ALIGNMENT

I.F. Alignment

1. Set the Waveband Switch to M.W., the Volume control fully clockwise and the Gang Capacitor to minimum capacity.

2. Inject a 470 kc/s modulated signal into the grid of V1 (Pin 6) and chassis.

3. Adjust cores of L8,L7,L4 and L3 consecutively for maximum output.

R.F. Alignment

Connect a few turns of wire to the output leads of the signal generator and inductively couple the turns to the M.W. or L.W. coils (L1 or L2) on the Ferrite Rod.

Medium Wave

Set Volume Control to Maximum and Waveband Switch to M.W.

Operation No.	Set Signal metres	Generator. kc/s	Set Gang Capacitors.	Operation.
1	574	522	Maximum	Adjust core of L5 for maximum output
2	187	1602	Minimum	Adjust TC2 for maximum output Repeat operations 1 & 2.
3	510	588	Tune in	Adjust L1 for maximum output
4	210	1427	Tune in	Adjust TC1 for maximum output Repeat operations 3 and 4

Long Wave

Set Volume Control to Maximum and Waveband Switch to L.W.

Operation No.	Set Signal metres	Generator. kc/s	Set Gang Capacitors.	Operation
1	1852	162	Tune in	Adjust L2 for maximum output

N.B. L1 and L2 are adjusted in the factory and do not require re-adjustment, but if it found necessary to re-adjust these, they should be loosened with cellulose thinners.

VOLTAGE TABLE

The following table indicates the approximate static voltage and current readings obtained on each valve. Variations of ±15% may be anticipated between models.
A meter having a resistance of 20,000 Ω per volt should be used to measure voltages.

VALVE	ANODE Volts to Chassis		SCREEN Volts to Chassis
	MX. (Pin 2)	OSC. (Pin 3)	
V1 (DK96)	67	30	67.5
V2 (DF96)	67		67.5
V3 (DAF96)	65		50

Transistors

TRA1 } See Transistor Bias Chart for current check.
TRA2 }

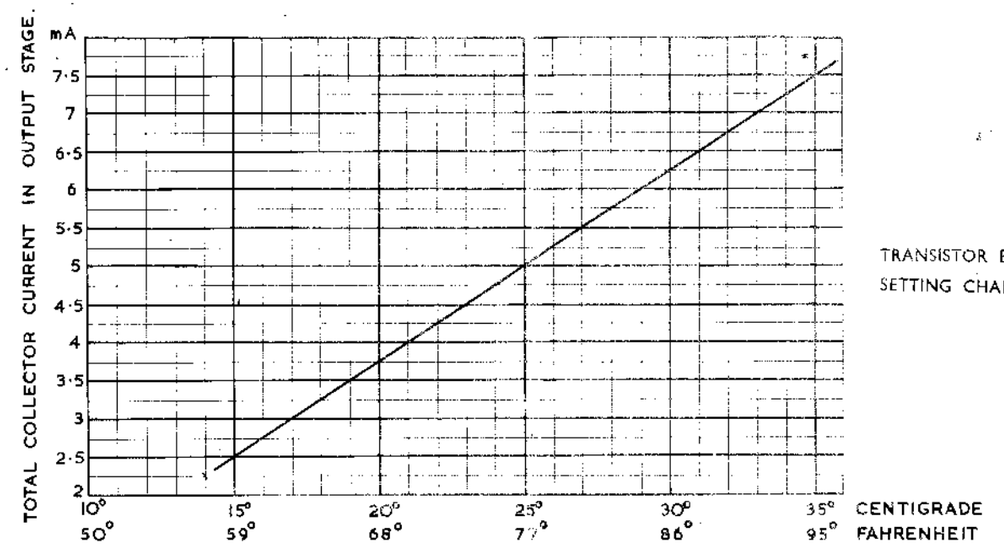
TOTAL H.T. CURRENT. 4.5 mA.
TOTAL L.T. CURRENT. 40 mA.

TRANSISTORS BIAS ADJUSTMENT

The preset Bias control (RV2) is adjusted at the factory and should not require further adjustment. If, however, replacement of the transistors becomesnecessary, RV2 should be adjusted in accordance with the Transistor Bias Setting Chart. The adjustment should be carried out as follows :-

Remove the radio chassis as described under "Dismantling". Unsolder one side of the test point link and connect in series a 0-10 mA meter. Switch the receiver on and position the tuner to a no-signal condition and volume control to minimum. The ambient temperature should now be taken.

Adjust sliding resistor RV2 for a current reading to correspond with the Bias Chart, e.g., if the ambient temperature is 20° centigrade the corresponding current reading for correct quiescent transistor bias should be 3.75 mA.



TRANSISTOR BIAS SETTING CHART

HINTS ON SERVICING TRANSISTORS

Normal methods may be used for checking the part of the circuit incorporating thermionic valves. Care should, however, be taken not to short circuit L.T. or H.T. with the meter probe.

The output stage should preferably be tested under dynamic conditions. If this is not possible, the stage may be checked under static conditions, i.e., with no signal.

A faulty transistor will result in bad distortion of the output, in which case a current check is permissible and if the current is approximately equal to half of the total current through the collectors, then it is most probable that one of the transistors is faulty. As already mentioned in the"Specification", the transistors are of matched pairs, therefore, it is suggested that both transistors should be replaced with a new matched pair.

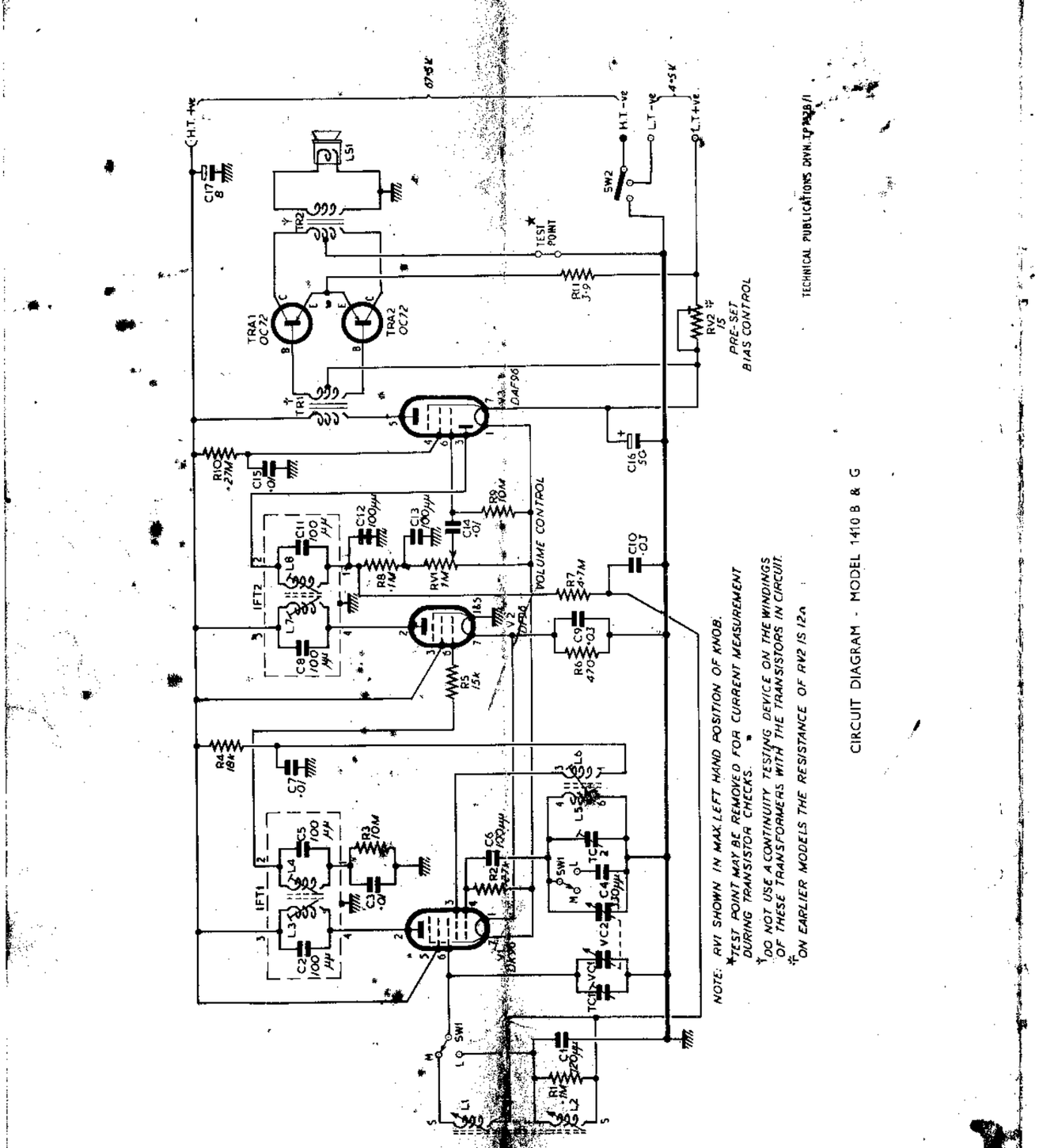
It is not recommended to use any continuity test meter on circuits incorporating transistors.

Excessive heating either by a soldering iron or due to excess current can cause a transistor to become faulty.

It is not recommended to disconnect the transistor leads for checking, but points which can be broken for test purposes are incorporated in the circuitry.

Should occasion arise for replacement of a transistor, heat shunts must be used, i.e., the leads of the transistor must be held with a pair of pliers and after soldering, the pliers must still be held in position until there is no danger of heat transference to the junction of the transistor and its leads (these junctions have extremely low temperature melting point).

In general, transistors are more rugged than normal thermionic valves but can be more prone to damage if handled carelessly. It can be emphasised however, that transistors be regarded as a reliable component and when a faulty receiver is being examined, the transistors should not be unduly suspected.



CIRCUIT DIAGRAM - MODEL 1410 B & G

TECHNICAL PUBLICATIONS DWN. TP 2328/1

NOTE: RV1 SHOWN IN MAX. LEFT HAND POSITION OF KNOB.

* TEST POINT MAY BE REMOVED FOR CURRENT MEASUREMENT DURING TRANSISTOR CHECKS.

† DO NOT USE A CONTINUITY TESTING DEVICE ON THE WINDINGS OF THESE TRANSFORMERS WITH THE TRANSISTORS IN CIRCUIT.

‡ ON EARLIER MODELS THE RESISTANCE OF RV2 IS 12Ω

PART No.	DESCRIPTION	No. PER INST.	FIN-ISH
Inductors (Continued)			
92760B	L5 } L6 } Oscillator Coil (MW)	1	00
92690B	L7 } L8 } 2nd. IF Transformer	1	00
92693	Dust Iron Cores for IFT1 & 2	4	00
92695A	Screening Can only for IFTS	2	00
40907	Dust Iron Core for L5/6	1	00
96056	Ferrite Rod for L1 & L2	1	00
12613	Cleat securing Ferrite Rod to Paxolin Panel	1	689
200040G	Screw } securing Cleat	1	689
201804	SP Washer } to Panel	1	00
200404	Nut }	1	689
96055A	Paxolin Panel Assy. - supporting Ferrite Rod	1	00
200040D	Screws securing Panel to Gang Capacitor	2	689
49825	Solder Tags only on Paxolin Panel	4	00
92800D	TR1 Interstage Transformer	1	513A
92800B	TR2 Output Transformer	1	513A
RESISTORS			
33362EA	R1 - 100 kΩ 20% ½w	1	00
33362ND	R2 - 27 kΩ 10% ½w	1	00
33362EN	R3 - 10 MΩ 20% ½w	1	00
33362KG	R4 - 18 kΩ 10% ½w	1	00
33362BV	R5 - 15 kΩ 10% ½w	1	00
33362BL	R6 - 470 Ω 10% ½w	1	00
33362EL	R7 - 4.7 MΩ 20% ½w	1	00
33362EA	R8 - 0.1 MΩ 20% ½w	1	00
33362EN	R9 - 10 MΩ 20% ½w	1	00
33362NE	R10 - 0.27MΩ 10% ½w	1	00
37860LT	R11 - 3.9 Ω 10% ½w	1	00
96061A	RV1 - 1 MΩ volume control assembly complete with knob and ON/OFF switch	1	00

PART No	DESCRIPTION	No. PER INST.	FIN-ISH
96062	Spacers }	2	689
200100N	Screws } securing RV1	2	689
200410	Nuts } Assembly to	4	689
96063	Wiring Tags } printed Panel	2	00
210310	Washers }	2	689
96060B	RV2 - Preset Bias control (15 Ω)	1	00
CAPACITORS			
38117TH	C1 - 120 μμF 2% 750v	1	00
38014TF	C2 - 100 μμF 2% (See IFT1)	1	00
38109B	C3 -0.01 μF -20%+80% 500v	1	00
38492VK	C4 - 330 μμF 2% 250v	1	00
38014TF	C5 - 100 μμF 2% (See IFT1)	1	00
38117DG	C6 - 100 μμF 20% 750v	1	00
38109B	C7 - 0.01 μF -20%+80% 500v	1	00
38014TF	C8 - 100 μμF 2% (See IFT2)	1	00
38137A	C9 - 0.03 μF -20%+80% 500v	1	00
38137A	C10 - 0.03 μF -20%+80% 500v	1	00
38014TF	C11 - 100 μμF 2% (See IFT2)	1	00
38117DG	C12 - 100 μμF 20% 750v	1	00
38117DG	C13 - 100 μμF 20% 750v	1	00
38109B	C14 - 0.01 μF -20%+80% 500v	1	00
38109B	C15 - 0.01 μF -20%+80% 500v	1	00
38420G	C16 - 50 μF Electrolytic 12v	1	00
38420F	C17 - 8 μF Electrolytic 100v	1	00
See VC1 & 2	TC1 } Part of Twin Gang TC2 } Tuning Capacitor Assy.	-	-
96052A	(VC1 Twin Gang Tuning } (VC2 Capacitor Assembly)	1	00
96053	Front Metal End Plate supporting Gang Capacitor and Switch Assembly	1	689
96054	Rear Metal End Plate supporting Gang Capacitor	1	689
200040D	Screws } securing Front	4	689
201804	SP Washers } & Rear Plates	4	00