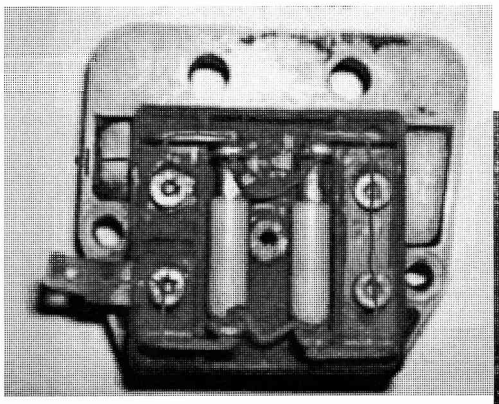
C-Matic Gearbox Fault Finding Guide

By Shane Leviston

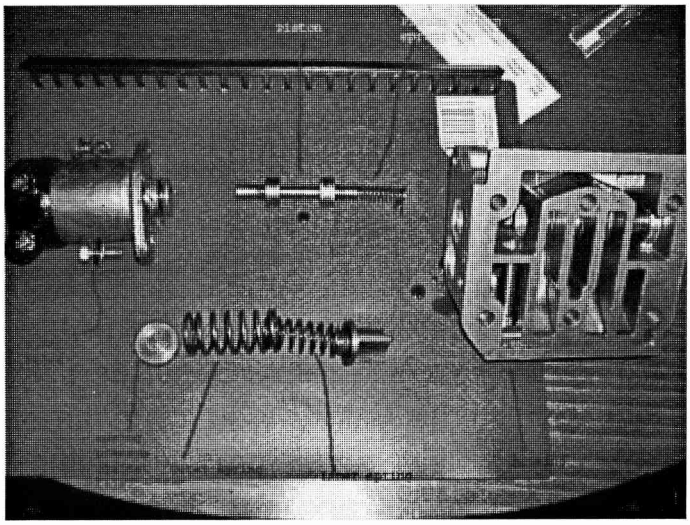
If you're reading this to attempt to diagnose a C-Matic gearbox I strongly suggest you study the two diagrams on fluid flow/ electrical wiring in both the Haynes and factory shop manuals and learn the principles the C-matic works under. Unless you understand how something works, you CAN'T fix it !!! These diagrams can also be downloaded from my website.

This is the process I've gone though in order to get the C-matic gearbox working. What should happen is whenever the gear shift is moved out of any gear, the drive to the torque converter should be disengaged. What can happen is the gearbox switches (shown below) gets dirty contacts and the drive can't be dis-engaged. Unplugging the wire from the switch block and earthing it should disengage/engage the drive. On this car it doesn't.

The switch block is quite simple, it's just 4 contacts, if



any one contact is broken, there is no earth for the electrovalve relay (so the relay won't switch on and the clutch doesn't disengage). If you turn the switch block upside down there are levers that mechanically break the switches shown as the gearbox shafts move.



Next step, I ran two wires directly to the electro-valve. The electro valve is what actually physically disengages the drive. With the electro valve directly wired across the battery the drive didn't disengage.

Don't even dream of trying to pull just the electro valve off. Pull the whole housing, it'll make life MUCH easier in the long run. The 6 studs should undo easily enough to remove the housing, if you're lucky none will shear off! The bolts and the hoses and wires need to be removed.

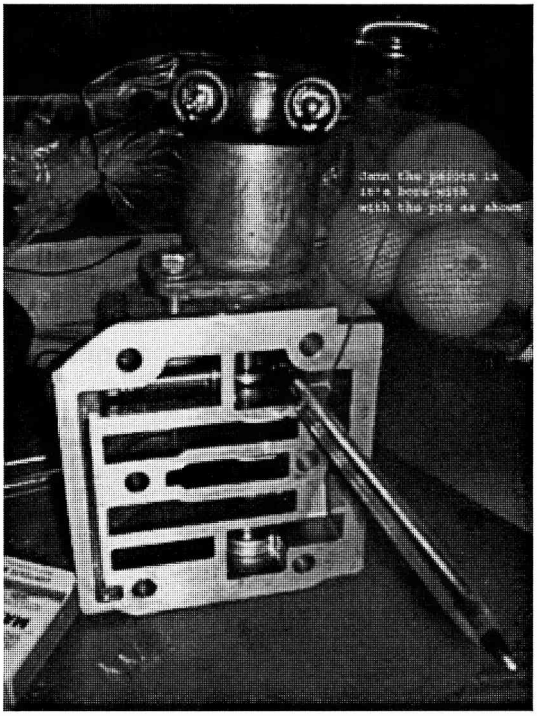
These springs and pistons are what will fall on the ground if you try to disassemble it on the car. Here (above) you can see the piston, and the overpressure relief valve (it's contains two springs, one inside the other). The electro-valve as you can see is nothing spectacular. They are certainly NOT worth the stupid $$$$ that are being asked for new ones

The piston was jammed in the housing. This was one of the problems. After freeing it I found it didn't grab anywhere in it's bore, and the electro-valve worked well. I'm not sure what caused the piston to stick. I've a feeling it may have been jammed when being re-assembled previously. You need to slide the piston up and down it's bore while gently spinning it. If it grabs at ANY stage, you need to carefully sand the edges of the piston or bore JUST enough so it won't grab. Careful not to destroy the tiny clearances required for correct operation.

To re-assemble the relay isn't easy, you first need to jamb the piston down in it's housing. As shown below, I used the nearest thing at hand (a pen :-)).

Make sure you pull the solenoid down evenly. ie: turn each screw a turn at a time. It takes quite a bit of force against those strong springs.

Once re-assembled bench test it to make sure the



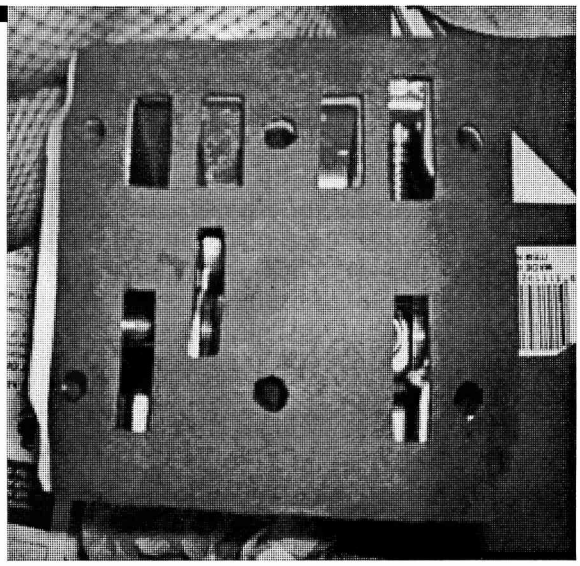
piston moves up & down without problems. Simply put the electro-valve terminals across a 12 volt car battery.

With the electro valve working, you need to refit it to the car. First cut a paper gasket, (top right) don't re-use the old one, especially as I'm sure it tore into two pieces when removing the housing ;-)

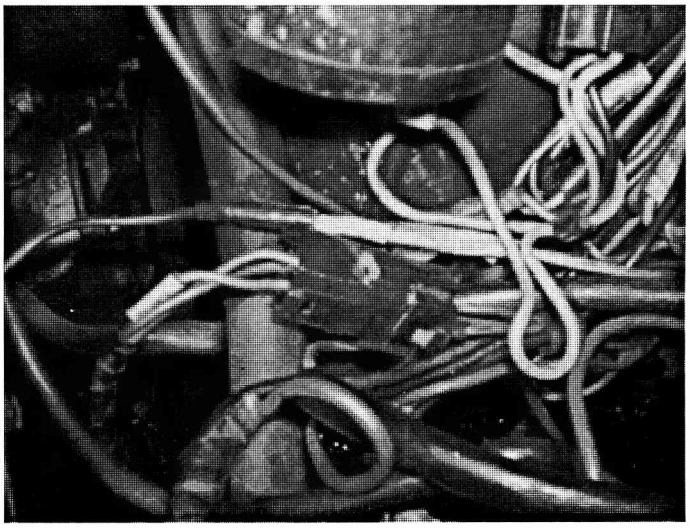
I applied a tiny smear of gasket sealer to both sides of the gasket and re-fitted it. Don't use too much sealer, you don't want it squishing out and getting into the gearbox.

I don't believe it after re-fitting the electro-valve, it would engage the clutch if I hot wired it directly, however using the existing wiring it didn't work.

I found the plug (below) was assembled incorrectly. It has 3 wires (the temp light & two electro valve wires). The way the plug was assembled only allowed two wires to ever make contact



However this still didn't solve my problems. I found there was now 12 volts to the electro-valve, however it's earth circuit was at 6 volts. I traced it's earth circuit to a relay that had obviously been very hot, it's wires had melted insulation.



I couldn't understand why the earth of the electro-valve would be running through a relay, and why were the wires melted?? I happened to be chatting to Alan S in email and he mentioned something about the the brown & green wires on his electro valve in his C-matic..... Hang on BROWN & GREEN!!!. Mine is wired with two green wires to the electro-valve and the brown wire is wired to the temperature sender. What's happening is the temperature sender circuit is trying to sink the current from the electro-valve circuit, that's why it's wires have been so hot !!!!! One Brown and One green!! Wires go to the electro-valve. The brown wire is an earth wire for the electro-valve. Finally I have a working C-matic gearbox!!!

Check out Shane's web site for clearer (colour) copies of these and other related pictures: www.aussiefrogs.com/shane/