Motorcycle
Electronic Cruise Control
Instruction Manual ©

Replacement of the cable & diaphragm MCS020 and MCS574 vacuum actuators

MOTORCYCLE CRUISE CONTROLS

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Actuator Cable & Diaphragm Replacement.

Note: - These instructions apply to both the 2 solenoid actuator (part number MCS020) and the 3 solenoid actuator (part number MCS574).

CAUTION: - During the procedure for disassembling the actuator there is a risk of breaking the locking tabs. This will render the actuator unusable.

1. In order to replace either the cable or diaphragm in the actuator, it is necessary to remove the actuator from the bike. The actuator cable will have to be disconnected from the CIU or bikes carburettor.

Remove the vacuum hose from the actuator hose barb. Be careful not to break the hose barb when removing the vacuum hose. It may be possible to gently pull the hose off the barb, but this is unlikely.

If the actuator is NOT fitted with decorative/protective covers, use a flat blade screwdriver to gently lever the hose off the barb. DO NOT JUST PULL ON THE HOSE.

If the actuator is fitted with covers, remove the rubber grommet, cut the hose as close to the cover as possible (don't cut the wires too!), remove the cover and then lever the stub of the hose off the hose barb.

NOTE: - it is NOT necessary to remove the smaller cover from the diaphragm housing (if fitted).

2. Mount the actuator in a vice with either soft jaws or a rag so that the cable end is uppermost. Clamp the actuator in the vice across the moulded ribs on each side of the actuator. These ribs are the strongest part of the actuator. Be careful not to clamp the actuator too tight and distort the body.

3. Use a hot air gun or hair dryer to GENTLY warm the actuator until the housing feels WARM to touch. This will make the plastic more flexible and reduce the chance of breaking the tabs. DO NOT MAKE THE ACTUATOR HOT TO TOUCH.

4. Apply gentle CONTROLLED sideways pressure to the ‘nose’ of the actuator diaphragm housing as shown (push away from the picture).

5. Keep applying pressure and use a LARGE flat screwdriver to gently lift the edge of the diaphragm housing to release the locking tabs. Apply JUST enough sideways pressure to the nose of the actuator to keep the lock tab released after you remove the screwdriver to prevent the tab locking again. Use the screwdriver to release the next tab while holding the pressure. You will need to reduce the sideways pressure as you release the second tab. Once you have released three tabs, the housing should separate fairly easily. BE VERY CAREFUL at this stage to prevent the other tabs suddenly releasing and being broken.

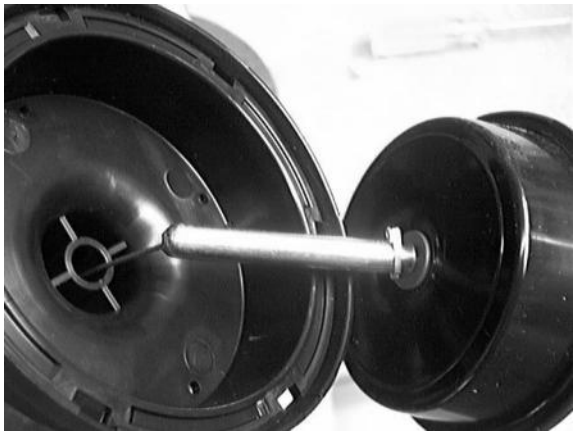
When you are down to the last one or two tabs it should be possible to gently lift the diaphragm housing from the actuator body.

6. Pull the diaphragm out of the housing to reveal the link tube and split pin under the diaphragm.

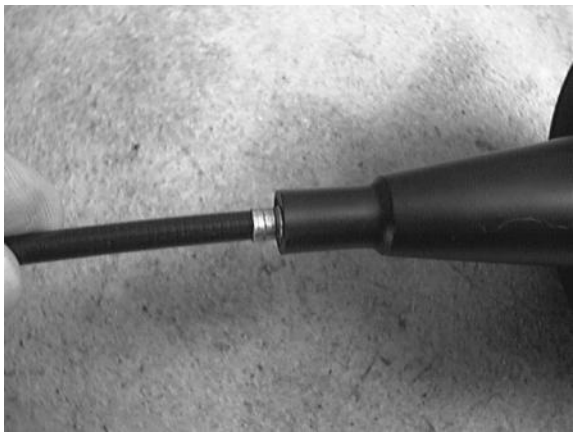
Remove the split pin and remove the diaphragm.

If the cable is not to be replaced, go to step 10 to reassemble the actuator.

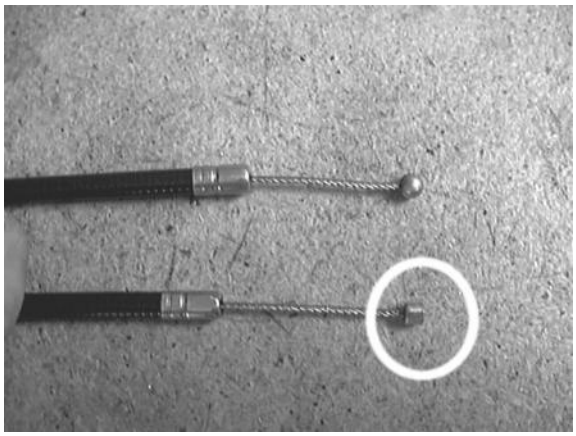
If the cable is to be replaced, slide the link tube off the end of the cable.



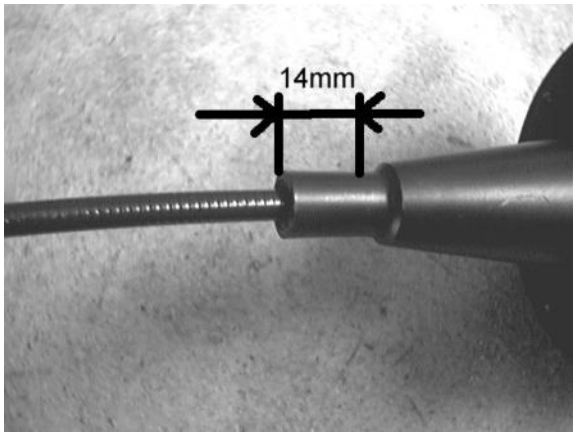
7. Pull the cable out of the nose of the diaphragm housing.



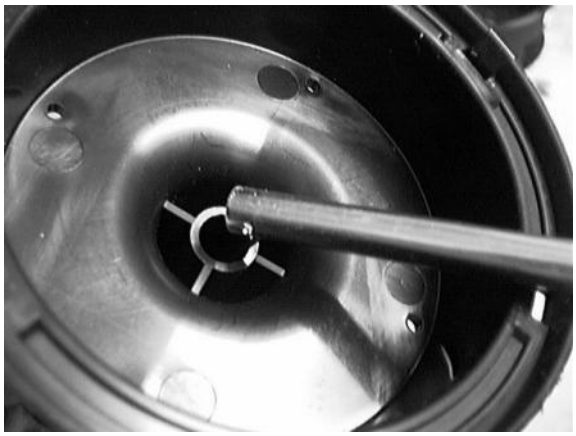
8. Identify the correct end of the cable with the small cylindrical nipple, NOT the ball nipple.

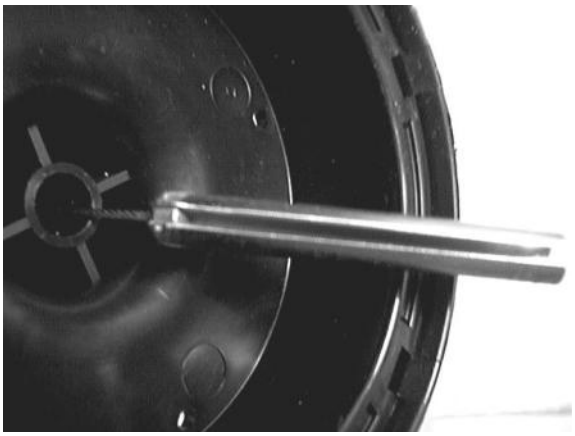


9. Insert the cable into the nose of the diaphragm housing. Push the cable in until it stops against the shoulder inside the housing. The cable should go in to a depth of about 14mm (9/16”). This is about 3~4mm past the metal cap on the end of the cable outer. You have to push fairly hard to press the cable in. **Be careful not to kink the cable during this procedure.**



10. Refit the link tube to the end of the cable by placing the nipple in the open end and then sliding the tube along the nipple.





11. Clean the diaphragm meticulously. Use methylated spirits (wood alcohol) or contact cleaner or video cleaner to remove any dirt on the diaphragm. Clean the diaphragm housing and the main body of the actuator. There must be NO dust or dirt present inside the vacuum chamber or on the sealing lip of the diaphragm.

12. Refit the diaphragm to the link tube and fit a new split pin.

13. Refit the diaphragm inside the diaphragm housing. Note the ridges on the edge of the diaphragm and the matching depressions in the diaphragm housing. The diaphragm must be turned so that the ridges and depressions match up when the actuator is re-assembled. If this is not done, the actuator will leak and will not work. **NOTE: - some earlier versions of the actuator may NOT have these ridges.**

14. Make sure that the spring is fitted to the metal plate on the diaphragm as shown, and the sealing lip on the diaphragm is located correctly in the housing.

NOTE: - We have found that a VERY FINE bead of NEUTRAL CURE SILICONE SEALANT on the lip of the diaphragm that mates with the main housing (see next photo) can help eliminate leaks. Do NOT use any silicone sealant that smell strongly of acetone. This may damage the housing.

The bead of sealant may also be applied in the groove in the housing shown in the next photograph. Use a small syringe fitted with a large bore needle to apply the fine bead of silicone sealant.

15. Fit the two halves of the actuator back together. Make sure that the spring is seated in the recess in the main housing shown at right in the photo.

Be careful not to break off the locking tabs when mating the halves. Push the halves together and check that all of the lock tabs are engaged. The orientation of the two housings NOT important, as long as the tabs line up with the holes.

16. Testing the actuator.

Attach a hose to the hose barb. You can either suck on the hose or use the actuator hose already fitted to the bike as a source of vacuum.

Using clip leads or wires, attach the red wire to a positive 12V source (the bikes battery is ideal).

If you have a two solenoid actuator, connect the black wire to the battery negative.

If you have a three solenoid actuator, connect the brown and green wires to battery negative.

Suck on the hose or start the bike then hold the white (2 solenoid) or yellow (3 solenoid) wire to the battery negative. You should see or feel the actuator cable pull in. If you are sucking on the hose, use your tongue to suck all of the air out of the actuator and pull the cable all the way in. The cable should pull all the way in quite quickly (2~3 seconds) if it is connected to the bikes vacuum hose.

Disconnect the white or yellow wire from battery negative and then stop sucking.

Pull on the end of the actuator cable. There might be a little 'spring' to the cable, but it should hold in indefinitely. If it gradually pulls out, there is a leak in the actuator, either in the diaphragm or one of the solenoids and the actuator will not work properly.

Disconnect the battery positive from the red wire. The actuator cable should be released all the way in 1 to 2 seconds. **Note: - that the cable will not be pushed out, it will only be released so that it can be pulled out.**

17. Refit the actuator to the bike.

18. Test the actuator and cruise control using diagnostic mode. Refer to section 8 of the installation instructions or your trouble shooting guide for details about diagnostic mode operation.