Alignment Procedure

I think it is assumed all coil cores are flush with case ends or as factory set

for

Troughline Stereo Tuners

later aka Generator

General requirements are a sweep oscillator and Double beam oscilloscope. *nowadays with x10 10MΩ probes ?*

1. Connect double beam oscilloscope as follows:-

a) Earth to earth tag on strip 3 adjacent to the angular bracket. *earth clip on tag marked {GND1} other test points are marked {NNN} on chassis picture at www.keith-snook.info*

b) IF (on Y1) to second tag down on strip 3 (grey lead and 10M ohms resistor) *intermediate frequency is set to 12.5MHz the {IF} d.c. signal needs inverting to give traces shown so Ch2 may have to used*

c) Discriminator (on Y2) to pin 4 of discriminator transformer. *this d.c. test point is same as MPX out on mono MkII and MkIII and is marked {T4-4} a coax lead from MPX direct to scope input my be more useful*

2. The sweep oscillator attenuator should be set to give a trace height the half height of that obtained of this IF when limiting. *limiting when IF trace cannot be increased*

3. Connect generator earth to oscilloscope earth and signal to terminal 4 of IFT (T1). *do not earth at T1 - the first IF transformer is marked T2 on the schematic - connect signal generator earth to the chassis at V4 pin 9 and signal to first IFT ouput at T2 pin 4 {T2-4}*

Procedure;

1) Adjust 2nd IF transformer to give Trace:-

the second 2nd IFT is marked T3 on the schematic and it is assumed both the top and bottom cores are adjusted to give the highest flatest top trace at {IF}

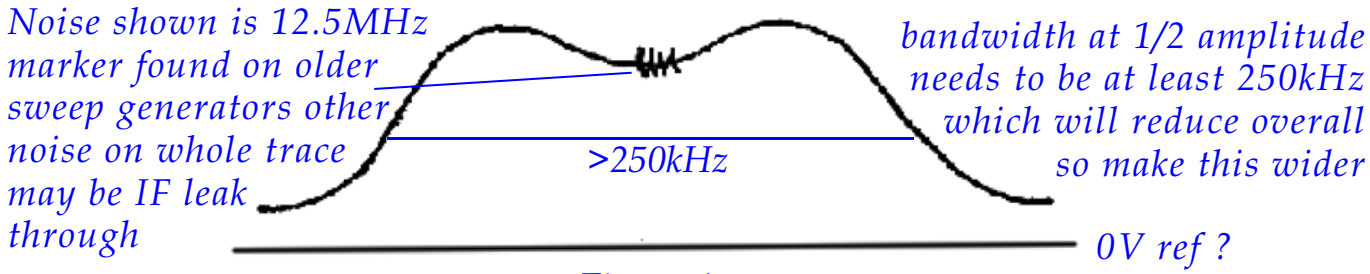

Figure.1

2) Adjust discriminator transformer to give trace:-

{NNN} are references on my marked up picture of tuner chassis

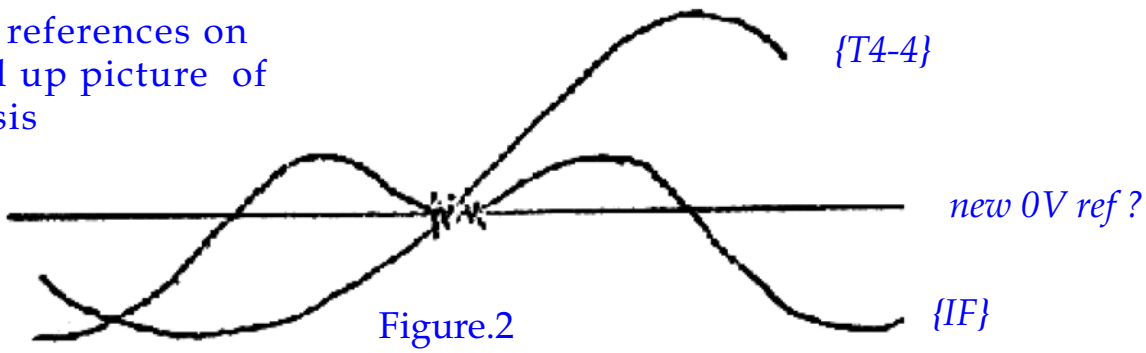

Figure.2

tuning 1st IFT which is marked T2 on schematic

3) Transfer generator o/p to:-

a) Earth on earth tag adjacent Pin 4 of V3

b) Signal to the wire between IF coil and Pin 3 of V3

DO NOT DO THIS

Adjust 1st IF transformer to give trace:- *V3 pin 3 is live at 140V The sweep generator should be connected to V3 pin 2 wire to {L5-3} as indicated on my marked up picture*

Again adjust the generator output to prevent {IF} limiting and try to get highest flattest trace with at least 250kHz bandwidth

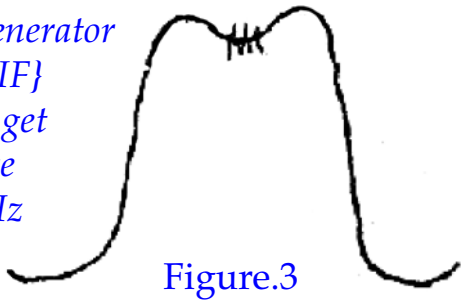

Figure.3

your trace should not cure up like this

4. Connect aerial to tuner and adjust orange trimer to give correct tracking. *I don't know what this means - orange trimmer C8 should set dial at 106MHz after mechanically setting the dial at 90MHz*

5. Tune to a transmission and adjust aerial transformer, mixer and IF coil for maximum deflection of tuning indicator. *this should be done with a VHF sweep generator after disconnecting IF setup tune L4 at 98MHz then aerial transformer at about 90MHz and C5 trimmer at 106MHz*

6. Disconnect aerial and reconnect generator leads as outlined in paragraph 3. (General) and adjust 2nd IFT for best shape (see diagram under 1 above). *Figure.1*
tuning the RF front end should not affect the 2nd IFT T3 - there may be some interaction

7. Reconnect generator leads as outlined in paragraph 3 above and adjust 1st IFT for best shape (diagram under 3)
adjust again to Figure.3 - you should be able to get better than pictured but keep >240kHz

8. Adjust bottom core of discriminator to set centre of discriminator trace on marker pip (diagram under 2).
assuming your {T4-4} trace is like Figure.4 adjust bottom core of T4 for 0V at 12.5MHz

9. Increase generator o/p to maximum. IF trace should be symetrical about centre of discriminator.

this implies a particular generator not mentioned in dispatches so increase level to limiting and just beyond while checking shape

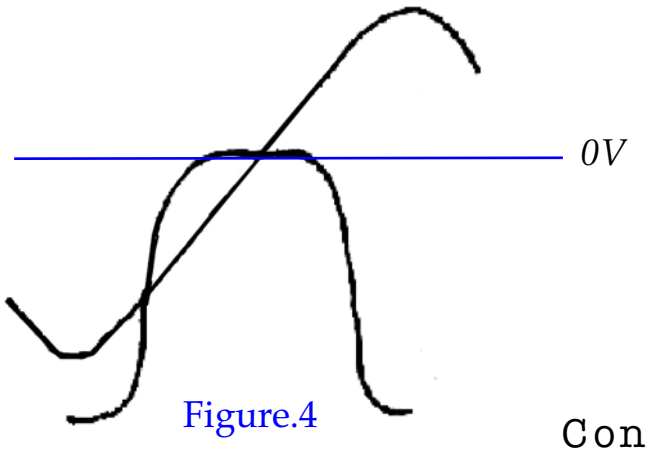

Figure.4

Cont/ . . . . . .

10. Transfer generator leads to aerial terminal via a matching unit (if necessary). Tune receiver to 95 MHz and adjust oscillator to give a trace well below limiting level. Adjust IF coil to produce a flat topped IF trace. *ignore matching unit - I think IF coil here is L5 but also adjusting T2 top core may help shape*

Figure.5

11. Screw IF coil core IN until trace is reduced to half original height. The bottom core of the first IFT is then adjusted to level out the top of IF trace. *try screwing in L5 to reduce level then adjust bottom core of L2 for shape*

12. Tune receiver to 88MHz and adjust sweep oscillator to this. Adjust aerial transformer core to give maximum trace height *the first statement that makes sense but I would do this at 90MHz*

13. Tune receiver to 93MHz and oscillator to this. Adjust mixer core for maximum IF trace.
often the local oscillator stops before 106MHz - tuning mixer L4 at 98MHz may help
14. Tune receiver to 97MHz and oscillator to this. Adjust aerial trimmers for maximum trace.
This is another reason this tuner did not work well above 100MHz - tune C5 at 106MHz
15. Repeat 12. to 14. until no improvement is obtained. The generator o/p must be kept below limiting during this operation. *only just below becasue you need to see the result of tuning at realistic level*

16. Fine adjustment for Radio 1, 2 and 3 etc. , can be obtained by adjustment of C8 when cover is fitted
ignore this - these instructions were made when there were only 3 stations all below 100MHz and the tuners were factory set for maximum smoke on the BBCs third proramme - if you have an untouched Trough Line it probably does not work at 106MHz or above and the dial is no where near where it should be - that said adjust the orange trimmer C8 at 106MHz

Good luck and take care - Keith Snook

www.keith-snook.info