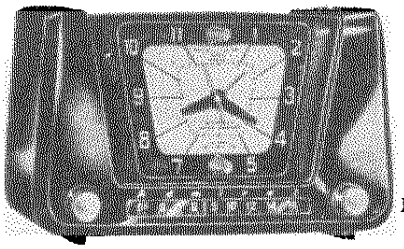
MODELS 5X21, 5X2
5X23, Ch. 5X2



Model 5X21 Ebony, 5X22 Mahogany, 5X23 Ivo

Operating Voltage: 117 volts AC only.
Power: 30 watts.

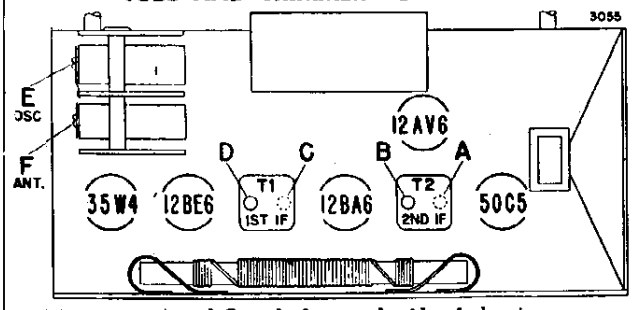
ALIGNMENT PROCEDURE

- Turn receiver volume control full on (fully clockwise).
- Use an isolation transformer if available, otherwise connect a .1 mfd. condenser in series with low side of signal generator and connect to chassis.
  Caution: Do not connect a ground wire directly to chassis.
- Connect output meter across speaker voice coil.
- Use lowest output setting of signal generator capable of producing adequate output meter indication and proceed in the following sequence.
- Use a NON-METALLIC alignment tool for IF transformers. See asterisk * note below.
- Repeat adjustments to insure good results.

Step	Dummy Antenna in Series with Signal Generator	Connection of Signal Generator (High Side)	Signal Generator Frequency	Receiver Gang Setting	Trimmer Description	Trimmer Designation	Type of Adjustment
1	250 mmfd. condenser	Antenna stator of tuning condenser	455 KC	Gang fully open	2nd IF 1st IF	*A, B *C, D	Maximum output
2	250 mmfd. condenser	Antenna stator of tuning condenser	1620 KC	Gang fully open	Oscillator (on gang)	E	Maximum output
3	Loop of several turns of wire, or place generator lead close to receiver antenna for adequate signal pickup.	No actual connection (signal by radiation)	1400 KC	Tune in generator signal	Antenna (on gang)	F	Maximum output

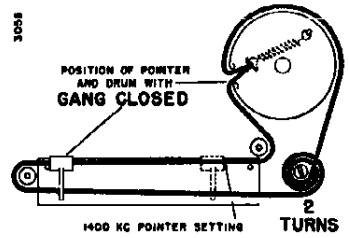
*Adjustments A and C made from the underside of the chassis. To avoid splitting the slotted head of the powdered iron core tuning slugs in IF transformers, use an alignment tool having a blade ⅛" wide.

TUBE AND TRIMMER LOCATION



Adjustments A and C made from underside of chassis.

DIAL STRINGING AND POINTER SETTING



Dial stringing and pointer setting is shown with the gang condenser closed. The 1400 KC pointer setting is shown in dashed lines.

OPERATING THE RADIO

The radio is turned on manually when the "Off-Auto-On" switc is set to the "ON" position. The radio is turned on and off aut matically when the switch is set to the "AUTO" position.

REMOVING THE CLOCK FROM CABINET

To remove the clock, proceed as follows:

1. Remove the radio chassis from the cabinet.
2. Remove the two hexagonal nuts and lock washers whic mount the clock movement to the metal cover.
3. Carefully remove the clock movement from the cover. Do n unsolder leads unless complete removal of the clock is r quired. The metal cover mounting the clock to the chass may be removed if more space is required for servicing th clock.

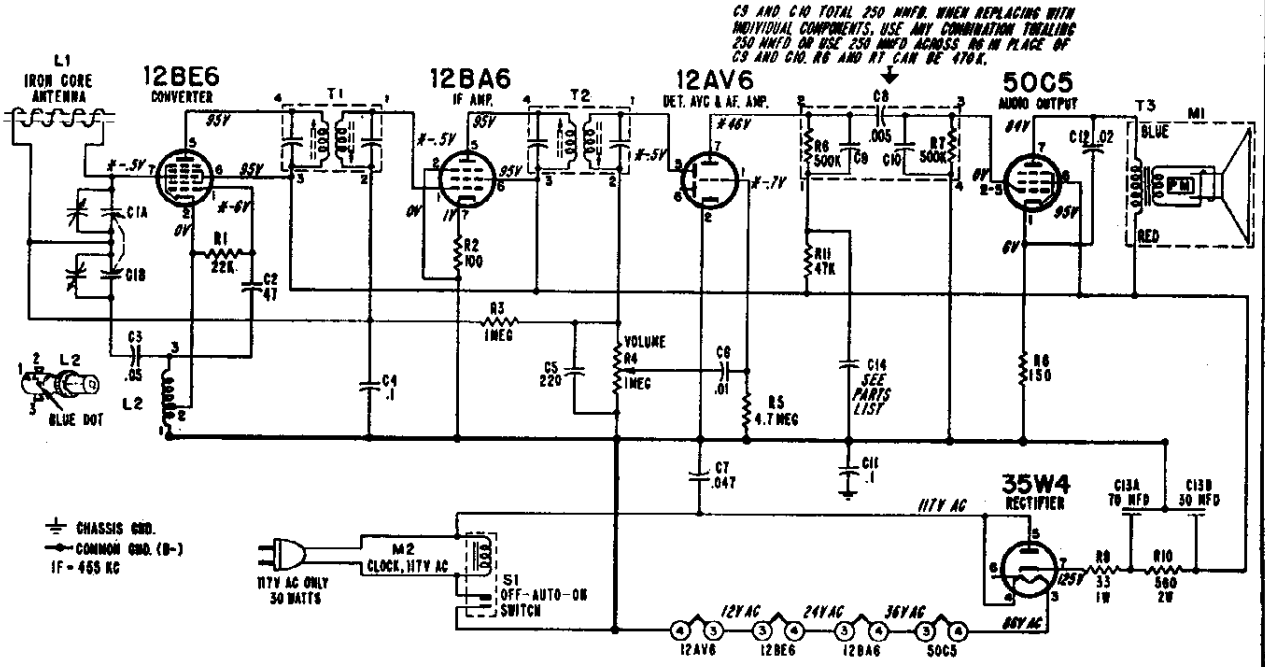
REPLACING THE CLOCK MOTOR

To remove the clock motor, press the motor inwardly and rota it to the left (counterclockwise).

Mount the clock motor by pressing the motor inwardly an rotating it to the right (clockwise).

Caution: The gear on the motor must mesh with the fiber ge on the clock mechanism. If the gears are not properly meshe damage may result.

MODELS 5X21, 5X22, 5X23, Ch. 5X2



*These voltage readings will be either lower or practically zero if taken with a 1000 ohm-per-volt meter.

VOLTAGE DATA

Voltages shown on schematic diagram.

- All readings made between tube socket terminals and B minus (negative of electrolytic condenser C13).
- Measured on 117 Volt AC line.
- Volume control minimum; dial turned to low frequency end.
- Voltages measured with Vacuum Tube Voltmeter.

RESISTORS

Symbol	Description	Part No.
R1	22,000 ohms, ½ watt	60B 8-223
R2	100 ohms, ½ watt	60B 8-101
R3	1 megohm, ½ watt	60B 8-105
R4	1 megohm, Volume control	75B 1-51
R5	4.7 megohms, ½ watt	60B 8-475
§R6	500,000 ohms, ½ watt	
§R7	500,000 ohms, ½ watt	
R8	150 ohms, ½ watt	60B 8-151
R9	33 ohms, 1 watt	60B 28-3
R10	560 ohms, 2 watts	60B 20-561
R11	47,000 ohms, ½ watt	60B 8-473

CONDENSERS

Symbol	Description	Part No.
C1A, C1B	290 mmfd, max. Ant. / 104 mmfd, max. Osc. } gang. (Dial drum spot welded to gang)	68B 51
C2	47 mmfd, ceramic	65C 6-79
C3	.05 mfd, 400 volts, paper	64B 1-7
C4	.1 mfd, 200 volts, paper	64B 1-5
C5	220 mmfd, ceramic	65C 6-80
C6	.01 mfd, 400 volts, paper	64B 1-10
C7	.047 mfd, 400 volts, paper	65A 13-5
§C8	.005 mfd, 450 volts	
§C9, §C10	See note on schematic.	
C11	.1 mfd, 200 volts, paper	64B 1-5
C12	.02 mfd, 400 volts, paper	64B 1-9
C13A, C13B	70 mfd, 150 volts / 30 mfd, 150 volts } elect.	67A 17-1
C14	4 mfd, 150 volts, elect. (in early sets) / .25 mfd, 200 volts, paper (in later sets)	67A 4-2 / 64B 1-3

§Part of couplate (part number 63A5-4). Replace with exact duplicate or individual components. Note that numbers 1, 2, 3, 4 on schematic correspond to lead numbers printed on face of couplate.

COIL, TRANSFORMERS, ETC.

Symbol	Description	Part No.
L1	Rod Antenna and Cabinet Back	69C 157
L2	Coil, Oscillator	69A 52-4
T1	Transformer, 1st IF	72B 28-7
T2	Transformer, 2nd IF	72B 28-7
T3	Transformer, Output	98A 4
M1	Speaker (4" PM) and Output Transformer	78B 65-3
S1	Switch, Off-Auto-On (part of clock)	91C 6-16
	Couplate (includes R6, R7, C8, C9, C10)	63A 5-4

MISCELLANEOUS PARTS

Description	Part No.
Carton and Fillers	44B 259
Clip, IF Transformer Mounting	72B 28-10
Dial Background	15B 840
Dial Cord (27" length needed)	50A 1-3
Grommet, Rubber (for mounting gang)	12B 1-19
Manual, Operating Instructions	41B 20-12
Pointer, Dial	25A 49-2
Shaft, Tuning	28A 26-7
Sleeve, Tuning Shaft	27A 124-1
Snap Button (for mtg. cabinet back)	13A 1-5-71
Socket, Tube plain	87A 24-2
Socket, Tube with grounding strap	87A 24-3
Spacer, Metal "T" (for mounting gang)	29A 2-3-24
Speed Nut (for mounting tuning shaft sleeve)	2B 10-21-59
Spring, Dial Cord Tension	19C 1-5
Washer, "C" (for tuning shaft)	4A 4-8

CABINET PARTS

Description	Part No.
Cabinet, Plastic Ebony	34D 55-1
Cabinet, Plastic Mahogany	34D 55-2
Cabinet, Plastic Ivory	34D 55-3
Escutcheon, Dial Scale	21B 63
Grille Cloth and Baffle Board Ebony	AA227-5
Grille Cloth and Baffle Board Mahogany	AA227-6
Knob, Radio Ebony	33A 81-1
Knob, Radio Mahogany	33A 81-3
Knob, Radio Ivory	33A 81-2
Washer, Felt (for radio knobs)	5A 4-19

CLOCK PARTS

Symbol	Description	Part No.
M2	Clock, Complete for 117 volts, 60 cycles	91C 8-1
	Clock, Complete for 117 volts, 50 cycles	91C 8-2
	Knob, Clock Ebony	91C 8-11
	Knob, Clock Mahogany	91C 8-12
	Knob, Clock Ivory	91C 8-13
	Motor, Clock for 117 volts, 60 cycles	91C 6-14
	Motor, Clock for 117 volts, 50 cycles	91C 6-15
	Snap Button (for mtg. clock window)	13A 1-4
	Window (plastic)	24B 12