AR7030 SYNCHRONOUS AM

When the AR7030 is used over a large temperature range the synchronous AM may start to operate outside of its aligned lock range. The result is a slight beat note or growling sound on auto when lock is found. no difference will be noticed on manual sync'.
There are several ways to overcome this;

1) Tune the main tuning dial a few tens of hertz until the note disappears.

2) Careful alignment of the internal sync' adjustments can be carried out in the environment in which the set is being used in.

3) Addition of temperature compensation in the sync' circuit.

To do this, simply add a resistor and thermistor in parallel with VR2.
The thermistor used is a NTC 100K (@25C), RS 198-961.
The resistor is added in series with the thermistor is 47K.

The 47K res' should be placed vertically up from the VR2 end of R135.
Solder the thermistor so that it goes from the spare end of the 47K to a suitable earth point (earth end of C107). Place the bead of the thermistor so that it rests on Q35.

The sync' will now have to be re-aligned. Note that the thermistor will have to be at the same temperature as the rest of the set before alignment can take place.
Ideally the set should be allowed to operate for 15 minutes fully cased before any alignment is carried out.

The above modification will allow synchronous lock over a wider temperature range. The sync' lock time at the end of auto tuning may however take several seconds depending on the temperature of the set. This is not usually a problem but can be improved by a further refinement to the circuit.

As in the above modification, temperature compensation is added, but, in this case the alignment of VR3 is subject of the change.

To carry out the modification;

Add a 100K @ 25C (RS 198-961) thermistor in series with a 150Kohm resistor from the junction of VR3 / R143 up to a suitable 5V supply level (one end of C134). Place the thermistor on to the top of Q41.

As with the previous modification, alignment of VR2 and VR3 will have to be carried out once the added components are at the same temperature as the rest of the set. The set should also be allowed to warm up a short while (in practice, due to temperature compensation on both VR2 and VR3, alignment

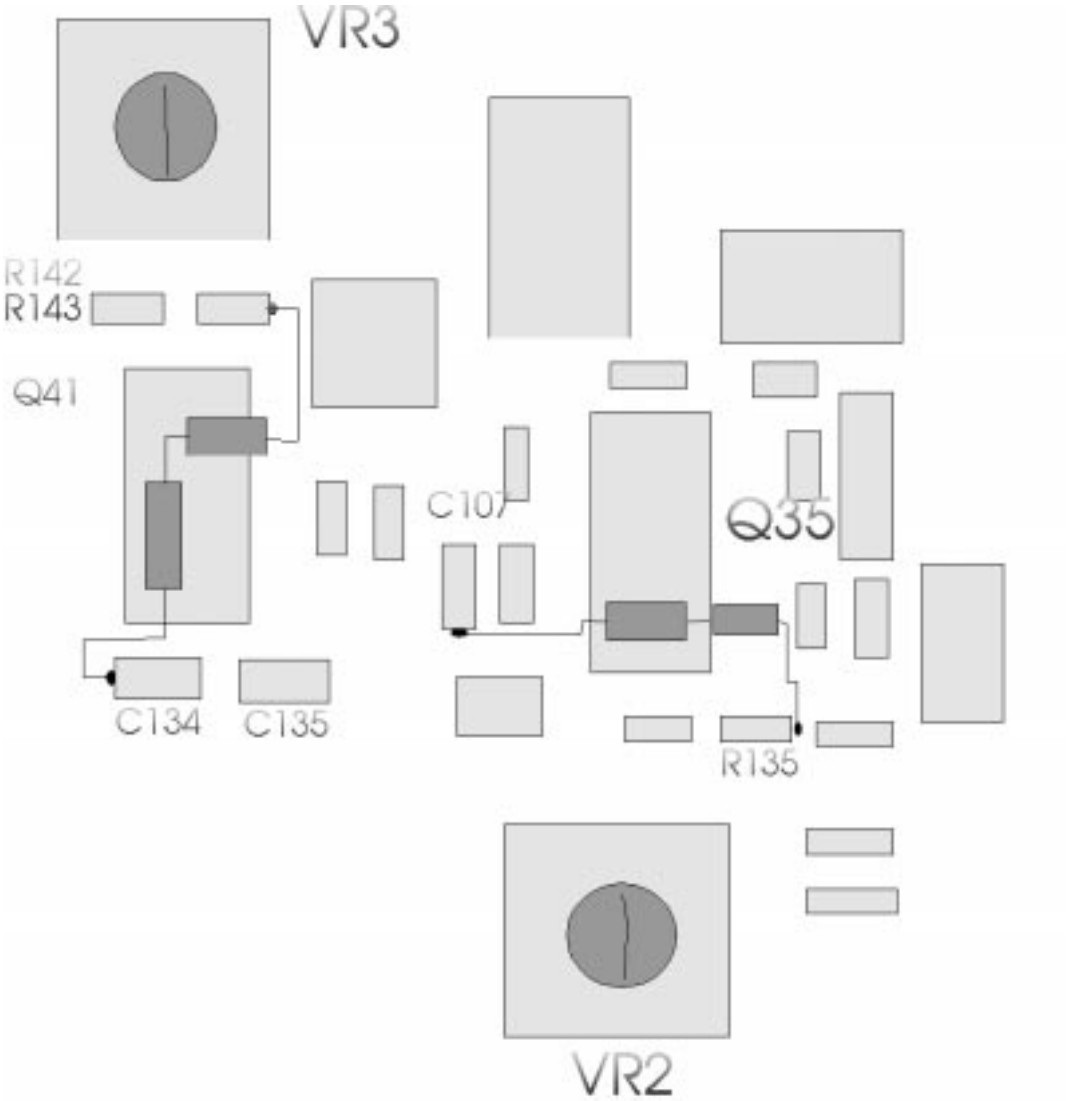
can be carried out at any time after the set has been on for 10 to 15 minutes).

Note; As the set is now operating closer to its ideal set up alignment over a wider temperature range, the amount of background noise may be reduced on some sets (high pitch whistles and tones). This will be most noticeable when the set is cold.

Note 2; A small number of sets may behave slightly differently to this (due to a different manufacturer or batch of components being used). If the above modification does not cure the problem then a small alteration to the value of the fixed resistors will be needed;

In the first case, the 47K should be replaced with a 100K and a further 100K will have to be added in parallel with the thermistor.

In the second case, the 150K should be replaced with 120K and a further 15K will have to be added in series with this (making 135K in total).



PART OF AR7030 PCB SHOWING ADDITIONAL THERMISTOR & 150K ADDED BETWEEN R143 / C134 AND THERMISTOR & 47K ADDED BETWEEN R135 / C107.