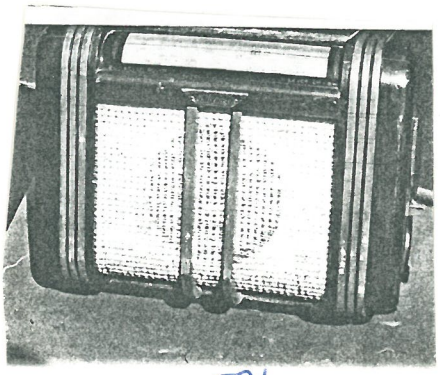

526

TECHNICAL INFORMATION

BULLETIN NO.153. 17-7-46

(TYPE)

TECHNICAL DESCRIPTION AND ADJUSTMENT PROCEDURE

COVERING 5-VALVE DUAL-WAVE RECEIVERS

MODEL 526. (Roller dial)

Drawing No.775.

RECEIVER

COLLIER & BEALE LTD.

WELLINGTON

17th July 1946

526

TECHNICAL DESCRIPTION AND ADJUSTMENT PROCEDURE

COVERING 5-VALVE DUAL-WAVE RECEIVERS

MODEL 526.

Model 526 receiver is of the Superheterodyne type and employs a total of 5-valves used in the following arrangement :-

1 - type 6K8GT Mixer oscillator.
1 - " 6SG7 Intermediate frequency amplifier (455 Kc/s.)
1 - " 6SQ7 Diode rectifier and 1st audio amplifier.
1 - " 6V6GT Power amplifier.
1 - " 6X5GT Power supply rectifier.

The circuit embodied in this receiver is conventional in every respect, the two frequency ranges being covered by separate coil assemblies, the range desired being brought into action by a sub-panel operated switch.

The receiver covers the ranges 535-1600 Kc/s and 6.5-19 Mc/s.

Adjustment of the receiver, if ever required, should be undertaken along orthodox lines; the following procedure - which should be used in conjunction with schematic drawings is recommended.

Intermediate Frequency Amplifier. The intermediate frequency used in model 526 is 455-Kc/s., both transformers being adjusted for maximum output, and under no circumstances should a "staggered" adjustment be used, as the "gain" of the whole receiver will be materially affected. Adjustment of the two transformers should be undertaken by first aligning the diode transformer alone, this being accomplished by clipping the signal generator plate on to the grid of the frequency amplifier tube (6SG7) and adjusting for maximum output. The generator unit should then be transferred to the grid of the mixer tube (6K8GT) and the first transformer treated in a similar manner. In this latter adjustment it is desirable to make certain that the wave-band switch is in the "broadcast" position, otherwise the comparatively low impedance of the short-wave tuned circuits at this test frequency will place the equivalent of a short-circuit across the generator terminals and so make the obtaining of an adequate test voltage difficult. An alternative arrangement - to avoid any possibility of loss in the detector input circuits - is to entirely remove the grid lead from this valve, and to complete the grid circuit temporarily with a fixed resistor of approximately 50,000-ohms resistance.

Signal Frequency Circuits Alignment. Adjustment of the signal frequency circuits, although not difficult, should be undertaken with a fair amount of care, particularly in the setting of the oscillator trimmer condensers, and, in no case, unless the performance of the receiver is in question, should any attempt be made to disturb the factory adjustment, regardless of minor errors in dial readings. In all cases, the broadcast band should be treated first; the order of adjustment is as follows :-

With an accurate signal generator set at some convenient high frequency, say 1400-Kc/s, and with the gang condenser set at the correct position as indicated by the dial scale, the oscillator trimmer should be adjusted for maximum output. With this adjustment made, the mixer trimmer may then be adjusted.

With these adjustments satisfactorily made, the receiver should be aligned or "padded" at the low frequency end of the band, this adjustment taking place at approximately 600-Kc/s. The most satisfactory way of adjusting the padder condenser is to use a highly damped signal generator, to avoid the necessity of constantly "rocking" the tuning mechanism, to ensure the optimum adjustment that provides maximum output. The most suitable highly damped source is generally available in the variety of electrical disturbances that constitute the usual background of a radio receiver when connected to an antenna. The receiver, therefore, should preferably be tuned to a frequency of 600-Kc/s., making sure that no station carrier wave is present, and the padding condenser adjusted for maximum noise output. After satisfactory adjustment of the padding condenser, it is wise again to re-check the high frequency oscillator trimmer condenser, this latter adjustment only being necessitated if a considerable movement of the padding condenser has taken place.

The adjustment of the short-wave band should be undertaken in an identical manner to that described above, the only requirement being the exercise of greater care in the adjustment of the oscillator trimmer condenser, which in this case, will be found to be quite critical. The same remarks in regard to the avoidance of altering trimmer adjustment, if the performance of the receiver is satisfactory, apply in this band as well, and in the event of dial readings being appreciably out, movement of the pointer should be suspected and adjustment made accordingly. In certain cases unequal stretching of the dial operating cord can produce fair discrepancies in dial reading, and in such cases, the remedy is quite simply and necessitates only the repositioning of the cursor on the dial operating cord.

The average test figures for model 526 receiver are as tabulated :-

In each case the stated input at each position produces 50 microvolts output when terminated in a 3 ohm resistor.

Position.	Signal Generator Input.
2nd Stage I.F.	2250 Microvolts
1st " "	53 "
1400 Kc/s.	8 "
1000 "	8 "
600 "	8 "
18 Mc/s.	8 "
15 "	13 "
12 "	20 "
10 "	30 "
7 "	53 "

A standard R.M.A. dummy load is used in series with the Signal Generator.

As an aid in servicing the receiver in the event of failure in any of the components fitted, a component schedule is appended which is to be used in conjunction with the schematic diagrams attached.

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

17th July, 1946.

Bulletin No.153.

COMPONENT PARTS LIST COVERING 5V DUAL-WAVE MODEL 526.

Ref.No.	Qty.	Type or Value.	Class or Cat. No.	Description or Function.
CONDENSERS:				
C 1		25 mfd. 25V.	Tubular Electrolytic	Audio Filter By Pass.
C 2		10 " 450V.	" "	H.T. Filter.
C 3		10 " "	" "	" "
C 4		8 " "	" "	Audio By Pass Filter.
C 5		.1 " 600V.	" Paper	R.F. By Pass H.T.
C 6		.1 " "	" "	R.F. By Pass Screens.
C 7		.1 " "	" "	R.F. By Pass Cathode.
C 8		.05 " "	" "	A.V.C. By Pass.
C 9		.02 " "	" "	" "
C 10		.01 " "	" "	Audio Coupling.
C 11		.01 " "	" "	Audio Coupling.
C 12		.004 " "	Mica	Tone Correction.
C 13		.004	"	Fixed Padder S.W.
C 14		1000 mmfd Padders		Var. Padder S.W.
C 15		600 " "		" " B.C.
C 16		.00025 mfd.	Mica	Tone Control Neg. feedback type.
C 17		.00025 mfd.	"	Det. Plate R.F. By Pass.
C 18		.0001 mfd.	"	Osc. Grid Coupling.
C 19		.0001 "	"	Diode Load R.F. By Pass.
C 20		1 mmfd. approx.	C&B Special	Neutralising Cond.
RESISTORS:				
R 1		10 megohm ½ watt	Carbon	Det. Grid Bias.
R 2		1 " "	"	A.V.C. Decoupler.
R 3		1 " "	"	" "
R 4		1 " "	"	" Bleeder.
R 5		.5 meg. Potentiometer	" Variable	Volume Control.
R 6		- ditto -	" "	Tone Control incorporating S1
R 7		250,000 ohm. ½ watt	"	Det. Plate Load.
R 8		50,000 " "	"	Osc. Grid Leak.
R 9		50,000 " "	"	R.F. Filter Vol. Control.
R 10		10,000 " 1 "	"	Screen Dropper.
R 11		500 " ½ "	"	R.F. Suppressor (Beam Power Tube)
R 12		300 " 1 "	"	Output Tube Bias.
R 13		150 " ½ "	"	R.F. & I.F. Cathode Bias.
R 14		50 " ½ "	"	Osc. Grid Suppressor.

Ref.No.	Qty.	Type or Value	Class or Cat. No.	Description or Function.
COILS:				
L 1		Type 784	Iron cored	Broadcast Antenna Coil.
L 2		" 786	Air "	Short Wave " "
L 3		" 184	" "	Broadcast Osc. Coil.
L 4		" 186	" "	Short Wave " "
T 1) T 2) T 3) T 4)		3-30 mmfd. Trimmers	Postage stamp type variable	High Frequency Alignment Trimmers.
IFT 1	1	No.14-1 455 Kc/s.	Iron cored.	I.F. Transformer TR5540-3.
IFT 2	1	No.14-2 " "	" "	" " TR5540-4.
Gang		Defiance B.S.2. 2 Sect. 356 mmfd. per section.	Variable	Main tuning.condenser.
SW 1	1	S.P.S.T.	On-off	Switch.
SW 2	1	4-pole D.T.	Wafer type	Wave-change Switch SW 5283.
SP 1	1	F4 1250 ohm Field 5000 ohm Transformer	Energised	5" Loudspeaker.

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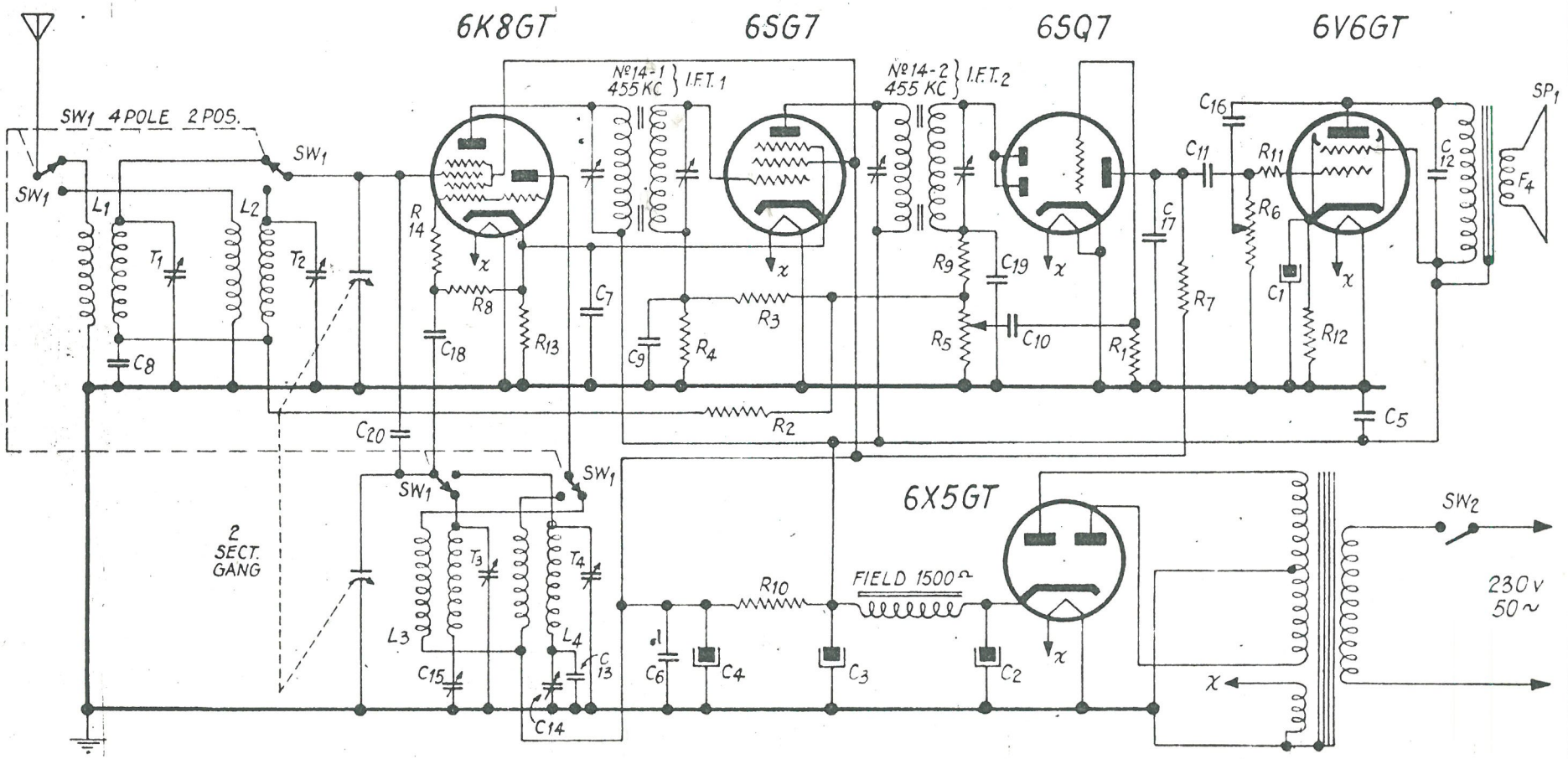
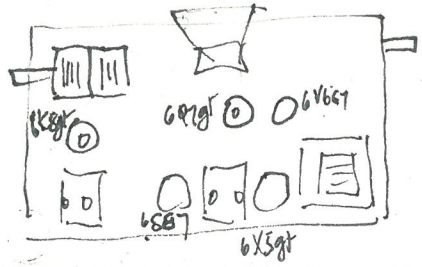
17th July, 1946.

5V. DUAL-WAVE RECEIVER MODEL 526
FREQ. RANGE 535-1600 K/C., 6·5-19 M/C.

SCHEMATIC DIAGRAM





DRAWING Nº 775

DATE 10.7.46

APPLIES TO SERIAL Nºs .....