

THE FISK RADIOLA

Models 87 and 199

FIVE VALVE, TWO BAND, BATTERY 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.

BATTERY COMPLEMENT

"A" Battery 2 volt Accumulator

"B" Battery 135 volts

"C" Battery 4.5 volts

CURRENT CONSUMPTION

"A" Battery60 amp.

"B" Battery 15-18 M.A.

VALVE COMPLEMENT

(1) 1C7G Frequency Converter

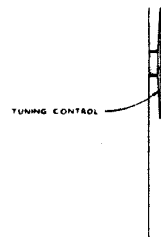
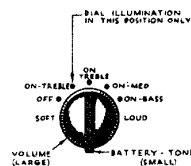
(2) 1D5G I.F. Amplifier

(3) 1D5G I.F. Amplifier

(4) 1K7G 2nd Det., A.V.C. and A.F. Amp.

(5) 1L5G Output Pentode.

CONTROLS.



REPLACEMENT FUSE $\frac{3}{8}$ amp.

DIAL LAMPS 2.5 volt, .06 amp.

LOUDSPEAKER (Permanent Magnet)

Loudspeaker Transformer—

Voice Coil Impedance—

Model 87—7-inch Type AY3

Model 199—12-inch Type AU3

Loudspeaker Type AY3—XA3

Loudspeaker Type AU3—TU3

Loudspeaker Type AY3—3 ohms at 400 C.

Loudspeaker Type AU3—2.2 ohms at 400 C.

UNDISTORTED POWER OUTPUT 350 milliwatts

The Model 87 is a Table Type Receiver, and the Model 199 a Console. The chassis employed are identical and interchangeable. As will be seen by reference to the above data, the loudspeakers differ in type, a 7-inch type being fitted to the Table Model, and a 12-inch installed in the Console.

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 loca-

tions 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	*IC7G Grid Cap	455 Kc/s.	Past 550 Kc/s.††	3rd I.F. Trans.	L14	Max. (Peak)
2	*IC7G Grid Cap	455 Kc/s.	Past 550 Kc/s.††	2nd I.F. Trans.	L13	Max. (Peak)
3	*IC7G Grid Cap	455 Kc/s.	Past 550 Kc/s.††	2nd I.F. Trans.	L12	Max. (Peak)
4	*IC7G Grid Cap	455 Kc/s.	Past 550 Kc/s.††	1st I.F. Trans.	L11	Max. (Peak)
5	*IC7G Grid Cap	455 Kc/s.	Past 550 Kc/s.††	1st I.F. Trans.	L10	Max. (Peak)
Repeat the above adjustments before proceeding.						
6	Aerial Term	600 Kc/s.	600 Kc/s.†	Oscillator	Core L6	Max. (Peak)
7	Aerial Term	1500 Kc/s.	1500 Kc/s.	Oscillator	C7	Max. (Peak)
8	Aerial Term	1500 Kc/s.	1500 Kc/s.	Aerial	C2	Max. (Peak)
Repeat adjustments 6, 7, and 8.						
9	Aerial Term	15M.	15M.	Oscillator	C9	Max. (Peak)**
10	Aerial Term	15M.	15M.‡	Aerial	C4	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. †† 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.

OPERATION AND MAINTENANCE OF AIR-CELL.

WARNING.

Before proceeding to install an air-cell, be sure to remove the dial lamps from the receiver. Serious damage to the air-cell will result if this is not done.

To prepare an air-cell for service, proceed as follows:—

(1) Unscrew caps and punch out the thin diaphragms which seal the bottoms of the filler holes. The pieces falling inside the cell will do no harm.

(2) Fill each compartment with all the water it will hold without overflowing. Use cool drinking water. Avoid spilling by pouring from a vessel with a spout.

IMPORTANT: Water spilled on the top of the battery must be removed immediately.

Only a single filling, if carried out as above, is required to prepare a cell for service. The solution will automatically recede to the correct level at the top of the indicator wires. Thereafter, inspect solution levels monthly, adding enough water to just cover the indicating wires inside each compartment.

(3) Remove the transparent coverings, as the air-cell cannot breathe with these in place. The air-cell is then ready for service.

(4) If the cell is carried any distance after filling, thoroughly wipe out filler caps before placing the battery in service.

To connect the air-cell proceed as follows:—

The battery cable is supplied with two battery clips as standard equipment. Remove these clips so that the leads terminate with the two small connecting lugs. Take the air-cell resistor supplied with the receiver. The resistor is fitted with two lugs, one round, the other in the form of a hook for connecting to the air-cell. With the screw and nut supplied, connect the round lug of the

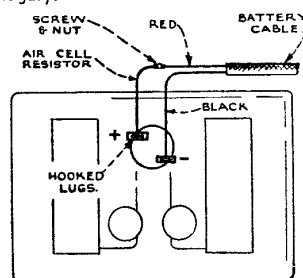
resistor to the lug attached to the positive (red) lead of the battery cable. Connect the hook lug on the other end of the resistor to the positive (plus) clip on the air-cell and the negative (black) lead of the battery cable to the negative (—) clip. The correct air-cell resistor No. 4925 is coloured yellow for positive identification. Refer to the accompanying diagram for a complete illustration of the installation.

WARNING.

The air-cell will be quickly and permanently damaged:

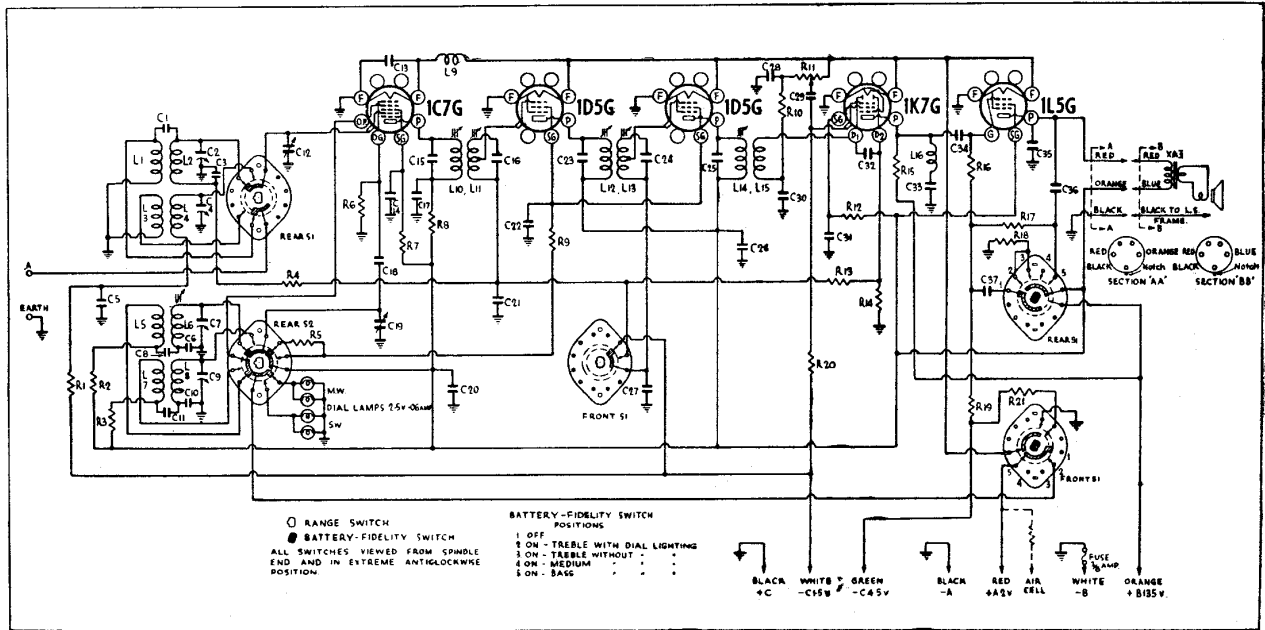
- (1) If short-circuited.
- (2) If current drain exceeds 650 M.A. (0.65 amp.).
- (3) If solution levels are not kept properly adjusted.
- (4) If vent holes in filler caps become plugged.

The air-cell contains caustic soda, which can be neutralised by acetic acid (vinegar).



Air-Cell Connections.

CIRCUIT DIAGRAM AND CODE—MODELS 87 AND 199



NOTE:—Condenser C38, which is not shown, should be connected from 1K7G plate to ground.

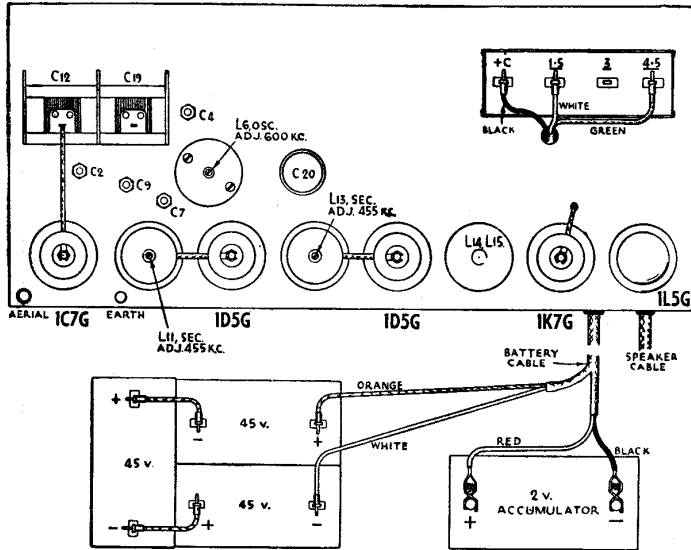
Code No.	Part No.	COILS.
L1, L2	7974	Aerial Coil 1600-550 K.C.
L3, L4	7975	Aerial Coil 13.65-45M
L5, L6	7977	Osc. Coil 1600-550 K.C.
L7, L8	7977	Osc. Coil 13.65-45M.
L9	3149	Filament Choke
L10, L11	6076	1st I.F. Transformer
L12, L13	5688	2nd I.F. Transformer
L14, L15	5759	3rd I.F. Transformer
L16, C33	5441	I.F. Filter

Code No.	Part No.	RESISTORS.
R1		100,000 ohms 1/3W
R2		40,000 ohms 1W
R3		400 ohms 1/3W
R4		100,000 ohms 1/3W
R5		100,000 ohms 1W
R6		30,000 ohms 1/3W
R7		40,000 ohms 1W
R8		300 ohms 1/3W
R9		100,000 ohms 1W
R10		20,000 ohms 1/3W
R11	7903	500,000 ohms Vol. Cont.
R12		1 Megohm 1W

R13		1.75 Megohms 1/3W
R14		2.3 Megohms 1/3W
R15		250,000 ohms 1W
R16		390,000 ohms 1/3W
R17		200,000 ohms 1/3W
R18		15,000 ohms 1/3W
R19		100,000 ohms 1/3W
R20		1.75 Megs. 1/3W
R21		600 ohms 1W

No. Code	No. Part	CONDENSERS.
C1		4 mmfd mica
C2	3661	2-20 mmfd air trimmer
C3		.05 mfd paper
C4	2663A	8-26 mmfd air trimmer
C5		.05 mfd paper
C6		440 mmfd mica (padder)
C7	4853A	16-34 mmfd air trimmer
C8		.05 mfd paper
C9	3658	2-10 mmfd air trimmer
C10		4000 mmfd mica (padder)
C11		.05 mfd paper
C12	8031A	Tuning Condenser
C13		.1 mfd paper

C14		.1 mfd paper
C15		115 mmfd mica (A)
C16		130 mmfd mica (H)
C17		.05 mfd paper
C18		70 mmfd mica (N)
C19	8031A	Tuning Condenser
C20		8 mfd 450V. electrolytic
C21		.02 mfd paper
C22		.1 mfd paper
C23		115 mmfd mica (A)
C24		130 mmfd mica (H)
C25		70 mmfd mica (N)
C26		.1 mfd paper
C27		.02 mfd paper
C28		110 mmfd mica (L)
C29		.01 mfd paper
C30		110 mmfd mica (L)
C31		.1 mfd paper
C32		50 mmfd mica (D)
C33		115 mmfd mica (A)
C34		.05 mfd paper
C35		.0025 mfd paper
C36		.05 mfd paper
C37		2000 mmfd mica
C38		200 mmfd mica (J)



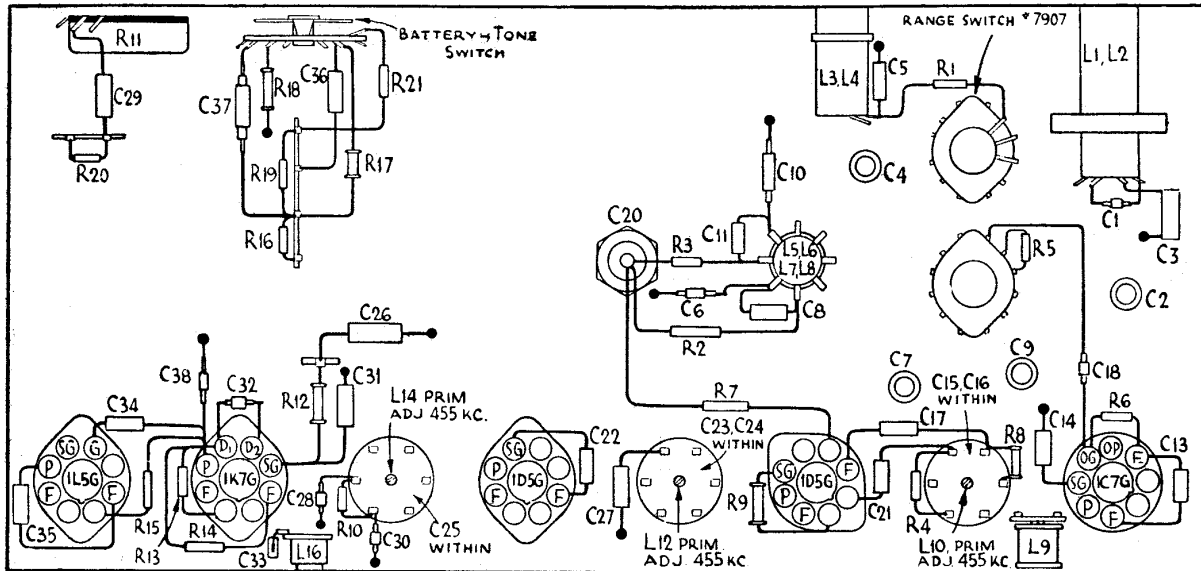
Layout Diagram (Top View), Showing Battery Connections.

SOCKET VOLTAGES.

		Control Grid to Chassis	Screen Grid to Chassis	Plate to Chassis	Plate Current	Fila-ment
		Volts	Volts	Volts	M.A.	Volts
1C7G Converter	M.W.	0	47	133	1.45	2.0
	S.W.	0	52	133	2.15	—
Oscillator	M.W.	—	—	62	1.5	—
	S.W.	—	—	130	4.2	—
1D5G I.F. Amp.	M.W.	0	23	135	0.8	2.0
	S.W.	0	31	135	1.3	—
1D5G I.F. Amp.	M.W.	-1.5	23	135	0.24	2.0
	S.W.	0	31	135	1.15	—
1K7G 2nd Detector		-1.5*	16*	35*	0.18	2.0
1L5G Pentode		-4.5*	135	130	5.0	2.0

* Cannot be measured accurately with ordinary voltmeter.

Measured with no signal input and volume control in maximum clockwise position.



Layout Diagram (Underneath View)

MECHANICAL REPLACEMENT PARTS.

TUNING MECHANISM.		MISCELLANEOUS.	
DESCRIPTION	Part No.	DESCRIPTION.	Part No.
Pointer (Red) and Saddle, with Drive Wire	6629	Range Switch	7907
Drive Wire Tension Spring	6641	Battery-tone Switch	7905
Drive Wire Jockey Pulleys—Large	6246	Battery Cable	7569
Drive Wire Jockey Pulleys—Small	7885	Air-cell Resistor	4925
Pointer Drive Drum	8030	Loudspeaker Cable	6475
Main Drive Segment	8039	Tuning Knob	8075
Main Drive Spindle Assembly	8035	Tuning Knob Clip	7686
Intermediate Drive Gear Assembly	8037	Range Switch Knob—Outer	5625
Dial Scale	8155	Range Switch Knob—Inner	4589
Dial Lamp Sockets	4195	Volume-Battery-Tone Control Knob—Outer	5625
		Volume-Battery-Tone Control Knob—Inner	4589
		Knob Clips	7929
		Valve Sockets (4)	4704
		Valve Socket (Cushion)	7327
		Valve Clips	7459
		Loudspeaker Cone Assembly—Model 87	8588
		Loudspeaker Cone Assembly—Model 199	7251