1/2" (12.7mm) Throw-out Needle Thrust Bearing	30 x 3/8" (9.53mm) balls
1/2" (12.7mm) Flat Throw-out Thrust Washer	66 x .010" (0.25mm) Mounting Shims
1 x 0.625" (15.9mm) Bellville Spring Washer	1 Clutch Cover Gasket

## 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

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 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.
2. Remove the nuts and bolts holding the rear brake lever on, to remove the lever for installation.
3. Remove the clutch cover bolts with an 8mm socket and carefully remove the clutch cover.
4. Using a 10mm socket, remove the bolts holding the 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.

**Note:** The washer can get stuck to the backside of the stock pressure plate. Also see pictures on Step 12 to see sample of the lifter, bearing and washer if needed.

- Remove the top friction disc and steel drive plate—**do not re-install**.

Next, remove three stock .047" drive plates; replace them with four Rekluse .055" drive plates by stacking two together under the top-most friction disk.

**Note:** At this point you will have 1 stock friction disk and 4 stock steel drive plates removed from the clutch.

**Warning:** Before finishing the install the top most part of clutch pack must be a friction disk. Your configuration should now be as follows:

- 1 stock friction plate
- 2 .055" Rekluse steel plates
- 1 stock friction plate
- 1 .055" Rekluse steel plate
- 1 stock friction plate
- 1 .055" Rekluse steel plate
- 1 stock friction plate
- 1 .047" stock steel plate
- 1 stock friction plate
- 1 .047" stock steel plate
- 1 stock friction plate
- 1 .047" stock steel plate
- 1 stock friction plate
- 1 .047" stock steel plate
- 1 stock friction plate

Top of pack (finish here)



Bottom of pack (start here)

### Installing the Lower Assembly

- Place the included M6 studs into the bike's center clutch standoffs and place 11 Mounting Shims over each standoff. **See picture below.**

**Install M6 studs and carefully place exactly 11 *Mounting Shims* over each stud.**



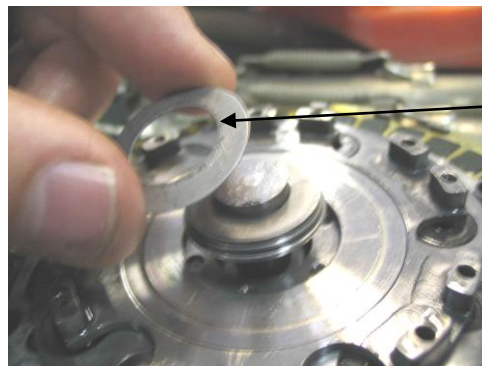
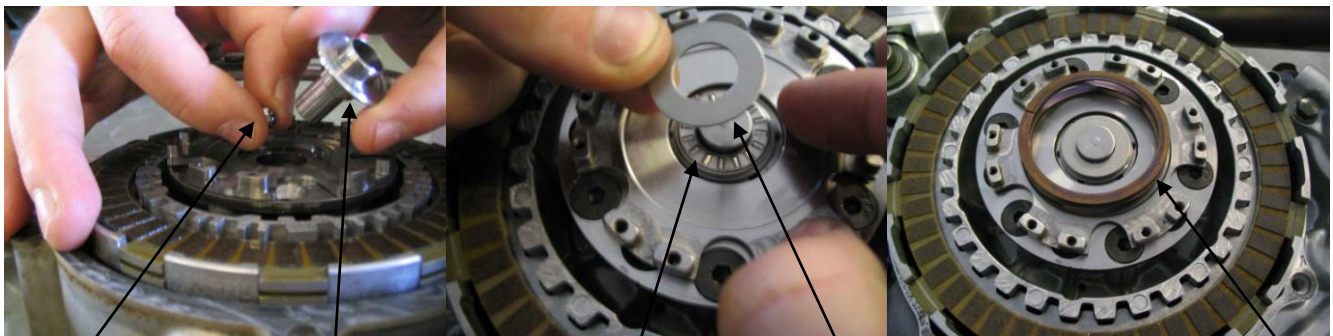
- Place the z-Start *Lower Assembly* over the M6 Threaded Studs so the Threaded Studs pass through the corresponding set of 6 countersunk holes in the z-Start *Lower Assembly*.
- Carefully remove M6 Threaded Studs one at a time and replace them with M6 Flat Head Screws. **Apply a small amount of blue 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

9. Guide the  $\frac{9}{32}$ " **Rekluse throw-out spacer ball** followed by the **Rekluse Clutch throw-out** over the stock throwout rod. Be sure that the spacer ball is in place between the Rekluse Clutch throw-out and the throw-out 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**. Next, place the *belleville spring washer* concave side down on top of the flat  $\frac{1}{2}$ " **Throw-out Washer**.

Finally, Place the 2" **CS200L1 Wave Spring** on top of the Lower Assembly. Refer to the Spring Adjustment chart at the end of this manual for setting descriptions and options. The CS200L1 Wave Spring is the one that came packaged inside the z-Start and it is shorter than the C200L2. **See following pictures.**



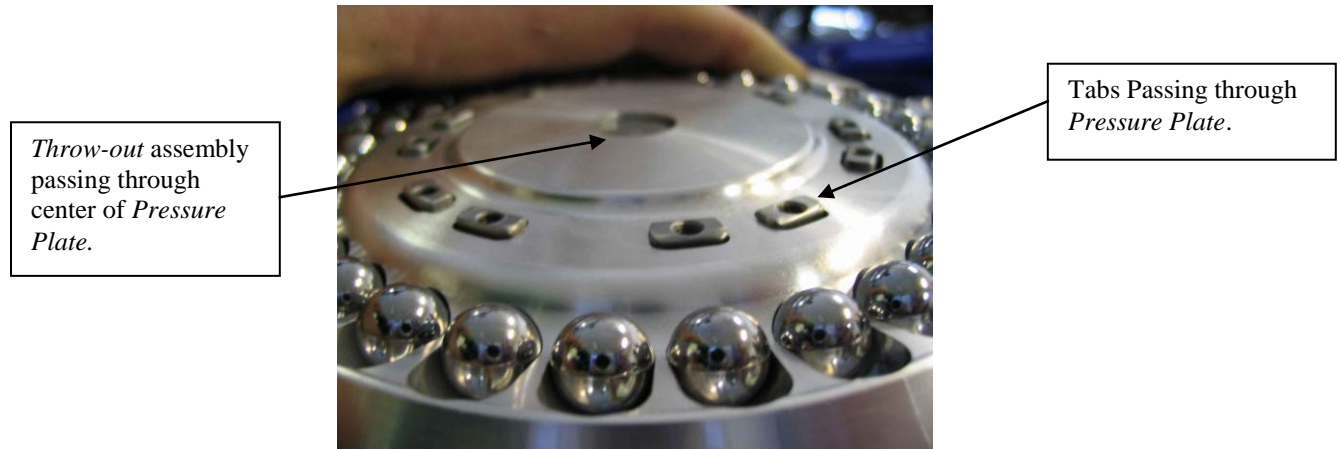
Belleville Spring Washer

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

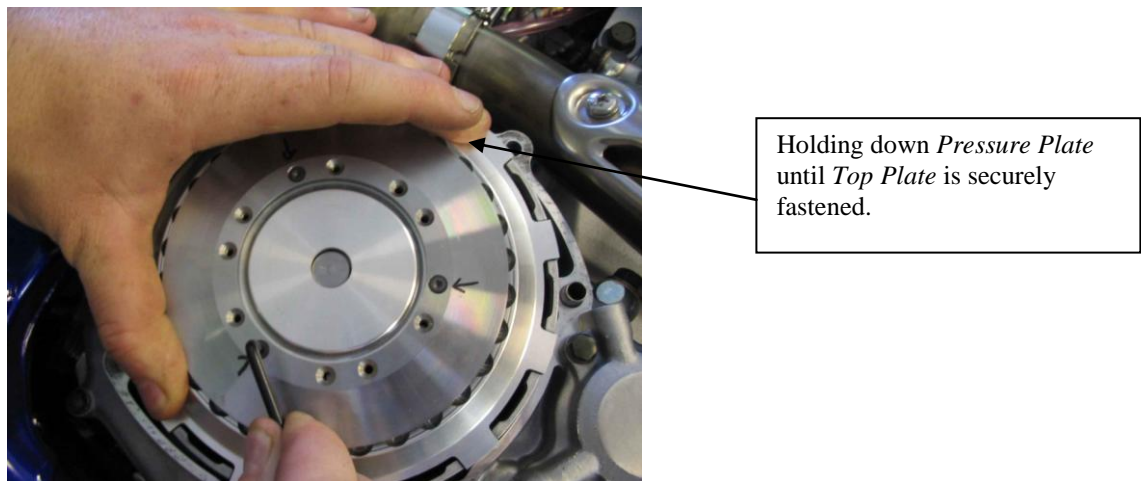
10. Place a small amount of oil into the ball slots of the *Pressure Plate* and insert the 30  $\frac{3}{8}$ " **Balls**.

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 must be 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 stock .047" (1.2mm) drive plate with a *Rekluse .055" (1.4mm) drive plate*. If the measurement is *less than* .030" replace one *Rekluse .055" (1.4mm) drive plate* with a stock .047" (1.2mm) 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.
15. Re-install your clutch cover **with the included gasket**. Hand-tighten each of the clutch cover bolts, then torque to 6 to 8 foot/pounds in 2 steps.

**Note:** You must use the provided clutch cover gasket or clutch cover damage may result.

**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.**

### 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	0 x Flat Washers	Very Low Stall Speed (generally below a low idle)
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.**