

Rekluse Motor Sports

The z-Start™ Clutch

KTM 250 SXF

Installation Guide

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z-Start Revision 3.000
RMS138 – KTM 250 SXF

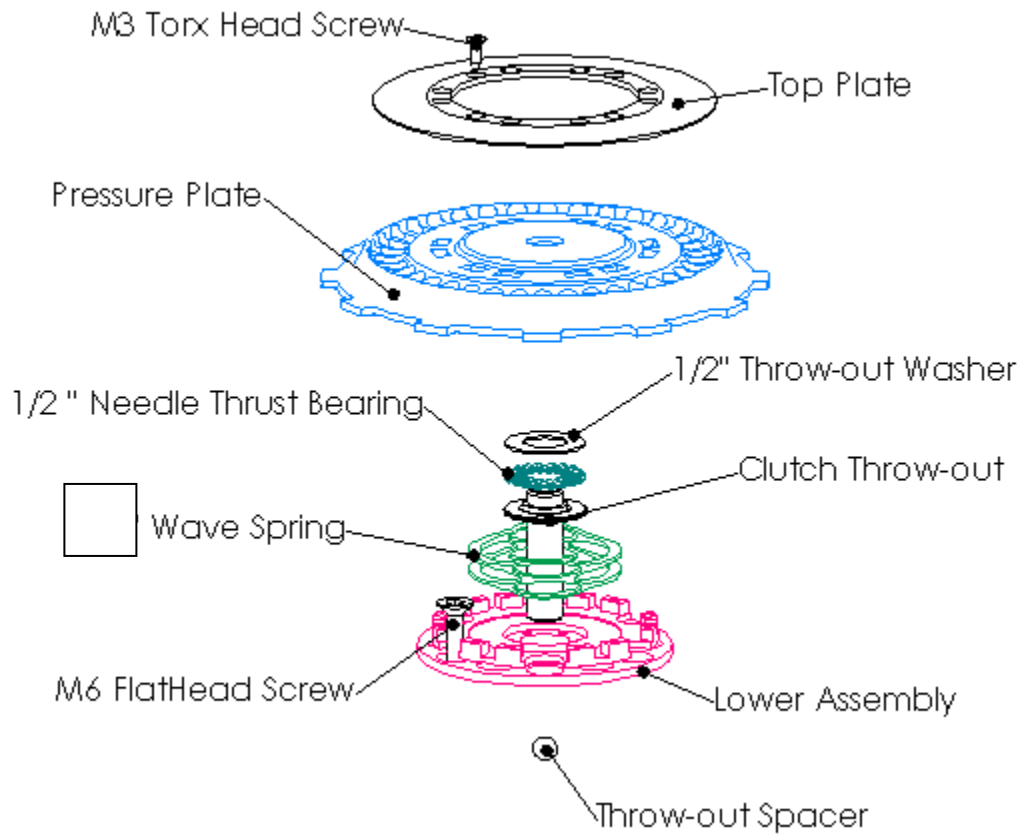
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Required Tools

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	5 x M6 Threaded Studs (to assist mounting)
Pressure Plate	5 x M6 Flat Head Screws
Lower Assembly	80 x .010" (0.25mm) Mounting Shims
Clutch Throw-out	1.375" (35mm) Wave Spring (C137L2)
1/4" (6.35mm) ball Throw-out Spacer	1.375" (35mm) Wave Spring (C137L3)
1/2" (12.7mm) Throw-out Needle Thrust Bearing	10 x M3 #10 torx screws
1/2" (12.7mm) Flat Throw-out Thrust Washer	40 x 5/16" (7.94mm) balls
1 x 0.625" (15.9mm) Bellville Spring Washer	10 x 5/16" (7.94mm) Tungsten Carbide balls
7 Rekluse .040" (1.0mm) steel drive plates	1 Clutch Cover Gasket
	2 Rekluse .047" (1.2mm) steel drive plates

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, 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. 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. Lay the motorcycle over on its left side.

3. Remove the rear brake lever so you have easy access to the clutch cover.
4. Remove the clutch cover bolts with an 8mm socket and carefully remove the clutch cover.
5. Using an 8-mm 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, stock throw-out, and 5 bolts and springs are not reinstalled.

Clutch Pack Configuration

6. Remove 7 of the stock .055" steel drive plates and replace them with 7 of the *Rekluse .040"* steel drive plates starting at the top of the clutch pack and working your way down.

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

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

Installing the Lower Assembly

7. Place the included M6 studs into the bike's center clutch standoffs and place 1 Mounting Shims over each standoff. **See picture below.**

Install M6 studs and carefully place exactly 1 *Mounting Shims* over each stud.



8. Place the z-Start *Lower Assembly* over the M6 Threaded Studs so the Threaded Studs pass through the corresponding set of 5 countersunk holes in the z-Start *Lower Assembly*. There are 2 sets of 5 countersunk holes, this model makes use of the inner set.
9. 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.

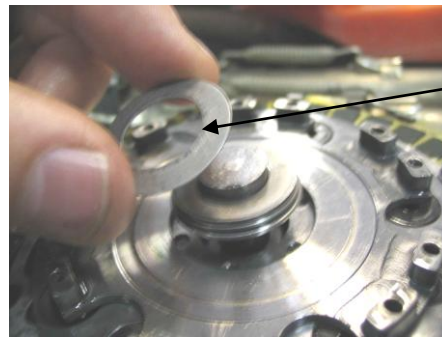
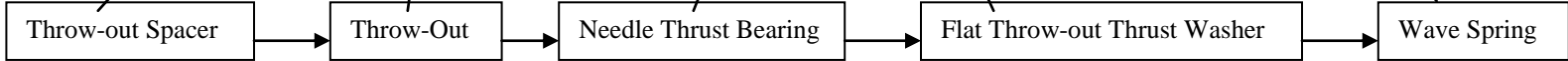
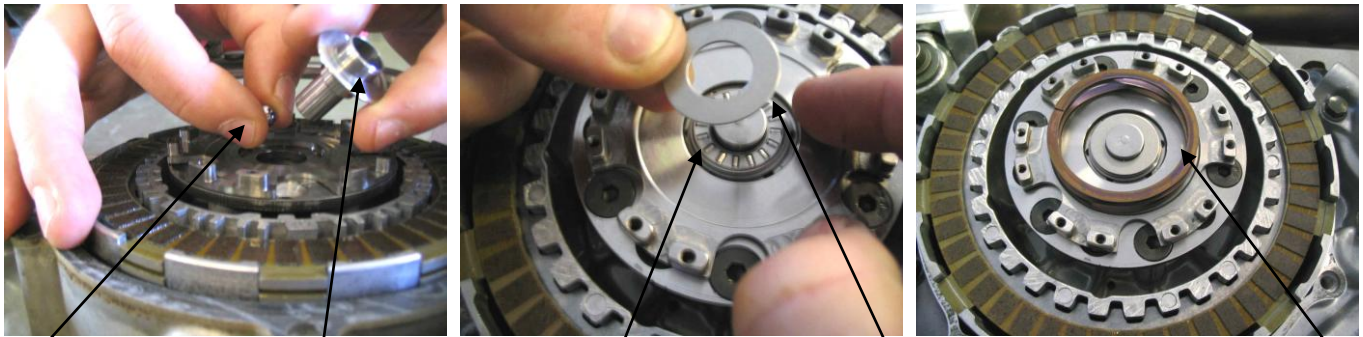
Assembling the Rekluse Throwout, Pressure Plate, and Top Plate

10. Guide the 1/4" **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 rod.

Place the 1/2" **Needle Thrust Bearing** on top of the **Rekluse Throw-out** followed by the 1/2" **Throw-out Thrust Washer**. Place the Belleville Spring washer, curve side down, on top of the flat Thrust Washer.

Place the **C137L2 Wave Spring** on top of the Lower Assembly. This is the shorter of the 2 springs included in the kit and is not the one that came packaged inside of the clutch.

This is our recommended setting for engagement RPM—refer to the chart on the last page of these instructions for other adjustment settings. **See following pictures.**



Belleville Spring Washer

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

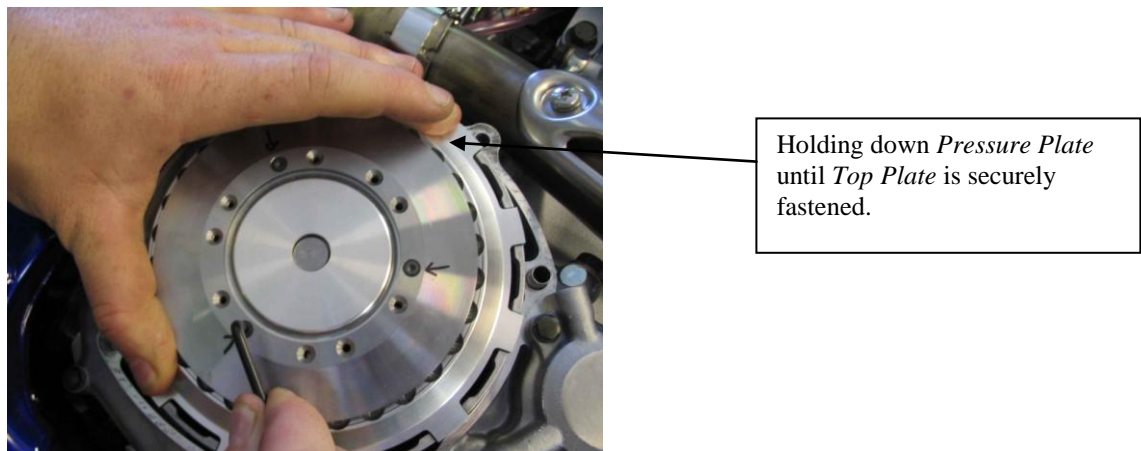
11. Place a small amount of oil into the ball slots of the **Pressure Plate**. Place 1 Tungsten Carbide ball followed by 7 steel balls. Repeat the pattern until all slots contain a ball. **It is very important to space the Tungsten Carbide balls evenly around the pressure plate.**

12. 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.**



13. 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

14. 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* .040" (1.0mm) with one *Rekluse* .047" (1.2mm) drive plate or a stock .055" drive plate as necessary to get the correct installed gap.

Note: Two *Rekluse* .047" drive plates are included for finer clutch wear adjustments between Stock .055" and *Rekluse* .040" 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

15. 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.
16. 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. **The included gasket must be used or significant clutch damage will 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 14. 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 are two *Wave Springs* and 10 Tungsten Carbide balls to fine tune the z-Start engagement. The *Wave Spring* is located inside the z-Start between the *Pressure Plate* and *Lower Assembly*. To adjust the stall speed, it is necessary to remove the clutch cover and the M3 screws holding the z-Start *Top Plate* to access the *Wave Spring*. Refer to the z-Start Parts View and the installation instructions for detailed information on how to change the *Wave Spring*.

Using more Tungsten Carbide balls will cause the clutch to engage faster and closer to engine idle speed. Using fewer will delay clutch engagement. **Always space tungsten carbide balls evenly around the Pressure Plate to maintain proper balance of the clutch.**

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.

Note: After testing your z-Start clutch, if it is desired to have it engage at a different RPM, then refer to the following chart for Wave Spring and ball combinations:

C137L2 Wave Spring	10 x TC Balls & 30 Steel balls	Low Engagement RPM (typically just above idle)
C137L2 Wave Spring	5 x TC Balls & 35 Steel balls	Medium-Low Engagement RPM
C137L2 Wave Spring	All Steel Balls	High Engagement RPM
C137L3 Wave Spring	10 x TC Balls & 30 Steel balls	Medium-Low Engagement RPM
C137L3 Wave Spring	5 x TC Balls & 35 Steel balls	Medium- Engagement RPM
C137L3 Wave Spring	All Steel Balls	Highest Engagement RPM

Key: -TC = Tungsten Carbide.

The chart is based on having 40 total balls in the Pressure Plate at all settings.
-The C137L2 Wave Spring is shorter than the C137L3.