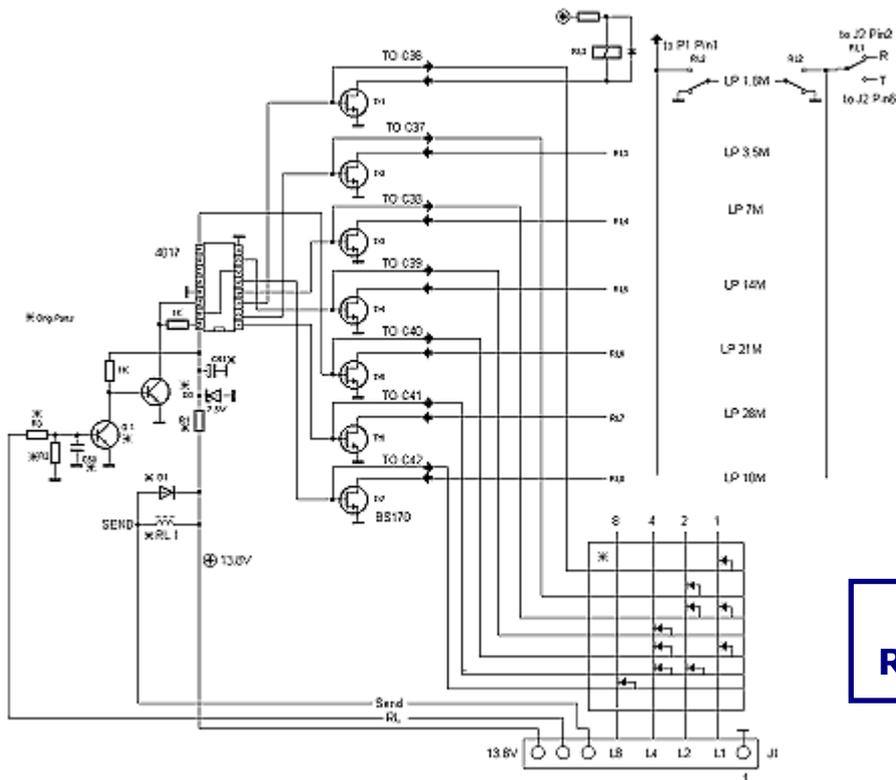


Icom IC-720A (IC 720 A IC720A) Rotaryswitch mod



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Icom IC-720A (IC 720 A IC720A) Modifying IC-720A to get rid of rotary relay

I have just finished modifying an old IC-720A HF transceiver to replace the rotary relay filter control with a set of reed relays and a small digital circuit to select the appropriate relay and provide feedback to the existing CPU in the radio so it thinks it's still on the rotary relay. The cost for parts was about \$25; the cost of my time was slightly more than that, but it was "fun".

The modification is so far successful, and the radio is much quieter in band switching as well as being more reliable (the old rotary relay was impossible to get mechanically aligned correctly, leading to poor connectivity between the rx/tx and the antenna, as well as many missed stepping pulses).

Summary: Use the step-pulse line to drive a small SPDT relay; use the SPDT relay to drive an R/S flip-flop (built from two nand gates) to provide a clean step signal (the existing step signal has some kind of very high speed clock train superimposed on it and therefore was not usable directly). Feed the pulse train into a CMOS decade counter type 4017. Take the appropriate decade outputs (active high) and recreate the switch-position feedback signals using a small diode matrix ala the original design. Also use the decade outputs through 33K resistors to turn on 2N3904 NPN transistors, which are used to select the appropriate (1 of 7) DPST reed relays. The CMOS chips (the nand gates and the decade counter) can be had at Radio Shack and must be powered from 9V (or so) because the radio does not use 5V logic (of course...)

I mounted the reed relays inside the original low-pass filter subassembly, and the rest of the circuitry on a small perf-board near the SWR module (connected by ribbon cable).

This is not a detailed design description but if you are interested I will provide more details. This project did salvage an otherwise-worthless IC-720A, but I don't think I'd do it again (rather time consuming, but perhaps you can benefit from my experience and save some time).