

General Electric Co.

	Model: 41	Chassis:	Year: Pre 1949
	Power:	Circuit:	IF:
	Tubes:		
	Bands:		

Resources

[Riders Volume 17 - GE 17-1](#)

[Riders Volume 19 - CHANGES 19-2](#)

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[Riders Volume 17 - GE 17-3](#)

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[Riders Volume 17 - GE 17-13](#)

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17-1, 2

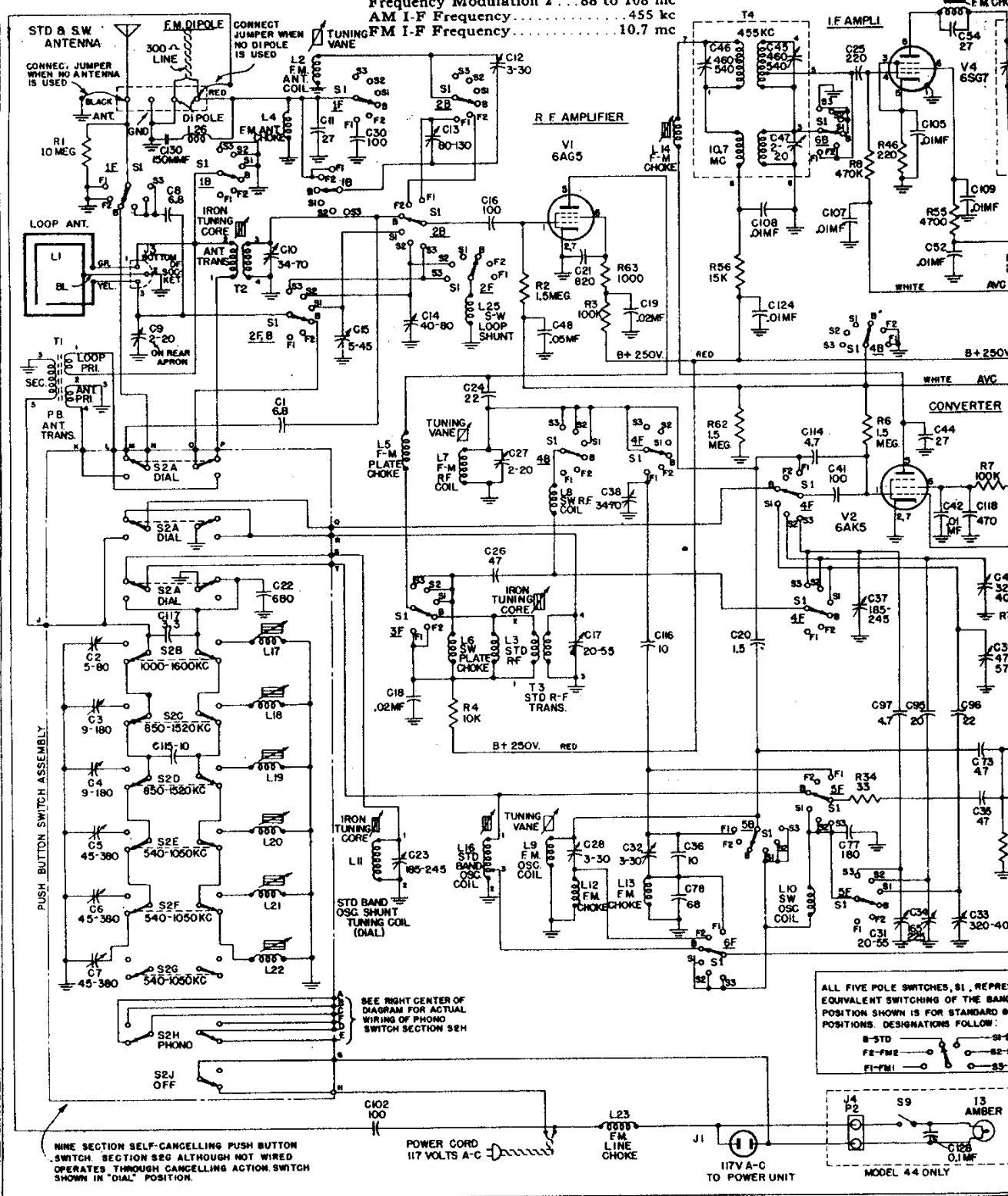
GENERAL ELECTRIC

ELECTRICAL RATINGS:

Voltage.....105-125 v. a-c
 Frequency (All Models).....60 cycles
 Models 42 and 44 available in.....50 cycles
 Wattage (Radio only).....185 watts
 (With phono).....210 watts

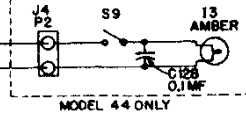
OPERATING FREQUENCIES:

Standard Band.....540 to 1600 kc
 Short Wave 1.....9.4 to 9.8 mc
 Short Wave 2.....11.5 to 12.0 mc
 Short Wave 3.....14.8 to 15.5 mc
 Frequency Modulation 1.....42 to 49 mc
 Frequency Modulation 2.....88 to 108 mc
 AM I-F Frequency.....455 kc
 Tuning FM I-F Frequency.....10.7 mc



ALL FIVE POLE SWITCHES, S1, REPRESENT EQUIVALENT SWITCHING OF THE BANK POSITION SHOWN IS FOR STANDARD POSITION. DESIGNATIONS FOLLOW:

- B-STD — S1
- FE-FME — S2
- FI-FMI — S3



NINE SECTION SELF-CANCELLING PUSH BUTTON SWITCH. SECTION S2G ALTHOUGH NOT WIRED OPERATES THROUGH CANCELLING ACTION SWITCH SHOWN IN "DIAL" POSITION.

POWER CORD 117 VOLTS A-C

117V A-C TO POWER UNIT

GE 41, 42, 43

These models appear on pages 17-1,2 through 17-15 of *Rider's Volume XVII*. The following changes should be made. Add Cat. No. REF-003, line fuse F201, 3AG, 5 amp., 250 volts, to the parts list and add this to the schematic diagram of the Special Power Unit on page 17-3. The fuse should be placed in series with the power transformer primary and the power cord. Besides the addition of a fuse, the safety will be further increased by placing a sheet of asbestos underneath the power unit to cover the ventilation slots. Thus, even in the case of overload, the hot tar of the over-heated transformer is prevented from dropping on the floor.

Add Cat. No. RSV-001, Switch—power ON-OFF switch to the parts list. Replacement is readily made by merely bending the mounting taps.

To adjust for minimum hum level, turn the volume control until the audio output is zero and vary resistor R201 (which is parallel to the filaments and center-tapped to the chassis, forming an effective hum balancing circuit).

General Electric 41, 42, 43, 44, 45

These models appear on pages 17-1,2 through 17-15 of *Rider's Volume XVII*. A sliding type switch has been added in series with R67 (8200 ohms) connecting the resistor to the phonograph pickup input jack, J3. This switch is on the receiver chassis back apron with its respective label indicating High Fidelity and Normal, the open and closed positions, respectively.

In the replacement parts list under Cat. No. RSS-003, add the item: High Fidelity-Normal switch.

General Electric 50

This model will be found on pages 15-1 through 15-4 of *Rider's Volume XV*. This change covers a correction to the original parts list in the model 50 where Cat. No. RHS-001 was changed to RMX-006 for a tuning assembly and spacer.

A further correction is necessary in the item description since only the tuning shaft and drive pulley (assembled) is supplied under RMX-006. The spacer is the tuning shaft bearing, and is catalogued as a separate item under RHJ-001. The original parts listing of the drive pulley under this number has been deleted.

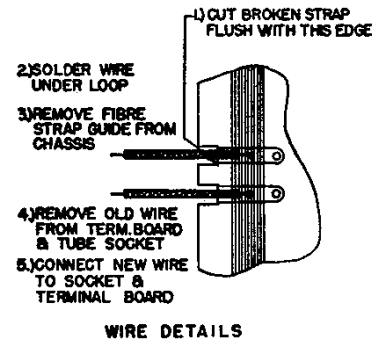
GE 140

This model appears on pages 17-21 through 17-23 of *Rider's Volume XVII*. The following changes should be made in the parts list: From Cat. No. RAD-027 remove the statement "(with loop connecting strips only)." Change Cat. No. RCC-075 to read RCC-080. Delete Cat. Nos. RDK-098, RHC-008, and RMX-103. Add the following parts.

- RDK-106 Knob—door catch knob
- RCE-002 Strap—loop contact strap
- RHE-002 Eyelets—spacer eyelets for escutcheon screws RHS-016
- RHE-003 Eyelet—used for loop contact strap
- RHR-002 Rivets—door hinge rivets (power cord access)
- RHS-015 Screw—self tapping (used for cabinet door cover)
- RHS-016 Screw—Phillips, flat-head, mounts bottom of escutcheon

The following procedure is recommended for repairing broken antenna loop connecting straps.

The broken straps should be cut back flush with the inside edge of the notch on the loop. The flexible wire is then used to make connections from the loop to the inside of the receiver. Consult the accompanying diagrams for loop connecting details and wire specifications. Carefully lift the section of the loop to allow connecting the specified pieces of wire and solder



Above, the loop connecting details of the General Electric Model 140. The wire details for the antenna loop connections are shown in the lower figure.

wires to remainder of loose straps. Remove the fibre strap guide which originally insulated the loop straps within the cabinet. Remove original wire leads and pieces of loop strap connected inside the cabinet to the chassis terminal strip and pin 6 of the 1R5 oscillator-converter tube socket. Solder the new leads from the antenna loop directly to the terminal board and tube socket. Make certain that the inside of the loop is connected to pin 6 of the 1R5 tube socket.

The following procedure is recommended to replace a speaker in this model.

- 1—Unsolder leads on speaker, using small tip iron.
- 2—Unsolder 90- μ f capacitor (C14) at terminal strip.
- 3—Without unsoldering, remove dual 40- μ f capacitor (C20) from mounting clip.
- 4—Using long screwdriver (8 inches or longer) loosen screws holding speaker to chassis.
- 5—Remove nuts holding speaker to front panel.
- 6—Lift up left end of resistor mounting plate and then lift out speaker.

If the antenna straps which interconnect the antenna in the receiver cover with the radio chassis circuit break, the following replacement procedure is recommended:

- 1—Bend up insulating material covering set end of antenna strips by inserting the tip of a long-nose pliers and twisting gently so as not to tear material.
- 2—Unsolder wires from loop strips in receiver.
- 3—Remove screws holding door cover.
- 4—Lift loop at point midway between hinges to expose strip rivets and unsolder loop from loop strips.

- 5—Remove rivet or rivets as needed, taking care not to damage loop or loop back.
- 6—Replace broken straps by new members, Cat. No. RCE-002, and rivet it in place with eyelets, Cat. No. RHE-003. In order to replace the rectifier disc assembly, SR, proceed as follows:
 - 1—Remove two mounting screws from the power switch, S1 (door switch).
 - 2—Dress power switch away from mounting plate, providing more access to underside of top chassis deck.
 - 3—Unsolder leads to rectifier disc assembly.
 - 4—Push aside components underneath rectifier assembly mounting screw until screw can be loosened.

General Electric 210, 211, 212

These models appear on pages 18-21 through 18-25 of *Rider's Volume XVIII*. Change the third column (Signal Input Point) of the alignment charts on page 18-23 to read: 12BE6 grid (pin 7 of V2). See note 7.

The parts list on page 18-25 should be changed as follows: Change catalogue number UOP-557 to UOP-558 for Speaker 5/4-inch PM. Add the reference symbol R32 to Cat. No. URD-141—Resistor—6.8 meg., 1/2w., carbon.

The following changes have been made in the schematic diagram on page 18-21. Where capacitor C38 is shown terminating at ground on this schematic, later model receivers have this ground connection removed and the capacitor is terminated at the junction of the antenna input and capacitor C14. Capacitor C36 should be added and connected from the junction point of R29, pilot lamp I1, and pin 4 of V7 to ground. Resistor R32, which has been added to replacement parts list above, is connected from the junction of R8 and C4 (AVC filter) to the cathode, pin 2, of output tube V6.

This resistor, R32, has been added to increase the converter stage gain when operating in the A-M position because of a change in performance characteristics relative to grid cut-off of the 12BE6 tube.

General Electric 230 Kaiser-Frazer

This model appears on pages 18-26 through 18-28 of *Rider's Volume XVIII*. The change involves a substitution of catalog numbers in the replacement parts list as follows:

Cat. No. URE-035 and URF-055 are catalogued for carbon-type resistors. These numbers are to be replaced for numbers specifying wirewound resistors, RRW-037 becoming the Cat. No. for R13 and RRW-036 the number for R18.

General Electric 502

This model appears on pages 17-4 through 17-8 and pages 17-39,40 through 17-47 of *Rider's Volume XVII*. The changes involve a schematic correction and a correction in the value of a component in the replacement parts list.

The schematic diagram which shows an open circuit in the screen grids of the 6V6 tubes, V10 and V11, should be corrected to show the screen grids connected to the 260-volt B-plus line.

In the listing of Cat. No. RCW-1028, the capacitor value was mistakenly given as 22- μ f. The capacitors listed are actually 100- μ f and RCW-1028 should be changed to read 100- μ f.

ERIC CO.

ANTENNA INPUTS:

Broadcast and Short Wave.....conventional antenna
 FM.....300-ohm input for folded dipole

MODELS MUSAPHONIC
 41, 42, 43, 44, 45

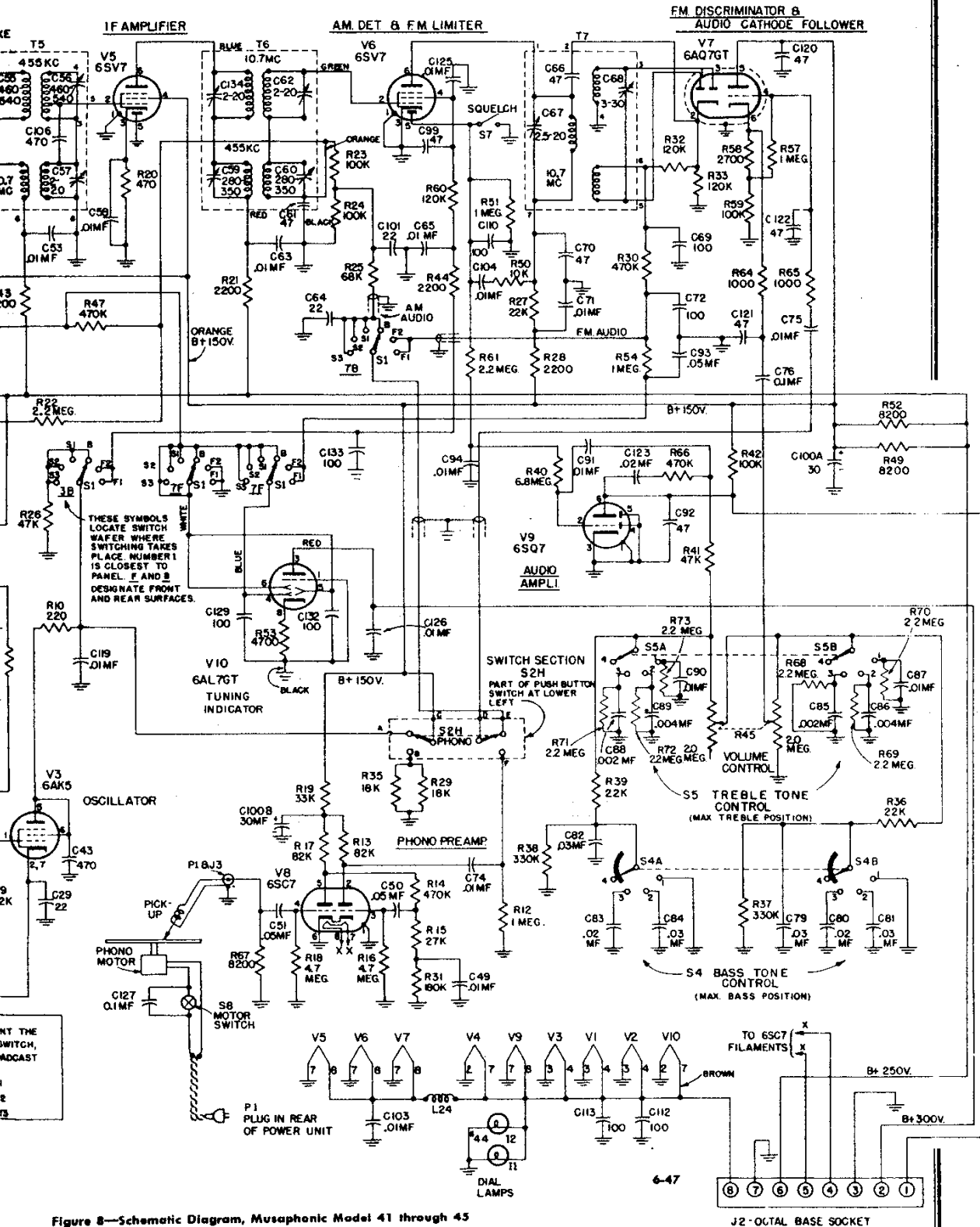


Figure 8—Schematic Diagram, Musaphonic Model 41 through 45

RECORD CHANGER: GE Model P4, RCD. CH. 17-5

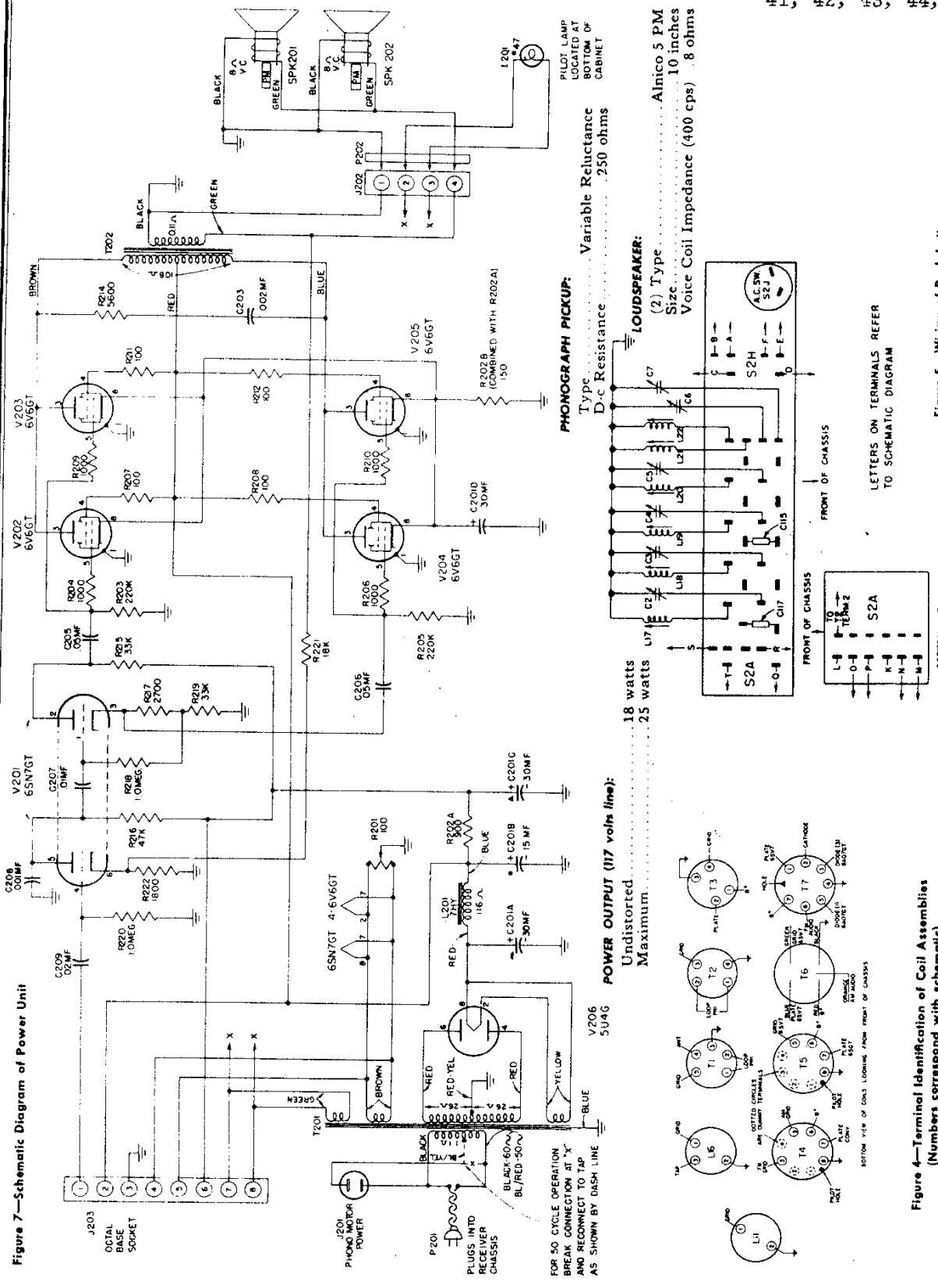


Figure 7—Schematic Diagram of Power Unit

Figure 4—Terminal Identification of Coil Assemblies
(Numbers correspond with schematic)

Figure 5—Wiring of Push-button Switch

FOR 50 CYCLE OPERATION
BREAK CONNECTION AT 'X'
AND RECONNECT TO TAP
AS SHOWN BY DASH LINE

POWER OUTPUT (117 volts line):
Undistorted..... 18 watts
Maximum..... 25 watts

PHONOGRAPH PICKUP:
Type..... Variable Reluctance
D-c Resistance..... 250 ohms

LOUDSPEAKER:
(2) Type..... Alnico 5 PM
Size..... 10 inches
Voice Coil Impedance (400 cps)..... 8 ohms

PILOT LAMP
LOCATED AT
BOTTOM OF
CABINET

LETTERS ON TERMINALS REFER
TO SCHEMATIC DIAGRAM

Farnsworth P71

This model appears on pages RCD. CH. 19-1 through 19-10 of Rider's Manual Volume XIX. The following changes should be noted in the parts list:

Part No.

07594 Turntable assembly, changed to 15241

64437 Tone arm counterbalance spring, changed to 64343.

Part number 44064, phono motor, has been deleted. This is shown on pages RCD. CH. 19-5. It is available as Part Number 11437 only. Motor parts, Numbers 15237, 37241, 54308, 64471, and 92335, are no longer available as separate parts. If any of these are required, a complete motor assembly, No. 11437, must be ordered.

Farnsworth P72 Record Changer

This record changer may be found on pages RCD.CH. 18-25 through RCD.CH. 18-9 of Rider's Volume XVIII. A production change has been made in the Surf-Sonic Control. The 0.02- μ f capacitor has been changed to 0.1 μ f. The 3,300-ohm resistor has been changed to 2,200 ohms.

The following have been deleted from the parts list:

<i>Part No.</i>	<i>Description</i>
25276	0.02 μ f, 200 v
77240	3,300 ohms, 1/2 w

The following have been added to the parts list:

25182	0.1 μ f, 200 v
77184	2,200 ohms, 1/2 w

Farnsworth P71, P72, P73

Model P71 appears on pages RCD. CH. 19-1 through 19-10 of Rider's Manual Volume XIX, and Models P72 and P73 appear on pages RCD. CH. 18-1 through 18-9 of Rider's Manual Volume XVIII. There appears to be some misunderstanding concerning the correct nomenclature of parts numbers 58854 and 64467. Part 58854 is correctly titled "Starting Lever Spring". The function of this part is to exert the proper amount of tension on part 58853, starting reset lever, which in turn performs the dual purpose of transmitting the motion of the trip mechanism to the starting lever, thus setting the starting lever in the proper position for starting the change cycle and also resetting the starting and reject levers, after the change cycle has started, to their proper positions. Part 64467 performs the operation of transmitting the motion from the reject button mechanism to the reject lever, thus starting the change cycle. Part 64467 is referred to in the parts list as the "Trip Spring". In order to avoid future misunderstanding, the nomenclature of this part has been changed to read—Part #64467, Reject lever spring.

Farnsworth 41E Capehart Record Changer

This record changer may be found on pages RCD.CH. 18-25 through RCD.CH. 18-46 of Rider's Volume XVIII. The change cycle is placed into operation when the trip finger releases the mercury switch dog (part number 561222). If, for any reason, a changer should fail to cycle properly and, upon checking, the trip mechanism is found to be operating normally, it is suggested that the top of the mercury switch Reset Lever (part number 561221) be examined to make sure that it is smooth. Many hours of operation may tend to wear a groove in the top of the Reset Lever which would tend to hold the dog in place, thus resisting the action of the trip mechanism. This condition is caused by normal

wear due to friction between the two parts.

When this condition is found, it is recommended that the mercury switch Reset Lever be replaced by a new one. The new stock has been hardened to provide longer operating life.

In an early production run, a mercury switch with a metal shell or housing was used. Due to the slow action and greater angle of drop necessary to actuate this switch, it has since been replaced by one using a glass housing or bulb. Changers employing the metal-housed mercury switch should be checked for positive switch action, especially if it has been reported that the changer cycles continuously, or more than once for a single tripping action.

In such cases, it is recommended that the metal switch be replaced with the more positive glass bulb type (part number 90147).

The contacts of the Play Control switch must be set so that positive contact is made when the play control knob is set in OFF position. In this position the contact points must be OPEN.

It is not necessary to remove the play control to adjust these contacts on the majority of the Model 41-E changers now in use. A 5/16" diameter observation hole has been added to the back of the play control housing directly in line with the contact points. With the changer on the service bench, it is an easy matter to insert a screwdriver or a pair of long nose pliers and bend the contact springs slightly.

This operation is a little more difficult with the changer in the cabinet, as there is only about a 3-inch clearance between the back of the play control housing and the side of the cabinet. A small inspection mirror, a "knob" type screwdriver and a penlite will be helpful in making these adjustments when the changer is in the cabinet.

Federal 1021, 1031, 1032, and 1540

These models are the same as Model 1030T, appearing on pages 16-5 through 16-8 of Rider's Volume XVI, except for the cabinets.

Federal 1024TB

This model appears on pages 17-1 through 17-3 of Rider's Volume XVII. Some sets have been equipped with a 12SK7 tube as an i-f amplifier instead of the 6SS7. This gives better performance.

Federal 1027, 1035

These models are the same as Model E1025TB, appearing on pages 16-1 through 16-4 of Rider's Volume XVI, except for the cabinets.

Federal 1028TB, 1029

These models are the same as Model 1024TB, appearing on pages 17-1 through 17-3 of Rider's Volume XVII, except for the following changes. A 12SK7 tube is used as the i-f amplifier instead of the 6SS7. The cathode resistor (R2) of the i-f amplifier can be either 1500 ohms or 750 ohms. C17 can be either 470 μ f or 1000 μ f. R13 (in filament lead) has been eliminated, and pin 2 of the 50L6GT tube connected to pin 7 of the 35Z5GT tube.

Federal 1034

This model is the same as Model 1024TB, appearing on pages 17-1 through 17-3 of Rider's Volume XVII, except for the cabinet.

General Electric 41, 42, 43

These models appear on pages 17-1, 2 through 17-15 of Rider's Volume XVII. To increase the sensitivity at certain points on the broadcast and shortwave bands, a 470- μ f capacitor, C111, catalog number UCU-544, has been added between terminals 3 and 5 on the first i-f transformer. On early production sets without this capacitor, the following should be done:

1. This capacitor should be added between terminals 9 and 10 of wafer #6 on the band switch.
2. The orange, green, and black leads from terminals 5, 3, and 8 of the first i-f transformer to the band switch should be grouped together and pressed to chassis.
3. C108, a 0.02- μ f bypass capacitor, ground end, should be removed and grounded under the mounting lug of the first i-f plate coil.

General Electric 50

This model appears on pages 15-1 through 15-4 of Rider's Volume XV. Add to the description of catalog number RAU-009 Cabinet—plastic cabinet, the color "Brown Mottle." Also, add the following to the parts list:

<i>Cat. No.</i>	<i>Description</i>
RAU-017	Cabinet—plastic cabinet (black)
RAU-018	Cabinet—plastic cabinet (dark ivory)
RAU-019	Cabinet—plastic cabinet (ivory and red)
RAU-024	Cabinet—plastic cabinet (white urea)

General Electric 118, 119

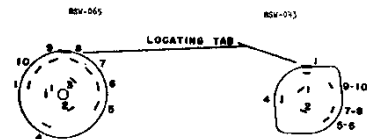
These models appear on pages 19-8 through 19-10 of Rider's Volume XIX. The green grid lead and blue plate lead of the first i-f transformer must be dressed as far as possible to the rear of the chassis and against the chassis. Coupling capacitor C24 should never lie against either of these leads. This will eliminate any possibility of r-f leakage into the phono-preamplifier which causes stations to be heard while operating the phonograph.

The following changes should be made in the parts list. Add P2 under symbol for RJP-003. Delete: RCN-014, C26, Capacitor—phenolic, for Model 118. Add to UCC-045: C26, Capacitor, 0.05 μ f, 600 v., paper, for Model 118.

General Electric 118, 119M, 119W

These models appear on pages 19-8 through 19-10 of Rider's Manual Volume XIX. The phono radio switch S1, catalogue number RSW-043 has been changed to RSW-065 and the new switch is wired as follows:

Connect terminals 1 and 3 together. Connect terminals 5 and 6 together. Connect terminals 7 and 8 together and then connect terminals 9 and 10 together. The leads may then be transferred from the old switch to the corresponding terminals on the new switch RSW-065, as shown in the accompanying diagram.

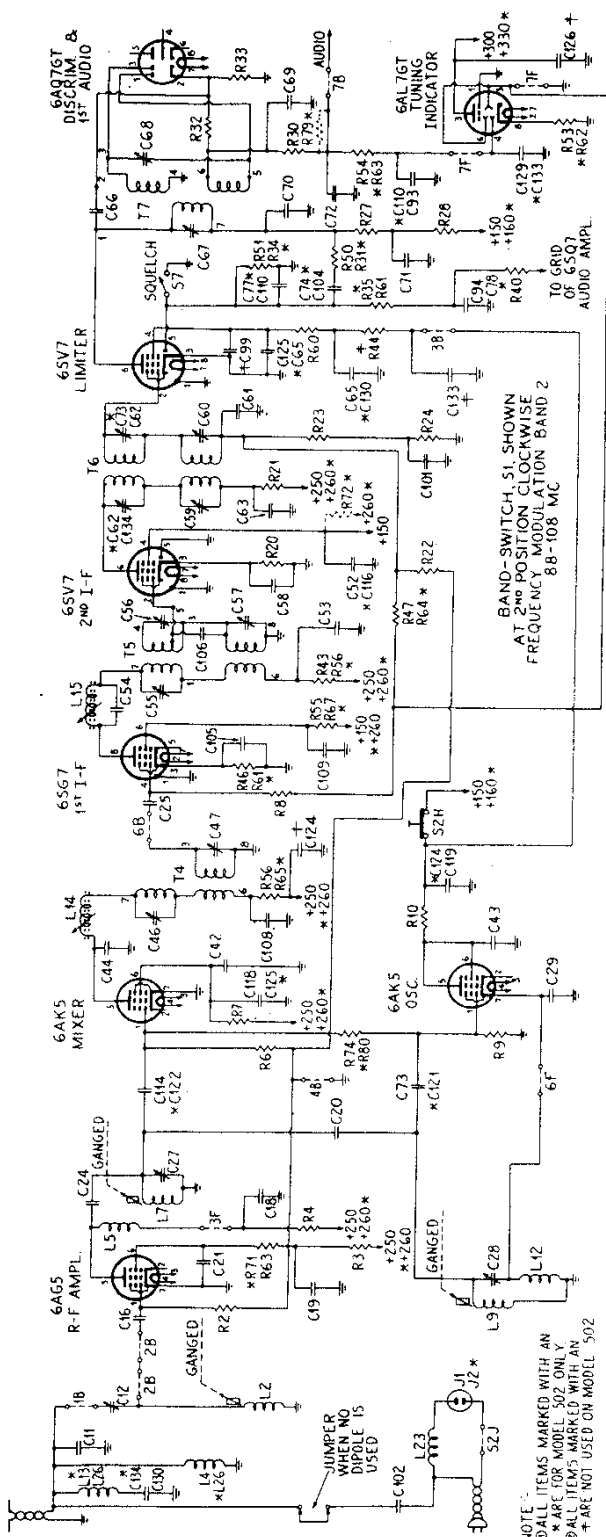
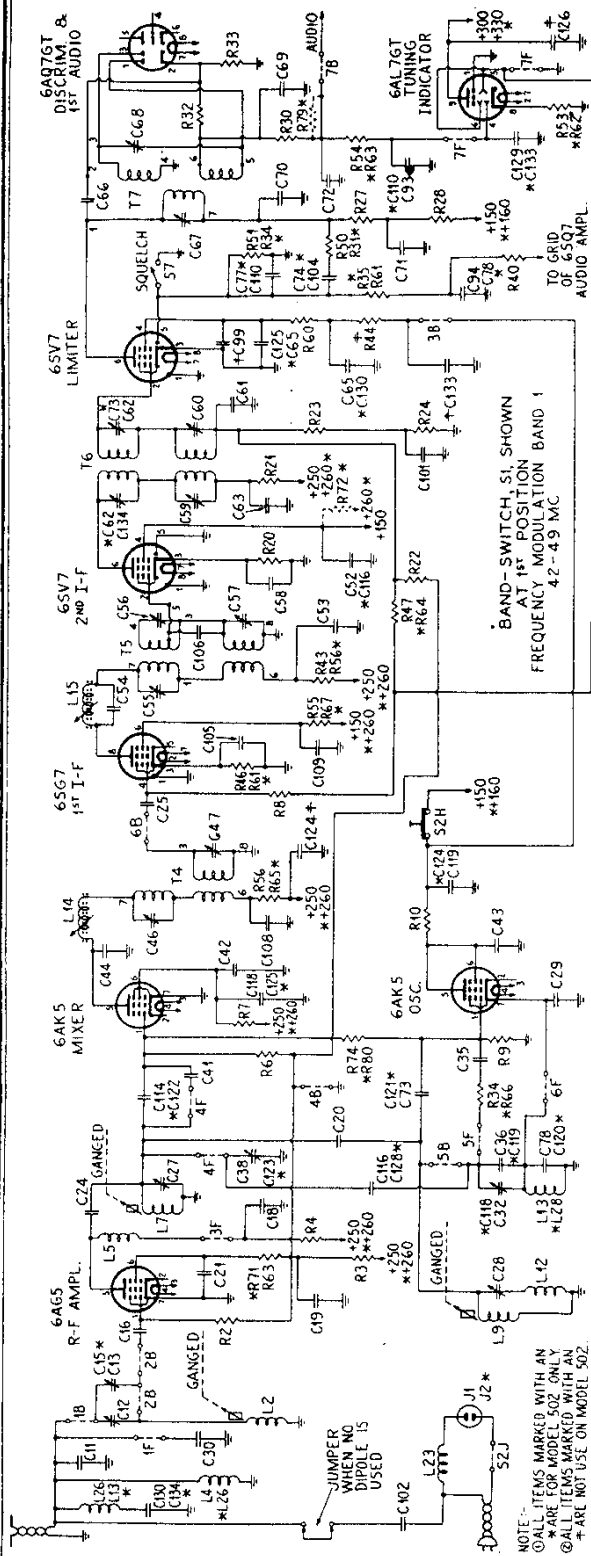


General Electric 118, 119.

"clarified schematics"

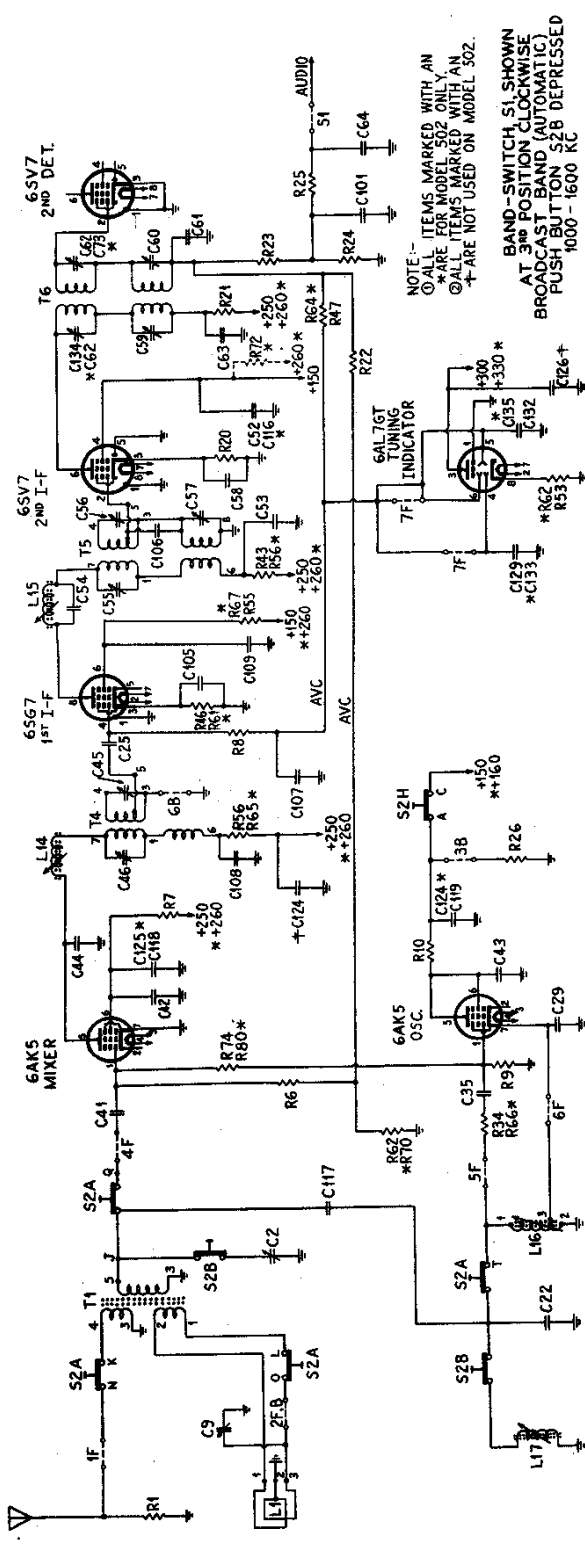
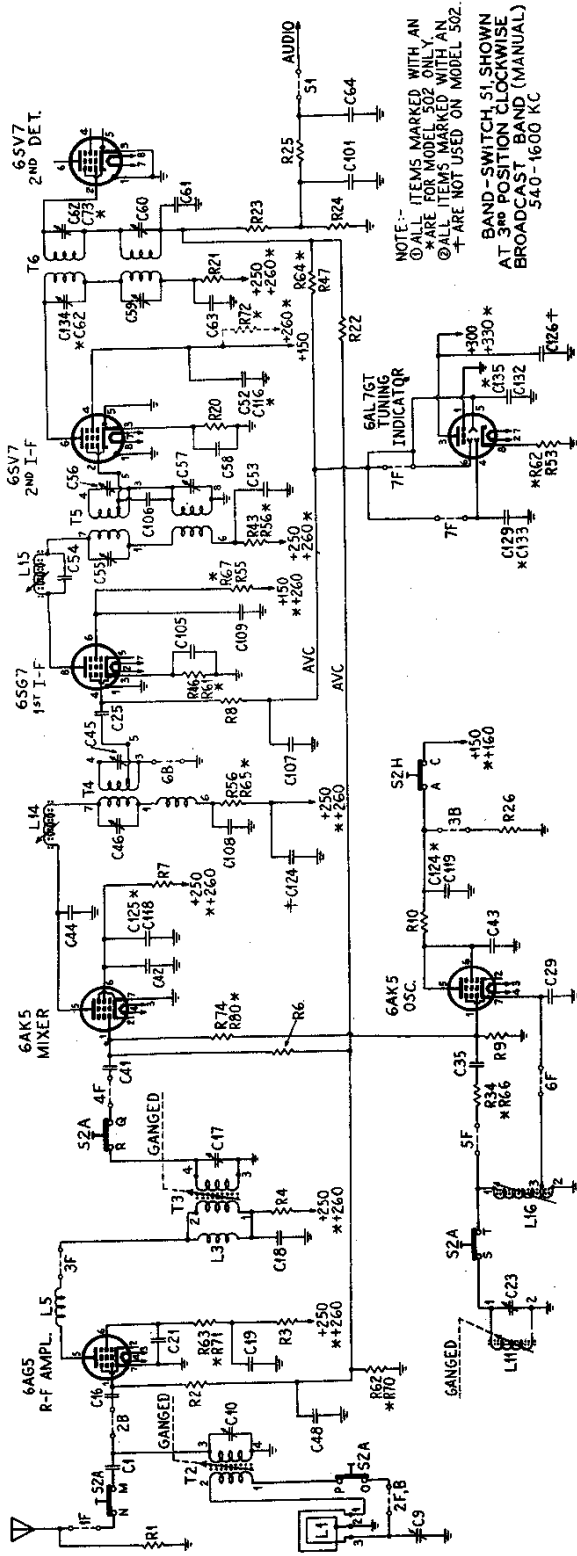
MODELS MUSAPHONIC
41, 42, 43, 44, 45
MODEL 502

GENERAL ELECTRIC CO.



GENERAL ELECTRIC CO.

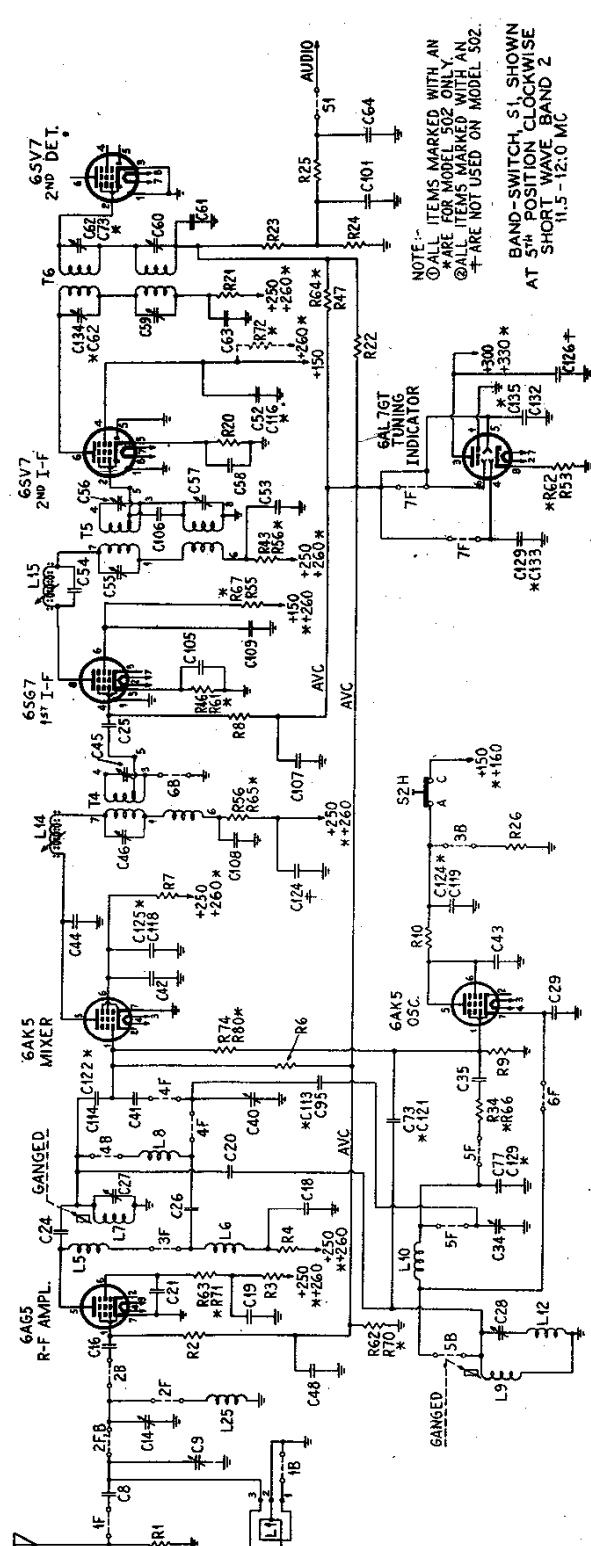
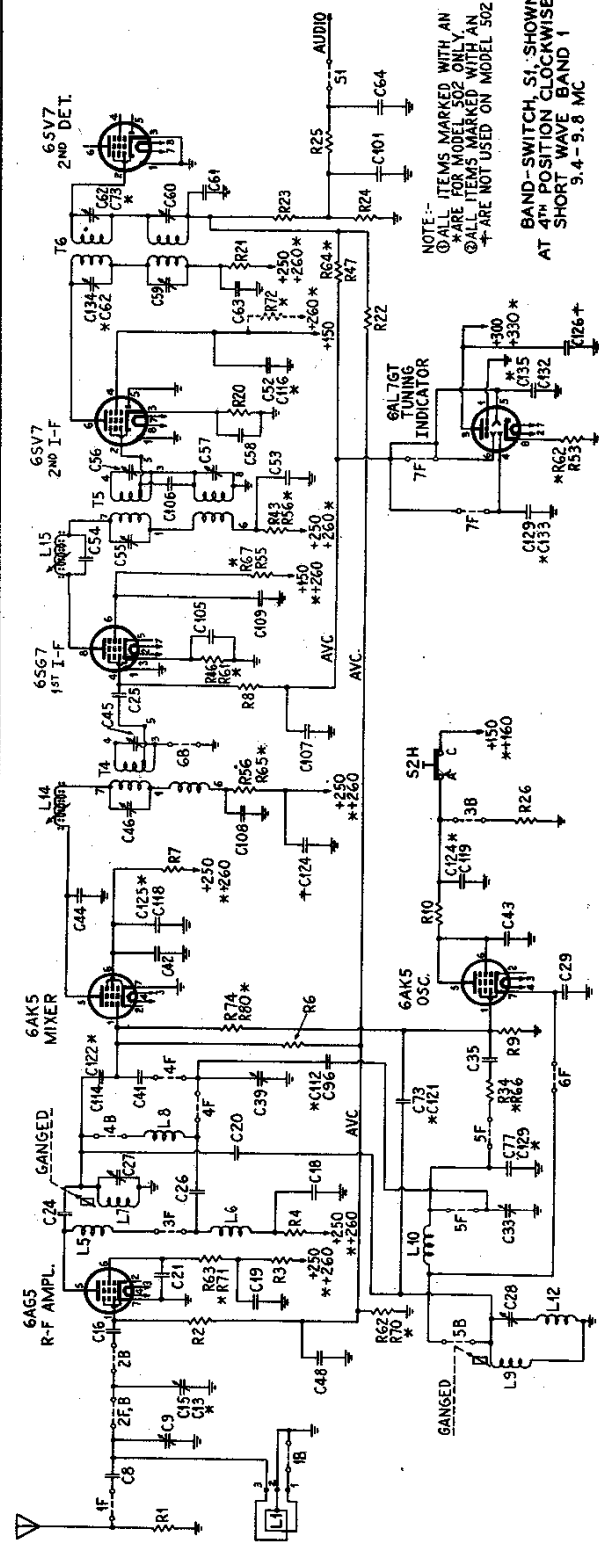
MODELS MUSAPHONIC
41, 42, 43, 44, 45
MODEL 502.



"clarified schematics"

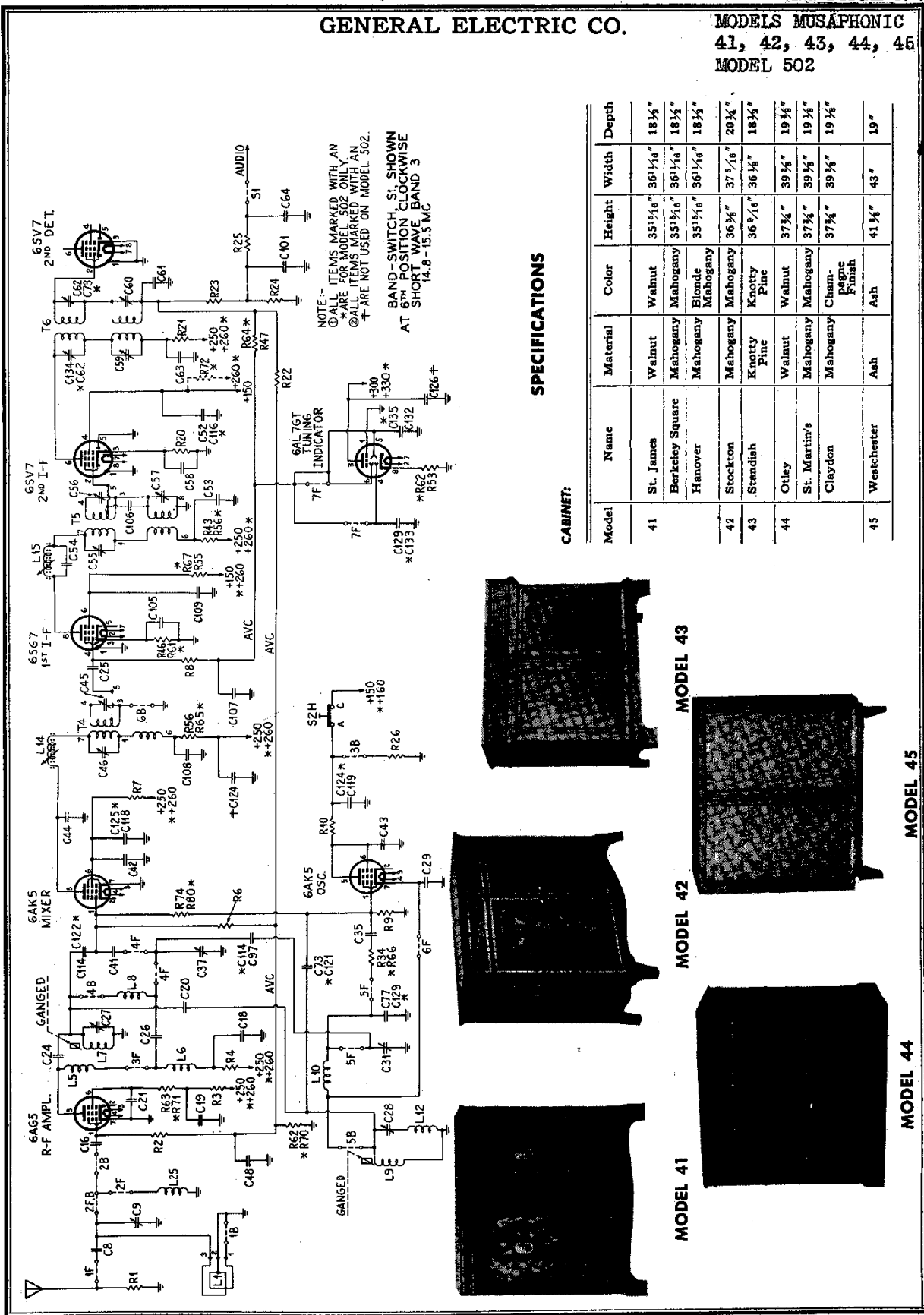
MODELS MUSAPHONIC
41, 42, 43, 44, 45
MODEL 502

GENERAL ELECTRIC CO.



GENERAL ELECTRIC CO.

MODELS MUSAPHONIC
41, 42, 43, 44, 45
MODEL 502

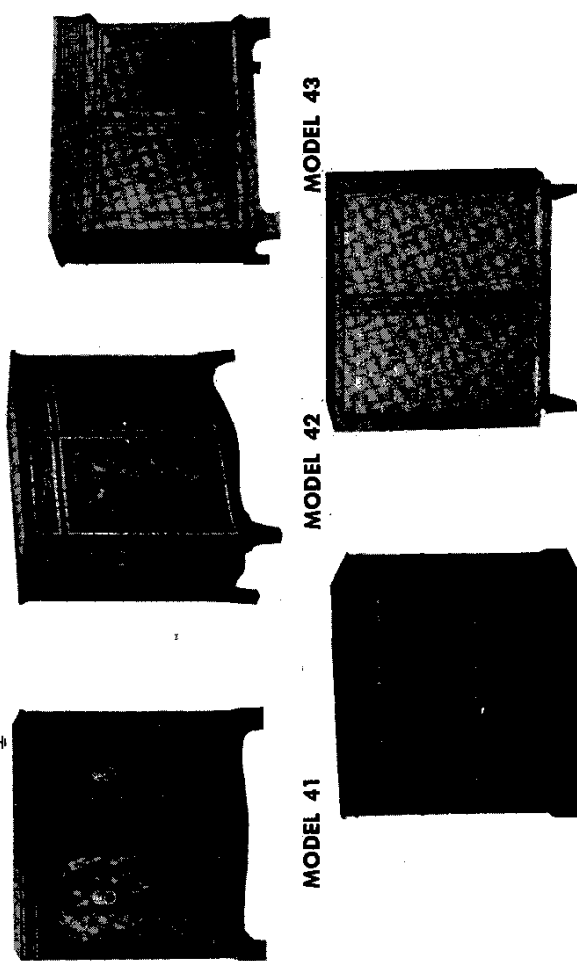


NOTE: ITEMS MARKED WITH AN
O ARE FOR MODEL 502 ONLY
O ALL ITEMS MARKED WITH AN
+ ARE NOT USED ON MODEL 502.
BAND SWITCH, S1, SHOWN
AT 8" POSITION, CLOCKWISE
14.8-15.5 MC

SPECIFICATIONS

CABINET:

Model	Name	Material	Color	Height	Width	Depth
41	St. James	Walnut	Walnut	35 1/8"	36 1/8"	18 1/2"
	Berkeley Square	Mahogany	Mahogany	35 1/8"	36 1/8"	18 1/2"
	Hanover	Mahogany	Elonide Mahogany	35 1/8"	36 1/8"	18 1/2"
42	Stockton	Mahogany	Mahogany	36 5/8"	37 1/8"	20 1/2"
43	Standish	Knotty Pine	Knotty Pine	36 5/8"	36 1/2"	18 1/2"
44	Otley	Walnut	Walnut	37 3/8"	39 3/8"	19 1/2"
	St. Martin's	Mahogany	Mahogany	37 3/8"	39 3/8"	19 1/2"
	Cleydon	Mahogany	Cham-pagne Mahogany	37 3/8"	39 3/8"	19 1/2"
45	Waverchester	Ash	Ash	41 3/8"	43"	19"



MODELS MUSAPHONIC
41, 42, 43, 44, 45

GENERAL ELECTRIC CO.

GENERAL INFORMATION

INTRODUCTION

The information contained in this service note covers the MUSAPHONIC Models 41 thru 45 completely except for the record player.

THE TUNING SYSTEM

The "r-f end" of the receiver is unusual in a number of respects. Variable inductance tuning is employed instead of using a conventional tuning capacitor. This design makes possible two distinct advantages. First, it provides a high efficiency FM circuit in the 88 to 108 megacycle range which would not be possible with the more conventional methods of tuning. Second, it provides stable shortwave spread-bands which tune as easily as the broadcast band. Other advantages are also obtained but the two mentioned above are the most important.

Tuning is accomplished by an "elevator" which consists of a rigid plastic horizontal plate raised and lowered by means of a windlass controlled by the tuning knob at the panel. From this plate are suspended three powdered iron cores which tune the broadcast r-f, converter, and oscillator coils; and three tuning "vanes" which tune three low-inductance circuits. These latter circuits are employed in both FM bands and both shortwave bands with the exception of the antenna circuit for the shortwave spread-bands when a broad tuned antenna coil is used and the r-f guillotine tuner is switched out. They are called "guillotine" tuners because of their appearance.

FACTS ABOUT "GUILLOTINE" TUNING

The "guillotine" tuners are designed primarily for the 88-108 megacycle FM band where special technique is needed to realize high gain and circuit stability. Ordinary coils, tuned by a variable capacitor are inefficient at these frequencies, first, because of the low inductances required to reach these frequencies when a variable tuning capacitor is employed and, second, because shunt capacity reduces the gain of the amplifier circuit; shunt capacity must be kept very low. Another disadvantage of standard tuning arrangements at these frequencies is that common coupling is obtained through the shaft of a ganged tuning capacitor unless insulated single sections are used (cumbersome and costly). Common coupling of this type tends to cause oscillation or general instability and precludes high gain per stage. The guillotines make possible short leads, completely isolated sections, stable tuning, high Q circuits, low shunt capacity, and location of each tuner in the best physical and electrical position in the assembly. Furthermore, since the shunt capacity is small and the inductance is consequently at its highest corresponding value, the additional unavoidable inductance introduced in the wiring, band switch, etc., produces a minimum of circuit losses and unbalance.

The guillotine tuner consists of a heavy, silver-plated, two-turn square coil, rigidly supported between two plastic posts. A flat, solid vane slides up and down between the two turns. It is guided in grooves in the plastic posts so that it passes between the two sections of the coil without touching them. The posts are so moulded and the coil so constructed that the whole assembly is held rigidly at a predetermined spacing. The tuning vane is raised and lowered by the tuning elevator. When the elevator is all the way up (set tuned to lowest frequency), the vane is completely above the coil which then acts as a simple two-turn coil. As the set is tuned toward the higher frequencies, the vane moves downward into the field of the coil until, finally, it is all the way in. The vane reduces the inductance of the coil through two principles. First, it acts as a shorted turn, and thus reduces inductance directly; second, it provides a barrier between the two turns of the coil which reduces the mutual coupling and thus also reduces inductance.

The tuners described above are identified as L2, L7, and L9 on the schematic diagram.

FM BANDS

Guillotine tuners L2, L7, and L9 are used as the tuned circuits for the r-f amplifier, converter, and local oscillator respectively, in both FM bands. In the higher frequency band, the tuner is used with only a small shunt trimmer for adjusting distributed capacity. In the lower band, a higher value shunt trimmer is used to reduce the frequency. The layout of band switch, tuners, and tube sockets is arranged to give the shortest possible leads when the FM bands are in use. The lead length in the other bands is not nearly so critical.

Part No.	Symbol	Description
UNIVERSAL REPLACEMENT PARTS		
UCC-035	C208	CAPACITOR—.001 mfd., 500 v., paper
UCC-036	C85, 88	CAPACITOR—.002 mfd., 600 v., paper
UCC-040	C42, 49, 52, 53, 58, 63, 65, 71, 74, 75, 87, 90, 91, 94, 103, 104, 105, 107, 108, 109, 119, 124, 125, 126, 207	CAPACITOR—.01 mfd., 600 v., paper
UCC-041	C19, 18, 80, 83, 123, 209	CAPACITOR—.02 mfd., 600 v., paper
UCC-042	C79, 81, 82, 84	CAPACITOR—.03 mfd., 600 v., paper
UCC-045	C48, 50, 51, 93, 205, 206	CAPACITOR—.05 mfd., 600 v., paper
UCC-048	C76	CAPACITOR—.10 mfd., 600 v., paper
UCC-056	C203	CAPACITOR—.002 mfd., 500 v., paper
UCG-2048	C22	CAPACITOR—680 mmf., mica
UCN-502	C20	CAPACITOR—1.5 mmf., ceramic
UCN-505	C97	CAPACITOR—4.7 mmf., ceramic
UCN-506	C11, 8	CAPACITOR—6.8 mmf., ceramic
UCN-1504	C17	CAPACITOR—3.3 mmf., ceramic
UCN-1550	C21	CAPACITOR—820 mmf., mica
UCU-012	C64, 101	CAPACITOR—22 mmf., mica
UCU-020	C92	CAPACITOR—47 mmf., mica
UCU-028	C72, 102, 111, 133	CAPACITOR—100 mmf., mica
UCU-520	C26, 61, 66, 70, 99, 120, 121, 122	CAPACITOR—47 mmf., mica
UCU-536	C25	CAPACITOR—220 mmf., mica
UCU-544	C43, 106, 118	CAPACITOR—470 mmf., mica
UCU-1504	C95, 113, 115	CAPACITOR—10 mmf., mica
UCU-1512	C96	CAPACITOR—22 mmf., mica
UCU-1532	C30, 130	CAPACITOR—150 mmf., mica
UCW-012	C49	CAPACITOR—.22 mmf., ceramic
UCW-1004	C36, 116	CAPACITOR—10 mmf., ceramic
UCW-1014	C11, 44, 54	CAPACITOR—27 mmf., ceramic
UCW-1024	C78	CAPACITOR—68 mmf., ceramic
UCW-1028	C69	CAPACITOR—100 mmf., ceramic
UDL-005	11, 2	PILOT LITE
UDL-008	T201	PILOT LITE—Bayonet base
UJB-027		ANTENNA TERMINAL BOARD
UOP-1011		SPEAKER—10-inch PM speaker
URD-013	R34	RESISTOR—33 ohms, 1/2 w., carbon
URD-025	R207, 208, 211, 212	RESISTOR—100 ohms, 1/2 w., carbon
URD-033	R10, 46	RESISTOR—220 ohms, 1/2 w., carbon
URD-041	R20	RESISTOR—470 ohms, 1/2 w., carbon
URD-049	R63, 64, 65, 71, 204, 206, 209, 210	RESISTOR—1000 ohms, 1/2 w., carbon
URD-055	R222	RESISTOR—1800 ohms, 1/2 w., carbon
URD-057	R21, 28, 43, 44	RESISTOR—2200 ohms, 1/2 w., carbon
URD-059	R58, 217	RESISTOR—2700 ohms, 1/2 w., carbon
URD-065	R53, 55	RESISTOR—4700 ohms, 1/2 w., carbon
URD-071	R49, 52, 67, 217, 31	RESISTOR—8200 ohms, 1/2 w., carbon
URD-077	R56	RESISTOR—15,000 ohms, 1/2 w., carbon
URD-079	R221	RESISTOR—18,000 ohms, 1/2 w., carbon
URD-081	R9, 27, 36, 39	RESISTOR—22,000 ohms, 1/2 w., carbon
URD-083	R15	RESISTOR—27,000 ohms, 1/2 w., carbon
URD-085	R19, 215, 219	RESISTOR—33,000 ohms, 1/2 w., carbon
URD-089	R216, 41	RESISTOR—47,000 ohms, 1/2 w., carbon
URD-093	R25	RESISTOR—68,000 ohms, 1/2 w., carbon
URD-095	R13, 17	RESISTOR—82,000 ohms, 1/2 w., carbon
URD-097	R3, 7, 23, 24, 42, 59	RESISTOR—100,000 ohms, 1/2 w., carbon
URD-099	R32, 33, 60	RESISTOR—120,000 ohms, 1/2 w., carbon
URD-103	R31	RESISTOR—180,000 ohms, 1/2 w., carbon
URD-105	R203, 205	RESISTOR—220,000 ohms, 1/2 w., carbon
URD-109	R37, 38	RESISTOR—330,000 ohms, 1/2 w., carbon
URD-127	R8, 14, 30, 47, 66	RESISTOR—470 ohms, 1/2 w., carbon
URD-121	R1, 12, 54, 57, 51, 218, 220	RESISTOR—1.0 meg., 1/2 w., carbon
URD-125	R2, 6, 62	RESISTOR—1.5 meg., 1/2 w., carbon
URD-129	R22, 61, 68, 69, 70, 71, 72, 73	RESISTOR—2.2 meg., 1/2 w., carbon
URD-133	R74, 80	RESISTOR—3.3 meg., 1/2 w., carbon
URD-137	R16, 18	RESISTOR—4.7 meg., 1/2 w., carbon
URD-141	R40	RESISTOR—6.8 meg., 1/2 w., carbon
URE-067	R214	RESISTOR—5600 ohms, 1 w., carbon
URE-073	R50, 4	RESISTOR—10,000 ohms, 1 w., carbon
URE-089	R26	RESISTOR—30,000 ohms, 1 w., carbon
URF-079	R29, 35	RESISTOR—18,000 ohms, 2 w., carbon

SHORTWAVE SPREAD-BANDS

Band spread tuning in the shortwave bands is obtained in the converter and oscillator circuits by inserting the guillotine tuners in series with a higher inductance so that the two inductances together form the "L" part of the shortwave tuned circuit. The small percentage change in inductance obtained in the tuner provides smooth, wide, and stable tuning. The "C" part of the tuned circuit consists primarily of a shunt trimmer. Switching from one shortwave band to the other is accomplished by selecting a different shunt trimmer.

The converter grid circuit, as an example, includes L8 and L7 in series in the SW1, SW2 and SW3 bands. Tuner L7 is in the ground end of the circuit and the signal is fed into the grid end through C26. The shunt tuning capacity is C37, C39, or C40, depending upon which of the three shortwave bands is used. Additional oscillator coupling capacitors C95, C96 and C97 are also added to compensate for the lower coupling through C20 when the higher shunt capacitors are in the circuit.

In the r-f stage, a section of the loop is used as the grid circuit. It is tuned for resonance by a shunt capacitor (C9, C14, or C15) and a shunt inductance (L25). Because a tuned circuit of this type is inherently broad, tuning through the relatively narrow spread-band offers little advantage and is not done.

STANDARD BROADCAST BAND

When manual tuning is employed (band switch in STD position), the receiver employs an r-f stage, a converter, and an oscillator, all of which are tuned by iron slugs suspended from the tuning elevator. When push buttons are used, the r-f stage is not used. Instead, a separate antenna coil is used which couples the antenna and loop directly into the converter. A separate coil is used in order to make the tuning circuit independent of the dial tuning mechanism so that it may be tuned by trimmers in the push-button assembly.

Switching from manual to push-button tuning is accomplished in the oscillator by using an oscillator coil which is tuned by a separate shunt inductance. In manual tuning, the inductance is one which is tuned by the tuning elevator. In push-button tuning, a fixed shunt capacity C22 plus one of a series of push-button selected coils tunes the oscillator.

I-F AMPLIFIER

The i-f amplifier consists of a composite 455 kc and 10.7 mc circuit. The electrical changes required to transfer between AM and FM service are made by the band switch. When the switch is in either the FM1 or FM2 position, the amplifier operates at 10.7 megacycles and delivers the i-f signal into an FM discriminator circuit. When the switch is in any of the other positions, the amplifier operates at 455 kc. Screen voltage is removed from the tube which acted as an FM limiter and this tube then acts as an AM diode detector.

Thus, the AM audio signal appears across R24 while the FM audio signal appears across R32. A section of the band switch switches the audio input circuit from one to the other. The AVC bus is also shorted out for FM.

REPLACEMENT OF DRIVE CORDS

Dial Stringing

Push the tuning elevator all the way down and string the dial as shown in Figure 1. This illustration shows the stringing as viewed from behind the dial scale, as you would see it when working on it. The numbers and arrows indicate the progression of the dial cord from start to finish. Notice that the dial cord, in progressive steps 9, 10, 11, and 12, is made to travel behind the start and end of cord stringing, as viewed in Figure 1. The procedure will be easier if pulley C is by-passed until the rest of the work is finished after which the cord can be pulled tight over that pulley. During the procedure, locate the two brass eyelets so that they fall between pulleys A and B. When finished, crimp the eyelets on the cord in the proper positions to act as minimum and maximum stops for the tuning mechanism. Insert pins through the cord and glue to prevent eyelets from moving. Clip the pointer on the cable halfway between the eyelets.

Separate detail drawings are given to show the three different methods of attaching the ends of the cord. The arrangement with the standard helical spring was used in some earlier production receivers. If the cord and spring are to be replaced, the Type 1 spring should be used. It fits the same drum and is an improved type. The Type 2 spring should be used with the later type of drum (with two tabs). When stringing the mechanism with either the Type 1 or Type 2 spring, load the spring by pulling the hook over the projection at the other end of the spring, string the dial and, as a final step, release the hook so that it pulls up the slack in the dial cord.

Elevator Stringing

The step-by-step procedure for stringing the elevator windlass is shown in Figure 2, a rear view of the mechanism. Start by inserting the metallic cord in slot as shown in Step 1. Observe that the cord is measured five inches from end of loop to where it enters the slot. Now bring the loop end around the pulley counterclockwise, as in Step 2. Next, thread loop through hole in elevator top plate, fastening it to the hoist cord tension spring, as viewed in Step 3. Steps 4, 5, 6, and 7 show how the free end of cord progresses on the pulley, going clockwise and that each turn is laid progressively one in back of the other and in back of the vertical section, going to the tension spring in tuner plate. In Step 6, pass the free end of cord down through the hole in chassis, grasping its end with long-nosed pliers and drawing tension on cord while running elevator completely down to the bottom. Keeping tension on cord and forcing large dial drive drum so that hoist cord

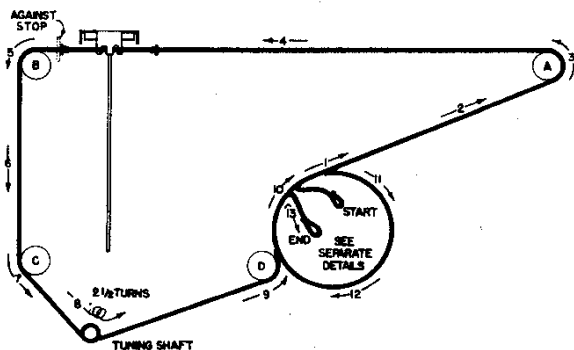


Figure 1—Dial Stringing Diagram Showing Spring Details at Right

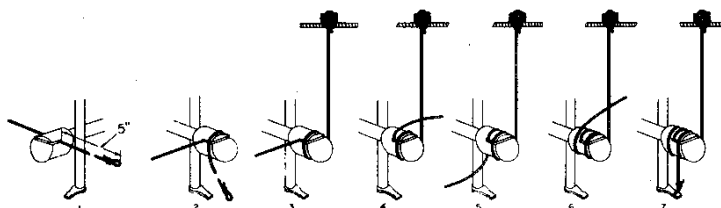
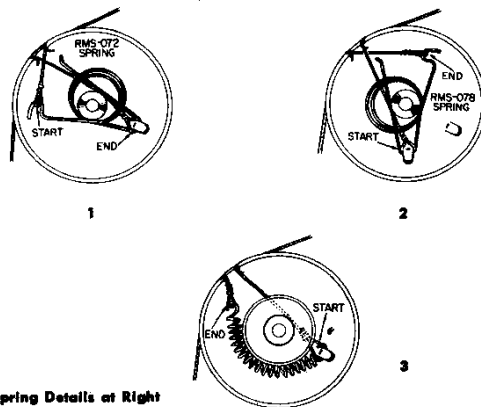


Figure 2—Elevator Windlass Stringing Procedure

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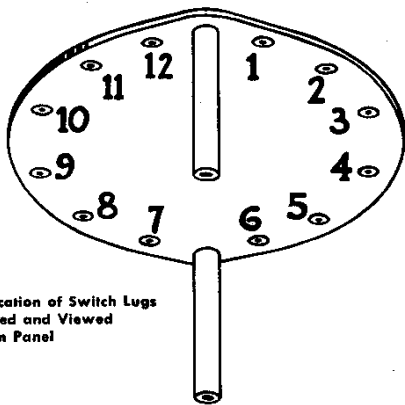


Figure 3—Identification of Switch Lugs
—Set Inverted and Viewed from Panel

spring is compressed, complete Step 7 making a one turn loop of the cord's free end around the lug shown on end of elevator shaft, and solder.

Concluding Comments

After replacing the dial cord or the elevator cord, it may be found that some correction in relative positioning is needed. This can be done by loosening the setscrews in the large drive pulley directly behind the dial scale and repositioning it on the shaft. The object, of course, is to permit the tuning control to drive the elevator through its full tuning range. Slight

errors in final setting are not serious since leeway is provided in the location of the dial pointer itself.

WIRING OF BAND SWITCH

In order to facilitate repair, replacement, and circuit tracing, a table and diagrams are supplied with reference to the connections made in the band switch. If used properly, these will be of invaluable aid. The remarks which follow are intended to clarify the make-up of the tables and diagrams—read them carefully before using the table.

The table is broken down into seven parts, one for each switch wafer. Section 1 is nearest the front and Section 7 is the rearmost wafer.

Individual lugs on each wafer are numbered from 1 to 12, depending upon their position on the wafer. The method of numbering is illustrated in Figure 3. In determining the number, turn the chassis upside down and look from the front toward the rear of the chassis. Thus, lugs 1 and 12 are the ones which are at the bottom when the set is in its normal position; lugs 3 and 4 are on the side with the broadcast band coils; and lugs 9 and 10 are on the side with the 6AK5 tubes. The numbering refers to lugs whether they be on the front or rear of the wafer.

Figure 6 shows the physical location of various components and terminals to which reference is made in the table.

In those cases where a component symbol number is given in column two, instead of a wire, that component is connected by its own lead wire directly to the switch lug and the connection of the other end of the component is given in the last column.

C9 LOCATED ON BACK APRON CHASSIS
15.2 MC

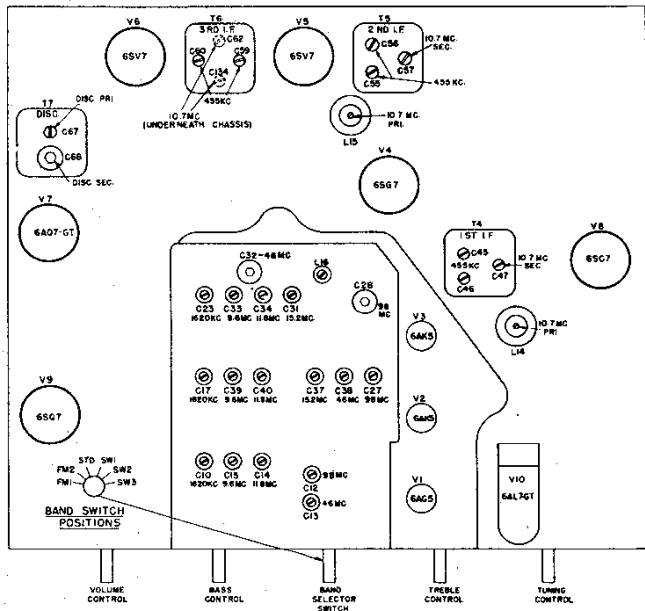


Figure 9—Location of Tubes and Adjusters

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 have a tolerance of $\pm 20\%$. AM IF measurements should be taken with low signal so that AVC is not effective. R-f measurements should be made by measuring the d-c voltage developed at the r-f tube grid (V1) or converter tube grid (V2) by rectification of the signal.

(1) R-F and I-F Stage Gains

Signal applied through IRE dummy antenna:

- Antenna post to V1 grid..... 3 @ 1000 kc
 - Antenna post to V1 grid..... 2.5 @ 9.6 mc
 - Antenna post to V1 grid..... 2.0 @ 11.8 mc
 - Antenna post to V1 grid..... 2.0 @ 15.2 mc
- Signal applied through 300 ohms, including signal generator impedance.

- Dipole terminals to V1 grid..... 1.5 @ 45 mc
- Dipole terminals to V1 grid..... 1.5 @ 98 mc

These checks made with oscillator tube (V3) removed:

- V1 grid to V2 grid..... 10 @ 1000 kc
- V1 grid to V2 grid..... 6 @ 9.6 mc
- V1 grid to V2 grid..... 7 @ 11.8 mc
- V1 grid to V2 grid..... 12 @ 15.2 mc
- V1 grid to V2 grid..... 7 @ 45 mc
- V1 grid to V2 grid..... 6 @ 98 mc

These checks with oscillator tube (V3) removed:

- V2 grid to V4 grid..... 24 @ 455 kc
- V2 grid to V4 grid..... 42 @ 10.7 mc
- V4 grid to V5 grid..... 17 @ 455 kc
- V4 grid to V5 grid..... 56 @ 10.7 mc
- V5 grid to V6 grid..... 50 @ 455 kc
- V5 grid to V6 grid..... 20 @ 10.7 mc

(2) Audio Gain

.065 volts at 400 cps to V7 grid with volume control set at maximum will give approximately $\frac{1}{2}$ -watt output across the speaker voice coil.

0.35 volts at 400 cps at input of power amplifier chassis (V201, pin 4) will give approximately $\frac{1}{2}$ -watt output across the speaker voice coil.

(3) Oscillator Grid Bias

D-c voltage developed across R9 (average):

- 12 v. @ 1000 kc..... 6.5 v. @ 15.2 mc
- 2.8 v. @ 9.6 mc..... 4.6 v. @ 45 mc
- 4.7 v. @ 11.8 mc..... 3.5 v. @ 98 mc

(4) Socket Pin Voltages

Figures 10 and 11 show typical tube pin voltages. All readings should be made from the pins to ground unless otherwise indicated.

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WIRING OF BAND SWITCH

(Wire length given from end to end before stripping)

SECTION 1

At this lug—	—connect this—	—the other end of which is connected to this—
1	Insulated green wire, 13/4" lg.	Antenna terminal at rear of chassis
2-3		
3		
4	Capacitor C8	Switch section 2, lug 11
5		
6	(Front lug) capacitor C30 (Rear lug) short copper strap	Chassis Trimmer C12, lug nearer T2
**7	a. C11 b. One side of 300-ohm transmission line	Tube socket V1, pin 2 Hot dipole terminal at rear of chassis
8		
9	a. Short bus with spaghetti, 1 3/4" long b. Short bus with spaghetti	Chassis Section 1, terminal T2
10	Insulated white wire, 5 1/2" long	Dial switch S2-A terminal N
11	a. Insulated green wire, 3 3/4" lg. b. Insulated orange wire, 6" lg. c. Insulated green wire, 12 3/4" lg.	Antenna transformer T2, terminal 2 Push-button transformer T1, terminal 2 Loop socket J3, at rear of chassis, terminal 1
12	See lug 9 above	

SECTION 2

1	Choke, L25	Ground on band switch shield
2	a. Insulated green wire, 3 3/4" lg. b. Capacitor, C1	Trimmer C10, lug nearer T2 Section 2, lug 12
3	Insulated green wire, 2 1/4" lg.	Trimmer C15, lug nearer T2
4	Insulated green wire, 2" long	Trimmer C14, lug nearer T2
5		
6	Short copper strap	Trimmer C13, lug nearer tube V1
7	Short copper strap	Tuner L2, terminal nearer rear of chassis
8	Capacitor C16	Tube socket V1, pin 1
9		
10	Insulated brown wire, 6" lg.	Dial switch S2-A, terminal O
**11	a. Insulated yellow wire, 12 3/4" long b. See section 1, lug 4	Loop socket J3 at rear of chassis, terminal 3
12	a. Insulated blue wire, 6 1/2" lg. b. See lug 2, above	Dial switch S2-A, terminal M

SECTION 3

1		
2	a. Choke, L6 b. Capacitor, C18 c. Insulated red wire, 3" long d. Insulated red wire, 8 3/4" long	Switch section 3, lug 9 Ground on band switch shield RF transformer T3, terminal 1 Terminal strip 1, terminal 2
3	Insulated green wire 2 1/4" long	RF transformer T3, terminal 2
4-5		
5		
6	Short bus with spaghetti, 1 3/4" long	Terminal strip 2, terminal 4
7	Insulated yellow wire, 16" lg.	Resistor R44 on terminal board on chassis rear apron
8	a. Resistor R10 b. Capacitor, C119 c. Insulated blue wire, 8 1/4" lg.	Tube socket V3, pin 5 Ground lug on band switch shield Push-button switch S2H, terminal A
9	a. See lug 2 (a), above b. Capacitor C26	Section 4, lug 11
10	Resistor, R26	Ground lug on terminal strip 2
11-12		

SECTION 4

At this lug—	—connect this—	—the other end of which is connected to this—
1	Copper strap with tubing, 3" long	Trimmer C38, lug nearer L7
2	Copper strap with tubing, 2 1/2" long	Coil L8, terminal 2
3	Insulated brown wire, 7" lg.	Dial switch S2A, terminal Q
4	Insulated green wire, 2 1/4" lg.	Trimmer C39, lug nearer T3
5	Insulated green wire, 2" long	Trimmer C40, lug nearer T3
6	Short copper strap	Trimmer C37, lug nearer L7
7	Short copper strap	Tuner L7, rear terminal
8	Capacitor, C41	Tube socket V2, pin 1
9	Bus with spaghetti, 2" long	Ground lug on terminal strip 2
10	Insulated white wire, 2 1/2" lg.	Terminal strip 2, terminal 1
11	a. See section 3, lug 9 b. Copper strap with tubing, 3 1/2" long	Coil L8, terminal 1
12		

SECTION 5

1	a. Bus with spaghetti, 2" long b. Capacitor C36	Section 5, lug 6 Section 6, lug 1
2	a. Insulated green wire, 2 3/4" lg. b. Insulated blue wire, 6 1/2" lg.	Broadcast oscillator coil L16, terminal Dial switch S2A, terminal T
3	Insulated green wire, 2 1/4" lg.	Trimmer C33, lug nearer L11
4	Insulated green wire, 2" lg.	Trimmer C34, lug nearer L11
5	a. Capacitor, C97 b. Copper strap with tubing, 2" lg.	Trimmer C37, lug nearer T3 Trimmer C31, lug nearer L16
6	a. See lug 1(a) above b. Capacitor, C116 c. Copper strap with tubing, 3 3/4" long	Trimmer C38, lug nearer tuner L7 Air trimmer C32, right-hand terminal*
7	Short copper strap	Tuner L9, left-hand terminal*
8	Resistor R34	Capacitor, C35
9		
10	a. Short copper strap b. Copper strap with tubing, 3 1/2" long	Section 6, lug 11 SW oscillator coil L10, terminal 2
11	a. Capacitor C77 b. Copper strap with tubing, 3" lg.	Chassis ground SW oscillator coil L10, terminal 1
12		

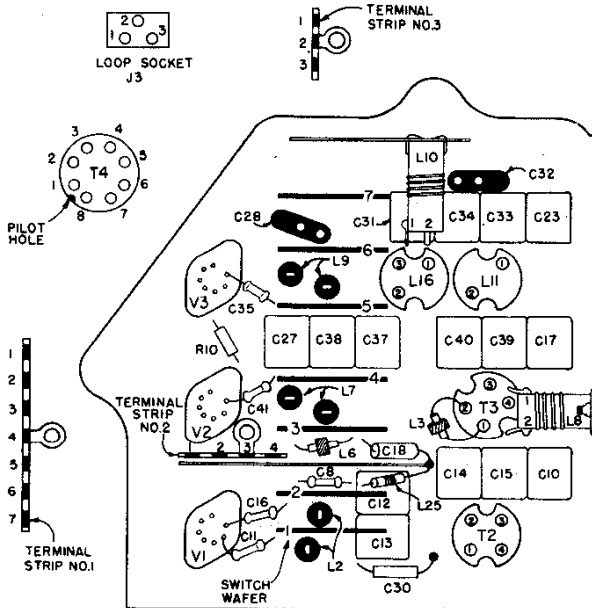


Figure 6—Physical Location of Components Listed in Band Switch Wiring Table

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SECTION 6

WIRING OF BAND SWITCH (Cont'd)

SECTION 7

At this lug—	—connect this—	—the other end of which is connected to this—
1	a. See section 5, lug 1 b. Capacitor C78 c. Copper strap with tubing, 6" lg.	Tuner L9, right-hand terminal* Air trimmer C32, left-hand terminal*
2	Insulated black wire, 3/4" lg.	1st IF transformer T4, terminal 8
3	Insulated green wire, 2 1/4" lg.	Broadcast oscillator coil L16, terminal 3
4		
5		
6		
7	Short copper strap	Air trimmer C28, right-hand terminal*
8	Copper strap, 2" long	Tube socket V3, pin 7
9	Insulated green wire, 3/4" lg.	1st IF transformer T4, terminal 5
10	Insulated yellow wire, 4/4" lg.	1st IF transformer T4, terminal 3
11	See section 5, lug 10(a)	
12		

At this lug—	—connect this—	—the other end of which is connected to this—
1		
2	Shielded green wire, 12 3/4" lg.	Discriminator audio output at R30
3		
4	Insulated blue wire of tuning eye cable	Tuning eye tube socket V10, pin 4
5		
6	Insulated blue wire, 4" lg.	Terminal strip 3, terminal 3
7	Bus wire with spaghetti, 2" lg.	Trimmer C31, terminal nearer C32
8		
9		
10	Shielded green wire, 8 3/4" lg.	Phono switch S2H, terminal E
11	Insulated green wire, 10 1/2" lg.	Resistor R54 on main chassis
12	Shielded green wire, 11 1/4" lg.	AM audio output at R25

* Looking from front, chassis inverted.
** Double lug (front and rear) soldered together.

ALIGNMENT

EQUIPMENT REQUIRED:

1. Test oscillator with tone modulation. (See Table.)
2. D-c voltmeter or microammeter. (See Notes 2 and 3.)
3. A-c voltmeter, 1.41 volts. (See Note 6.)

4. Insulated hex wrench, 1/4-inch.
5. .01 mfd. paper capacitor.
6. 400-ohm, 1/2 watt resistor.
7. 200 mmf. mica capacitor.

Step	Signal Generator Frequency	Signal Input Point	Band Switch	Dial Setting	Adjust	See Note	Remarks
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AM IF ALIGNMENT

1	455 kc	Conv. grid directly	STD	Peak C60 & C59	4, 5, 6	
2	455 kc	Conv. grid directly	STD	Peak C56 & C55	4, 5, 6	
3	455 kc	Conv. grid directly	STD	.....	Peak C45 & C46	4, 5, 6	

FM IF ALIGNMENT

4	10.7 mc	2nd 6SV7 grid thru .01 mf	FM1	.....	C68 for zero**	1, 2	Adjust C68 for zero meter reading. Apply 1-volt signal input.
5	.....	2nd 6SV7 grid thru .01 mf	FM1	.....	Signal Generator	1, 2	Detune signal generator to point of maximum meter reading.
6	As in step 5	2nd 6SV7 grid thru .01 mf	FM1	.....	Peak C67	1, 2	
7	10.7 mc	1st 6SV7 grid thru .01 mf	FM1	.....	Peak C62 & C134	1, 3	6AQ7GT tube removed from socket.
8	10.7 mc	6SG7 grid thru .01 mf	FM1	.....	Peak C57 & L15	1, 3	6AQ7GT tube removed from socket.
9	10.7 mc	Conv. grid directly	FM1	.....	Peak C47 & L14	1, 3, 4	6AQ7GT tube removed from socket.

FM RF ALIGNMENT

10	98 mc	DIPOLE terminals	FM2	98 mc—3.55 to 3.65 in.*	Peak C28**	1, 3, 7, 10	Set dial accurately—then adjust C28.
11	98 mc	DIPOLE terminals	FM2	For max. output	Peak C27	1, 3, 8	Tune dial for maximum output—then peak C27 while rocking dial.
12	98 mc	DIPOLE terminals	FM2	Do not change	Peak C12	1, 3	
13	46 mc	DIPOLE terminals	FM1	46 mc—3.25 to 3.35 in.*	Peak C32**	1, 3, 7, 10	Set dial accurately—then adjust C32.
14	46 mc.	DIPOLE terminals	FM1	For max. output	Peak C38	1, 3, 8	Tune dial for maximum output then peak C38 while rocking dial.
15	46 mc	DIPOLE terminals	FM1	Do not change	Peak C13	1, 3	

* Important! See Note 7.
** Use insulated hex wrench, 1/4 inch.

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ALIGNMENT TABLE (Cont'd)

Step	Signal Generator Frequency	Signal Input Point	Band Switch	Dial Setting	Adjust	See Note	Remarks
SW RF ALIGNMENT							
16	15.2 mc	Antenna thru 400-ohms	SW3	15.2 mc—3.7 to 3.8 in.*	Peak C31	5, 6, 7, 10	Set dial accurately—then adjust C31.
17	15.2 mc	Antenna thru 400-ohms	SW3	Do not change	Peak C37	5, 6, 8	Peak C37 while rocking dial.
SW RF ALIGNMENT continued							
18	15.2 mc	Antenna thru 400-ohms	SW3	Do not change	Peak C9	5, 6, 11	C9 is located on back apron of chassis
19	11.8 mc	Antenna thru 400-ohms	SW2	11.8 mc—3.35 to 3.45 in.*	Peak C34	5, 6, 7, 10	Set dial accurately—then adjust C34
20	11.8 mc	Antenna thru 400-ohms	SW2	Do not change	Peak C40	5, 6, 8	Peak C40 while rocking dial.
21	11.8 mc	Antenna thru 400-ohms	SW2	Do not change	Peak C14	5, 6, 11	
22	9.6 mc	Antenna thru 400-ohms	SW1	9.6 mc—4.0 to 4.1 in.*	Peak C33	5, 6, 7, 10	Set dial accurately—then adjust C33.
23	9.6 mc	Antenna thru 400-ohms	SW1	Do not change	Peak C39	5, 6, 8	Peak C39 while rocking dial.
24	9.6 mc	Antenna thru 400-ohms	SW1	Do not change	Peak C15	5, 6, 11	
BROADCAST RF ALIGNMENT							
25	1620 kc	Antenna thru 200 mmf	STD	Extreme right-hand position	Peak C23	5, 6	
26	1620 kc	Antenna thru 200 mmf	STD	Extreme right-hand position	Peak C17	5, 6	
27	1620 kc	Antenna thru 200 mmf	STD	Extreme right-hand position	Peak C10	5, 6, 11	
28	1500 kc	Antenna thru 200 mmf	STD	1500 kc—1.35 to 1.45 in.*	Osc. coil L11 iron slug	5, 6, 7, 9	L11 iron slug is the rear one on left side.
29	1000 kc	Antenna thru 200 mmf	STD	For max. output	R-F coil, T3 iron slug	5, 6, 9	T3 iron slug is the center one on left side.
30	1000 kc	Antenna thru 200 mmf	STD	Do not change	Ant. coil, T2 iron slug	5, 6, 9	T2 iron slug is the front one on left side.
31	580 kc	Antenna thru 200 mmf	STD	For max. output	Peak L16	5, 6, 8	Peak L16 while rocking dial.
32							Repeat steps 25-31.

* Important! See Note 7

Notes in Connection with Alignment Table:

1. Use unmodulated signal.
2. Connect 20,000 ohms-per-volt meter from junction of R30 and C72 to chassis. Use ten-volt scale (steps 4-6).
3. Connect 20,000 ohms-per-volt meter from grid (pin 2) of 6SV7 LIMITER to chassis with a 200,000-ohm resistor connected in series. The resistor must be connected directly to the grid so that capacity loading will be negligible and so that the meter is isolated from the i-f signal voltage. Keep signal generator output down so that the meter indicates not more than one volt at the grid (5 microamperes through 200,000 ohms) (alignment steps 7 to 15).
4. Connect signal generator directly to the converter grid at some convenient point. The generator lead must be shielded up to this connection so that not more than $\frac{1}{8}$ inch of exposed lead exists. Ground the shield solidly by clamping it firmly to the chassis or a shield as close to the connection as possible. (Steps 1-3, 9.)
5. Use 400-cycle modulation.
6. Connect a standard output meter across the speaker voice coil. Turn volume control fully on. Keep signal generator output down so that the meter indicates not more than $\frac{1}{2}$ watt output (1.41 volts) during alignment.

7. If dial scale is not available, index pointer as follows: Turn pointer to right-hand limit of travel. Mark the dial backplate at a reference edge of the pointer slider. Then set pointer by turning dial knob until the indicated dimension exists between the reference edge and the mark.
8. "Rocking" consists of adjusting the indicated adjuster while turning the dial a small amount back-and-forth through peak output. The object is to find the maximum peak. Rocking is necessary and is permissible only when interlocking circuits are being adjusted.
9. The main iron tuning slugs are suspended from the left side of the tuning "elevator." They are individually adjustable by loosening the locknut and turning the supporting screw into which the suspending wire is soldered.
10. Two oscillator settings may give response. The higher frequency response point is the correct one; the other is the image. If in doubt, start with the trimmer screw loosened completely and adjust for the first response.
11. Loop antenna must be plugged in when aligning antenna trimmers C9, C10, C14, and C15.

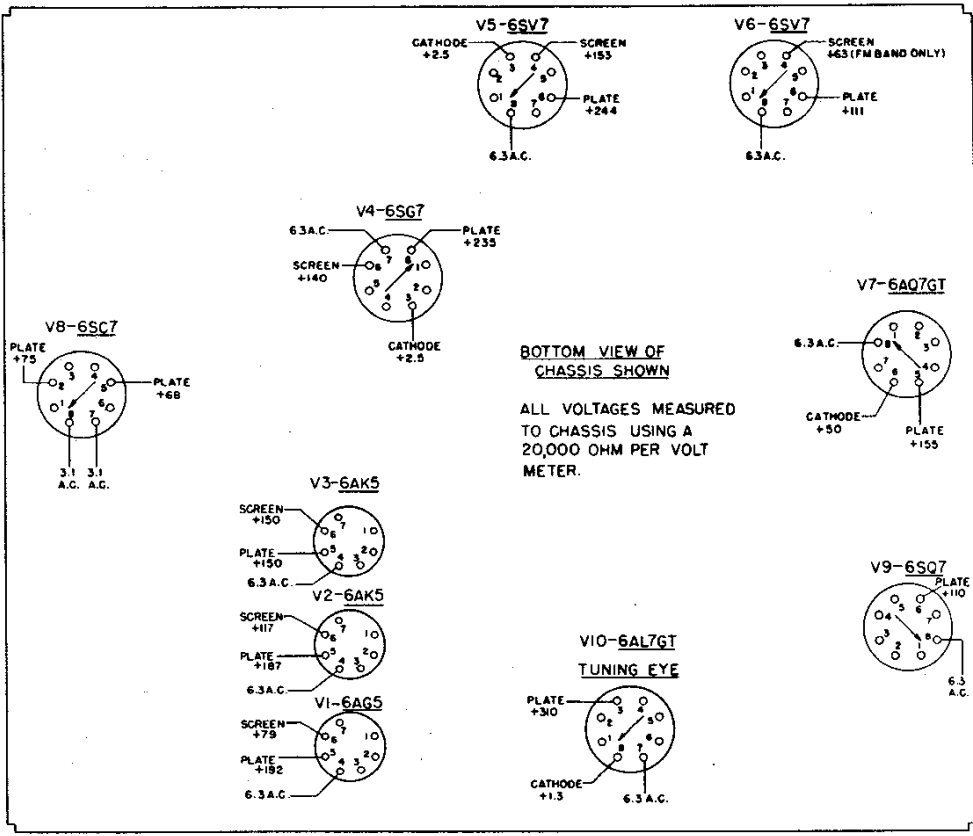


Figure 10—Socket Voltage Diagram of Main Chassis

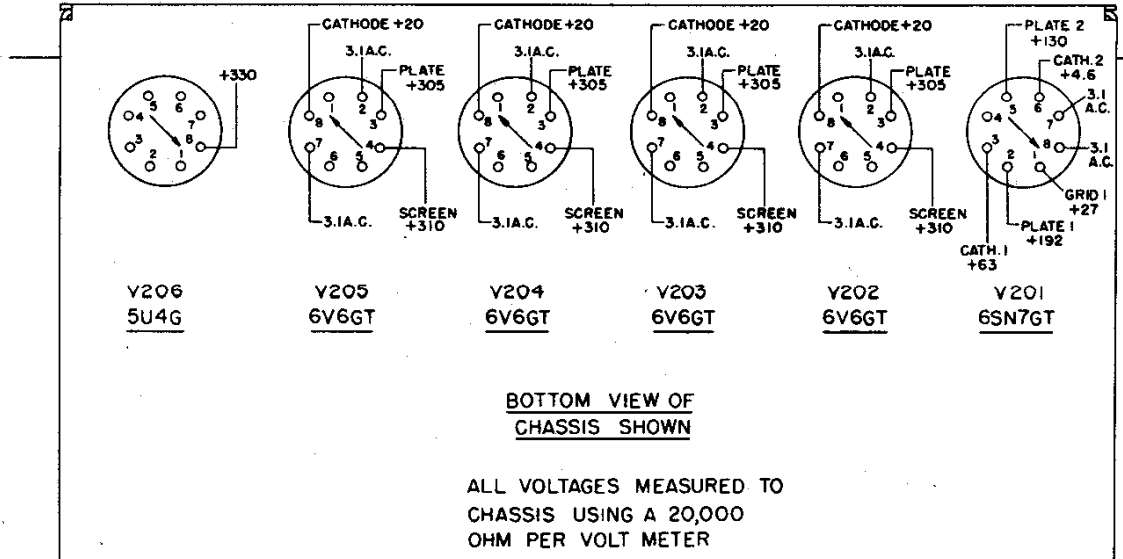


Figure 11—Socket Voltage Diagram of Power Chassis

GENERAL ELECTRIC CO.

MODELS MUSAPHONIC
41, 42, 43, 44, 45

Part No.	Symbol	Description	Part No.	Symbol	Description
SPECIALIZED REPLACEMENT PARTS			SPECIALIZED REPLACEMENT PARTS (Cont'd)		
RAB-028	L1	LOOP AND BACK ASSEMBLY—Model 41, Walnut	RJS-065		SOCKET—Pilot light socket and leads
RAB-029	L1	LOOP AND BACK ASSEMBLY—Model 41, Mahogany	RJS-066		MOUNTING PLATE—Electrolytic mounting plate, on SPU chassis
RAB-030	L1	LOOP AND BACK ASSEMBLY—Model 41, Blonde Mahogany	RJS-073		SOCKET—Phono-lite socket
RAB-031	L1	LOOP AND BACK ASSEMBLY—Model 42, Mahogany	RJS-085		SOCKET—Tube socket for V8
RAB-032	L1	LOOP AND BACK ASSEMBLY—Model 43, Knotty Pine	RJX-003	J3	RECEPTACLE—Phono input
RAB-033	L1	LOOP AND BACK ASSEMBLY—Model 44, Walnut	RJX-005	P202	PLUG—4-pin amphenol for pilot light and speaker cable
RAB-034	L1	LOOP AND BACK ASSEMBLY—Model 44, Mahogany	RJX-006		OCTAL PLUG RECEPTACLE AND LOCK RING—For power receptacle on main chassis
RAB-035	L1	LOOP AND BACK ASSEMBLY—Model 44, Champagne Finish Mahogany	RLA-006	T1	B.C.P.B. ANTENNA TRANSFORMER
RAB-042	L1	LOOP AND BACK ASSEMBLY—Model 42, Mahogany, 50 cycles	RLA-009	T2	COIL—Broadcast band antenna coil
RAB-044	L1	BACK AND LOOP ASSEMBLY—Model 45	RLA-012	L4, 13, 28	COIL—FM antenna choke, FM1 oscillator cathode choke, oscillator cathode choke
RAD-018		BRACKET—Band switch (front)	RLB-006	T3	COIL—Broadcast band RF coil
RAD-019		BRACKET—For coil on rear bracket of band switch	RLB-008	L6	COIL—SW band RF plate choke coil
RAD-020		BRACKET—For coil on rear bracket of band switch	RLB-009	L3	COIL—Broadcast RF primary dummy
RAD-023		MOUNTING BRACKET—Dial scale	RLC-015	L10	COIL—SW oscillator loading coil
RAL-001		BEZEL—Dark	RLC-016	L16	COIL—Broadcast band oscillator shunt coil
RAL-002		BEZEL—Light	RLC-017	L8	COIL—SW band RF loading coil
RAX-014		BRACKET AND ROLLER FORK ASSEMBLY—For tuning hoist	RLF-003	L24	CHOKE—IF filament choke
RCC-038	C86, 89	CAPACITOR—.004 mfd., 600 v., paper	RLF-010	L201	CHOKE—Filter for power supply
RCE-019	C201A, B, C, D	CAPACITOR—30 mfd., 400 v., electrolytic	RLI-005	L23	CHOKE—FM power line choke
RCE-032	C100A, C100B	CAPACITOR—30 mfd., 350 v., electrolytic	RLO-002	L12	CHOKE—FM oscillator cathode choke
RCM-001	C127	CAPACITOR—.01 mfd., metal cased	RLI-016	L25	COIL—SW2 load shunt coil
RCM-002	C128	CAPACITOR—.01 mfd., metal cased	RLP-005	L14, 15	CHOKE—IF plate choke
RCW-024	C29	CAPACITOR—44 mfd., ceramic	RLP-008	L5, 26	COIL—FM choke; RF plate and IF wavetrap
RCW-025	C73, 114	CAPACITOR—4.7 mfd., ceramic	RLX-002	L5	COIL AND MOUNTING BRACKET ASSEMBLY—For push buttons
RCW-1028	C11, 16, 41, 113, 129, 132	CAPACITOR—100 mfd., ceramic	RLX-003		TRIMMER STRIP BRACKET AND COIL ASSEMBLY—For push buttons
RCX-012	C2, 3, 4, 5, 6	TRIMMER STRIP—Push button	RMC-012		CLAMP—For holding cover on RF unit
RCX-024	C12, 13	TRIMMER STRIP—3-30 mfd., 80-130 mfd.	RMC-013		CLIP—Support for clamp, holding cover on RF unit
RCX-025	C13, 31, 33, 34	TRIMMER STRIP—185-245 mfd., 20-55 mfd., 320-400 mfd., 165-225 mfd., trimmer capacitor	RMF-003		CLIP—For tube shield on 6A07GT
RCX-026	C17, 39, 40	TRIMMER STRIP—20-55 mfd., 475-575 mfd., 320-400 mfd., trimmer capacitor	RMM-009		SPACER—Metal sleeve on hoist pulley shaft
RCX-027	C27, 37, 38	TRIMMER STRIP—2-20 mfd., 185-245 mfd., 34-70 mfd., trimmer capacitor	RMM-010		VANE—Tuner vane for FM coils L2 and L7
RCX-028	C10, 14, 15	TRIMMER STRIP—34-70 mfd., 40-80 mfd., 5-45 mfd., trimmer capacitor	RMM-011		VANE—Tuner vane for FM oscillator coil L9
RCY-011	C9	CAPACITOR—2-20 mfd., trimmer	RMM-034		SHIELD—Lite shield for bezel
RCY-017	C28, 32	CAPACITOR—3-30 mfd., 3-30 mfd., trimmer capacitor	RMM-035		SHIELD—Tube shield for 6A07GT
RDB-006		KEY—Push-button key (brown)	RMM-036		SUPPORT—Fibre support for push-button coils
RDB-007		KEY—Push-button key (tan)	RMM-037		DRAWER SLIDES—Cabinet drawer slides
RDC-019		CORD—Hoist cord, 6 1/2 inches long	RMR-002		ROLLER—Presses against hoist shaft
RDC-025		DRIVE CORD ASSEMBLY	RMS-039		WASHER—"C" washer for idler pulley shaft
RDF-003		FELT WASHER—Dark, for control knobs	RMS-040		SPRING—Flat spring against hoist pulley shaft
RDF-006		FELT WASHER—Light, for control knobs	RMS-041		SPRING—Hoist cord tension spring
RDF-008		FELT STRIP—Dial scale	RMS-042		SPRING—Iron core adjusting screw
RDK-042		KNOB—(Plain) Pine, Blonde Mahogany, and Champagne	RMS-043		SCREW—Guide wire connecting tuning vanes to adjustment screws
RDK-043		KNOB—(Plain) Mahogany	RMS-044		SCREW—For tuning vane adjustment
RDK-044		KNOB—(Plain) Walnut	RMS-076		SPRING—Type 2 dial cord spring (late production)
RDK-045		KNOB—(Arrow) Pine, Blonde Mahogany, and Champagne	RMS-078		SHAFT—For mounting push-button keys
RDK-046		KNOB—(Arrow) Mahogany	RMU-030		SHAFT—Tuning shaft
RDK-047		KNOB—(Arrow) Walnut	RMU-031		FLYWHEEL—Less setscrew
RDK-092		KNOB—(Plain) for Model 45 only	RMW-013		PULLEY—Main tuning drum
RDK-080		KNOB—(Arrow) for Model 45 only	RMW-016		PULLEY—Hoist
RDP-025		POINTNER ASSEMBLY—Model 43 only	RMW-018		PULLEY—Idler pulley for dial cord
RDP-026		POINTNER ASSEMBLY—Models 41, 42, 44, 45	RMX-032		CABLE ASSEMBLY—For tuning eye
RDS-023		DIAL SCALE ASSEMBLY	RMX-006		FLYWHEEL—With setscrew
RDS-045		SCALE—Dial scale	RMX-018		PULLEY—Hoist pulley and shaft
RDX-020	S6, L17, 18, L19, 20, 21, L22	PUSH-BUTTON SWITCH ASSEMBLY	RMX-019		TUNER TOP PLATE AND SHAFT ASSEMBLY
REI-006		IRON CORE—AM tuning	RMX-021		BRACKET AND SPRING ASSEMBLY—For push buttons
RHE-001		EYELET—For connecting FM coil links	RRC-026		BASE TONE CONTROL ASSEMBLY—Base
RHG-007		GROMMET—Rubber grommet for tuning eye cable	RRC-027		TREBLE TONE CONTROL ASSEMBLY—Treble
RHG-008		GROMMET—Rubber grommet for tuner plate	RRC-050		RESISTOR—2 meg., dual potentiometer
RHG-009		GROMMET—Rubber grommet for tuner plate near tuning shaft	RRT-001		RESISTOR—900 ohms, 6 w., 150 ohms, 6 w., wirewound
RHG-010		GROMMET—For GSC7 tube socket	RRW-016		RESISTOR—100 ohms, 2 w., variable resistor
RHM-012		CUSHION—Dial scale	RSP-004		SWITCH—Push-button switch
RHM-024		LINK—Hoist link, holding end of hoist cord	RSP-006		FLUG—Loop plug
RHM-025		RING—Retaining ring for shaft, mounting push-button keys	RSS-003	S7	SWITCH—Squelch switch
RHN-004		NUT—Hex nut for tuning vane adjustment	RSW-029	S1	SWITCH—Band change switch
RJC-001		CONTACT PIN—For speaker connection	RSX-010	T7	SWITCH ASSEMBLY—Phono-lite
RJJ-001		RECEPTACLE—Receptacle for octal plug on receiver chassis	RTD-001	T4	FM DISCRIMINATOR TRANSFORMER
RJJ-002	J3	RECEPTACLE—For loop	RTL-017	T4	BC 1st IF TRANSFORMER
RJP-004	P1	RECEPTACLE—6AL7 tuning eye socket	RTL-022	T5	BC 2nd IF TRANSFORMER
RJP-006	J1	PLUG—Male phono input, from preamplifier	RTL-043	T6	BROADCAST 3rd IF TRANSFORMER
RJP-007	J1	SHELL—For loop plug	RTO-026	T202	TRANSFORMER—Audio output to speakers
RJP-008	J201	RECEPTACLE—117 v. a-c output to SPU chassis	RTP-035	T201	TRANSFORMER—Power transformer, 60 cycles
RJP-009	J202	RECEPTACLE—Special power unit a-c	RTU-036	T201	TRANSFORMER—Power transformer, 30 cycles
RJP-013	J202	RECEPTACLE—For pilot light and speaker cable plug	RWL-004		CORD AND PLUG—For 117 v. a-c to main chassis
RJS-012	J203	MOUNTING PLATE—For mounting electrolytic on SPU chassis	RWM-001	P201	CORD—Cord and plug for 117 v. a-c to special power unit, Model 41 and 42
RJS-017	J203	TUBE SOCKET—Octal base socket on SPU chassis	RWM-003	P201	CORD—Cord and plug for 117 v. a-c to special power unit, Model 43
RJS-030		SOCKET—For tubes V4, V5, V6, and V7	RWM-004	P201	CORD—Cord and plug for 117 v. a-c to special power unit, Model 44
RJS-044		TUBE SOCKET—Tube socket for V1, V2, and V3	RWM-005	P201	CORD—Cord and plug for 117 v. a-c to special power unit, Model 45
RJS-052		SOCKET—Tube socket for V9, V201, V202, V203, V204, V205, and V206	RYC-006		TAB—Push-button key tab (phono)
			RYC-007		STATION CALL LETTERS—For push-button keys
			RYC-008		TAB—Push-button key tab (OFF)