



**Motorcycle
Electronic Cruise Control
Instruction Manual ©**

**Cleaning of solenoids for
MCS020 and MCS574 vacuum actuators**

MOTORCYCLE CRUISE CONTROLS

**MotorCycle Setup Pty. Ltd.
A.B.N. 94 798 167 654
6 Kingston Street
Mount Waverley, Victoria, 3149
AUSTRALIA**

Note: - Electrical specifications and tests are at the end of this document.

Actuator Solenoid Valve Pack Cleaning, Repair and Replacement.

In order to replace the solenoid valve pack in the actuator, it is necessary to partially remove the actuator from the bike. In order to gain adequate access to the actuator the actuator cable may have to be disconnected from the CIU or bikes carburettors or throttle bodies, depending on how much free length of cable is available and how accessible the actuator is. If this is not done, caution must be exercised to ensure the cable is not kinked during the following procedure. In most cases, it should not be necessary to disconnect the cable.

If the actuator is fitted with covers, remove the rubber grommet, and try gently twisting the hose to 'break' the seal and pull the hose off the hose barb.

CAUTION: - Do NOT pull hard on the hose, you may break the hose barb inside the actuator.



If you can't remove the hose, cut the hose flush with the cover, then remove the cover from the actuator.

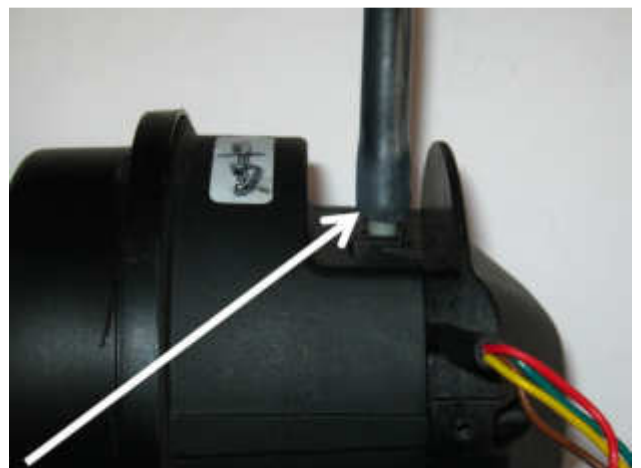
CAUTION: - Take care not to cut the wires when you cut the hose.



For actuators without covers, or if you have already removed the cover, disconnect the hose from the hose barb.

Gently twist the hose to 'break' the seal and pull the hose off the hose barb.

CAUTION: - Do NOT pull hard on the hose, you may break the hose barb.



Alternatively, use a flat blade screwdriver to gently lever the hose off the hose barb.



Undo the three Phillip's head screws holding the actuator mounting bracket to the actuator and remove the bracket.

If the actuator has a cover on it this must be removed as well.

BE SURE TO NOTE WHICH HOLES WERE USED AND THE POSITION OF THE BRACKET ON THE ACTUATOR.



Gently prise up the two tabs on the back of the actuator by inserting a screwdriver tip and gently twisting the screwdriver, as shown below, to release the top cover.



Insert a screwdriver tip and gently twisting the screwdriver to release the top cover.



Lift off the cover from the back.



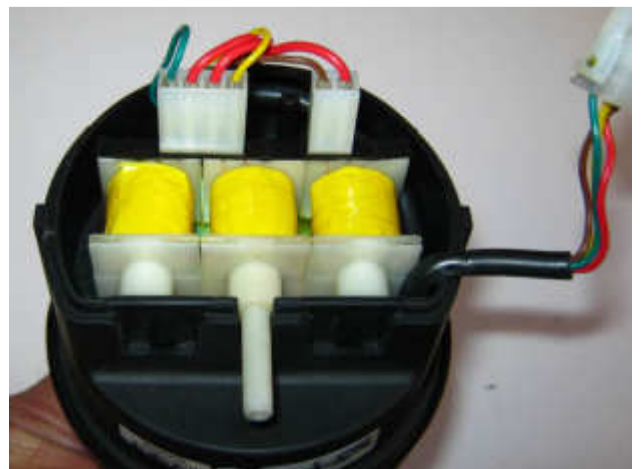
Remove it by tilting the cover forward until the two front tabs are free.



Note location of wires and the solenoid pack in the three solenoid actuator (MCS574).

Pull the plug/s off the solenoid pack terminals, being careful not to dislodge the solenoid pack.

The solenoid pack must be held in place while the plug/s is/are removed.



The three solenoid pack from the MCS574 actuator.

Remove the solenoid pack by pulling it up from the actuator body.

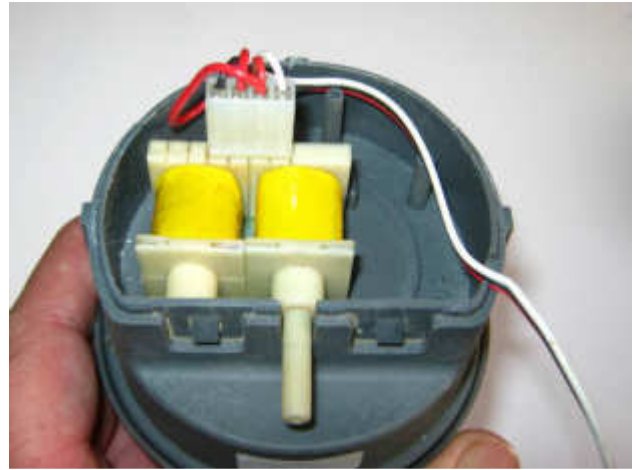
BE CAREFUL NOT TO LOSE THE THREE 'O' RINGS.



Note location of wires and the solenoid pack in the two solenoid actuator (MCS020).

Pull the plug/s off the solenoid pack terminals, being careful not to dislodge the solenoid pack.

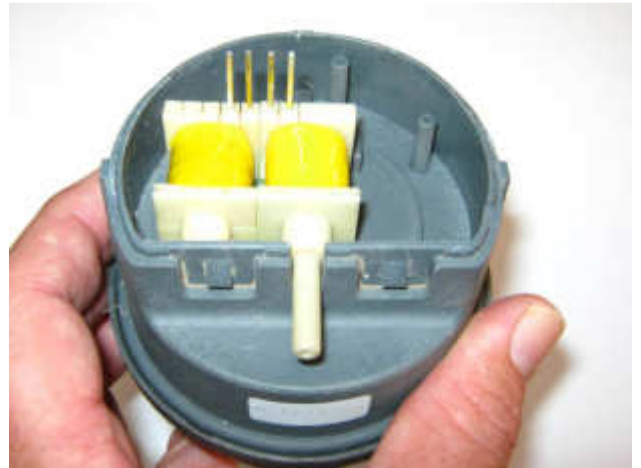
The solenoid pack must be held in place while the plug/s is/are removed.



The two solenoid pack from the MCS020 actuator.

Remove the solenoid pack by pulling it up from the actuator body.

BE CAREFUL NOT TO LOSE THE TWO 'O' RINGS.



Sometimes the 'O' rings stay in the port holes in the solenoid.

In this example, two of the 'O' rings stayed in the solenoids.



One 'O' ring stayed on the port in the actuator.

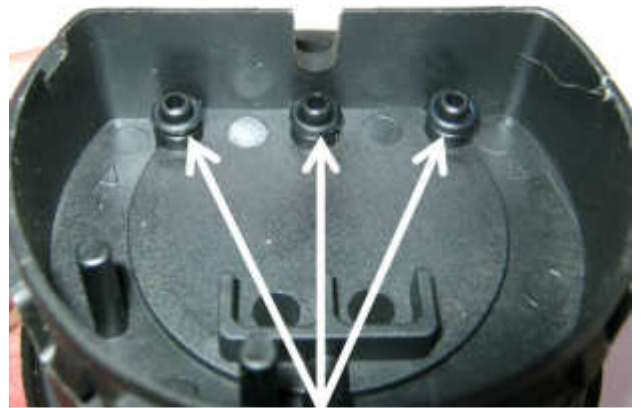


Hook the 'O' rings out of the ports in the solenoids with a small screwdriver.



Check the condition of the 'O' rings as they are critical to the operation of the actuator.

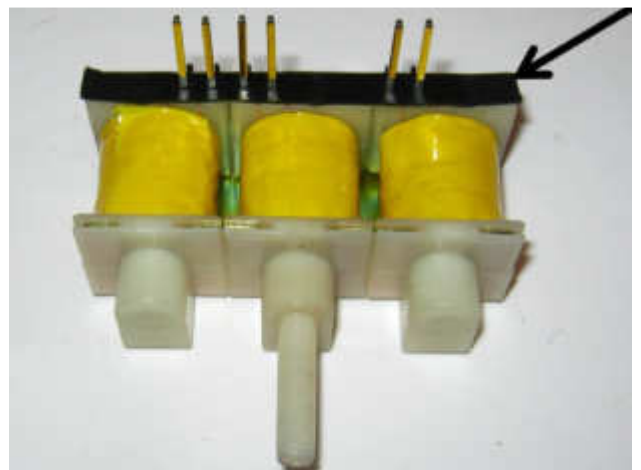
Replace the 'O' rings on the ports on the actuator.



NOTE: - You can measure the resistance of the coils to check for electrical faults. The resistance should be approximately 40~50Ω (ohms) on each coil.

Open circuit (infinite Ω) indicates a broken wire. Short circuit (0 or low Ω) indicates that the insulation on the wire has broken down.

If fitted, remove the rubber strip from the solenoid pack.

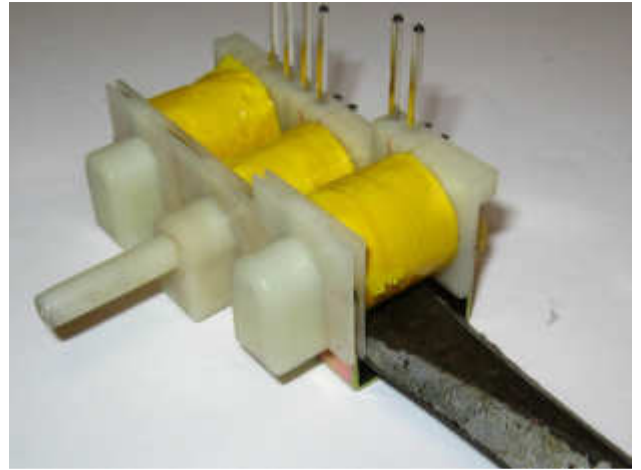


MotorCycle Cruise © - Actuator Solenoid Cleaning

Use a large flat blade screwdriver and GENTLY lever one dump solenoid out of the bracket as shown.

Be VERY careful not to damage the tape covering the solenoid wire coil.

The wire is very fine and is easily damaged.

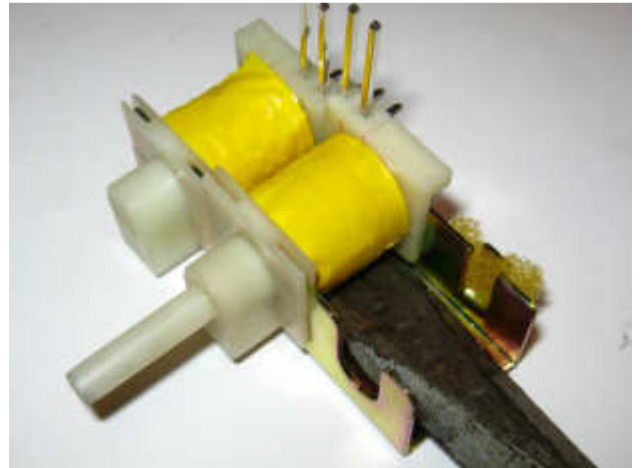


Use a large flat blade screwdriver and GENTLY lever the vacuum solenoid out of the bracket as shown.

Be VERY careful not to damage the tape covering the solenoid wire coil.

The wire is very fine and is easily damaged.

If you are going to clean the dump solenoids as well, remove the second dump solenoid from the bracket.

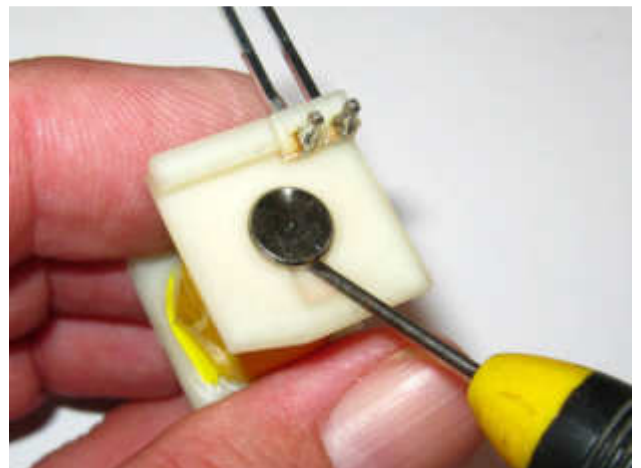


WARNING: - BE VERY CAREFUL NOT TO MIX THE COMPONENTS FROM THE VACUUM AND DUMP SOLENOIDS. IT IS CRITICALLY IMPORTANT FOR YOUR SAFETY THAT THESE PARTS ARE NOT MIXED.

VACUUM solenoid cleaning.

This solenoid has the hose barb for the vacuum hose to connect to it.

Use a fine flat blade screwdriver and gently prise the cap out of the solenoid.



Remove the cap, spring and shuttle from the solenoid housing.

Carefully inspect the parts for dirt, corrosion or wear.

Carefully check the 'O' rings and other rubber parts for damage or deterioration.



TWO SOLENOID ACTUATOR ONLY (MCS020)

Examine the end cap from the VACUUM solenoid.

Later versions of the two solenoid actuator have a small raised shoulder on the inside end, arrowed in the photo.

Earlier versions were flat on the end. If you have a cap with the flat end, please contact us and we will supply a new cap with the shouldered end.



Clean the components carefully.

We recommend using Methylated Spirits. In USA and Canada this is called denatured alcohol or methyl hydrate. In Europe this may be called Spirits, Brennsprit or just Spiritus or Ethylalkohol (Germany), alcool a bruler (France), or alcool etilico denaturato (Italy).

Another good cleaning product is electrical contact cleaner such as CRC CO Contact Cleaner. This is also sold as Video Head Cleaning Spray.

Isopropyl (rubbing) alcohol is also suitable, but it is more expensive and is often watered down.

NOTE: - We do not know if wood alcohol is suitable or not.

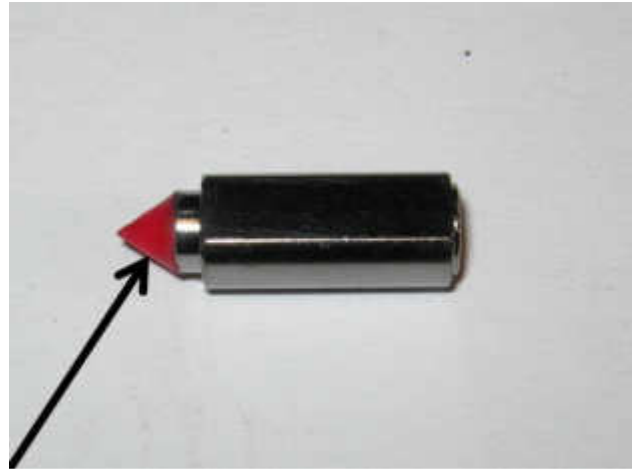
WARNING: - BE VERY CAREFUL NOT TO MIX THE COMPONENTS FROM THE VACUUM AND DUMP SOLENOIDS. IT IS CRITICALLY IMPORTANT FOR YOUR SAFETY THAT THESE PARTS ARE NOT MIXED.

Carefully clean the conical rubber tip on the shuttle.

WARNING: - DO NOT USE AGGRESSIVE SOLVENTS TO CLEAN THE COMPONENTS.

This rubber tip is usually red, but on some earlier versions they may be other colours, usually black.

Examine the tip for wear or cracking.

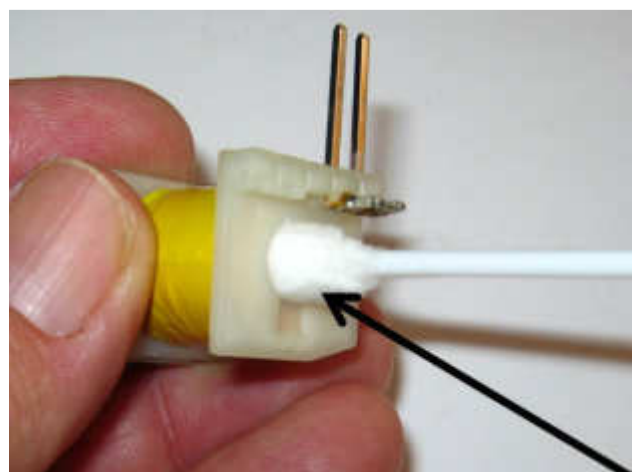
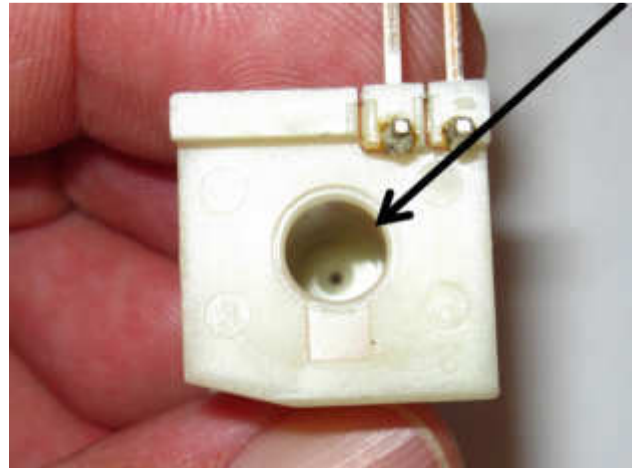


Clean inside the solenoid housing.

WARNING: - DO NOT USE AGGRESSIVE SOLVENTS TO CLEAN THE COMPONENTS.

Use cotton buds or cotton swabs (Q-Tips) to carefully clean inside the solenoid.

WARNING: - DO NOT USE AGGRESSIVE SOLVENTS TO CLEAN THE COMPONENTS.



Allow the parts to air dry for a few minutes.

Re-assemble the solenoid.

WARNING: - Note the orientation of the shuttle, the rubber tip on the end of the shuttle MUST go into the solenoid housing first (arrowed).

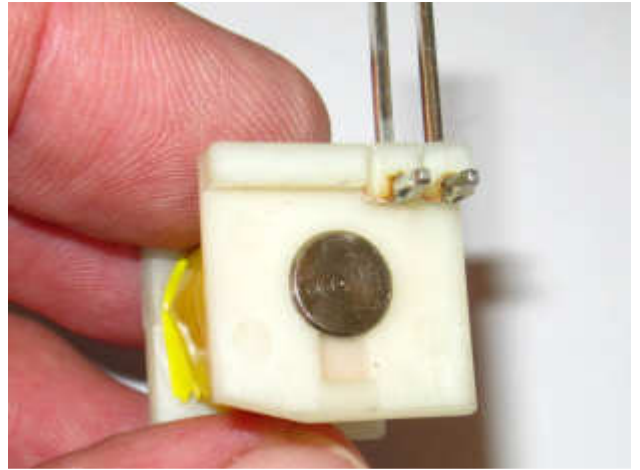
Then the spring.

Then the end cap.



Push the end cap in so it is flush with the end of the solenoid.

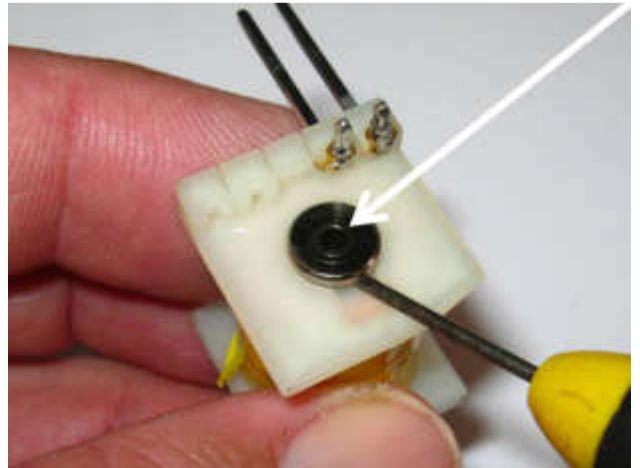
WARNING: - The vacuum solenoid has a solid end cap. It does not have a hole through it.



Dump solenoid cleaning.

This solenoid does NOT have a hose barb.

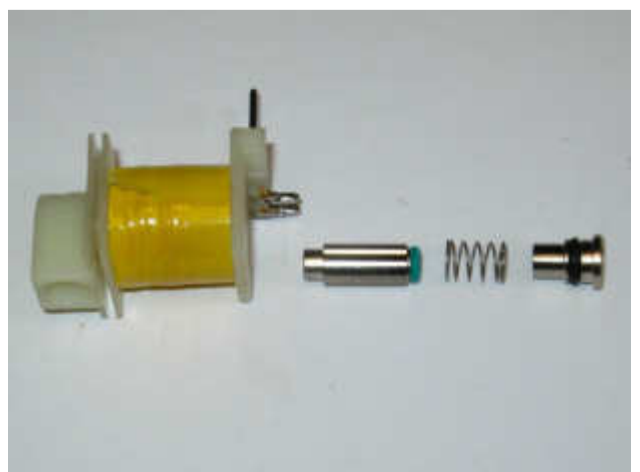
Use a fine flat blade screwdriver and gently prise the cap out of the solenoid.



Remove the cap, spring and shuttle from the solenoid housing.

Carefully inspect the parts for dirt, corrosion or wear.

Carefully check the 'O' rings and other rubber parts for damage or deterioration.

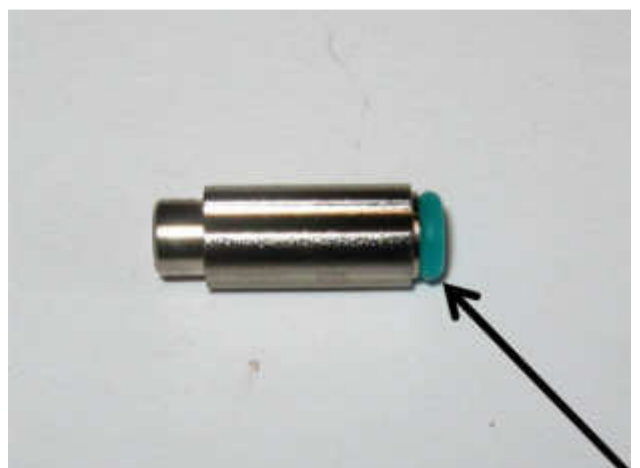


Carefully clean the rubber 'O' ring on the shuttle.

WARNING: - DO NOT USE AGGRESSIVE SOLVENTS TO CLEAN THE COMPONENTS.

This rubber 'O' ring is usually green, but on some earlier versions they may be other colours, usually black.

Examine the 'O' ring for wear or cracking.



MotorCycle Cruise © - Actuator Solenoid Cleaning

Clean all the parts with suitable solvent.

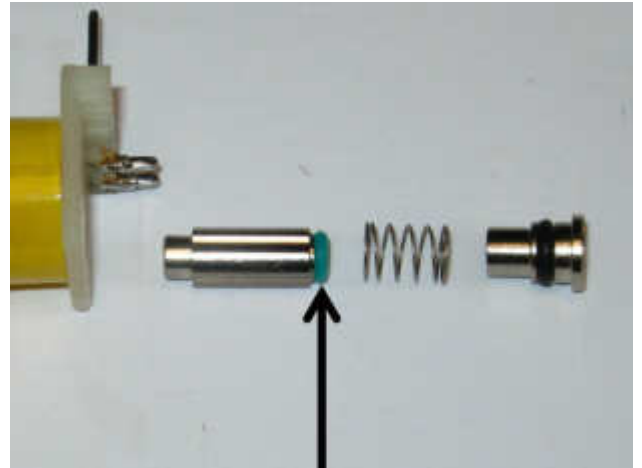
Allow the parts to air dry for a few minutes.

Re-assemble the solenoid.

Note the orientation of the shuttle, the rubber 'O' ring on the end of the shuttle MUST point toward the spring and end cap (arrowed).

Then the spring.

Then the end cap. **WARNING: - IT IS CRITICAL THAT THIS IS NOT ACCIDENTALLY REPLACED WITH AN END CAP FROM THE VACUUM SOLENOID THAT DOES NOT HAVE THE HOLE.**



WARNING: - THE END CAP ON THE DUMP SOLENOID MUST HAVE THE HOLE DRILLED THROUGH THE END CAP.



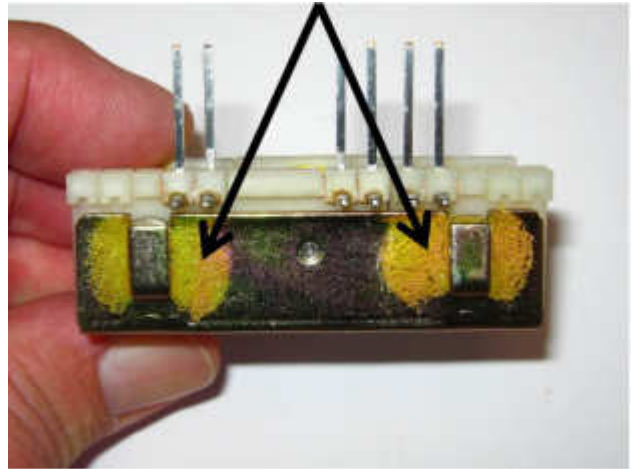
Replace the solenoids in the bracket.

Replace the rubber strip (if fitted).

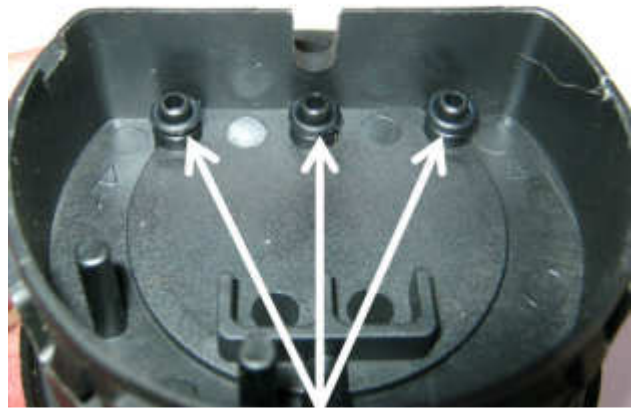


Clean the foam filter/s behind the dump solenoid/s.

Make sure they are inserted correctly.



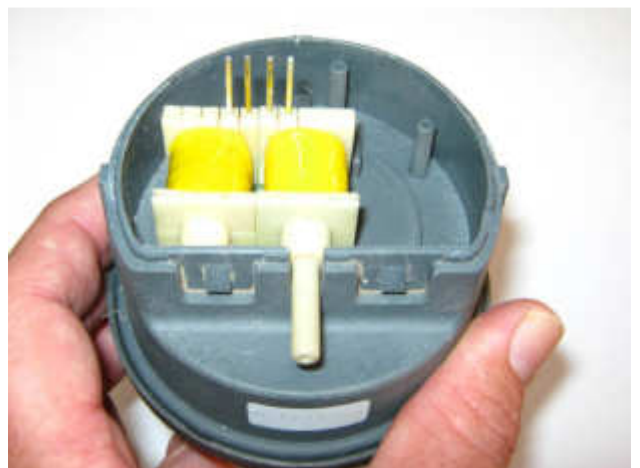
Check that the 'O' rings are in position on the ports correctly.



Place the new or repaired solenoid pack as shown, and push it down to ensure the holes in the solenoid are over the 'O' rings and the solenoid pack is seated correctly.



Place the new or repaired solenoid pack as shown, and push it down to ensure the holes in the solenoid are over the 'O' rings and the solenoid pack is seated correctly.

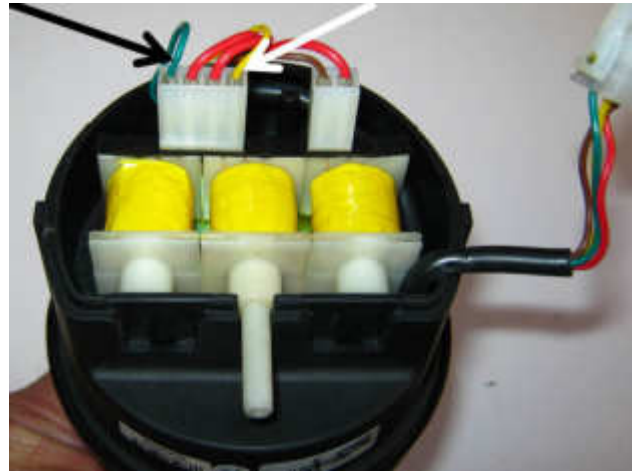


Three solenoid actuator.

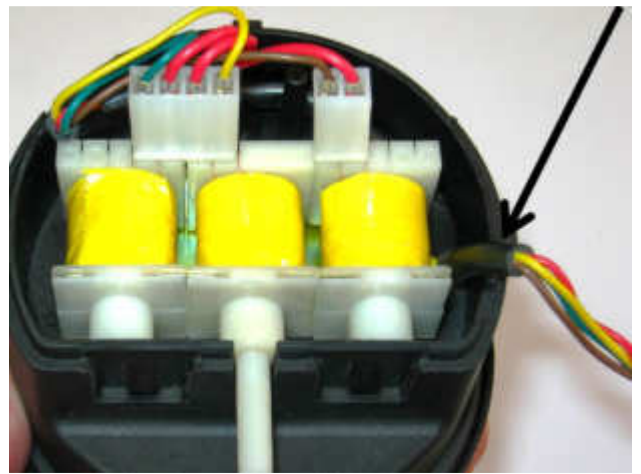
Replace the plugs and wires as shown. Note the position of the wire in the actuator body as it runs behind the two guide posts and out through a notch.

The orientation of the plugs on the solenoid packs is very important. The orientation of the two way plug with the red and brown wires has the red on the right and the brown on the left in this view.

The orientation of the four way plug has the yellow wire on the right (white arrow) and the green wire on the left (black arrow) in this view, and the plug must be on all four pins. If this is reversed the cruise control will not work.



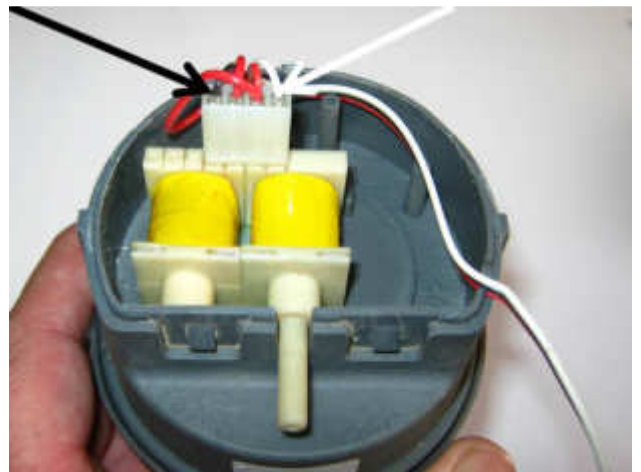
If the actuator has covers fitted, position the end of the rubber sheath as shown (arrowed).



Two solenoid actuator.

Replace the plug and wires as shown. Note the position of the wire in the actuator body as it runs behind the two guide posts and out through a notch.

The orientation of the plug in the solenoid pack is very important. In this view the black wire is on the left (black arrow) and the white wire is on the right (white arrow). If this is reversed the cruise control will not work.



Replace the cover by engaging the front tabs first, then pushing down until all four lock tabs engage on the lugs.

This can be done by squeezing the cover and the body together at all four points around the actuator where the tabs are located.

DON'T FORGET THE TWO FRONT TABS.

Ensure that the wires are not caught under the cover and come out of the actuator through the hole in the cover.



Check that the rear tabs are fully engaged.



Replace the actuator mounting bracket on the actuator, using the same holes for the three screws and ensure the bracket is replaced the same way as before it was removed.

DO NOT RELY ON THE PHOTOGRAPH FOR CORRECT POSITIONING OF THE BRACKET AS THE LOCATION OF THE BRACKET IS DIFFERENT FOR DIFFERENT MOTORCYCLES.



Electrical tests for the solenoids.

Resistance of the solenoid coils:

Two solenoid pack:

Red wire to white wire ~ 45 ohms

Red wire to black wire ~ 45 ohms

Three solenoid pack:

Red wire to yellow wire ~ 45 ohms

Red wire to green wire ~ 45 ohms

Red wire to brown wire ~ 45 ohms

Operational test for the solenoids.

Any 12V DC source can be used such as a 12V motorcycle or car battery. Each solenoid draws ~0.25 A.

NOTE: - The solenoids MUST be fitted to the metal 'bracket' or 'frame' in order to work correctly. They will NOT operate correctly if removed from the metal bracket.

Connect the red wire to the 12V positive of the battery. Connect the other wires (black, white, yellow, green and brown), one at a time, to the negative. The solenoid should give a very 'firm' click when connected and a lighter 'click' when disconnected. The vacuum solenoid will sound slightly different to the dump solenoid.

Movement of the shuttle in the solenoid can be seen by viewing it through the port that connects to the actuator housing (the one with the 'O' ring). Note: the shuttle on move a very short distance, about 1mm.