

TECHNICAL INFORMATION

BULLETIN NO. 137.

6LSE + Eye.

(TYPE)

NEECO MODEL BN-1-40 6-VALVE

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DUAL WAVE RECEIVER.

RECEIVER

COLLIER & BEALE LTD.

WELLINGTON

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TECHNICAL DESCRIPTION AND ADJUSTMENT PROCEDURE OF

After setting 6-VALVE DUAL WAVE RECEIVER MODEL 6-L.S.E. trimmer, at or about 1,500-Kc/s., the other two circuits should be brought into line. The receiver should then be checked carefully at or about 600-Kc/s., adjusting the broadcast padding condenser very carefully.

This receiver uses six tubes in the following arrangement :-

If any great movement of the padding condenser is necessary to correctly align the receiver, 1 1 - Type 6U7-G Signal frequency amplifier (both bands) oscillator trimmer.

1 - " 6K8 Oscillator and 1st detector

1 - " 6U7-G I.F. amplifier

Note:- Care is required to align the receiver, 1 - " 6B8-G Diode detector and audio amplifier frequency padding trimmer. 1 - " 6F6-G Power amplifier frequency change is high for small screw movements. 1 - " 5Y3-G Full wave rectifier

1 - " 6U5 Tuning indicator

The alignment of the receiver should be checked in the middle portion of the dial. A unit coil assembly is used, that incorporates all the high frequency alignment condensers as an integral part of the assembly. A dual padding condenser is used, made up of 1 - 500-mmf'd. section, and 1 - 2,000-mmf'd. section. As the padding condenser required for the short wave range is approximately 6,000-mmf'd., a .004-fered fixed condenser is permanently in shunt with the 2,000-mmf'd. section.

Location of the various trimmer condensers are as follows :- of brass tube or any metal object, fitted to an insulated handle, which when placed on the stator coil. Looking directly at Coil Box, top row, left to right - 1, Broadcast section to Oscillator, 2, Broadcast Interstage, (Broadcast R.F. grid condenser on wave change switch).

In all cases of adjustment to either the high or low frequency capacitors, an Bottom row, left to right - 1, Short Wave Oscillator, 2, Short Wave Interstage, 3, Short Wave Antennae. short wave section should be undertaken in a similar manner, except that the test frequencies should be 15 and 16-Kc/s.

The padding condensers are located in the left chassis end back view. 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 left 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-Kc/s. The I.F. transformers are 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 high ratio of capacity change for small screw movements. The broadcast section should be adopted as described for the broadcast band.

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.

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22nd April, 1940.

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After setting the pointer by way of the oscillator trimmer, at or about 1,500-Kc/s., the other two circuits should be brought into line. The receiver should then be checked carefully at or about 600-Kc/s., 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-Mc/s.

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.

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COMPONENT LEGEND FOR MODEL 6-L.S.E. RECEIVER.

(Refer Blue-Print attached.)

CONDENSERS:

C-1	25-mfd.	Decoupling condenser (1st audio amplifier)
2)	.8 "	Filter condensers (power supply)
3)		
4	.25 "	R.F. By-pass (H.T. supply)
5	.25 "	Decoupling condenser (1st audio stage)
6	.25 "	Screen by-pass (R.F. stages)
7	.25 "	Cathode by-pass (I.F. stages)
8	.1 "	Screen by-pass (1st audio stage)
9	.1 "	Cathode by-pass (R.F. stage)
10	.1 "	Bias filter output stage
11	.05 "	A.V.C. Filter
12	.05 "	" "
13	.01 "	Audio coupling condenser (1st stage)
14	.01 "	" " " (2nd ")
15	.01 "	H.T. By-pass (oscillator supply)
16	.004 "	Fixed padding condenser (H.F. band)
17	.001 "	High frequency audio filter (output stage)
18	.00025 "	Tone control condenser (output stage)
19	.0001 "	High frequency filter (1st audio stage)
20	.0001 "	Diode load by-pass
21	.0001 "	Oscillator grid condenser
22	2,000-mmfld.	Variable padding condenser (H.F. band)
23	500 "	" " " (B.C. ")
T-1 to)		H.T. Alignment trimming
T-6)		capacitors.

RESISTORS:

R-1	1-megohm.	Screen dropping resistor (1st audio stage)
2	1 "	A.V.C. Filter
3	.5 "	" "
4	.5 "	Diode load
5	.5 "	Volume control
6	.5 "	Tone control
7	.5 "	Bias potentiometer (section)
8	.5 "	Bias filter (output stage)
9	.5 "	" " (1st audio stage)
10	.25 "	Plate load resistor (1st audio stage)
11	100,000-ohm.	Decoupling resistor (1st " ")
12	65,000 "	Bias potentiometer (section)
13	50,000 "	Oscillator grid leak
14	20,000 "	Oscillator plate dropping resistor
15	15,000 "	Screen dropping resistor

RESISTORS:

R-16	10,000-ohm.	Bias potentiometer (section)
17	1,000 "	Feed-back equalising resistor (broadcast band)
18	600 "	Cathode bias resistor (1st I.F. stage)
19	200 "	Grid suppressor (oscillator stage)
20	150 "	Cathode bias resistor (R.F. & I.F. stages)
21	1-megohm.	Tuning indicator plate load resistor.

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

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MODEL 6L.S.E. RECEIVER

SCHEMATIC DIAGRAM

New 6L
6Q7

