

# BROTHER® HL-2130 • TN410

## TONER CARTRIDGE REMANUFACTURING INSTRUCTIONS



BROTHER TN410 TONER CARTRIDGE

# REMANUFACTURING THE BROTHER HL-2130/DCP-7055 (TN410) TONER CARTRIDGE

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Introduced by Brother into specific markets (Argentina and Australia thus far), the low-cost HL-2130 printer and the multifunction DCP-7055 version are part of the HL-2 series. This laser engine recognizes a single type of cartridge (TN410), with specifications similar to previous models released to the market, such as the HL-2240/2270 (TN420/TN450).

The HL-2130 is a 600 x 600 DPI and HQ1200 (2400 x 600 DPI) engine. It comes with standard 8MB of memory (non-expandable) and runs off a 200MHz ARM9 processor.

In order to print the first page, the warm-up time is 25 seconds after being turned on, and the printing time is seven seconds after stand-by mode with an ambient temperature no lower than 70°. The lower tray has a 250-sheet capacity at 80g/m<sup>2</sup>, and the output tray can accumulate up to 100 printed sheets. The machine is capable of printing at a rate of 20 pages per minute in A4 size, and 21 ppm in Letter format.

It has a manual feed tray can allow up to 163g/m<sup>2</sup> paper media weight, and down to 105g/m<sup>2</sup> maximum from the tray.

In theoretical terms, the drum system of this model, HL-2130, is identical to those in the series HL-2240/2270; both use the same OPC unit, DR420, but not the same toner cartridge. The HL-2130 and the DCP-7055 do not accept the TN420 and TN450 cartridges, and vice versa; nor does the HL-2240/2270, or the TN410.

The TN410, that is of concern here, comes out of the box with a printer yield of 700 pages, and requires modification in order to be remanufactured and put to use once again. Brother's new TN410 replacement cartridge (1,000 pages) includes a flag gear system (or reset gear) in order to reset the counter and refresh the machine to print again, unlike the starter cartridge.

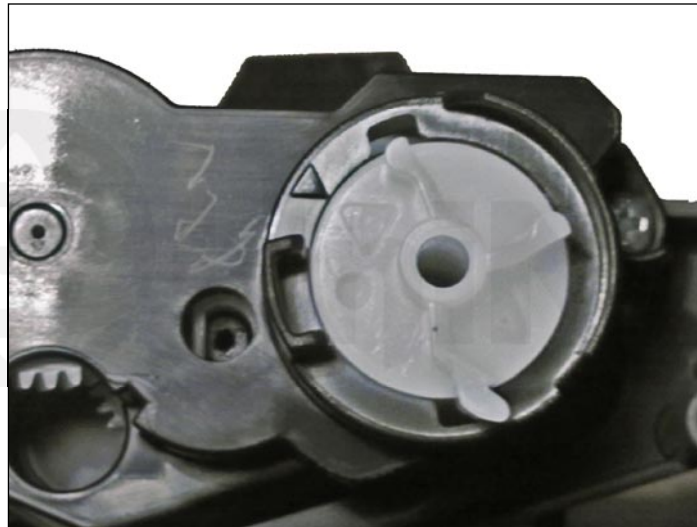
With the exception of non-interchangeability (solvable), the type of reset gear and toner charge volume; the functionality, working method and supplies necessary for remanufacturing this cartridge are identical to the TN420 and TN450.

At first glance, the TN410 and TN420 starter cartridges look identical, except for some changes to the cylinder heads for both, which impede or jam the closing of the printer lid in each case. As previously mentioned, the OPC drum unit for the DR420 is the same for both cartridges, as well as for TN450.



**Difference between the TN410 (upper cartridge) and TN420 (lower cartridge)**

The fuser assembly, the paper feed assembly, and the laser unit, possess a duty cycle of 50,000 pages. The printer also has a 50,000-page duty cycle; basically, when these parts wear out, so does the printer.



There is a reset gear that resets the machine's counters every time a new toner cartridge is installed. In order utilize the TN410 starter cartridge again, a special gear (called a flag gear) must be installed, and the left side must also be replaced with one that shows three actuator flags on it.



**Flag gear, spring, and end cap shown for TN410 and TN420**

### **CARTRIDGE PRINT THEORY**

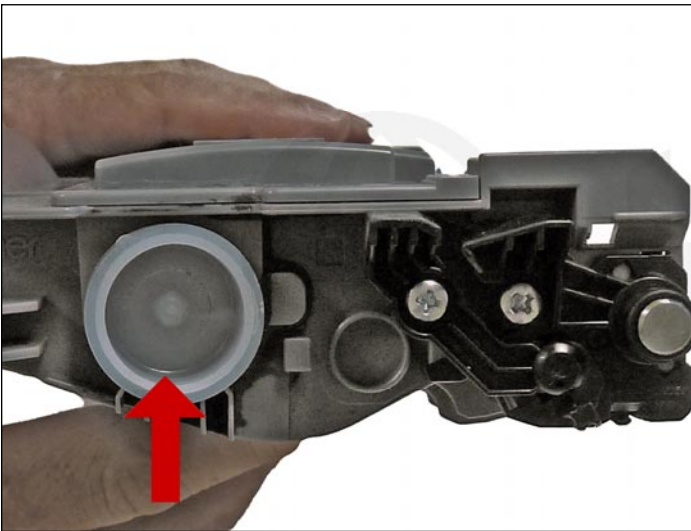
Basic printing theory is further explained in our Brother TN420/450 toner, and DR420 OPC drum cartridge remanufacturing instructions.

### **REQUIRED TOOLS**

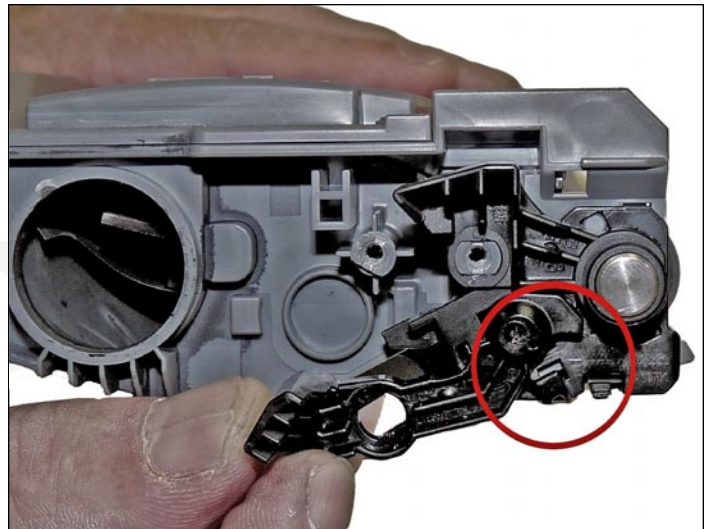
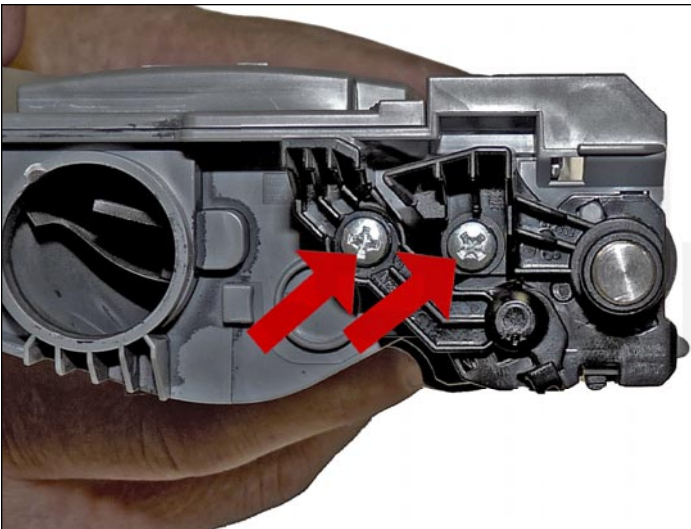
1. Vacuum approved for toner
2. Medium Phillips screwdriver
3. Small jeweler's screwdriver
4. Needle-nose pliers

### **REQUIRED SUPPLIES**

1. New replacement toner for use in the TN410 (45 grams)
2. Developer roller cover
3. Lint-free cloths
4. Conductive grease
5. White lithium grease for gears
6. Isopropyl alcohol



1. Vacuum the exterior of the cartridge. Remove the fill plug from the toner cartridge. Dump of the remaining toner and vacuum/blow out the cartridge.

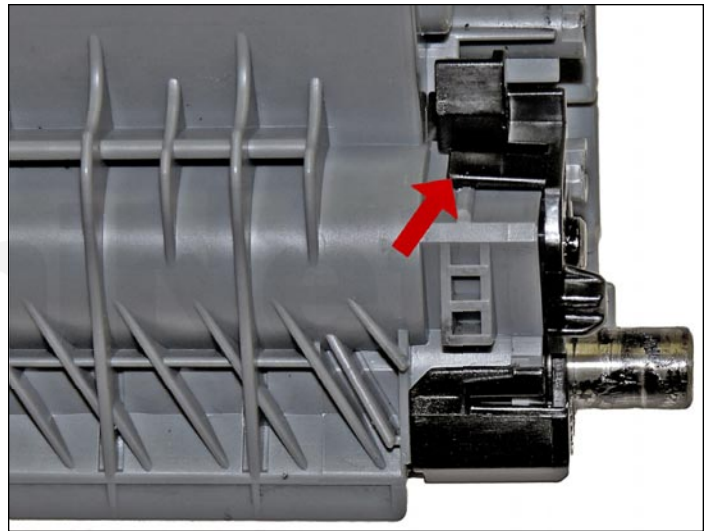
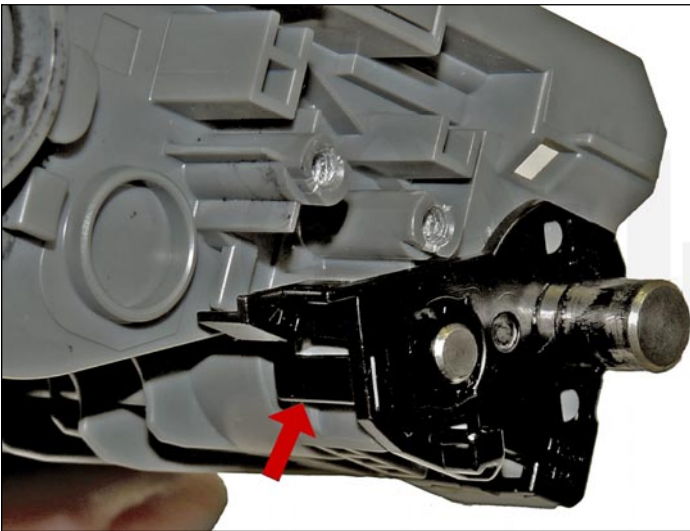


2. Remove the two screws on the non-gear side of the developer roller.

Remove the two plastic arms shown.

The smaller arm must be turned in order to release the lock.



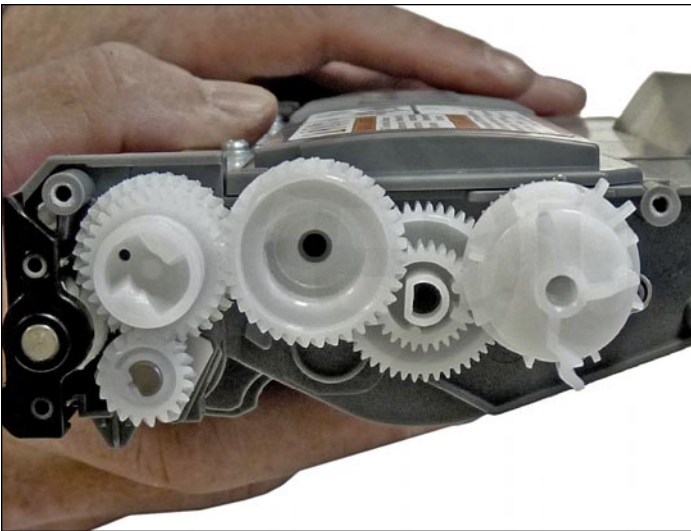


3. Remove the drum axle plate, lifting it up by the two tabs as indicated.

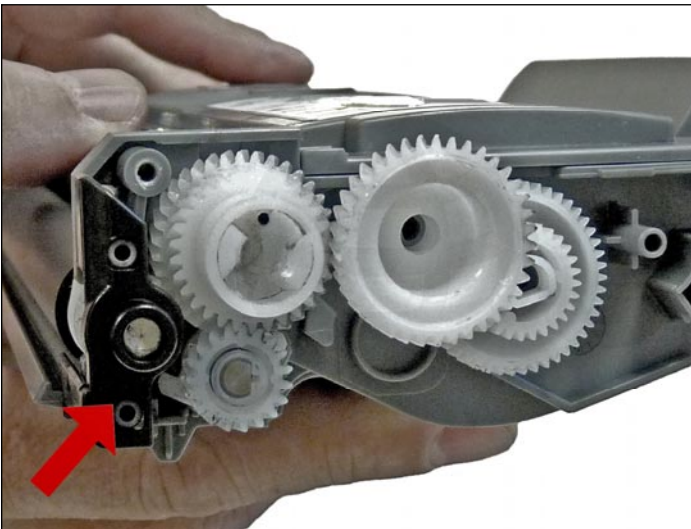
Lift the plate and take it out.



4. On the gear side, remove the two screws and cover plate.

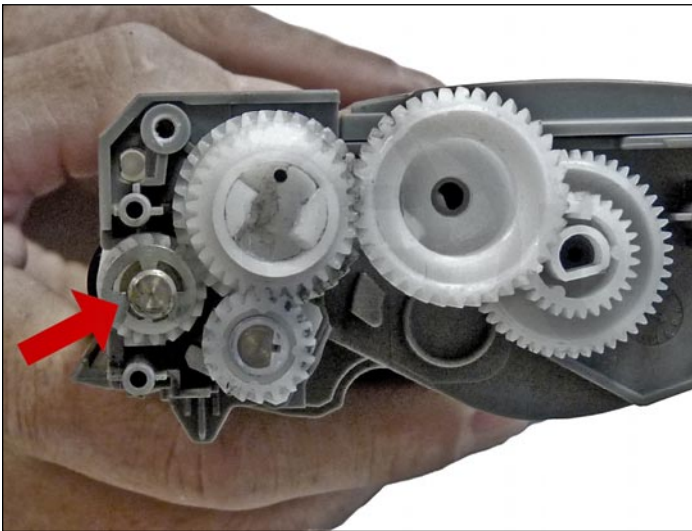


5. The reset gear is spring-loaded and must be positioned correctly for the printer to accept a new cartridge. The starter cartridge does not have a reset gear and the end cap blocked us from adding a new one. Starter cartridges will need to have a reset gear and replacement end cap before they can be used.

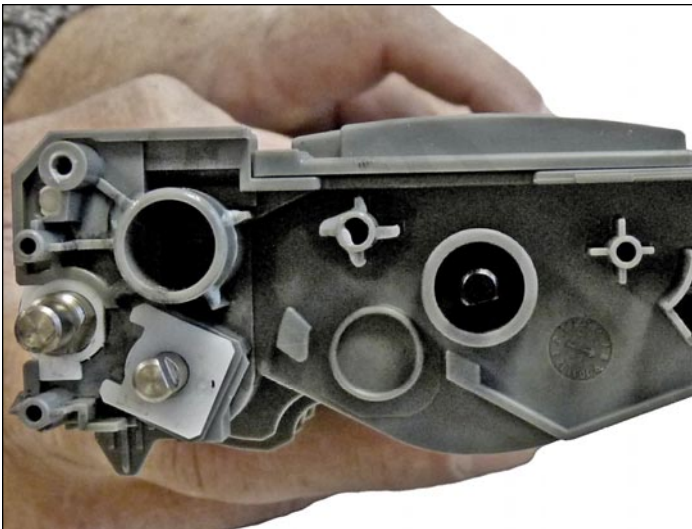


6. Remove the black plastic spacer from the developer roller shaft.

Press in on the black tab to release.



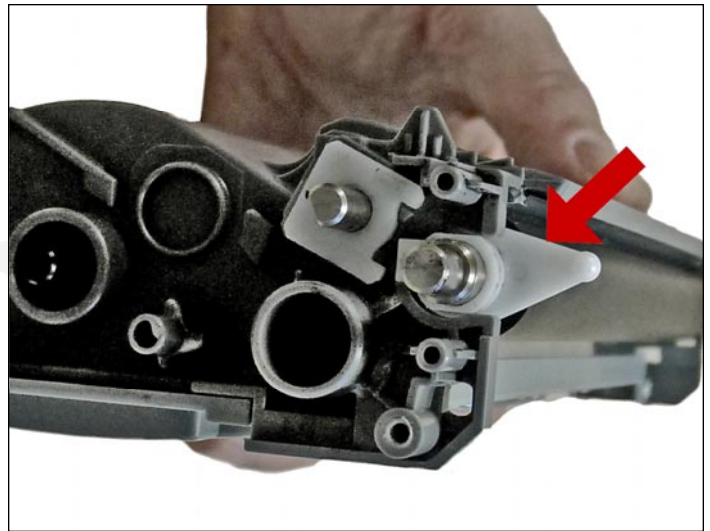
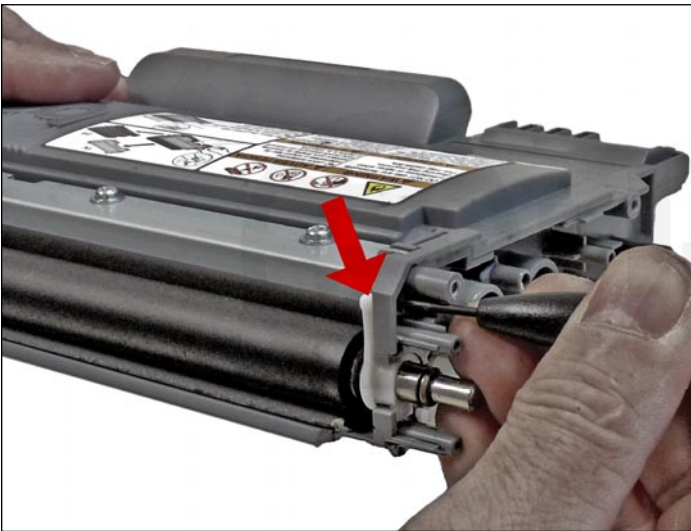
7. Remove the "E" ring.



8. Remove all of the remaining gears.

Do not lose the reset gear spring!

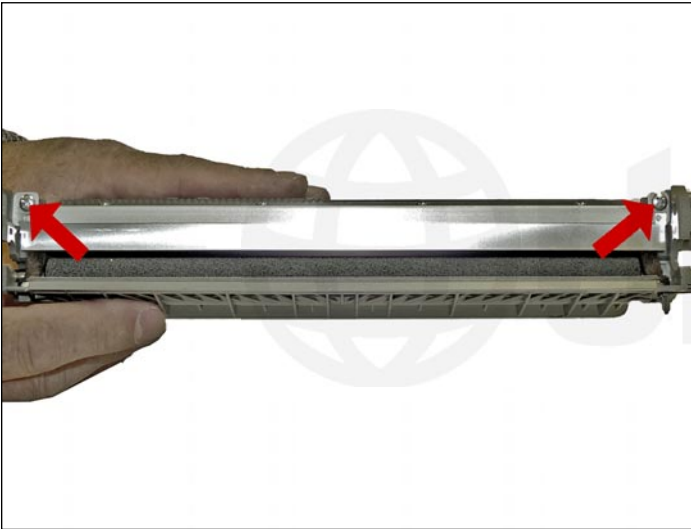




9. On the gear side of the developer roller, press in on the locking tab, and rotate the developer roller lock up, to release it.

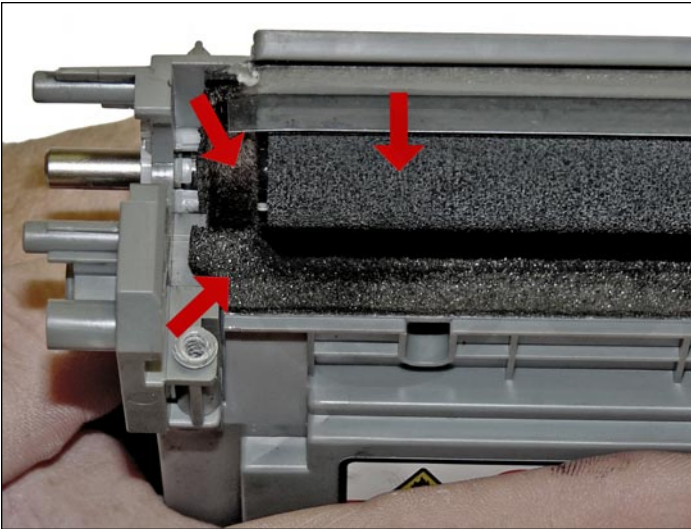


10. Remove the developer roller.

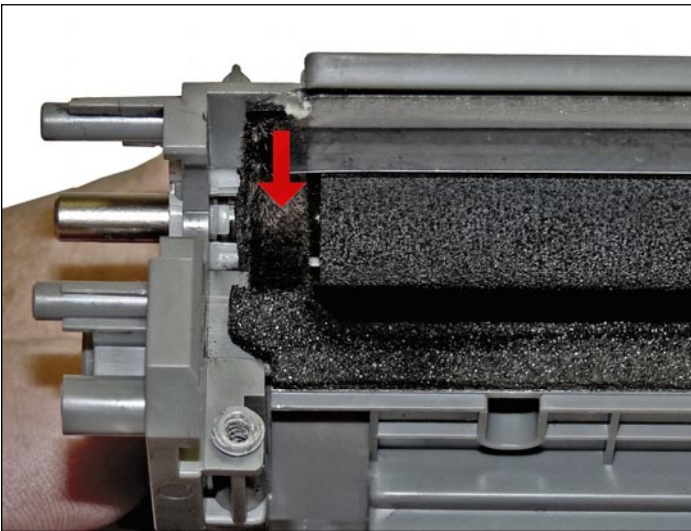


11. Remove the doctor blade screws and the doctor blade.

Unlike previous TN cartridges, the doctor blade is not physically attached to the seals, so it can be removed for cleaning.



12. Completely remove all remaining toner from the toner hopper, the foam feed-roller, and the doctor blade foam seals.



13. Inspect the magnetic roller felts. If they are compressed (shiny), rough them up with a small jeweler's screwdriver.



14. Carefully wipe the doctor blade down with a lint-free cloth.

Be careful not to bend or damage the blade in any way.

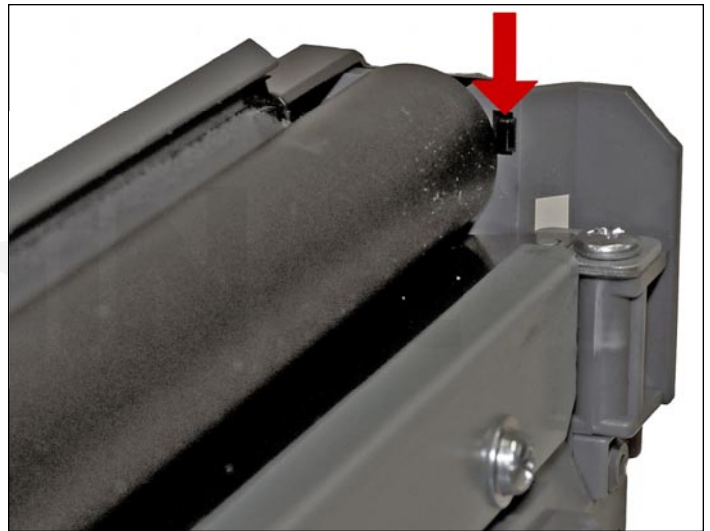
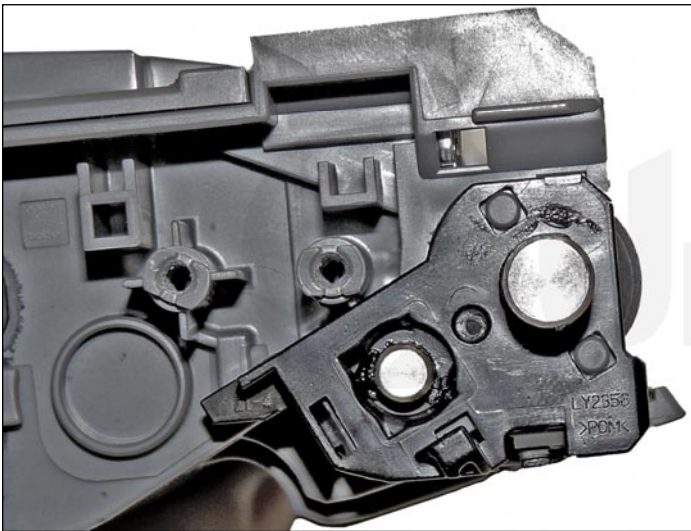
Install the blade and two screws.



15. Clean the developer roller with a lint-free cloth and a dedicated developer roller cleaner for use on Brother rollers. Do not use any chemicals other than a dedicated Brother roller cleaner. Reinstall the developer roller (long shaft side to the gear side), with the white lock pointing up. Turn the lock towards the doctor blade until it locks in place.

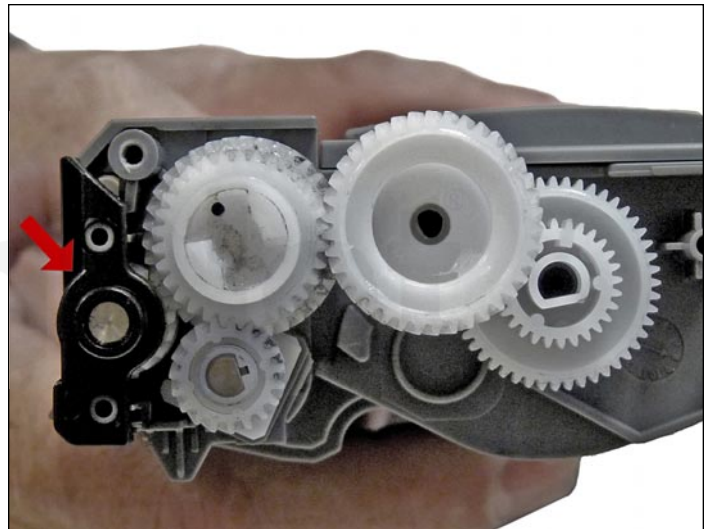
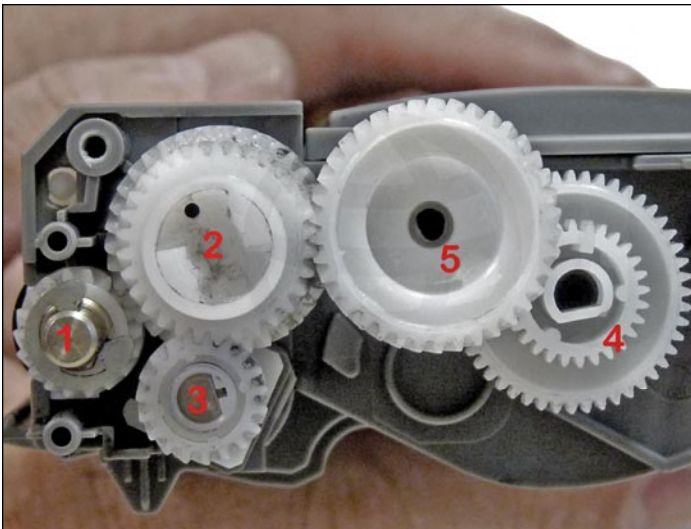




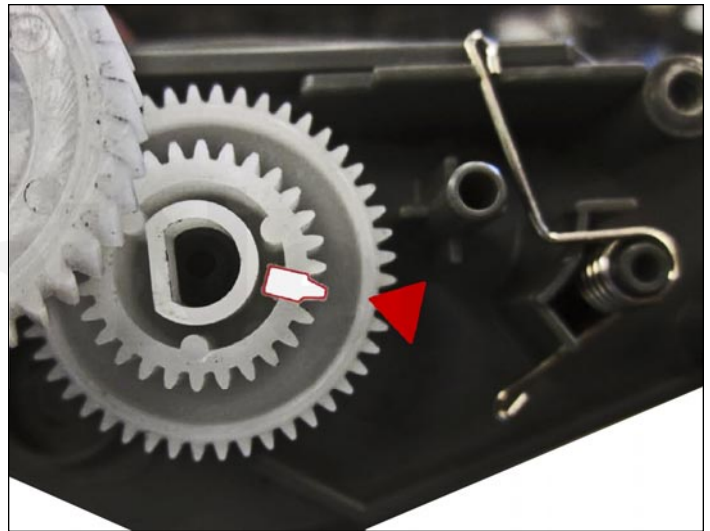
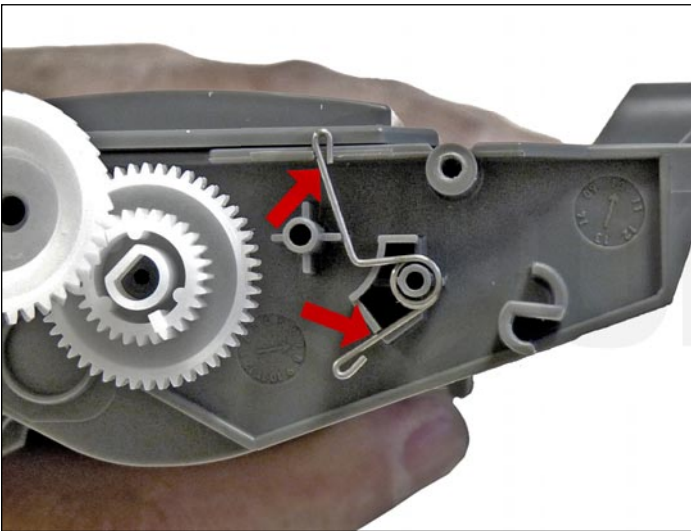


16. Install the non-gear side axle plate.

Make sure the tabs lock in place.

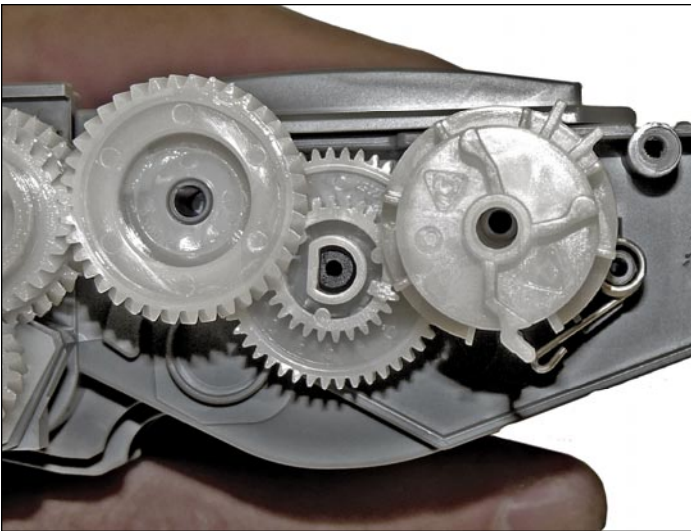


17. Clean the gears, making sure they have no toner on them. This is a good time to also check the gear shafts to make sure there is enough grease. If the shafts appear dry, or the grease is contaminated with toner, clean the shaft and inside the gear. Replace the grease with white lithium grease. Install the developer roller gear, "E" ring, black axle spacer, and the rest of the gears in the order shown. Make sure all the gears are meshing properly.



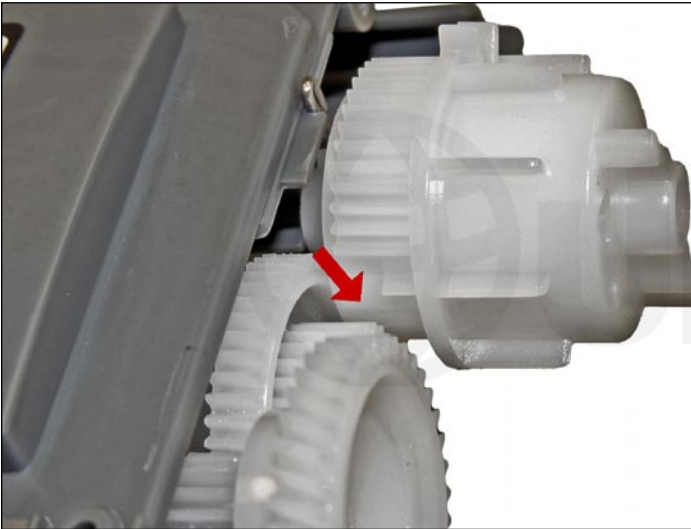
18. Set the reset gear spring as shown.

Ensure that the actuator gear is in the proper position as shown (right photo).

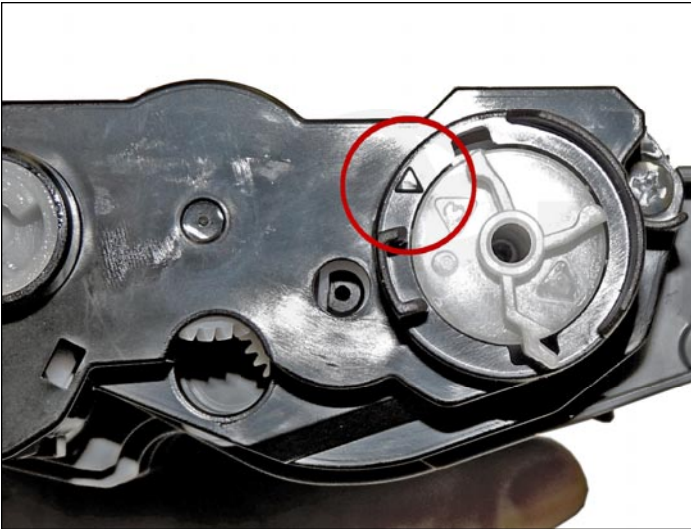


19. Set the reset gear as shown.

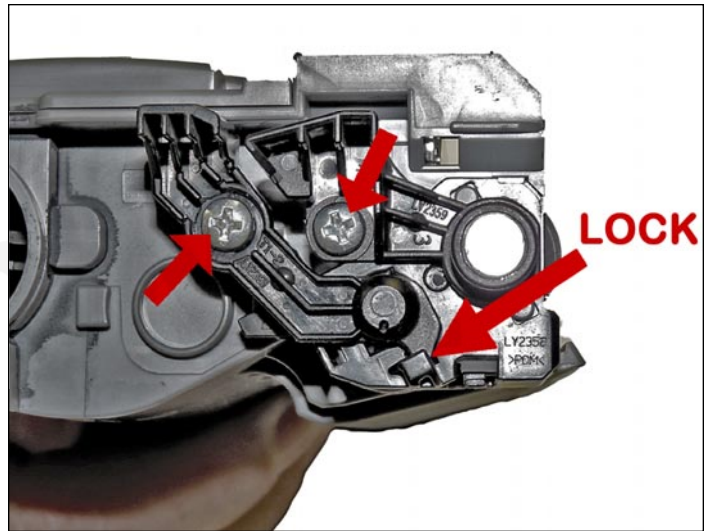
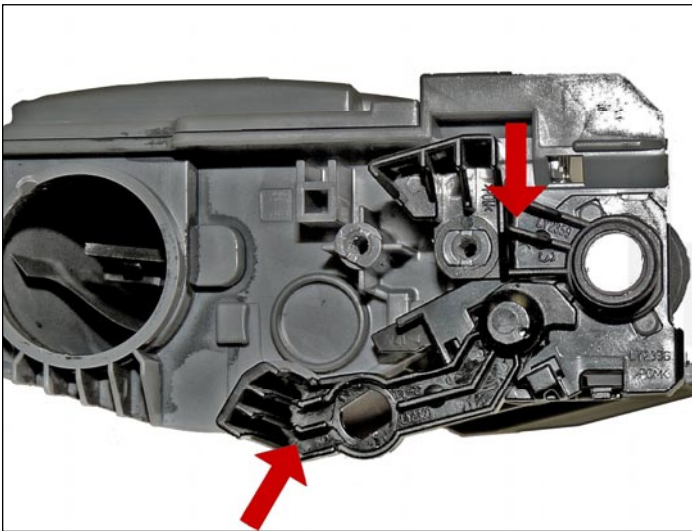




Note that the gear teeth are not meshed when set, which is how it should be. The gear is spring-loaded and will turn when driven by the printer.



20. Install the gear cover plate as shown in the photo. Make sure the black arrow on the cover is aligned with the white arrow marked #3. This applies both to the TN410 and the TN420 cartridges. This is not the case for the TN450, which has different gears.

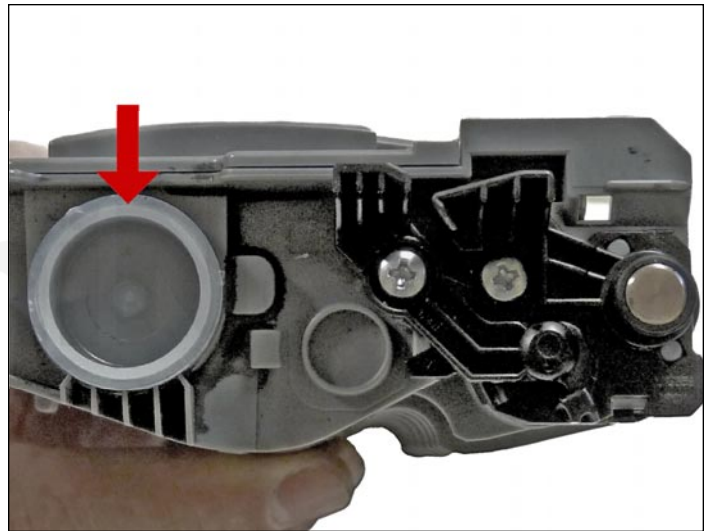


21. On non-gear side, install the plastic arms and their corresponding screws.

The smaller arm is installed last, and must be turned from the bottom up, so that the lock engages.

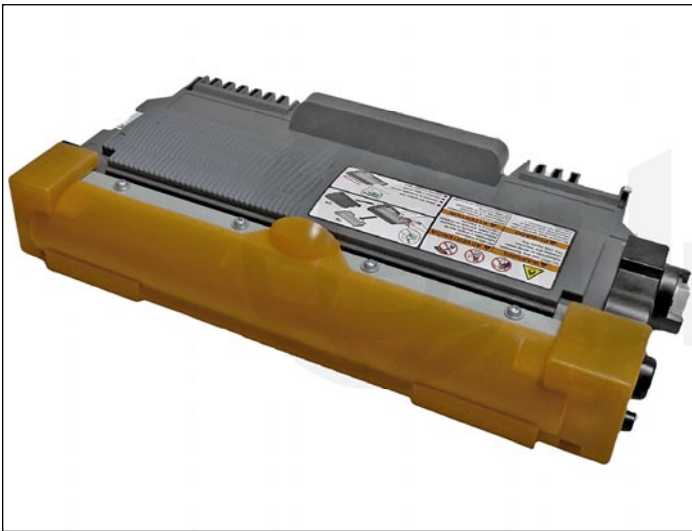


22. Fill the cartridge with the proper gram load of black toner for use in the Brother TN410 cartridge (approximately 45 grams).



23. Replace the fill plug.

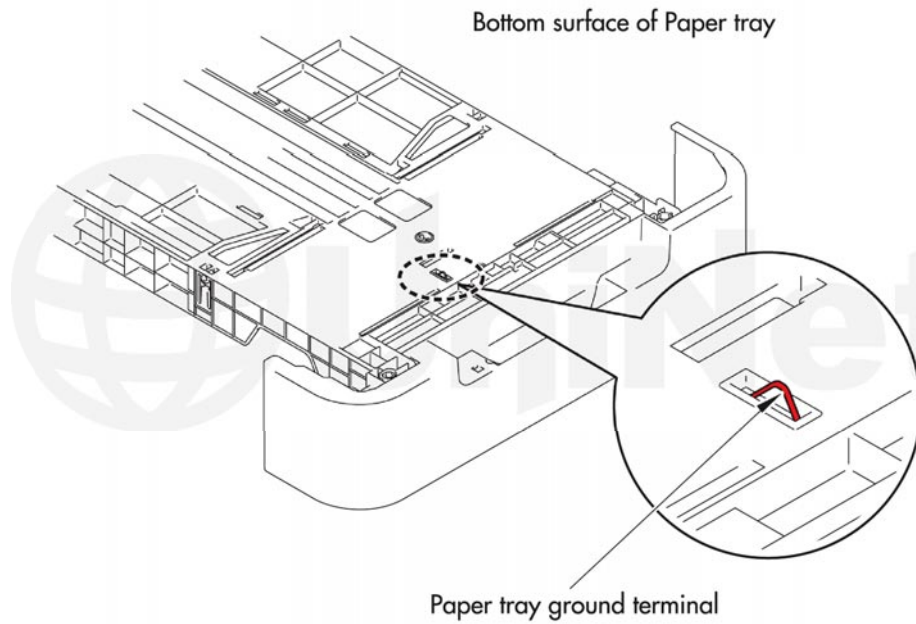
Wipe the cartridge down to remove any toner dust.



24. Install the developer roller cover.

**REPETITIVE DEFECT CHART**

<b>OPC drum:</b>	<b>94.2 mm</b>
<b>Upper fuser roller:</b>	<b>53.4 mm</b>
<b>Lower pressure roller:</b>	<b>78.5 mm</b>
<b>Developer roller:</b>	<b>32.5 mm</b>



**NOTE:** If you are experiencing horizontal black streaks and changing cartridges does not help, look to the bottom of the paper tray. There is a small metal ground terminal. If it gets bent or dirty, it can cause this.