

Alignment

The method of alignment described below will locate most faults that affect alignment. Alignment should not be attempted without proper equipment.

FM IF ALIGNMENT

- 1 Connect oscilloscope to junction of R75, C77. Set oscilloscope to 10 milli-volts per cm.
- 2 Connect sweep generator via 0.01 mfd to base of TR7. Set generator to 10.7 MHz. Unwind bottom tuning slugs on all FM IFT's so that the bottom of the slugs are level with the printed circuit board.
- 3 Adjust L20, L18 for normal discriminator response with peak to peak of 500 kHz centred on 10.7 MHz.
- 4 Transfer generator to base of TR5. Reduce output from generator. Unwind bottom slug of L20 until bottom of slug is level with printed circuit board. Adjust L16, L17 for maximum output, this will show a broad top with -3dB points at 10.5 and 11 MHz.
- 5 Transfer generator to base of TR4. Adjust L14, L15 for maximum output. Reduce output of generator as alignment proceeds. This will give a flat top response (perhaps a slight dip in centre) with -3dB points at 10.5 and 10.9 MHz.
- 6 Transfer generator to base of TR3. Increase output from generator. Adjust L12, L13 for maximum output. (Earth lead of generator must be connected close to TR3). This will give similar response to step 5 but with -3dB points at 10.6 and 10.8 MHz.
- 7 Transfer generator to base of TR2. Adjust L10, L11 for maximum output. Response should be as 6.

- 8 Leave generator on base of TR2. Adjust L20 for normal discriminator response. Recheck L10 for maximum output. With oscilloscope set for 100 mV/cm check that discriminator response is linear and with a peak to peak to 400 kHz minimum centred on 10.7 MHz.

Note:

Never readjust any slugs after moving on to next step of alignment. It may be that spurious signals show on the oscilloscope during alignment. A very short wire shorting out the FM oscillator section of the gang will prevent this.

FM RF and OSCILLATOR ALIGNMENT

- 9 Check that dial log scale reads 0 when gang is fully in mesh.
 - 10 Transfer generator to coax aerial socket, and adjust generator for 22.5 kHz deviation at 88 MHz with 1 kHz modulation. Tune receiver to 88 MHz on dial. Adjust L8, L6, L7 in that order for maximum output. Keep generator input below that at which limiting starts.
 - 11 Tune generator and receiver to 108 MHz. Adjust C22, C14, C11 in that order for maximum output.
 - 12 Repeat 10 and 11 until no further improvement in sensitivity and/or tracking results. The FM alignment is now complete.
- Note:
If realigning, unwind all slugs before starting.

AM IF ALIGNMENT

- 1 Connect oscilloscope or valve voltmeter to junction of C197 and S10.
- 2 Connect generator to centre section of AM gang and earth. Tune generator to 430 kHz with 30% modulation at 400 Hz.
- 3 Adjust L41, L40, L39, L38, L37 in that order for maximum output. Repeat adjustments until there is no further increase in output. It is very important that the generator output be as low as possible.

MEDIUM WAVE RF AND OSCILLATOR ALIGNMENT

- 4 Transfer generator to AM aerial input. Switch receiver to MW and tune to 550 metres. Leave generator set to 430 kHz. Adjust L26 for *minimum* output.

- 5 Set generator to 550 metres. Adjust L34, L30, L27 in that order for maximum output.
- 6 Set generator to 200 metres. Tune receiver to 200 metres. Adjust C168, C153, C143 in that order for maximum output.
- 7 Repeat steps 5 and 6 until no further increase in output or improvement in tracking results.

LONG WAVE RF AND OSCILLATOR ALIGNMENT

- 8 Set generator to 1500 metres. Switch receiver to LW and tune to 1500 metres. Adjust L36, L31, L28 in that order for maximum output.
- Note:
There are no trimmers on LW.
The AM alignment is now complete.
- Note:
If realigning, unwind all slugs before starting.

ALIGNMENT OF M8 STEREO DECODER

A Stereo Signal Generator must be used and be capable of providing:

- 1 A modulated signal between 88-108 MHz (a single spot frequency will do).
 - 2 Pilot only.
 - 3 A+B.
 - 4 A or B at 1 kHz.
 - 5 A-B.
- 1 Connect the generator to the FM aerial input of the Tuner or Tuner-Amplifier. Switch Tuner to FM stereo. Set signal generator for 100 micro-volts output, modulated by pilot only. (19 kHz, 9% modulation). Set tuner carefully to generator frequency. Connect oscilloscope to collector of TR10 on Decoder, with oscilloscope sensitivity set to 1V per cm.
 - 2 Tune L23, L24 for maximum output. Signal should reach 2 to 3 volts peak to peak at 19 kHz.
 - 3 Transfer Y input of oscilloscope to junction of C87 and C89. Set oscilloscope sensitivity for 10 millivolts per cm. Switch time base off and connect X amplifier to collector of TR10 via 500 pf capacitor. Set X amplifier for 1V per cm.

- 4 A figure of eight should now appear on the oscilloscope similar to Fig. 1. L23 should be adjusted carefully slightly clockwise for an exact centre crossover point as in Fig. 2.

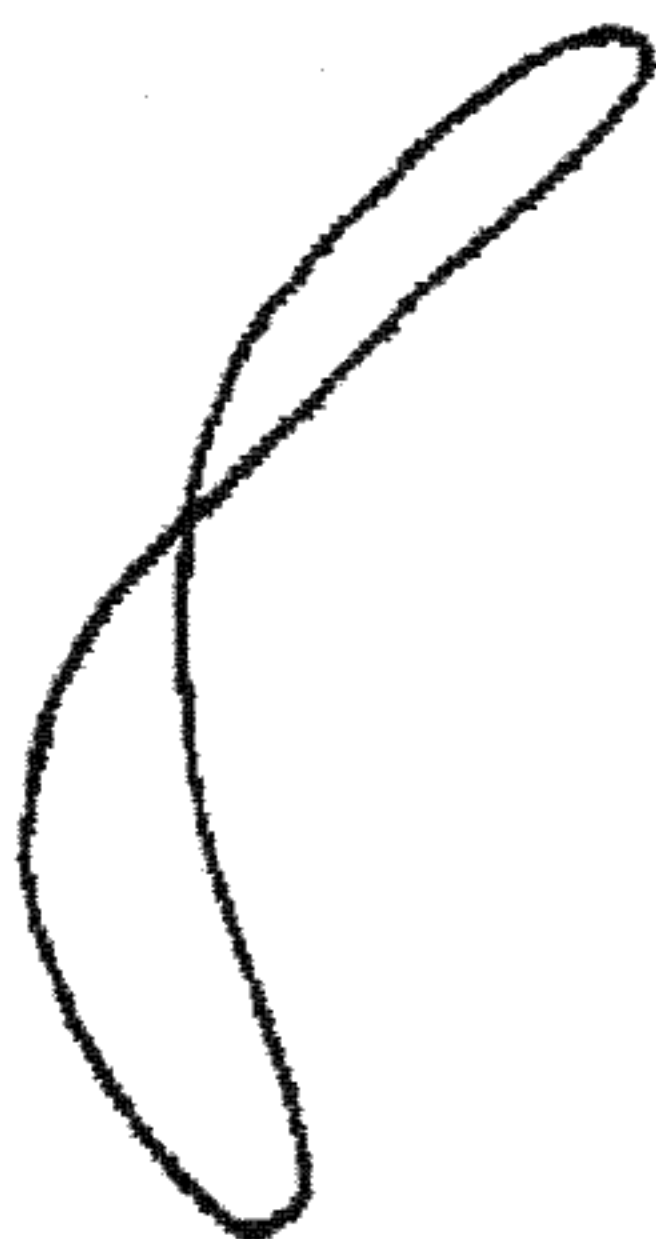


Fig. 1

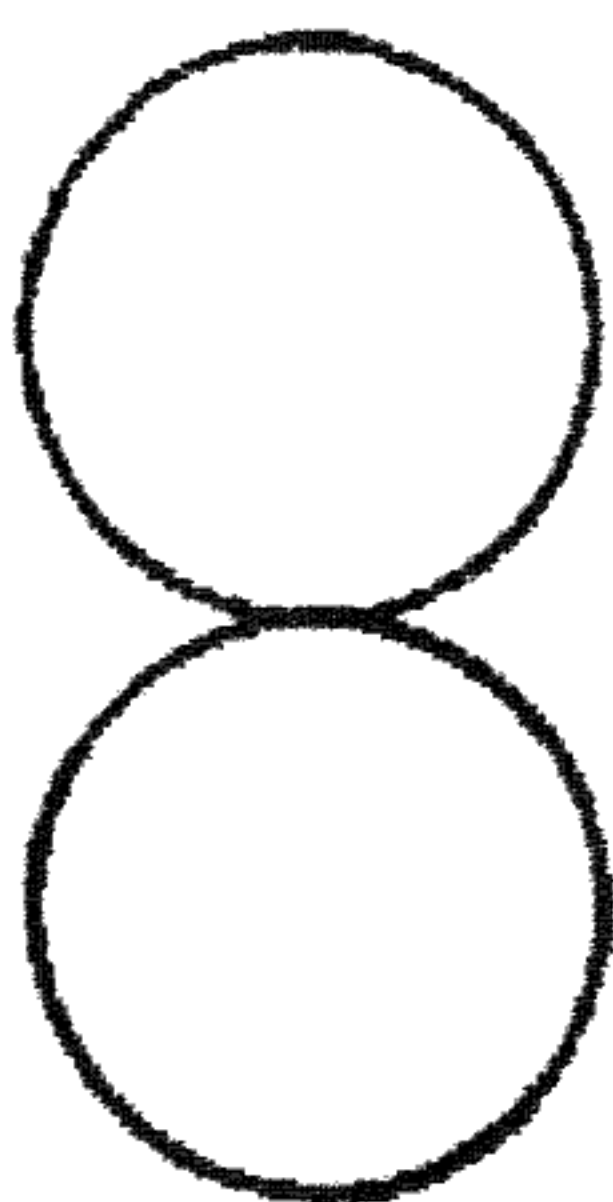


Fig. 2

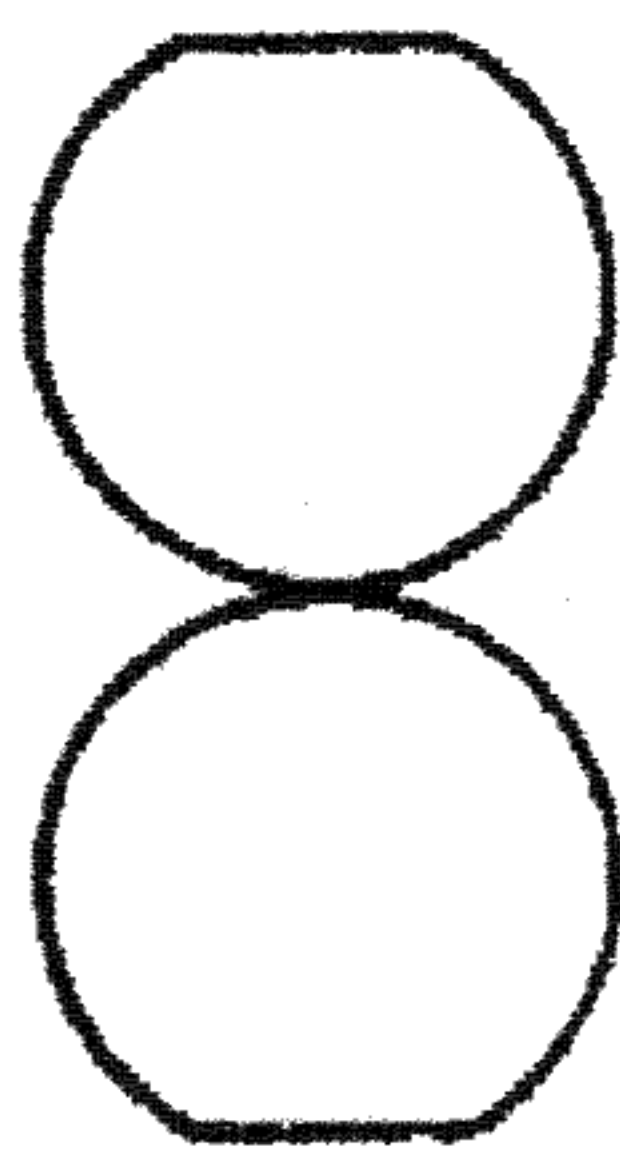


Fig. 3

Decoder Alignment

Note:

A flat top or bottom to the eight is unimportant. For example see Fig. 3.

- 5 Disconnect oscilloscope. At this stage the stereo pilot lamp fitted to the tuner should be alight and remain alight when the pilot level is reduced to at least 7%.
- 6 Connect a suitable output meter to the audio output of the tuner (or tape recording output on tuner-amplifier). Set sensitivity for approximately 1 volt. In case of tuners, check that pre-set output controls are at maximum.
- 7 Set stereo generator for A+B (at a modulation level of 35% at 1 kHz *with pilot switched off*). With pilot switched on, the combined levels should be 44%. Leave pilot on! The output meter should read approximately 400 millivolts each channel. Channel matching should be ± 1 dB.
- 8 Switch modulation to A-B. Output meter should remain the same as for A+B.

- 9 Switch to A only, then B only (with pilot on). The respective channels should show the same output as before. Cross Talk should be at least 25 dB down. The actual figure will generally be better than this but will depend on correct alignment of the tuner and decoder. Alignment is now completed.

Note:

If a 67 kHz storecast filter is fitted as in some export models, this should be tuned for *minimum* output with a modulated signal of 67 kHz, 10% modulation depth via the normal stereo generator SCA socket.