

Rekluse Motor Sports

The z-Start™ Clutch

Cannondale

Installation Guide

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z-Start Revision 3.000
RMS105 – Cannondale

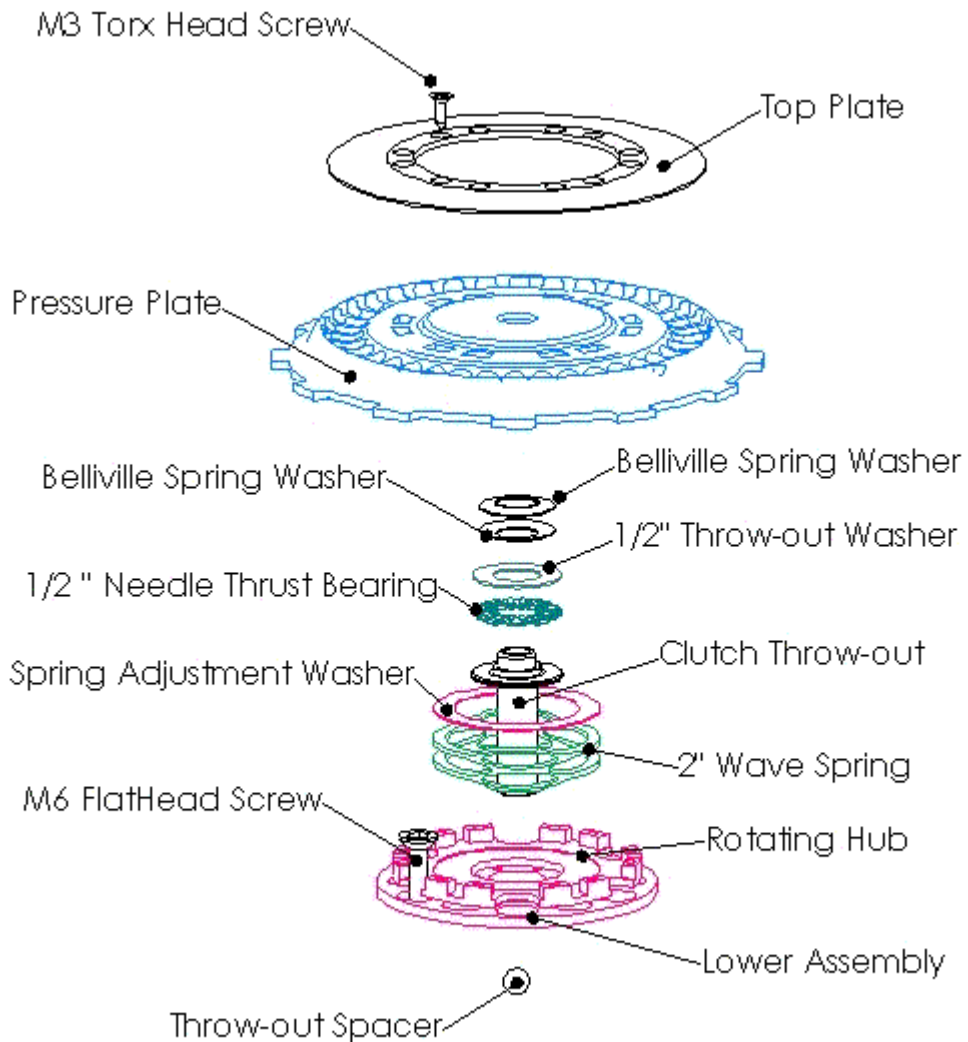
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Required Tools

6mm socket	2 Sets of feeler gauges
10mm socket	Inch Pound Torque Wrench
4mm allen key socket	T10 torx head driver (included)
3mm allen	Blue Loctite 243 (oil resistant)

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	80 x .010" (0.25mm) Mounting Shims
Lower Assembly	6 x M6 Flat Head Screws
Clutch Throw-out	2" (51mm) Wave Spring (C200L1)
9/32" (6.35mm) ball Throw-out Spacer	2" (51 mm) Wave Spring (C200L2)
1/2" (12.7mm) Throw-out Needle Thrust Bearing	2 x 2" (51mm) Wave Spring Adjustment Washer
1/2" (12.7mm) Flat Throw-out Thrust Washer	12 x M3 #10 torx screws
1 x 0.625" (15.9mm) Bellville Spring Washer	30 x 3/8" (9.53mm) balls
	15 x 3/8" (9.53mm) Tungsten Carbide balls

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. Drain the gas out of the fuel tank.

Quad: Lean the quad against a fixed stationary object at a suitable angle so that the quad is stable. Place blocks or stands under front and rear wheels to prevent the quad from falling. When Quad is tipped on its side be prepared to catch the excess gas and oil in a suitable container to prevent a fire hazard.

Motorcycle: Lay the motorcycle on its right side so the clutch cover is facing up.

2. Remove the shift lever.
3. Remove the clutch cover bolts with a 6mm 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, bearing, and a ball bearing spacer**. The ball bearing spacer sits between the throw-out rod and the throw-out and can get stuck inside the backside of the throw-out.

Stock Pressure plate, stock throw-out, ball bearing spacer, 6 bolts, and springs are not reinstalled.

5. Remove the top most steel drive disk so that the top of your clutch pack is a friction disk.

Note: The top steel drive disk does not go back into your clutch pack.

Warning: The top of your clutch pack must be a friction disk or you will damage the z-Start Pressure Plate.

Installing the Lower Assembly

6. Place the included M6 Threaded Studs into the bike's center clutch standoffs 2-3 turns, and place 12 Mounting Shims over each standoff. **See picture below.**

Install M6 studs and carefully place exactly 12 Mounting Shims over each stud.



7. Place the z-Start *Lower Assembly* over the Center Clutch so that the Threaded Studs studs pass through the corresponding set of 6 counter sunk holes in the z-Start *Lower Assembly*.
8. 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 screws are torqued-down, the top part of the *Lower Assembly* should spin freely.

Measuring Installed Gap

9. This step measures the Installed gap of the z-Start assembly by measuring how far the tabs of the *Lower Assembly* pass through their corresponding windows in the *Pressure Plate* when the *Pressure Plate* is engaging the clutch pack.

Place the z-Start *Pressure Plate* 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 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 windows in the *Pressure Plate*. Push the *Pressure Plate* down so it is engaging the top friction disk of the clutch pack. See following picture.



- Using the *Top Plate* as a straight edge, place the *Top Plate*, counter-sink side down, on top of the tabs of the *Lower Assembly*. Insert the largest feeler gauge that can slide smoothly between the *Top Plate* and *Pressure Plate*. Be sure to insert the gauge all the way into the center ring of the *Pressure Plate* **See pictures below**.

Note: In order to get an accurate measurement it is necessary to keep equal pressure on the *Top Plate* to keep the *Lower Assembly* from rocking. Write down the size in thousand's of an inch **here:** _____.



- Your measurement above needs to be $.025''$ to $.035''$. If it is not, you need to exchange stock or Rekluse drive plates to get the measurement in the prescribed range. For example, if you measure $.040''$, remove one of the one of the stock $.040''$ steel drive plates and replace it with one of the Rekluse $.047''$ drive plates.

When your drive plate configuration achieves the correct measurement, remove the z-Start *Pressure Plate* and continue.

Assembling the Rekluse Throwout, Pressure Plate, and Top Plate

12. Guide the 9/32" **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 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 2" **C200L2 Wave Spring** on top of the Lower Assembly. The **CS200L1 Wave Spring** is the taller of the two wave springs provided with the kit. This is our recommended setting for a medium engagement RPM—refer to the chart on the last page of these instructions for other adjustment settings. **See following pictures.**



Throw-out Spacer

Throw-Out

Needle Thrust Bearing

Flat Throw-out Thrust Washer

Wave Spring



Belleville Spring Washer

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

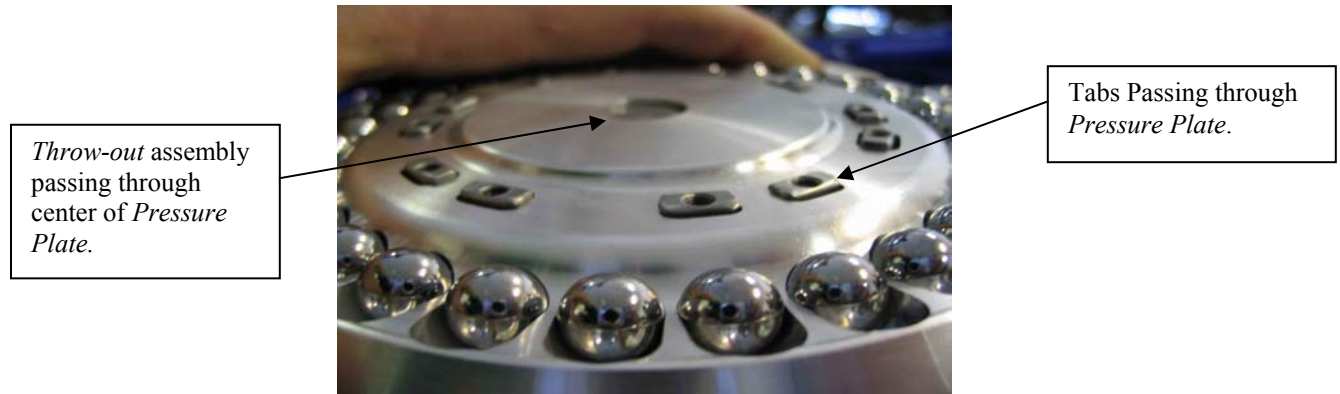
13. Place a small amount of oil in each of the **Pressure Plates** ball grooves. Place 1 **Tungsten Carbide ball** followed by 1 **steel ball**. Repeat the pattern until all slots contain a ball. **It is very important to have the Tungsten Carbide balls spaced evenly around the Pressure Plate.**

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

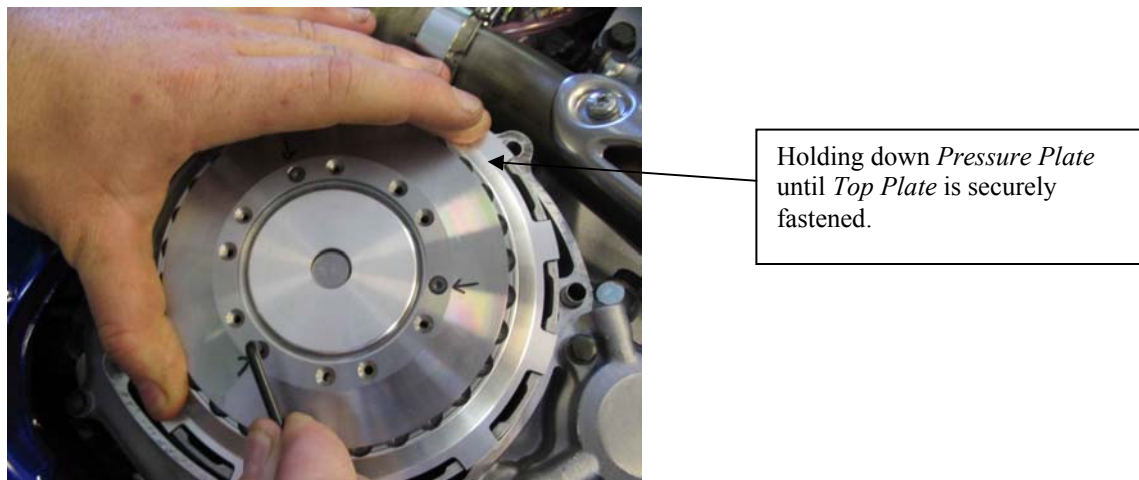
Note: The remaining steel balls are used for adjustment.

14. 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.**



15. 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 on the *Top Plate*, and lightly tighten each screw. **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.

Final Installation Steps

16. Using a small amount of Blue Loctite 243, put in the rest of the torx head M-3 screws and torque M3 torx screws to 10 inch/pounds. 10 inch-pounds requires a good hard crank with the included T10 key, but be careful not to bend the head of the T10 key. Remove the three marked M-3 screws, add Loctite, and tighten.

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

17. Re-install your clutch cover with the stock gasket. Hand-tighten each of the clutch cover bolts, then torque to 6 to 8 foot/pounds in 2 steps.
18. Re-install your shifter lever.

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

Refer to the following chart 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 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*.

Note: If your clutch still hits too hard after going through all the above internal spring set-ups, then you can drop your Tungsten Carbide ball count down to 10.