



## **BASIC UPGRADE KIT INSTRUCTIONS FOR RETRO 150**

### **Kit includes the following:**

- 1. N-MP-03503 Gear Sets 14 X 38 GY6 150cc engine improved gears**
- 2. N-MP-05206-1 Racing Variator, Main Torque Spring, Rollers, Backing Plate, Fan, Clutch Springs**
- 3. CB GY6 7.5G Additional roller weights for new combinations of take off speed or high end speed. In total kit brings two sets of weights for you to set to your preference of take off / top end speed. – See roller section explanation**

One of the easiest ways to improve the overall power response and acceleration is to improve the variator. This is also known as the front pulley, front variable transmission, or variator transmission. OEM variators are designed to only work in a set amount of gear ratios. In the case of the Retro 150 we are changing the gear ratios as well as the variator and weights. The new racing variators allow the vehicle to use a greater range of ratios. These ratios allow for both better acceleration and more top end speed.

By upgrading to the new racing variator you should see substantial improvement in overall acceleration of your new vehicle. Just follow these easy steps.



### **Step 1:**

Set up the Retro on a table or workbench and begin by disconnecting bolts to standard OEM transmission box. Make sure to leave a clean area to set up the screws and bolts left over from the face plate. Next remove all of the screws that secure the cover then simply pull it outward.



The part you will be replacing will be the original variator with a new and improved MRP racing version.



Continue with step 1. Now remove the cover.

Be Careful and make sure to pull out the cover evenly.

This is what it looks like once its open.



Step 2: Now that the transmission cover is off make sure to identify the parts we are changing. On the far left is the variator, in the center is the transmission belt, and on the far right is the clutch bell cover and the clutch

Step 3: Now that you are familiar with the set up. You will now be faced with two pulleys. Our main focus is the one on the left which we identified earlier known as the Variator. Start by removing the nut that secures the variator in place. (To remove both it and the nut that secures the variator, use an impact gun as this will allow you to remove them with out having to hold the pulleys in place.)



Replace driving plate and kick start gear



Now you see the original variator and the belt.  
Proceed to remove them.

Step 4: Remove the transmission belt and the remove the original variator. Replace old variator with new variator and new roller weights

### Roller Weights:



- **We highly recommend that you begin by upgrading the variator roller weights before engaging in any performance upgrades. This is the simplest of upgrades and the least expensive for the consumer. We suggest stocking every size for every brand you carry in the store.**

**This is a minimal investment and offers a maximum return. The main rule for tuning variators is: the lighter the roller the more rpm's are needed to push the rolls outwards through centrifugal motion to set the gear change in motion. Heavier roller weights need lower rpm's to start moving. Heavier roller weights = slower take off speed, more acceleration, = higher maximum speed. Lighter roller weights = faster take off speed, less acceleration = lower achievable speed. The right balance is an individual choice since a scooter racer will want heavier weights to achieve a higher overall speed so that they might be faster at full throttle. For daily use a driver might prefer lighter weights for more power to take off faster at a stop light. We recommend you stock all of the sizes for the brands you sell due to the low cost and quick turnover of the product.**



It should now look like this. (Notice there is no variator, spacer, or belt) Step 5: Replace with new Racing variator and spacer. Install new variator and spacer. After installing replace belt over variator. Once installed make sure to tighten everything before closing the cover.

Now let's move on to the Clutch System.

# FIXING THE RETRO 150 CLUTCH, MAIN SPRING, AND GEARS



One of the easiest ways to improve acceleration is to improve the clutch system. OEM clutches are not designed for acceleration, but with a better clutch you should see substantial improvement in overall acceleration of your new vehicle. Just follow these easy steps.

## Step 1:

Set up the Retro 150 on a table or workbench and begin by disconnecting bolts to standard OEM transmission box. Make sure to leave a clean area to set up the screws and bolts left over from the face plate. Next remove all of the screws that secure the cover then simply pull it outward.

Step 2: Now that the transmission cover is off make sure to identify the parts we are changing. On the far left is the variator, in the center is the transmission belt, and on the far right is the clutch bell cover and the clutch



Identify Clutch – The clutch is in the rear and has a clutch bell cover.



Clutch



Main Spring

Step 3: Now that you are familiar with the set up. You will now be faced with two pulleys. Our main focus is the one on the right which we identified earlier known as the clutch or driven pulley. Start by removing the nut that secures the clutch in place. (To remove both it and the nut that secures the variator, use an impact gun as this will allow you to remove them with out having to hold the pulleys in place.)



Step 4: With it removed slide the clutch bell off the input shaft. Now slide the complete clutch assembly off the input shaft. With the clutch securely held down, unscrew the nut that holds the clutch assembly together. Use extreme caution.

The spring is under tremendous load. Once you have unbolted the nut and have the clutch separated from the pulleys, remove the stock spring which lies between the pulleys and the clutch. Replace it with the new spring provided.



After removing the clutch bell, clutch and spring proceed to changing the main spring.

**CHANGING THE SPRING**

The Main Spring that is stock on the Retro 150 must be changed to have better RPMs



Step 1 Remove the Stock Retro 150 Main Spring

Step 2 Place New MRP Main Spring on Clutch.



Step 2 Make sure to tighten with impact gun.  
Its important that the spring is on there tight and not loose.

Now move on to the gears on the Retro 150



Remove the stock rear gear



Then using a 10 to 20 ton press remove gently the gear



prepare to install the new MRP replacement 14 / 38 gear



press in new gear



replace on bike



Make sure gears lineup and close

Replace new clutch system with new main clutch spring





Next replace the stock clutch with the clutch from the power pack. If you do not have a race clutch you can always order one from MRP

Part # N-MP-05207 Dealer Cost \$30

If not use the clutch springs that are in the variator kit and replace the stock clutch springs for more rpms.

Compress the spring to bring the clutch closer to the pulleys align the indentations on the clutch with the corresponding ones found on the shaft. Align the nut that holds the clutch assembly together and turn until tight.

Make sure this nut is all the way down tight.

The force of the spring compounded with the revolutions of the engine can cause this spring to explode out of place if not properly secured. Place the clutch assembly back on-to the input shaft.

Place the clutch bell over the clutch assembly and push it as far back as it will go on the input shaft. Now tighten the nut that secures it to the input shaft using an impact gun. Pay extra close attention to the order in which the internal parts are removed as you will need to reassemble them in the exact reverse order as you removed them.

Note: Careful to keep the starter pinion in place as it is only held in place by the driven variator plate which acts as a fly wheel.



Now the tricky part; place the belt over the pulleys on the clutch side. Note: Some belts have arrows on them to determine orientation, be sure to follow them. (Arrows point in direction of rotation.) Next, compress the torque spring by pulling the two pulleys apart. Force the belt in-to this opening. This will allow for slack needed when fitting the outer half or driven half of the variator. Stretch the belt over the variator bushing and place the outer half of the variator on-to the shaft. Note: Be sure the starter pinion is in place and all the way back. Reassemble the fan, kick start gear, flat washer and nut back over the shaft and tighten with an impact gun.

Now place the cover over the pulleys and tighten down all of the bolts.



After replacing the cover make sure it looks like it originally did before the clutch replacement.

Be sure to reconnect the vent hose at the front of the front of the cover. Test the kick start lever by turning it over a few times to ensure the reassembly has been done correctly.

Prepare to close. Adjust belt and place engine cover back on scooter.

Should you have any questions do not hesitate to call us here at MRP – 305-599-8993

Written By



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DIAMO USA

