SERVICE BULLETIN
MODEL 99
OCT., 1946

RADIO CORPORATION OF NEW ZEALAND LTD.
80 Courtenay Place, Wellington, C3., New Zealand.

MODEL 99

Thirteen Valve High Fidelity All-Wave Receiver

GENERAL DESCRIPTION

Model 99 is a thirteen valve high fidelity receiver with five wave bands including three calibrated bandspread bands.

To facilitate cabinet fitting the receiver is built on to two chassis, one comprising the radio tuner and the other the power supply and amplifier.

The maximum undistorted output from the amplifier is sixteen watts and is supplied to a Goodman 12in. speaker.

DETAILS

The receiver uses the following valve types:

Tuner	6SK7	R.F. Amplifier	
	6J8	Converter	
	6SK7	I.F. Amplifier	
	6SN7	2nd Det. and A.V.C.	
	6SJ7	Tone Control and 1st Audio	
	6C5	Cathode Follower Output	
	6U5	Magic Eye	
Amplifier	6C5	Cathode Follower Input	
	6SJ7	High Gain Audio	
	6C5	Phase Inverter	
	807s	Push-pull High Power Output	
	5Z3	Rectifier	

R. F. TUNER. The circuit and switching for the antenna, R.F. and oscillator sections follow very closely that of the model 90. The use of aluminium shielding and variable iron cores are important factors in the resulting high sensitivity and receptional signal-to-noise ratio.

The layout differs from that of the Model 90 in that the oscillator section is at the front of the chassis and the antenna section at the rear. Also the trimmer layout is changed to give better distribution of the trimmers with shorter wiring.

The I.F. Channel is unorthodox in that the first I.F. Transformer is capacity coupled allowing variation in coupling to provide a wide bandpass for the high-fidelity positions. For the first five positions on the tone control the I.F. response is selective with a 4 K/c bandpass. From positions six to eleven the bandpass is widened to 8 K/c. The widening of the I.F. channel is followed by a slight decrease in sensitivity, but as the high fidelity positions should only be used when tuned to a station of good signal strength this is not material.

As the I.F. channels have been adjusted accurately at the factory against a standard "Wobulator,' the I.F. stages should not require alignment. If, however, it is found necessary to align the I.F. stages with a standard Signal Generator, the Tone Control should be adjusted to the narrow band-pass position (positions 1-5) and the I.F. aligned in the normal way. The wide bandpass positions should fall into place then on positions 6-11.

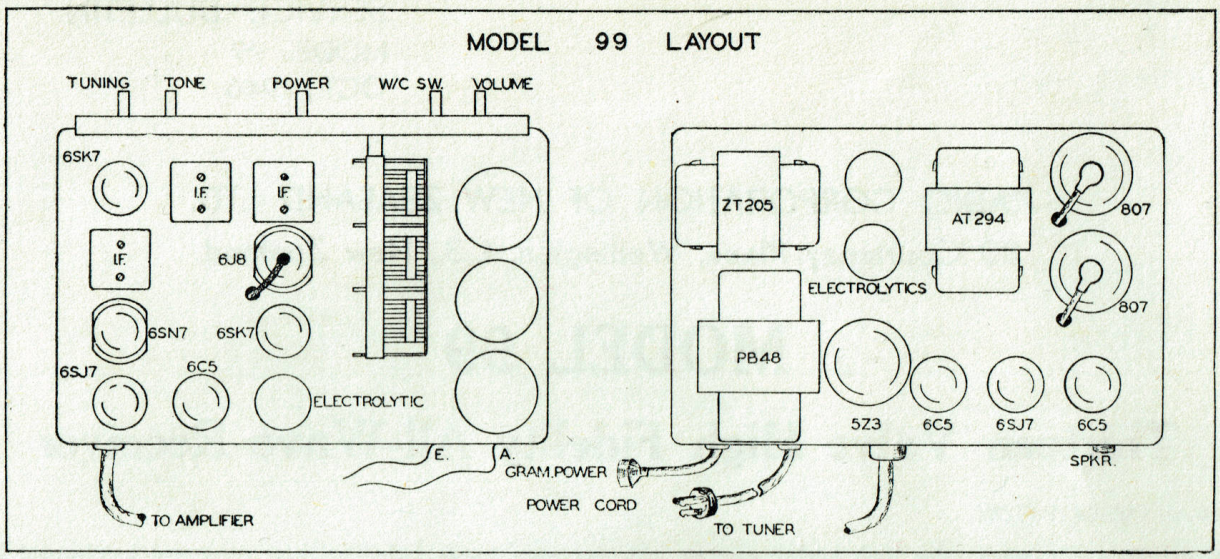
The first I.F. Transformer consists of two single winding split-wound bobbins in separate cans. These are capacitively coupled through the Tone System. The second I.F. Transformer consists of a single standard I.F. winding on a standard bobbin.

A tendency to "Wow" may be due to the .0001 ufd coupling condenser between the 6SK7 plate and the 6SN7 grid being low in value and thereby not sufficiently loading the circuit.

(**Modification:** The .001 ufd condenser from position 8 on SW4 to ground should be omitted and positions 6 & 7 should be linked and the link between 5 and 6 broken. See drawings No. 358 and 367.)

The second detector is of the infinite impedance type which for a high fidelity receiver has the advantage of low distortion at all modulation percentages. In order to obtain A.V.C. a 6SN7 is used, the second triode being used as a diode to rectify and provide the required voltage.

A 6SJ7 is next and is used for tone variations. The gain of this stage is heavily damped by resistance and a discriminating network across the resistance allows the selection of almost any tone combination. This in combination with the variable I.F. channel makes possible the tone high fidelity that is obtainable.



Coupling to the main amplifier is obtained by means of cathode follower stages. This system of coupling ensures a faithful transfer with complete absence of hum such as is frequently encountered with transformer coupling.

A Magic Eye as tuning aid is fitted in the usual way.

AMPLIFIER. Following the Cathode Follower Input the amplifier follows normal lines in most respects. The 6SJ7 is a high gain voltage amplifier working into a 6C5 as a phase inverter and followed by the two 807's which are operated in Class A.

Inverse feedback is incorporated and being from voice coil to 6SJ7 cathode ensures a flat response minimising possible losses in the output transformer, etc. The actual response of the amplifier is flat within 2 Db from 50 to 10,000 cycles.

SPEAKER: A Goodman 12in. high fidelity speaker completes the receiver. This speaker will handle 15 watts of audio and has a faithful frequency response from 50 to 16,000 cycles.

RADIO GRAMOPHONE. The electric pickup and turntable used in this respect is the Garrard automatic record-changer RC60 and will play twelve 10 inch or 12 inch mixed recordings automatically for a period of 30 to 45 minutes depending on the selection used.

This unit is spring mounted to lessen the transfer of noise due to bumps and other mechanical vibration. The pickup is connected to the amplifier by means of a switch which enables either Radio or Records to be selected.

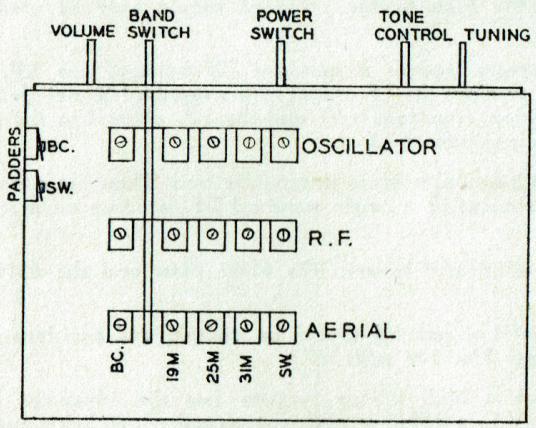
SENSITIVITY (for 50 mw output):

Broadcast, better than	1 uv.
IF 455 K.c.	150 uv.
S.W.	6 uv.

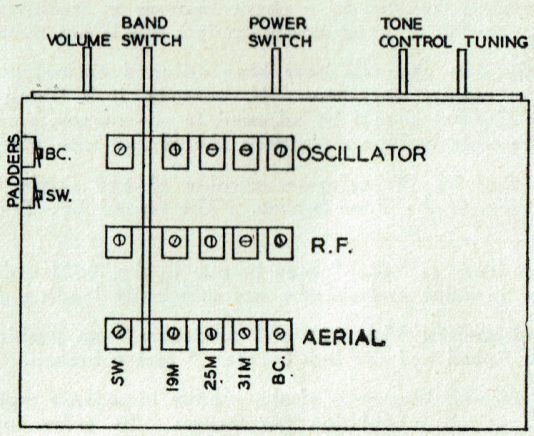
200/5/49

MODEL 99

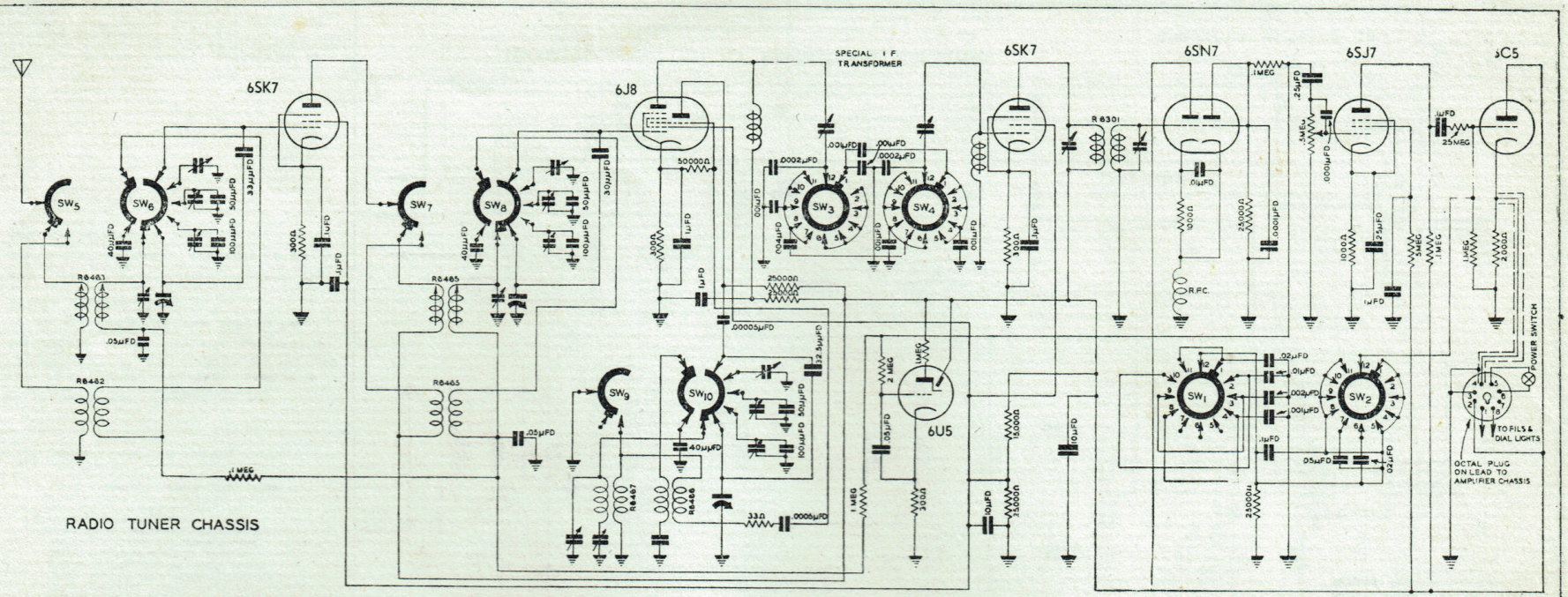
PLACEMENT OF TRIMMERS AND PADDERS



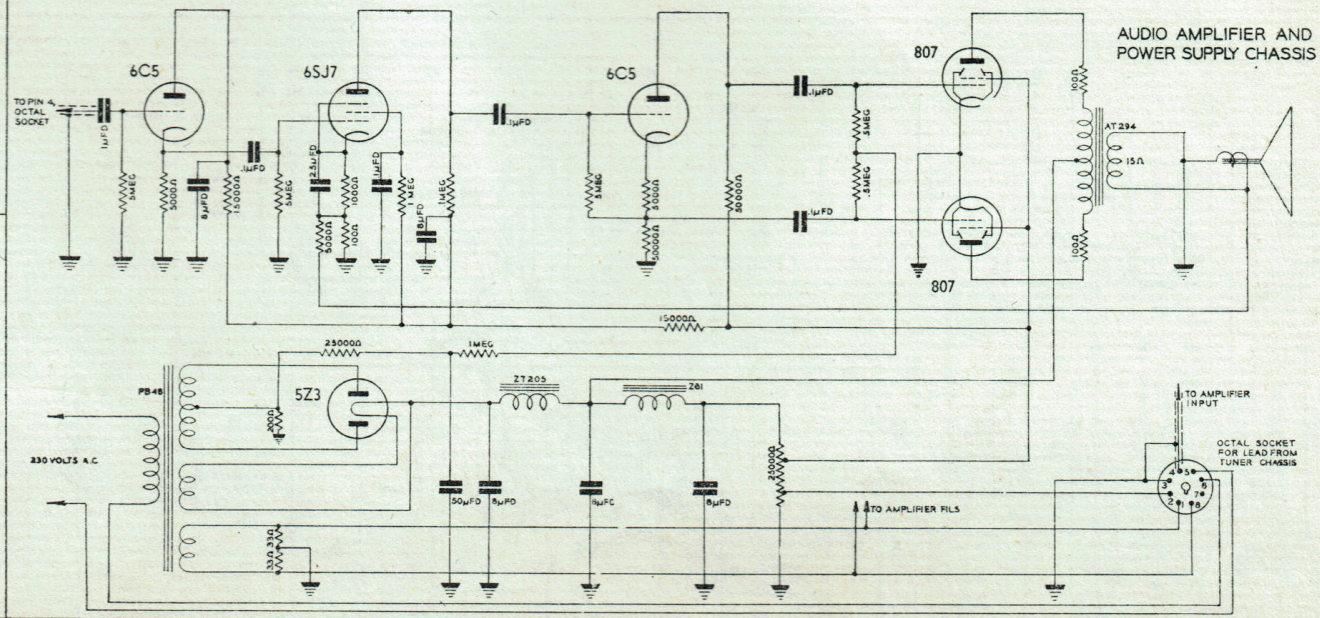
SERIAL NUMBERS
L5631 - L5636
L5741 - L5746

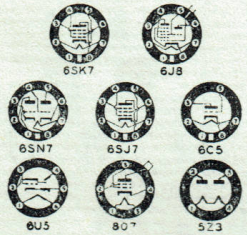


SERIAL NUMBERS L6621 ONWARDS



SW 5-6-7 8-9-10 ARE WAVECHANGE SWITCH WAFERS, SHOWN IN BROAD CAST POSITION AND MOVE IN COUNTER CLOCKWISE DIRECTION FOR SHORT WAVE
SW1-2 ARE TONE CONTROL SWITCH WAFERS AND ARE GANGED WITH THE VARIABLE I.F BANDWIDTH WAFERS SW.3-4
INTERMEDIATE FREQUENCY 455 KC



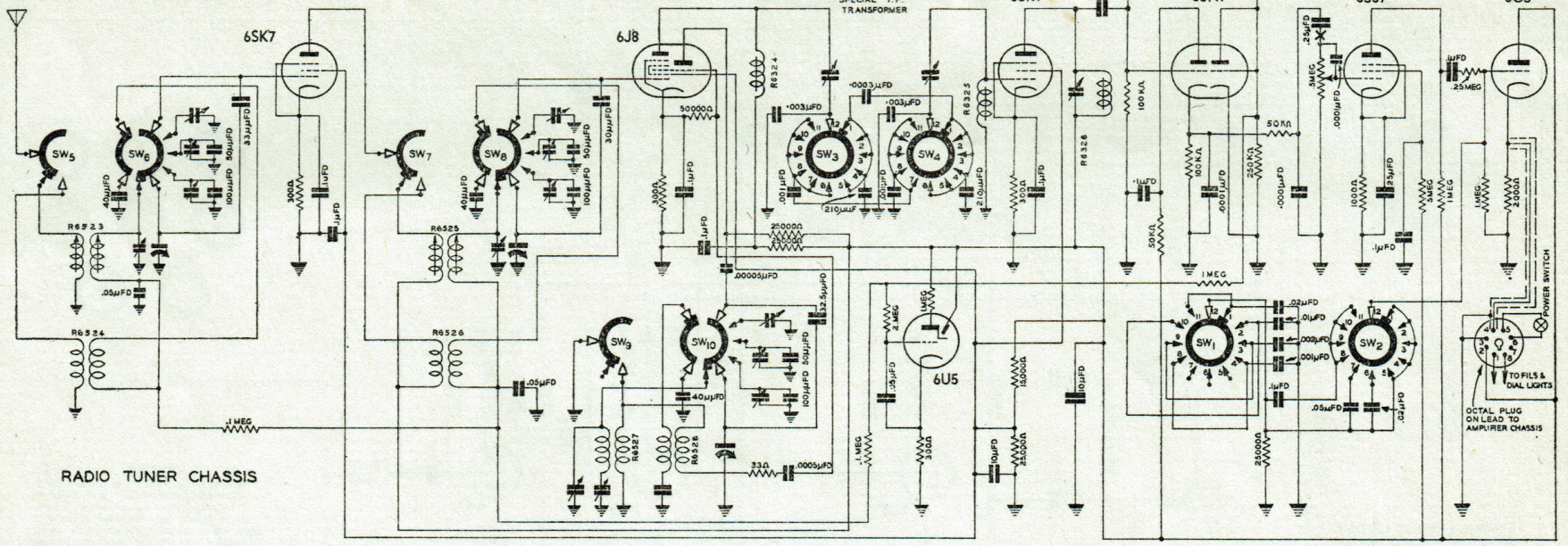


DESIGN	LAB		MODEL 99 (1ST EDITION)
DRAWN		9-10-46	
CHECKED		10-10-46	D.No. 358
APPROVED		21-10-46	

13 VALVE HIGH FIDELITY BANDSPREAD RECEIVER

RADIO CORPORATION OF NEW ZEALAND LTD.

AMENDMENTS	CHKD.	DATE



SW. 5-6-7-8-9-10 ARE WAVECHANGE SWITCH WAFERS, SHOWN IN BROADCAST POSITION AND MOVE IN COUNTER CLOCKWISE DIRECTION FOR SHORT WAVE, SW.1-2 ARE TONE CONTROL SWITCH WAFERS AND ARE GANGED WITH THE VARIABLE I.F BANDWIDTH WAFERS SW.3-4. INTERMEDIATE FREQUENCY 455 KC

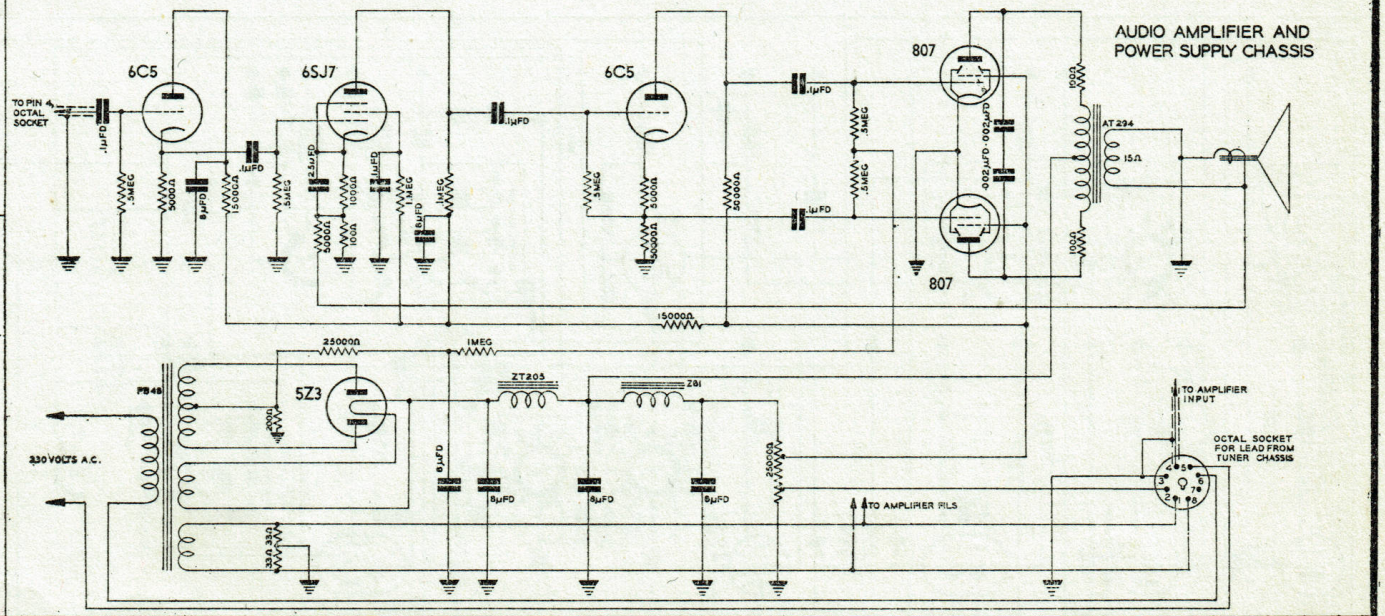
LONG SWITCH CONTACTS ⟶

✕ INDICATES WHERE RADIOGRAM CONNECTS IN

NB. CORRECTIONS TO DRAWING Nº 358

SW.2 DELETE CONNECTION FROM CONTACT 5 TO THE JUNCTION OF CONTACT 8 & THE ·1μFD CONDENDSER THUS ALLOWING CONTACT 5 TO BE CONNECTED TO THE TOP OF THE 25000Ω RESISTOR.

SW.3 JOIN CONTACTS 1 & 2, DELETE THE CONNECTION BETWEEN CONTACTS 5 & 6 AND JOIN CONTACTS 6 TO 7



DESIGN	LAB		MODEL 99 (2ND. EDITION)	13 VALVE HIGH FIDELITY BANDSPREAD RECEIVER
DRAWN		9-10-46		
CHECKED		10-10-46	D.No. 367	RADIO CORPORATION OF NEW ZEALAND LTD.
APPROVED		21-10-46		

AMENDMENTS	CHKD.	DATE
2ND EDITION AM. DRAWN		20-7-48