

# TECHNICAL INFORMATION

BULLETIN NO. 154. (DWA 776)

(TYPE)

TECHNICAL DESCRIPTION AND ADJUSTMENT PROCEDURE

ON MODEL 726 DUAL WAVE RECEIVER.

(DWGS. Nos. 776 & 777.)

*July  
Oct 1946*

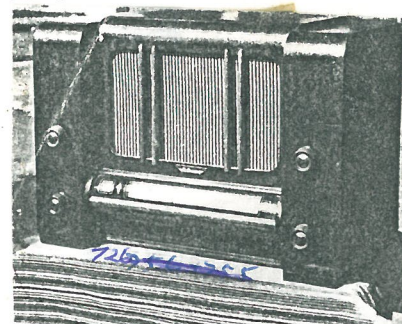
*6 valves + eye =  
7.5V total*

*cylindrical dial*

## RECEIVER

## COLLIER & BEALE LTD.

WELLINGTON



*Model 726 July 1946  
Bulletin No 154*

MODEL 726 DUAL WAVE RECEIVER.TECHNICAL DESCRIPTION AND MAINTENANCE DATA.General Description.

Model 726 is a 6-valve plus tuning indicator receiver of the Superheterodyne type covering the usual broadcast range of 535 Kc/s to 1600 Kc/s and a full cover short-wave range of 6 mc/s to 90 mc/s.

The valves employed and their functions are :-

|          |       |                                   |
|----------|-------|-----------------------------------|
| 1 - type | 6U7G  | R.F. Amplifier.                   |
| 1 - "    | 6K8GT | Mixer oscillator.                 |
| 1 - "    | 6U7G  | I.F. Amplifier (455-Kc/s)         |
| 1 - "    | 6Q7G  | 2nd Detector and Audio Amplifier. |
| 1 - "    | 6V6GT | A.F. Power Amplifier.             |
| 1 - "    | 6X5GT | Power Supply Rectifier.           |
| 1 - "    | 6U5G  | Tuning Indicator.                 |

*valve layout sticker marked "conv"*

An energised field loudspeaker of 1500 ohm field resistance is employed.

The circuit of Model 726 is quite conventional. Mechanical features are new and somewhat unusual and the following technical description should be of value in servicing or maintaining the unit.

Technical Description:

A unit coil assembly with integral wave change switch is employed. All alignment condensers are fitted to this assembly and it will be noted that high stability Ceramic type shunt trimmers are employed on the short-wave range. The use of such trimmers ensures a high order of calibration accuracy which is likely to be maintained over the life of the instrument. Trimmers for the broadcast frequency range are of the conventional compression type. Padding condensers are also located on this assembly and those, as well as the trimmer condensers, may be identified in respect of a particular range by reference to Drawing No.777 included in this Bulletin.

Special attention is drawn to the method of feeding HT to the oscillator anode and screen of the mixing valve. This connection is taken from the cathode of the rectifier and adequately filtered by resistor R16 and capacitor C4.

This arrangement provides a source of voltage for the oscillator section of the mixing valve which is substantially immune from the voltage fluctuations normally present when receiving short-wave carriers of varying amplitude. The result is a very marked improvement in frequency stability



of the receiver when receiving widely fluctuating short-wave signals.

Attention is also drawn to the method of feeding the anode of the audio amplifier type 6Q7G, the method being employed to produce a negative feed-back voltage in the output stage of approximately 15%. The system is highly satisfactory for this purpose, but it will be observed that any ripple potential appearing in the DC supply will be amplified by such connection and any increase in hum output of the receiver during its life may be attributed to a reduction in working capacitance of either of the main filter capacitors C2 or C3.

The mechanical features of the receiver are novel to the extent of a dial assembly which displays only the wave range in use. This facility is accomplished by the use of a cylindrical dial unit ganged to the wave change switch. The mechanism employed is of simple character and provides means for easily adjusting the angular position of the scales to accurately line up with the transparent escutcheon window. For such adjustment an extended grub screw will be visible in the left-hand end of the drum scale looking at the front of the chassis.

#### Circuit Alignment:

No specific directions regarding the alignment of this receiver are given as its adjustment follows other receivers of this Company's manufacture and conforms in general to the established methods of Superheterodyne receiver adjustment.

Attention is drawn, however, to the intermediate frequency of 455 Kc/s and the need for maintaining such frequency.

Caution should be observed prior to making any adjustments to trimmer or padding condensers of the signal circuits to ensure that the pointer is correctly established in respect of the dial scale. To assist in the establishing of the pointer in its correct position, pointer limit marks are inscribed between the scales, and the correct adjustment is with the pointer lined up on the left-hand mark with the condenser plates fully meshed.

Further technical information may be obtained from Schematic Circuit Diagram Drawing No.776 and trimmer and valve location sheet Drawing No.777 included herewith.

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

24th October, 1946.

24.10.46

← 24-7-46 P/see last page

DWG No 776

nothing new  
was added in  
1939 models

COMPONENT PARTS LIST COVERING

7-VALVE DUAL WAVE MODEL 726.

| Ref.No. | Qty. | Type or Value   | Class or Cat.No. | Description or Function.        |
|---------|------|-----------------|------------------|---------------------------------|
| C 1     |      | 25 mfd. 25V     |                  | Audio Filter By Pass.           |
| C 2     |      | 10 mfd. 450V    | )                | HT Filter.                      |
| C 3     |      | 10 mfd. 450V    | )                |                                 |
| C 4     |      | 10 mfd. 480V    |                  | Osc. Screen & Plate Filter.     |
| C 5     |      | 10 mfd. 480V    |                  | RF & IF Screens Filter.         |
| C 6     |      | .25 mfd.        |                  | Mix & IF Cathode By Pass.       |
| C 7     |      | .1 mfd.         |                  | RF By Pass HT.                  |
| 8       |      | .1 mfd.         |                  | RF By Pass Osc. Screen.         |
| C 9     |      | .1 mfd.         |                  | RF By Pass RF & IF Screens.     |
| C10     |      | .1 mfd.         |                  | Cathode By Pass RF Amp.         |
| C11     |      | .05 mfd.        | )                |                                 |
| C12     |      | .05 mfd.        | )                | AVC By Pass Conds.              |
| C13     |      | .05 mfd.        | )                |                                 |
| C14     |      | .01 mfd.        | )                | Audio Coupling 1st Audio        |
| C15     |      | .01 mfd.        | )                |                                 |
| C16     |      | .01 mfd.        |                  | Audio Coupling Output Tube.     |
| C17     |      | .003 mfd.       |                  | Fixed Padder SW.                |
| C18     |      | 1000 mmfd.      |                  | Var. Padder SW.                 |
| C19     |      | .001 mfd.       |                  | Tone Correction.                |
| C20     |      | 600 mmfd.       |                  | Var. Padder BC.                 |
| C21     |      | .00025 mfd.     |                  | Tone Control Cond.              |
| C22     |      | .0001 mfd.      |                  | Det. Plate RF By Pass.          |
| C23     |      | .0001 mfd.      |                  | Diode Load RF By Pass.          |
| C24     |      | .0001 mfd.      |                  | Oscillator Grid Coupling.       |
| C25     |      | APPROX. 1 mmfd. |                  | Neutralising Cond.              |
| 1       |      | 10 megohms      |                  | Det. Grid Bias.                 |
| R 2     |      | 1 "             |                  | AVC Decoupling.                 |
| R 3     |      | 1 "             |                  | Magic Eye Plate Load,           |
|         |      |                 |                  | incorporated in socket.         |
| R 4     |      | .5 "            |                  | Diode Load Resistor.            |
| R 5     |      | .5 "            |                  | Volume Control.                 |
| R 6     |      | .5 "            |                  | Tone Control incorporating Sl.  |
| R 7     |      | .25 "           |                  | AVC Decoupling.                 |
| R 8     |      | .25 "           |                  | Resistors.                      |
| R 9     |      | .25 "           | )                |                                 |
| R10     |      | 100,000 ohms    | )                | Negative Feedback Potentiometer |
| R11     |      | 15,000 "        | )                |                                 |
| R12     |      | 50,000 "        |                  | RF & IF Screens Dropper.        |
| R13     |      | 50,000 "        |                  | RF & IF Screens Bleeder.        |
| R14     |      | 50,000 "        |                  | RF Filter Diode Load.           |
| R15     |      | 50,000 "        |                  | Osc. Grid Leak.                 |

(2x100K)



| Ref.No. | Qty. | Type or Value              | Class or Cat.No. | Description or Function.           |                       |
|---------|------|----------------------------|------------------|------------------------------------|-----------------------|
| R16     |      | 25,000 ohms. —             | (2x50K)          | Osc. Plate & Screen Dropper.       |                       |
| R17     |      | 500 "                      |                  | RF Suppressor Output Tube.         |                       |
| R18     |      | 300 "                      |                  | Output Tube Bias.                  |                       |
| R19     |      | 300 "                      |                  | RF Tube Bias.                      |                       |
| R20     |      | 150 "                      |                  | RF Grid Suppressor.                |                       |
| R21     |      | 150 "                      |                  | ) IF & MIX Bias                    |                       |
| R22     |      | 150 "                      |                  |                                    | Resistors.            |
| R23     |      | 100 "                      |                  |                                    | Osc. Grid Suppressor. |
| R24     |      | 50 "                       |                  | MIX Grid Suppressor.               |                       |
| <hr/>   |      |                            |                  |                                    |                       |
| T 1     |      | )                          |                  | High Frequency Alignment Trimmers. |                       |
| T 2     |      | )                          |                  |                                    |                       |
| T 3     |      | )                          |                  |                                    |                       |
| T 4     |      | )                          |                  |                                    |                       |
| T 5     |      | )                          |                  |                                    |                       |
| T 6     |      | )                          |                  |                                    |                       |
| <hr/>   |      |                            |                  |                                    |                       |
| L 1     |      | Type No. 786.              |                  | SW Antenna Coil.                   |                       |
| L 2     |      | Type No. 785/1.            |                  | BC Antenna Coil.                   |                       |
| L 3     |      | Type No. 486.              |                  | SW Interstage Coil.                |                       |
| L 4     |      | Type No. 485.              |                  | BC Interstage Coil.                |                       |
| L 5     |      | Type No. 186.              |                  | SW Oscillator Coil.                |                       |
| L 6     |      | Type No. 185.              |                  | BC Oscillator Coil.                |                       |
| <hr/>   |      |                            |                  |                                    |                       |
| Gang    |      | 3 section Plessey 1842-14. |                  |                                    |                       |

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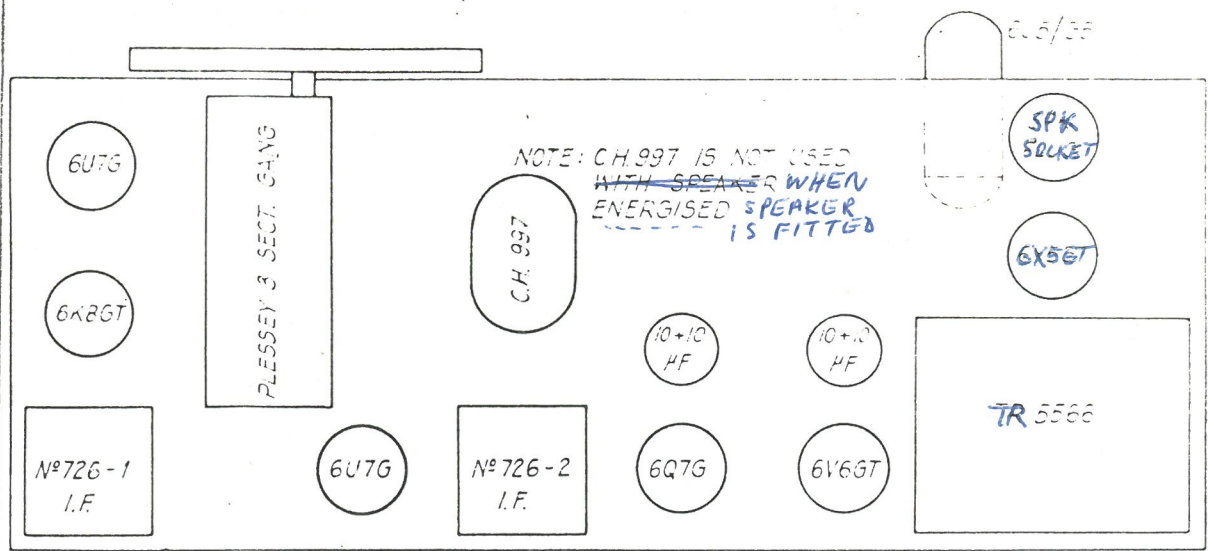
COLLIER & BEALE LTD.,  
66, GHUZNEE STREET,  
WELLINGTON, C.2.

24th October, 1946.

~~24th Oct~~?

DATE 24.10.46 (see last page)

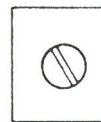
DWG No 776



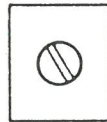
B.C. BAND



S.W. BAND

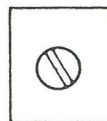
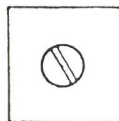


R.F. AMPLIFIER

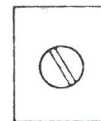


MIXER

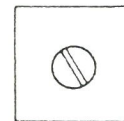
BROADCAST PADDER



OSCILLATOR



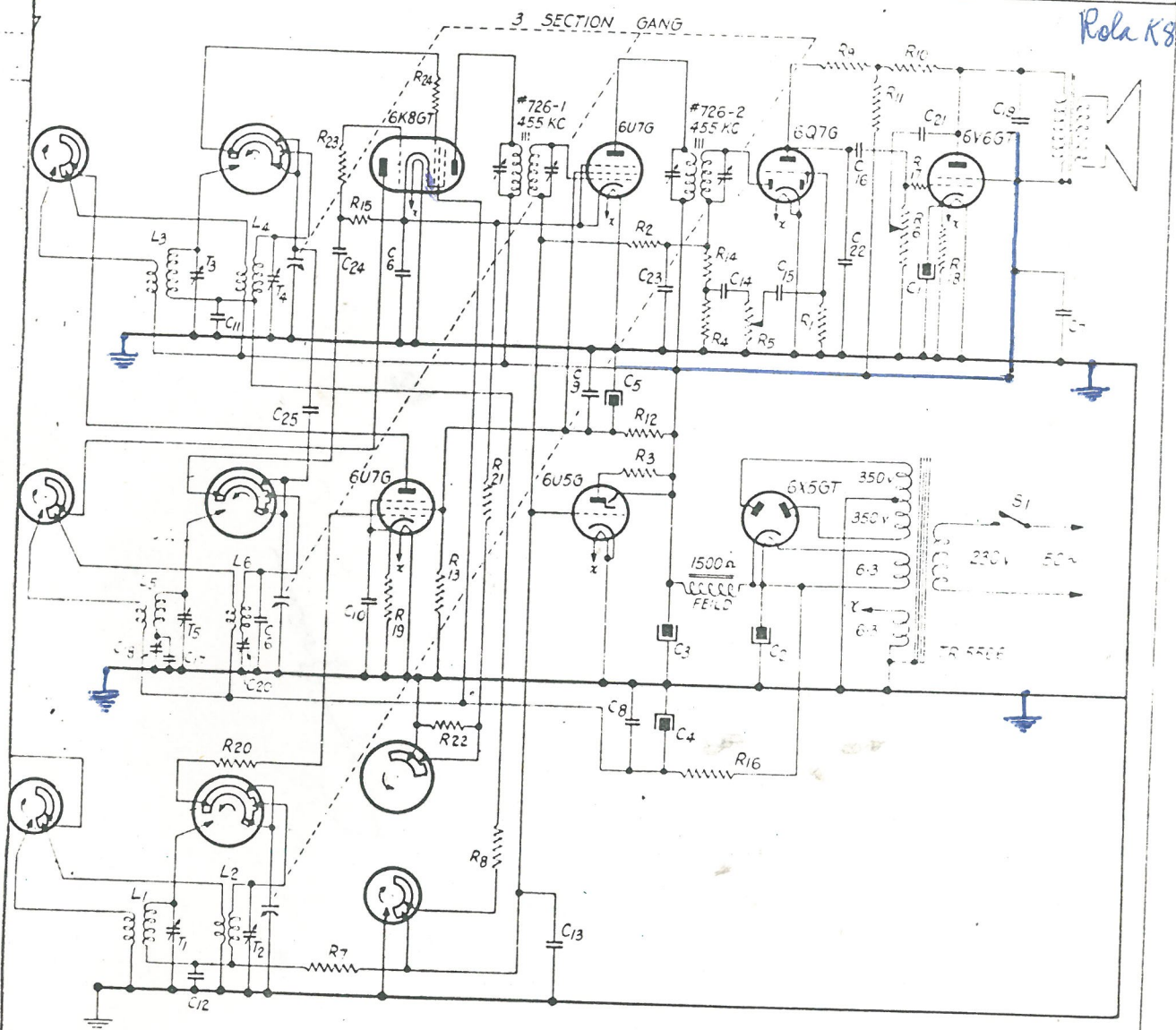
SHORTWAVE PADDER



TRIMMER & VALVE LOCATION CHART

DATE 24.7.46

DWG. N° 757



**FREQUENCY RANGE**  
 BROADCAST FREQ. 535 K/C. - 1600 K/C.  
 SHORTWAVE FREQ. 6 M/C. - 19 M/C.

**NOTE:** WAVE-CHANGE SWITCH SHOWN IN BROADCAST POSITION

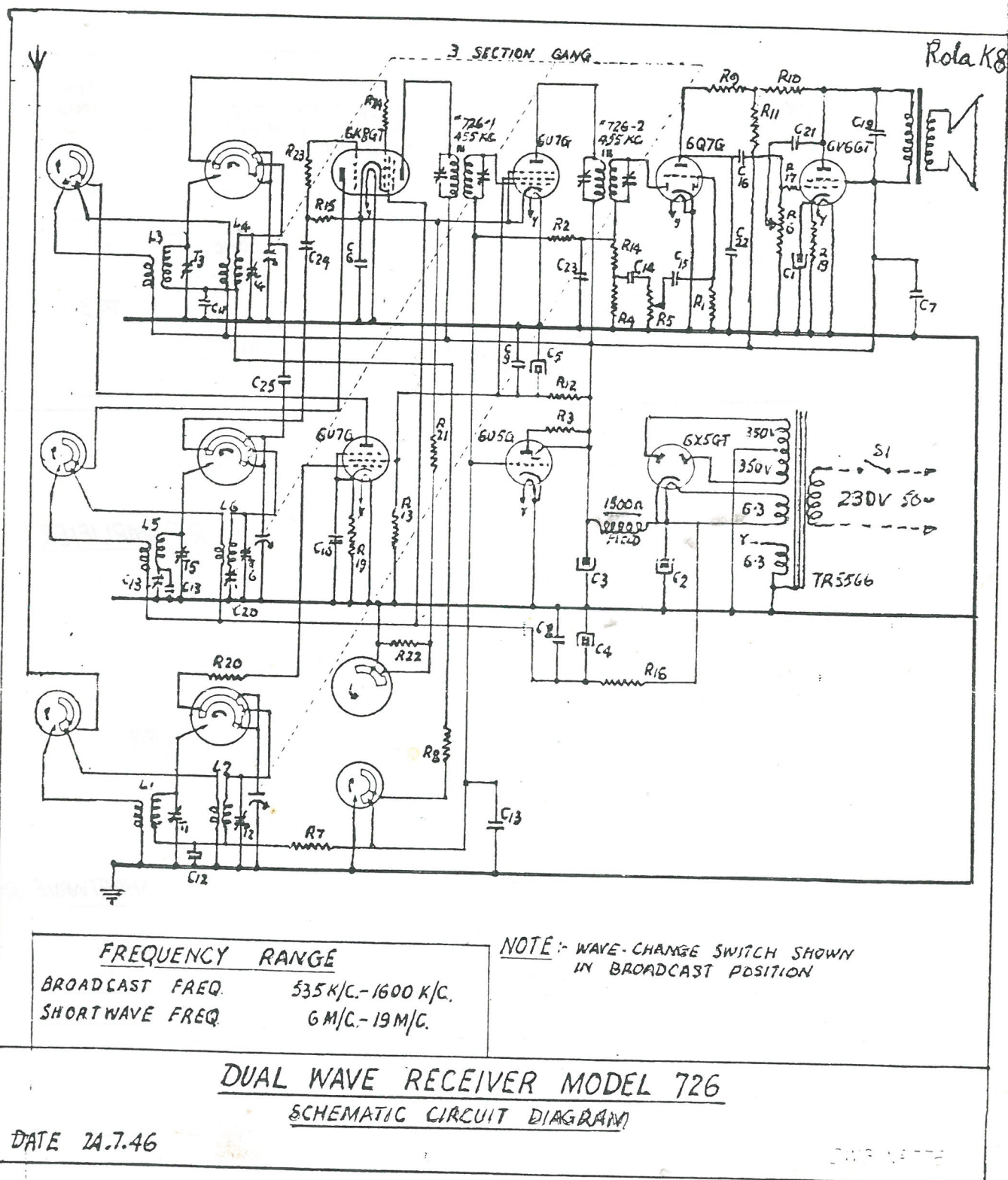
**DUAL WAVE RECEIVER MODEL 726**  
 SCHEMATIC CIRCUIT DIAGRAM

ATE 24.7.46

DWG. NO. 776

later models { used PM speaker + filter choke CH997  
 " dropping resistor } see next page





later models { used PM speaker & filter choke CH997  
" bypassing resistor see next page





State model 726 (Collier & Beale). SN 55591. Photo: James Davidson