

Admiral Radio

4E3X CHASSIS

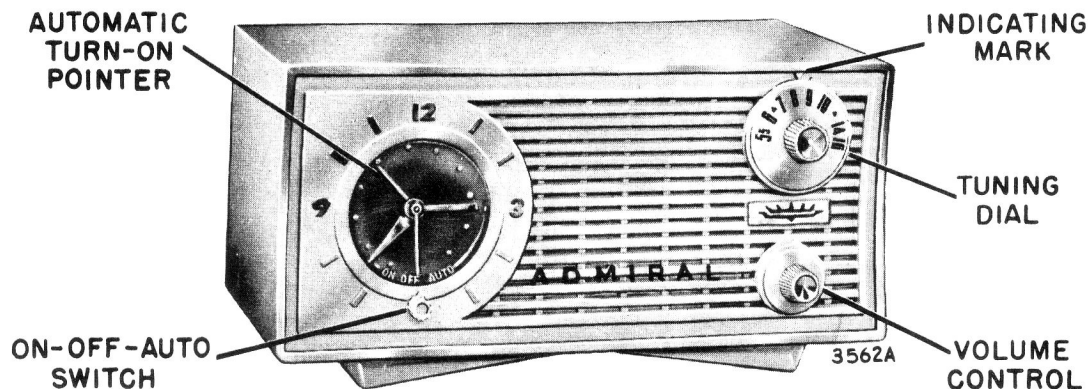


Figure 1. Front View of Set Showing Controls.

SPECIFICATIONS

ANTENNA: Built-in loop.

CIRCUIT: Superheterodyne using 4 miniature tubes.

CLOCK: (Telechron) Timer.

FREQUENCY RANGE: Standard broadcast band: 535 to 1620 KC.

INTERMEDIATE FREQUENCY: 455 KC.

POWER CONSUMPTION: 30 watts.

POWER SUPPLY: 117 volts, 60 cycles, AC only.

SPEAKER: 4" PM with Alnico V magnet. Voice coil impedance, 3.2 ohms.

GENERAL

This group of small, compact but very efficient AM radios was made possible by using the latest of modern "etched" wiring. This type circuit replaces the old fashioned hook-up wire used in the past. A copper foil is permanently bonded to one side of a phenolic board. The foil is then etched into the desired circuit wiring for the receiver.

All components such as resistors and capacitors, etc. are wired in on the opposite side of the board. All components are of standard design and type. By using the information given in this manual the trouble shoot-

CLOCK RADIO

MODEL	COLOR	CHASSIS
1189X	Grey — Green	4E3X

ing procedure is the same as in the past, but repairing of this type circuit requires an entirely different technique.

For information on servicing etched wiring circuits, see Service Manual No. S559.

REMOVING CHASSIS FROM CABINET

TO REMOVE CHASSIS FOR SERVICING

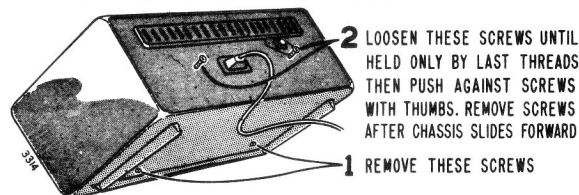


Figure 2. Rear View of Cabinet Showing Chassis Mounting Screws.

1. Disconnect line cord and remove the two screws located near the front on the bottom of cabinet.
2. Loosen the two chassis retaining screws on the back of cabinet until they are held by only the last threads.



SERVICE MANUAL T1083

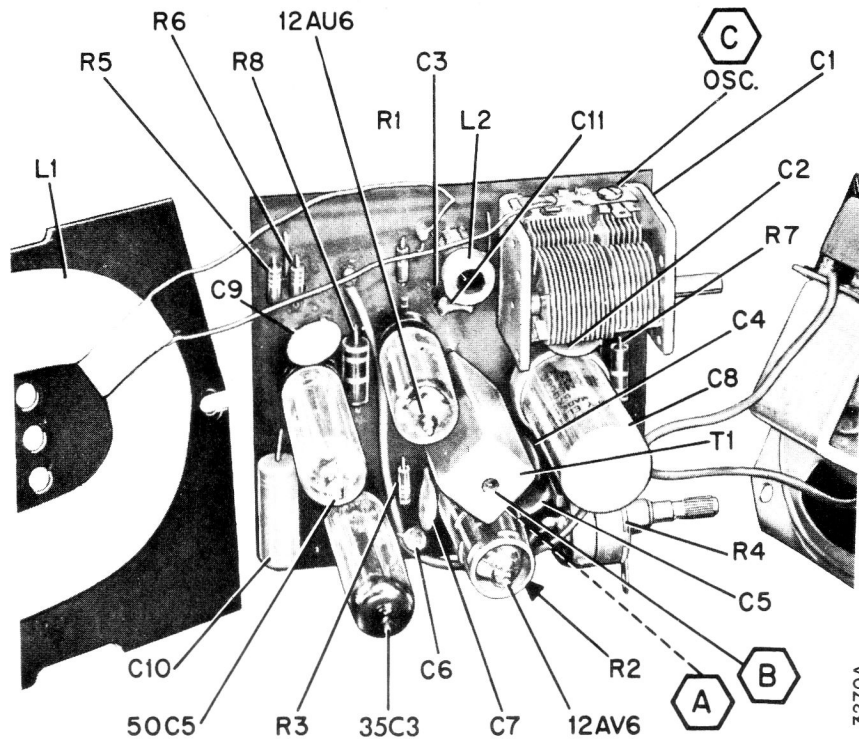


Figure 3. Top View of Chassis Showing Location of Components and Alignment Points.

Note: Alignment Point "D" is a Gimmick on Antenna Loop.

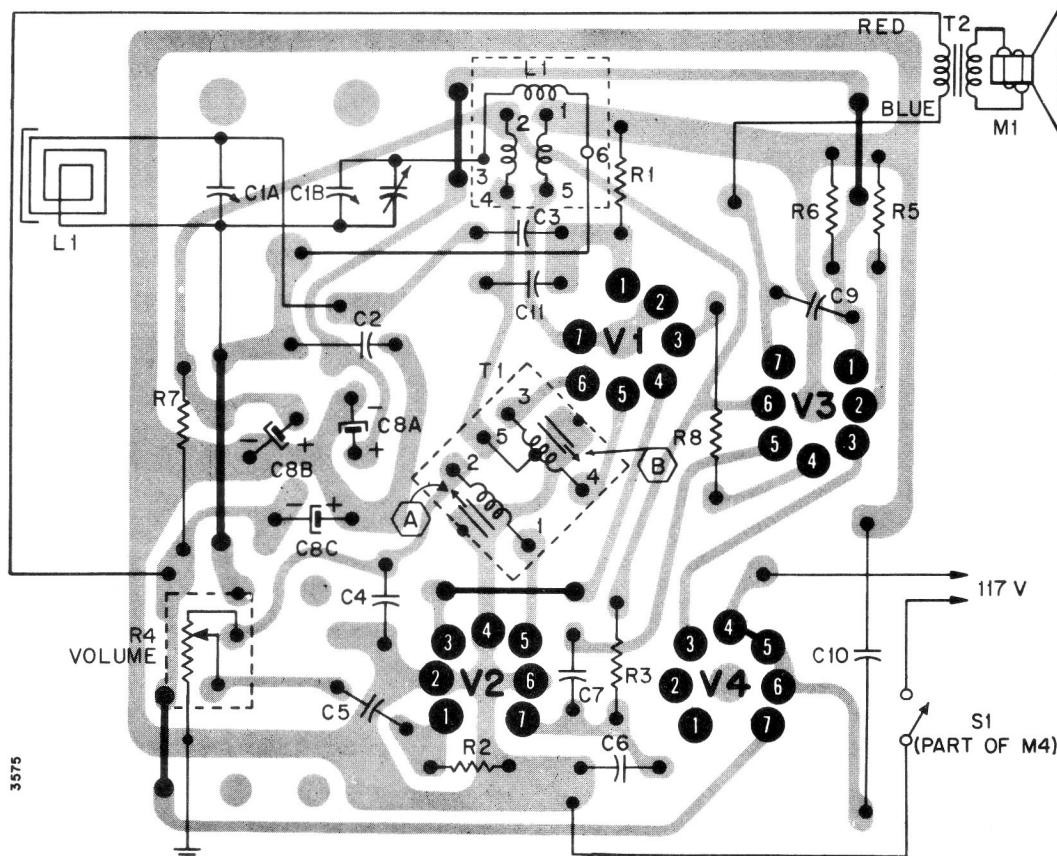


Figure 4. Rear View of Etched Circuit Board. Gray area represents etched wiring; black symbols and lines represent components and connections on opposite side.

- All readings made between tube socket terminals and etched circuit ground
- Dial turned to low frequency end; volume control at minimum.
- All voltages measured with vacuum-tube voltmeter, on 117 Volts AC line.
- Do not try to operate on direct current.
- Do not connect a ground wire to the set.

- a. Use an isolation transformer or connect a .1 mf. capacitor in series with low side of signal generator.
CAUTION: DO NOT CONNECT AN EARTH GROUND WIRE DIRECTLY TO CHASSIS.
- b. Set Volume control full on.
- c. Connect output meter across output secondary. Disconnect speaker, use 3.2 ohm load.
- d. Use lowest setting of signal generator capable of producing adequate indication on lowest scale of output meter.
- e. By using alignment tool (Part No. 98A30-7) both IF transformer slugs can be aligned from front or rear.
- f. Repeat adjustments to insure good results.

Step	Connection of Signal Generator	Signal Gen. Frequency	Receiver Gang Setting	Adjustment Description	Adjustment
1	Through a .1 mf capacitor to pin 1 of the 12AU6 (Converter) tube.	455 KC	Gang fully open	IF Primary IF Secondary	Ⓐ and Ⓑ for maximum output
2	Same as "STEP 1".	1620 KC	Gang fully open	Oscillator Trimmer	Ⓒ for maximum output
3	Radiated Signal. Loop of several turns of wire, or place generator lead close to receiver loop for adequate signal pickup.	1400 KC	Tune in generator signal	Antenna Gimmick	Ⓓ for maximum output (Rock gang for optimum results)

3. While steadying cabinet, apply pressure to the loosened chassis screws with thumbs. Since the chassis is secured to the front panel, the entire assembly will slide forward. NOTE: Be sure that Time Set knob on rear of clock clears the opening on rear of cabinet.

VOLTAGE PRECAUTION

The chassis of this receiver is connected directly to one side of the power line. To avoid possibility of damage to test equipment or to etched circuit wiring, do not place the chassis directly on a metal service bench, tools or other metal objects.

SERVICE HINTS

If set is noisy (squeals, hisses, etc) at high volume levels, check lead dress of output transformer. The blue lead from pin 7 of the 50C5 tube should be routed across the top of the board or down to the bottom of the cabinet to the transformer; **not across the board or between the tubes.**

When taking voltage readings or making resistance measurements, use test leads with needle point prods to avoid possibility of a short circuit between sections of the circuit wiring.

PARTS AND SERVICE FOR CLOCK

Consult your Admiral distributor for the address

of the nearest parts and service station for clocks used in Admiral radios.

COMPONENT REPLACEMENT

Defective resistors and capacitors should be removed by clipping leads as close to the unit as possible then the new part neatly soldered to the old leads. If any resistor or capacitor is found inconvenient to replace on the top side of board, it is permissible to solder component on the rear of the board.

If a unit such as the oscillator coil or IF transformer is to be replaced, first remove old part by heating the mounting lugs with a pencil type soldering tool (35 watts or less) and straighten with pick and long nose pliers. Brush away any loose solder with a stiff glue type brush. Before inserting new unit make certain all lug holes are free of solder, to prevent damage to wiring or component or both.

An open or damaged section of the etched wiring may be repaired by soldering a short jumper wire across the break.

TO REMOVE CLOCK

1. Remove clock knob. If clock knob is snug, it may be more easily removed when clock is loosened.
2. Remove cabinet from chassis with front panel attached, as shown in figure 2.

The clock is held by three Robertson head STS.

The clock crystal is held in place only by the clock.

PARTS LIST

RESISTORS			CAPACITORS			MISCELLANEOUS PARTS	
Sym.	Description	Part No.	Sym.	Description	Part No.	Description	Part No.
R1	2.2 meg, 1/2W, 10%.....	60B8-225	C8A	20 mfd, 25V		Bracket (Antenna Support).....	15B2089-1
R2	6.8 meg, 1/2W, 10%.....	60B8-685	C8B	30 mfd, 150V electrolytic....	67C30-3	Spring Clip.....	19A96
R3	470K ohm, 1/2W, 10%.....	60B8-474	C8C	50 mfd, 150V		Tube Socket, 7 Pin.....	87D35-13
R4	Control 2 meg ohm, 30%.....	75C25-16	C9	Ceramic .01 mfd, GMV, 500V..	65D10-3	Tube Socket, 7 Pin.....	87D35-14
R5	470K ohm, 1/2W, 10%.....	60B8-474	C10	.047 mfd, 20%, 400V.....	64L6-28	Tube Shield, 7 Pin.....	87B52-2
R6	180 ohm, 1/2W, 10%.....	60B8-181	C11	2.7 mmfd, ± .25 mmfd, 500V..	65M1-12		
R7	3.3K ohm, 1W, 10%.....	60B14-332	COILS, TRANSFORMERS			CABINET PARTS	
R8	33 ohm, 2W, 10%.....	60B20-330	L1	Loop Antenna.....	69C242-1	Cabinet (Grey-Green).....	34D129-25
R9	33 ohm, 1W, 10%.....	60B14-330	L2	Oscillator Coil.....	69A215-4	Cabinet Front.....	34D130-10
CAPACITORS			T1	I. F. Transformer.....	72C175-1	Knob (Volume).....	33A252-1
C1A	354 mmfd, max. ant. gang.....	68B64-8	MISCELLANEOUS PARTS			or	
C1B	89.3 mmfd, max. osc.	65M1-3	M1	Line Cord and Plug.....	89B62-4M	Knob (Volume) (Preferred).....	33A252-2
C2	.01 mfd, GMV, 1000V.....	65D10-119	M2	Plug Interlock.....	88W36	Knob (Tuning).....	33C226-3
C3	Ceramic 33 mmfd, 500V.....	65D10-85	M3	Speaker 4" P. M.....	78B94-2		
C4	150 mmfd, ± 20%, 500V.....	65D10-111		Lugs Terminal.....	9B1-7	CLOCK PARTS	
C5	2200 mmfd, ± 20%, 500V.....	65D10-21		Terminal and Connect.....	9C28-51	Clock Crystal.....	24A24
C6	Ceramic 220 mmfd, GMV, 500V	65D10-111		Bracket (Antenna Mfg.).....	15B1665	Clock Timer (Telechron).....	91C28-1
C7	2200 mmfd, ± 20%, 500V.....	65D10-111				Knob.....	91C28-10