2.7 Switch Delayed Filter Board

The wires from the rotary switch which selects the digital registration bank are susceptible to emi pickup from the high leve pipe organ keying system. This can occasionally trigger the switch inputs of the digital keyboard encoder. These false triggers can cause the registration bank to switch without warning while the organ is played. This problem is solved by inserting RC filters between the rotary switch and the keyboard encoder inputs. The values used are 220 ohms and 15µf.

The switch inputs of the keyboard encoder have internal pull-up resistors to 5v. When the input is externally pulled to ground, the encoder outputs it's MIDI signal. Unfortunately, when the organ is first turned on, all the filter capacitors are discharged and the encoder interprets this as all the inputs activated, including the proper one as set by the rotary switch. The encoder reads all 8 inputs sequentially before the capacitors have a chance to charge up and the Hauptwerk program quickly switches the registration bank eight times, ending at bank 8. Hauptwerk always uses the last input it receives since there is no way to unselect a registration bank.

The solution to this is to delay the signal from the rotary switch until after the filter capacitors have had time to charge up. This is done by delaying the ground connection to the switch for 2 seconds after organ turn-on. The circuit is connected to the organ –13.5v supply and activated at the same time as the keyboard encoder. The DIP reed relay has a coil impedance of 500 ohms.