

# Repairing the fuel pump 16710-MAY-305 for Honda Africa Twin XRV750



## Introduction;

Since there have been a lot of questions regarding the faulty fuel pump for the Africa I have gathered the information I have found.

I have also found a solution to the problem.

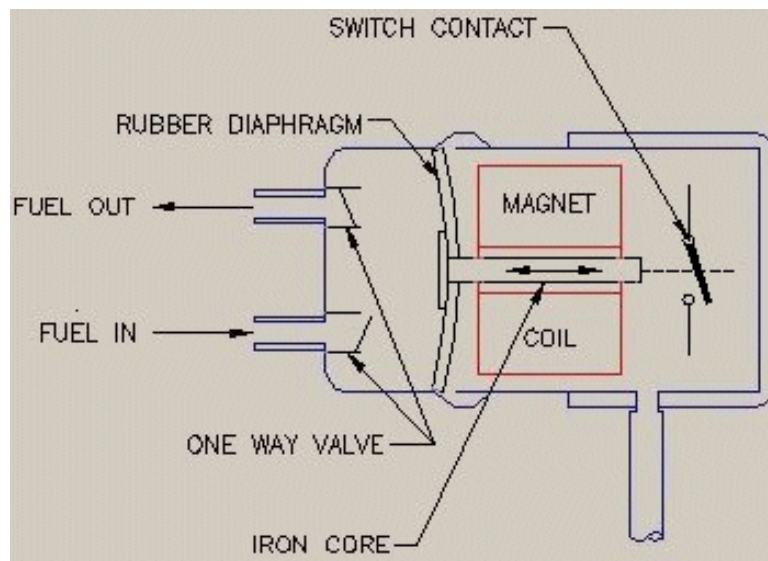
Many Africa owners has changed the expensive electrical pump for a cheaper vacuum pump but since I want mine as close to original I wanted to keep the electrical pump without spending a lot of money and at the same time feel confident that the pump wouldn't stop working.



Pic 1. Mikuni DF-52.  
Vacuum pump from African Queens.

Function;

The pump works as follows;

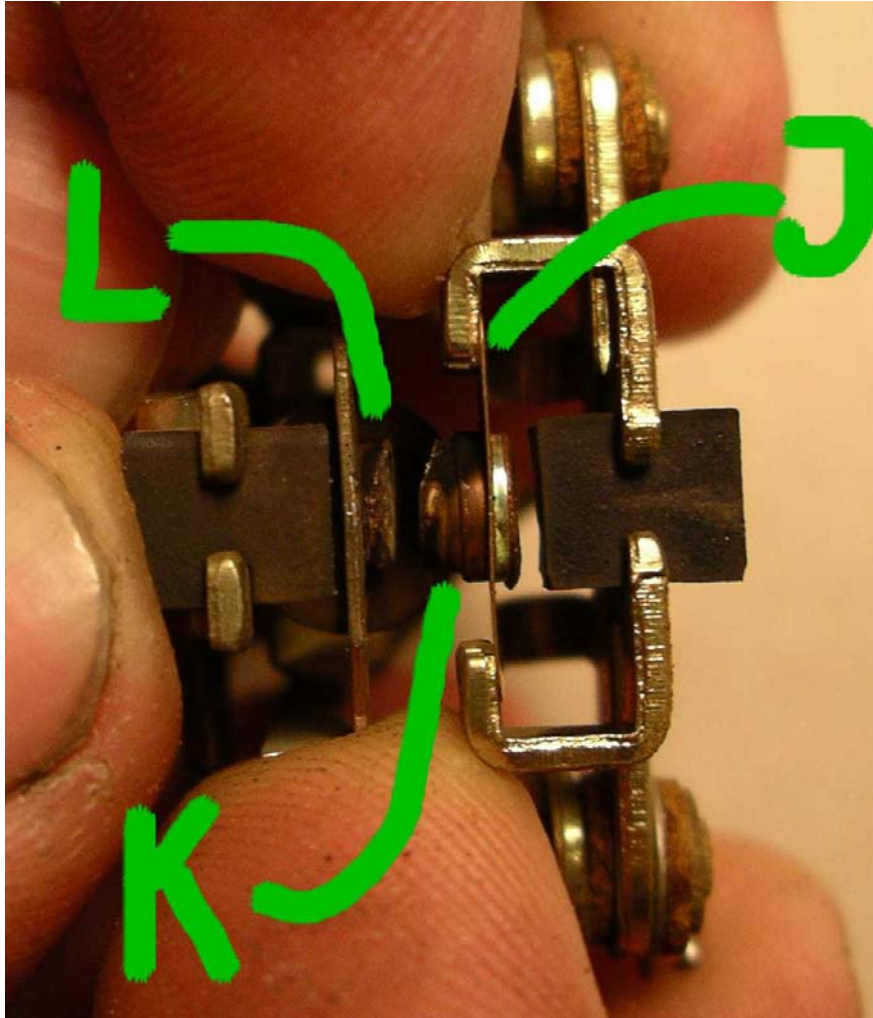


Pic 2. The pump function.

When the switch contact closes the rubber diaphragm are pulled towards right in the picture and gasoline is sucked in through the lower intake valve. The upper one way valve is closed at this time. The switch contact is opened when the iron core is fully pulled towards the right. At this point a feather pushes the diaphragm towards left in the picture. The lower valve closes and the upper opens and gasoline is pumped to the carbs. This sequence is repeated in different speeds depending on how much gasoline that is used by the carbs.

### The problem:

The load of the pump is about 50 Watts and therefore a powerful spark ignites when the switch opens. These sparks slowly but surely eat the contact surfaces of the switch. Finally they weld together and the pump becomes a 50 Watt heating element. Many motorcycle models have the same pump but not the same problem which is strange. The contact surfaces on my pump looked really good after 25000 kilometres and this may depend on the way I fuel my bike. I always fill the bike full and try to do so long before the reserve. The pump on my friend's bike stopped working after 35000 kilometres and the contact surfaces were really worn out.

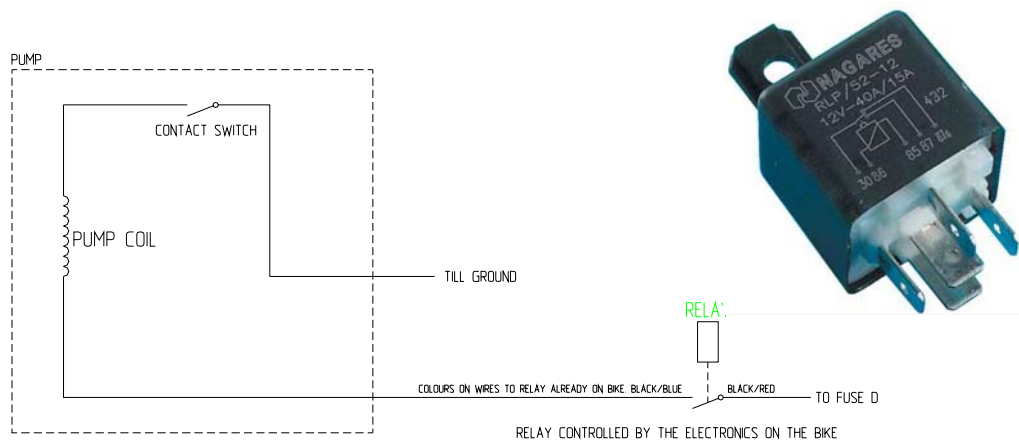


Pic 3. Worn contact surfaces. L is the moving surface. K is the springing/fixed part. J shows how K should be seated when L has opened. It has to lie on to the goods. If not, bend it so it does.

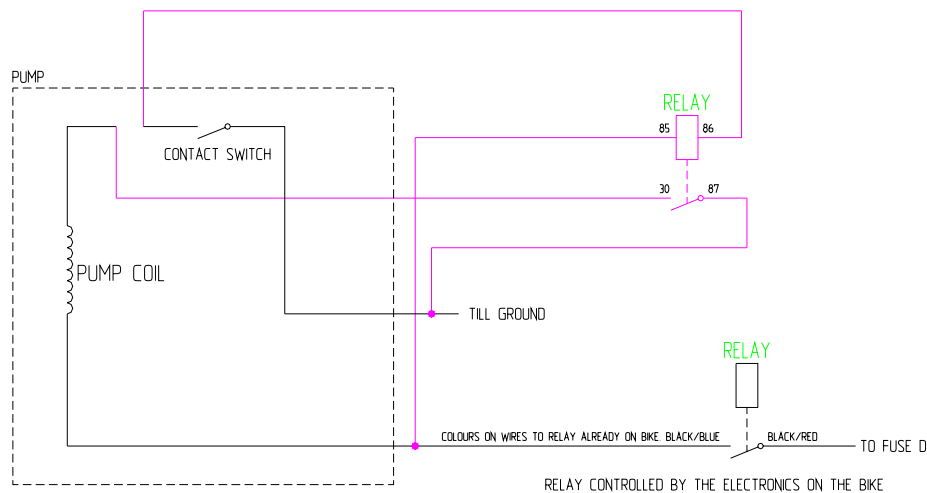
When the pump sucks air it runs like possessed with rapidly worn contact surfaces as a result. L and K pic 3. And when these surfaces are worn out the pump is trash, or?

The solution:

To avoid damage to the contact surfaces I have mounted a relay on my bike. The relay takes the 50 watts from the contact and the contact only supplies the relay with power. Now it is no longer the electrical parts of the pump that decides when it is worn out. It is the mechanical part from now on. The relay is an ordinary headlight relay that you can buy at the gasoline station or wherever.



Pic 4. Original connection of the pump and the headlight relay.

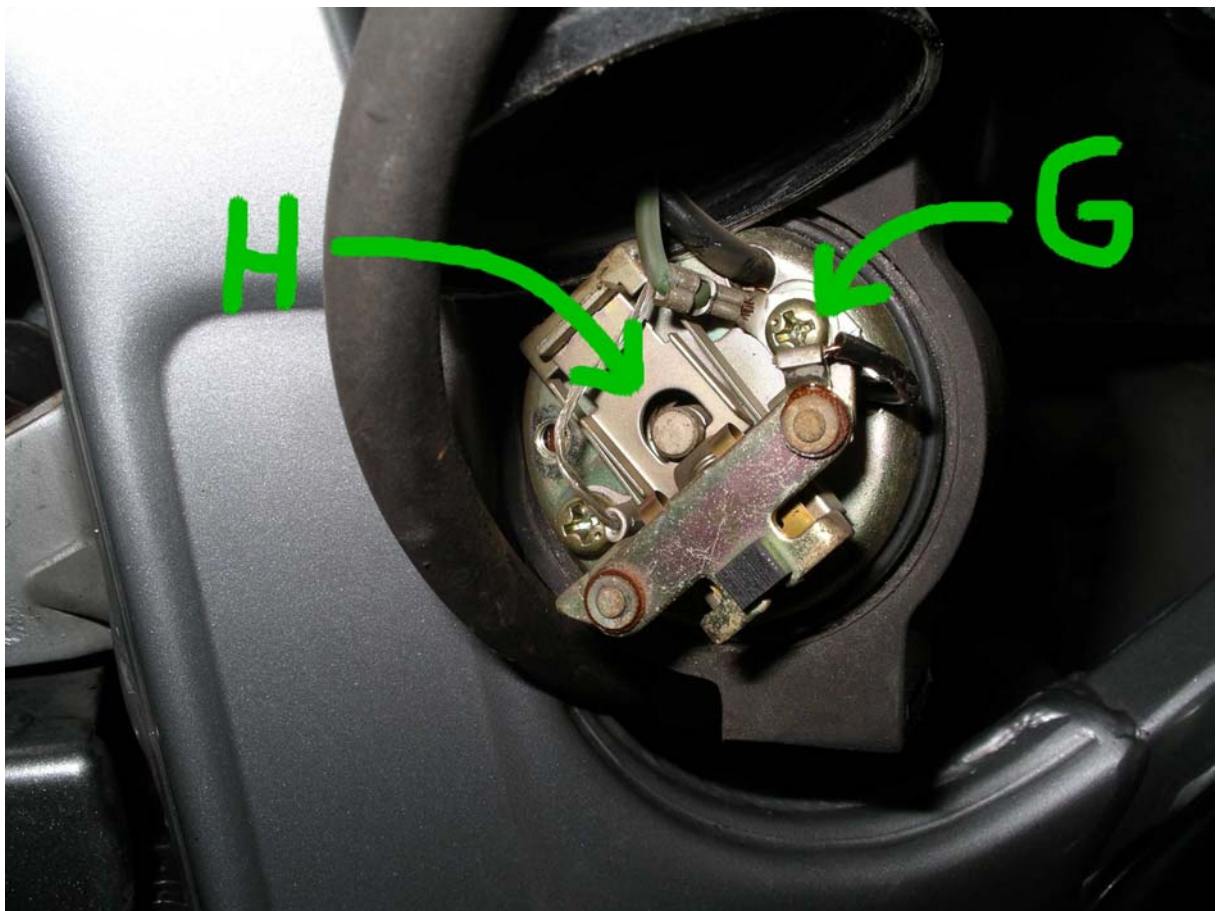


Pic 5. The purple drawing is the new connection with its relay.

## The renovation:

If the contact surfaces already have welded together the first thing to do is to fix these before we install the relay. There are two alternatives; change the switch with a new one or renovate the old one. To buy new ones has proven to be somewhat impossible but I have found a seller in Japan with whom I now am in contact but I have not yet gotten the price or how many I have to buy so until we have made the deal renovation is the only option. I will now show the renovation of my friends pump.

Start with removing the contact switch. This is done as follows: carefully loosen the lid, be careful not to damage the sealing between the lid and the pump, then unsolder the wire connected to G in the picture below.



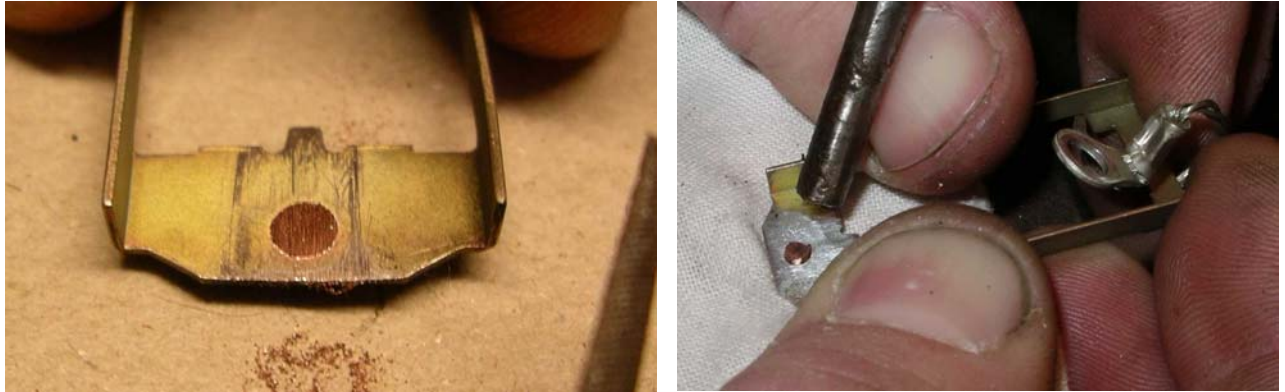
Pic 6. Lid opened. H shows how the axle is connected to the switch. G shows which wire to unsolder.



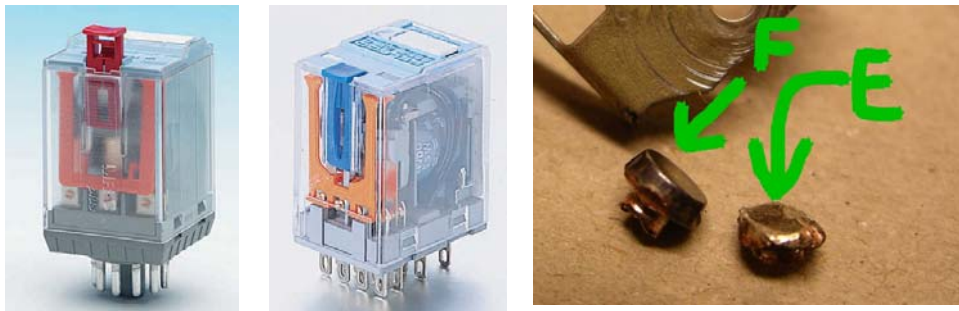
Remember how the parts are mounted so that you don't get problems to reassemble them afterwards. When the switch is removed go to the workshop and check the condition of the switch. In my case the fixed surface was in pretty good condition so I used a file and fine sandpaper to smoothen the surface and remove all irregularities. Be careful not to break the springing part, J pic 3. I used a screwdriver to keep the spring in place.

Pic 7. The switch removed.

The contact surface on the moving part was too damaged to save so I filed it off and riveted a new one .



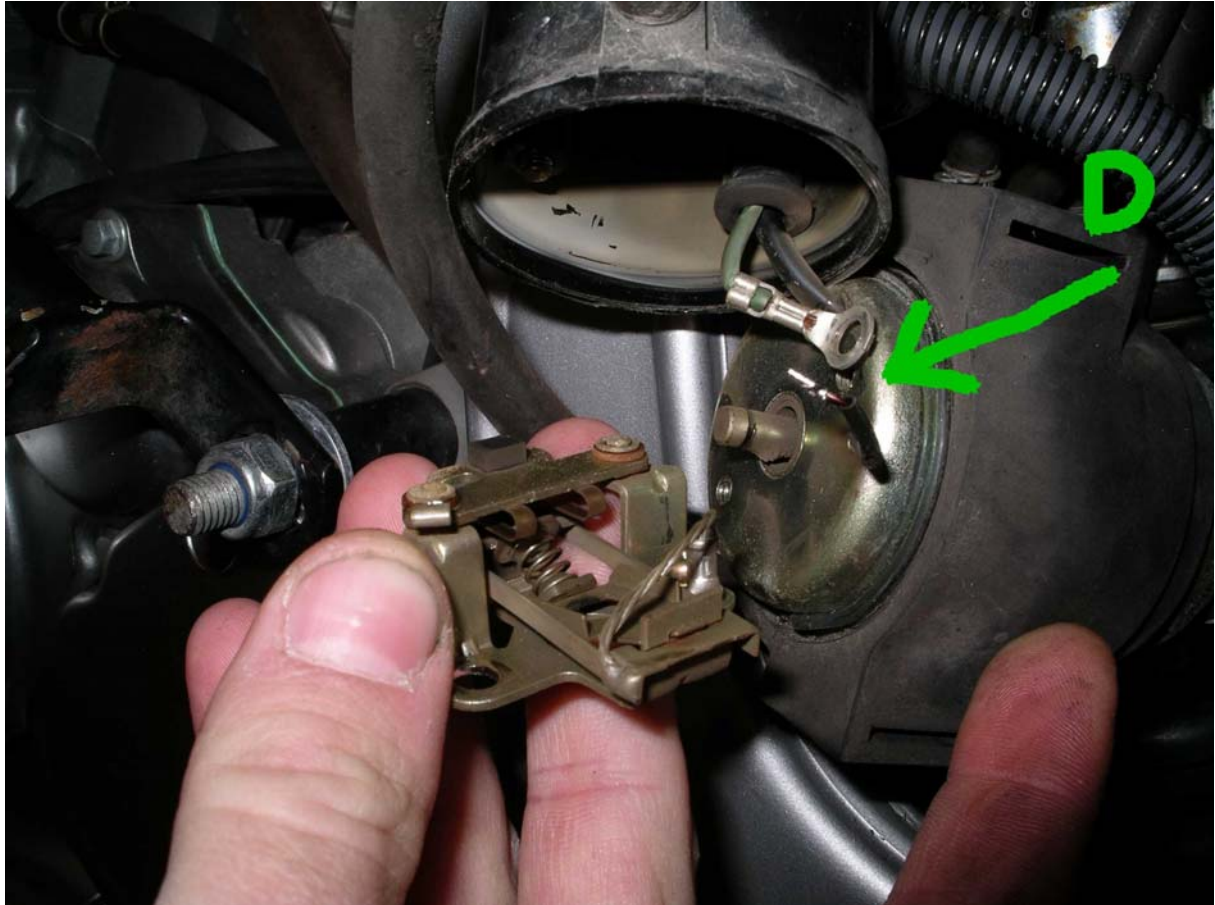
Pic 8 and 9. The backside of the contact surface is filed off so the removal of the surface went smoothly. The new surface is mounted in the hole from the old one and riveted with a mandrel. Be careful not to damage the surface.



Pic 10, 11 and 12. Industrial relays and contact surfaces. E is the old surface and F is the new.

The contact surface I picked from a relay used in the industry, for example Releco MRC or QRC. Where to find the outside Sweden I don't know. I took mine from the junk box at work.

Now it is time to reassemble the parts. Be sure that the springing part is fixed to the goods. See J picture 3. In case it doesn't carefully bend it into place. Exercise the switch to make sure it works properly. Now mount it and make sure that the axle is correctly connected to the switch. . See H pic 6.



Pic 13. Switch loosened. D shows unsoldered wire.

Now it is time to mount the relay. Use 0.75 loudspeaker cable for this. Solder one wire to the unsoldered wire on the pump. Isolate it with electrical tape. Then solder the second wire to the place where the unsoldered wire used to be. The unsoldered wire now goes to connection 30 on the relay. Picture 5. Connect the 87 on the relay to the ground of the pump. Green wire to the pump is ground. The easiest way to do this is simply to cut the wires to the pump and use cable shoes. Then connect the 85 of the relay to the live wire of the pump. The Black/blue wire. The wire you soldered to the fixed part in the pump is connected to 86 on the relay. The wires you have soldered in the pump are pulled through the same way as the original wires. Be sure to watertight. Also be sure the lid becomes watertight when mounting it. The relay on my bike is situated close to the pump but a better place is behind the left cover where also the original relay and electronics are situated.



Pic 14. The original relay controlled by the electronics...



Pic 15. ...and it's placement.



If the relay breaks and you don't have a spare just connect the wires that goes to 30 and 86 on the relay and it will work as if original.

Pic 16. My relay location, A and better yet behind the cover, B.

Questions? Send me an e-mail.

I hope my English has been sufficient.

Good luck!