

Thermo-Bob™ Installation Manual: Kawasaki Versys (2007 and newer)



Thank you for purchasing the Thermo-Bob™ radiator bypass system for the Kawasaki Versys.

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 / slotted screwdriver), gather the following items that you will need but are not included in the kit:

- Box cutter or sharp knife
- ~40 oz. of 50/50 coolant
- Depending on the age / mileage of your bike, you might want to have new radiator hoses ready for the installation.

The Thermo-Bob is already assembled, but if you ever plan to disassemble it, you will need a 4mm (or 5/32 inch) allen wrench.

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

(1) Thermo-Bob, assembled from:

Housing
Cap
Six screws
Thermostat
Large skinny o-ring
Straight brass hose barb

- (1) Tee Fitting with 45° 'bypass' hose barb
- (2) Small hose clamps
- (1) piece of bypass hose
- (4) Large hose clamps
- (1) Tie-wrap

ESTABLISH A PLAN, PREPARE THE AREA AND DRAIN THE COOLANT

- 1) To simplify reassembly, come up with a plan before you start concerning where to store fasteners as you remove components from the motorcycle. Some people opt to put the fasteners back into the holes that they came from (great unless you possibly test-ride the bike before it's totally reassembled and you lose fasteners), some people put them in labeled zip-lock bags, some people store them loosely with the component. It's your call.
- 2) Start with removing the windshield. This will make work easier as you move through the upcoming steps. Before loosening any windshield bolts, note which four bolt holes are being used, as the windshield height is adjustable on the Versys. Remove the four windshield bolts. Note how rubber washers are sandwiched between the windshield and the mounting brackets. It is recommended to reassemble the fasteners, with rubber washers, back into the windshield so you don't lose them.
- 3) Remove the right side fuel tank fairing (six bolts circled in yellow in **Figure 2**). Note that the "bottom" fastener is different so you won't be confused on re-installation. Then remove the left side fuel tank fairing, which is held in a similar fashion.
- 4) On the right side of the bike, remove the coolant pump cover (three bolts circled in yellow in **Figure 3**). Savvy readers will notice this is actually an assembly photo, as the installed Thermo-Bob can be seen.
- 5) Remove the two bolts that restrain the coolant overflow bottle. The bolts are circled in blue in **Figure 4**.
- 6) Remove the right turn signal bracket. It is held on with 3 bolts that are circled in blue in **Figure 5**. (It is recognized that in this Figure, the coolant overflow bottle is not loose as it was just described in step #5). Push in the retaining pin in the electrical connector and separate the plug so the turn signal bracket can be removed and set aside. Do the same with the left turn signal bracket.
- 7) This is when we learn a little about the cooling system design of the Versys, with the coolant overflow bottle being placed *above* the radiator neck from the factory. If you removed the radiator cap at this stage, the coolant overflow tank would drain into a full radiator, simply spilling your coolant on the ground! Thus, you'll note that Kawasaki has placed a "radiator cap blocker" in the system that won't allow you to remove the radiator cap until the bottle has been removed from its bracket. Here's the key: TILT the loose coolant overflow bottle until the coolant is below the bottle's drain hose as shown in **Figure 6**. Then remove the "radiator cap blocker" (highlighted as a yellow/gold item in **Figure 7**) by removing the two bolts that hold it on.
- 8) It is time to 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 near the bottom of the coolant pump housing, circled in yellow in **Figure 8**. When you first remove the drain plug, very little coolant will come out – but when you remove the radiator cap, BE PREPARED – as **Figure 9** shows how the coolant will gush out so quickly that it will travel nearly horizontal at first. Approximately 35-40 fluid ounces of coolant will drain. Reinstall the drain plug in the bottom of the coolant pump with its sealing washer, and torque to 60 inch-pounds (that's only 5 foot-pounds).

LEFT SIDE OF BIKE: COOLANT HOSE MODIFICATIONS, ORIGINAL THERMOSTAT REMOVAL AND THERMO-BOB “TEE” INSTALLATION

- 9) Searching through your Thermo-Bob kit, locate the bypass hose, Tee fitting and one of the small clamps. Slide the bypass hose onto the Tee fitting's brass barb, install a small hose clamp oriented as shown in **Figure 10**, and tighten appropriately.
- 10) On the left side of the engine, locate the original thermostat housing. It is retained with three 8-mm-head bolts as shown in **Figure 11**. As an aside, it's like the engine and frame guys at Kawasaki were on separate missions when the Versys was designed. It looks simple to remove and replace the factory thermostat but the frame is in the way, and tool selection is critical to this task. Luckily for you – by installing the Thermo-Bob, you won't have to reinstall the factory thermostat when re-tightening these three bolts – it's a pain and easy to do incorrectly.
- 11) What you'll want to do is first loosen each of the three bolts by one turn. What seems to work best is a little ¼” drive 6-point socket for this task on bolts A and B, and a small box-end wrench for bolt C. After each bolt has been loosened by one turn, use the small box-end wrench on bolt C along with your fingers to completely remove bolt C – it's best to do this before the housing moves when the other two bolts are loosened further. Be prepared for a small amount of coolant to spill on this next step - use the box-end wrench on bolt B and continue to use the socket on bolt A to completely remove those two bolts. Lift the thermostat housing away. The original thermostat orientation is shown in **Figure 12**. Remove the original thermostat from the cylinder head as it will not be reinstalled. Be careful not to damage o-ring in base of housing (shown in **Figure 13**).
- 12) Depending on your hose-cutting tools and savvy, step 13 could be skipped and you could go directly to step 14. But read step 13 below and see if it's the best way for you.
- 13) Loosen the upper radiator hose clamp at the radiator inlet and remove the hose/thermostat housing entirely from the motorcycle.
- 14) With a sharp instrument, cut ¾” from the upper radiator hose. **Figure 14** is a completed assembly, but should help you establish where to make the hose cuts. Advice: measure twice, cut once.
- 15) Re-install the original thermostat housing back onto the engine. Remember, you should **not** reinstall the original thermostat - just reinstall the housing, being sure that the o-ring in **Figure 13** is placed properly in its groove and that both sealing surfaces are free of debris. It is recommend that you get all three bolts to the “finger-tight” stage first, then snug each of them in ½ turn increments – bolt A, then B, then C, then A, then B... you get the drift. Final torque on these bolts is 60 INCH-pounds. The word INCH is stressed because this is only 5 foot-pounds of torque... you do *not* want to break one of these bolts.
- 16) Reassemble the upper radiator hose / tee fitting so it looks like **Figure 14**. It will help to slide the supplied large hose clamps on before sliding the tee fitting in, noting how the clamps are oriented in the Figure. Note that the brass barb is aimed towards the engine, not away from it. Keep in mind that you are responsible to not touch the exhaust system with the bypass hose when the project is complete. As a final check, there are four large clamps on the upper hose, and one small clamp on the bypass hose. Verify that all five are tightened appropriately.

ASSEMBLE THE THERMO-BOB

(Steps 17 through 19 have already been completed for you but are spelled out below if you ever take the Thermo-Bob apart in the future.)

17) Locate the thermostat from the kit and verify that the retention tabs have been cut off as shown in **Figures 15 and 16**. The thermostat will not fit in the housing until the tabs are removed. It is recommended that you drill a small hole (0.045 to 0.063 inch) in the 'stat as shown in **Figure 17**.

18) Lubricate the outside diameter of the thermostat's rubber seal and the inside of the Thermo-Bob housing with a thin film of coolant as shown in **Figure 18**. Then push the thermostat into the housing as shown in **Figure 19**. Before pushing it in, orient the thermostat in the housing as shown in **Figure 20**. It is important to push it in firmly until it bottoms squarely in the housing and does not protrude more than 0.005" above the edge as shown in **Figure 21**.

19) Lubricate the o-ring with coolant and install it in the housing cap as shown in **Figures 22 and 23**. Be sure it is down in the groove all the way around. Then install the cap onto the housing - **Figure 24** reminds you that the o-ring will slightly separate the housing and cap. Install the six housing screws. Install them finger tight, *then* tighten them in a cross-pattern, ½ turn at a time to seat the cap against the housing as shown in **Figure 25**. Finally, torque the screws to 45 to 50 in-lb.

RIGHT SIDE OF BIKE: COOLANT HOSE MODIFICATIONS AND THERMO-BOB INSTALLATION

20) Go back to the right side of the bike. Your task is to install the Thermo-Bob in the hose between the radiator and coolant pump. **Figure 26** shows the finished product which might help you visualize what this will look like – pay attention to the direction the Thermo-Bob is aimed: note that the bolt heads face down. Mark the lower radiator hose 1.5 inches and 3.5 inches from the coolant pump end of the hose. Cut the hose at these two locations. Remove the factory hose clamp on the bottom of the radiator and slide the hose off the radiator bib. Now insert the Thermo-Bob into the open section of the lower hose, slide the upper hose that you just removed from the radiator bib onto the Thermo-Bob, *then* slide the assembly back onto the radiator hose bib as shown in **Figure 27**. Aim the Thermo-Bob properly by rotating it to generate extra clearance between the exhaust pipes and the bypass hose barb (see **Figure 28**), then tighten three clamps appropriately in the following order: the lower Thermo-Bob clamp, the upper Thermo-Bob clamp, and the radiator bib factory clamp.

21) It is now time to determine the proper length for the bypass hose. It is provided a little too long on purpose to accommodate variations in each installation. Align the bypass hose with the barb to decide how much you'd like to remove from the bypass hose. Shorten the bypass hose to the proper length. Place a small hose clamp (supplied) on the free end of the bypass hose. It might help to take a small cup of coolant and raise it up to the submerge the free end of the hose, then slide it onto the Thermo-Bob's brass barb. Tighten the bypass hose clamp appropriately.

22) Use the supplied tie wrap to retain the bypass hose to left engine mount. It is important to not allow this hose to touch the exhaust pipes during engine operation – you are responsible to keep the two from contacting. See finished **Figure 29**.

23) Verify that all ten radiator clamps are properly tightened. There are two original clamps on the left hose, two original clamps on the right hose, three clamps on the Tee (2 large, 1 small) and three clamps on the Thermo-Bob (2 large, 1 small).

REFILL THE COOLING SYSTEM

24) With motorcycles having such small cooling system volumes, it is important to measure what goes in so you don't have an air bubble using up half your volume. A measuring cup such as a Ratio Rite (around \$10, shown on the right) can be very useful for this step, as well as being generally handy around the garage.



25) Getting the full 38 to 40 fluid oz. back into the bike's cooling system can be a slowish process. Kawasaki "solved" that originally by drilling a large bleed hole in the original thermostat, but it's so large that it sends too much coolant through the radiator when the thermostat was closed, and a stock bike can't even get up to operating temperature when it's 60F or below outside. For this reason the Thermo-Bob has a much smaller bleed hole to facilitate filling the cooling system, but not overcool the bike half of the year like a stock bike.

26) Pour 8 fluid ounces (one cup) of premixed 50/50 distilled water/ethylene glycol into the radiator. Wait a few minutes, and the level should drop in the radiator, allowing you to get in another 8 ounces. Continue this pour-and-wait process until you have at least 32 fluid oz. in the cooling system. Install the radiator cap.

27) Start the engine and monitor the temperature of the right radiator tank with your hand. It should only take a few minutes to note that the thermostat has opened (the left radiator tank will suddenly become hot – don't burn yourself - the right radiator tank will warm as well) and you can shut off the engine.

TIME FOR A BREAK

28) Allow the system to cool completely – this will take over a half-hour. Use this time to clean up your work area, put away tools, wash up, and maybe even grab a bite to eat.

29) Once the system has fully cooled, you can carefully check all clamps for tightness one final time. Noting that your final goal is to refill the cooling system with approximately 40 fluid oz. of coolant, remove the radiator cap, and you should now be able to pour in the remaining coolant that you couldn't get in during step 26. Once you have a total of 38 fluid ounces or more of coolant back in the radiator, replace the radiator cap. and pour any remaining ounces of coolant into the overflow bottle.

30) Start the engine again. Now that the cooling system has very little trapped air, it will pressurize itself so you can conduct leak checks.

31) Install the "Radiator Cap Blocker" (**Figure 7**) and tighten two bolts to 90 in-lb.

32) Install the left and right turn signal brackets (complete the electrical connection first, then tighten the three bolts shown in **Figure 5** to 40 in-lb.

33) Raise the coolant overflow bottle to its proper orientation and install two bolts (**Figure 4**), torquing them to 40 in-lb.

34) Install the coolant pump cover with three bolts shown in **Figure 3**. Torque to 40 in-lb.

35) Install the left and right side fuel tank fairings, which have six bolts each as shown in **Figure 2**. Torque all fasteners to 40 in-lb.

36) Install the windshield by using its four bolts. Don't forget to sandwich the rubber washers in-between the windshield and the support brackets. Tighten appropriately (approximately 25 in-lb).

37) After a full heat and cool cycle from your first ride, it is recommended that you check the level in the coolant overflow bottle one final time and verify the level is between the min and max marks.

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)

The standard application of a Thermo-Bob on a Kawasaki KLR650 controls the coolant temperature *exiting* the engine at 195°F. The Versys application, however, is controlling the coolant temperature *entering* the engine, so a cooler thermostat is recommended to obtain the same engine operating temperatures. Based on testing, the STANT 180° “Superstat” is recommended (and came pre-installed in your Thermo-Bob). The Superstat is a heavy-duty thermostat with a weir-based opening that smoothes out temperature variation at low lift, as well as having a larger heat motor and small bleed hole in the ‘stat.

Physically, any of four STANT thermostats will fit the Thermo-Bob housing:

- Standard 180° (Part number 13828 (catalog) or 29828 (sold on card))
- **Superstat 180°(Recommended) (Part number 45828 (catalog), or 59828 or 65828 (sold on card... see photo below))**
- Standard 195° (Part number 13829 (catalog) or 29829 (sold on card))
- Superstat 195° (Part number 45829 (catalog), or 59829 (sold on card)).

Do not try to cross-reference these part numbers to different thermostat brands, they typically will not fit properly. If you are unable to find parts locally, replacement thermostats are available below and include shipping fees to the US or Canada:

Heavy-Duty 180°F Thermostat: \$12

There are two methods to provide payment:

1) A personal check or money order to:
Watt-man LLC
6501 E. Greenway Pkwy
#103-296
Scottsdale, AZ 85254

and at the same time, send an e-mail to watt-man@cox.net so I'll be able to box up your order and wait for your check.

2) PayPal to watt-man@cox.net



If you need other parts (brass fittings, aluminum housing pieces etc.) contact me as well. Same e-mail address as above.

IMVS V1



Figure 1. Contents of Thermo-Bob Kit for Versys.



Figure 2.

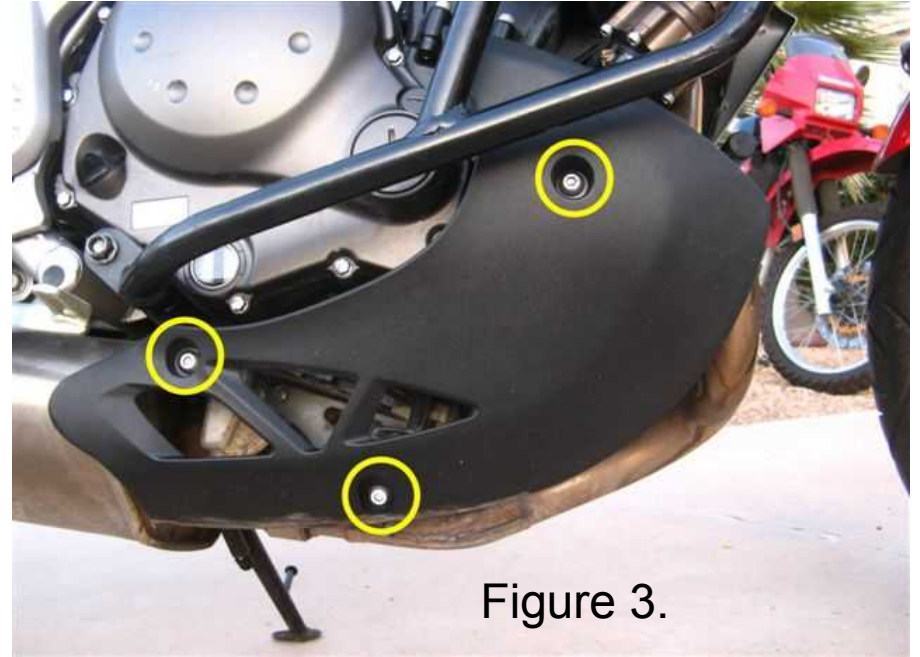


Figure 3.

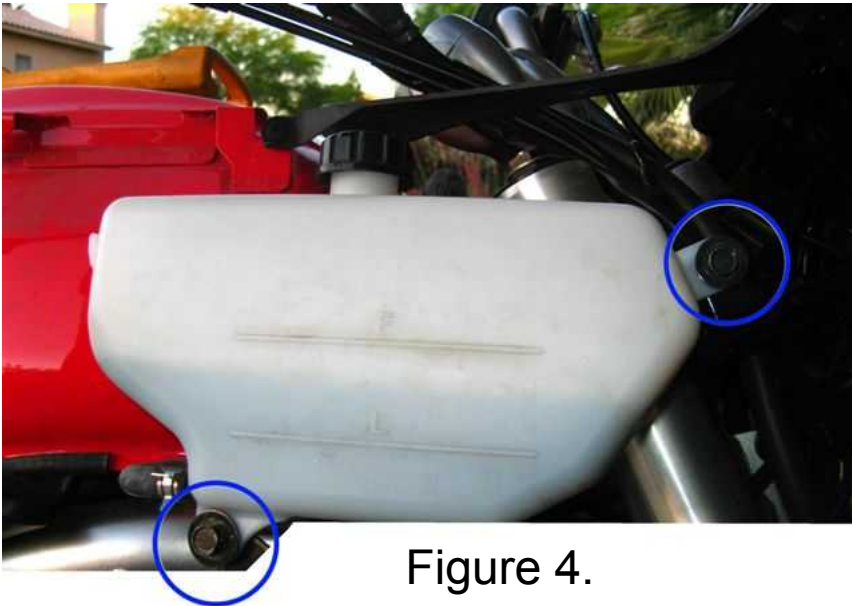


Figure 4.



Figure 5.

Figure 6.

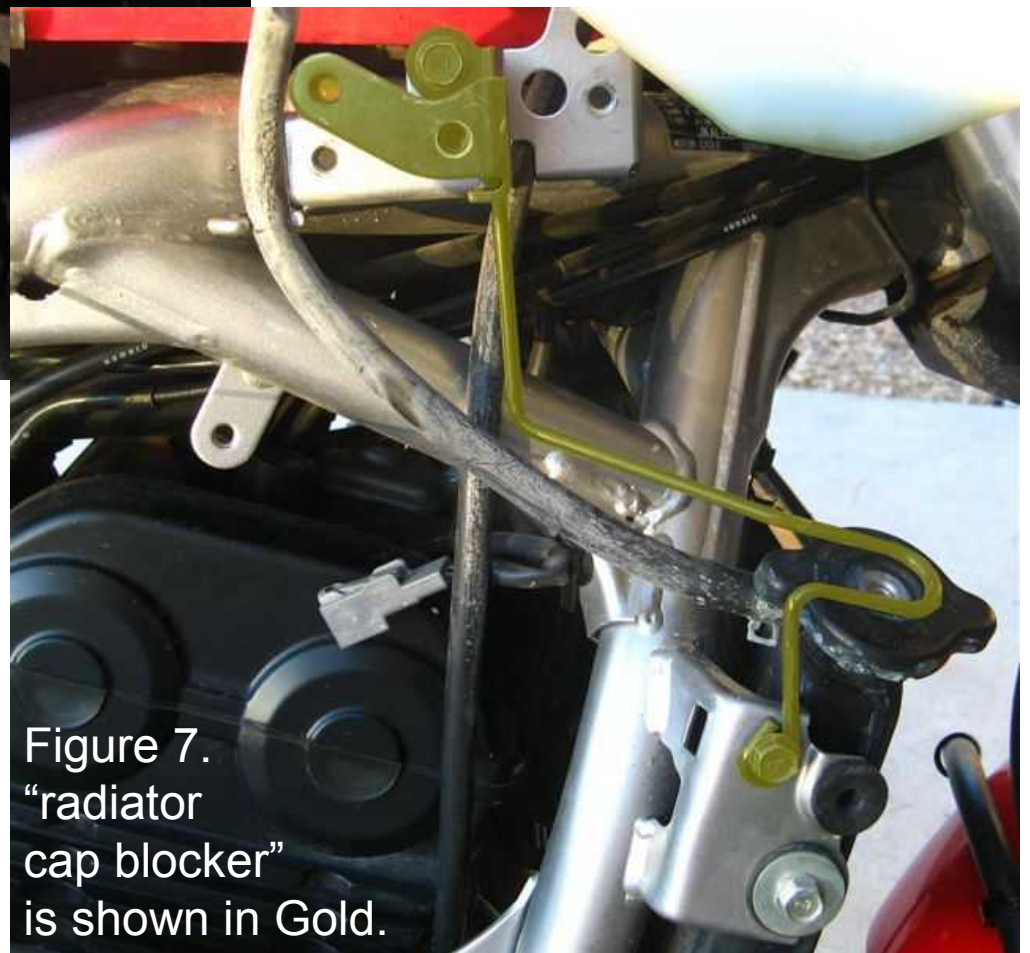
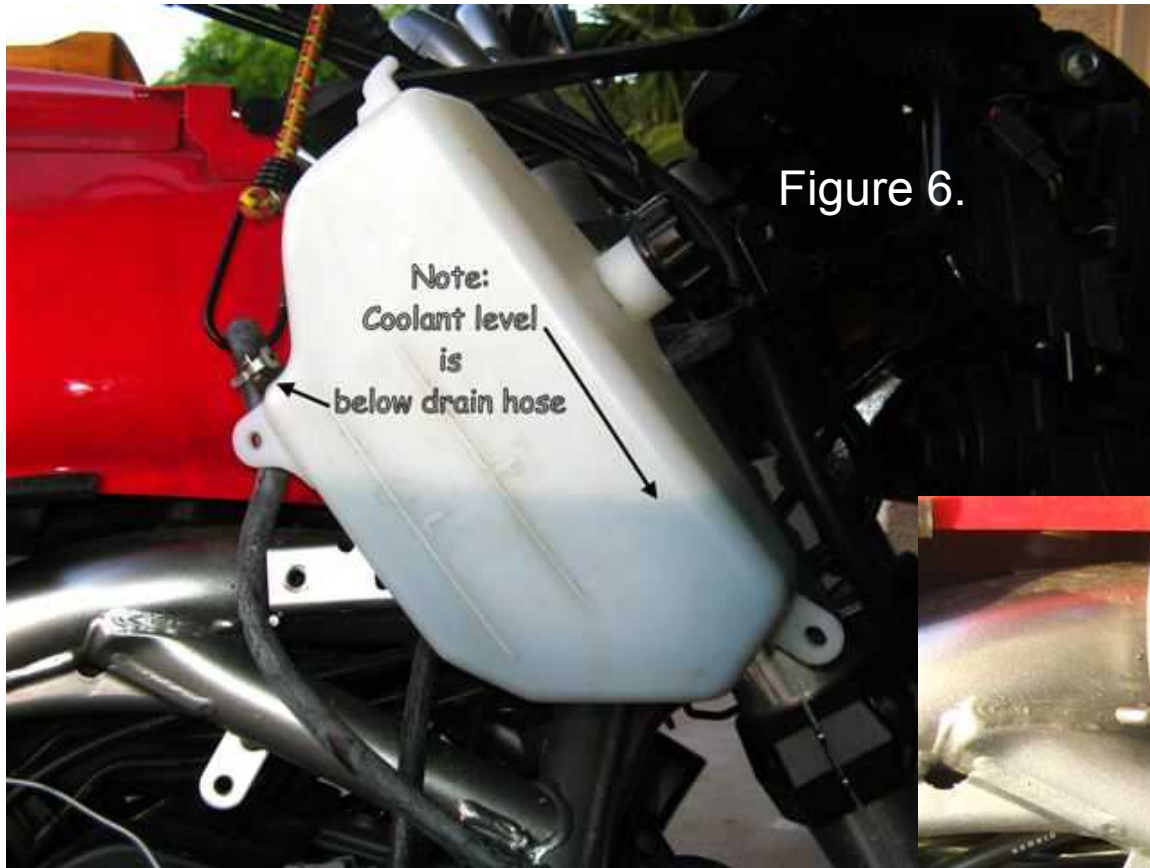


Figure 7.
"radiator
cap blocker"
is shown in Gold.

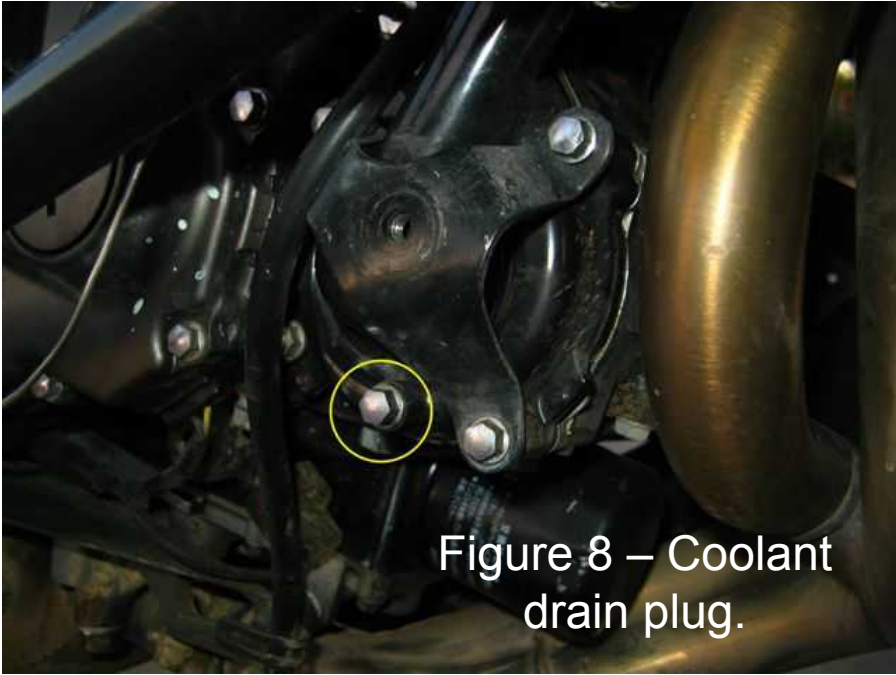


Figure 8 – Coolant drain plug.



Figure 9.



Figure 10.

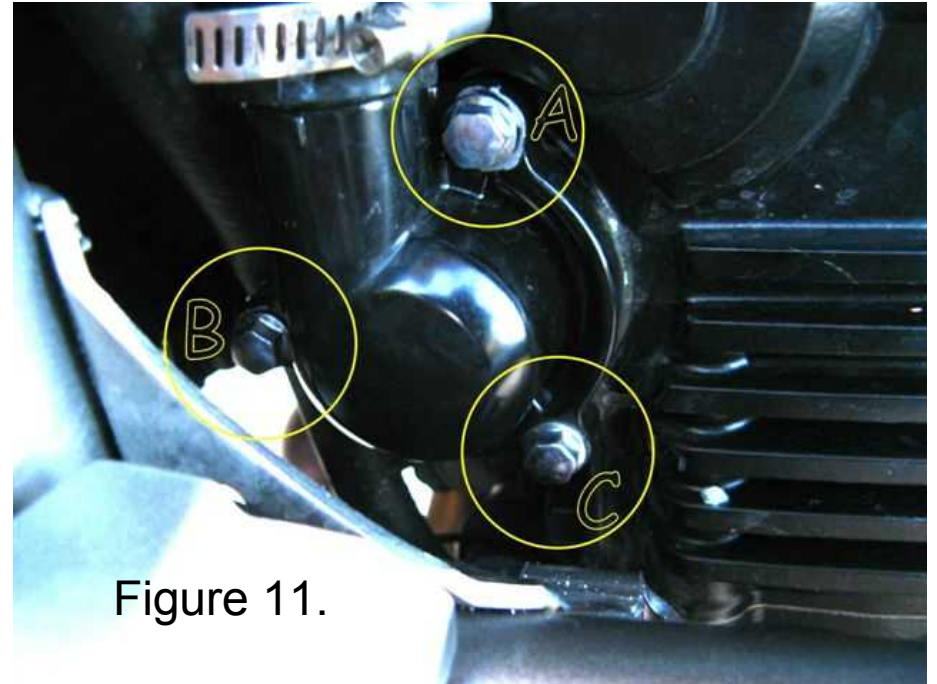


Figure 11.

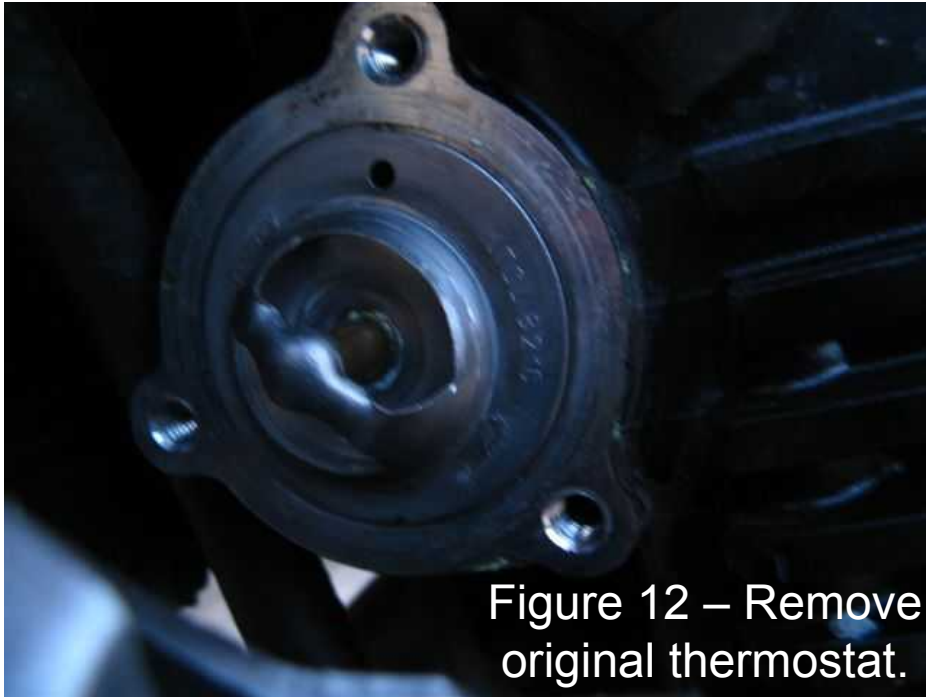


Figure 12 – Remove original thermostat.



Figure 13.



Figure 14.



These must be removed

Figure 15.

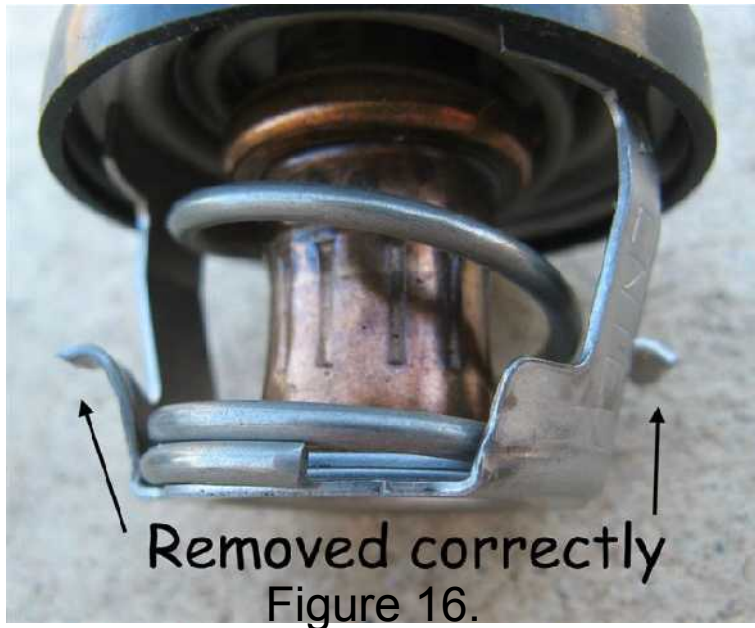


Figure 17.

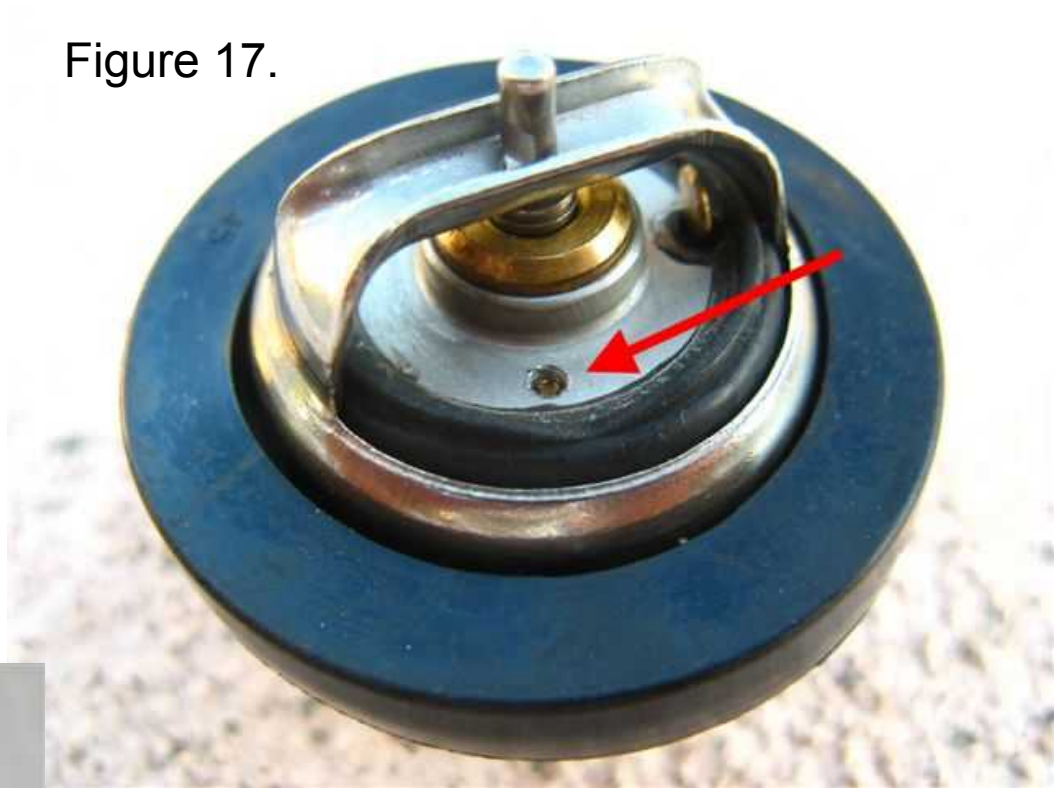


Figure 19.

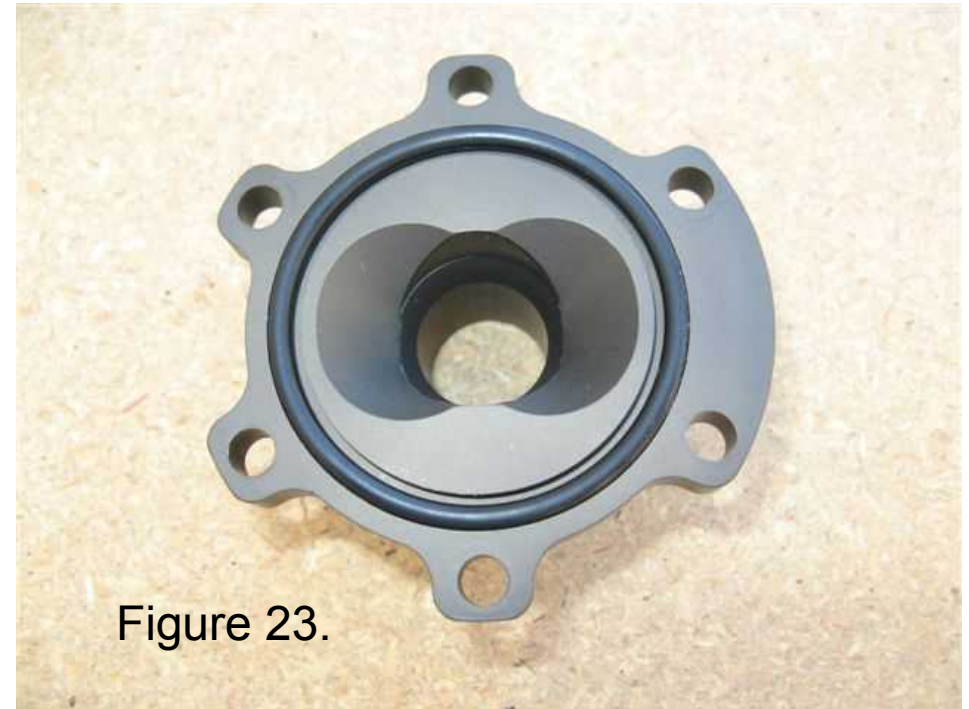




Figure 24.

Large skinny o-ring will hold cap off body slightly before screws are tightened



Good practice: tighten screws 1/2 turn each, 1-2-3-4-5-6 repetitively until tight

Figure 25.



Figure 26. Completed Installation.

Figure 27.

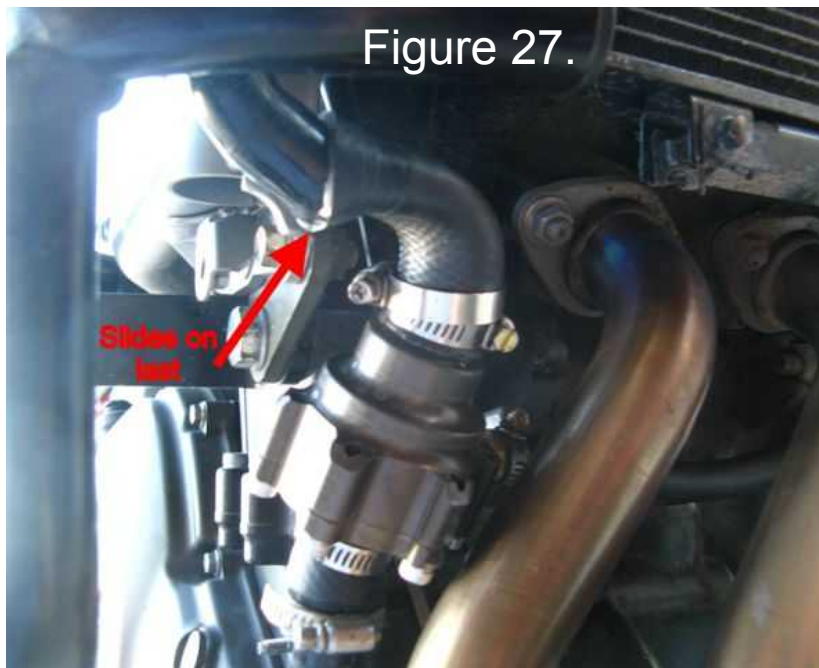


Figure 28.

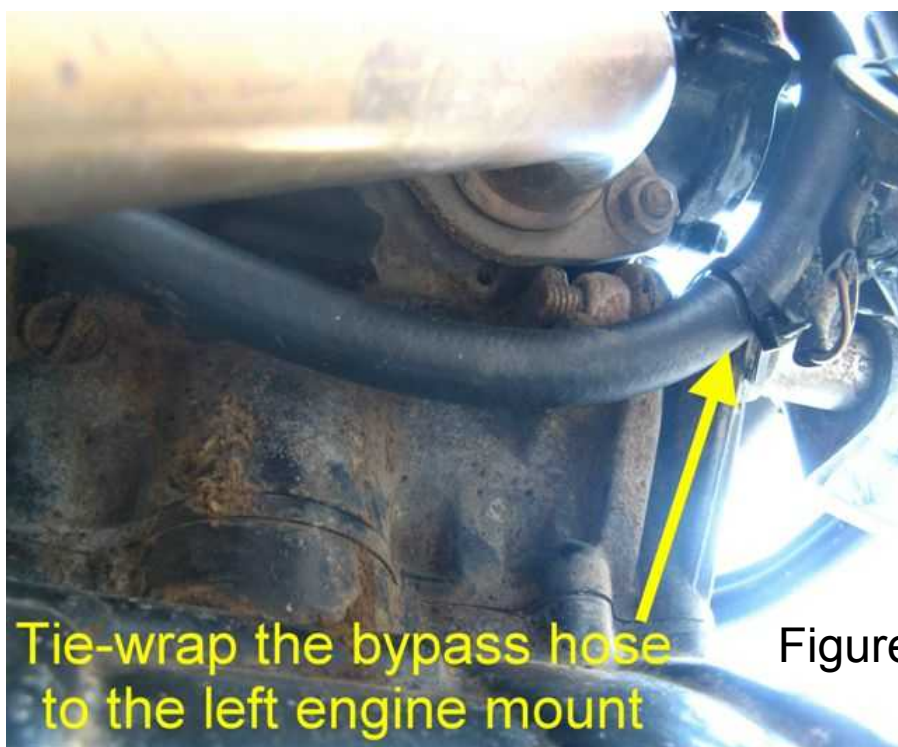
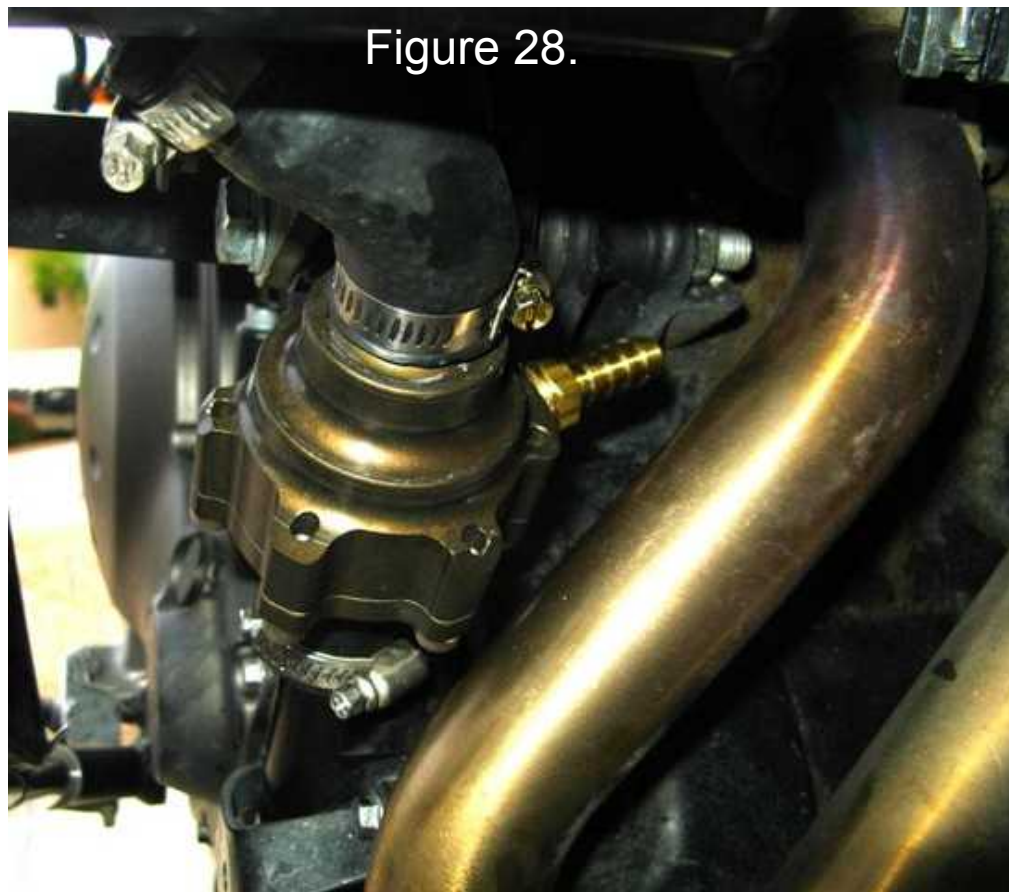


Figure 29.