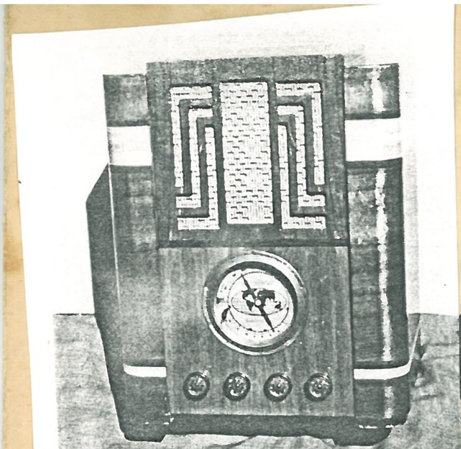
108

108-45406
45217

N.Z. Courtenay

also Pacific


Model 108 (1934-5)


Model 108 6-valve DW 1934

DEALERS' SERVICE DATA

No.2

6-VALVE

MODEL 108
DUAL WAVE

10.5 (175Kc) 205 = 256Kc → (could be S/B No 1 (missing)) Similar circuit but 5V B/C

...UME CONTROL CIRCUIT AND ADDITIONAL DATA.

orig dwg = 9-9-34

sighted S/N 45271 (1934)

SECOND EDITION, JANUARY, 1935.
CIRCUIT D 165A.

PROPE... F
J.W.S.OKE...

TURNBULL & JONES LTD.

Head Office: Wellington.

AUCKLAND, HAMILTON, PALMERSTON NORTH, CHRISTCHURCH, DUNEDIN.

D.165A
19

ELECTRICAL SPECIFICATIONS.

Mains operated for	200-250 volts A.C. 50 cycles
Power consumption	70 watts
Undistorted output	3 watts
Valves used	1-80, 1-2A5, 1-2B7, 1-2A7, 2-58
Intermediate frequency	256 K.C.
Broadcast Band frequency	550-1500 K.C.
Short Wave Band coverage	5.5-15.5 M.C.
Line-up and test frequencies	256, 1400, 1200, 1000, 800, 600 K.C., 15, 12, 9, 6 M.C.
Image ratio for broadcast band	10,000
Image ratio for short wave band	25

GENERAL INSTRUCTIONS FOR LINING UP 6 VALVE DUAL WAVE MODELS.

This method of line up presumes the possession of a standard signal generator covering all frequencies.

First, connect output from signal generator to grid of 2A7 mixer, and take care that ¼ M F. condenser is between 2A7 grid and signal generator output, as otherwise bias would be short-circuited in this valve. Set standard signal generator to 256 K.C. and align up I.F. transformers. These are aligned from top of chassis in the cans at back of chassis. Read microvolts absolute input as required to give standard 50 milliwatts output as shown on accompanying chart. Next, to line up the broadcast bands, set must be removed from cabinet. The broadcast and short wave trimmers are mounted underneath chassis both for convenience and efficiency in electrical layout and to avoid customers tampering with adjustments. The short wave trimmers are marked with RED SPOTS, AND SHOULD NOT BE TOUCHED EXCEPT IF ONE HAS STANDARD TEST OSCILLATOR OR CAN LISTEN TO SHORT WAVE STATIONS OF KNOWN FREQUENCY.

TO LINE UP BROADCAST BAND proceed as follows:—

(1) See that pointer is adjusted in a horizontal position when condensers are full in, that is, full capacity.

(2) Tune receiver dial to 1400 K.C. position. Adjust receiver oscillator and R.F. trimmers until 1400 K.C. signal from standard sig, gen. gives maximum output.

(3) Set receiver dial to 600 k.c. position. Adjust broadcast padder (left-hand end of chassis viewed from front) until 600 K.C. signal from generator gives maximum output. Check sensitivity with chart.

Important: Make no further adjustment on oscillator trimmer or padder condensers.

(4) Re-set receiver dial to 1400 K.C. position. Re-align R.F. trimmers only for maximum output of 1400 K.C. signal, and check sensitivity with chart. No further adjustment should be necessary for the broadcast band.

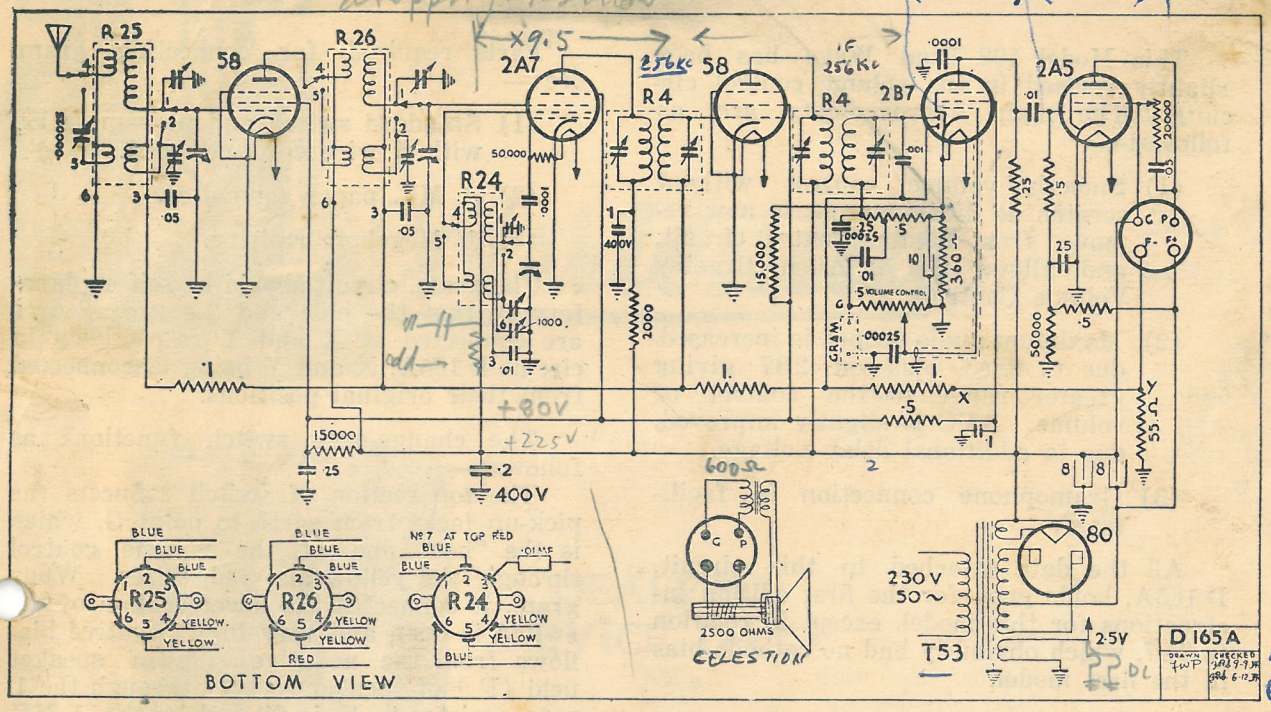
TO LINE UP SHORT WAVE BAND:

Switch to short wave band as shown by indicator on dial, but do not adjust pointer, as this would upset broadcast dial readings. Short wave trimmers are marked with red spots. Set dial pointer to bring in 12 M.C. signal. **The oscillator must be set at a higher frequency than the R.F. circuits.** To check this, tune to 11.488 M.C. and a weak image-repeat point should be heard. Note the condition that when the oscillator is set correctly at 256 K.C. (the I.F. frequency) higher than the R.F. signal received the image repeat will be 512 (i.e., 2 x I.F. frequency) lower than the received signal.

TO LINE UP SET WITHOUT STANDARD SIGNAL GENERATOR:

Line up of short wave band requires very delicate adjustment and had best be attempted only when calibrated oscillator is available. However, a clever serviceman can make a fairly acceptable line-up by using as a signal source stations whose frequencies are as near as possible to the suggested line-up frequencies mentioned above, and following the same procedure.

design error :- B+ osc (2A7) fed from B+225V direct instead of via dropping resistor



VALVE VOLTAGES.

Valve.	Function.	Heater.	Plate.	Screen.	Grid.	Cathode.	Plate MA
80	Rectifier	5.2	(See note ‡)				
2A5	Output	2.4	205	225	−10*	0	30 MA
2B7	Det. & And.	2.4	75†	20†	0	2.2	.4 MA
58	I.F. Amp.	2.4	225	80	A.V.C.	0	5.8 MA
2A7	Mixer-Osc.	2.4	225	80	A.V.C.	0	1.8 MA
58	R.F. Amp.	2.4	225	80	A.V.C.	0	5.6 MA

* Read on 100 volt scale, 1000 ohm/volt voltmeter.

† Read on 500 volt scale, 1000 ohm/volt voltmeter.

‡ High tension secondary measured from each 80 plate to can of insulated Elec. Cond., 80 removed: 400 volts A.C.

Total D.C. measured from 80 fil. to can of insulated Elec. Cond.: 380 V. D.C.

Filtered D.C. 80 fil. to earth 225 Volts D.C.

COIL RESISTANCES.

Coil:	Measured at:	Ohms.
Primary Power Trans.	Across power cord.	40
High Tension Secondary.	Each 80 plate to Center tap.	320-360
Speaker Field.	"Fil." Speaker socket.	2500
Speaker Input Trans.	"Grid to Plate" Speaker socket.	600
All I.F. Transformers.	(See circuit).	45-50
R.F. Coil Sec.	Grid 2A7 to No. 3 of R26.	8
R.F. Coil Pri.	Nos. 4 to 6 of R26.	6
Ant. Coil Sec.	Nos. 1 to 3 of R25.	8
Ant. Coil Pri.	Nos. 4 to 6 of R25.	4
Oscillator Coil.	Nos. 1 to 6 of R24.	7
Oscillator Coil.	Nos. 4 to 7 of R24.	4

STAGE TO STAGE SENSITIVITY TO GIVE 18.7 VOLT OUTPUT.

Frequency.	Input	applied to:
50 Cycles	2.5	Volts through .1 MF cond. to grid of 2A5 (16.5 v. output).
50 Cycles	2.5	Volts through .1 MF cond. to grid of 2B7 (105 v. output).
256 K.C.	34,000	Micro-volts to grid of 58 I.F. amplifier.
256 K.C.	36	Micro-volts to grid of 2A7 Converter.
1400 K.C.	.1	Micro-volts/meter to set's antenna (through dummy antenna)
1000 K.C.	.15	Micro-volts/meter to set's antenna (through dummy antenna)
600 K.C.	.2	Micro-volts/meter to set's antenna (through dummy antenna)

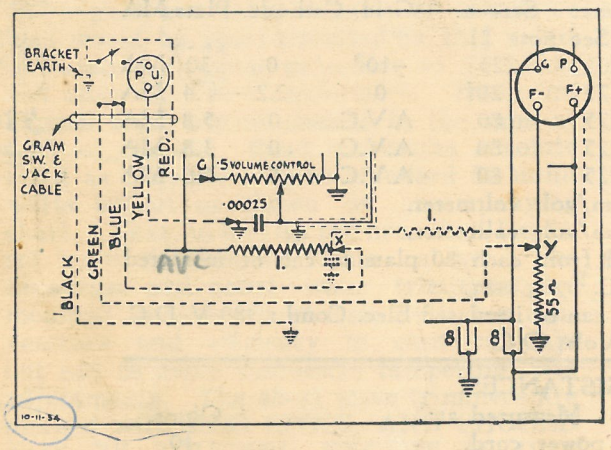
This Model 108 Dual Wave has been slightly revised in the volume control circuits. The main improvements are as follows:—

(1) Smooth volume control without scratch as diode current is now removed from Volume Control circuit, and allows use of Allen Bradley Volume Controls.

(2) Maximum audio output is increased, due to fixed bias on 2B7 giving greater range to the control of volume. AVC is slightly improved, due to additional delay voltage.

(3) Gramophone connection is facilitated.

All the data attached to this circuit, D 165A, holds good for the first edition instructions for this model, except in relation to 2B7, which obviously had no cathode bias in the first model.



The above circuit illustrates method of connecting gramophone pick-up jacks and radio-gramophone switch to this Model. We find so few customers really desirous of gramophone connection that we prefer not to burden all sets with same, but to supply, at a nominal charge upon special request the additional feature of switching from radio to gramophone, and completely "killing" radio reception when switched to gramophone.

Parts required for connecting gram. are:—

(1) Standard switch and pick-up jacks, with 5 wire cord attached.

(2) .1 MF. paper condenser.

(3) 1. Megohm resistor.

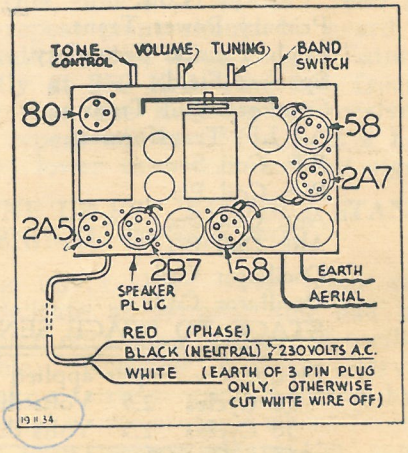
The gram. circuit should be self explanatory in that the blue and the green wires are connected at X and Y respectively in circuit D 165A, X and Y being disconnected from their original positions.

The change-over switch functions as follows:—

The top section of switch connects the pick-up jacks from earth to point G, which is the "hot" end of the volume control through the yellow and red wires. When gram. is connected the lower section of switch is open and very high negative bias flows from the negative side of speaker field (F + of speaker socket) through the 1. meg. resistor to X, is filtered by the .1 MF. condenser, and through the 1 meg. resistor to the A.V.C. and bias circuits, cutting these valves off and causing set to be quiet for gramophone playing.

The switch as shown in sketch illustrates "radio position," and high bias shorted out, allowing normal bias from point Y, 55 ohm. resistor, to flow through switch to point X, and thus to A.V.C. circuits.

The only mechanical work required to mount this gram. connection is to drill a $\frac{3}{8}$ inch hole beneath warning plate at rear of chassis and 15/32 inch hole in side of cabinet for mounting switch.



Printed by R.N.Z.