

General Electric Co.

Model: X-150

Chassis:

Year: Pre 1948

Power:

Circuit:

IF:

Tubes:

Bands:

Resources

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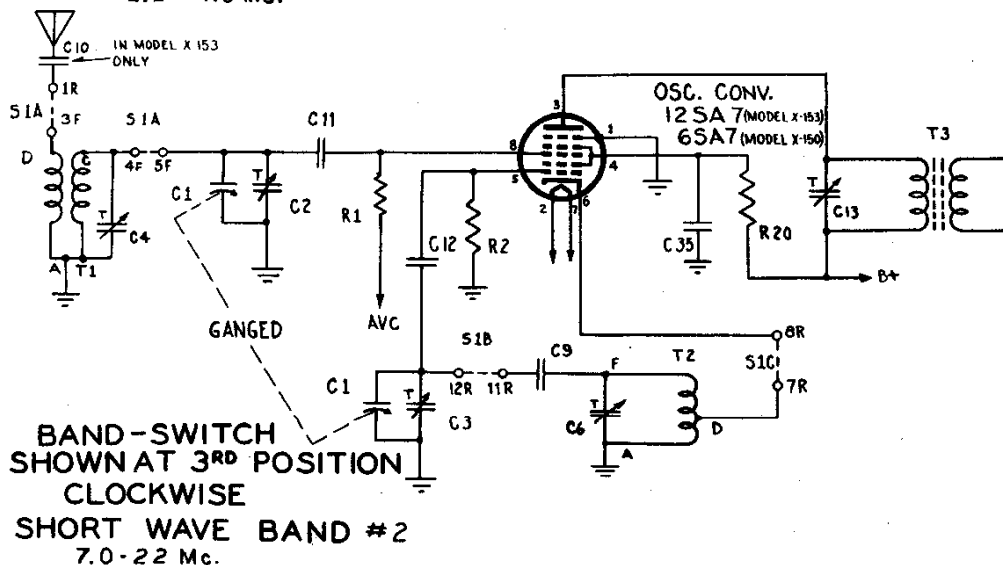
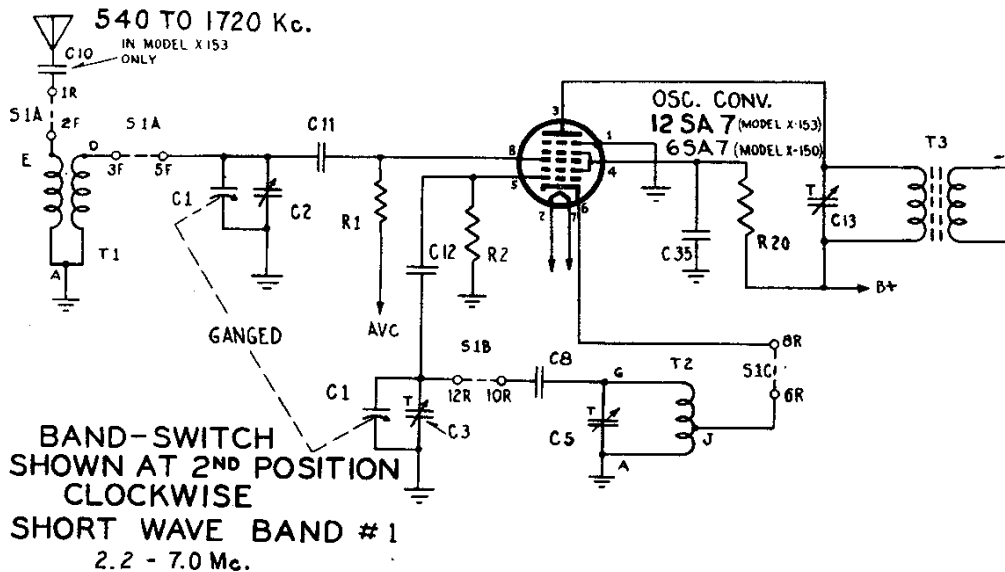
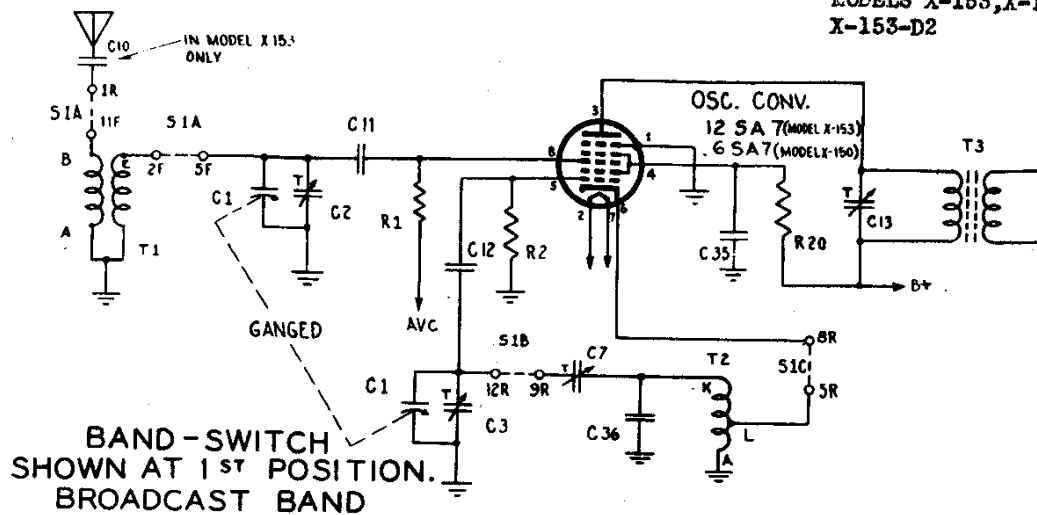
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GENERAL ELECTRIC CO.

MODELS X-150, X-150C,
X-150V
MODELS X-153, X-153-A1,
X-153-D2



GENERAL ELECTRIC CO.

**MODELS X-150, X-150C,
X-150V
MODELS X-153, X-153-A1,
X-153-D2**

ELECTRICAL CIRCUIT ALIGNMENT

ALIGNMENT FREQUENCIES:

R-F (Standard Wave).....	580 and 1500 kc
R-F (Short Wave 1).....	6 mc
R-F (Short Wave 2).....	18 mc
I-F.....	455 kc

EQUIPMENT REQUIRED:

1. Test oscillator with audio tone modulation.
2. A-C output meter, 1½ volts full-scale.
3. 0.05 mfd. paper capacitor.
4. 200 mmf mica capacitor.
5. Insulated screwdriver.

PROCEDURE—GENERAL:

1. The alignment procedure shown in table form should be followed with the chassis removed from the cabinet. Since the dial scale is not a part of the main chassis, it is necessary to use the special alignment scale fastened to the rear of the scale back plate assembly. With the gang condenser fully closed, set the left edge of the pointer to zero on the alignment scale. Then 147 on the alignment scale will correspond to 1500 kc (Standard Wave), approximately 149 to 6 mc (SW 1 band), and 141 to 18 mc (SW 2 band).
2. Connect output meter across speaker voice coil terminals. During alignment keep volume control set at maximum and attenuate test oscillator signal output so that the output meter reading never exceeds 1¼ volts.
3. Connect the capacitor listed in the chart between the "high side" of the test oscillator and the point of input specified. For Model X153, the ground terminal of the test-oscillator may be connected to the chassis, providing an isolating transformer is used between the radio and the line input.
4. After the chassis has been aligned and replaced into the cabinet, it may be necessary to reset the pointer. It should point to zero on the logging scale when the gang condenser is fully closed (pointer at extreme left of scale).

ALIGNMENT CHART

Step	Test-osc. Connection to	Test-osc. Setting	Pointer Setting	Adjust Trimmers for Max. Output
1	12SK7 or 6SK7 IF grid in series with .05 mfd.	455 kc	"STD" Band 550 kc	C15 and C16 (2nd IF trans. capacitors)
2	12SA7 or 6SA7 Conv. grid in series with .05 mfd.	455 kc	"STD" Band 550 kc	C13 and C14 (1st IF trans. capacitors)
3***	Ant. post in series with 200 mmf.	1500 kc	"STD" Band 1500 kc	C3 (osc.); C2 (ant.)
4	Ant. post in series with 200 mmf.	580 kc	"STD" Band 580 kc	C7**
5	Repeat Step No. 3			
6	Ant. post in series with 200 mmf.	6.0 mc	"SW1" Band 6.0 mc	C5 (osc.)**
7	Ant. post in series with 200 mmf.	18.0 mc	"SW2" Band 18 mc	C6 (osc.)* C4 (ant.)**

* Use minimum capacity peak.

** Rock gang condenser for optimum peak.

*** Note: C2 trimmer is not incorporated on some receivers. This requires that C3 be aligned while rocking the gang condenser.

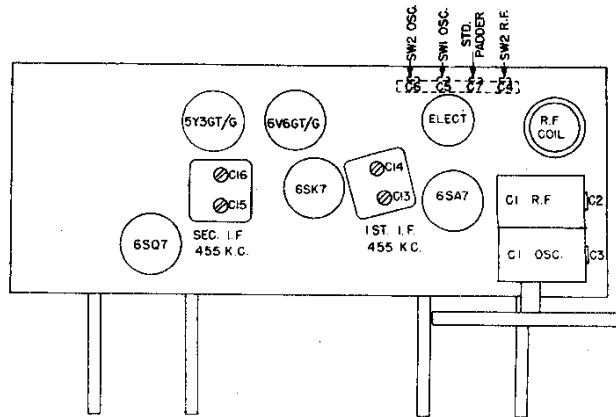


Fig. 1 Tube and Trimmer location (Model X150)

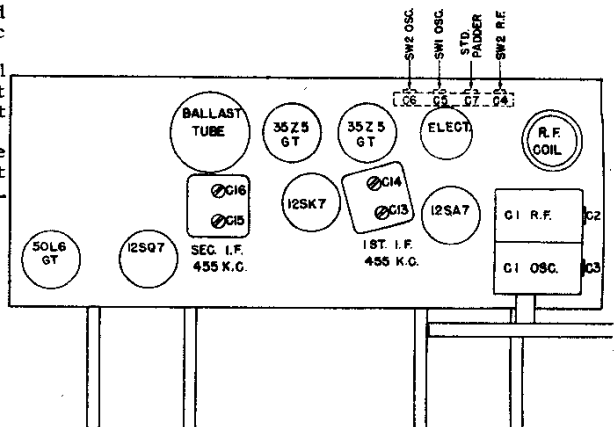


Fig. 2 Tube and Trimmer location (Model X153)

STAGE GAIN AND VOLTAGE CHECKS

Stage gain measurements by vacuum tube voltmeter or similar measuring devices may be used to check circuit performance and isolate trouble. The gain values listed may have tolerances of 20%. Readings taken with low signal input so that AVC is not effective.

- (1) R-F Stage Gains.
 - Antenna Post to 12SA7 Grid..... 5.5 @ 1000 kc
 - Antenna Post to 12SA7 Grid..... 3.3 @ 4000 kc
 - Antenna Post to 12SA7 Grid..... 2.0 @ 12000 kc
 - 12SA7 Converter Grid to 12SK7 Grid..... .65 @ 1000 kc
 - 12SA7 Converter Grid to 12SK7 Grid..... .81 @ 455 kc
 - 12SK7 Grid to 12SQ7 Diode Plate..... .62 @ 455 kc
- (2) Audio Gain.

0.06 volts for Model X150, or 0.03 volts for Model X153, at 400 cycles across volume control (R10) with control set at maximum will give approximately ½-watt output across the speaker voice coil.

- (3) Oscillator Grid Bias.
 - D-C voltage developed across the oscillator grid leak (R2) averages 7.3 volts at 1000 kc, 9.9 volts at 4000 kc, and 6.8 volts at 12,000 kc.
- (4) Socket Pin Voltages.

Figures 9, 10 and 11 show voltages from all tube pins to B— unless otherwise specified. Voltage readings much lower than those specified may help localize defective components or tubes.

GENERAL ELECTRIC CO.

**MODELS X-150, X-150C,
X-150V
MODELS X-153, X-153-A1,
X-153-D2**

ELECTRICAL RATING

Model	Rating	Power Supply			Power Consumption
		Nominal Voltage	Voltage Range	Frequency Cycles A-c	
X150	V	110	103-117	50-60	55
		125	117-133		
		150	140-160		
		200	185-213		
		225	213-234		
245	234-260				
X150	C	110	103-117	25-60	55
		125	117-133		
X153	D2	230 Ac-Dc	210-250	40-60	60
X153	A1	120 Ac	105-130	40-60	60

The Model X150 "C" rating makes use of a tapped transformer. To change voltage rating reconnect transformer primary to proper input color coded leads as shown on schematic.

Power Supply Conversion—Model X153:

The X153 Models with "D2" and "A1" ratings are identical except for the ballast tube that is used. The substitution of the appropriate ballast tube takes care of all the wiring changes necessary to convert from one line voltage range to the other. The "A1" rating may be converted for operation on a line of 230 volts a-c or d-c by removing the ballast resistor unit, Part No. RRB-002, and substituting the ballast resistance unit, Part No. RRB-001, in the same socket. When this is done the label should be changed so that it reads "D2" rating. The "D2" rating may be changed to "A1" rating in like manner—by substitution of Part No. RRB-002 ballast resistor for Part No. RRB-001.

CAUTION:

On the Model X153, one side of the power line is connected to the chassis. Use extreme caution when servicing this receiver unless an isolating transformer is used in the power line. Do not place a ground on the chassis unless an isolating transformer is used.

GENERAL INFORMATION

Power Supply Conversion—Model X150:

The Model X150 "V" rating receiver is equipped with a universal power transformer which permits practically instantaneous conversion for operation on any one of the six voltage ranges shown on the label. Merely loosen the set screw on the control at the top of the power transformer and turn the knob until the correct nominal voltage rating appears in the window. Tighten the set screw.

Phonograph or FM Sound Connection:

Figure 4 shows a simple method for connecting a crystal or high impedance magnetic phono pick-up into the circuit of the Models X150 and X153. A double-pole, double-throw type phono switch with a phono motor power switch attached is recommended: This should be mounted close to the rear chassis terminal board on the radio. It is important that if the lead from the record player is shielded that the shield braid be connected to terminal 3, *not to chassis ground. As a precaution when operating the Model X153, add spaghetti insulation to the full length of the shield braid so that the braid cannot accidentally touch the chassis. This will also avoid the possibility of the operator receiving a shock under certain conditions.*

When making this phono connection as a permanent installation, the link between terminals 1 and 2 must be removed.

An FM Translator may be connected in the same manner as for the record player. This permits the FM sound to be reproduced through the radio.

Cat. No.	Symbol	Description	Cat. No.	Symbol	Description
UNIVERSAL G-E REPLACEMENT PARTS			SPECIALIZED G-E REPLACEMENT PARTS		
UCC-036	C23	CAPACITOR—0.002 mf., 600 v., paper	RCE-034	C27, 28, 29	CAPACITOR—30 mf., 350 v.; 30 mf., 350 v.; 30 mf., 25 v., dry electrolytic (Model X150)
UCC-039	C20, 24	CAPACITOR—0.005 mf., 600 v., paper	RCE-009	C30	CAPACITOR—30 mf., 250 v., dry electrolytic (Model X153)
UCC-040	C10, 21, 25	CAPACITOR—0.01 mf., 600 v., paper	RCE-035	C27, 28, 29, 37	CAPACITOR—20 mf., 25 v.; 30 mf., 250 v.; 40 mf., 250 v.; 10 mf., 250 v., dry electrolytic (Model X153)
UCC-045	C17, 18, 34, 35	CAPACITOR—0.05 mf., 600 v., paper	RCS-002	C31	CAPACITOR—0.02 mf., 600 v., paper (Model X153)
UCC-050	C32	CAPACITOR—0.25 mf., 600 v., paper (Model X153)	RCT-009	C1, 2, 3	CONDENSER—Tuning condenser, includes trimmers
UCC-061	C26	CAPACITOR—0.008 mf., 1000 v., paper (Model X153)	RDF-005		WASHER—Felt washer for knobs
UCU-028	C33	CAPACITOR—100 mmf., mica	RDK-022		KNOB—Control knob with pointer (painted)
UCU-044	C11	CAPACITOR—470 mmf., mica	RDK-053		KNOB—Control knob with pointer (plain)
UCU-1004	C36, 38	CAPACITOR—10 mmf., mica	RDM-001		CUSHION—Rubber cushions for dial scale
UCU-1040	C19	CAPACITOR—330 mmf., mica	RDF-009		POINTNER—Dial scale pointer assembly
UCU-1044	C22	CAPACITOR—470 mmf., mica	RDS-014		SCALE—Dial scale
UCU-1520	C12	CAPACITOR—47 mmf., mica	RDX-012		SCALE PLATE—Scale plate assembly
UCU-2557	C8	CAPACITOR—1800 mmf., mica	RDX-014		CORD—Drive cord assembly
UCU-2570	C9	CAPACITOR—5600 mmf., mica	RIT-002		Cover—Inner and outer cardboard cover for electrolytic capacitor
UIC-001		CEMENT—Cone cement	RIT-003		SOCKET—Octal base tube socket
UOP-520	LS1	LOUDSPEAKER—5 1/4 inch PM speaker	RJS-003		PLATE—Electrolytic mounting plate (4 mtg. lugs)
UOX-008		CONE—Loudspeaker replacement cone assembly	RJS-012		SOCKET—Pilot light socket (Model X150)
URD-029	R14, 21	RESISTOR—150 ohms, 1/2 w., carbon	RJS-022		SOCKET—Pilot light socket (Model X153)
URD-037	R3	RESISTOR—330 ohms, 1/2 w., carbon	RJS-023		PLATE—Electrolytic mounting plate (3 mtg. lugs) (Model X153)
URD-049	R4, 12, 17	RESISTOR—1000 ohms, 1/2 w., carbon	RLA-003	T1	COIL—Antenna coil
URD-061	R19	RESISTOR—3300 ohms, 1/2 w., carbon (Model X153)	RLC-009	T2	COIL—Oscillator coil
URD-065	R19	RESISTOR—4700 ohms, 1/2 w., carbon (Model X150)	RMM-005		CUSHION—Pilot lamp shield
URD-081	R2	RESISTOR—22,000 ohms, 1/2 w., carbon	RMS-007		SPRING—Drive cord tension spring
URD-089	R22	RESISTOR—47,000 ohms, 1/2 w., carbon	RMU-009		SHAFT—Tuning shaft and cotter
URD-097	R16	RESISTOR—100,000 ohms, 1/2 w., carbon (Model X153)	RMW-008		PULLEY—Drive cord idler pulley and stud
URD-103	R9	RESISTOR—180,000 ohms, 1/2 w., carbon	RRB-001		BALLAST—230 volt ballast resistance unit (Model X150)
URD-105	R6	RESISTOR—220,000 ohms, 1/2 w., carbon	RRB-002		BALLAST—120 volt ballast resistance unit (Model X153)
URD-113	R11, 13	RESISTOR—470,000 ohms, 1/2 w., carbon	RRC-009	R8	VOLUME CONTROL—2 meg., potentiometer
URD-117	R1	RESISTOR—680,000 ohms, 1/2 w., carbon	RRC-010	R10, S2	TONE CONTROL—2 meg., potentiometer includes power switch (Model X150)
URD-129	R5	RESISTOR—2.2 meg., 1/2 w., carbon	RRC-011	R10, S2	TONE CONTROL—2 meg., potentiometer, includes power switch (Model X153)
URD-145	R7	RESISTOR—10 meg., 1/2 w., carbon	RSW-011	S1	SWITCH—Band change switch
URE-035	R18	RESISTOR—270 ohms, 1 w., carbon (Model X150)	RTL-013	T3	TRANSFORMER—1st I-F transformer
URF-057	R15	RESISTOR—2200 ohms, 2 w., carbon (Model X153)	RTL-014	T4	TRANSFORMER—2nd I-F transformer
URF-059	R15	RESISTOR—2700 ohms, 2 w., carbon (Model X150)	RTO-008	T5	TRANSFORMER—Output transformer (Model X150)
URF-069	R20	RESISTOR—6800 ohms, 2 w., carbon (Model X153)	RTO-009	T5	TRANSFORMER—Output transformer (Model X153)
URF-077	R20	RESISTOR—15,000 ohms, 2 w., carbon (Model X150)	RTP-014	T6	TRANSFORMER—Power transformer, 60 cycle (Model X150)
RAB-013		BACK—Cabinet back cover (Model X150)	RTP-015	T6	TRANSFORMER—Power transformer, 25-60 cycles (Model X150)
RAB-014		BACK—Cabinet back cover (Model X153)	RWL-004		CORD—Power cord
RAV-006		CABINET—Wood cabinet			
RCC-040	C30	CAPACITOR—0.01 mf., 600 v., paper			
RCC-059	C26	CAPACITOR—0.005 mf., 1000 v., paper (Model X150)			