TECHNICAL INFORMATION

BULLETIN No. 121.

(TYPE)

TECHNICAL DATA ON THE TYPE 6 L..S..C.

6-VALVE DUAL-WAVE A.C. OPERATED RECEIVER.

RECEIVER

COLLIER & BEALE LTD.

WELLINGTON

TECHNICAL DESCRIPTION AND ADJUSTMENT PROCEDURE OF

6 VALVE DUAL WAVE RECEIVER.

MODEL 6L.S.C.

This Receiver uses six Tubes in the following arrangement :-

1 - Type 6D6 Signal Frequency Amplifier (both hands)
1 - " 6A7 Oscillator and 1st Detector
1 - " 6D6 I.F. Amplifier
1 - " 6B7 Diode Detector and Audio Amplifier
1 - " 42 Power Amplifier
1 " " x 80 Full Wave Rectifier

An entirely new Coil Assembly is used, that incorporates all the high frequency alignment Condensers as an intergral part of the Assembly. A Dual Padding Condenser is used, made up of 1 - 500 Mmfd. section, and 1 - 2,000 Mmfd. section. As the Padding Condenser required for the Short Wave range is approximately 6,000 Mmfd., a .004 Fixed Condenser is permanently in shunt with the 2,000 Mmfd. section.

Location of the various Trimmer Condensers are as follows:-

Looking directly at Coil Box, top row, left to right - 1 Broadcast Oscillator, 2 - Broadcast Interstage, 3 - Broadcast Antennae stage.

Bottom row, left to right - 1 - 3 Wave Oscillator, 2 - Short Wave Interstage, 3 - Short Wave Antennae.

The Padding Condensers are located in the left Chassis end. Left hole is the Broadcast Padding Condenser; right hole the Short Wave Padding Condenser. A variable Short Wave Antennae Series Condenser is located in the right Chassis end.

Adjustment of the various Condensers, if required, should be undertaken in the following manner :-

In all cases of adjustment, alteration of the high frequency alignment screws should only be attempted after Intermediate Frequency Amplifier has been checked. The intermediate frequency used is 465 Kilocycles. The first stage is an Air Core Unit, the second being fitted with Powdered Iron Cores. The Special type of Condenser to tune the I.F. Coils, is of the centre screw pattern, and has a ratio of capacity change for small screw movements.

The adjustment of the Broadcast section should be undertaken first. If the Receiver appears to be operating satisfactorily and the dial indications are substantially correct, it is very unwise to disturb the original adjustment. Any variation from the correct setting will usually be found at the high frequency end of the Dial, where small irregularities in trimmer settings, caused by vibration or temperature change has a marked effect. The Oscillator Trimmer decides the pointer indication, although it does not necessarily mean that any setting is the correct setting, unless the other coils are in alignment.

After setting the pointer by way of the oscillator trimmer, at or about 1500 Kilocycles, the other two circuits should be brought into line. The Receiver should then be checked carefully at or about 600 Kilocycles, adjusting the Broadcast Padding Condenser very carefully.

If any great movement of the Padding Condenser is necessary to correctly align the Receiver, it is always advisable to recheck the high frequency oscillator trimmer.

Note:- Care is required in adjusting both high frequency and low frequency Padding Condensers, as the ratio of capacity change is high for small screw movements.

The alignment of the Receiver should be checked in the middle portion of the dial, by either pressing or opening the moving plates slightly, or by the addition of a small external capacity to each section in turn. An increase in signal by such an addition denotes lack of capacity, which can usually be traced to distorted plates. If all sections show a decrease, the Receiver can be considered in satisfactory alignment.

A suitable tool for checking the above is a small section of brass tube or any metal object, fitted to an insulated handle, which when placed on the stator connection strips, will provide a small additional capacity, just sufficient to produce the required change.

In all cases of adjustment to either the high or low frequency Capacitors, an antennae or the equivalent of an antennae should always be connected to the Receiver. Adjustment of the Short Wave section should be undertaken in a similar manner, except that the test frequencies should be 15 and 16 Megacycles.

Greater care, however, will be required in the setting of the various trimmer condensers, as very small movements, particularly at the high frequency end of the dial, will have the effect of shifting the frequency or tuning, to a very large degree. The short wave Padding Condenser is a very broad adjustment, and rarely will need alteration.

The adjustment of the Antennae Series condenser is not critical, but care should be taken to see that too much capacity is not used that will destroy the tuning of the Antennae circuit particularly at the H.F. end of the dial.

The same procedure for correctness of alignment in the middle settings of the Condenser should be adopted as described for the Broadcast band.

Variations in sensitivity after realignment between Chasses of the same type, can usually be traced to irregularities in the Valves.

Component data and circuit diagram, are shown on separate leaves, attached.

COLLIER & BEALE LIMITED,
66 GHUZNEE STREET,
WELLINGTON, C.2.

20th March, 1936.

CONDENSER DETAILS,

"ELSTREE" DUAL WAVE RECEIVER.

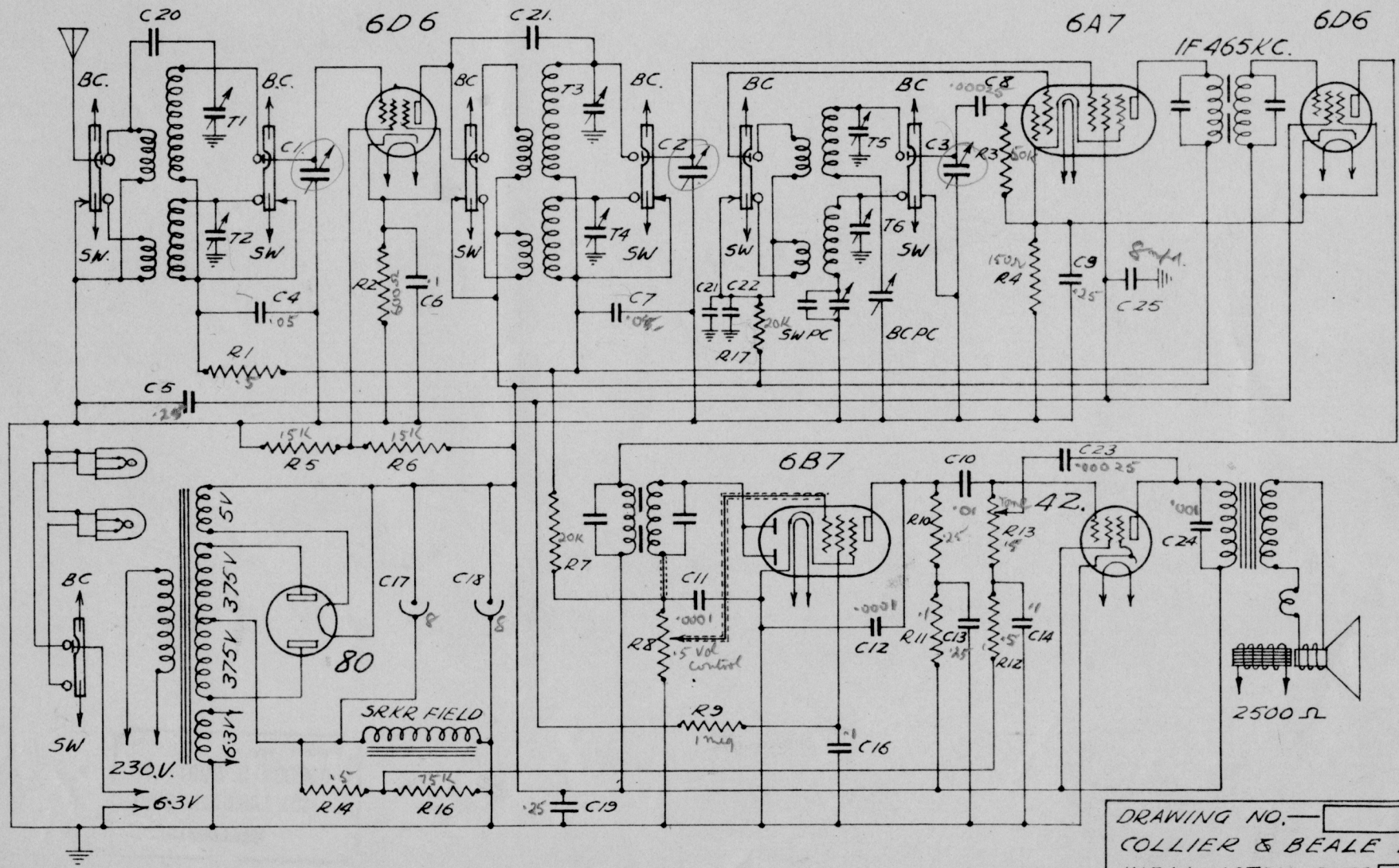
T. 1)	
T. 2)	
T. 3)	
T. 4)	High Frequency Alignment Condensers.
T. 5)	
T. 6)	
C. 1)	
C. 2)	3-Gang Variable Condenser, 450 Mmfd.
C. 3)	
C. 4	.05 Mfd. A.V.C. Filter
C. 5	.25 Mfd. Screen By-Pass
C. 6	.1 Mfd. R.D. Bias By-Pass
C. 7	.05 Mfd. A.V.C. Filter
C. 8	.00025 Mfd. Oscillator Grid Condenser (Note :- In later Models this has been changed to .)
C. 9	.25 Mfd. 1st Detector and I.F. Bias By-pass.
C.10	.01 Mfd. Audio Coupling Condenser.
C.11	.0001 Mfd. Diode Load By-Pass.
C.12	.0001 Mfd. R.D. Plate Filter.
C.13	.25 Mfd. Audio Plate Filter.
C.14	.1 Mfd. Audio Grid Filter.
C.16	.1 Mfd. 6B7 Screen By-Pass.
C.17)	8 Mfd. Filter Condensers.
C.18)	
C.19	.25 Mfd. H.T. By-Pass.
C.20)	High Frequency Couplings, made up of plate and grid leads,
C.21)	in insulated sleeve.
C.21a	.01 Mfd. Condenser.
C.22	8 Mfd. Electric Condenser
C.23	.00025 Tone Control Condenser
C.24	.001 42 Plate Condenser
C.25	8 Mfd. Electrolytic Condenser.

RESISTOR DETAILS.

"ELSTREE" DUAL WAVE RECEIVER.

R. 1	.5 Meg. A.V.C. Filter
R. 2	600-Ohm. R.F. Bias
R. 3	50,000-Ohm. Oscillator Grid Leak
R. 4	150-Ohm. 1st Detector and I.F. Bias (Note:- In Later Models, this has been changed to 300-Ohms.)
R. 5	15,000-Ohm. Screen Dropping
R. 6	15,000-Ohm. Screen Bleeder
R. 7	1 Meg. A.V.C. Filter
R. 8	.5 Meg. Diode Load - Volume Control. (Note:- Later Models have been changed, and have a type of volume control identical to that fitted to previous "Daventry" and "Gloucester" Receivers. This is not shown in circuit diagram attached.)
R. 9	1 Meg. Screen Dropping
R.10	.25 Meg. Plate Load
R.11	.1 Meg. Audio Plate Filter
R.12	.5 Meg. Audio Grid Filter
R.13	.5 Meg. Potentiometer 42 Grid
R.14	.5 Meg. Bias Potentiometer
R.16	75,000-Ohm. Bias Potentiometer.
R.17	20,000 $\frac{1}{2}$-Watt Resistor.

SCHEMATIC DIAGRAM TYPE 6 L.S.C. RECEIVER.



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