expensive) Eimac bases was to ensure that a cooling blast of air was shot up the main orifice of the valve, hitting the spots the rest of the air couldn't reach . . .

And if you do decide to use those discarded 813 bottles, remember they take 10 volts at 5 amps each on the filaments, and this must be kept dead on, otherwise you'll strip the coating!

DOUGLAS BYRNE G3KPO

A TALE OF TWO SYDs

Editor, My husband passed his RAE last December and as his name is spelled Sydney he reserved the callsign G6SYD for which he had to wait only an extra week to get.

He started to work for his morse exam in January after realising if he worked hard maybe he could get the G4SYD. On March 16th '83 after only two months of very hard work he passed the morse test at Cullercoats radio station, and sent the appropriate papers away to the Home Office asking them to reserve G4SYD. On 12th April 1983, with only a few callsigns and a matter of hours to spare G4SYD came through our door to a delighted Syd.

I would be most interested to know if this has happened before.

JEAN COOK

PHASE COMPARATOR

Frank, I am following your series *Technicalities* with interest, but a few things worried me in the May article.

In **Fig. 11**, the digital phase comparator, both output transistors can be switched on at once, albeit for only 50nS or so, as it takes this finite time after the second D-type has switched on before both are reset. This will surely put spikes on the power (and earth!) rail if not actually damaging the transistors in time. While fancy digital techniques could doubtless cure this glitch a simpler way I believe would be to limit the maximum current with emitter resistors of a few hundred ohms in both transistors. As the loop filter has a high input impedance, this shouldn't affect operation of the circuit.

Secondly, you do not seem very impressed with varicap diodes. Were they conducting, I could understand if they generated noise, but they are reverse biased, so I don't! Perhaps you could explain please, and does not the diode on the gate of the BF256 oscillator in **Fig. 7** have similar disadvantages?

Finally, and this is my fault not yours, I don't understand how the crystal oscillators in **Fig. 8** work. OK, the L & C in the drain circuit resonate, and the Miller (?) capacitance drain-to-gate forms the feedback so it will oscillate, and I could even believe it will be pulled by the crystal, but the signal at the gate will surely be low level, and it is fed to a tapped coil which must also be low impedance, putting a high load on the oscillator contrary to normal recommendations. Could you explain its operation please?

I am also wondering if a separately regulated supply to the switched oscillators would be advantageous, else any nasties on the 12V line will add noise sidebands you are so desperately trying to avoid. I also wonder whether the diode in the gate adds any noise, as per your comment on varicaps?

P VINCE G8ZZR

Good point abut the glitches. I hadn't thought of that. We have incorporated your idea in the Project Omega VFO. Many thanks. Re. varicaps, the noise generation

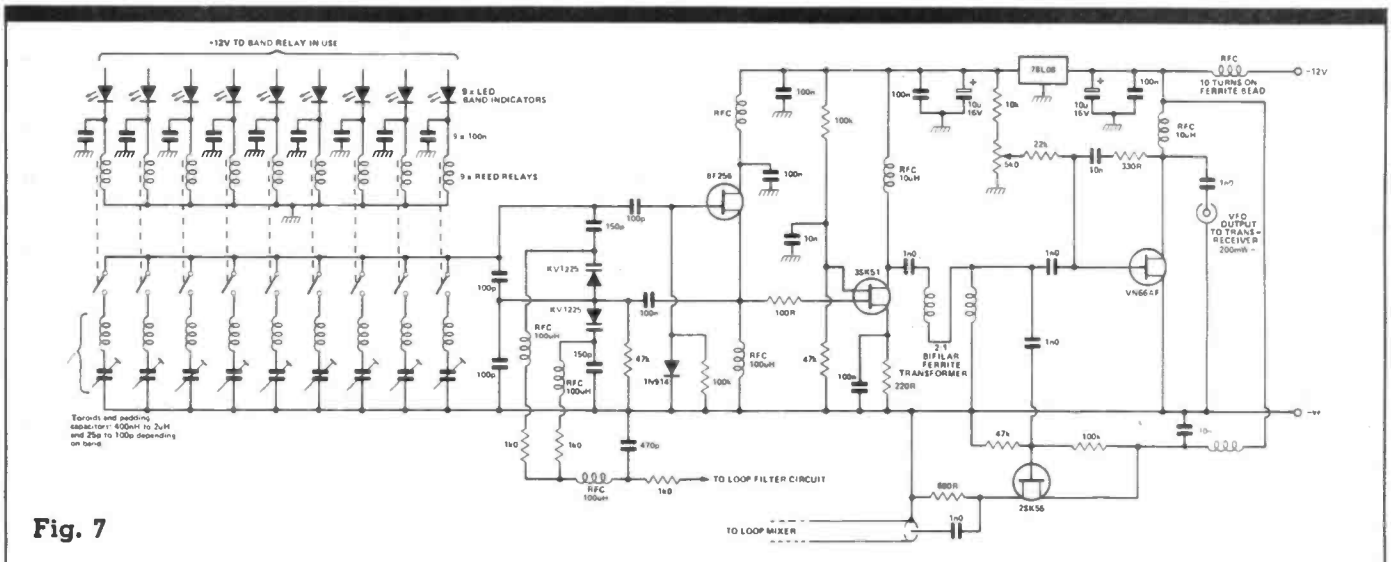
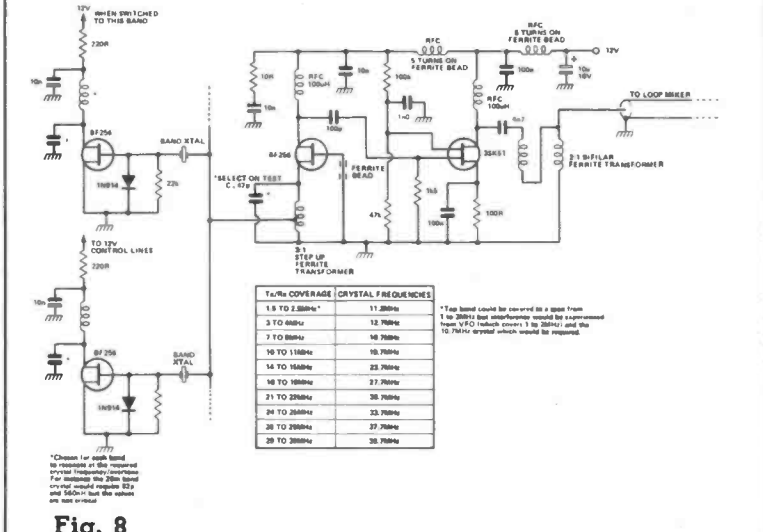


Fig. 7



Tx/Rx COVERAGE	CRYSTAL FREQUENCIES
1.5 TO 2.5MHz*	11.2MHz
3 TO 4MHz	12.7MHz
7 TO 8MHz	16.7MHz
10 TO 11MHz	18.7MHz
14 TO 15MHz	23.7MHz
18 TO 19MHz	27.7MHz
21 TO 22MHz	30.7MHz
24 TO 25MHz	33.7MHz
28 TO 29MHz	37.7MHz
29 TO 30MHz	38.7MHz

*Tap band could be covered as a span from 1 to 2MHz but interference would be experienced from VFO (which covers 1 to 2MHz) and the 10.7MHz crystal which would be required.

*Chosen for each band to resonate at the required crystal frequency/overtone. For instance the 28m band crystal would require 82p and 560nH but the values are not critical.

Fig. 8

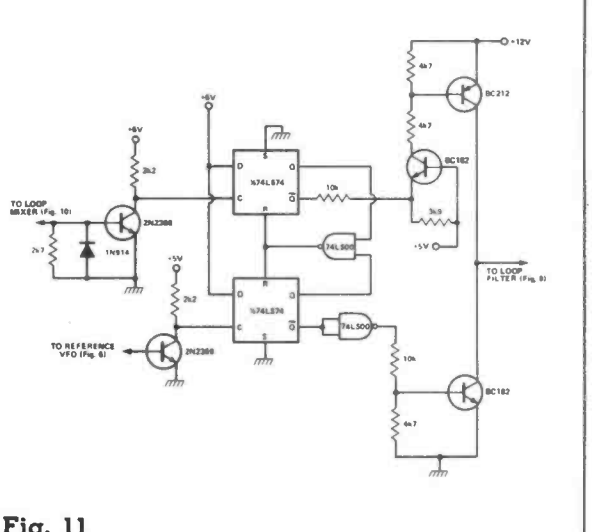


Fig. 11