

Thermo-Bob 2™ Installation Manual: KLR650E (2008 and newer)

Thank you for purchasing the Thermo-Bob 2™ radiator bypass system for the KLR650. Since the KLR already has a *doohickey*, it seemed that this *thingamabob* for the KLR needed a name too.

Proper installation is critical: if you are not familiar with or feel uncomfortable with heated, pressurized liquid cooling systems, you should have a professional install the kit. Improper installation can cause engine overheating and possible engine damage.

Read through these instructions completely to familiarize yourself with the hardware names and installation procedure. This will also allow the bike to cool off if ridden recently.

Other than basic tools (small wrenches / screwdrivers), gather the following items that you will need but are not included in the kit: a 5mm allen wrench, a box cutter or sharp knife, and up to 48 oz. of 50/50 coolant.

Familiarize yourself with the parts in the kit per **Figure 1** below:



Bypass Tee Fitting with brass hose barb

DRAIN THE COOLING SYSTEM

- 1) Remove the skid plate.
- 2) Carefully remove the radiator cap after the engine is cool and pressure has been relieved from the cooling system. **If you do this while the coolant is still hot, you may burn yourself.**
- 3) Drain the coolant into a suitable container, remembering to keep it away from children and pets due to the toxicity. The drain plug (8mm head) is in bottom of the coolant pump housing as shown in **Figures 2 and 3**. Approximately 34 fluid ounces of coolant will drain. Reinstall the drain plug with its sealing washer, and torque to 60 to 70 inch-pounds (that's only 5.0 to 5.7 ft-lb).

4) **Figure 4** shows a finished installation to help you visualize where the parts go, with the cooling system hoses color-coded to minimize confusion. The following pages will describe how to remove the original Kawasaki

thermostat, how to sandwich the Thermo-Bob 2 housing (with Thermo-Bob 2 thermostat) in-between the cylinder head and the original thermostat housing, install a bypass tee in the "Blue" radiator hose between the radiator bottom tank and coolant pump inlet, and install a "Gold" bypass hose between the Thermo-Bob 2 and bypass tee.

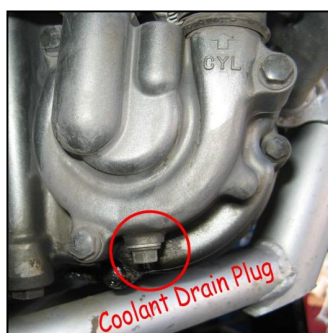
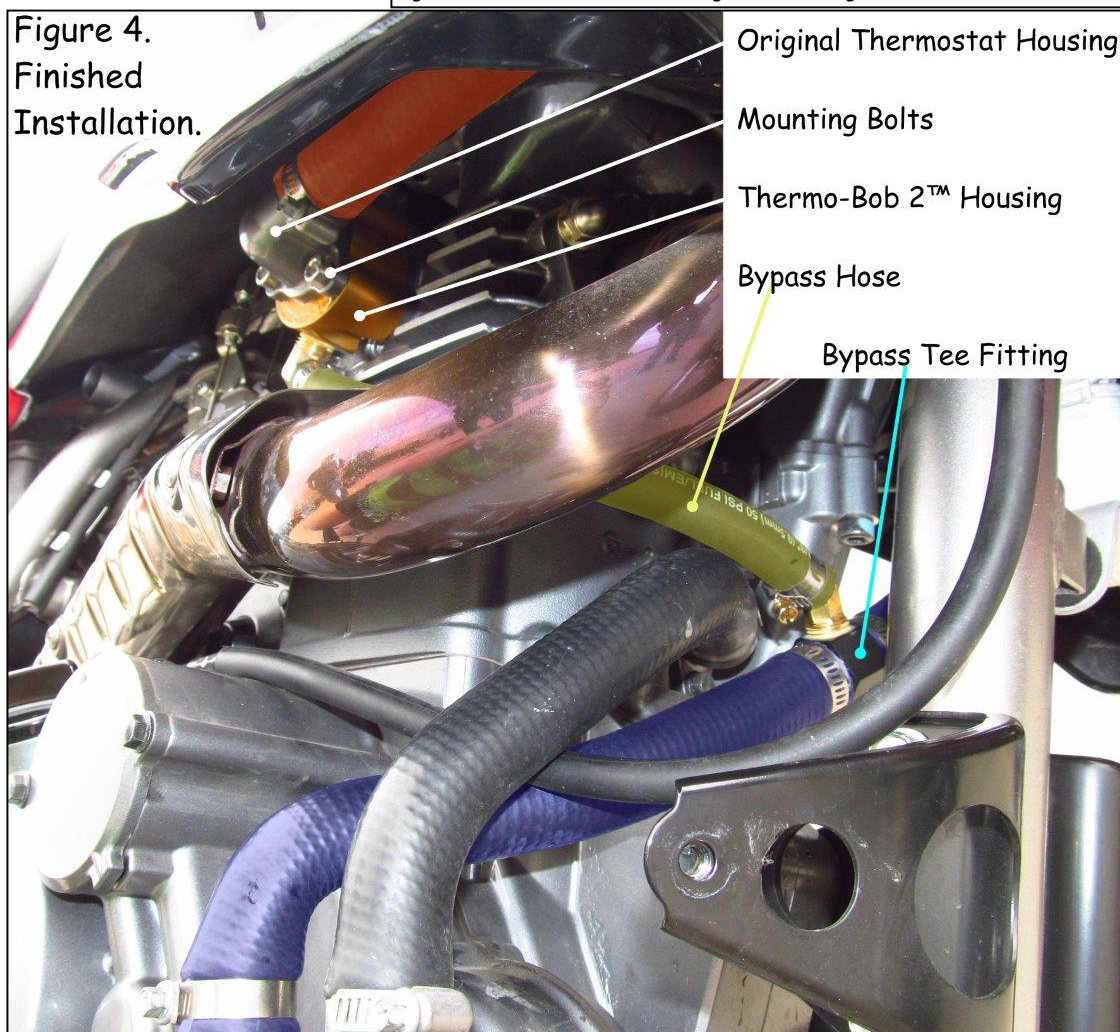


Figure 2. Locate Coolant Drain Plug.



Figure 3. Drain Coolant.

Figure 4.
Finished
Installation.



OLD THERMOSTAT REMOVAL AND INSTALLATION OF THERMO-BOB 2™

5) Remove the three bolts (8mm head) on the original thermostat housing – the bolts are circled in red in **Figure 5**. Lift the factory thermostat housing away from the cylinder head. In the side of the cylinder head, you'll see the original thermostat and gasket as shown in **Figure 6**. Remove them as shown in **Figure 7**. **They will not be reinstalled.**

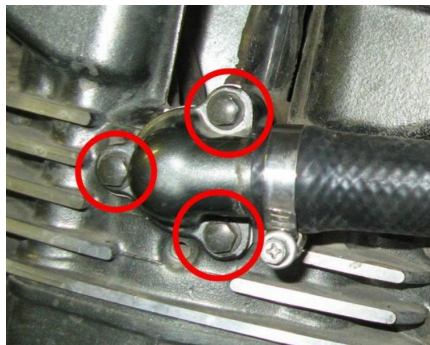


Figure 5. Original Thermostat Housing is restrained by 3 bolts.



Figure 6. Original Thermostat.



Figure 7. Remove Original Thermostat.



Figure 8. Install Thermo-Bob 2 thermostat in Thermo-Bob 2 Housing.

6) Install the Thermo-Bob 2 thermostat into the housing as shown in **Figure 8**.

7) As shown in **Figure 9**, place the supplied small, fat o-ring in place of the original Kawasaki thermostat, place the Thermo-Bob 2 housing (with TB2 thermostat already installed per step 6) on top of that, and place the original thermostat housing on top of the assembly. Use the three supplied 40mm long bolts to mount this sandwich of parts to the side of the cylinder head. **IMPORTANT: Be careful installing this – run the bolts down finger tight, then turn each bolt ½ turn at a time in succession to slowly seat the assembly against the cylinder head, then torque to 60 to 70 INCH-pounds (only 5.0 to 5.7 ft-lb).** If you don't do this 'shared' method of tightening the housing bolts and crank only one bolt all the way down first, you *could* damage or break an ear off the original thermostat housing.

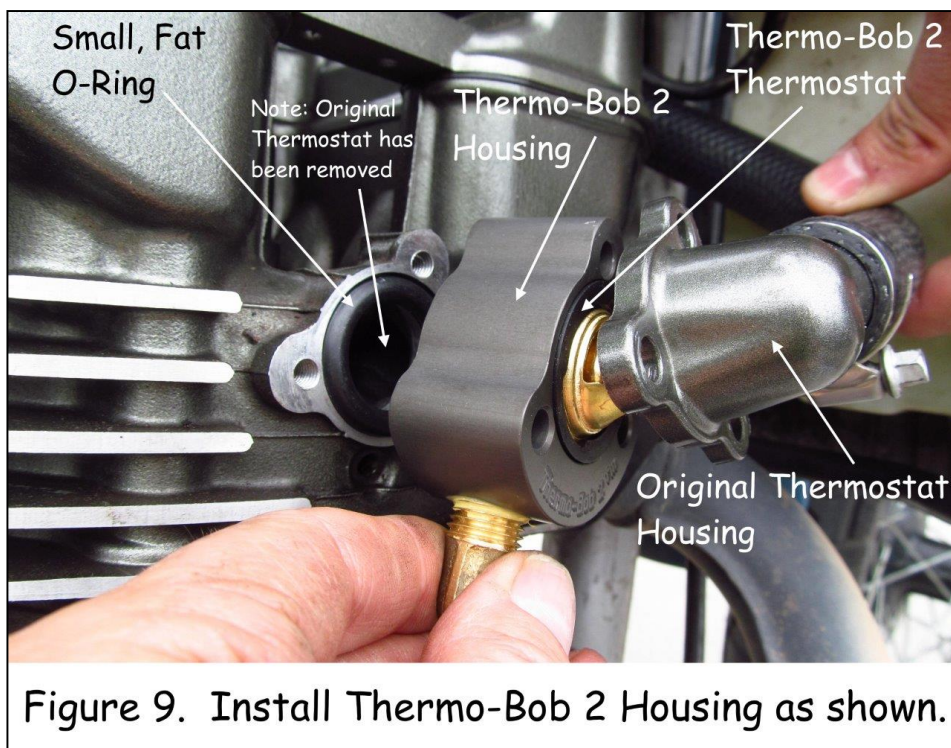


Figure 9. Install Thermo-Bob 2 Housing as shown.

The completed installation should look like **Figure 10**.

LOWER HOSE MODIFICATION, AND BYPASS HOSE INSTALLATION

8) Remove the radiator hose that is colored blue in **Figure 4** by removing the clamps at each end of the hose. After viewing **Figure 11** below, mark the hose accordingly and remove a 5/8 inch section of the hose. Note that the measurements in **Figure 11** are taken from the completion of the bend in the hose (also known as the point of tangency) in the 'radiator end', **not** the 'coolant pump end' of the hose.

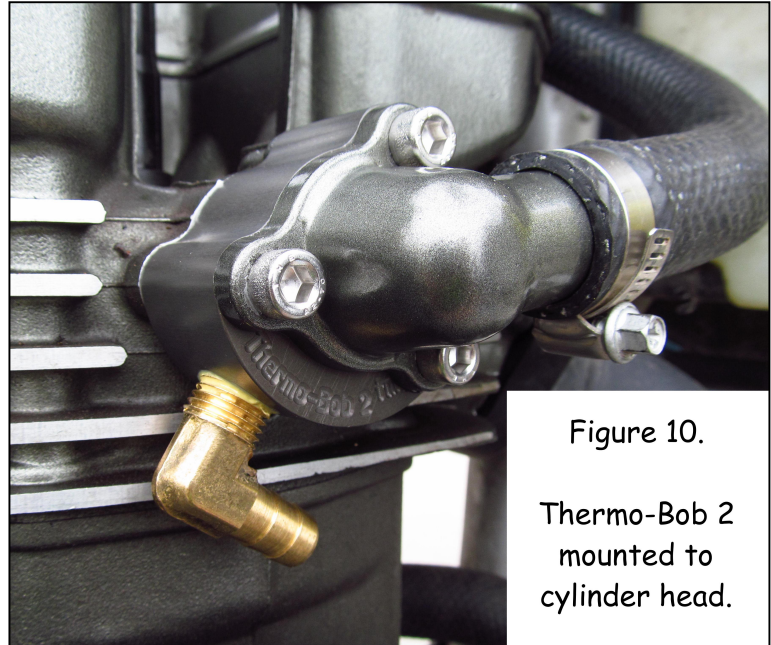


Figure 10.

Thermo-Bob 2
mounted to
cylinder head.

9) Slide a large clamp (supplied) onto the freshly-cut hose and the supplied tee fitting into the hose with the orientations shown in **Figures 4 and 12**. Also install the bypass hose onto the bypass tee's barb with a small clamp (supplied). Try to match the tee and clamp orientations shown. **Figure 12's** view is from the "coolant pump" end of the hose, and note how the bypass tee is clocked to aim the bypass hose towards the cylinder (i.e., "11 o'clock"). You can then slide the 'radiator end' of the hose (with a supplied large clamp) onto the open end of the bypass tee and use the pink alignment marks in **Figure 11** to help you properly clock the 'radiator end' of the hose. Tighten all three clamps. Reinstall the "blue" hose assembly on the bike from the radiator side, noting how the clutch cable fits between the "blue" hose and the original hose that travels from the coolant pump to the bottom of the cylinder.

10) Using **Figure 4** and **Figure 13** as references, pull the loose end of the bypass hose over to the Thermo-Bob 2 and determine the amount of bypass hose



Figure 11.

Cut and remove the Blue section that is 5/8" long.

(which is colored Gold in **Figure 4**) to cut away. We tend to find that shorter is better, as this will keep the bypass hose closer to the cylinder and further away from the exhaust headpipe. After shortening the bypass hose, slide the final small supplied clamp onto the hose for an inch or two, then slide the loose end of the bypass hose onto the Thermo-Bob 2's brass hose barb. Finally, slide the small clamp into place as shown in **Figure 13** and tighten the clamp.



Figure 12.
Orientation of barb
on bypass tee.

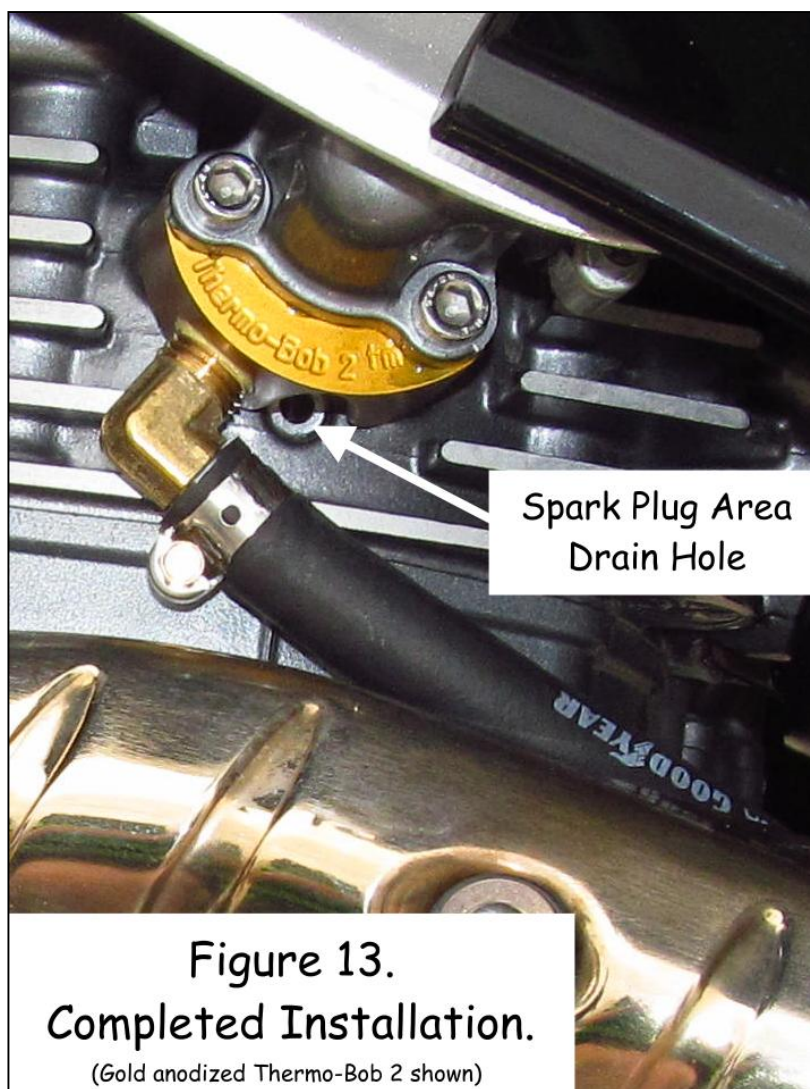


Figure 13.
Completed Installation.

(Gold anodized Thermo-Bob 2 shown)

11) **Figure 13** does bring one other subject up: the bottom of the Thermo-Bob 2 has been clearanced to provide access to the spark plug drain hole. This factory hole allows drainage for any liquids that splash into the area surrounding the spark plug. Since many owners use this hole to propel compressed air UP the passage prior to a spark plug change, the Thermo-Bob 2 has been clearanced in this area to maintain this capability.

12) Verify that all hose clamps are tight one final time.

REFILL THE COOLING SYSTEM

13) The cooling system typically holds about 34 fluid ounces: fill the radiator to the top by pouring in 50/50 coolant. If you are not able to pour in all 34 fluid ounces in a single transfer, start and run the engine between 1000 and 2000 rpm for less than 30 seconds. This will allow any air to be purged in the system, and the coolant level will drop in the radiator. Shut off the engine and you then should be able to complete the fill to have poured in 34 fluid oz. total. Replace the radiator cap, being sure it is on correctly. Start the engine and let the bike continue to run and heat up for a few more minutes until the radiator fan operates once, implying that the thermostat has opened for the first time. This will also allow the cooling system to heat and pressurize itself so you can conduct leak checks. Then shut off the engine, and after the bike cools completely you should remove the radiator cap and top off the coolant. Be sure to re-install the radiator cap correctly.

14) Replace the skid plate, and torque all bolts to Kawasaki specification.

Installation is complete. If you have any comments or questions, contact me at watt-man@cox.net.

REPLACEMENT PARTS

(Recommended replacement frequency: every 5 years or 40,000 miles, whichever comes first)

Older models of the Thermo-Bob use a STANT automotive thermostat, but your Thermo-Bob 2 uses a thermostat that is available at www.watt-man.com.

If you have any questions, contact me at watt-man@cox.net.

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