"HIS MASTER'S VOICE"

SERVICE MANUAL

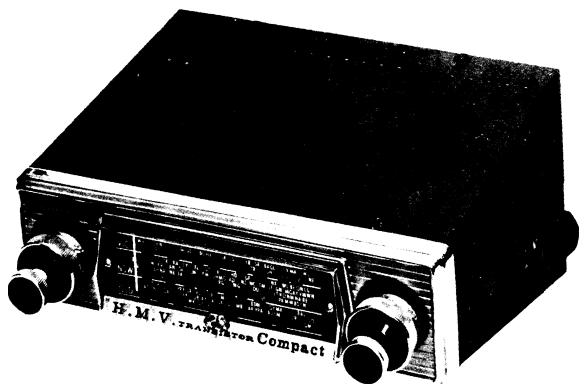
FOR

ONE-UNIT MANUALLY-TUNED

CAR RADIOS

MODELS S5 AND S6

S5: 12-VOLT OPERATION - S6: 6 AND 12-VOLT OPERATION



TRANSISTORS:

- AF116NS — RF Amplifier
- AF116N — Frequency Converter
- AF117N — First IF Amplifier
- AF117N — Second IF Amplifier
- AC125 — Audio Driver (Model S5)
- AC126 — Audio Driver (Model S6)
- 2/AC128 — Audio Output (Matched pair)
- OA90 — Detector and AGC Diode.
- OA675 — Voltage Regulator Diode (Model S6).

DIAL LAMPS:

S5: 16 volts, 0.2 amps., bayonet cap.

S6: 6.3 volts, 0.15 amps., bayonet cap.

CONSUMPTION (including Lamp):

S5: 180 mA $\pm$ 30 mA, under no-signal conditions.

S6: 200 mA $\pm$ 30 mA, under no-signal conditions.

FUSE:

2 amps.

LOUDSPEAKER IMPEDANCE:

3.5 ohms at 400 c/s.

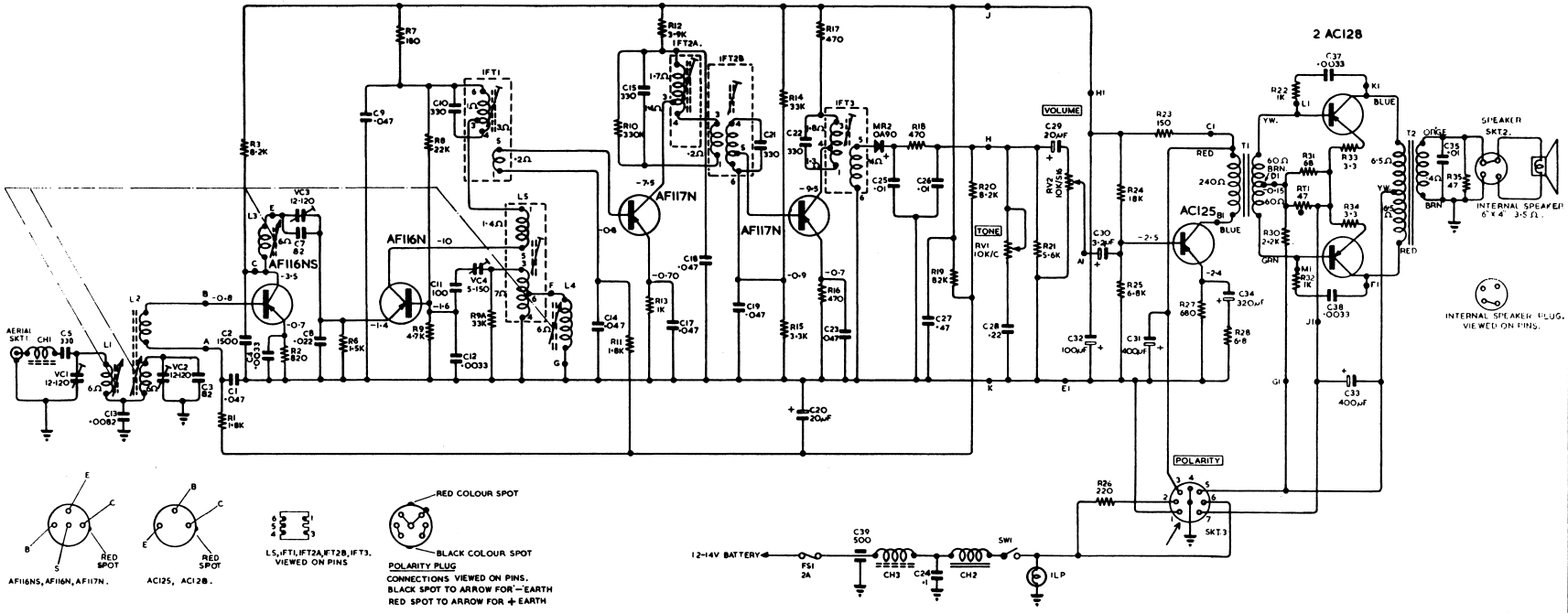
UNDISTORTED POWER OUTPUT:

S5: 1.5 watts.

S6: 12 volt operation — 1.8 watts.

6 volt operation — 1.2 watts.

H.M.V. S5.



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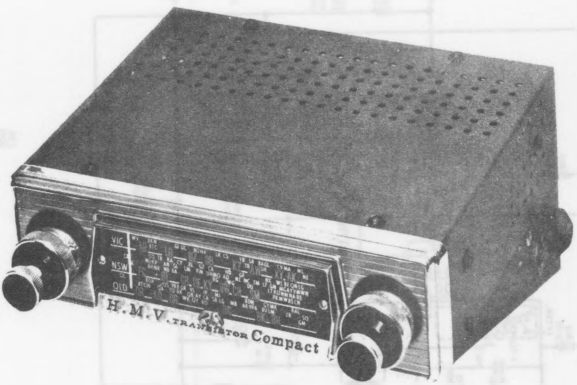

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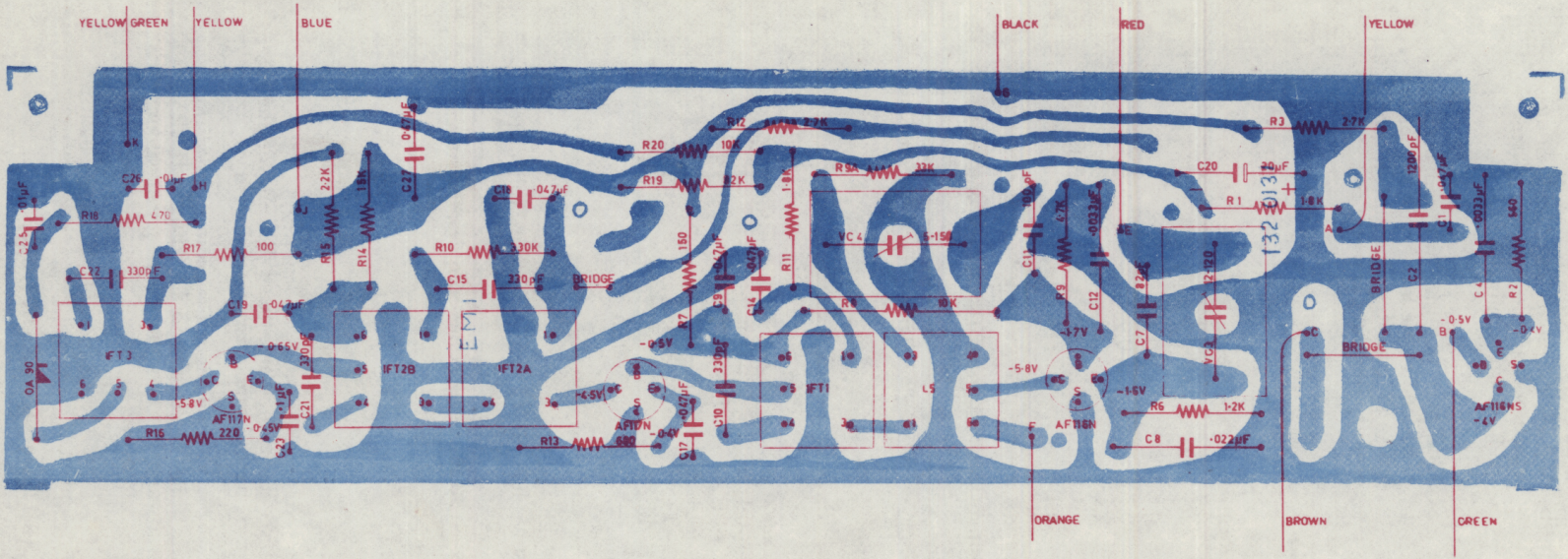
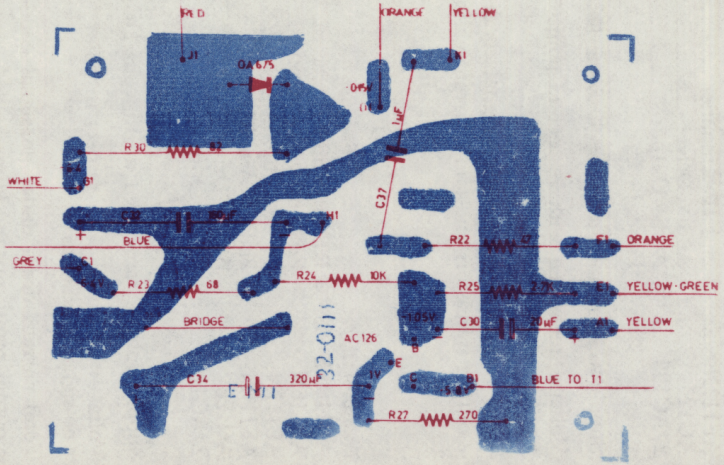
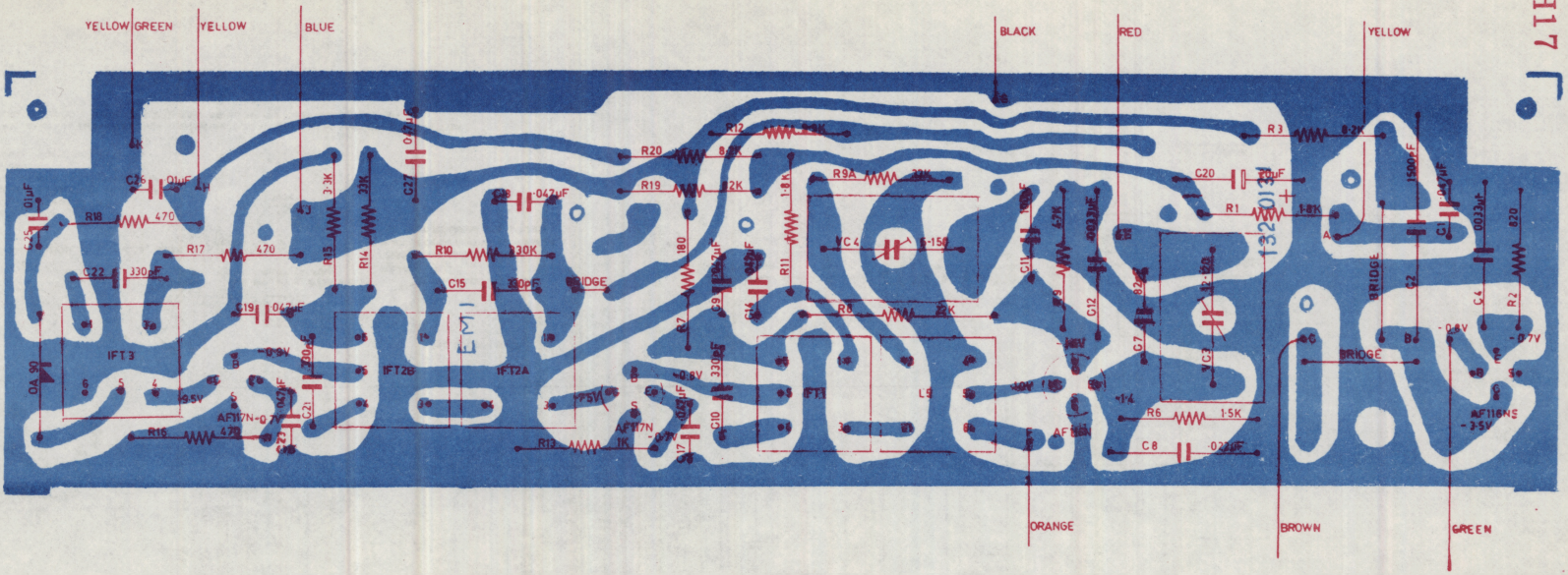


H.M.V. TUNER COMPONENT LAYOUT — S6 — LOOKING ON COPPER SIDE

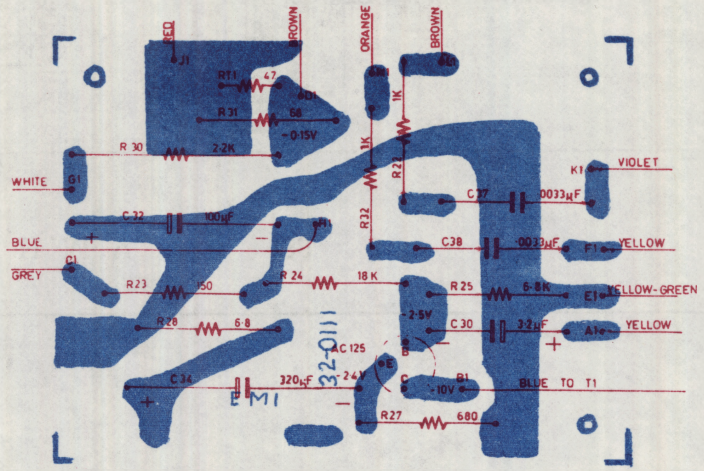


AMPLIFIER COMPONENT LAYOUT — S6 — LOOKING ON COPPER SIDE



TUNER COMPONENT LAYOUT — S5 — LOOKING ON COPPER SIDE

H.M.V. S5.

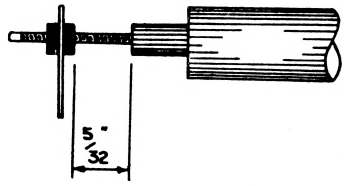


AMPLIFIER COMPONENT LAYOUT — S5 — LOOKING ON COPPER SIDE

RF ALIGNMENT TABLE

MODELS S5 *and* S6

	Operation	*Tune Generator To*	*Tune Receiver To*	*Adjust for Maximum Output*
1	.....	Set position of cores in carriages as shown below.		



2	.....	1630 Kc/s.	Tuning carriage fully out	VC4 Osc. Trimmer.
3	.....	1500 Kc/s.	1500 Kc/s.	VC1, VC2 and VC3, Aerial, Band-pass and RF Trimmers.
4	.....	1000 Kc/s.	1000 Kc/s.	L1, L2 and L3, Aerial, Band-pass and RF Tuning Cores.
5	.....	600 Kc/s.	600 Kc/s.	L5, Osc. Padder Core.
6	.....	Check that receiver tunes to 525 Kc/s. on low frequency end of band. If not, adjust.		L4, Osc. Tuning Core.
7	.....	Repeat operations 2-5 as necessary, to obtain optimum alignment.		
8	.....	1000 Kc/s.	1000 Kc/s.	Adjust Pointer to Set Mark on Dial Scales.
9	.....	Seal Oscillator, Band-pass and RF Trimmers with wax. Ensure that excess wax does not fall on chassis, around Osc. and RF Trimmers.		

DO NOT SEAL AERIAL TRIMMER.

NOISE SUPPRESSION

Normal suppression requirements are:

(1) A 15K resistor, fitted into the HT lead from the ignition coil to the distributor, fitted as closely as possible to the distributor cap.

Most modern cars have this ignition suppressor built into the HT cable and the cable marked "Radio Suppressed."

(2) A 0.5 uF capacitor connected between the armature (large) terminal on the generator, and the generator frame, or car chassis within three inches of the generator.

DO NOT CONNECT CAPACITOR TO THE FIELD TERMINAL.

This capacitor usually is not required on cars fitted with an alternator in place of a generator.

(3) A 0.5 uF capacitor should be connected to the ignition coil, from the LT lead to the ignition switch, to earth or the coil frame.

Should further suppression be required:

(1) Distributor rotor contacts and spark plug gaps should be cleaned and set.

(2) Suppressor resistors capable of withstanding high temperatures may be placed in each HT spark plug lead and should be fitted as close as possible to the spark plug.

(3) Electrical equipment such as windscreen wipers, petrol pumps, clocks and gauges, can be suppressed by connecting a 0.5 uF capacitor between the live terminal of the unit and earth.

(4) Earthing: In some cases it may be necessary to earth the motor directly to the chassis, at the same point as the battery earth lead.

It may also be necessary to earth the bonnet to the chassis, using a heavy copper braid.

In extreme cases it may be found necessary the repack the hub cap on wheel bearings, using Grade "G" Graphite, to prevent wheel and brake noise.

It may also be necessary to fit springs between the wheel bearings and grease cap, to overcome the insulation effect of the grease in the bearings between axles and the hubs.

(5) Aerial: The aerial lead-in should be soldered to the connectors at each end and the connectors secured properly in their sockets. Loose connections, poor earthing or dirty contacts will cause intermittent, weak and noisy reception.

Great care should be taken when soldering aerial leads, as excessive heat will damage the insulation.

IMPORTANT:

Be sure to clean back to the bare metal to obtain a good earth connection at the aerial mount and at all earth points for suppressors.

Also, make sure that the aerial lead shielding makes connection to the aerial socket. In some cases, it may be necessary to distort the fluting on the Benjamin aerial plug.

H.M.V. S5. & S6.

IF SENSITIVITY

Model S5: Less than 70 uV for 50 mW output.

Model S6: Less than 50 uV for 50 mW output.

NOTE: These IF transformers are a very high Q miniature type. It will be appreciated that the amount of travel for the tuning core to cover its tuning range is much smaller than in normal IF transformers. Tuning the IF thus becomes more critical and the following points should prove useful.

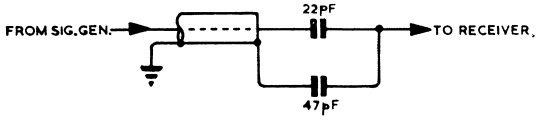
(a) The tuning tool should be a small metal screwdriver with a tip which fits cleanly into the tuning core.

(b) When turning the core, do not use any downward pressure, as the threaded former has enough resilience to detune the IF transformer, after the pressure is relieved.

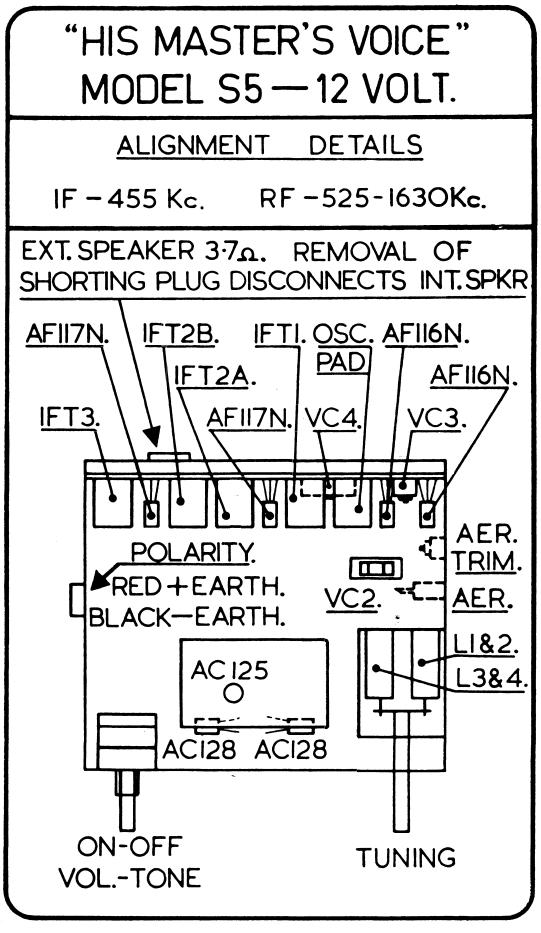
(c) The thread in the former may be damaged if the core is wound in and forced against the circuit board. A light torque should be all that is normally required to turn the core.

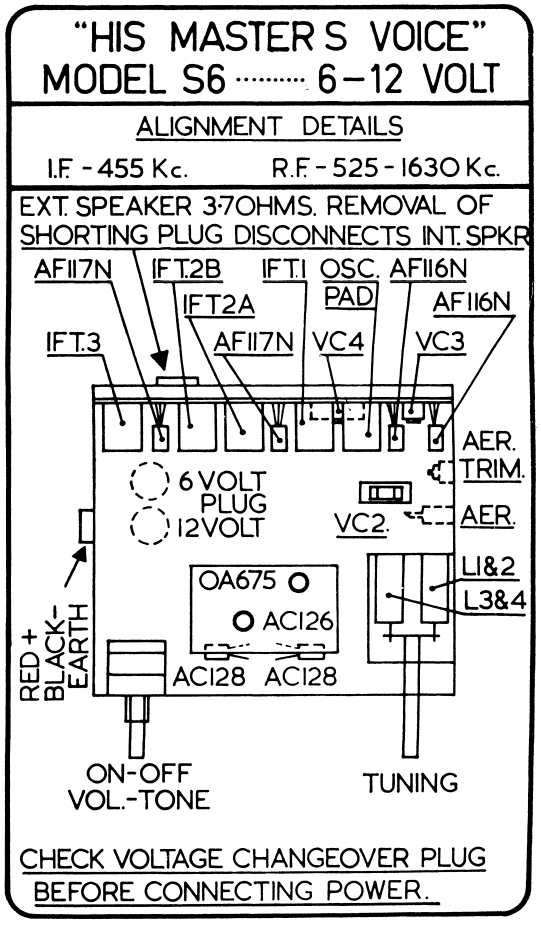
RF ALIGNMENT

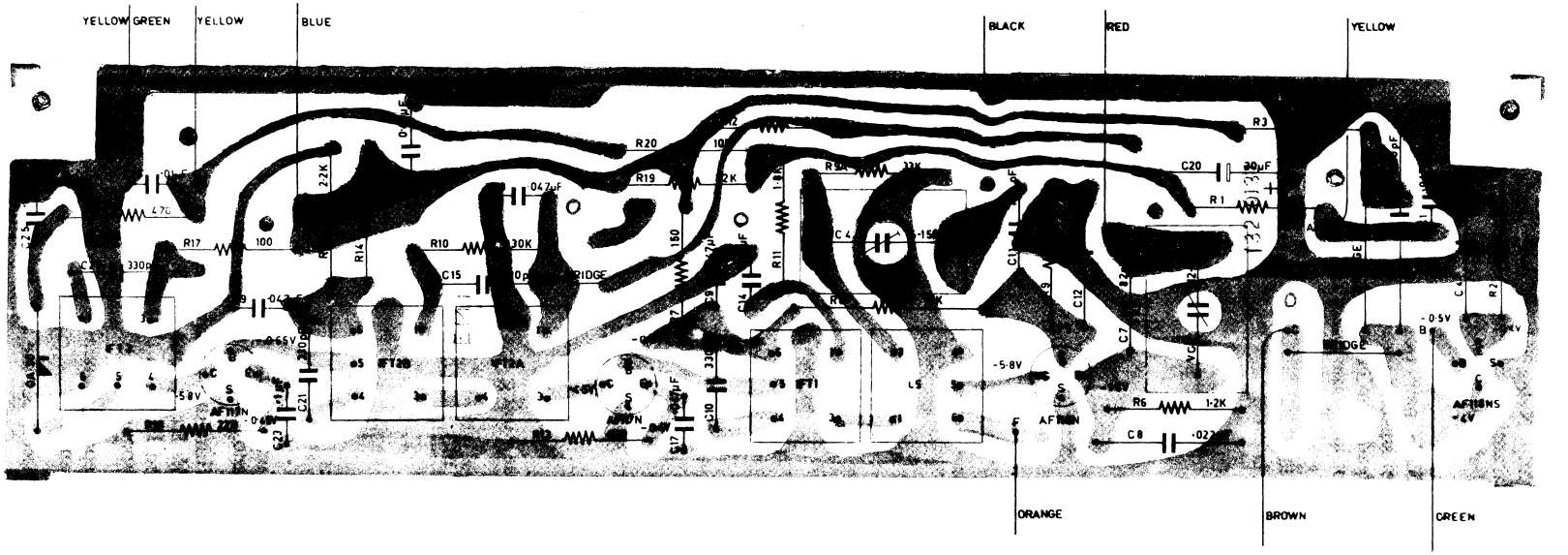
(1) Connect the signal generator to the aerial input socket, via a dummy aerial as shown below.



(2) Turn both the volume and tone controls fully clockwise.







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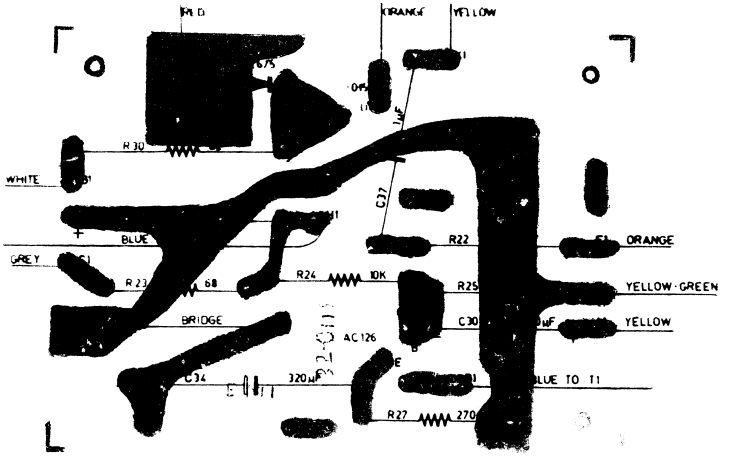


AMPLIFIER COMPONENT LAYOUT — S6 — LOOKING ON COPPER SIDE

H.M.V. S5. & S6.

OUTPUT TRANSISTOR REPLACEMENT

Note: Do not switch the receiver on with only one output transistor in circuit.

(a) Unsolder the three leads and slide the suspect transistor out of its heat sink. Pressure may be applied to the transistor by means of a screwdriver.

(b) Slip Nylex tubing over leads of new transistor. (Red—Collector, Green—Base, Brown—Emitter).

(c) Slide new transistor with application of silicone grease into heat sink. Solder leads into circuit, making use of a pair of long-nose pliers as a heat sink.

VOLTAGE TABLES
Model S5

Transistor Type	*Function*	*Emitter*	*Base*	*Collector*
AF116NS	RF Amplifier	–0.7	–0.8	–3.5
AF116N	Frequency Converter	–1.4	–1.6	–10
AF117N	1st IF Amplifier	–0.7	–0.8	–7.5
AF117N	2nd IF Amplifier	–0.7	–0.9	–9.5
AC125	Audio Driver	–2.4	–2.5	–10
2/AC128	Audio Output	—	–0.15	–12.8
	Point J	–10.3		

Supply voltage monitored at 13 volts DC.

Voltages measured with respect to point 'G' (tuner positive line) using a 20,000 ohms/volt meter, under no-signal conditions.

Total current drain under no-signal conditions: 180 mA $\pm$ 30 mA, depending on quiescent current of the output transistors and lamp current variations.

Model S6

Transistor Type	*Function*	*Emitter*	*Base*	*Collector*
AF116NS	RF Amplifier	–0.4	–0.5	–4
AF116N	Frequency Converter	–1.6	–1.7	–5.8
AF117N	1st IF Amplifier	–0.4	–0.5	–4.5
AF117N	2nd IF Amplifier	–0.45	–0.65	–5.8
AC126	Audio Driver	–1	–1.05	–6.4
2/AC128	Audio Output	—	–0.15	—
	Point J	–6		

Supply voltage monitored at 13 volts DC.

Voltages measured with respect to point 'G' (tuner positive line) using a 20,000 ohms/volt meter, under no-signal conditions.

Total current drain under no signal conditions 200 mA $\pm$ 30 mA, depending on quiescent current of the output transistors and lamp current variations.

ALIGNMENT

Use a Signal Generator modulated 30% at 400 c/s.

IF ALIGNMENT

(1) Remove top and rear sections of the receiver case and remove RF/IF board.

(2) Connect a 33K resistor across the primary of IFT2B.

(3) Connect the signal generator, via a 0.1 uF capacitor to point 'E,' adjacent to the RF trimmer.

(4) Turn the volume and tone controls fully clockwise.

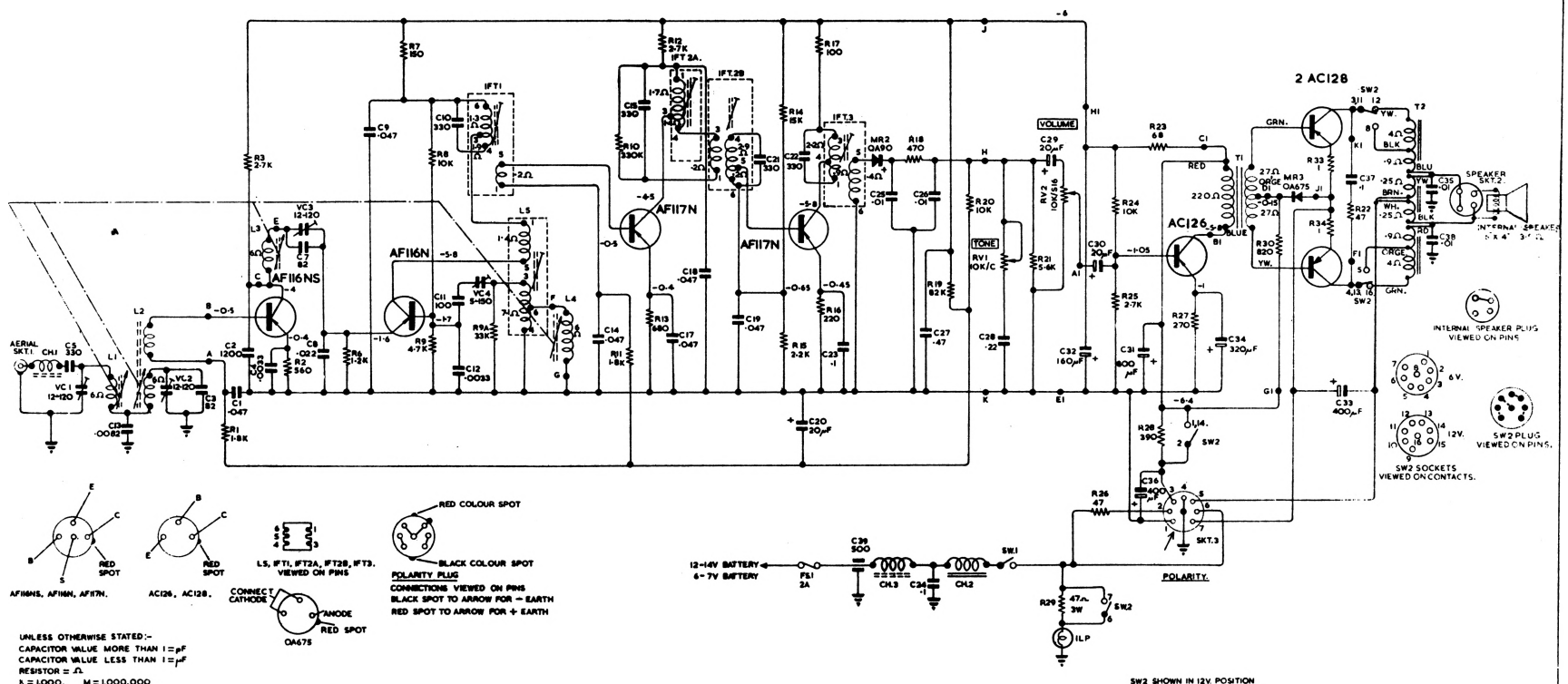
(5) Tune to the extreme HF end of the band (tuning carriage fully out).

(6) With the signal generator tuned to 455 Kc/s, tune IFT3, IFT2B, IFT2A and IFT1, in that order, for maximum response.

(7) Repeat sequence for optimum alignment.

(8) Disconnect the 33K resistor.

H.M.V. S6.



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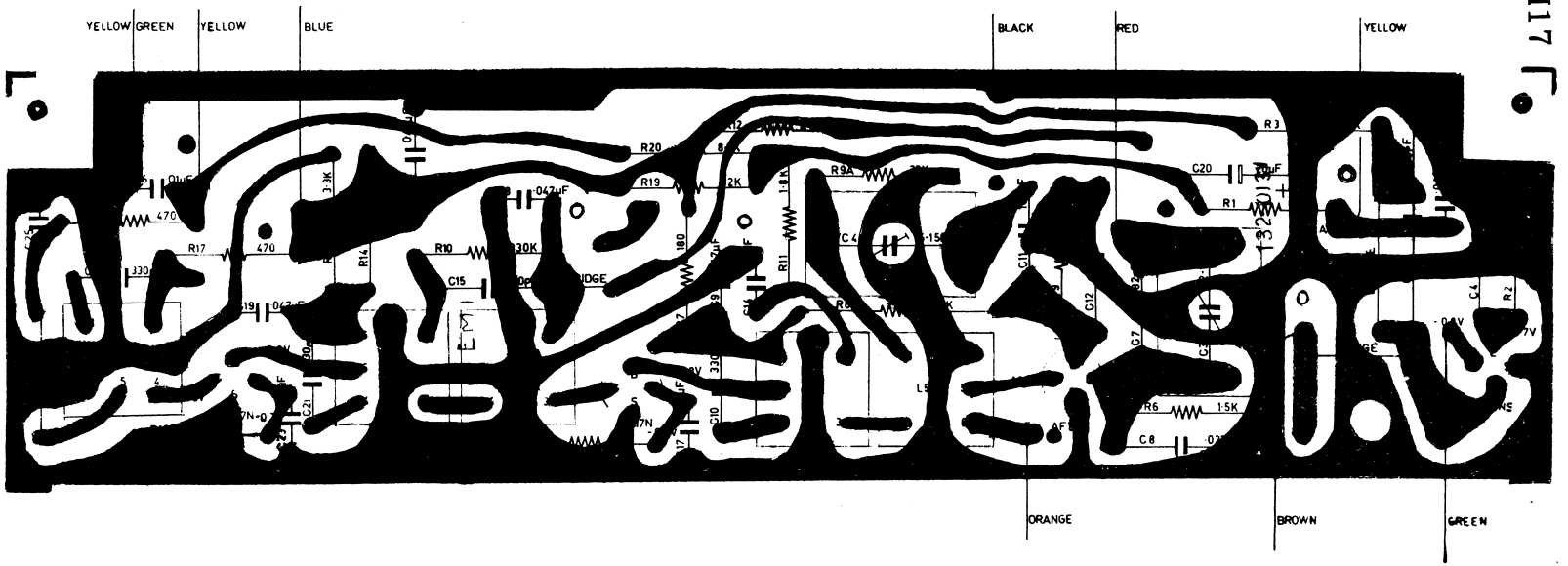
H17



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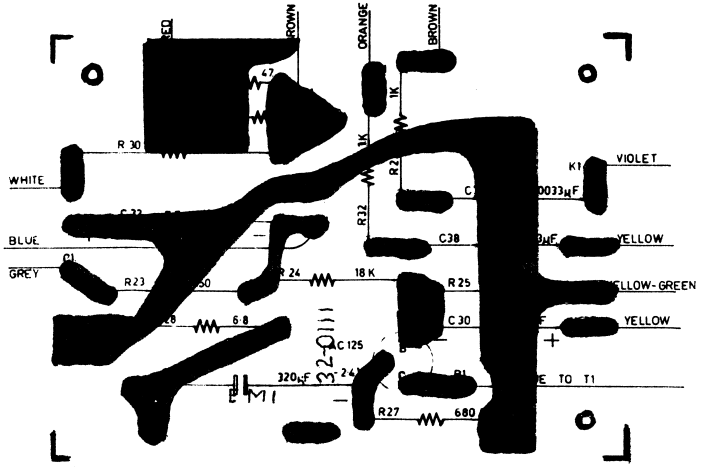

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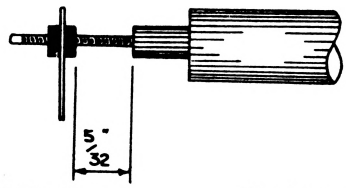

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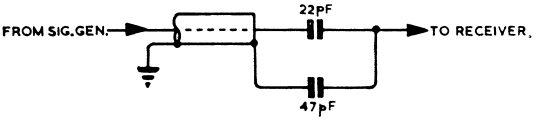

(2) Turn both the volume and tone controls fully clockwise.