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Parts required

- 1 - Doohickey (MCYKLR-EM-10)
- 1 - Torsion Spring (MCYKLR-EM-TS)
- 1 - Rotor Bolt (KAW92002-1693)

Possible:

- 1 - Magneto Inner Gasket (KAW11060-1692)
- 1 - Magneto Outer Gasket (KAW11060-1693)

Suggested tools:

- 1/2" drive ratchet
- 3/8" drive ratchet
- 19mm socket
- 17mm socket
- 10 mm socket
- 8 mm socket
- 10 mm box wrench
- small vice grips
- 1/2" breaker bar
- 1/2" drive torque wrench
- Skid plate specific tools
- Rotor retaining wrench (HTPKLR-32MM)
- Rotor bolt puller tool (MCYKLR-22MMRP)
- drill motor
- small flat screwdriver

Overview: In the '86-'07 KLR650's chain-driven balancer subsystem, two related parts are prone to failure: 1) the balancer idler lever (Kawasaki part no. 13168-1436); and, 2) the idler shaft spring (Kawasaki part no. 92144-1860). The two parts serve to maintain tension on the balancer chain. In the 2008+ KLR650 the balancer idler shaft lever is improved but not nearly what it could be. But even more important, the factory extension spring is too long to do any good. It only gets worse with miles. Happy Trails Products offers all the parts and tools you need to perform this vital upgrade.

I. Removing OEM Doohickey and spring:

A. Drain the oil (on the left side of the bike):

1. Remove skid plate as per your skid plate mfr. instructions..
2. Place a catch pan under the oil drain plug and remove the drain plug (17 mm).

B. While oil is draining:

1. Remove the front sprocket cover by taking out the three (10 mm) sprocket cover bolts.
2. Remove the shifter lever by taking out the one (10 mm) shifter lever bolt.
3. Remove the outside rotor cover by taking out the ten (8 mm) rotor cover bolts.

C. Remove Outside Generator Cover:

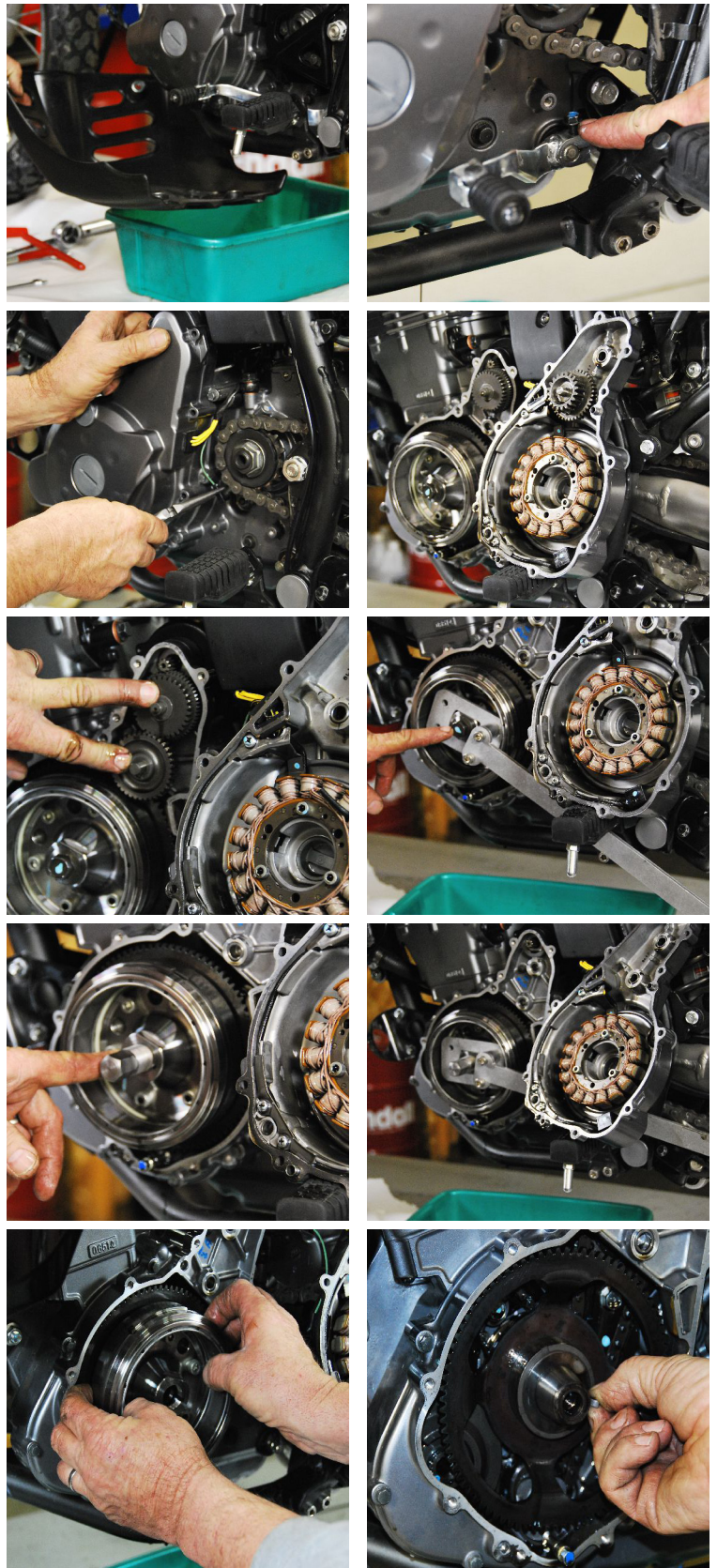
1. Pull the neutral switch wire and the wiring harness (there are two looms) from their protective slot to the left of the countershaft sprocket and chain.
2. Use a plastic or rubber hammer to tap gently on the outside cover to loosen it. Make sure your catch pan is still underneath ... more oil may flow out when you remove the cover.
3. Pull off the cover; it will be stiff because of the magnetism of the motor. PULL IT OUT GENTLY to protect the gasket from injury; if the gasket tears you must replace it. Set the cover on the footpeg (turn the cover 180° and set the large end to rest on the footpeg).

D. Remove Rotor:

1. Remove the two starter-drive gearing shafts. CAUTION: for reinstallation purposes please note the position of the two shim washers on each shaft. Typically the shim washers will come with the gears and shafts.
2. Position the rotor wrench under the rider's footpeg while you remove the rotor bolt. DISCARD the rotor bolt after removal, it cannot be reused. (If reused it will stretch when you try to torque it to 110 ft. lbs.)
3. Screw in the rotor puller—reinsert the rotor holding wrench and now let it rest on top of the footpeg.
4. Screw the puller into the rotor and tighten it down until the rotor loosens from the crankshaft. Usually you hear a popping sound when it releases.
5. Place your fingers between the rotor and starter clutch gear and remove the rotor.

E. Remove Starter Gear:

1. Pull the Woodruff key out of the crankshaft.
2. NOTE: for reinstallation purposes notice the thrust washer between the rotor and starter gear. It may "oil stick" to the backside of the rotor; otherwise remove it before removing the starter gear.
3. Pull off the starter gear. NOTE: behind the gear are two spacers that must remain (or be put back in place) when reinstalling.



F. Remove OEM Doohickey:

1. Remove Doohickey bolt (8 mm) and remove OEM Doohickey.
2. Remove the nine (8 mm) bolts on the inner crankcase cover. NOTE: the one (8 mm) bolt behind the starter gears is 5 mm shorter than the others (see picture).
3. With a rubber or plastic hammer gently tap on the outside edge of the cover. Grasping the top of the cover and pushing your thumb against the starter shaft, gently pull it out a little.
4. Grab the cover at the top and bottom and pull it off. Work gently as you pull it off so that you might preserve the gasket. The gasket cannot always be preserved, and if it's torn it MUST be replaced.
5. Gently remove the Doohickey tensioner spring.

II. Installation of Eagle Mfg. Doohickey and Spring

A. Torsion or extension spring? You must decide which kind of tensioner spring to use: the extension-type tensioner spring included in the kit or the torsion-type tensioner spring available at additional cost. Happy Trails uses the torsion-type tensioner spring on all their Doohickey upgrades because from start to finish it has a more uniform pull on the lever. These instructions will only show the reinstallation procedure for the torsion spring.

B. Install Torsion-type spring and Doohickey:

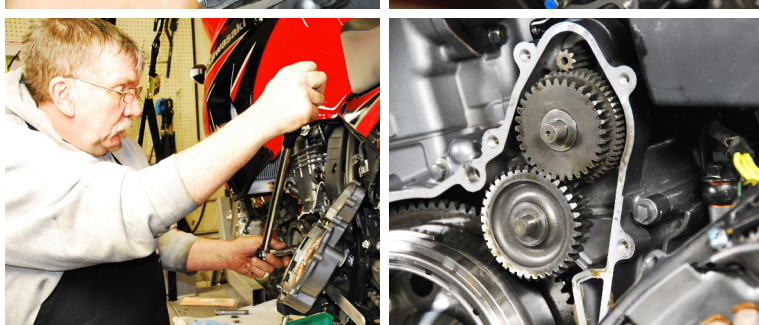
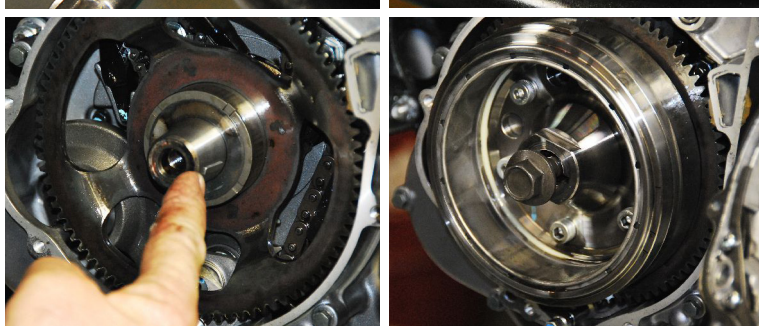
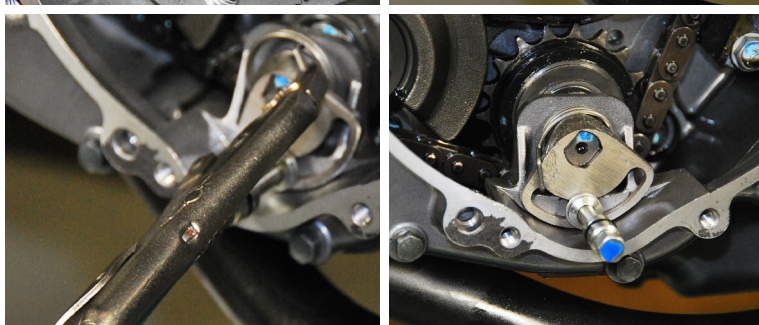
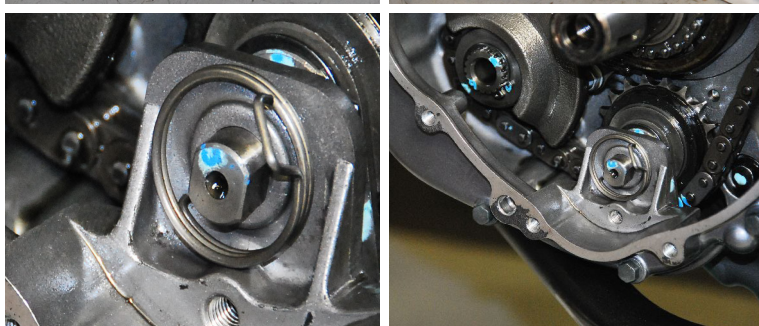
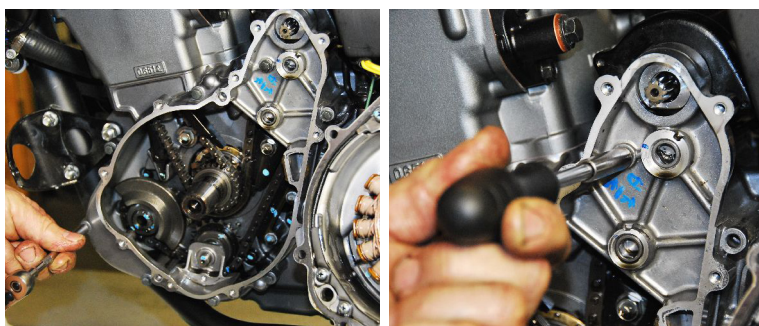
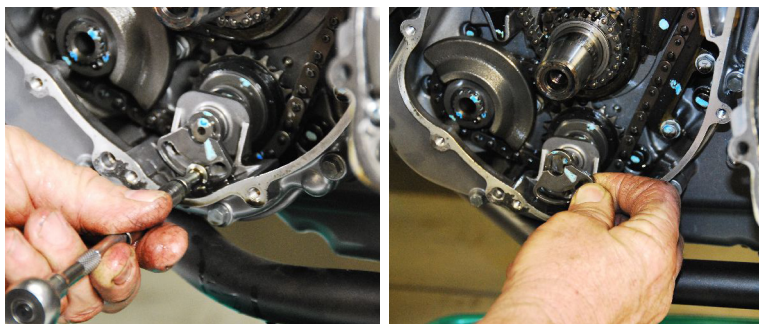
1. Using the 1/16" bit included with the spring, drill the inside crankcase cover for the anchor of the tensioner spring. Do this at the 7:00 position of the Doohickey shaft hole.
2. After drilling the hole it's important to remove drill filings with an air compressor or canned air.
3. Replace the inner cover gasket, or install a new one if the old one is torn.
4. Put the inner cover back on.
5. Reinstall with the nine (8 mm) bolts you removed before. Tighten them uniformly, in a circle.
6. Install torsion spring in anchor hole.
7. Install Doohickey lever.
8. Place Doohickey bolt in its slot. **HAND-TIGHTEN ONLY FOR NOW.**
9. Using a small vice-grip or pliers, grab the hook end of the torsion spring and hook it onto the Doohickey. Inserting this will take effort; a small screwdriver may give you extra leverage. Make sure the spring is seated on the hub of the Doohickey and not perched on the Doohickey itself.

C. Install Starter Gear and Rotor:

1. Put the starter gear back on the crankshaft. Check to be sure spacer collars are back in position (see remove rotor and starter gear #16).
2. Replace the large thrust washer back on the crankshaft.
3. Replace the Woodruff key,
4. Replace the rotor: slightly rotating it back and forth will help with placement.
5. Install the new OEM rotor bolt. (The bolt MUST be new).
6. Put the rotor wrench back in place on top of the footpeg and torque the rotor bolt to 85 ft. lbs.
7. Remove the rotor wrench and reposition it under the footpeg. Loosen the rotor bolt three turns. The rotor is now seated on the crankshaft.
8. Reposition the rotor wrench on top of the footpeg and torque the rotor bolt to 110 ft. lbs.
9. Remove the rotor wrench.

D. Install Outer Generator Cover

1. Replace the starter gear shafts and thrust washers (four total two on each shaft) to their original position. (If you're not sure which one is which it's okay; only one of the two gear sets will mesh properly with the starter gear.)
2. Replace the outer cover gasket or install a new one if old one is torn.



3. Carefully position the outer cover in place, align dowel pins and seat with **HAND PRESSURE ONLY**.
4. Insert the ten (8 mm) bolts. Tighten evenly in a circular pattern.
5. Tighten the Doohickey bolt and replace the rubber plug for the Doohickey bolt.
6. Reposition both wiring looms back into their holders and reconnect neutral wire.
7. Reinstall shift lever and tighten it. Make sure it is in the correct position for your shifting pattern and boots to allow for ease of shifting through all the gears.
8. Replace front sprocket cover: start all three bolts first and then go back and tighten them. (If you tighten all the way one at a time the others might not go in.)
9. Replace oil drain plug. (On our Happy Trails bikes we use a magnetic drain plug. This plug adds additional protection by attracting fine metal debris from wear and tear.)

E. Remove old oil filter:

1. Move to the right side of the bike.
2. Take out the two (8 mm) bolts that hold the oil filter in place.
3. Use a small screwdriver in the screwdriver slot to gently pry out and remove the cap.
4. Remove old oil filter
5. **IMPORTANT:** remove the center pipe from the oil filter. If the center pipe is missing you **MUST** replace it with Kawasaki part.
6. Discard old filter.
7. Replace center pipe in new oil filter right away (so it doesn't get misplaced).

F. Install new filter and oil:

1. Wipe the oil filter cavity, removing any old oil. Put in the new oil filter (the centre pipe only allows it to seat in one direction).
3. Inspect the O-ring on the oil filter cap for damage. If O-ring is missing or damaged remove it and replace with Kawasaki part. Seat the cap to the O-ring.
4. Restart both (8 mm) bolts. Do **NOT** tighten fully yet or you risk damage to cap.
5. Set the oil filter cap by pressing with your hand. Tighten the two (8 mm) bolts.
6. Remove the oil filler cap. Add 2½ quarts of oil. (At Happy Trails we use Kendall GT-1 motorcycle oil 20W-50)
7. Replace oil filter cap.

G. Install Skid Plate:

1. To install OEM skid plate, reinstall the two (8 mm) upper bolts and then the two (8 mm) bottom bolts.

