LISSEN 8108, 8111, 8116, 8117, 8121, 8125, 8128, 8129 EVER READY 5004, 5005, 5006

Four-valve, plus rectifier, two-waveband superhet with provision for pickup in the table models and low impedance extra loudspeakers in all models. The types of models and their mains supply voltage ratings are shown in the table.

Trade Mark.	Model No.	Type	Voltage Range.	Remarks.
Lissen	8108	R/G	200–250v. 40–100 c/s.	Basic Chassis.
,,	8111	Table.	200–250v. 40–100 c/s.	,, ,,
,,	8116	Table	200–250v. 25–40 c/s.	,, ,,
,,	8117	Table	100–110v. 40–100 c/s.	,, ,,
,,	8121	R/G.	100–110v. 40–100 c/s.	,, ,,
,,	8125	Table	200–250v. 40–100 c/s.	Modified Chassis.
,,	8128	Table	200–250v. 25–40 c/s.	,, ,,
,,	8129	Table.	100–110v. 40–100 c/s.	,, ,,
Ever-Ready	5004	Console.	*Available in four Ranges.	Basic and Modified Chassis.
,,	5005	R/G.	,, ,,	,, ,,
,,	5006	Table.	,, ,,	,, ,,

* 100–110v. 25–40 and 40–100 c/s. 200–250v. 25–40 and 40–100 c/s.

TWO aerial sockets are provided A1 and A2, the latter being for local station reception and with this socket in use signals are fed *via* C1 to the coupling coil L1 of the inductively coupled band-pass filter circuit in which L2, L4 are the MW coils and L3, L5 the LW coils.

The signal is fed from L4 to the control grid of the frequency changer V1. The cathode circuit of this valve incorporates a fixed biasing resistance R2 and a variable resistance VR1 which acts as a sensitivity control. The oscillator section of V1 employs a tuned grid circuit, R4 and C4 being the grid leak and condenser, while the oscillator coils are L6 (MW) and L7 (LW). L8 is the anode feed-back coil which connects to the HT line *via* R5.

To obtain extra gain on Gram. the pickup input is switched into the grid circuit of the oscillator section of V1. R5 then acts as an LF coupling resistance and C6 as the coupling condenser to feed the LF signal via R12 and C15 to the volume control VR2.

On Gram the screening grid circuit of V1 is broken by a pair of switch contacts and on radio another pair of contacts breaks the connection to C6 and R12.

IF signals from V1 are coupled by L9, L10 to the pentode IF amplifying valve V2, which is cathode biased by R10 decoupled by C9.

A second IF transformer, L11, L12, transfers the signal from V2 to the signal diode of the double diode valve V3. The LF load resistance is R13, the IF signal being filtered out by R11, C11, C13.

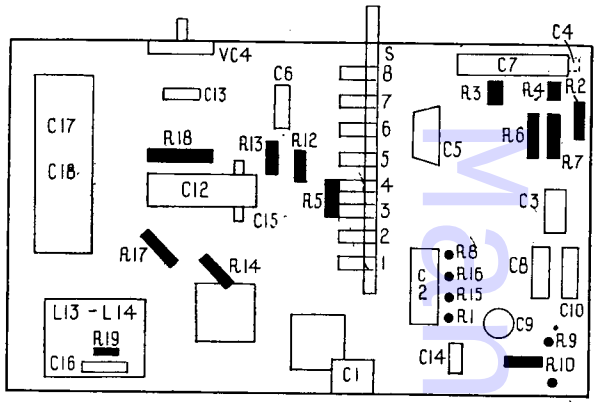
A variable tone control VC4 is connected across R13 and the bias resistance R18.

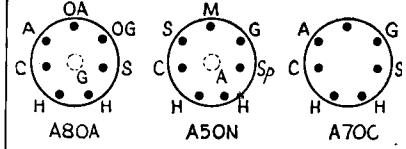
From R13 the LF signals are fed *via* C15 to the volume control VR2 and thence *via* the grid stopper R14 to the grid of the pentode output valve V4.

The AVC diode of V3 is fed from the anode of V2 through C14, the AVC load resistances being R15, R16. Full bias is applied to V1, while a smaller potential is tapped off from the junction of R15, R16 to control the grid circuit of V2.

V4 is cathode biased by R17 and R18 decoupled by C12, and bias for the signal diode of V3 is obtained from the junction of R17 and R18. This arrangement biases the signal diode of V3 so that stations which are not of programme strength are suppressed.

The output from V4 is coupled to the low-impedance energised moving-coil loudspeaker by the matching transformer L13, L14. A permanent degree of tone correction is effected by R19 and C16 across L13. L15 and L16 are the speech coil and the humbucking coil respectively, across which may be connected an extra low impedance loudspeaker. The internal loudspeaker may be muted by withdrawing its plugs from their sockets.





The HT supply is derived from the full-wave rectifier V5, smoothing being effected by the field coil winding L17 and condensers C17, C18. It will be noted that the pilot lamps are fed from a separate 2v winding on the mains transformer.

MODIFIED CHASSIS.

In models incorporating the modified chassis the following changes will be found :—

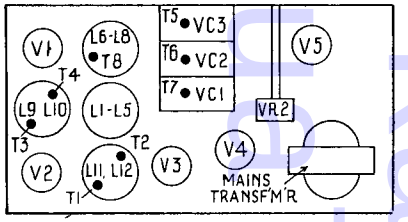
AERIAL CIRCUIT.—A 5 mmfd. condenser

Continued on page vii

VALVE READINGS

V	*Type*	*Electrode*	*Volts*	*Mas*
1	A80A	Anode	275	1.2
	(All valves	Osc anode	77	2.2
	Every Ready)	Screen	72	4
2	A50N	Anode	275	6
		Screen	105	2.5
3	A20B	—	—	—
4	A70C	Anode	258	27
		Screen	275	3.1
5	A11B	Cathode	400	—

Pilot lamps, 3.5v, .3 amp MES. Voltage readings taken with high resistance meter, no signal input and sensitivity control at maximum gain.



CONDENSERS

C	*Mfds*	*C*	*Mfds*
1	.15 mm fds.	10	.1
2	.25	11	.0001
3	.1	12	20
4	.001	13	.0001
5	.1	14	.0001
6	.1	15	.05
7	2	16	.01
8	.1	17	8
9	.1	18*	8

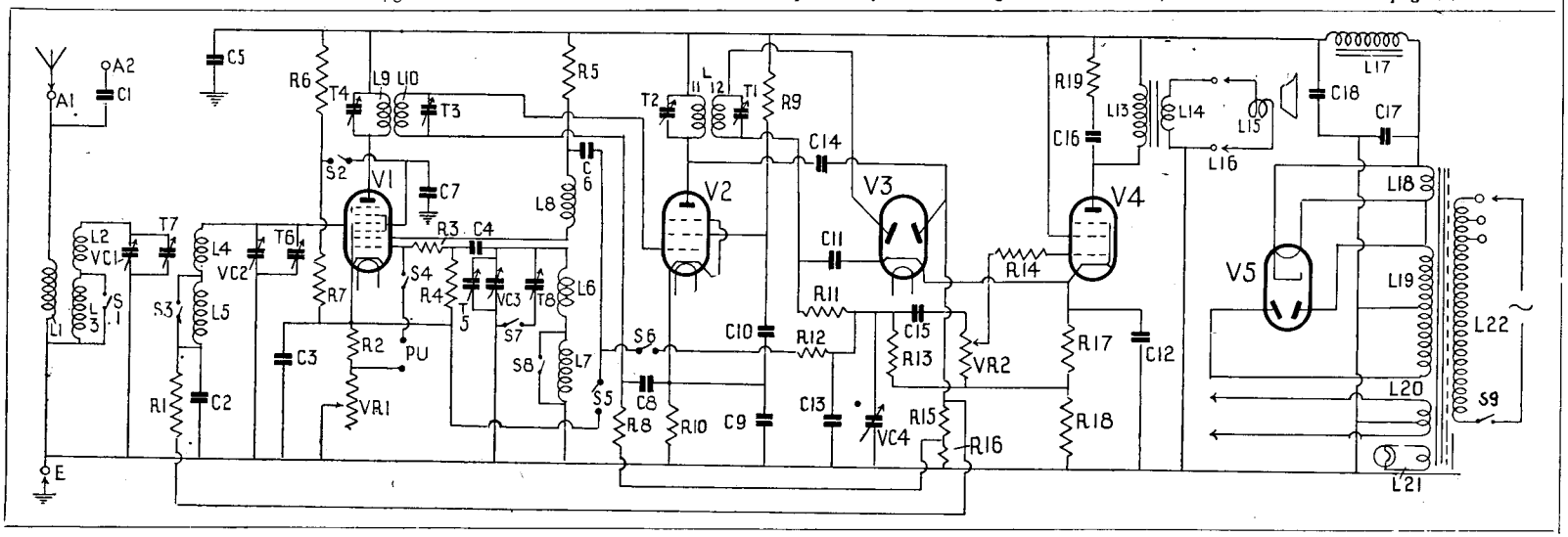
* 16 mfd in modified chassis.

RESISTANCES

R	*Ohms*	*R*	*Ohms*
1	510,000	12	100,000
2	300	13	260,000
3	1,000	14	25,000
4	100,000	15	510,000
5	100,000	16	510,000
6	40,000	17	150
7	40,000	18	500
8	510,000	19	10,000
9	80,000	VR1	2,000
10	200	VR2	500,000
11	100,000		

WINDINGS

L	*Ohms*	*L*	*Ohms*
1	24	12	42
2	2.3	13	700
3	15	14	.3
4	2.3	15	1.5
5	15	16	.3
6	1.8	17	3,000
7	1.5	18	.13
8	45	19	340
9	93	20	.07
10	93	21	.35
11	42	22	43



MURPHY D90

Four-valve, plus rectifier, three-wave-band superhet for operation from AC or DC mains, 200–250v, 25–100 cycles. Marketed by Murphy Radio, Ltd., Welwyn Garden City, Herts.

THE D90 and D90RG models are practically similar in all respects to the A90 and A90RG models described on the opposite page. The accompanying circuit diagram shows the differences which occur in the pick-up input circuit and the valve heater network.

A low impedance pick-up of only 10 ohms DC resistance is connected across the primary of a step-up isolating transformer L25, L26. The secondary is connected through the radiogram switch to the radio volume control R13.

The HT supply circuit employs a half-wave rectifier with a current limiter R27 in the anode circuit. The mains input has dust cored HF chokes L23, L24 for HF filtering.

The heater circuit employs the usual arrangement of mains dropping resistance R23—R26 with the valve heaters in series and incorporates a thermal-delay switch S7 which short circuits R22 after a lapse of a short period.

GANGING

The alignment of all circuits is as given in the review of the AC models. The usual precautions being taken, of course, to isolate the service oscillator from the chassis which may be "live" on certain mains supplies.

VALVE READINGS

V	Type	Electrode	Volts
1	TH233	Anode	120
	Mazda	Osc anode	72
		Screen	120
		Cathode	4
2	VP133	Anode	185
	Mazda	Screen	160
		Cathode	3.75
3	HL133DD	Anode	72
	Mazda	Cathode	1.4
4	PEN383	Anode	172
	Mazda	Screen	160
		Cathode	9
5	U403	Cathode	255
	Mazda		

Pilot Lamps, 3.5 v, .15 amp.
Readings taken with 1,000 o-p-v meter on 240 v AC mains.

CONDENSERS

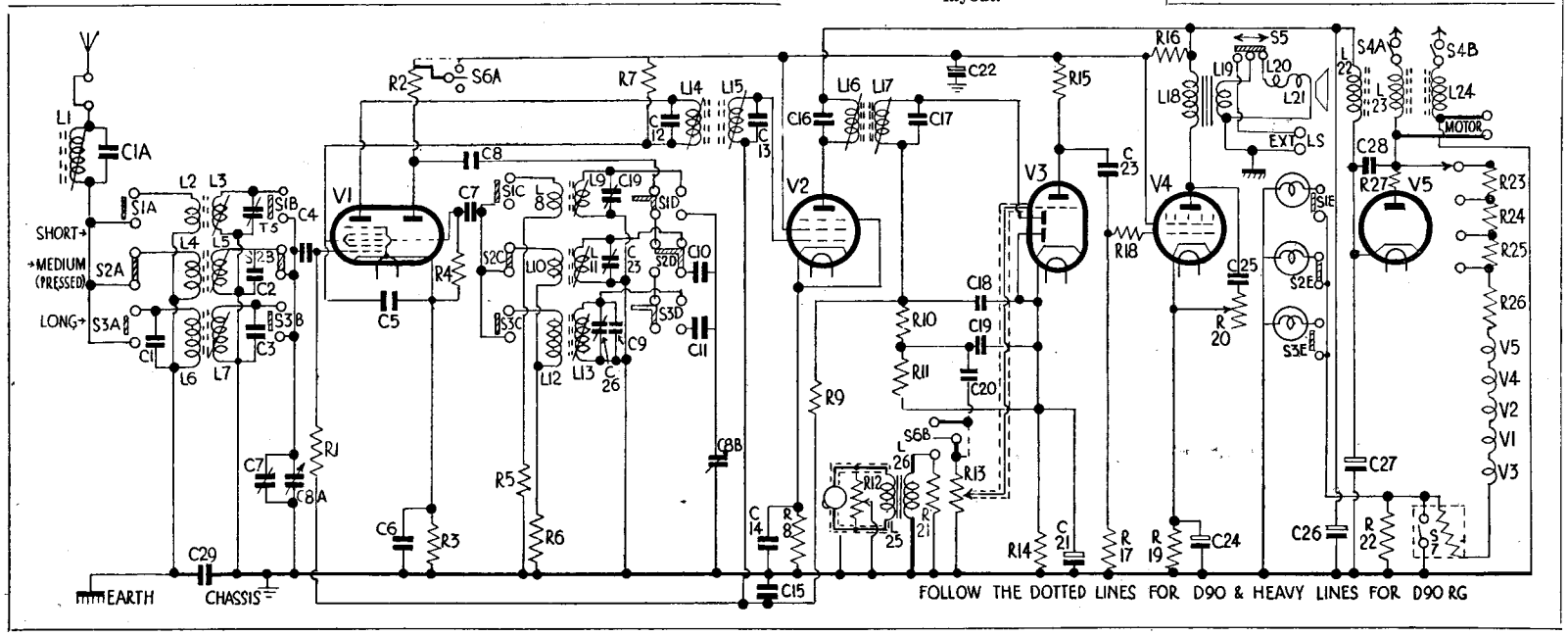
C	Mfds	C	Mfds
1	.0005	15	.05
1A	.0005	16	139 mmfd
2	10 mmfd	17	150 mmfd
3	85 mmfd	18	.0001
4	.0005	19	.0001
5	.05	20	.01
6	.05	21	50
7	.0002	22	16
8	.0001	23	.01
9	.00026	24	50
10	.0007	25	.1
11	414 mmfd	26	16
12	139 mmfd	27	16
13	150 mmfd	28	.04
14	.025	29	.01

RESISTANCES

R	Ohms	R	Ohms
1	1 meg	15	47,000
2	22,000	16	1,000
3	390	17	470,000
4	22,000	18	47,000
5	47	19	140
6	470	20	25,000
7	5,100	21*	12,000
8	470	22	23
9	2.2 meg	23	75
10	100,000	24	100
11	470,000	25	75
12*	500	26	336
13	1 meg	27	47
14	1,000		

* On RG Models only.

The design of the D90 models corresponds largely with that of the AC version as regards both circuit and layout.



MURPHY A90 *Continued from opposite page*

adjustment can be judged more accurately by ear than with an output meter.

Connect the service oscillator, tuned to 465 kcs, to the aerial and earth terminals of the receiver. Reduce the output from the oscillator until the signal is only just audible. Adjust L1 until the signal is at minimum.

MW Band.—Tune the service oscillator and the receiver to 230 metres. Adjust T1 and T2 for maximum gain.

Tune the receiver and the service oscillator to 500 metres and adjust L11 and L5 for maximum output. Readjust T1 and T2.

LW Band.—Tune the service oscillator and the receiver to exactly 1,000 metres.

WINDINGS

L	Ohms	L	Ohms
1	2.5	14	5.5
2	.2	15	5.5
3	.05	16	5.5
4	.7	17	5.5
5	2.25	18	200
6	25	19	.6
7	15	20	.1
8	.2	21	2.5
9	.05	22	900
10	.8	23	—
11	1.25	24	—
12	.9	25	2
13	1.7	26	400

Pick-up on RG Model, 10 ohms.
Th Delay Switch, 18 ohms.

Adjust T3 to correct any calibration errors.

Tune the oscillator and the receiver to exactly 1,900 metres, and adjust L13 to correct any tracking errors. Adjust L7 for maximum gain.

SW Band.—The makers emphasise that extreme accuracy is necessary on the shortwave band, and the adjustments are made in the factory with the aid of crystal controlled oscillators. If adjustments are made to the oscillator circuits with the aid of an ordinary service oscillator, the receiver should afterwards be checked under broadcast conditions.

Tune the service oscillator and the receiver to 17 metres. Adjust T4 and T5 for maximum output.

Tune the receiver and the service oscillator to 42 metres and adjust L9 and L3 to take up any tracking errors. Re-adjust T4 and T5.

Note.—Chassis in which the SW trimmers are mounted on the ganged condenser should have the SW band aligned first.

LISSEN 8108 *Continued from page v*

is connected between the top ends of L1 and L2.

PU CIRCUIT—The slider of VR1 is taken to chassis through a 300 ohm resistance which is shunted by a pair of switch contacts which open on gram. This arrangement desensitises V1 to prevent radio breakthrough and takes the place of the screen grid switching which is deleted. R2 is changed from 300 ohms to 150 ohms. R4 is changed to 51,000 ohms.

V4 CATHODE CIRCUIT—A 100 ohm resistance is connected between R17 and R18, R17 being reduced to 50 ohms. R13 is taken to the junction of R17 and the added resistance, while VR2 is taken to the other end of this resistance where it joins R18.

SMOOTHING CIRCUIT—C18 is increased to 16 mfds.

GANGING

IF CIRCUITS—The manufacturers advise that a damping unit comprising a 50,000 ohm resistance and a .1 mfd condenser in series be connected across the winding of the IF transformer opposite to that which is being trimmed.

Adjust VR1 and VR2 to maximum and prevent V1 from oscillating by connecting a large capacity condenser between the oscillator anode and chassis.

Inject a 127 kcs signal into the grid (top cap) of V1 and adjust T1 for maximum output with the damping unit connected across L11. Transfer damping unit to L12 and adjust T2 for maximum output. Repeat procedure for L9 when trimming T3, and L10 when trimming T4.

MW BAND—Check calibration by adjusting gang to minimum capacity and pointer so that it coincides with mark at end of scale.

Inject a 196m signal into A1 and E sockets *via* a suitable dummy aerial and adjust T5, T6 and T7 for maximum output.

LW BAND—Switch receiver to LW and adjust pointer to 1,300m. Inject a 1,200m signal and adjust T8 for maximum output.