



# 1999-2002 Suzuki SV650 Spark Plugs Replacement

Change the spark plugs in your '99 to '02 SV650 to improve engine performance.

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## INTRODUCTION

Change the spark plugs in your '99 to '02 SV650 to improve engine performance. Suzuki recommends that the plugs are inspected (and replaced if necessary) every 4,000 miles or 6 months and recommends that they are replaced every 7,500 miles or 12 months, regardless of condition

NOTE: The SV650 factory manual and several forums indicate that removing the radiator is not necessary for this repair and that the radiator can simply be rotated forward. However, we found this method difficult due to space constraints and risky because the radiator and radiator hoses could be damaged or even accidentally disconnected.

### TOOLS:

- [12mm Socket \(1\)](#)
- [Ratcheting Socket Wrench \(1\)](#)
- [3/8 inch Drive Socket Ratchet Extension \(1\)](#)  
*Should be between 3" and 6"*
- [4mm Allen Wrench \(1\)](#)
- [5/8" Spark Plug Socket \(1\)](#)
- [Phillips #1 Screwdriver \(1\)](#)
- [socket 6mm \(1\)](#)  
*Optional substitution for Phillips #1 screwdriver*
- [10mm Socket \(1\)](#)

### PARTS:

- [Engine Coolant \(1\)](#)

## Step 1 — Coolant Drain



- Remove the radiator cap security screw with a Phillips #1 screw driver by turning it counter-clockwise.
- Remove the radiator cap by pressing down on it and turning it counter-clockwise until it can be lifted off the radiator.

⚠ If your engine has been running recently, be very careful. The system may be pressurized and hot which will cause coolant to flow out through the radiator filler hole when the cap is removed.

## Step 2



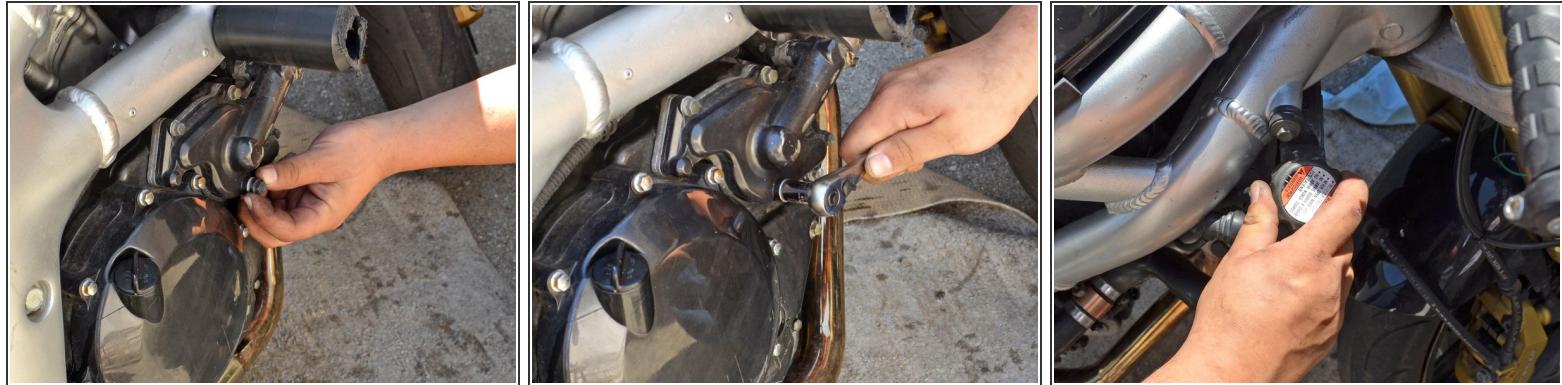
- Locate the 10 mm hex coolant drain plug. It is on the right engine cover, just below the coolant outlet.
- Turn the coolant drain plug counter-clockwise with a 10 mm socket wrench or box end wrench until it can be turned freely by hand.
- Place a container under the drain plug to catch the coolant when it streams out of the coolant drain hole.
  - Coolant capacity is 1.7L, ensure your container can accommodate this.
  - If you are not using a pan style container, it is recommended that you use a funnel to help prevent spills.

## Step 3



- Finish removing the drain plug by hand and allow the coolant to drain into the container.
- Once the draining coolant has slowed to a drip, stand the bike up vertically to allow the last of it to drain.

## Step 4



- Put the coolant drain plug back in its hole and turn it clockwise with a socket wrench or box end wrench until it is snug.
- **⚠** Do not over-tighten the drain plug or you risk stripping the threads. Suzuki rates the drain plug torque at 9.5 lb-ft (13 N-m).
- Place the radiator cap back over the filler hole and turn it clockwise until is snug.
- **ⓘ** Placing the radiator cap back on the radiator will prevent debris from entering the radiator while working on the bike.

## Step 5 — Seat



- If you have frame covers below your seat, remove them by removing the 4 mm allen bolts holding them on. Use a 4 mm allen wrench to turn the screws counter-clockwise until they come off.
- Once the frame covers are off, remove the 4 mm allen seat bolts on both sides of the seat. Use the 4 mm allen wrench to turn the screws counter-clockwise until they come off.
  - *(i)* The bolt in the picture is not stock.
- Lift the front of the seat, then pull it off the frame.

## Step 6 — Tank



- Turn the two 4mm allen bolts in the front tank mounts counter-clockwise with an allen wrench until they come out.  
*(i)* The bolts shown in the picture are not stock.
- Turn the two 12mm hex bolts in the tank's hinge base counter-clockwise with a socket wrench or box end wrench until they come out.

## Step 7



- Disconnect the fuel level sensor connector, located near the tank hinge base. It will be a three wire connector and one side of the wire will be traceable to the underside of the tank.
- Carefully lift the front of the tank to gain access to the hoses attached to the tank.  
**⚠** Do not lift the tank too much, or you risk damaging fuel lines, vacuum lines and spilling fuel.  
**⚠** There are small metal inserts that go into the front tank mounts. Make sure these do not fall out and get lost while working with the tank.

## Step 8



- Locate the petcock on the left underside of the tank. It will have 2 hoses attached to it and will be next to the fuel level sensor.
- Disconnect the vacuum hose from the petcock.  
*(i)* It is advisable to always remove this hose first to reduce the amount of fuel spilled.
- Disconnect the fuel hose from the petcock
- Disconnect the tank breather hose from the base of the tank.

## Step 9



- Carefully lift the tank up and off the frame of the bike, being sure that the fuel level sensor wire does not get caught in the frame.

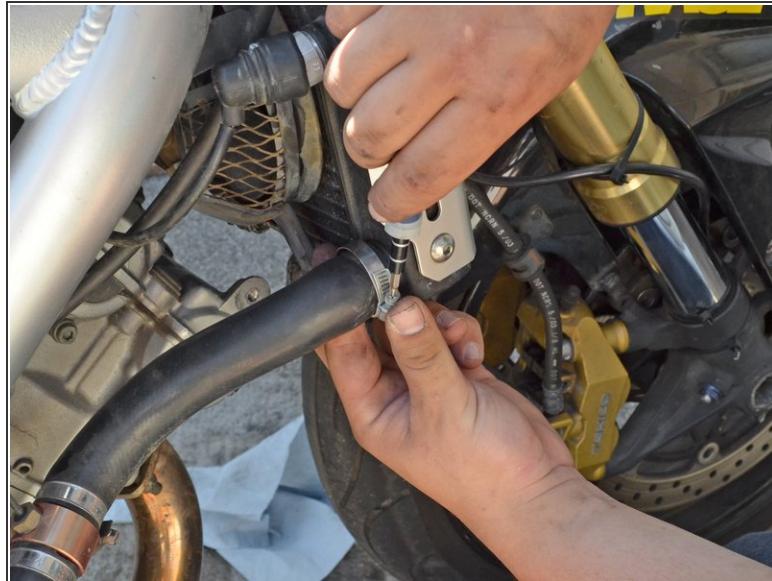
**⚠** When you set your tank aside, be mindful of the petcock hose fittings, especially the vacuum fitting on the bottom. These fittings can easily be broken by the weight of the tank and are costly to replace.

## Step 10 — Moving the Radiator



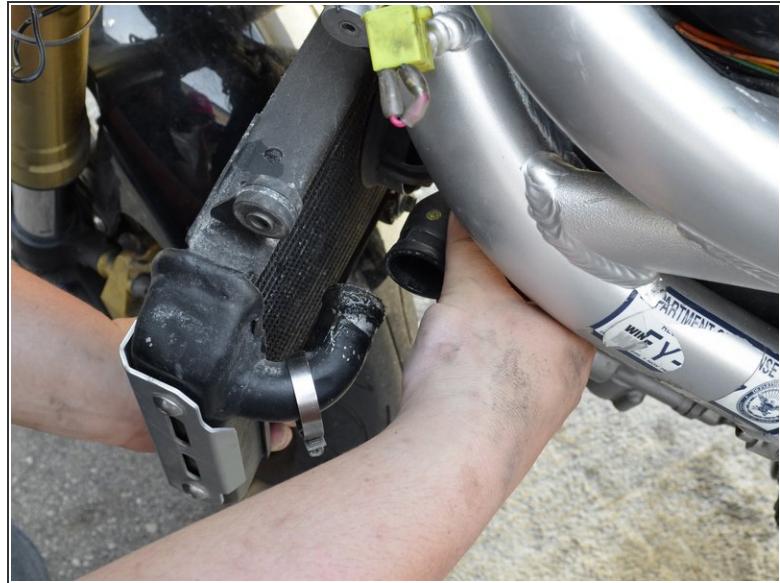
- Remove the 10 mm hex radiator mounting bolts, on the top left side of the radiator, the top right side of the radiator and the bottom right side of the radiator.
  - ⓘ The top left and bottom right bolts can be removed with a socket wrench or box end wrench. The top right bolt, however, should be removed with a box end wrench because the radiator cap and neck are in the way.

## Step 11



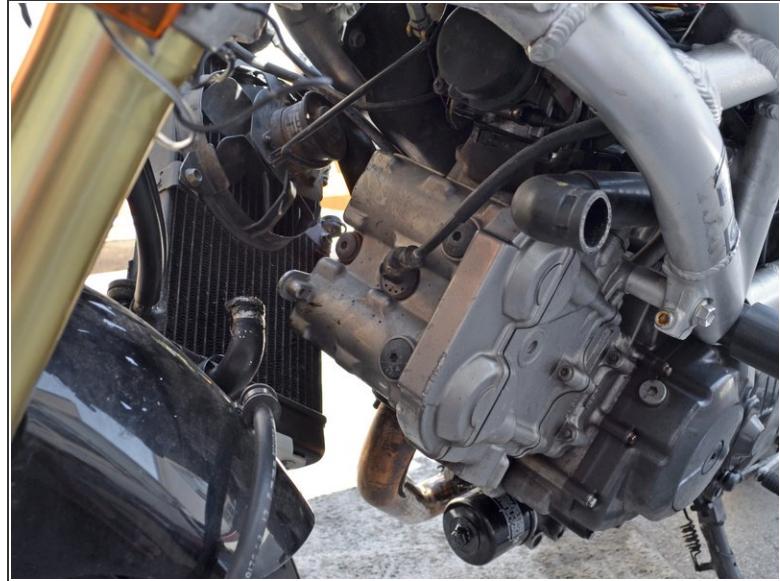
- Loosen the hose clamp attached to the right side radiator outlet by turning the bolt counter-clockwise with a Phillips #1 screwdriver, a 6 mm socket wrench or a 6 mm box end wrench.
- Slide the hose clamp down the radiator hose, away from the radiator outlet.
- Carefully pull the radiator hose off the radiator outlet. Slightly twisting the hose left and right to "walk" the hose off the outlet may help if it is stuck.

## Step 12



- Loosen the hose clamp attached to the left side radiator inlet by turning the bolt counter-clockwise with a Phillips #1 screwdriver, a 6 mm socket wrench or a 6 mm box end wrench.
- Carefully pull the radiator hose off the radiator inlet. Slightly twisting the hose left and right to "walk" the hose off the inlet may help if it is stuck.

## Step 13



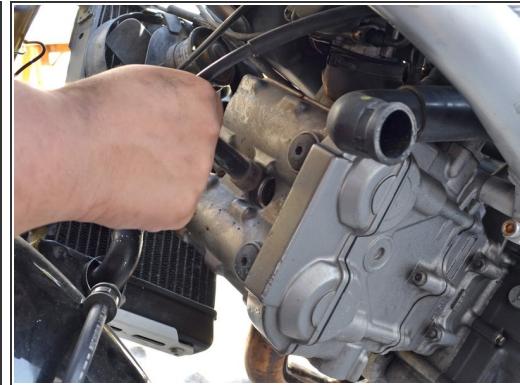
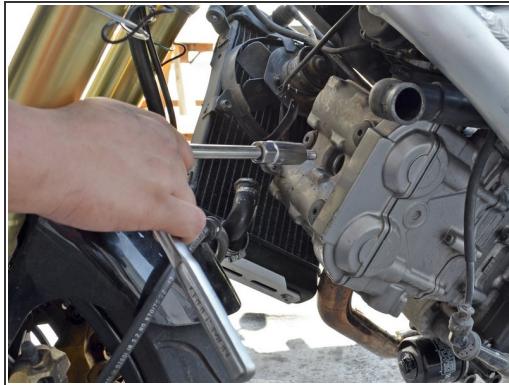
- Unbend the wire holder on the inside of the front right of the frame to get slack in the wires attached to the radiator.
- Carefully move the radiator to the right side of the bike, out of the way of the cylinder head.  
⚠ The radiator is not completely disconnected from the bike, there are still wires connected to the thermo-switch and fan. Be sure that you do not put too much tension on these wires or you risk ripping them out of their sockets.

## Step 14 — Changing Spark Plug #1



- Remove the spark plug cap from cylinder 1 by grabbing the plug cap boot and pulling straight out.  
⚠ Do not remove the cap by pulling on the wires, you risk ripping the wire out of the cap.
- Use a 5/8" spark plug driver, a socket extension and a socket wrench to remove the spark plug. Press the spark plug driver firmly onto the spark plug until you feel it "grab" the plug and turn it counter-clockwise until you can pull it out of the cylinder head.  
⚠ Be careful not to drop anything down the spark plug hole and into the cylinder! If something falls into the cylinder you will have to do a complete cylinder tear down to remove what ever was dropped!

## Step 15



**⚠** Be sure to check the electrode gap of your spark plug, even if the plug has been advertised as pre-gapped. An improper gap can stress the ignition system and cause misfires. Use a feeler gauge to check that the gap is between .028" and .031" or .7 mm and .8 mm. If the gap is out of spec, carefully bend the ground tab, being sure to not scar the electrode or ground tab.

- Insert the new spark plug into the spark plug driver. Press it in firmly so that the rubber insert grips the plug and doesn't allow it to fall out when turned upside down.
- Place the spark plug into the spark plug hole and turn it clockwise until you feel the gasket seat. Give the wrench approximately 1/4 to 1/2 a turn clockwise from the seated position to snug up the spark plug.
- **i** If you have a torque wrench available, Suzuki's torque spec for the spark plug is 8 lb-ft or 11 N-m.
- Place the spark plug cap on the new spark plug. Press the cap on firmly until you feel it fully seat.

## Step 16 — Reinstalling the Radiator



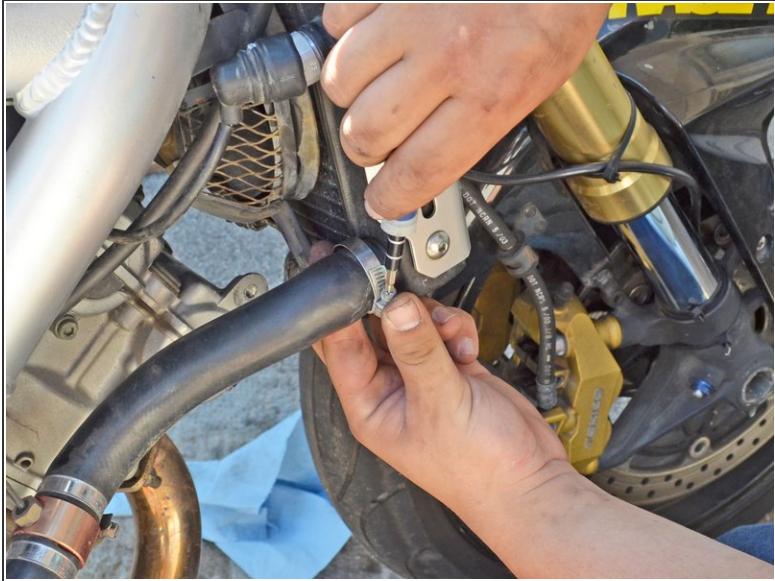
- Move the radiator back to its original position.
- Wipe dirt and debris off the radiator inlet and outlet with a clean rag.
- Insert the 10 mm hex radiator mounting bolts into the two top mounting points. Screw these bolts in a few turns by hand, but leave them loose enough to allow the radiator to rotate back and forth.

## Step 17



- Slide the left radiator hose back onto the radiator inlet.
- Move the hose clamp back over the hose/radiator inlet and turn the clamp bolt clockwise, with a 6 mm socket, 6 mm box end wrench or Phillips #1 screwdriver, until the hose clamp is snug.

## Step 18



- Slide the right radiator hose back onto the radiator outlet.
- Move the hose clamp back over the hose/radiator outlet and turn the clamp bolt clockwise, with a 6 mm socket, 6 mm box end wrench or Phillips #1 screwdriver, until the hose clamp is snug.

## Step 19



- Insert the bottom right radiator mounting bolt and turn it clockwise by hand a few turns.
- Tighten the three radiator mounting bolts by turning them clockwise with a 10mm socket wrench or box end wrench until they are snug.
- Re-wrap the wires in the wire holder to prevent them from shifting while riding.

## Step 20 — Changing Spark Plug #2



- Remove the spark plug cap from cylinder 2. Remember to not pull it by its wire!
- Use a 5/8" spark plug driver, a socket extension and a socket wrench to remove the spark plug. Press the spark plug driver firmly onto the spark plug until you feel it "grab" the plug and turn it counter-clockwise until you can pull it out of the cylinder head.

 Don't forget to be cautious about not dropping things down the cylinder hole!

## Step 21



- Check and adjust the new spark plug's gap as described in step 15.
- Put the new spark plug in the spark plug driver and insert it into the spark plug hole.
- Turn the spark plug clockwise until the spark plug gasket seats. Turn the spark plug 1/4 to 1/2 a turn clockwise from the seated position.
- *(i)* See step 15 for torque specs if you are using a torque wrench.
- Firmly press the spark plug cap onto the new spark plug until you feel it fully seat.

## Step 22 — Reinstalling the Tank



- Gently set the tank back into place.
- Rotate the tank forward and re-attach the tank breather hose.
- Route the fuel level sensor wire between the frame and underneath the tank hinge, being sure that it is not tangling or interfering with any other wires or hoses. Reconnect the fuel level sensor.

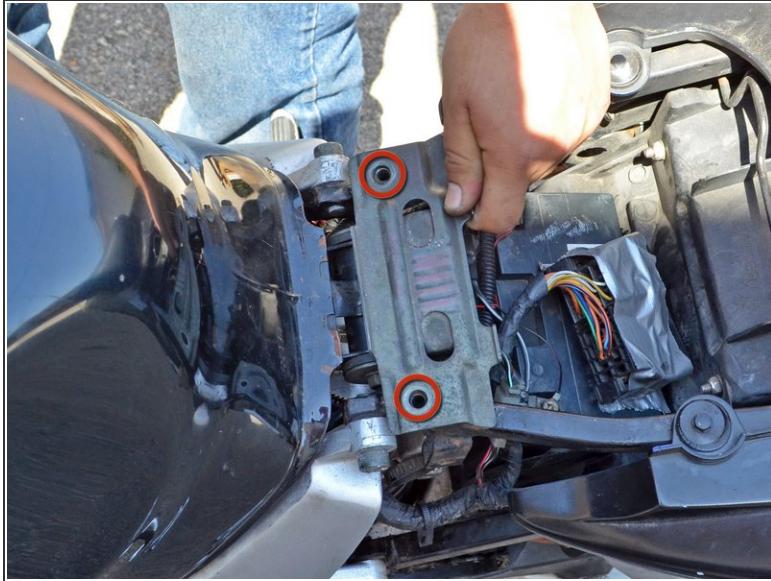
## Step 23



- Lift the front of the tank slightly.
- Re-attach the fuel hose.
- Re-attach the vacuum hose.
- Gently lower the tank until it rests on the frame.

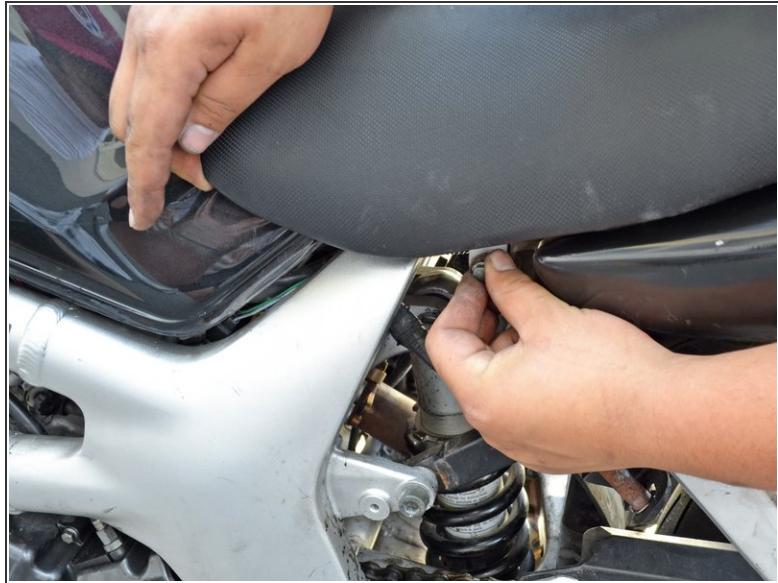
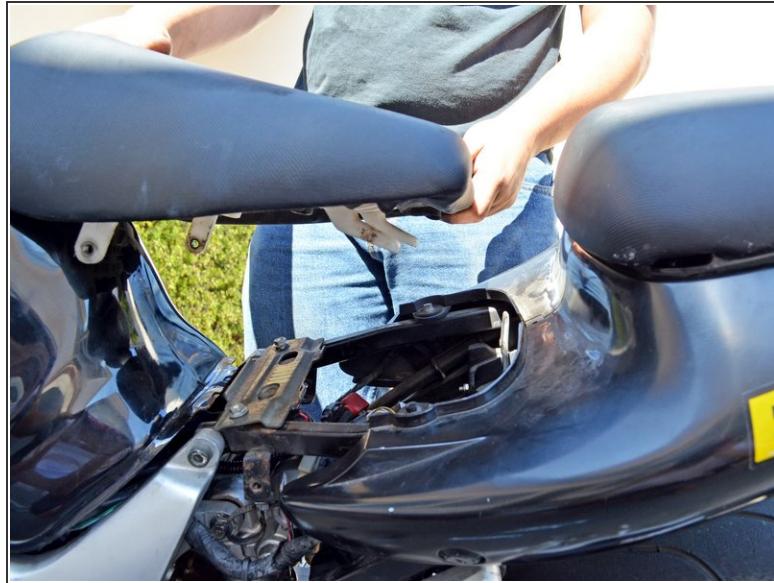
*(i)* Watch the fuel and vacuum hoses as you lower the tank and make sure they do not pinch or kink. If flow is obstructed in either of the hoses, the engine will not run properly.

## Step 24



- Align the bolt holes of the tank hinge base.
- Place the hinge base bolts into their holes and turn them clockwise by hand a few turns. Do not tighten them yet.
- Align the the front mounting bolt holes and place the front mounting bolts into their respective holes. Turn the bolts clockwise by hand a few turns.
-  Don't forget to put the small metal inserts back into the front mounting holes if you removed them earlier.
- Tighten the four tank mounting bolts with a 10mm socket wrench or box end wrench until snug.

## Step 25 — Reinstalling the Seat



- Slide the seat into place, back end first. Make sure the plastic hooks on the back of the seat slide under the metal bar in the sub-frame.
- Insert the seat bolts and turn them clockwise until they are snug.
- If you have frame covers, reposition them into their appropriate spots, insert their bolts and turn the bolts clockwise until they are snug.

## Step 26 — Refilling the Coolant



- Remove the radiator cap again and insert a funnel into the radiator filler hole.
- Pour approximately 1.7 quarts of coolant into the radiator or fill until you can see coolant near the filler neck. Use one hand to stabilize the funnel to prevent spills.
- *(i)* Towards the end of refilling the cooling system, take short breaks in filling to allow air bubbles to work their way out of the system. You can turn the engine on for a couple seconds to help pull coolant through the system.

## Step 27



- Remove the funnel and place the radiator cap back over the radiator filler hole. Press down on the cap and turn it clockwise until it is snug.
- Insert and turn the radiator cap security screw clockwise until it is snug.
- Start the bike, look for excessive vibration and listen for any irregular noises such as ticking or knocking that were not previously present. If something is not right, shut the bike off quickly to prevent potential damage.
  - Loud ticking indicates that a spark plug may be too loose or that its threads are damaged. Try tightening the plug a little more. If that does not fix the ticking, inspect the engine's and spark plug's threads for damage.
  - Knocking and/or excessive vibration likely indicates that a cylinder is not firing properly. Identify the cylinder that is not firing and first double check that the spark plug cap is properly installed and not damaged. If the cap is ok, check the spark plug. Recheck the gap of the spark plug and adjust as necessary. If the engine still knocks, you will want to double check that you have the correct heat spark plugs or that you did not get a defective spark plug.