Work should proceed as follows:
i) Remove the screw that holds the voltage regulator heat-sink bracket at the end near the regulator. Replace this with a 4BA screw from the component side of the board (you may have to enlarge the hole) and on the foil side of the board screw a 12mm threaded stand-off pillar. Next locate a point just below the a.f. i.c. (Q410). Here there is a large area of ground foil and a second stand-off should be soldered directly onto this, 48mm away from the first pillar. These two stand-offs now provide the support for the bracket as shown in Fig. 2.3.

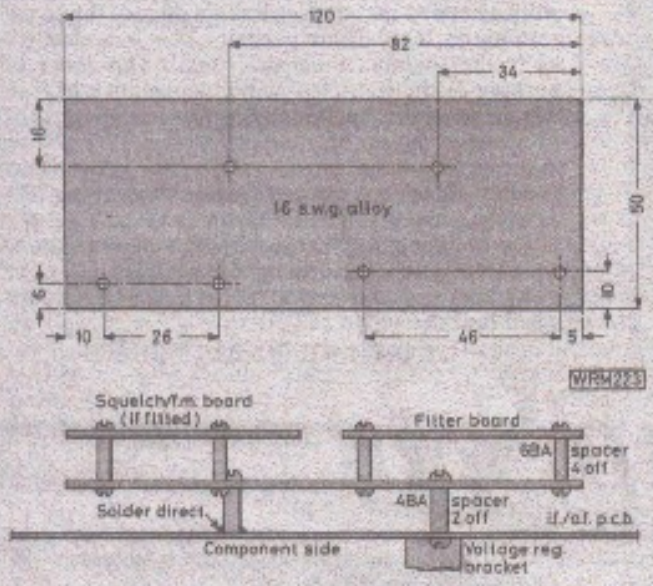


Fig. 2.3

ii) Before fitting the bracket, the four remaining holes on it should be fitted with stand-off pillars facing away from the IF/AM circuit board. If the f.m./squelch board is to be fitted, then fit all four pillars at this stage.
iii) Connect two short lengths of miniature coaxial cable to input and output points formerly occupied by the filter. Locate a suitable point to run two leads for the 10 volt supply.
iv) Fit the panel to its support pillars.
v) Make necessary connections to the new circuit board, as shown in Fig. 2.2.
vi) Carefully plug-in XIC1.

At this point it is necessary to decide which switching method to use. If the f.m. circuit is not going to be incorporated then two options are open.
a) The record socket can be re-located on the back panel next to the loudspeaker output and the hole vacated can be filed open slightly to take a standard miniature 2-pole double throw switch.
b) Spare wafer connections on the MODE switch can be used to provide narrow filter switching at SSB and AM/ANL switching positions. This latter method involves sacrificing the noise limiter but in the author's view this has little effect anyway.

If f.m. with squelch is going to be fitted then yet a third method should be adopted as the AM/ANL position on the MODE switch will be needed for the f.m. and the record socket hole will be needed for the squelch control.

The squelch potentiometer for the f.m. unit will be a 10kΩ log with push-pull switching and a suitable device is made by Alps and available from Cirkit. Once fitted the two wires from the light switch should be transferred to the appropriate switch tags on the back of the potentiometer so that lights come on when the switch is pulled.

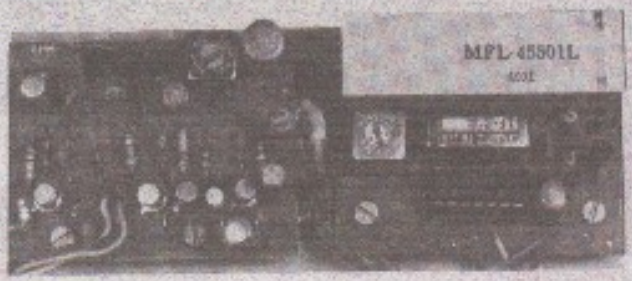
The LIGHT switch is now free to be used for switching the filters.

Finally, it only remains for the board to be screwed onto its pillars and the front panel switch labelled in a suitable way. In the author's case, dark grey card with white rub-down lettering was made up and stuck over the existing lettering with light glue.

Testing and Alignment

Switch on the set and select the wide filter position. Normal reception should be possible. Now switch to the narrow filter position and check that it is operating. Whatever setting the core of XT1 is at, reception should be possible and if not the likely faults will be a wrong connection or the 4066 damaged by handling.

Assuming all is well, find a fairly weak signal at around S-2 or 3 and trim XT1 for maximum deflection of the meter. This is all that is necessary for aligning the actual switched-filter unit.



The new switching filter board and squelch/f.m. board (Part 3)

Re-tuning the BFO

Because the narrow filter has a different centre frequency to the original wide one it is necessary to re-tune the b.f.o. The Toko filter centres on 453·3kHz and so the b.f.o. will need to tune to 452·0kHz for u.s.b. and to 455kHz for l.s.b. If a digital frequency counter is available this is an easy task, merely re-tune i.f. style transformer T406 for l.s.b. and then trimmer capacitor TC404 for u.s.b. (both are located close to the audio i.c. and TP405 is the measuring point).

If a d.f.m. is not available then the following procedure should be followed in the exact sequence shown:
i) Select the wide filter and switch to a.m. Tune into any a.m. station that gives a clear indication on the S-meter that the tuning is centred.
ii) Without touching the tuning, select l.s.b. Now trim T406 until you hear the b.f.o. tone go to zero beat.
iii) Tune to any amateur transmission above 10MHz, switch to u.s.b. and select the narrow filter. Ignore the audio and instead tune the set for maximum S-meter deflection. Then resolve for the best audio by trimming TC404.
iv) Now repeat procedure (i), then select l.s.b. and note if the b.f.o. is still zero beating. If it does or if it is only slightly off frequency then you do not need to go any further. However, if it is obviously off frequency then you will have to re-trim T406 and then repeat procedure (iii).

Keep repeating procedures (i) to (iv) until you are able to set TC404 for u.s.b. without upsetting the l.s.b. tuning. This can be rather tedious but because of the interaction between the transformer and trimmer capacitor it is necessary if fairly accurate b.f.o. settings are to be obtained.