

Models 86, 197, 198 and 502

FOUR VALVE, ONE BAND, BATTERY OPERATED SUPERHETERODYNES

Technical Information & Service Data

ELECTRICAL SPECIFICATIONS

TUNING RANGE	1600-550 K.C.	R.F. ALIGNMENT SETTINGS—600 K.C. (Osc.), 1500 K.C. (Osc. & Aer.)
INTERMEDIATE FREQUENCY		
CURRENT CONSUMPTION		
REPLACEMENT FUSE		3/8 amp.
VALVE COMPLEMENT		
1C7G Converter 1D5G I.F. Amplifier		1K7G 2nd Det., A.V.C. and Audio Amplifier 1L5G Output Pentode
DIAL LAMPS		
LOUDSPEAKER (Permanent Magnet)		
Mantel		
Loudspeaker Transformer		XA3
Voice Coil Impedance		
UNDISTORTED POWER OUTPUT		

GENERAL DESCRIPTION.

The model 86 is a mantel type receiver housed in a compact moulded cabinet. The models 197, 198 and 502 are consoles.

The circuit arrangement of the chassis for the four models is practically identical, the only differences being in certain audio $\frac{1}{2}$

components, which are dependent on the acoustical properties of the cabinets. Physically, the only difference is that in the Model 86 the loudspeaker (5 inch) is mounted on the chassis, while in the other models the loudspeaker (7 inch) is a separate unit mounted in the cabinet and connected by a cable and plug.

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 A.W.A. Type C1070 test oscillator is used, see that a 250,000 ohms resistor is connected between the output terminals of the instrument.

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

Perform the alignment in the proper order starting with 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 obtain an observable indication. This will avoid A.V.C. action and overloading.

ADJUSTING TOOLS.

Two tools are used in the alignment procedure; one is a combination tool for air-trimmer adjustment and locking (Part No. 5371), and the other is a non-metallic screwdriver specially constructed for adjusting the cores with the I.F. transformers and oscillator coil (Part No. 5372). These tools may be obtained from the Service Department of the Company.

OPERATION AND MAINTENANCE OF AIR-CELL.

WARNING.

Remove the dial lamps before connecting the air-cell. Dial illumination is not allowable when an air-cell is installed, as the added current drain would irreparably damage the cell.

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

- 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.
- 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 the cell for service. The solution will automatically recede to the correct level at the top of the indicator wires. Thereafter inspect the solution levels monthly, adding enough water to just cover the indicating wires inside each compartment.

- 3. Remove transparent coverings, as the air-cell cannot breathe with these in place. The air-cell is then ready for service.
- If cell is carried any distance after filling, thoroughly wipe out filler caps before placing the battery in service.

TECT INICTOLINAENIT

To connect the air-cell, proceed as follows:-

The battery cable of the receiver is supplied fitted 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 (found in an envelope 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 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 (+) clip on the air-cell and the negative (black) lead of the battery cable to the negative (-) clip. The correct air-cell resistor (part No. 4674) is coloured green so that it may be positively identified.

Refer to the diagram below for a complete illustration of the installation.

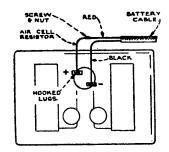
WARNING.

The air-cell will be quickly and permanently damaged:-

- 1. If short-circuited.
- 2 If current drain exceeds 650 M.A. (0.65 amps.).
- 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).

DECENTED



Air-Cell Connections.

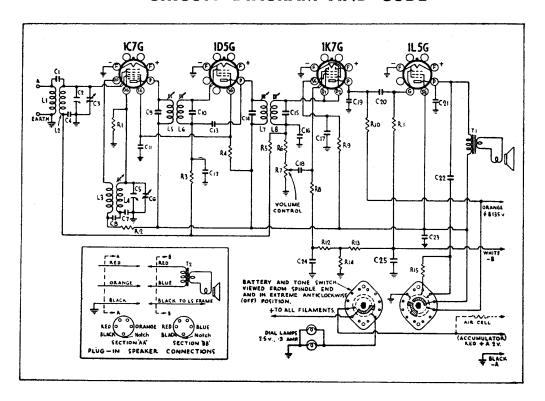
ALIGNMENT TABLE.

	1EST INSTRUMENT	l	RECEIVER					
Alignment Test Inst. Connection Order to Receiver		Test Inst. Setting	Receiver Dial Setting	Circuit to Adjust	Adjust for Maxi- mum Peak Output			
1	*1C7G Grid Cap	455 K.C.	550 K.C.	2nd I.F. Trans.	L8			
2	*1C7G Grid Cap	455 K.C.	550 K.C.	2nd I.F. Trans.	L7			
3	*1C7G Grid Cap	455 K.C.	550 K.C.	1st I.F. Trans.	L6			
4	*1C7G Grid Cap	455 K.C.	550 K.C.	1st I.F. Trans.	L5			
Repeat th	e above adjustments before prod	eeding.						
5	Aerial Term.	rial Term. 600 K.C.		Oscillator	Core L4			
6	Aerial Term.	1500 K.C.	1500 K.C.	Oscillator	C 5			
7	Aerial Term 1500 K.C.		1500 K.C.	C2				
Repeat ad	justments 5, 6 and 7.							

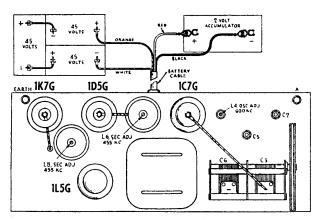
^{*} With grid clip connected. A .001 mfd. condenser should be connected in series with the "hot" output lead of the test instrument.

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

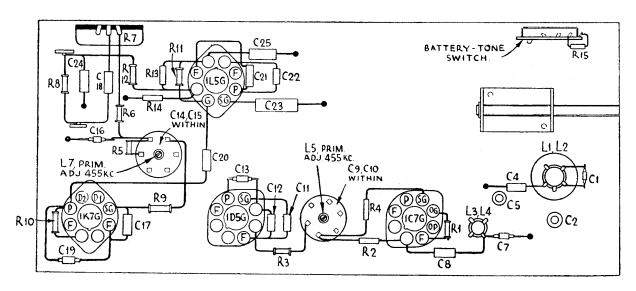
CIRCUIT DIAGRAM AND CODE



Code No.	Part No.	COILS.	Code No.	Part No.	RESISTORS.	Code No.	Part No.	CONDENSERS.	C14 C15	70 mmfd, mica (N). 70 mmfd, mica (N).
L1, L2 L3, L4 L5, L6 L7, L8	7639	Aerial Coil. Oscillator Coil. 1st 1.F. Transformer. 2nd 1.F. Transformer.	R1 R2 R3 R4 R5 R6 R7 R8	7690	50,000 ohms 1/3 W. 50,000 ohms 1 W. 100,000 ohms 1/3 W. 40,000 ohms 1 W. 1.75 megohm 1/3 W. 50,000 ohms 1/3 W. 500,000 ohms Vol. Cont. 1.75 megohms 1/3 W.	C1 C2 C3 C4 C5 C6 C7	5462A 7645 4849A 7645	4 mmfd. mica. 6-14 mmfd. air trimmer. Tuning condenser. .05 mfd. paper. 16-24 mmfd. air trim. Tuning condenser. 420 mmfd. mica	C16 C17 C18	200 mmfd. mica (J).' .1 mfd. paper01 mfd. paper110 mmfd. mica (L). (502 only)350 mmfd. mica01 mfd. paper0025 mfd. paper (502
		TRANSFORMERS.	R9 R10		1 megohm 1 W. 250,000 ohms 1 W.	C8		(padder). .05 mfd. paper.	C21	only). 1000 mfd. mica.
TI	KA3	Loudspeaker Trans- former.	R11 R12 R13		500,000 ohms 1/3 W. 500,000 ohms 1/3 W. 200 ohms 1 W.	C9 C10 C11		70 mmfd, mica (N) 70 mmfd, mica (N) 1 mfd, paper.	C22 C23 C24	.035 mfd. paper. .5 mfd. paper. .1 mfd. paper.
T2	TU3	Loudspeaker Trans- former	R14 R15		100 ohms 1 W, 10,000 ohms 1/3 W.	C12 C13		.01 mfd. paper. 4 mmfd. mica.	C25	25 mfd. 40V. electro- lytic.



Layout Diagram—Top View.



Layout Diagram (Underneath View).

MECHANICAL REPLACEMENT PARTS

Description		F	art No.	Description		Part No.
Dial Pointer and Drive Wire		 	8405	KnobsVolume and Battery Tone	 	7482
Dial Pointer Tension Spring		 	1741	KnobTuning Control	 	7483
Drive Wire Jockey Pulleys		 	1730	(Colour to be specified)		
Drive Drum		 	5068	Tuning Control Knob Clip	 	7686
Tuning Control Spindle		 	8119	Dial Lamp Sockets	 	4195
Tuning Control Extension Spindle—				Battery—Tone Switch—86	 	7852
Models 197, 502		 	8078	,, ,, ., —197, 198, 502	 	7925
Model 198		 	8077	Battery Cable	 	8153
Extension Spindle Coupling		 	8274	Valve Sockets	 	4704
Dial Scale—Model 86		 	7687	Valve Shields	 	8147
Dial Scale—Models 197, 198, 502		 	7688	Valve Clips	 	7459
Cone Assembly for Loudspeaker—Ty	pe AC5	 	8207	·		
Tv	ne AYI		8434			