

## **Carriage Stopped on NSM CITY II Fault Repaired**

*My city II had been behaving itself well as of late. Suddenly one morning on selecting a disc, the selection was accepted, the credits were debited for one play. The disc position counter went blank no movement from carriage, and the display went back to select record mode as if a disc had been played, all without the carriage moving.*

*First step hinge open the cover on the Electronic Centre, the unit with the tone controls, Check all 6 red LED lights are on. If not check associated fuses, ensuring that any replacement is the correct value for that position, DO NOT assume that the dud removed was the correct value. Basic power check completed.*

*Next switch cabinet off, watching Relay MO this should take about 2 seconds to release, if quicker suggest you give the article, "**Tonic for City II**", a read as your supply electrolytic capacitors look weak. Now switch the cabinet back on and check that MO operated. This means there is power to operate the carriage motors, as the voltage to operate MO is derived from the motor supply.*

*Next Press the scan button, this should cause the carriage to move. In my case it did not, **Start of fault trail**. The scan button signals the computer to start moving the carriage, We have tried two ways (disc select and scan) to get the carriage moving, both unsuccessful, Both routes are via the COMPUTER!.*

***Panic not**, at the moment, as all the selection lamps are working correctly and these are controlled by the computer through the same set of drivers that control the motors, so it's unlikely to be the computer at fault.*

*The computer should be trying to operate relay FA, so let us manually operate FA and see what happens*

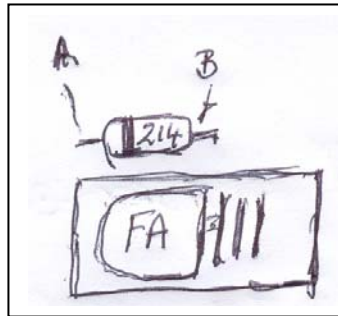


this is the relay  
lower left side of  
the group of  
three, flip off it's  
plastic cover

*Actuate it gently with a finger. The carriage moves but will stop if the pressure is released, maintain the pressure and select a disc, the carriage completes the scan already started, maintain pressure on FA, carriage restarts and continues to the selected disc, Relay LR now operates, The selected disc loads plays, and returns to the rack, Carriage returns to datum.*

**PROBLEM FOUND** “FA not operating”,

*Using a simple Digital Multimeter, the failure is easy to localise, because LR was observed operating, hence the relay power supply is OK. With the Multimeter Set to measure greater than 26V DC. Measure between point B (+) and the heatsink (-).*



*As the relay is not operated the meter should read 26v. In my case it read almost zero volts. “**relay operated**”, to confirm this move probe from B to A the voltage is 26V. Switch off the cabinet allow time for voltages to leak away. Select a resistance range on the Multimeter suitable to measure the 740 coil of Relay LA. This can be done by measuring between A and B. It was far higher than the acceptable 740  $\pm$  10% **FAULT FOUND** the coil of LA was open circuit, burnt out?. On removing LA to replace it I noticed the coil is marked as 12V further investigation revealed that LR was also a 12v Coil measured it at 480 . I can only assume that these were field replacements, as all the information to hand from NSM indicates the 740 coil is correct. Both replaced with the correct coils. Machine is fully functional again.*

*A word of warning to remove the relays it is necessary to take the mother board off the heat sink, this means removing all the heatsink mounted devices off the heatsink, some of the mounting kits had seen better days, but were duly refitted, on power up the - 5V indicator was out. Powered down quickly Rechecked the mountings of VR202 the bush had failed. Bought in a replacement for VR202 although it seemed to have survived the short Circuit, as well as several new mounting kits, on the rebuild every mounting kit was new, a few pence to avoid possible major damage.*