THE FISK AWA RADIOLA

Models 85, 91, 195, 200 and 312

FIVE VALVE, TWO BAND, A.C. OPERATED SUPERHETERODYNES

Technical Information & Service Data

ELECTRICAL SPECIFICATIONS.

TUNING RANGES
"Standard Medium Wave"—1600-550 K.C.
"Short Wave"— 13.65-45 M.

R.F. ALIGNMENT SETTINGS.
"Standard Medium Wave"—600 K.C. (Osc.), 1500 K.C. (Osc. and Aer.)
"Short Wave"—15 M. (Osc. and Aer.)

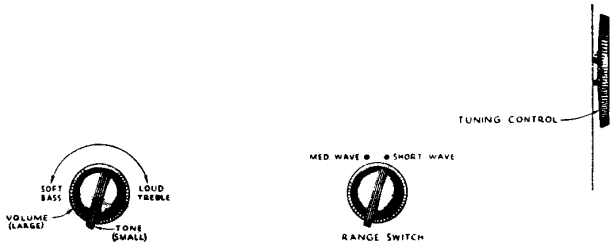
INTERMEDIATE FREQUENCY ..... 455 K.C.

POWER SUPPLY RATING ..... 200-260 V. 50-60 Cycles
(Instruments with other voltage and frequency ratings available.)

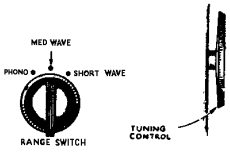
POWER CONSUMPTION ..... 75 watts

VALVE COMPLEMENT
(1) 6J8G Frequency Converter
(2) 6U7G I.F. Amplifier
(3) 6B6G 2nd Det., A.V.C. and A.F. Amp.
(4) 6V6G Output
(5) 5Y3G Rectifier

CONTROLS (Models 85, 195 and 312)



Models 85 and 195.



Model 312.

CONTROLS (Models 91 and 200).

In the Models 91 and 200, the controls, while performing the same functions as those shown above for the Models 85 and 195, are arranged differently. Concentric knobs are replaced by three single knobs on the cabinet front which from left to right control Tone, Volume and Range. The Tuning Control is situated in the normal position at the side of the cabinet, but is not the dual ratio type.

LOUDSPEAKER—Models 85 and 91—7-inch, Type AW4, Models 195, 200, and 312—12-inch, Type AS8.
Loudspeaker Transformer—Type AW4-XA1. Type AS8-TX20
Field Coil Resistance, 1500 ohms
Voice Coil Impedance—Type AW4—3 ohms at 400 c. Type AS8—2.2 ohms at 400 c.

UNDISTORTED POWER OUTPUT ..... 4.2 watts

DIAL LAMPS ..... 6.3 v., .25 amp.

INTRODUCTION.

The cabinet style of these models is as follows:—Models 85 & 91, Table; Models 195 and 200, Console; Model 312, Radio-Gramophone Combination. The latter is of revolutionary design, the lower section of the cabinet withdraws, revealing the gramophone turntable and pick-up. When closed, the gramophone section is entirely concealed, and the cabinet takes on the appearance of a normal console.

As is the case with all other models released in the 1940 range, one of the most striking features is the unique chassis layout. In these receivers the valves are most accessible, as they are arranged in line at the rear of the chassis in the same sequence as they appear on the circuit diagram. By careful placement of other components, efficiency has been increased, crowding has been eliminated, and a big improvement has resulted both in performance and from a servicing aspect.

A feature of the Models 85, 195 and 312 is the dual ratio tuning drive. This drive has two ratios; one, 2½ to 1, providing a quick shift to any position on the dial, and the other, 58 to 1, providing vernier tuning for one revolution of the knob.

ALIGNMENT PROCEDURE.

Alignment should only be necessary when adjustments have been altered from the factory setting or when repairs have been made to the tuned circuits. Climatic conditions should not seriously affect the receiver.

It is important to apply a definite procedure, as tabulated, and to use adequate and reliable test equipment. Instruments ideally suited to the requirements are the A.W.A. Junior Signal Generator, Type 2R3911, or the A.W.A. Modulated Oscillator, Type C1070. An output meter is necessary with both these instruments. If the Type C1070 test oscillator is used, see that a 250,000 ohms resistor is connected between the output terminals and, for Short Wave alignment, a 400 ohms non-inductive resistor in series with the active output lead of the instrument.

Connect the ground connection of the test instrument to the receiver chassis.

Perform alignment in the proper order, starting from No. 1 and following all operations across, then No. 2, etc. Adjustment locations are shown in the layout diagrams. Keep the Volume Control set in the maximum clockwise position, and regulate the output of the test instrument so that a minimum signal is introduced to the receiver to give a standard indication on the output meter. This will avoid A.V.C. action and overloading.

When the receiver has been satisfactorily aligned, seal the adjusting screws with a small quantity of celluloid cement to eliminate the possibility of them shifting and also to indicate whether they have been tampered with after servicing.

ADJUSTING TOOLS.

Two tools, which have been specially designed for alignment purposes, may be obtained from the Service Department of the Company. One is for adjusting and locking air-trimmer condensers, and the other is a non-metallic screwdriver for adjusting the cores within the I.F. transformers and the broadcast oscillator coil. The part number of the former is No. 5371 and the latter No. 5372.

ALIGNMENT TABLE

Alignment Order.	Test Inst. Connection to Receiver.	Test. Inst. Setting.	Receiver Dial Setting.	Circuit to Adjust.	Adjustment Symbol.	Adjust to Obtain
1	*6J8G Grid Cap	455 Kc/s.	Past 550 Kc/s.††	2nd I.F. Trans.	L12	Max. (Peak)
2	*6J8G Grid Cap	455 Kc/s.	Past 550 Kc/s.††	2nd I.F. Trans.	L11	Max. (Peak)
3	*6J8G Grid Cap	455 Kc/s.	Past 550 Kc/s.††	1st I.F. Trans.	L10	Max. (Peak)
4	*6J8G Grid Cap	455 Kc/s.	Past 550 Kc/s.††	1st I.F. Trans.	L9	Max. (Peak)
		Repeat the above adjustments before proceeding.				
5	Aerial Term	600 Kc/s.	600 Kc/s.†	Oscillator	Core L6	Max. (Peak)
6	Aerial Term	1500 Kc/s.	1500 Kc/s.	Oscillator	C6	Max. (Peak)
7	Aerial Term	1500 Kc/s.	1500 Kc/s.	Aerial	C2	Max. (Peak)
		Repeat adjustments 5, 6, and 7.				
8	Aerial Term	15M.	15M.	Oscillator	C8	Max. (Peak)**
9	Aerial Term	15M.	15M.‡	Aerial	C3	Max. (Peak)***

* With grid clip connected. A .001 mfd. condenser should be connected in series with the active output lead of the test instrument.

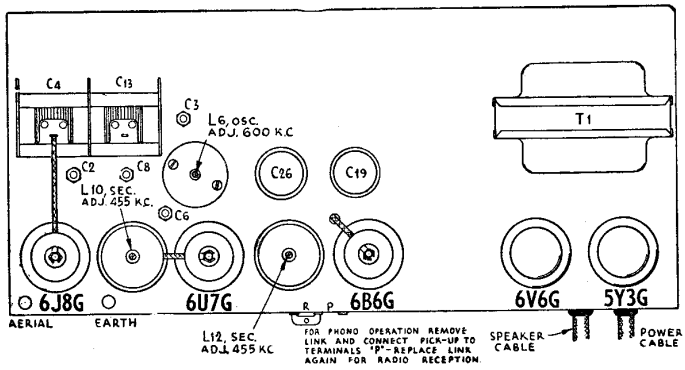
† Rock the tuning control back and forth through the signal. Reset the dial pointer to 600 Kc/s., if necessary. The pointer is soldered to the control wire and may be moved by applying a hot soldering iron to the connection.

** Use minimum capacity peak if two peaks can be obtained.

*** Use maximum capacity peak if two peaks can be obtained. Check for image signal by tuning the receiver to approx. 16M. It may be necessary to increase the output of the test oscillator to receive the signal.

‡ Rock the tuning control back and forth through the signal.

†† With tuning condenser plates in full mesh.



Layout Diagram—Top View.

SOCKET VOLTAGES.

VALVE	Bias Volts	Screen Grid to Chassis Volts	Plate to Chassis Volts	Plate Current M.A.	Heater Volts
6J8G Converter M.W.	-3*	95	255	1.3	6.3
S.W.	-3	95	255	1.3	—
Oscillator M.W.	—	—	160	5.0	—
S.W.	—	—	160	5.0	—
6U7G I.F. Amplifier M.W.	-3*	95	255	8.0	6.3
S.W.	-3*	95	255	8.0	—
6B6G 2nd Detector	0	—	125*	0.52	6.3
6V6G Output	-12.5*	255	242	44.0	6.3
5Y3G Rectifier 800/400 volts, 75 M.A. Total current, 5.0.					

*Cannot be measured with ordinary voltmeter.

Measured at 240 volts, A.C. supply. No signal input. Volume Control at maximum.

GRAMOPHONE MOTOR AUTOMATIC STOP ADJUSTMENT (MODEL 312).

Two types of motors are used in this Receiver, namely "Collaro" and "Garrard," and as the adjustment is different for each, first identify the motor in question before proceeding. The trade marks for the "Collaro" and "Garrard" are on the motor board and pick-up, respectively.

"COLLARO" ADJUSTMENT.

The Automatic stop is set at the factory to suit standard records. If adjustment becomes necessary, loosen the stop adjustment screws and adjust the trip lever so that the pick-up arm comes in contact with the lever when the needle enters the continuous track outside the record label.

"GARRARD" ADJUSTMENT.

The Patent Stop and Switch is fully automatic.

As the needle travels towards the centre of the record, the Pick-up Arm moves Friction Plate A (see diagram) which, through the friction pad and spring, carries with it the Main Lever B and Trip Lever C.

This Main Lever moves in towards the Turntable Spindle on which is mounted the striker, which gently wipes against the rubber bush on end of Trip Lever C at every revolution, thus tapping back the Main Lever B (the friction between Lever A and Lever B allows this).

The "tapping back" process continues until the needle reaches the "run-in" groove in the centre of the record. The trip lever is now moved forward into the path of the striker, which strikes the side of the lever and trips the Stop mechanism.

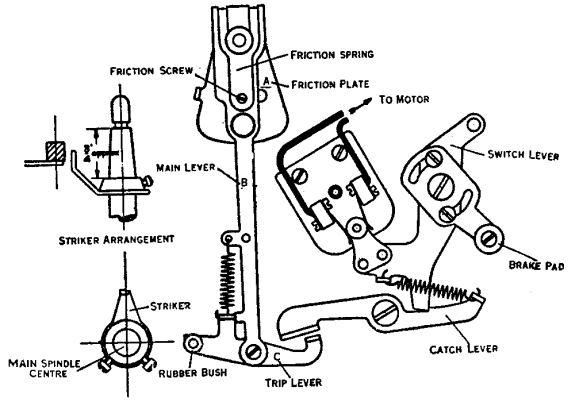
If Stop fails to operate at finish of record, there is probably insufficient friction between Lever A and Lever B. This may be rectified by turning the friction screw in lever B in a counter-clockwise direction.

When Stop operates early, i.e., before needle reaches the end of the record, the trouble is either due to excessive friction or to the rubber bush on the trip lever being worn. Friction can be reduced by turning the friction screw clockwise.

As this adjustment is very sensitive, the screw should not be turned more than a quarter of a turn at a time. Excessive friction may cause a knocking sound to be heard in the loudspeaker and undue wear on records.

When the rubber bush is worn, this may be turned round on its pin to expose a new face to the striker.

A brake pad is provided which is automatically applied to the turntable rim after switching off. It can be adjusted by loosening the two screws securing the brake pad lever. After adjustment, it is important to verify that the switch breaks contact before brake operates.



"Garrard" Automatic Stop Mechanism.

MECHANICAL REPLACEMENT PARTS

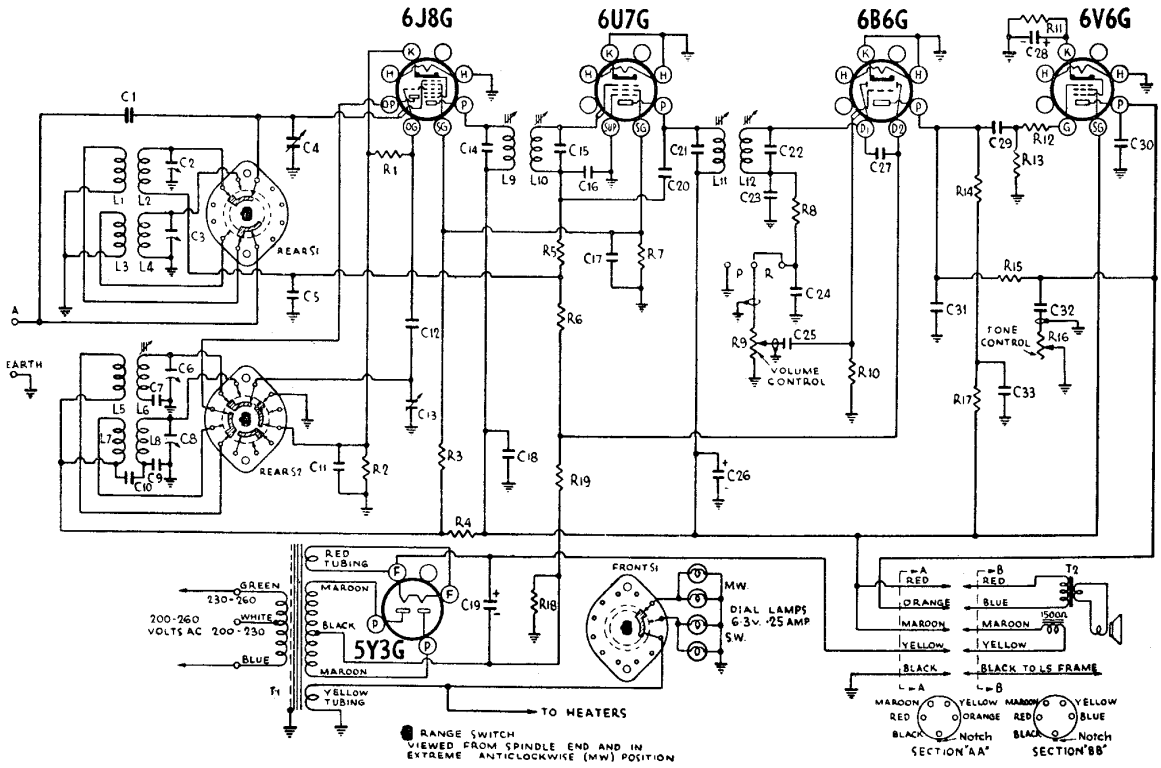
TUNING MECHANISM.

DESCRIPTION	Part No.
Pointer and Saddle, with Drive Wire	6629
Drive Wire Tension Spring	6641
Drive Wire Jockey Pulleys—Large	6246
Drive Wire Jockey Pulleys—Small	7885
Pointer Drive Drum	8030
Main Drive Segment	8039
Main Drive Spindle Assembly	8035
Intermediate Drive Gear Assembly	8037
Dial Scale	8154
Dial Lamp Sockets	4194

MISCELLANEOUS.

DESCRIPTION	Part No
Range Switch—85, 91, 195 and 200	7907
Range Switch—312	8109
Power Cable	209
Loudspeaker Cable	6465
Tuning Knob	8075
Tuning Knob Clip	7686
Range Switch Knob—Outer	5625
Range Switch Knob—Inner	4589
Volume-Tone Control Knob—Outer	5625
Volume-Tone Control Knob—Inner	4589
Knob Clips	7929
Valve Sockets (4)	4704
Valve Socket (Cushion)	7327
Valve Clips	7459
Loudspeaker Cone Assembly—Models 85 and 91	8588
Loudspeaker Cone Assembly—Models 195, 200 and 312	7071

CIRCUIT DIAGRAM AND CODE—MODELS 85, 91, 195 AND 200



NOTE:—Pick-up terminals, shown in the circuit diagram, are not provided in the Models 91 and 200.

Code No.	Part No.	COILS.
L1, L2	7974	Aerial Coil 1600-550 K.C.
L3, L4	7975	Aerial Coil 13.6-45M
L5, L6	9145	Osc. Coil 1600-550 K.C.
L7, L8	9145	Osc. Coil 13.6-45M
L9, L10	8286	1st I.F. Transformer
L11, L12	8287	2nd I.F. Transformer

NOTE. Prior to 1-5-40 oscillator coil, No. 7977 was used.

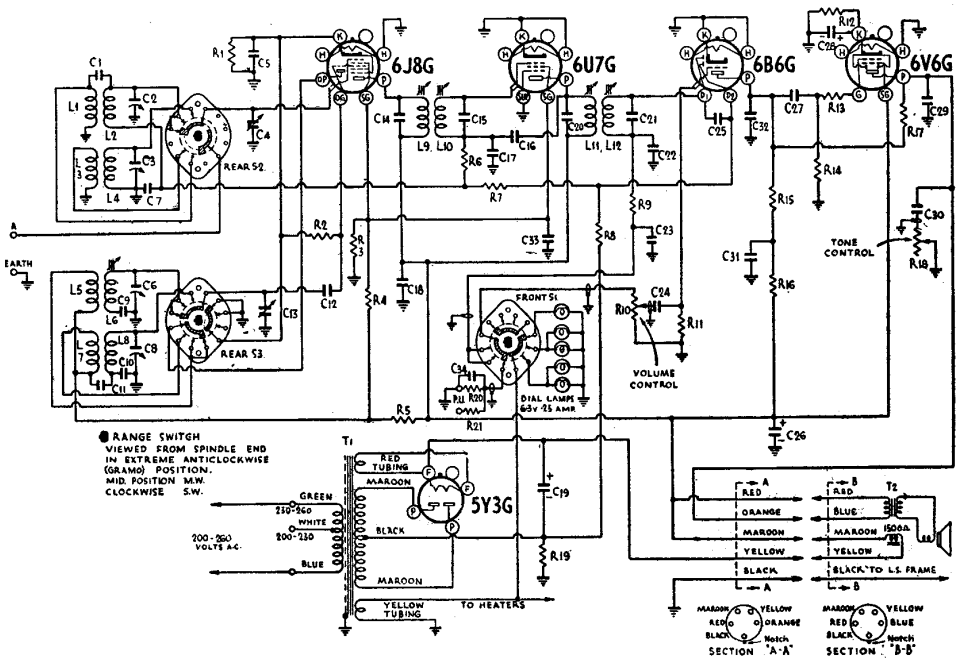
TRANSFORMERS.

T1	7979A	Power Transformer 50-60C
T1	7981A	Power Transformer 40C
T2	XA1	Loudspeaker Transformer (85, 91)
T2	TX20	Loudspeaker Transformer (195, 200)

Code No.	Part No.	RESISTORS.
R1		50,000 ohms 1/3W
R2		350 ohms 1/3W
R3		8000 ohms 1W
R4		6000 ohms 2W
R5		100,000 ohms 1/3W
R6		1.75 megohms 1/3W
R7		20,000 ohms 1W
R8		50,000 ohms 1/3W
R9	7903	500,000 ohms Vol. Cont.
R10		10 megohms 1W
R11		250 ohms 3W
R12		50,000 ohms 1/3W
R13		500,000 ohms 1/3W
R14		250,000 ohms 1W
R15		1.75 megohms 1W
R16	7902	100,000 ohms Tone Cont.
R17		20,000 ohms 1W
R18		40 ohms 3W
R19		2.3 megohms 1/3W

Code No.	Part No.	CONDENSERS.
C1		4 mmfd mica
C2	3661	2-20 mmfd air trimmer
C3	3661	2-20 mmfd air trimmer
C4	7985	Tuning Condenser
C5		.05 mfd paper
C6	3411A	11-29 mmfd air trimmer
C7		440 mmfd mica (padder)
C8	3658	2-10 mmfd air trimmer
C9		4000 mmfd mica (padder)
C10		.05 mfd paper
C11		.05 mfd paper
C12		70 mmfd mica (N)
C13	7985	Tuning Condenser
C14		70 mmfd mica (N)
C15		70 mmfd mica (N)
C16		.01 mfd paper
C17		.1 mfd paper
C18		.1 mfd paper
C19		16 mfd, 500V. electrolytic
C20		4 mmfd mica
C21		70 mmfd mica (N)
C22		70 mmfd mica (N)
C23		110 mmfd mica (L)
C24		110 mmfd mica (L)
C25		.01 mfd paper
C26		16 mfd 350V. regulating electrolytic
C27		50 mmfd mica (D)
C28		25 mfd 25V. electrolytic
C29		.02 mfd paper
C30		.0025 mfd paper (195, 200) .015 mfd paper (85, 91)
C31		200 mmfd mica (J)
C32		.1 mfd paper
C33		.5 mfd paper

CIRCUIT DIAGRAM AND CODE—MODEL 312



NOTE:—Condenser C1 is incorrectly shown. It should be connected between the aerial terminal and the control grid of the 6J8G, as in the Circuit Diagram overleaf.

Code No.	Part No.	COILS.
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L3, L4	7975	Aerial Coil 13.6-45M
L5, L6	9145	Osc. Coil 1600-550 K.C.
L7, L8	9145	Osc. Coil 13.6-45M
L9, L10	8286	1st I.F. Transformer
L11, L12	8287	2nd I.F. Transformer

NOTE: Prior to 1-5-40 oscillator coil, No. 7977 was used.

TRANSFORMERS.

T1	7979A Power Transformer 50-60C
T1	7981A Power Transformer 40C
T2	TX20 Loudspeaker Transformer

Code No.	Part No.	RESISTORS.
R1		350 ohms 1/3W
R2		50,000 ohms 1/3W
R3		20,000 ohms 1W
R4		8000 ohms 1W
R5		6000 ohms 2W
R6		100,000 ohms 1/3W
R7		1.75 megohms 1/3W
R8		2.3 megohms 1/3W
R9		50,000 ohms 1/3W
R10	7903	500,000 ohms Vol. Cont.
R11		10 megohms 1W
R12		250 ohms 3W
R13		50,000 ohms 1/3W
R14		500,000 ohms 1/3W
R15		250,000 ohms 1W
R16		20,000 ohms 1W
R17		1.75 megohms 1W
R18	7902	100,000 ohms Tone Cont.
R19		40 ohms 3W
R20		50,000 ohms 1/3W
R21		20,000 ohms 1/3W

Code No.	Part No.	CONDENSERS.
C1		4 mmfd mica
C2	3661	2-20 mmfd air trimmer
C3	3661	2-20 mmfd air trimmer
C4	7985	Tuning Condenser
C5		.05 mfd paper
C6	3411A	11-29 mmfd air trimmer
C7		.05 mfd paper
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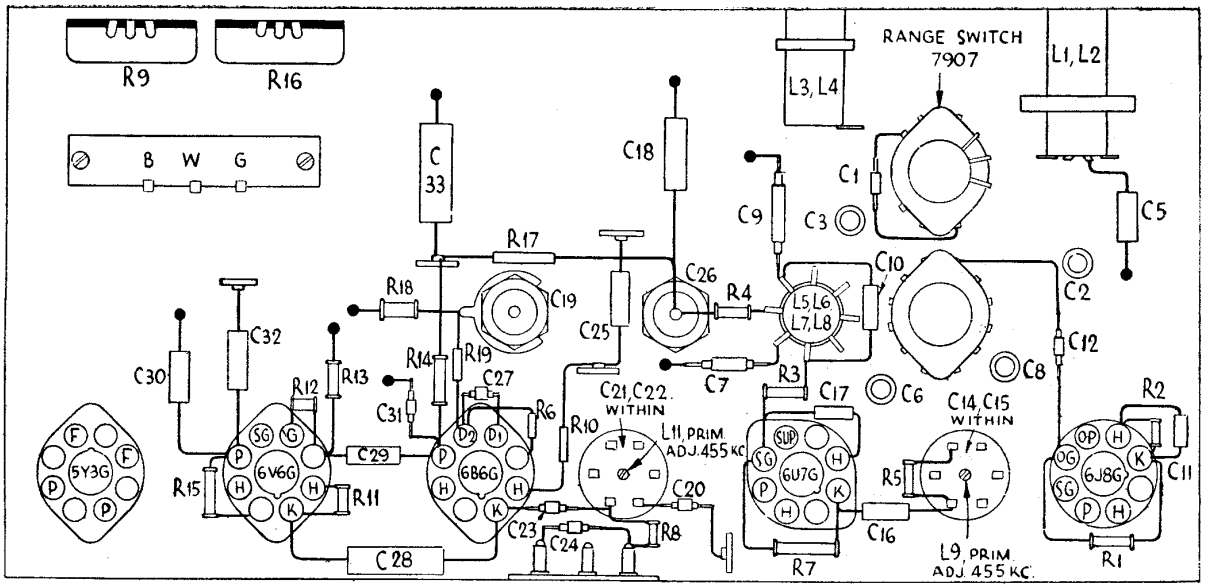
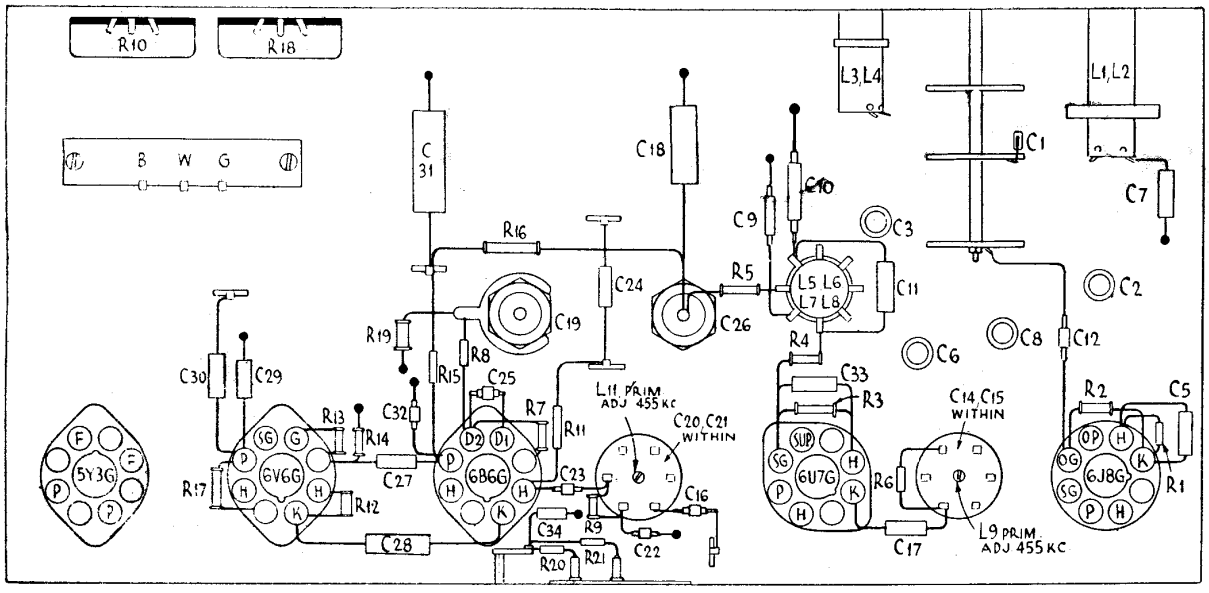
C9		440 mmfd mica (padder)
C10		4000 mmfd mica (padder)
C11		.05 mfd paper
C12		70 mmfd mica (N)
C13	7985	Tuning Condenser
C14		70 mmfd mica (N)
C15		70 mmfd mica (N)
C16		4 mmfd mica
C17		.01 mfd paper
C18		.1 mfd paper
C19		16 mfd 500V. electro.
C20		70 mmfd mica (N)
C21		70 mmfd mica (N)
C22		110 mmfd mica (L)
C23		110 mmfd mica (L)
C24		.01 mfd paper
C25		50 mmfd mica (D)
C26		16 mfd 350V. Reg. Electro.
C27		.02 mfd paper
C28		25 mfd 25V. electrolytic
C29		.0025 mfd paper
C30		.1 mfd paper
C31		.5 mfd paper
C32		200 mmfd mica (J)
C33		.1 mfd paper
C34		.01 mfd paper



Layout Diagram—Models 85, 91, 195 and 200 (Underneath View).



Layout Diagram—Model 312 (Underneath View)