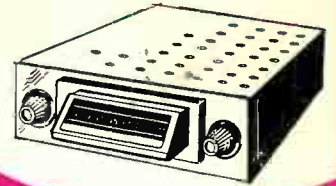
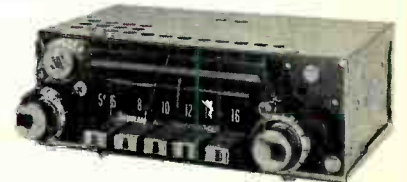


SAMS PHOTOFACT[®]



AUTO RADIO SERIES

AR-46
46
DECEMBER 1967



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HOWARD W. SAMS & CO., INC.

Indianapolis, Indiana

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SAMS PHOTOFACT[®] AUTO RADIO SERIES

VOLUME

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by the

Howard W. Sams

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REMOVAL INSTRUCTIONS

GENERAL REMOVAL INFORMATION

Most radios and speakers can be removed for service by following the steps shown in this block of information. Check the Make, Model and Year of car listed below. If more specific instructions are required, they are shown.

Step 1 Disconnect power, speaker and antenna leads. Step 4 Remove radio from under dash.
Step 2 Remove knobs. Step 5 Remove nuts holding speaker and remove speaker from under dash.
Step 3 Remove nuts from control bushings and cabinet braces.

BUICK - 1967

- Step 1. Remove knobs and nuts from control bushings.
- Step 2. Remove screws from side windshield garnish mouldings and remove.
- Step 3. Remove screws under lip of instrument panel cover. Lift up front of cover and disconnect speaker connector. Remove instrument panel cover. (Speaker accessible for removal)
- Step 4. Disconnect speaker connector, and antenna lead. Remove screw from rear support brace.
- Step 5. Remove radio from top of instrument panel.

BUICK SPECIAL - 1967

- Step 1. Remove knobs and nuts from control bushings.
- Step 2. Remove screws from center air conditioning duct and lower duct.
- Step 3. Disconnect speaker connector and antenna lead.
- Step 4. Remove ash tray housing. Remove both screws from radio bottom brace and remove radio from under dash.

SPEAKER REMOVAL

- Step 1. Remove lower air conditioning duct.
- Step 2. Remove glove box.
- Step 3. Remove nuts from speaker mounting and remove speaker.

CHEVROLET-1967

- Step 1. Remove Phillips screws from instrument panel trimplate and remove trimplate.
- Step 2. Remove Phillips screws from radio trimplate, remove knobs and trimplate.
- Step 3. Remove Phillips screws from ash tray housing.
- Step 4. If car has air conditioning, remove left air conditioning hose. Remove two (2) screws from duct and push aside.
- Step 5. Remove antenna lead and speaker connector.
- Step 6. Remove screws from bottom brace and remove brace.
- Step 7. Remove nuts from control bushing and remove radio from under dash.

SPEAKER REMOVAL

- Step 1. Remove radio.
- Step 2. Remove 4 screws on heater control head and lower.
- Step 3. Remove screw from speaker mounting bracket and remove speaker through control hole.

CHEVROLET TRUCK - 1967

See General Removal Information

CHEVY II - 1967

See General Removal Information

CAMARO - 1967

- Step 1. Remove knobs and nuts from control bushing.
- Step 2. Remove ash tray.
- Step 3. Remove Phillips screw from lower edge of trimplate and remove trimplate.
- Step 4. If car has air conditioning. Remove screws from lower air conditioning air plenum. Remove screws from main air conditioning distribution duct and remove both ducts.
- Step 5. Remove Phillips screws from ash tray housing and remove.
- Step 6. Remove screw from radio rear mounting bracket.
- Step 7. Disconnect antenna lead and speaker connector.
- Step 8. Remove screws from front braces.
- Step 9. Remove radio from under dash.

CHEVELLE - 1967

- Step 1. If car has air conditioning, remove 2 screws and lower main air conditioning manifold duct. Remove Philips screws from underside of air conditioning control, disconnect Packard connector and lower control.
- Step 2. Remove knobs, remove spanner nuts from control bushing. Remove trimplate.
- Step 3. Remove antenna lead and speaker connectors.
- Step 4. Remove screw from side brace and remove radio from under dash.

CORVAIR - 1967

- Step 1. Remove ash tray and housing. Remove screw from bottom brace of radio.
- Step 2. Remove knobs and nuts from control bushing. Remove radio trimplate.
- Step 3. Remove antenna lead and speaker connector.
- Step 4. Bend dash bushing tabs forward to clear radio.
- Step 5. Remove radio out front of dash.

SPEAKER REMOVAL

- Step 1. Remove Radio.
- Step 2. Remove screw from mounting bracket and remove speaker thru radio opening.

DODGE-CHRYSLER-PLYMOUTH - 1967

- Step 1. Remove Phillips screw from Face Plate and remove.
- Step 2. Remove nut from rear brace.
- Step 3. Disconnect "A" lead, speaker leads, and antenna.
- Step 4. Remove screws from front mounting.
- Step 5. Remove radio from under dash.

DODGE TRUCK - 1967

- Step 1. Remove Knobs.
- Step 2. Remove screws from front of escutcheon. Remove escutcheon.
- Step 3. Remove nuts from control bushings. Remove escutcheon mounting plate.
- Step 4. Disconnect "A" lead at fuse holder, speaker connector and antenna lead.
- Step 5. Remove nut from bottom brace, and remove radio from under dash.

DART - 1967

See General Removal Information.

FORD & THUNDERBIRD - 1967

- Step 1. Remove screws from instrument panel escutcheon moulding.
- Step 2. Remove moulding.
- Step 3. Remove radio and instrument panel knobs. Remove screws from instrument panel escutcheon. Remove escutcheon.
- Step 4. Disconnect antenna lead, "A" lead and speaker leads.
- Step 5. Remove nuts from control bushings and screw from rear brace.
- Step 6. Remove radio thru opening in dash.

MUSTANG - 1967

See General Removal Information

FORD ECONOLINE TRUCK - 1967

- Step 1. Remove knobs.
- Step 2. Remove screws from front of escutcheon. Remove escutcheon.
- Step 3. Remove nuts from control bushings. Remove escutcheon mounting plate.
- Step 4. Disconnect "A" lead at fuse holder, speaker connector and antenna lead.
- Step 5. Remove nut from bottom brace, and remove radio from under dash.

FAIRLANE -1967

- Step 1. Remove Phillips screws from lower instrument panel escutcheon.
- Step 2. Remove radio and instrument panel knobs. Remove instrument panel escutcheon.
- Step 3. Disconnect antenna lead, "A" lead and speaker lead.
- Step 4. Remove nuts from control bushings and screw from rear brace.
- Step 5. Remove radio out front of instrument panel.

MERCURY - 1967

See General Removal Information.

COUGAR - 1967

See General Removal Information

COMET- 1967

See General Removal Information

OLDSMOBILE F-85 - 1967

- Step 1. Remove screws from air conditioning duct and lower duct.
- Step 2. See General Removal Information.

FIREBIRD -1967 1/2

- Step 1. Remove knobs and nuts from control bushing.
- Step 2. Remove ash tray.
- Step 3. Remove Phillips screw from lower edge of trimplate and remove trimplate.
- Step 4. If car has air conditioning. Remove screws from lower air conditioning air plenum. Remove screws from main air conditioning distribution duct and remove both ducts.
- Step 5. Remove Phillips screws from ash tray housing and remove.
- Step 6. Remove screw from radio rear mounting bracket.
- Step 7. Disconnect antenna lead and speaker connector.
- Step 8. Remove screws from front braces.
- Step 9. Remove radio from under dash.

TORONADO - 1967

- Step 1. Remove screws from bottom cover plates on both sides of steering column and remove plates.
- Step 2. Remove 2 screws from instrument panel brackets on both sides of steering column. Remove 2 screws at top of instrument panel.
- Step 3. Remove 2 nuts from steering column mounting. Lower steering wheel and rest on seat.
- Step 4. Disconnect speaker connector and antenna lead.
- Step 5. Remove knobs and nuts from control bushings.
- Step 6. Loosen instrument panel support bracket and swing aside.
- Step 7. Remove 4 screws from instrument panel cover, remove 1 nut from right side of instrument panel cover and remove cover.
- Step 8. Remove nut from radio bottom brace instrument panel forward and remove radio.

SPEAKER REMOVAL

- Step 1. Remove glove box and glove box door.
- Step 2. Remove right side air condition hose.
- Step 3. Remove screws from speaker mounting and remove speaker.

SUNBEAM

See General Removal Information.

PONTIAC - 1967

- Step 1. Remove screw from rear air condition distribution duct and remove.
- Step 2. See General Removal Information.

SPEAKER REMOVAL

- Step 1. Remove garnish moulding.
- Step 2. Remove screws on lower covers of instrument panel covers.
- Step 3. Tilt front of instrument panel cover up and remove cover.
- Step 4. Remove screws from speaker mounting and remove speaker.

TEMPEST - 1967

- Step 1. If car has air conditioning. Remove screw from courtesy light. Remove screws from air conditioning duct. Remove screw from each louvre and lower duct.
- Step 2. Remove knobs and nuts from control bushings.
- Step 3. Disconnect antenna lead, speaker connector, and dial light.
- Step 4. Remove screw from bottom brace and remove radio from under dash.

RAMBLER - 1967

- Step 1. Remove Ash Tray
- Step 2. See General Removal Information

VALIANT - 1967

See General Removal Information.

VOLKSWAGEN SEDAN-KARMANN GHIA -FASTBACK-SQUAREBACK

- Step 1. Disconnect power, speaker and antenna leads.
- Step 2. Remove knobs.
- Step 3. Remove nuts from control bushings. From inside of luggage compartment, remove nut from rear brace.
- Step 4. Remove radio thru luggage compartment opening.
- Step 5. Remove nuts holding speaker and remove speaker thru luggage compartment opening.

TRANSPORT-TYPE 3

See General Removal Information.



TRADE NAME : Blaupunkt Model New Yorker - Series X
 (From Serial Numbers X1485001)
 SUPPLIER : For Current Address, See Annual Index.
 TYPE SET : 14-Transistor Tuner, 4-Transistor Output
 Chassis
 POWER SUPPLY: 6 or 12 Volt Storage Battery
 RATING : .36 Amp. @ 6.3Volts DC
 .8 Amp. @ 12.6 Volts DC



VOLTAGE CONVERSION INSTRUCTIONS

POWER CHASSIS J2319/04Z

Radios using Power Chassis J2319/04Z are equipped with 6-12V supply selector and polarity selector printed slides, and are located on the power output printed board. The two selectors should be inserted as follows:

12V Operation - Push the 6V-12V supply selector into 6V/12V slot (in the output transistors heat sink plate) so that the arrow engraved in the heat sink plate is pointing to the side of the 6/12V supply selector engraved "12V."

6V Operation - Insert the 6V/12V supply selector with the engraved arrow pointing to the side of 6V/12V supply selector engraved "6V."

Negative Ground - Insert the polarity selector into the slot marked with a ground symbol (in the output transistors heat sink plate) so that arrow engraved in the heat sink plate is pointing to the side of the polarity selector engraved with a minus (-) symbol.

Positive Ground - Insert the polarity selector into the slot marked with a ground symbol (in the output transistors heat sink plate) so that the arrow engraved in the heat sink plate is pointing to the side of the polarity selector engraved with a plus (+) symbol.

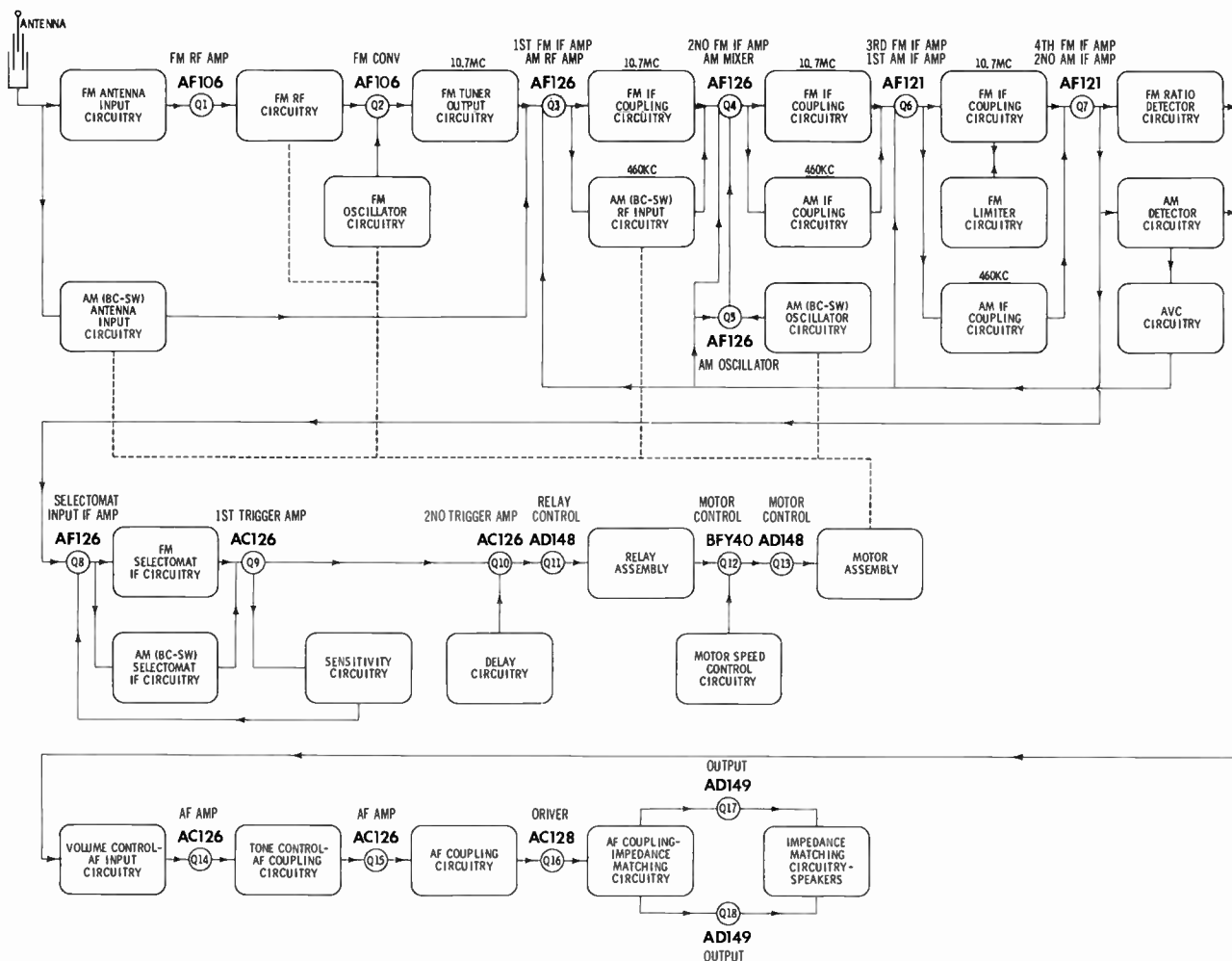


Fig. 1. Circuit Block Diagram.

CIRCUIT DESCRIPTION

The Blaupunkt "New Yorker" is an FM-AM-SW auto radio that may be tuned three ways: (1) manual selection of stations by turning tuning knob, (2) pre-selected stations (two FM, two AM, one SW) by pressing push buttons, (3) Selectomat (automatic power tuning) by pressing tuning knob. Push buttons also serve as band selectors; pressing either FM button moves switch S1 to the FM position, pressing either AM button moves both switches S1 and S2 to the AM position, pressing the SW button moves switch S1 to the AM position and switch S2 to the SW position.

FM Tuner (Q1, Q2)

The incoming FM RF signal from the antenna is coupled through C17, L1, and L2 to base of Q1 where it is amplified. Q1 collector output is to a tuned circuit consisting of L4, C24, and C25 and determines the frequency of the selected signal. This signal is coupled to the emitter of converter Q2. L7, C37, and C38 form the oscillator circuitry. L7 is ganged mechanically with L4 and frequency of oscillator is always 10.7MC above Q1 output. Oscillator signal is also coupled to Q2 emitter. Q2 collector output is tuned to resultant difference signal which is 10.7MC.

FM IF Amplifiers (Q3, Q4, Q6, Q7)

The 10.7MC signal is amplified to high level necessary for good detection by four transistor stages - Q3, Q4, Q6, and Q7. Coupling and proper impedance matching between stages is accomplished by coils and capacitors. Tunable coils L12, L19, and L22 increase sensitivity and selectivity. FM limiter diodes X3 and X4 prevent FM overload and provide noise suppression.

FM Detector

Tunable coil L25, diodes X5 and X6, and associated components form the FM ratio detector. After detection, audio signal is fed through equalization network R48-C89 and a section of S1 to the volume control.

AM(BC-SW) RF-Oscillator-Mixer (Q3, Q4, Q5)

Incoming broadcast (AM ON pushbutton) RF signal is coupled through input circuitry (C42, L9, noise limiter X1, C44, C45, C46) and antenna tuning coil L11 to base of AM RF amplifier Q3. Frequency of output signal of Q3 is determined by tuned circuit L13, C57, and C58. This signal is fed to base of AM mixer Q4.

Q5 AM oscillator frequency is determined by L17, C70, C71, and C73. L17 is ganged mechanically with L13 and oscillator frequency is always 460KC above Q3 output. Oscillator signal is coupled to AM mixer, Q4, emitter and Q4 collector output is to circuit tuned to difference signal of 460KC (L20). Short wave signal path is similar except L10 is antenna coil, L14 is paralleled with L13 in RF section, and L18-C74 are paralleled with L17 in oscillator section.

AM(BC-SW) IF Amplifiers (Q6, Q7)

The 460KC IF signal is amplified to high level necessary for detection by Q6 and Q7. Coupling between stages is by tunable coils L20, L21, L23, and L24 and capacitors C75 and C81 for proper impedance matching and to improve sensitivity and selectivity.

AM Detector-AVC (X7, X8)

L26 couples IF signal to diode X7 where audio information is recovered and AVC level is determined. AVC voltage is stabilized by diode X8 and capacitors C1 and C5 then fed back to RF amplifier, mixer, oscillator, and IF stages. Audio signal is coupled through a section of S1 to the volume control.

AF Amplifiers-Driver-Output (Q14, Q15, Q16, Q17, Q18)

Audio signal developed at detectors must be amplified to usable level to drive speaker. Detector output is coupled through C11 to high side of volume control then from wiper arm through C13 to base of first AF amplifier Q14. Output of Q14 is to tone compensation network then to second AF amplifier Q15. Q16 drives T1 which couples signal to output transistors Q17 and Q18. Output stage supplies power required for T2 to drive speaker.

Selectomat-Motor Control (Q8, Q9, Q10, Q11, Q12, Q13)

The signal seeking assembly consists of a mechanical portion for power tuning the radio through the frequency band and an electronic portion providing a means whereby an incoming station signal stops the tuner on that station. Momentarily pressing tuning shaft closes S4 activating K1 which in turn supplies power to motor and selectomat circuitry, mutes speaker, and connects AVC line to selectomat circuitry for sensitivity control. Relay K1 is held "ON" by Q11 conduction until trigger signal from Q9 and Q10 releases it. The undetected IF signal is used as a source for trigger voltage. IF signal is amplified by Q9 and rectified by X9 and X10. Resultant DC voltage controls Q9 and Q10 trigger amplifiers and in turn Q11 relay control. R5, R6, and R7 control sensitivity of selectomat circuitry by varying bias of Q9 and Q10. Sensitivity switch S3 controls overall sensitivity of IF stages, while seeking, by changing bias at bases of these stages. Q12 and Q13 regulate motor speed so that pointer sweep time will be constant even through input voltage varies.

NOTE: Selectomat printed circuit board may be removed by lifting yellow arm up (away from board) and pulling up on plastic tab at end of board. Radio will continue to operate with board removed. To service selectomat components with board removed from radio, order extension cable part number KA0874/01Z. Add one lead to cable to connect 3A of socket M6 to Circuitrace point 119 on the board.

Power Supply

The power supply is designed to operate on either 6 or 12 volts input, positive (+) or negative (-) ground. Both voltage conversion and ground polarity conversion is accomplished by inserting shorting plugs into sockets on the output chassis. See "Adjustments" section.

ADJUSTMENTS

Preliminary Information

In order to avoid incorrect adjustments, the radio should be stored at normal room temperature for one hour before making adjustments. All adjustments are made with 7 or 14 volts input measured from fuse lead to chassis. Turn radio off before making meter connections.

FM Converter Bias Adjustment

Operating bias of FM Converter Q2 is correct when voltage drop across R16 is .22 volts. Bias should be checked after replacement of Q2 or associated components. Adjustment procedure:

1. Position FM tuning covers half inside and half outside coils (approximately 96MC).
2. Connect DC VTVM across R16 (CT1 and 16).
3. Adjust R2 for .22 volt reading on meter.

Selectomat Bias Adjust

To set proper operating point of Second Trigger Amplifier Q10, perform following steps:

1. Connect DC VTVM from wiper arm of R8 (CT121) to 6.2 volt source (CT5).

2. With motor running, adjust R8 for .4 volt reading on meter.

Motor Running Time Adjust

Adjust R9 for one dial sweep (either direction) in 9 seconds plus or minus 1 second.

Output Bias Adjust

To set rest current of Output Transistors Q17 and Q18, perform the following steps:

1. Turn volume control to minimum.
2. Connect milliammeter in series with common collector voltage supply load (terminal 6 of T2).
3. Adjust R96 for reading of 75ma plus or minus 25ma on the meter.

See Alignment section for other control adjustments.

Voltage Conversion (Models Using Power Chassis J2319/02Z, /05Z)

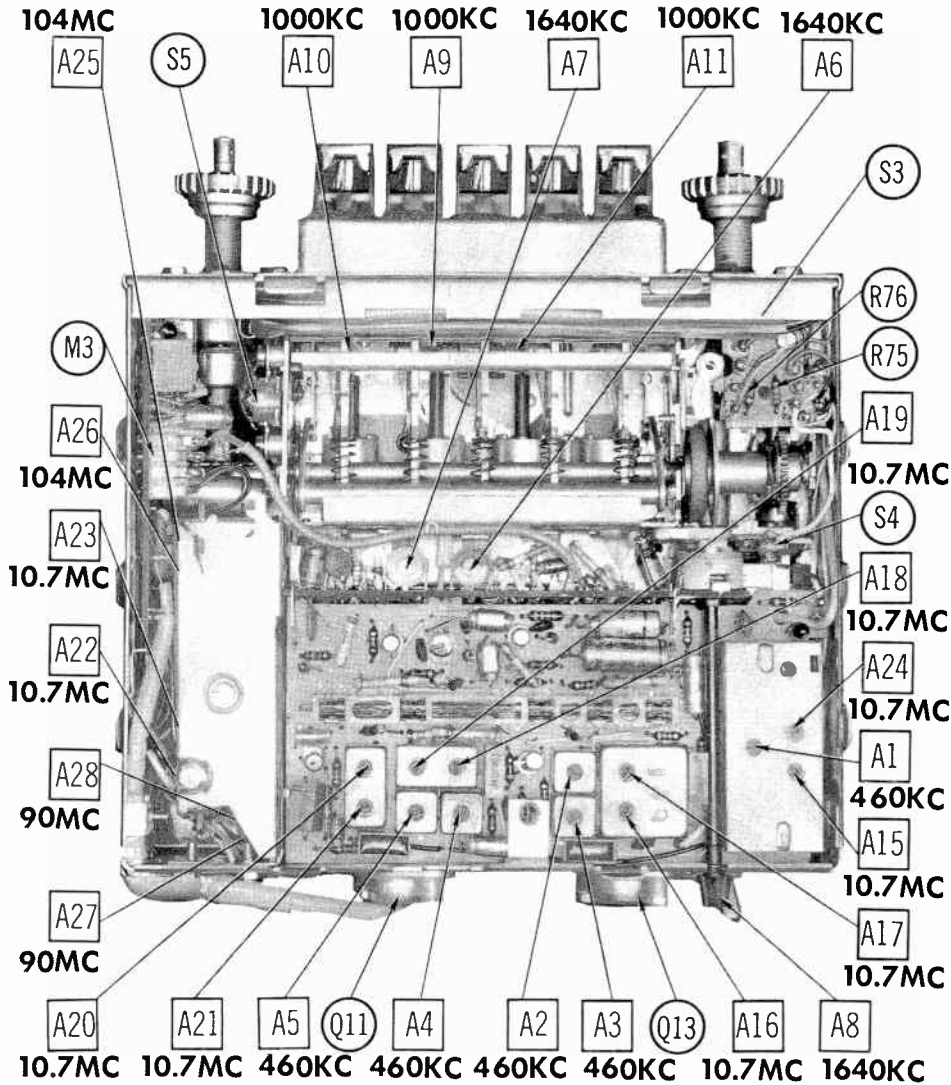
The voltage conversion plug is located on the output chassis and is marked with a 6 on one end and 12

on the other. To change, remove plug by pulling straight out and replace with desired input voltage number nearest diamond shaped stud on conversion socket.

chassis cover. Polarity plug is marked - at one end, + at the other. Remove plug by pulling straight out and then replace with desired symbol, positive ground (+), negative ground (-), nearest diamond shaped stud on conversion socket.

Polarity Conversion

To change ground polarity, first remove output



Chassis Top View - Alignment Points.

ALIGNMENT INSTRUCTIONS

Check for specified source voltage.
Use only enough generator output to provide a usable indication.

The dial glass and dial reflector plate must be removed to make A9 thru A14 adjustments. Remove dial glass by prying outward. Position dial pointer at extreme left hand stop. Place a screw driver blade behind right side of dial reflector plate and remove plate by prying outward.

AM Alignment - "AM" Pushbutton Depressed

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mf to point Δ , low side to ground.	460 KC (400% Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4, A5	Adjust for maximum.
2.	Thru dummy (Fig. A) to antenna receptacle.	1640KC	"	"	A6, A7, A8	"

ALIGNMENT INSTRUCTIONS (cont)

AM Alignment(Cont'd.)

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. IF necessary, back tuning cores (A9, A10, A11) out of coils but not out of forms. Repeat step 2.					
3. Thru dummy (Fig. A) to antenna receptacle.	1000KC	Tune to Signal.	Output Meter across voice coil.	A9, A10, A11	Adjust for maximum. Repeat steps 2 & 3 until no further improvement is noted.
With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.					

Pushbutton Adjustment

<ol style="list-style-type: none"> 1. Press button for desired band (AM, SW, FM). 2. Pull button out. 3. Tune manually to desired station. 	<ol style="list-style-type: none"> 4. Press button in firmly. 5. Repeat for remaining buttons.
---	--

SW RF Alignment – "SW" Pushbutton Depressed

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
4. Thru dummy (Fig. A) to antenna receptacle.	5.95MC (400v Mod.)	Tune to signal (50.4 Meters)	Output Meter across voice coil.	A12, A13	Adjust for maximum.
5. Thru dummy (Fig. A) to antenna receptacle.	6.25MC	Tune to signal (48 Meters)	"	A14	"

FM IF Alignment Using AM Signal Generator – "FM" Pushbutton Depressed

High side thru .1 mfd to point \diamond B, low side to ground.					
GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS	
6. 10.7MC (Unmod.)	Point of non-interference.	DC probe of VTVM to point \diamond C; common to ground.	A15, A16, A17, A18, A19, A20, A21	Adjust for maximum.	
7. "	"	DC probe to point \diamond D; common to ground.	A24	Adjust for zero reading. A positive or negative reading will be obtained on either side of the correct setting.	

FM IF Alignment Using FM Signal Generator "FM" Pushbutton Depressed

High side thru .1 mfd to point \diamond B, low side to ground. Use only enough marker signal to obtain indication. Use 60v frequency modulated signal with 450KC sweep. Use 120v sawtooth voltage in scope for horizontal deflection.					
GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS	
6. 10.7MC (450KC Swp.)	Point of non-interference	Vert. amp. of Scope to point \diamond C; low side to ground.	A15, A16, A17, A18, A19, A20, A21	Disconnect stabilizing capacitor C3. Adjust for maximum gain and symmetry of response similar to Fig. B with marker as shown. Reconnect C3.	
7. "	"	Vert. amp. to point \diamond D; low side to ground.	A24	Adjust A24 (Secondary) to place marker at center of crossover lines similar to Fig. C. Adjust A15 (Primary) for maximum amplitude and straightness of crossover lines.	

FM RF Alignment – "FM" Pushbutton Depressed

Connect generator across antenna terminals with 120Ω carbon resistors in series with each lead.					
GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS	
8. 100MC	Tune to signal.	DC probe of VTVM to point \diamond C; common to ground.	A22, A23	Adjust for maximum.	
9. Any (87-108MC) (AM modulated)	Tune to signal.	"	R3	Adjust for MINIMUM.	

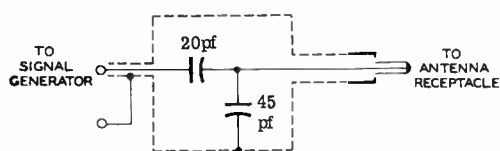


Fig. A

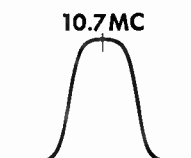


Fig. B

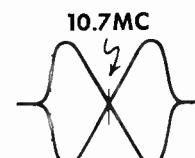


Fig. C

ALIGNMENT INSTRUCTIONS (cont)

FM RF Alignment (Cont'd.)

GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS
10. 104MC	104MC	DC probe of VTVM to point $\diamond C$; common to ground.	A25, A26	Adjust for maximum.
11. 90MC	Tune to signal.	"	A27, A28	Rock tuning and adjust for maximum. Repeat steps 10 and 11 until no further improvement can be made.

AF Alignment – "AM" Pushbutton Depressed

Connect high side of audio generator thru .1 mfd to base of Q14, common to ground.				
GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS
12. 1000 cps	Any	Output Meter across Voice coil.	R95	Adjust for maximum output, minimum distortion.

SELECTOMAT ALIGNMENT

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	RF METER	ADJUST	REMARKS
Sensitivity Switch (S3) in #2 Red Position.					

"FM" Pushbutton Depressed

13.	High side to antenna, low side to ground.	94MC	Motor Running		A29	Adjust so that pointer stops same distance from 94MC when running either direction.
14.	"	"	" "		R7	Adjust so that pointer stops on 94MC.
15.						Repeat steps 13 and 14 until pointer stops exactly at 94MC.

"AM" Pushbutton Depressed

16.	Thru dummy (Fig. A) to antenna receptacle.	800KC	Motor Running		A32	Adjust so that pointer stops same distance from 800KC when running either direction.
17.	"	"	" "		R5	Adjust so that pointer stops on 800KC.
18.						Repeat steps 16 and 17 until pointer stops exactly at 800KC.

"FM" Pushbutton Depressed

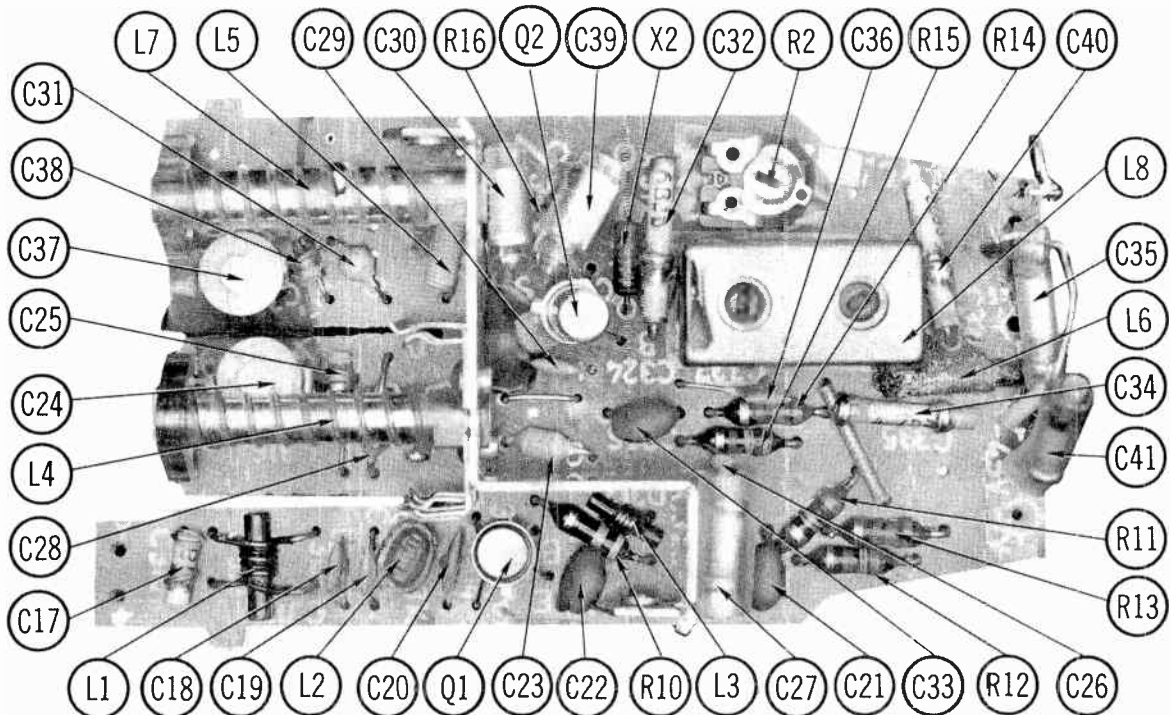
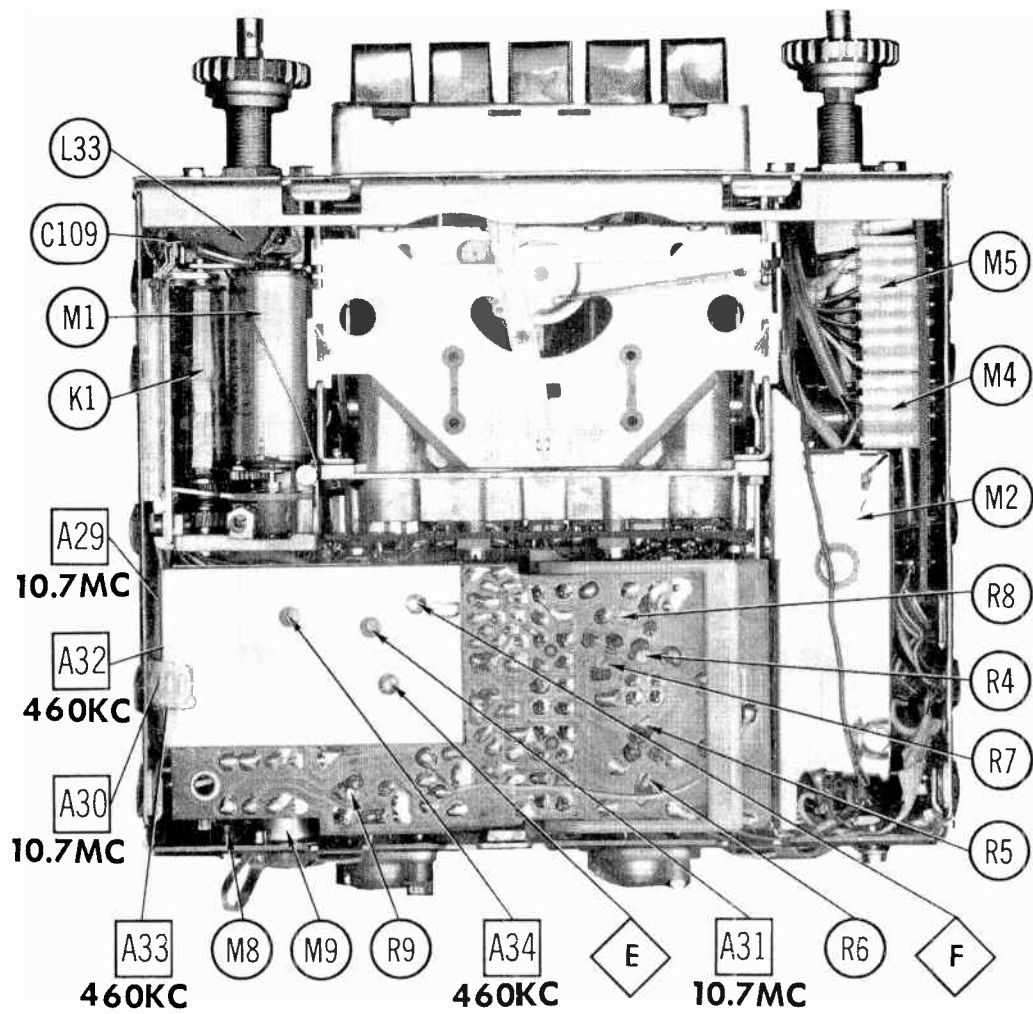
19.	Thru dummy (Fig. A) to antenna receptacle.	6MC	Motor Running		R6	Adjust so that pointer stops on 6MC.
Perform remaining steps only if proper results cannot be obtained in steps 13 and 19.						
Sensitivity Switch (S3) in #1 Green Position. Disable motor by disconnecting red lead from reversing switch S5.						

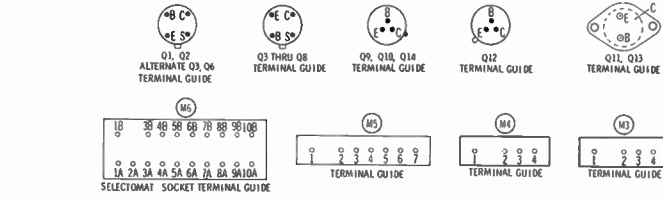
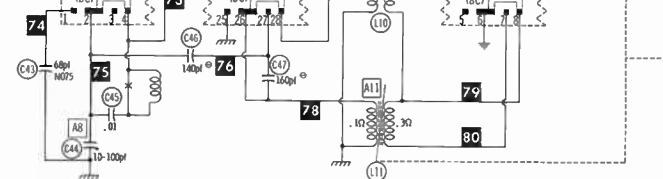
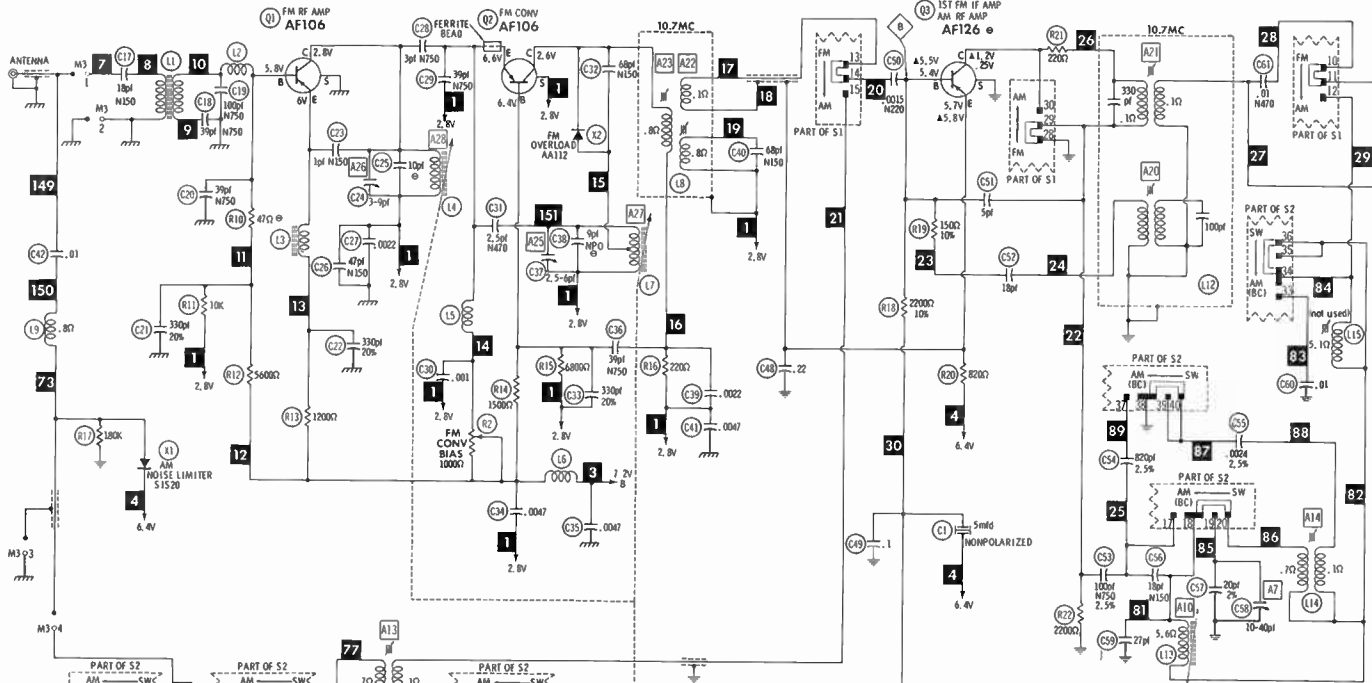
"SW" Pushbutton Depressed

20.	High side thru .1 mfd to $\diamond B$, low side to ground.	10.7MC	Point of non-interference	Probe of RF meter to point $\diamond E$, common to ground.	A30	Adjust for approximately 300MV with relay engaged.
21.	"	"	"	"	A29	Adjust for MINIMUM.
22.	"	"	"	Probe of RF meter to point $\diamond F$, common to ground.	A31	Adjust for ratio of 3.8 to 1 between points $\diamond E$ and $\diamond F$ (e.g. 300MV @ $\diamond E$, then 80MV @ $\diamond F$).
23.						Repeat steps 20, 21, and 22.

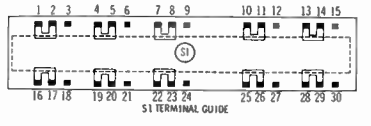
"AM" Pushbutton Depressed

24.	High side thru .1 mfd to $\diamond B$, low side to ground.	460KC	"	Probe of RF meter to point $\diamond E$, common to ground.	A33	Adjust for approximately MV with relay engaged.
25.	"	"	"	"	A32	Adjust for MINIMUM.
26.	"	"	"	Probe of RF meter to $\diamond F$, common to ground.	A34	Adjust for ratio of 6 to 1 between points $\diamond E$ and $\diamond F$ (e.g. 300MV @ $\diamond E$, then 50MV @ $\diamond F$).
27.						Repeat steps 25 and 26.





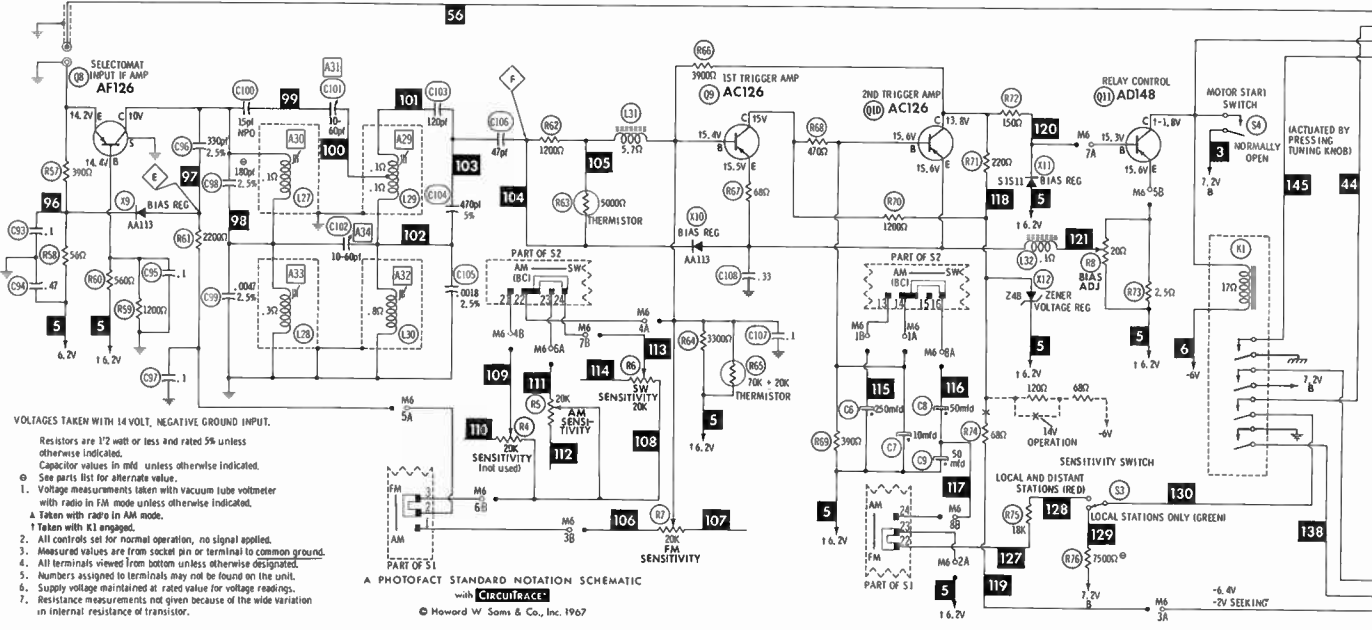
SELECTOR SWITCHES S1 AND S2 ACTUATED BY MANUAL PUSH BUTTONS



SELECTOR SWITCH S1 SHOWN IN FM SWITCH SEQUENCE:
1. FM
2. AM

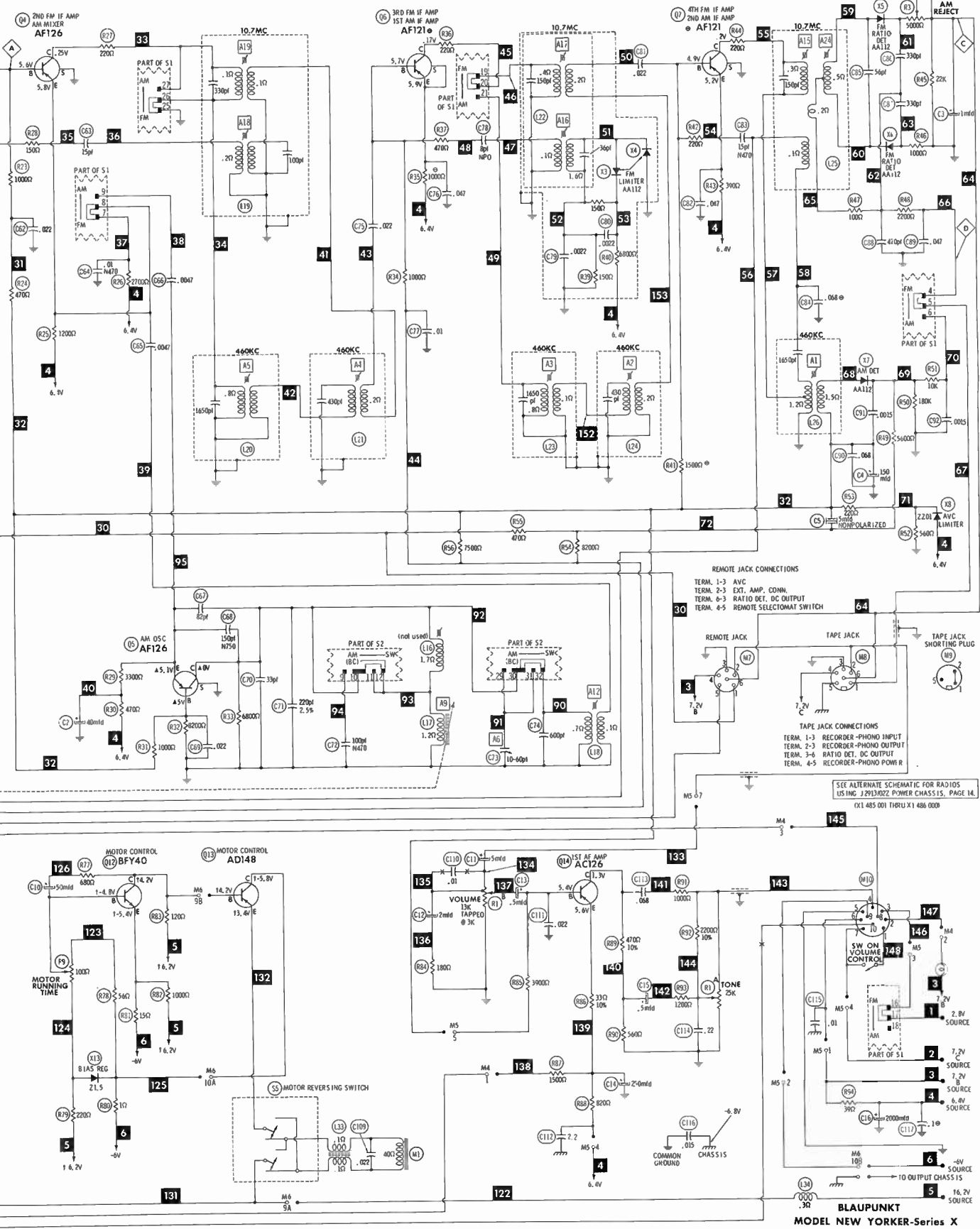


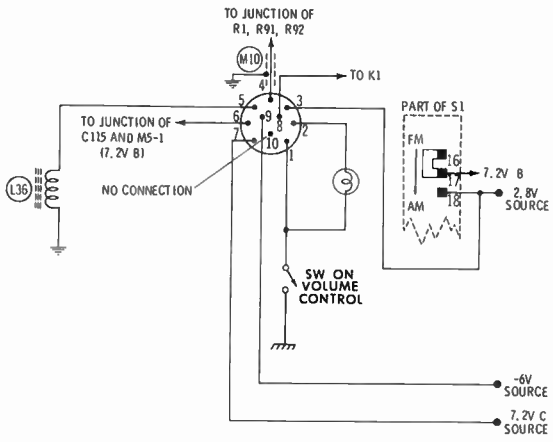
SELECTOR SWITCH S2 SHOWN IN SW SWITCH SEQUENCE:
1. NOT USED
2. AM (BC)
3. SW



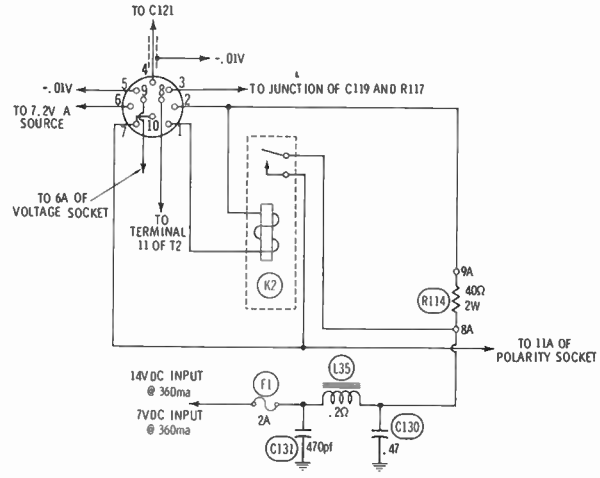
- VOLTAGES TAKEN WITH 14 VOLT, NEGATIVE GROUND INPUT.
- Resistors are 1/2 watt or less and rated 5% unless otherwise indicated.
Capacitor values in mfd unless otherwise indicated.
See parts list for alternate value.
1. Voltage measurements taken with vacuum tube voltmeter with ratio in FM mode unless otherwise indicated.
 2. Taken with ratio in AM mode.
 3. Taken with K1 engaged.
 4. All controls set for normal operation, no signal applied.
 5. Measured values are from socket pin or terminal to common ground.
 6. All terminals viewed from bottom unless otherwise designated.
 7. Numbers assigned to terminals may not be found on the unit.
 8. Supply voltage maintained at rated value for voltage readings.
 9. Resistance measurements not given because of the wide variation in internal resistance of transistor.

A PHOTOCAT STANDARD NOTATION SCHEMATIC with **Circuitrace**
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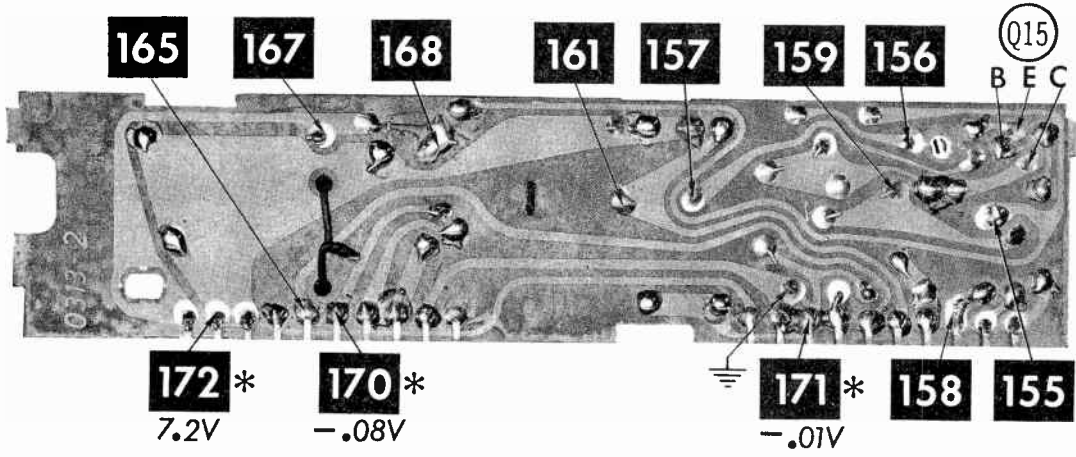


MAIN CHASSIS
X1 485 001 THRU X1 486 000

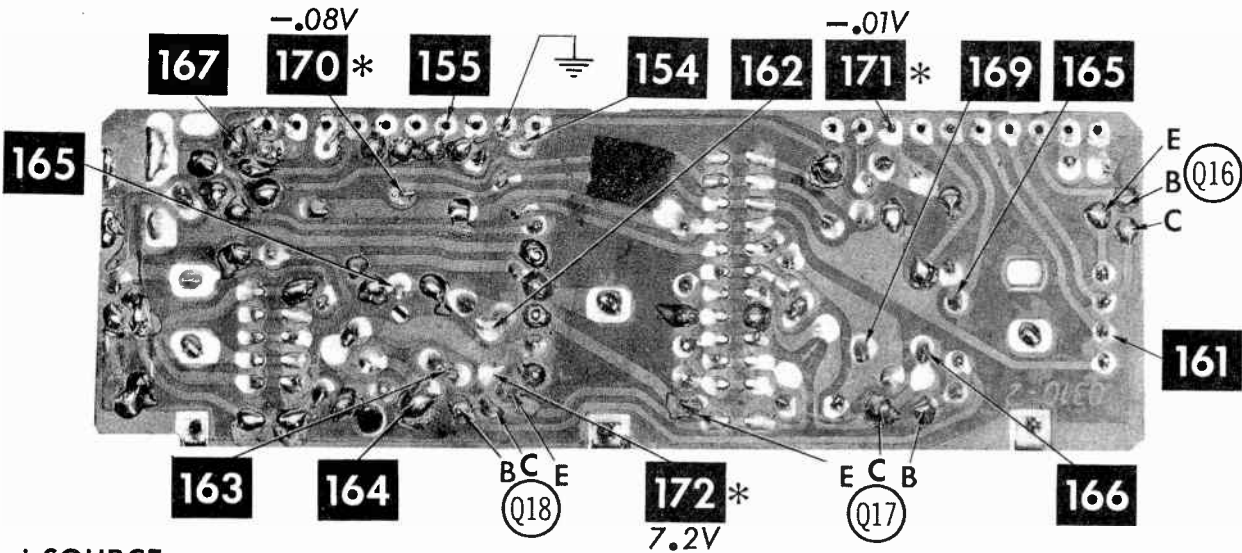


J2319/02Z OUTPUT CHASSIS

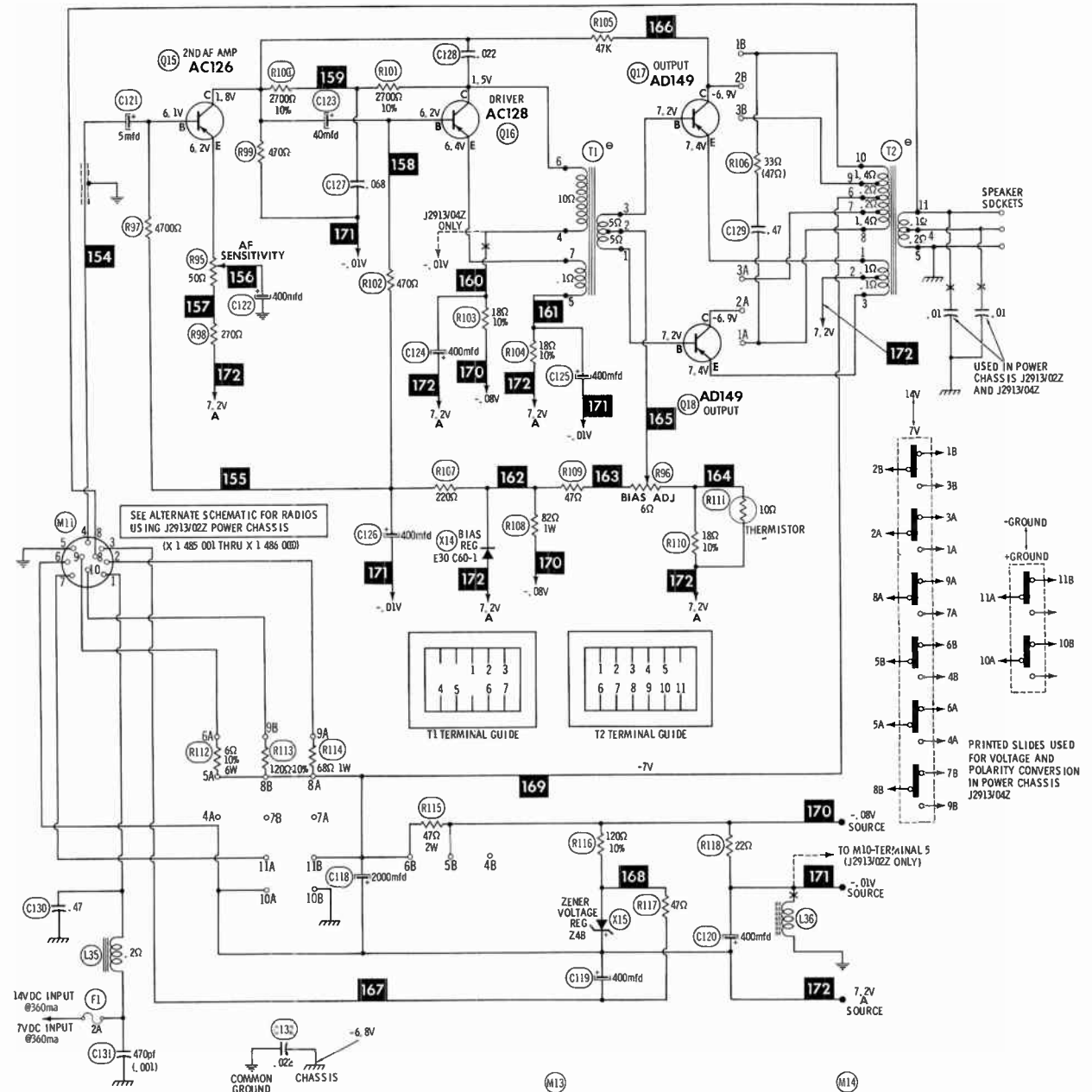
Alternate Interconnecting Plug Circuit for Models Using Power Chassis L2319/02Z.



*SOURCE



*SOURCE



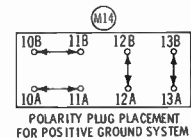
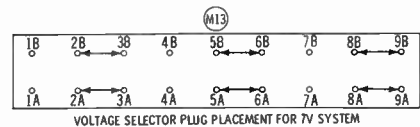
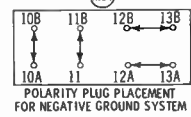
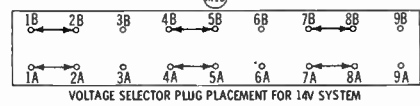
VOLTAGES TAKEN WITH 14 VOLT, NEGATIVE GROUND INPUT.

Resistors are 1/2 watt or less and rated $\pm 5\%$ unless otherwise indicated.
Capacitor values in mfd unless otherwise indicated.

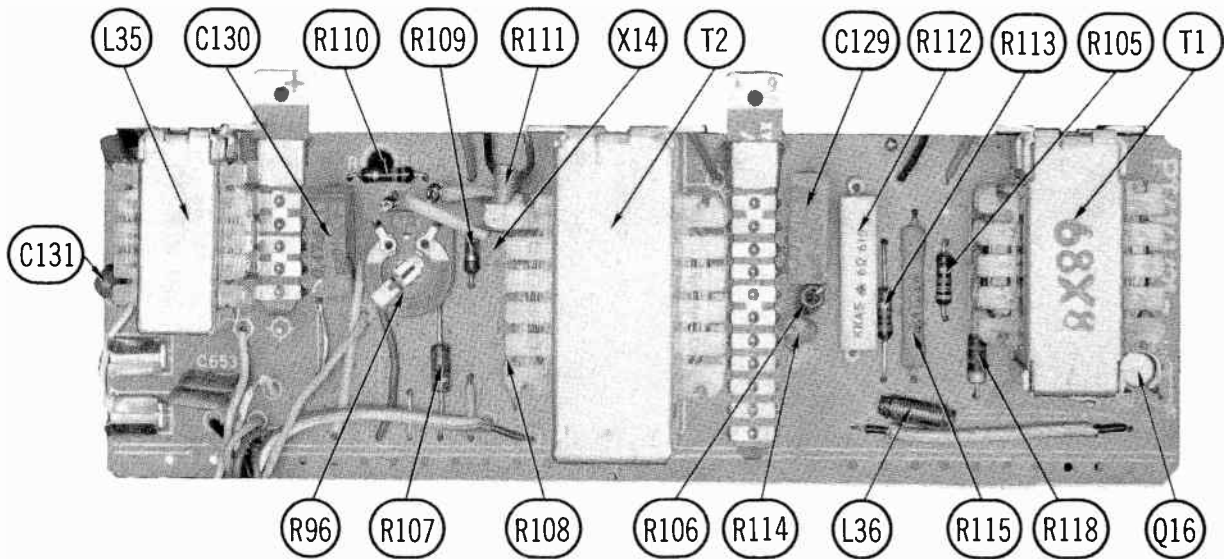
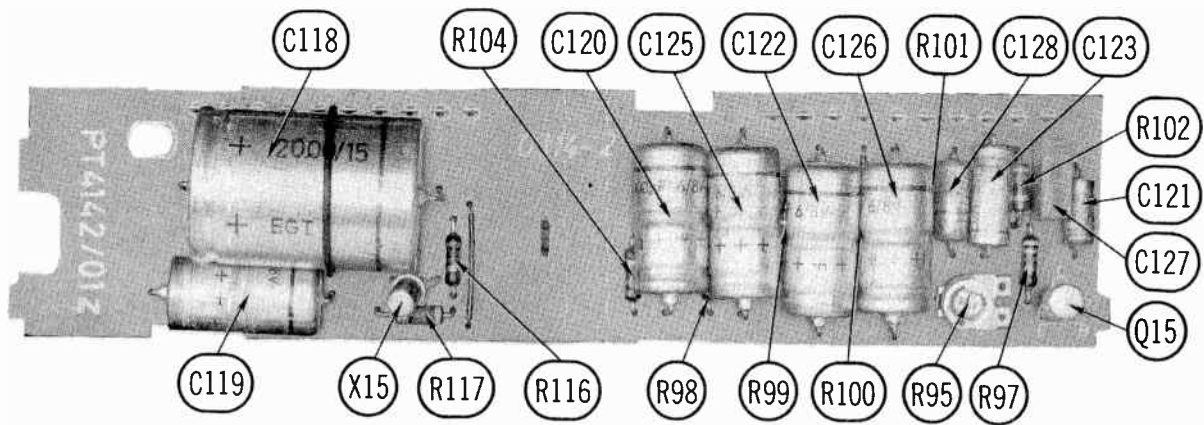
- See parts list for alternate value.
- 1. Voltage measurements taken with vacuum tube voltmeter with radio in FM mode unless otherwise indicated.
- A Taken with radio in AM mode.
- † Taken with K1 engaged.
- 2. All controls set for normal operation, no signal applied.
- 3. Measured values are from socket pin or terminal to common ground.
- 4. All terminals viewed from bottom unless otherwise designated.
- 5. Numbers assigned to terminals may not be found on the unit.
- 6. Supply voltage maintained at rated value for voltage readings.
- 7. Resistance measurements not given because of the wide variation in internal resistance of transistor.

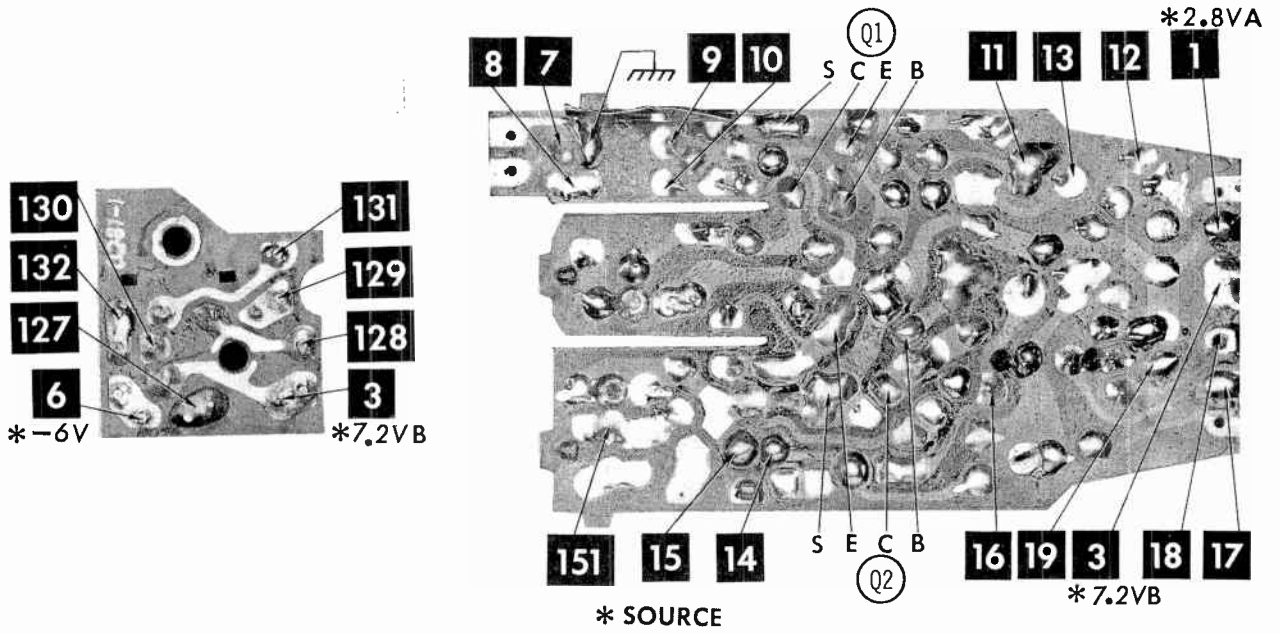
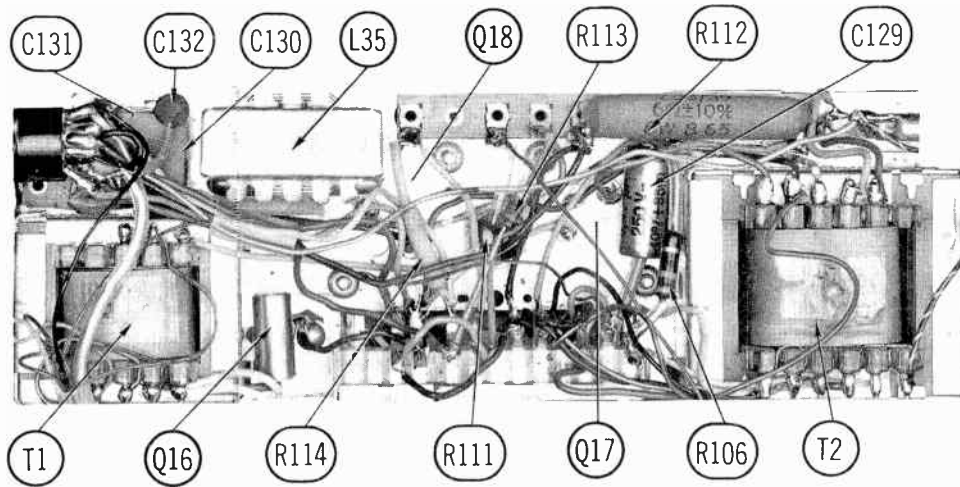
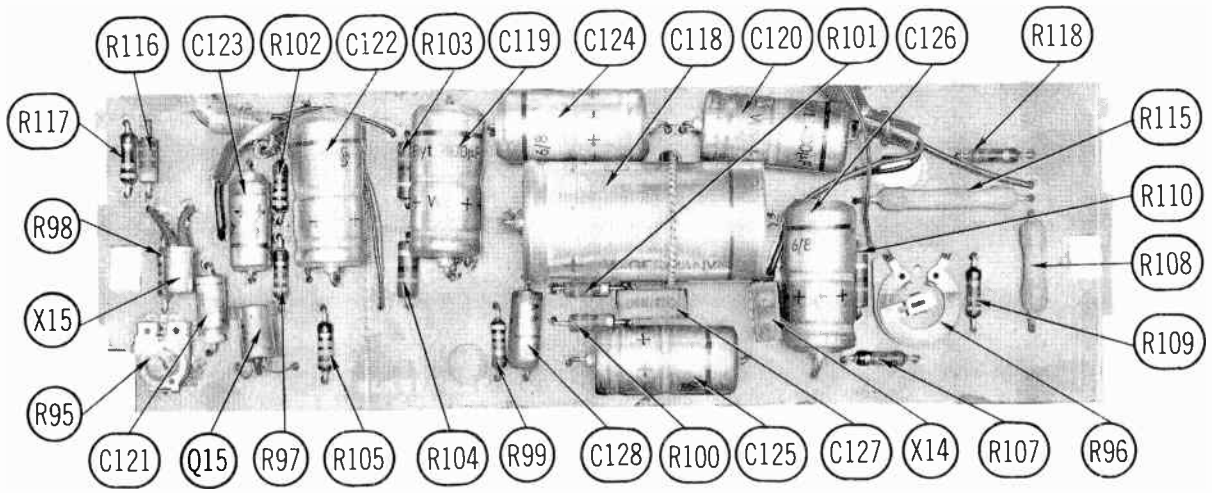
A PHOTOFACIT STANDARD NOTATION SCHEMATIC with **CIRCUITRACE**

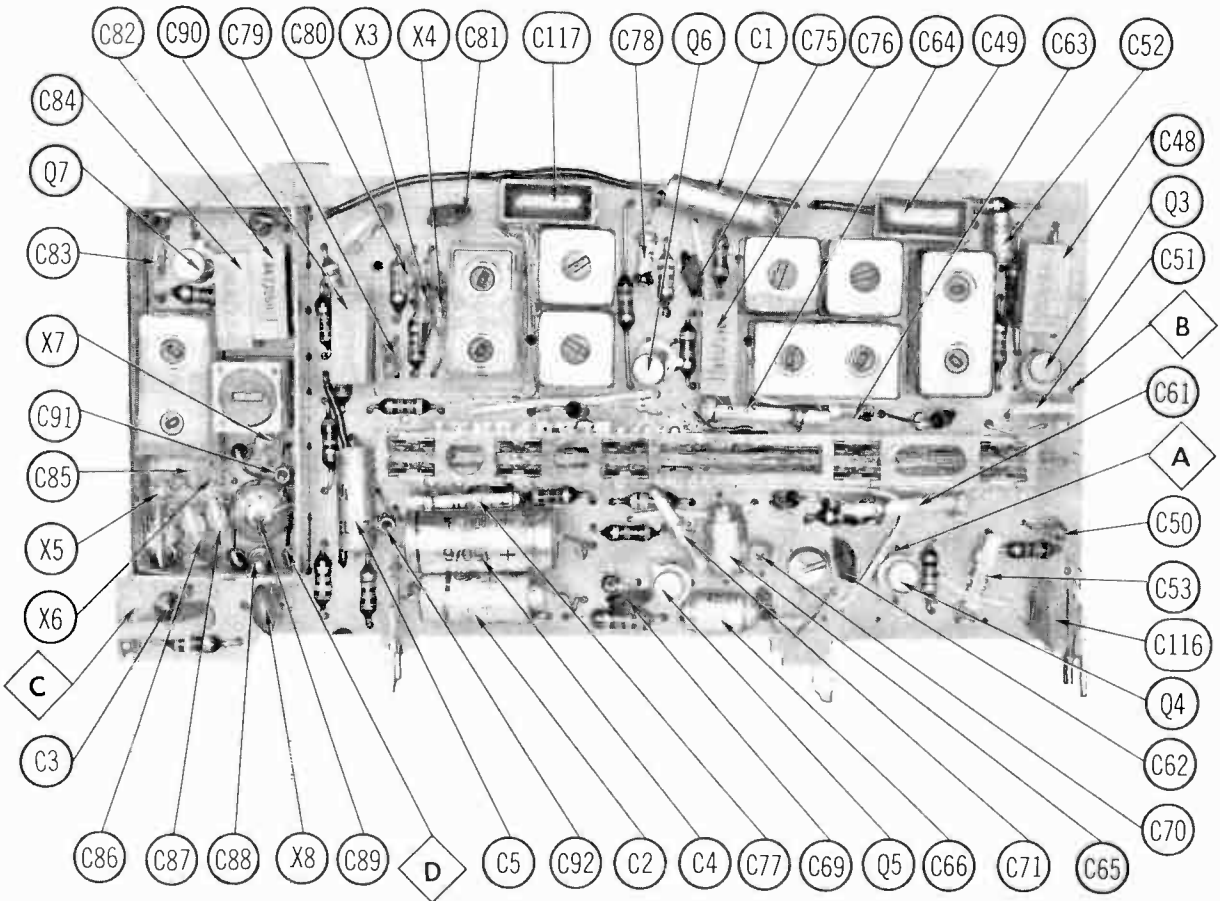
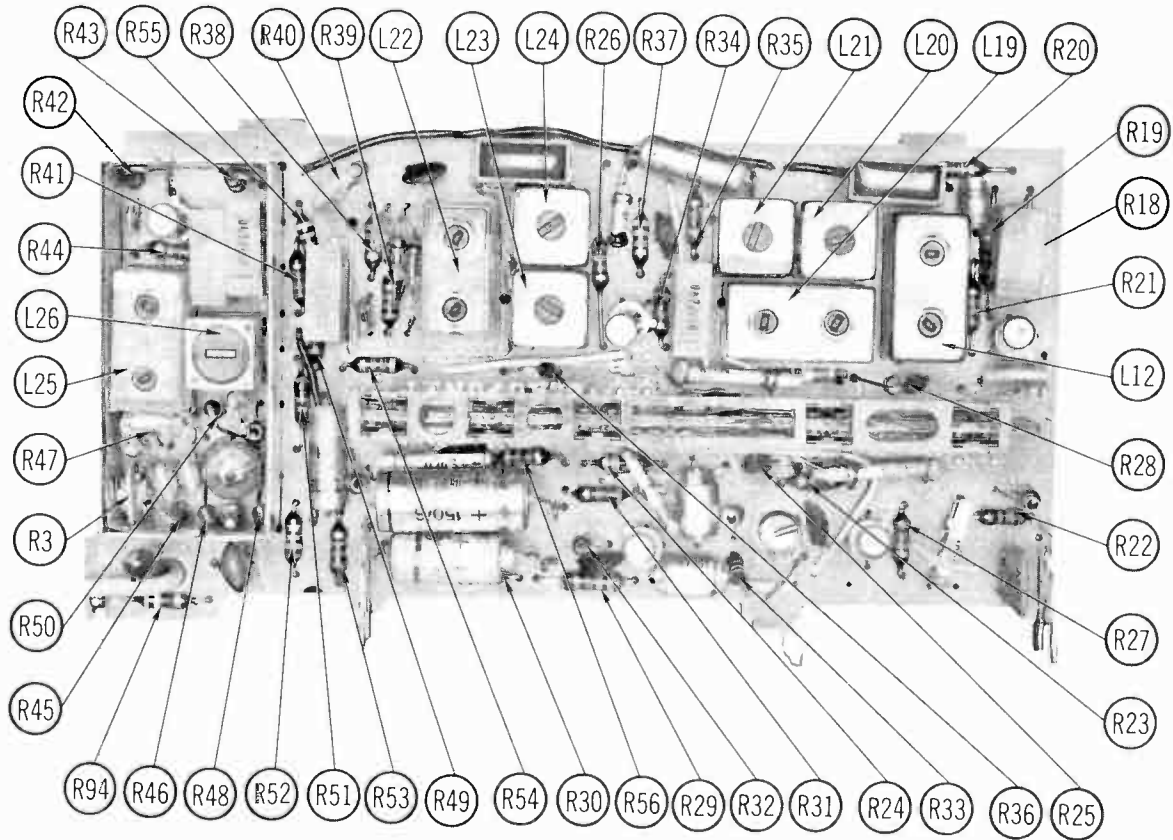
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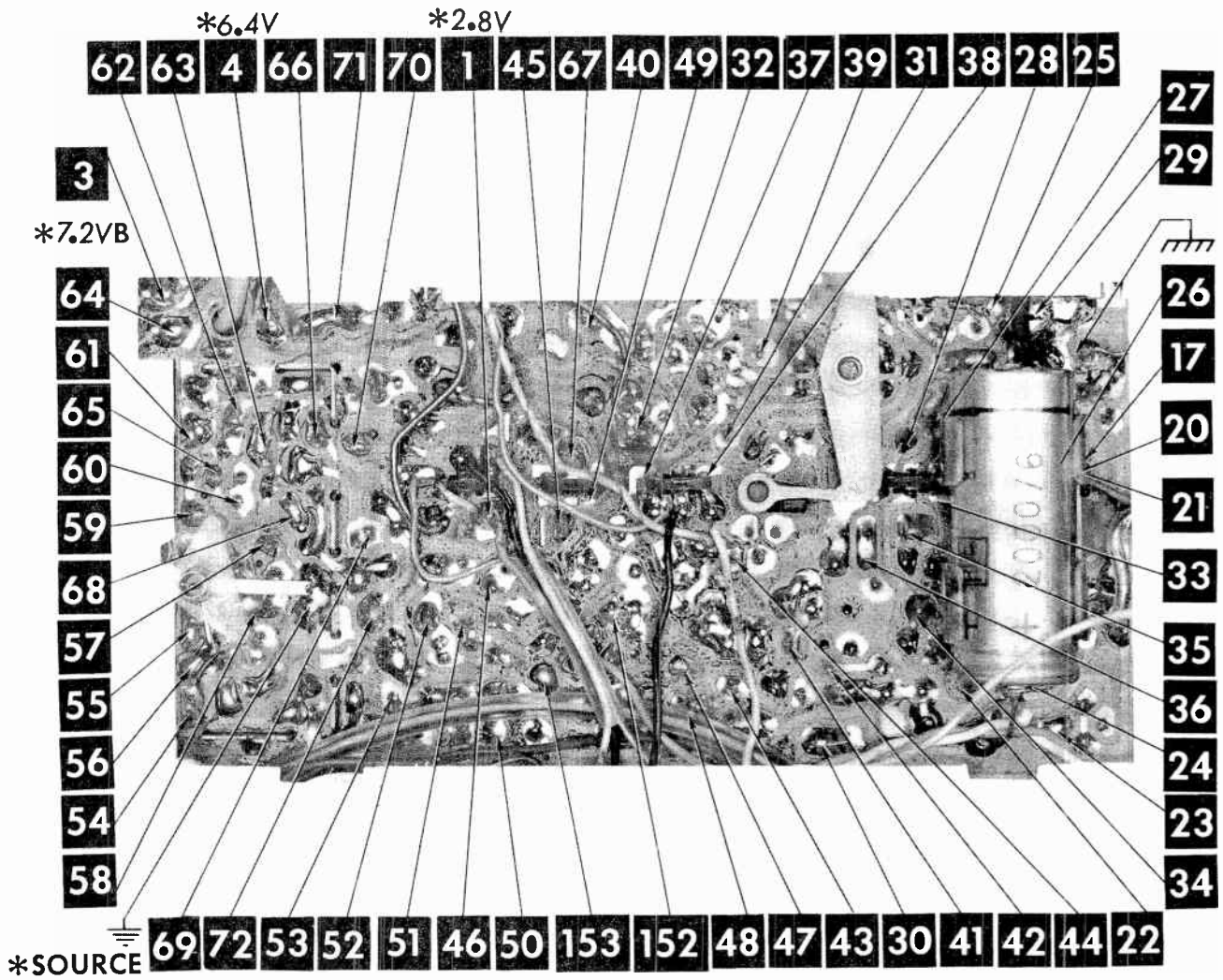
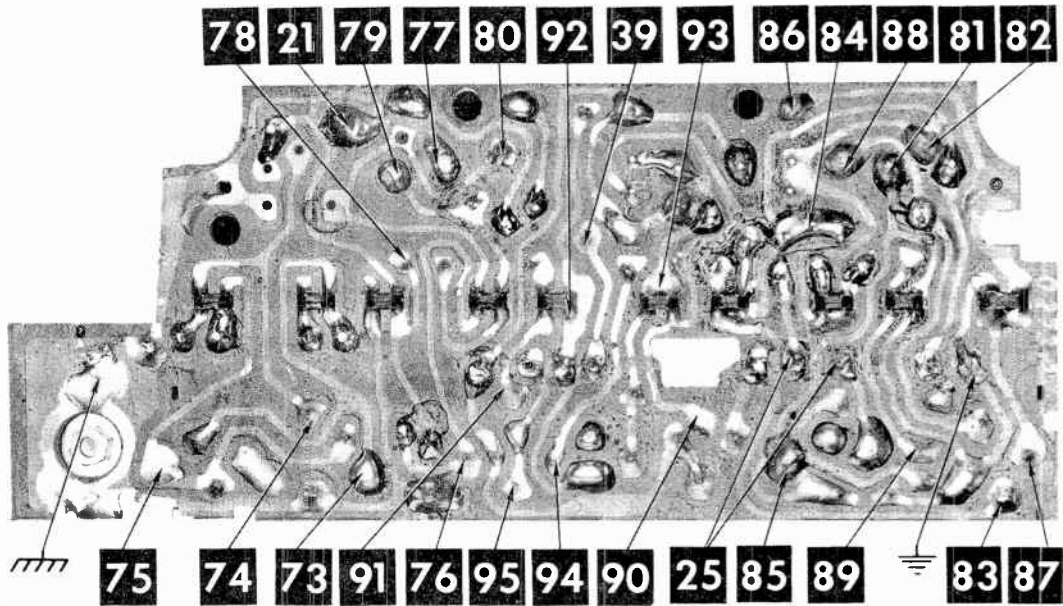


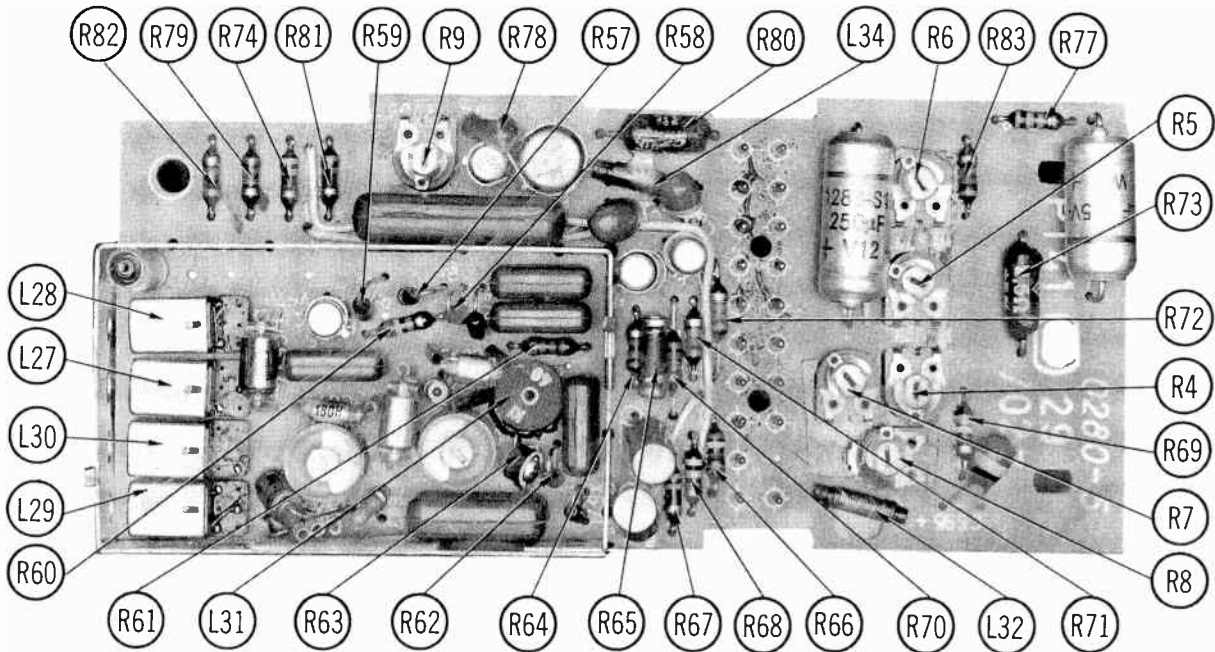
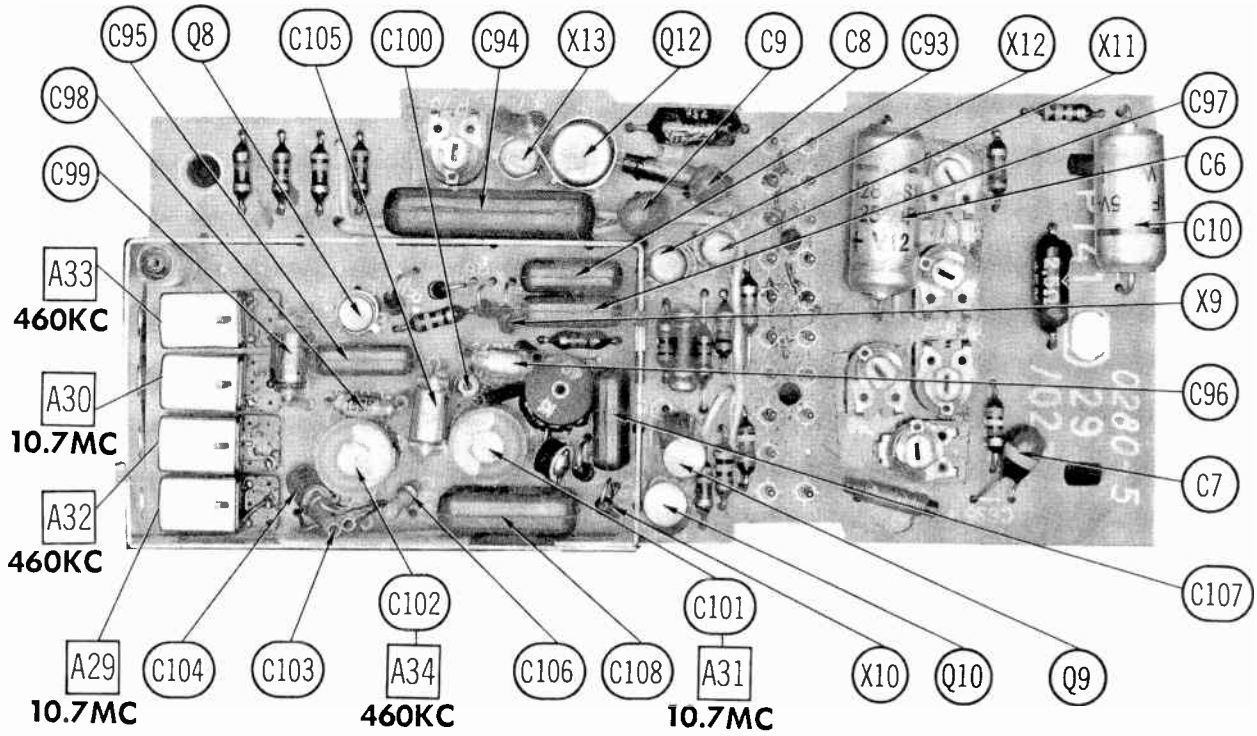
**BLAUPUNKT MODEL
NEW YORKER-Series X**

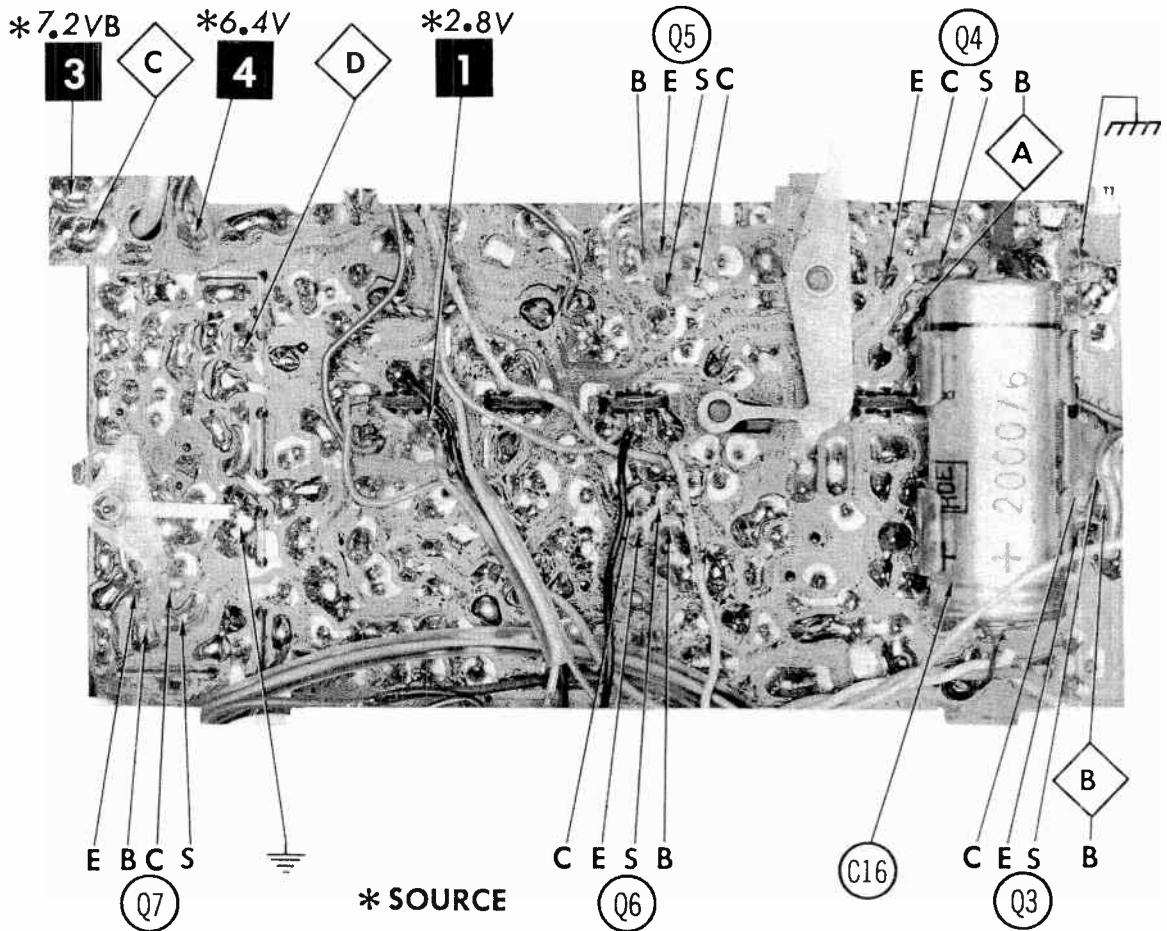
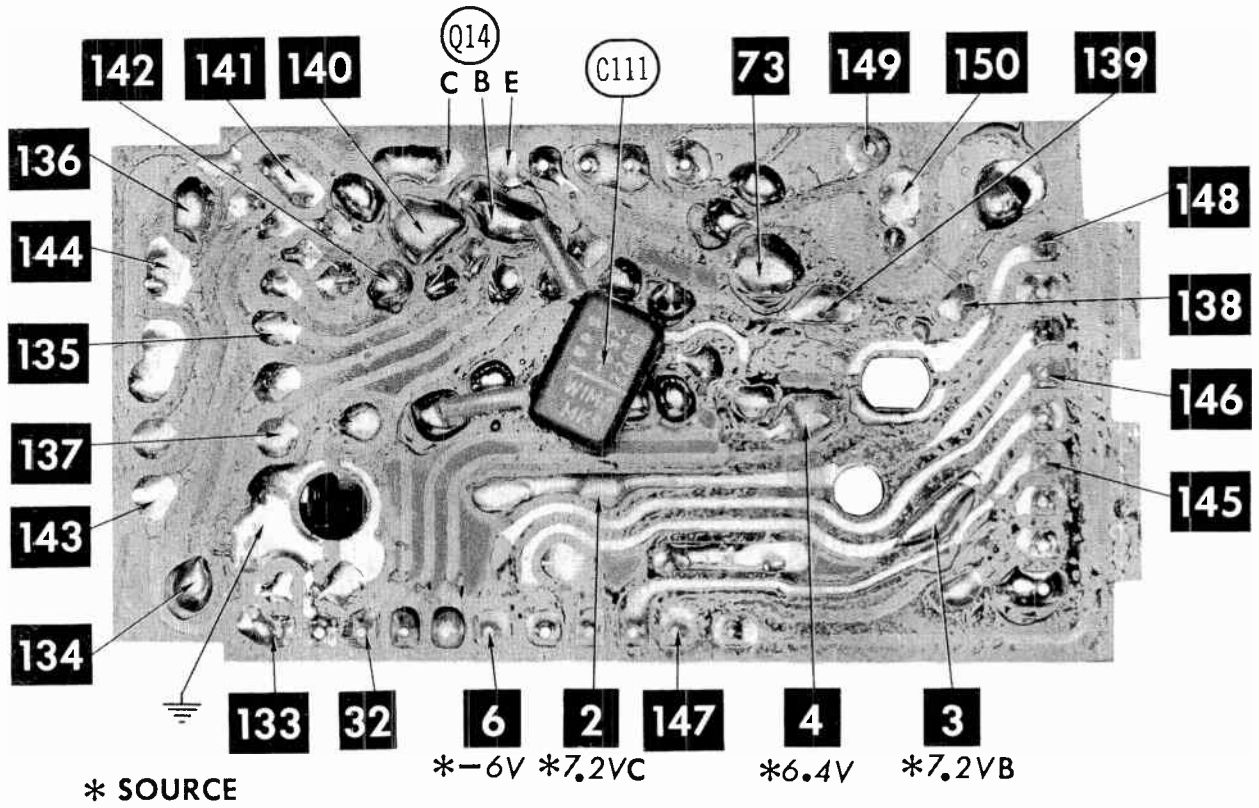




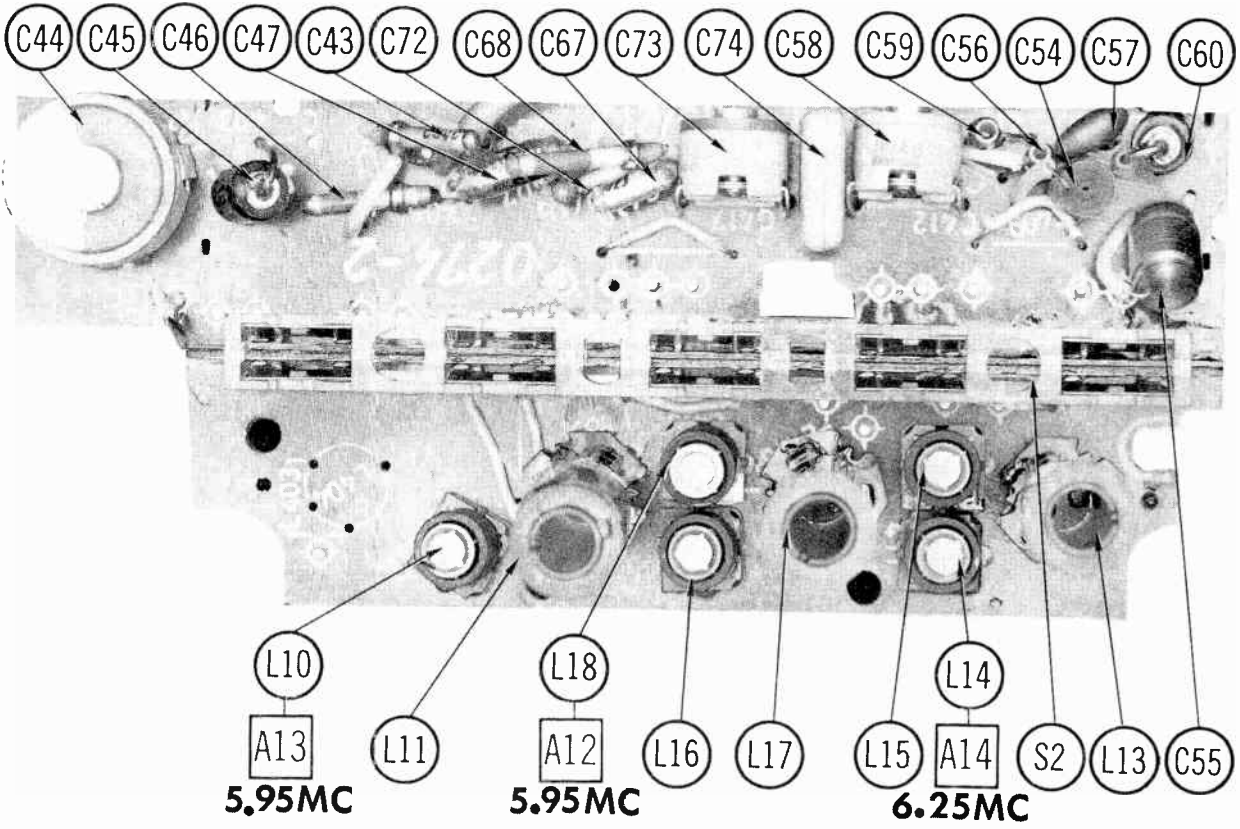
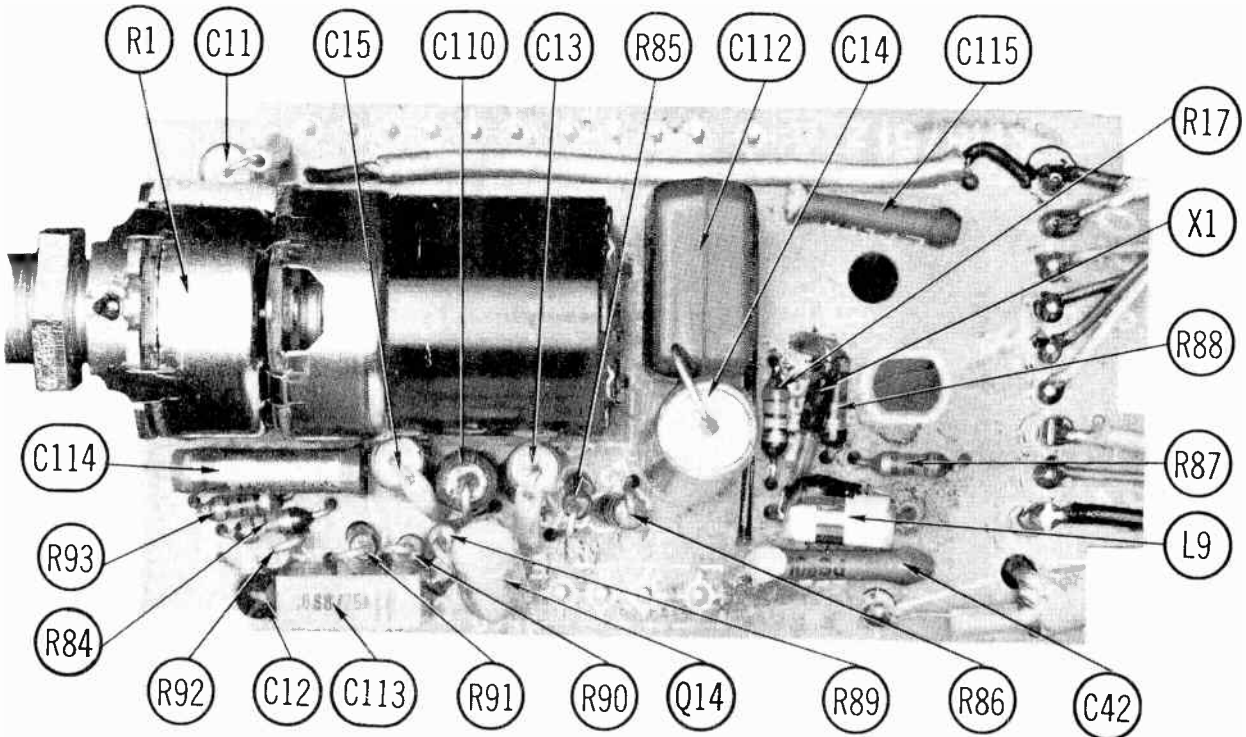


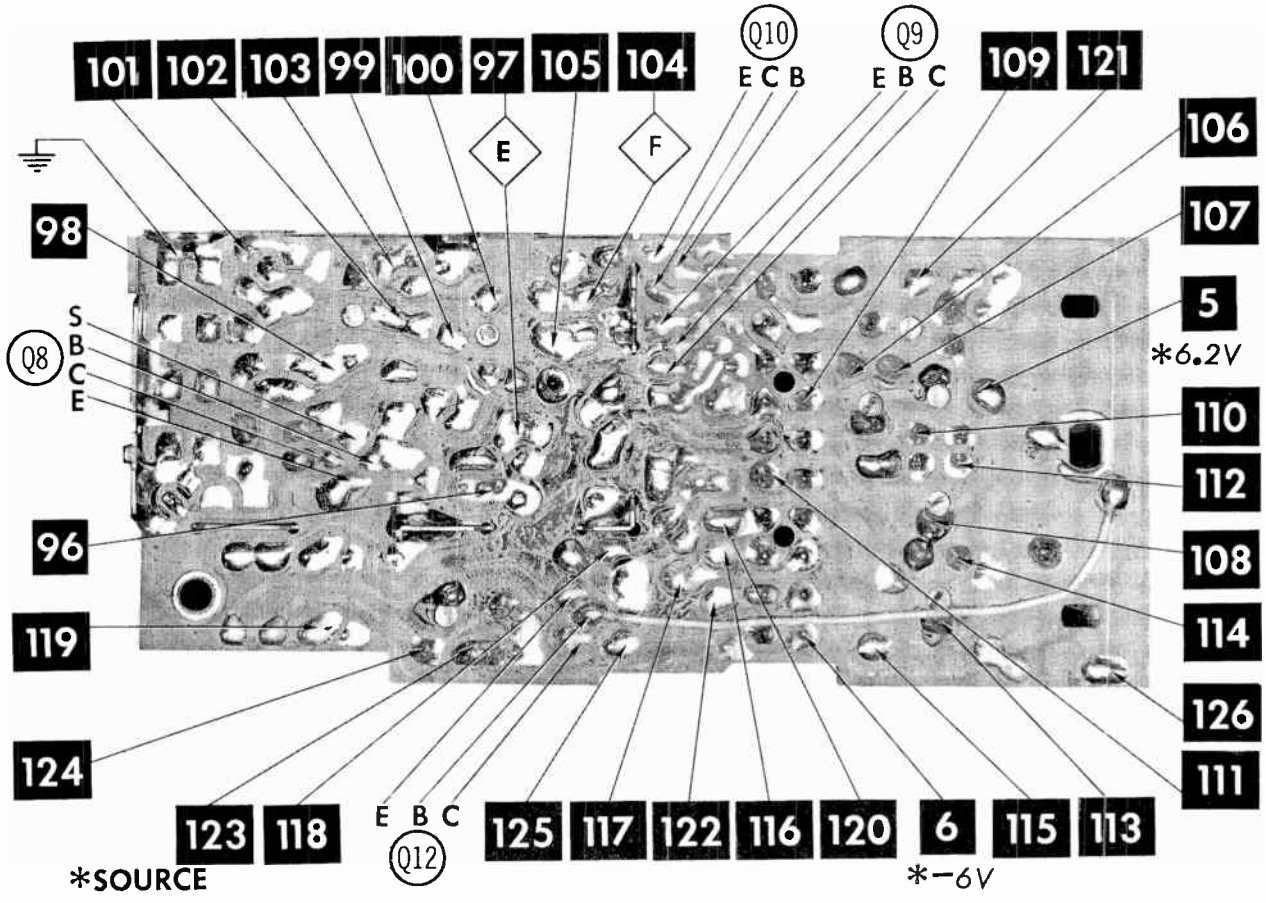
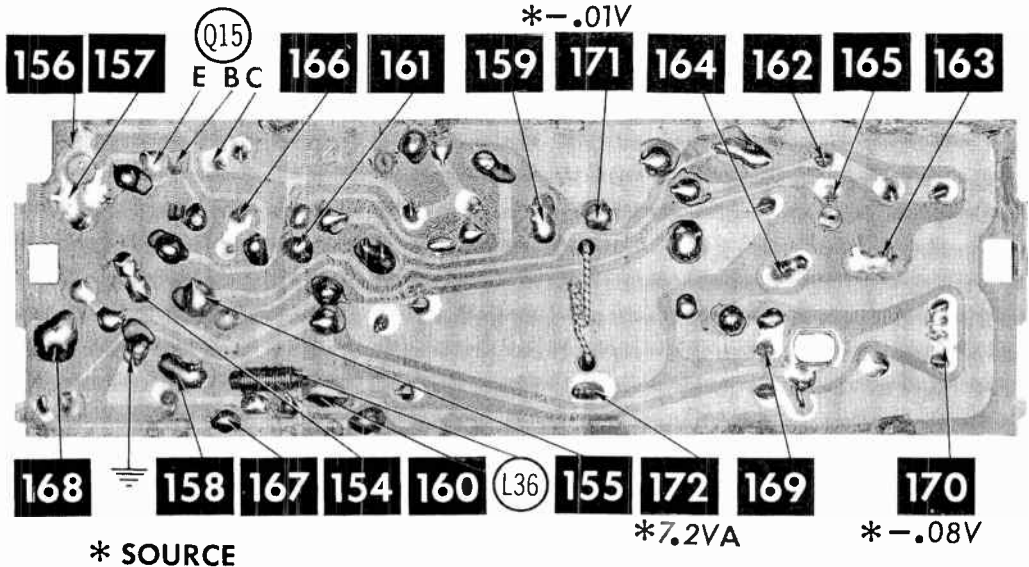






BLAUPUNKT MODEL NEW YORKER-Series X





A Howard W. Soms CIRCUITRACE® Photo

PARTS LIST

TUNER CHASSIS

Ref. No.	Part No.	Description
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TRANSISTORS

Q1	96XZ6051/27N	FM RF Amplifier (AF106), PNP
Q2	96XZ6051/27N	FM Converter (AF106), PNP
Q3	96XZ6052/35N	1st FM IF Amp., AM RF Amp. (AF126), PNP
	96XZ6052/18N	(AF185), PNP, X1 485 001 thru X1 486 000
Q4	96XZ6052/35N	2nd FM IF Amp., AM Mixer (RF126), PNP
Q5	96XZ6052/35N	AM Oscillator (AF126), PNP
Q6	96XZ6051/31N	3rd FM, 1st AM IF Amp. (RF121), PNP
	96XZ6052/17N	(AF185), PNP, X1 485 001 thru X1 486 000
Q7	96XZ6051/31N	4th FM, 2nd AM IF Amp. (RF121), PNP
	96XZ6052/36N	(AF126), PNP, X1 485 000 thru X1 486 000
Q8	96XZ6052/35N	Selectomat Input IF Amp. (AF126), PNP
Q9	96XZ6053/33N	1st Trigger Amplifier (AC126), PNP
Q10	96XZ6053/33N	2nd Trigger Amplifier (AC126), PNP
Q11	96XZ6054/44X	Relay Control (AD148), PNP
Q12	96XZ6053/37N	Motor Control (BFY40), NPN
Q13	96XZ6054/44X	Motor Control (AD148), PNP
Q14	96XZ6053/33N	AF Amplifier (AC126), PNP

SIGNAL DIODES AND RECTIFIERS

X1	96XZ0778/47N	AM Noise Limiter (SIS20)
X2	96XZ0778/53N	FM Overload (AA112)
X3	96XZ0778/53N	FM Limiter (AA112)
X4	96XZ0778/53N	FM Limiter (AA112)
X5	96XZ0778/53N	FM Ratio Detector (AA112)
X6	96XZ0778/53N	FM Ratio Detector (AA112)
X7	96XZ0778/53N	AM Detector (AA112)
X8	89WI0759/46N	AVC Limiter (E295ZZ01)
X9	96XZ0778/82N	Bias Regulator (AA113)
X10	96XZ0778/82N	Bias Regulator (AA113)
X11	96XZ0778/64N	Bias Regulator (SIS11)
X12	96XZ0778/61N	Zener Voltage Regulator (Z4B)
X13	96XZ0778/92N	Bias Regulator (Z1.5)

CAPACITORS

C1	28KO0749/36N	5mfd, 15V, non-polarized Electrolytic
C2	28KO0747/08N	40mfd, 6V, Electrolytic
C3	28KO0749/36N	1mfd, 35V, Electrolytic
C4	28KO0747/16N	150mfd, 6V, Electrolytic
C5	28KO0747/36N	5mfd, 6V, non-polarized Electrolytic
C6	28KO0753/10N	250mfd, 3V, Electrolytic
C7	28KO0745/33N	10mfd, 10V, Electrolytic
C8	28KO0745/09N	50mfd, 3V, Electrolytic
C9	28KO0745/09N	50mfd, 3V, Electrolytic
C10	28KO0748/36N	50mfd, 15V, Electrolytic
C11	28KO0749/36N	5mfd, 25V, Electrolytic
C12	28KO0748/03N	2mfd, 25V, Electrolytic
C13	28KO0750/41N	.5mfd, 30V, Electrolytic
C14	28KO0747/	250mfd, 6V, Electrolytic
C15	28KO0750/41N	.5mfd, 30V, Electrolytic
C16	28KO0747/42N	2000mfd, 6V, Electrolytic
C17	28KO2219/78N	18pf, N150, 250V, Ceramic Tubular
C18	28KO2218/15N	39pf, N750, 125V, Ceramic Plate
C19	28KO2220/25N	100pf, N750, 125V, Ceramic Plate
C20	28KO2220/15N	39pf, N750, 125V, Ceramic Plate
C21	28KO2218/37N	330pf, 20%, 250V, Ceramic Disc
C22	28KO2218/37N	330pf, 20%, 250V, Ceramic Disc
C23	28KO2207/81N	1pf, N150, 500V, Ceramic Tubular
C24	81TK0722/02X	3-9pf, Trimmer
C25	28KO2218/01N	10pf, 125V, Ceramic Tubular (Alt Value 12pf)
C26	28KO2219/93N	47pf, N150, 250V, Ceramic Tubular
C27	28KO2219/57N	.0022mfd, 125V, Ceramic Tubular
C28	28KO2210/87N	3pf, N750, 500V, Ceramic Tubular
C29	28KO2218/15N	39pf, N750, 125V, Ceramic Plate
C30	22KO2175/49N	.001mfd, 125V, Ceramic
C31	28KO2213/88N	2.5pf, N470, 500V, Ceramic Tubular
C32	28KO2218/21N	68pf, N150, 125V, Ceramic Tubular
C33	28KO2218/37N	330pf, 20%, 250V, Ceramic Disc
C34	28KO2219/65N	.0047mfd, 125V, Ceramic Disc
C35	28KO2219/65N	.0047mfd, 125V, Ceramic Disc
C36	28KO2218/15N	39pf, N750, 125V, Ceramic Plate
C37	81TK0722/02X	2.5-6pf, Trimmer
C38	28KO2222/02N	9pf, NPO, 125V, Ceramic Tubular (Alt. Value 11pf)
C39	28KO2197/60N	.0022mfd, 125V, Polystyrene

Ref. No.	Part No.	Description
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CAPACITORS (Cont'd.)

C40	28KO2218/21N	68pf, N150, 125V, Ceramic Tubular
C41	28KO2219/65N	.0047mfd, 125V, Ceramic Tubular
C42	28KO2219/73N	.01mfd, 125V, Ceramic Tubular
C43	28KO2218/21N	68pf, N075, 125V, Ceramic Tubular
C44	81TK0715/04X	10-100pf, Trimmer
C45	28KO2169/73N	.01mfd, 125V, Plastic
C46	28KO2218/28N	140pf, 125V, Ceramic Tubular (Alt Value 200pf)
C47	28KO2218/28N	160pf, 125V, Polystyrene (Alt. Value 140pf)
C48	28KO2169/93N	.22mfd, 125V, Plastic
C49	28KO2166/89N	.1mfd, 250V, Plastic
C50	28KO2218/53N	.0015 mfd, N220, 125V, Ceramic Tubular
C51	28KO2222/75N	5pf, 125V, Ceramic Tubular
C52	28KO2219/78N	18pf, 250V, Ceramic Tubular
C53	28KO2219/83N	100pf, N750, 2.5%, 250V, Ceramic Tubular
C54	28KO2181/47N	820pf, 2.5%, 125V, Polystyrene
C55	28KO2181/58N	.0024mfd, 2.5%, 125V, Polystyrene
C56	28KO2218/07N	18pf, N150, 125V, Ceramic Tubular
C57	28KO2210/86N	20pf, 2%, 500V, Ceramic Disc
C58	81TK0716/02X	10-40pf, Trimmer
C59	28KO2218/95N	27pf, 125V, Ceramic Tubular
C60	28KO2169/73N	.01mfd, 125V, Plastic
C61	28KO2219/73N	.01mfd, N470, 125V, Ceramic Tubular
C62	28KO2194/05N	.022mfd, 125V, Ceramic Disc
C63	28KO2218/98N	15pf, 125V, Ceramic Tubular
C64	28KO2219/73N	.01mfd, N470, 125V, Ceramic Tubular
C65	28KO2176/65N	.0047mfd, 125V, Polystyrene
C66	28KO2176/65N	.0047mfd, 125V, Polystyrene
C67	28KO2182/23N	82pf, 125V, Polystyrene
C68	28KO2218/29N	150pf, N750, 125V, Ceramic Tubular
C69	28KO2194/05N	.022mfd, 125V, Ceramic Disc
C70	28KO2218/13N	33pf, 125V, Ceramic Tubular
C71	28KO2218/99N	220pf, 2.5%, 250V, Ceramic Tubular
C72	28KO2218/89N	100pf, N470, 125V, Ceramic Tubular
C73	81TK0721/01X	10-60pf, Trimmer
C74	28KO2168/01N	600pf, 400V, Plastic
C75	28KO2194/05N	.022mfd, 125V, Ceramic Disc
C76	28KO2166/85N	.047mfd, 250V, Plastic
C77	28KO2219/73N	.01mfd, 125V, Ceramic Tubular
C78	28KO2218/79N	8pf, NPO, 125V, Ceramic Tubular
C79	28KO2218/57N	.0022 mfd, 250V, Ceramic Plate
C80	28KO2218/57N	.0022 mfd, 250V, Ceramic Plate
C81	28KO2194/05N	.022mfd, 125V, Ceramic Disc
C82	28KO2166/85N	.047mfd, 250V, Plastic
C83	28KO2218/98N	15pf, N470, 125V, Ceramic Disc
C84	28KO2166/87N	.068mfd, 250V, Plastic (Alt Value .1mfd)
C85	28KO2181/19N	56pf, 125V, Polystyrene
C86	28KO2218/37N	330pf, 250V, Ceramic Disc
C87	28KO2218/37N	330pf, 250V, Ceramic Disc
C88	28KO2217/41N	470pf, 250V, Ceramic Tubular
C89	28KO2166/85N	.047mfd, 125V, Plastic
C90	28KO2166/87N	.068mfd, 250V, Plastic
C91	28KO2218/53N	.0015mfd, 125V, Ceramic Tubular
C92	28KO2218/53N	.0015mfd, 125V, Ceramic Tubular
C93	28KO2166/89N	.1mfd, 125V, Plastic
C94	28KO2166/97N	.47mfd, 250V, Plastic
C95	28KO2166/89N	.1mfd, 125V, Plastic
C96	28KO2175/37N	330pf, 2.5%, 125V, Polystyrene
C97	28KO2166/89N	.1mfd, 125V, Plastic
C98	28KO2181/31N	180pf, 215%, 125V, Polystyrene (Alt Value 200pf)
C99	28KO2176/65N	.0047mfd, 2.5%, 125V, Polystyrene
C100	28KO2218/98N	15pf, NPO, 125V, Ceramic Tubular
C101	81TK0721/01X	10-60pf, Trimmer
C102	81TK0721/01X	10-60pf, Trimmer
C103	28KO2218/27N	120pf, 125V, Ceramic Tubular
C104	28KO2182/41N	470pf, 5%, 125V, Polystyrene
C105	28KO2174/55N	.0018mfd, 215%, 125V, Polystyrene
C106	28KO2219/93N	47pf, 125V, Ceramic Tubular
C107	28KO2166/89N	.1mfd, 125V, Plastic
C108	28KO2166/95N	.33mfd, 250V, Plastic
C109	28KO2194/05N	.022mfd, 125V, Ceramic Disc
C110	28KO2169/73N	.01mfd, 125V, Plastic
C111	28KO2169/81N	.022mfd, 125V, Plastic
C112	28KO2164/54N	2.2mfd, 125V, Plastic
C113	28KO2166/87N	.068mfd, 250V, Plastic
C114	28KO2166/93N	.22mfd, 250V, Plastic
C115	28KO2219/73N	.01mfd, 125V, Ceramic Tubular
C116	28KO2218/74N	.015mfd, 250V, Ceramic Disc
C117	28KO2166/89N	.1mfd, 250V, Plastic (Alt Value .068mfd)

PARTS LIST (CONTINUED)

Ref. No.	Part No.	Description
CONTROLS AND RESISTORS		
R1A	89WI2283/01X	25K, Tone Control
R1B		13K, Tapped @ 3K, Volume Control
R2	89WI2285/02X	1000Ω, FM Converter Bias Control
R3	89WI6036/11X	5000Ω, AM Reject Control
R4	89WI2274/06X	20K, Sensitivity Control (not used)
R5	89WI2274/06X	20K, BC Sensitivity Control
R6	89WI2274/06X	20K, SW Sensitivity Control
R7	89WI2274/06X	20K, FM Sensitivity Control
R8	89WI2271/58X	20Ω, Bias Adjust
R9	89WI2276/03X	100Ω, Motor Running Time Adjust
R10	89WI2199/09N	47Ω, 5%, 1/8 Watt, Film (Alt Value 1000Ω)
R11	89WI2199/37N	10K, 5%, 1/8 Watt, Film
R12	89WI2199/34N	5600Ω, 5%, 1/8 Watt, Film
R13	89WI2199/26N	1200Ω, 5%, 1/8 Watt, Film
R14	89WI2199/27N	1500Ω, 5%, 1/8 Watt, Film
R15	89WI2199/35N	6800Ω, 5%, 1/8 Watt, Film
R16	89WI2199/17N	220Ω, 5%, 1/8 Watt, Film
R17	89WI2199/52N	180K, 5%, 1/8 Watt, Film
R18	89WI2200/29N	2200Ω, 10%, 1/5 Watt, Carbon
R19	89WI2200/15N	150Ω, 10%, 1/5 Watt, Carbon
R20	89WI2199/24N	820Ω, 5%, 1/8 Watt, Film
R21	89WI2199/17N	220Ω, 5%, 1/8 Watt, Film
R22	89WI2199/29N	2200Ω, 5%, 1/8 Watt, Film
R23	89WI2199/25N	1000Ω, 5%, 1/8 Watt, Film
R24	89WI2199/21N	470Ω, 5%, 1/8 Watt, Film
R25	89WI2199/26N	1200Ω, 5%, 1/8 Watt, Film
R26	89WI2199/30N	2700Ω, 5%, 1/8 Watt, Film
R27	89WI2199/17N	220Ω, 5%, 1/8 Watt, Film
R28	89WI2199/15N	150Ω, 5%, 1/8 Watt, Film
R29	89WI2200/31N	3300Ω, 5%, 1/5 Watt, Film
R30	89WI2199/21N	470Ω, 5%, 1/8 Watt, Film
R31	89WI2199/25N	1000Ω, 5%, 1/8 Watt, Film
R32	89WI2200/36N	8200Ω, 5%, 1/5 Watt, Film
R33	89WI2199/35N	6800Ω, 5%, 1/8 Watt, Film
R34	89WI2199/25N	1000Ω, 5%, 1/8 Watt, Film
R35	89WI2199/25N	1000Ω, 5%, 1/8 Watt, Film (Alt. Value 1500Ω)
R36	89WI2199/17N	220Ω, 5%, 1/8 Watt, Film
R37	89WI2199/21N	470Ω, 5%, 1/8 Watt, Film
R38	89WI2199/15N	150Ω, 5%, 1/8 Watt, Film
R39	89WI2199/15N	150Ω, 5%, 1/8 Watt, Film
R40	89WI2199/35N	6800Ω, 5%, 1/8 Watt, Film
R41	89WI2199/27N	1500Ω, 5%, 1/8 Watt, Film (Alt. Value 1000Ω)
R42	89WI2199/17N	220Ω, 5%, 1/8 Watt, Film
R43	89WI2200/20N	390Ω, 5%, 1/5 Watt, Film
R44	89WI2199/17N	220Ω, 5%, 1/8 Watt, Film
R45	89WI2199/41N	22K, 5%, 1/8 Watt, Film
R46	89WI2199/25N	1000Ω, 5%, 1/8 Watt, Film
R47	89WI2199/13N	100Ω, 5%, 1/8 Watt, Film
R48	89WI2199/29N	2200Ω, 5%, 1/8 Watt, Film
R49	89WI2199/34N	5600Ω, 5%, 1/8 Watt, Film
R50	89WI2199/52N	180K, 5%, 1/8 Watt, Film
R51	89WI2199/37N	10K, 5%, 1/8 Watt, Film
R52	89WI2199/22N	560Ω, 5%, 1/8 Watt, Film
R53	89WI2199/17N	220Ω, 5%, 1/8 Watt, Film
R54	89WI2199/36N	8200Ω, 5%, 1/8 Watt, Film
R55	89WI2199/21N	470Ω, 5%, 1/8 Watt, Film
R56	89WI2199/	7500Ω, 5%, 1/8 Watt, Film
R57	89WI2199/20N	390Ω, 5%, 1/8 Watt, Film
R58	89WI2199/10N	56Ω, 5%, 1/8 Watt, Film
R59	89WI2199/26N	1200Ω, 5%, 1/8 Watt, Film
R60	89WI2199/22N	560Ω, 5%, 1/8 Watt, Film
R61	89WI2199/29N	2200Ω, 5%, 1/8 Watt, Film
R62	89WI2199/26N	1200Ω, 5%, 1/8 Watt, Film
R63	89WI0759/35N	5000Ω, Thermistor
R64	89WI2199/31N	3300Ω, 5%, 1/8 Watt, Film
R65	89WI0759/40N	70K, ±20K, Thermistor
R66	89WI2199/32N	3900Ω, 5%, 1/8 Watt, Film
R67	89WI2199/	68Ω, 5%, 1/8 Watt, Film
R68	89WI2199/21N	470Ω, 5%, 1/8 Watt, Film
R69	89WI2199/20N	390Ω, 5%, 1/8 Watt, Film
R70	89WI2199/26N	1200Ω, 5%, 1/8 Watt, Film
R71	89WI2199/17N	220Ω, 5%, 1/8 Watt, Film
R72	89WI2199/15N	150Ω, 5%, 1/8 Watt, Film
R73	89WI2203/	2.5Ω, 5%, 1/3 Watt, Film
R74	89WI2199/	68Ω, 5%, 1/8 Watt, Film
R75	89WI2199/	18K, 5%, 1/8 Watt, Film
R76	89WI2199/	7500Ω, 5%, 1/8 Watt, Film (Alt Value 6800Ω)
R77	89WI2199/23N	680Ω, 5%, 1/8 Watt, Film
R78	89WI2199/10N	56Ω, 5%, 1/8 Watt, Film

Ref. No.	Part No.	Description
CONTROLS AND RESISTORS(Cont'd.)		
R79	89WI2199/17N	220Ω, 5%, 1/8 Watt, Film
R80	89WI2204/	1Ω, 1/2 Watt, Film
R81	89WI2199/	15Ω, 5%, 1/8 Watt, Film
R82	89WI2199/25N	1000Ω, 5%, 1/8 Watt, Film
R83	89WI2199/14N	120Ω, 5%, 1/8 Watt, Film
R84	89WI2199/16N	180Ω, 5%, 1/8 Watt, Film
R85	89WI2199/32N	3900Ω, 5%, 1/8 Watt, Film
R86	89WI2200/07N	33Ω, 10%, 1/5 Watt, Carbon
R87	89WI2199/27N	1500Ω, 5%, 1/8 Watt, Film
R88	89WI2199/36N	820Ω, 5%, 1/8 Watt, Film
R89	89WI2200/21N	470Ω, 10%, 1/5 Watt, Carbon
R90	89WI2199/22N	560Ω, 5%, 1/8 Watt, Film
R91	89WI2199/25N	1000Ω, 5%, 1/8 Watt, Film
R92	89WI2200/29N	2200Ω, 10%, 1/5 Watt, Carbon
R93	89WI2199/26N	1200Ω, 5%, 1/8 Watt, Film
R94	89WI2199/08N	39Ω, 5%, 1/8 Watt, Film

COILS		
L1	78TF0773/01Z	FM Antenna
L2	87WC5023/23X	RF Coil
L3	87WC2572/01Z	Emitter Choke
L4	87WC2575/01Z	Tuning
L5	87WC5023/26X	Wave Trap Coil
L6	87WC2076/01Z	RF Choke
L7	87WC2576/01Z	FM Oscillator
L8	91ZF0746/04Z	1st FM IF
L9	87WC2199/09Z	RF Choke - Short Wave
L10	87WC2569/17Z	SW Antenna
L11	87WC2580/02Z	BC Antenna
L12	91ZF0746/01Z	2nd FM IF
L13	87WC2580/01Z	BC RF - Tuning
L14	87WC2569/16Z	SW RF
L15		RF (not used)
L16		Oscillator (not used)
L17	87WC2582/01Z	BC Oscillator
L18	87WC2569/23Z	SW Oscillator
L19	91ZF0746/01Z	3rd FM IF
L20	91ZF0745/01Z	1st AM IF
L21	91ZF0745/01Z	1st AM IF
L22	91ZF0746/02Z	4th FM IF
L23	91ZF0745/01Z	2nd AM IF
L24	91ZF0742/06X	2nd AM IF
L25	91ZF0746/12Z	FM Ratio Detector
L26	91ZF0745/08Z	3rd AM IF
L27	91ZF0742/01X	FM Selectomat
L28	91ZF0745/03Z	AM Selectomat
L29	91ZF0745/02Z	FM Selectomat
L30	91ZF0742/03X	AM Selectomat
L31	16ED0718/04Z	RF Choke
L32	87WC2076/01Z	RF Choke
L33	16ED0710/05Z	RF Choke
L34	87WC2076/34Z	RF Choke

MISCELLANEOUS		
K1	71SM0713/01Z	Relay
M1	45MO0704/01Z	Motor (tuning)
M2	17EV0778/01Z	Tuner (FM)
M3		Interconnecting Socket
M4		Interconnecting Socket
M5		Interconnecting Socket
M6		Interconnecting Socket (Selectomat)
M7	18FA0741/52X	Socket (Remote Selectomat) - 6 Terminal
M8	18FA0741/55X	Tape Jack
M9	67SE0771/01Z	Tape Jack Shorting Plug
S1	30KT0753/02Z	Selector Switch (AM-FM) - Slider
S2	30KT0751/01Z	Selector Switch (BC-SW) - Slider
S3	70SH0845/01X	Sensitivity Switch
S4	70SH0847/01X	Motor Start Switch
S5	70SH0846/01Z	Motor Reversing Switch
	17EV0777/10Z	Push Button Tuning Assembly
	26KF0899/02Z	Knob, Sensitivity
	26KF0899/01Z	Knob, Tone
	21GL0701/01X	Pilot Light, 7V, 0.1A
	17EV0767/03Z	Wave Band Indicator
	72SQ2280/05Z	Dial Scale
	62RF0782/01Z	Reflector
	07AT0769/08Z	Antenna Cable

BLAUPUNKT MODEL NEW YORKER-Series X

PARTS LIST (CONTINUED)

OUTPUT CHASSIS

Ref. No.	Part No.	Description
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TRANSISTORS

Q15	96XZ6053/33N	AF Amplifier (AC126), PNP
Q16	96XZ6054/01N	Driver (AC128), PNP
Q17	96XZ6054/30N	Output (AD149), PNP
Q18	96XZ6054/30N	Output (AD149), PNP

} Matched Pair

RECTIFIERS

X14	96XZ0868/15X	Bias Regulator (E30 C60-1)
X15	96XZ0778/61N	Zener Voltage Regulator (Z4B)

CAPACITORS

C118	28KO0749/38N	2000mfd, 15V, Electrolytic
C119	28KO0747/46N	400mfd, 6V, Electrolytic
C120	28KO0747/46N	400mfd, 6V, Electrolytic
C121	28KO0749/36N	5mfd, 15V, Electrolytic
C122	28KO0747/46N	400mfd, 6V, Electrolytic
C123	28KO0747/08N	40mfd, 6V, Electrolytic
C124	28KO0747/46N	400mfd, 6V, Electrolytic
C125	28KO0747/46N	400mfd, 6V, Electrolytic
C126	28KO0747/46N	400mfd, 6V, Electrolytic
C127	28KO2166/87N	.068mfd, 250V, Plastic
C128	28KO2169/93N	.022mfd, 125V, Plastic
C129	28KO2166/97N	.47mfd, 250V, Plastic
C130	28KO2165/97N	.47mfd, 125V, Plastic
C131	28KO2218/41N	470pf, 500V, Ceramic Disc
C132	28KO2194/05N	.022mfd, 100V, Ceramic Disc

CONTROLS AND RESISTORS

R95	89W12276/02X	50Ω, AF Sensitivity Control
R96	89W12271/55X	6Ω, Bias, Adjust, 0.15W
R97	89W12199/33N	4700Ω, 5%, 1/8 Watt, Film
R98	89W12199/18N	270Ω, 5%, 1/8 Watt, Film
R99	89W12199/21N	470Ω, 5%, 1/8 Watt, Film
R100	89W12199/30N	2700Ω, 10%, 1/5 Watt, Carbon
R101	89W12199/30N	2700Ω, 10%, 1/5 Watt, Carbon
R102	89W12199/21N	470Ω, 5%, 1/8 Watt, Film
R103	89W12199/04N	18Ω, 10%, 1/5 Watt, Carbon
R104	89W12199/04N	18Ω, 10%, 1/5 Watt, Carbon
R105	89W12199/45N	47K, 5%, 1/8 Watt, Film
R106	89W12200/07N	33Ω, 5%, 1/8 Watt, Film
R107	89W12199/17N	220Ω, 5%, 1/8 Watt, Film

Ref. No.	Part No.	Description
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CONTROLS AND RESISTORS (Cont'd.)

R108	89W12121/23N	82Ω, 1 Watt, Film
R109	89W12199/09N	47Ω, 5%, 1/8 Watt, Film
R110	89W12199/04N	18Ω, 10%, 1/5 Watt, Carbon
R111	89W10759/10X	10Ω, Thermistor
R112	89W12135/09N	6Ω, 10%, 6 Watt, Film
R113	89W12199/41N	120Ω, 10%, 1/5 Watt, Carbon
R114	89W12205/11N	68Ω, 1 Watt, Film
R115	89W12121/17N	47Ω, 2 Watt, Film
R116	89W12199/14N	120Ω, 10%, 1/5 Watt, Carbon
R117	89W12199/09N	47Ω, 5%, 1/8 Watt, Film
R118	89W12199/05N	22Ω, 5%, 1/8 Watt, Film

CHOKES

L35	16ED0719/02Z	Filter Choke
L36	87WC2277/10Z	RF Choke

TRANSFORMERS

T1	78TF0770/03Z	Driver, J 2913/04Z, J2913/05Z
	78TF0770/01Z	Driver, J2913/02Z
	78TF0771/04Z	Output, J2913/04Z, J2913/05Z
	78TF0771/01Z	Output, J2913/02Z

MISCELLANEOUS

F1	69SG0703/18N	Fuse, 2 Amp (5.2 x 20mm)
M10	67SE0734/80X	Interconnecting Plug Only, J2913/02Z
	67SE0762/39X	Interconnecting Plug Only, J2913/05Z
	67SE0762/26X	Interconnecting Plug Only, J2913/04Z
	or	
	67SE0762/40X	
	25KA0823/07Z	Interconnecting Cable With Plug, J2913/02Z
	25KA0823/12Z	Interconnecting Cable With Plug, J2913/05Z
	25KA0823/14Z	Interconnecting Cable With Plug, J2913/04Z
M11	18FA0741/51X	Interconnecting Socket
M12	53NF2289/05Z	Voltage-Polarity Socket
M13	67SE0752/01Z	Voltage Selector Plug
M14	67SE0752/02Z	Polarity Selector Plug
	97XY4143/01X	Voltage Selector Slide, J2913/04Z
	97XY4144/01X	Polarity Selector Slide, J2913/04Z

Radio Serial Number	Output Chassis
From X1487 001	J2913/04Z
From X1486 001	J2913/05Z
From X1485 001	J2913/02Z



PHOTOFACT[®] with

CIRCUITRACE[®]

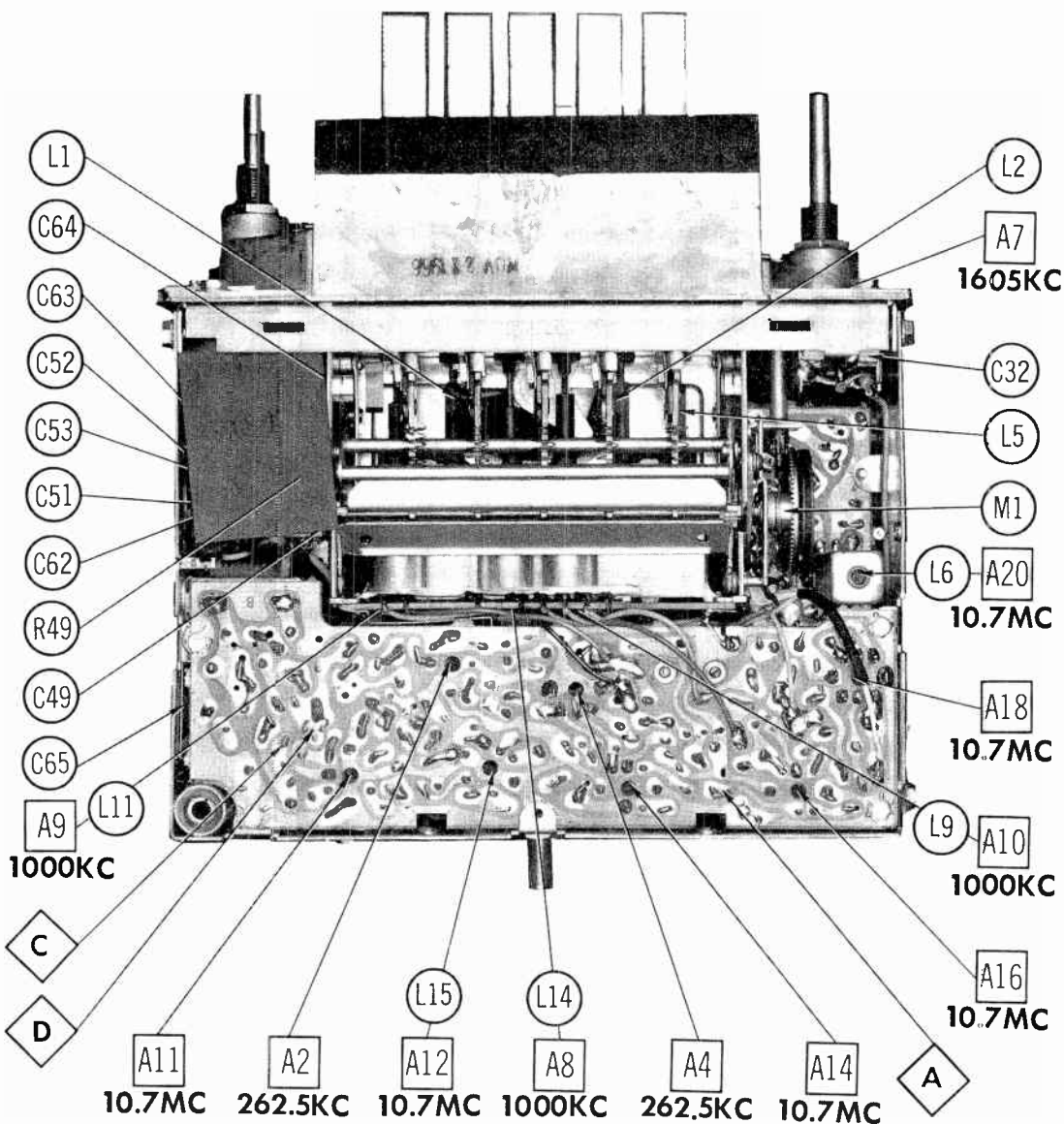
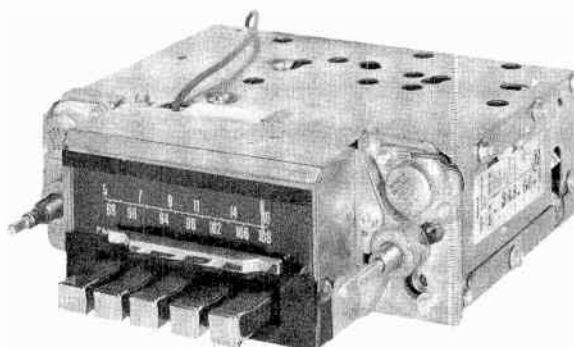
TRADE NAME : Ford Models F7TBF (1967 Galaxie)
 F7TBS (1967 ThunderBird)
 F7TBZ (1967 Mustang)

SUPPLIER : For Current Address, See Annual Index

TYPE SET : 11 Transistor AM-FM Receiver

POWER SUPPLY : 12 Volt Storage Battery

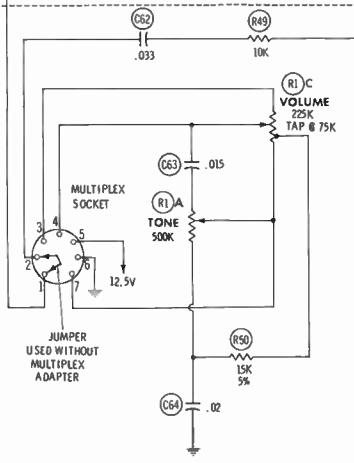
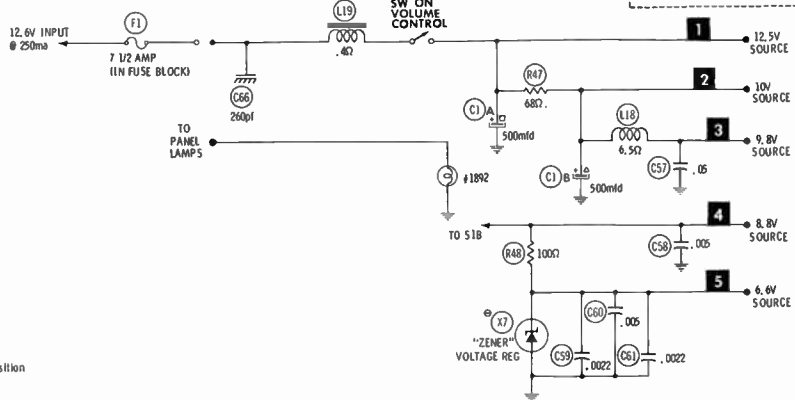
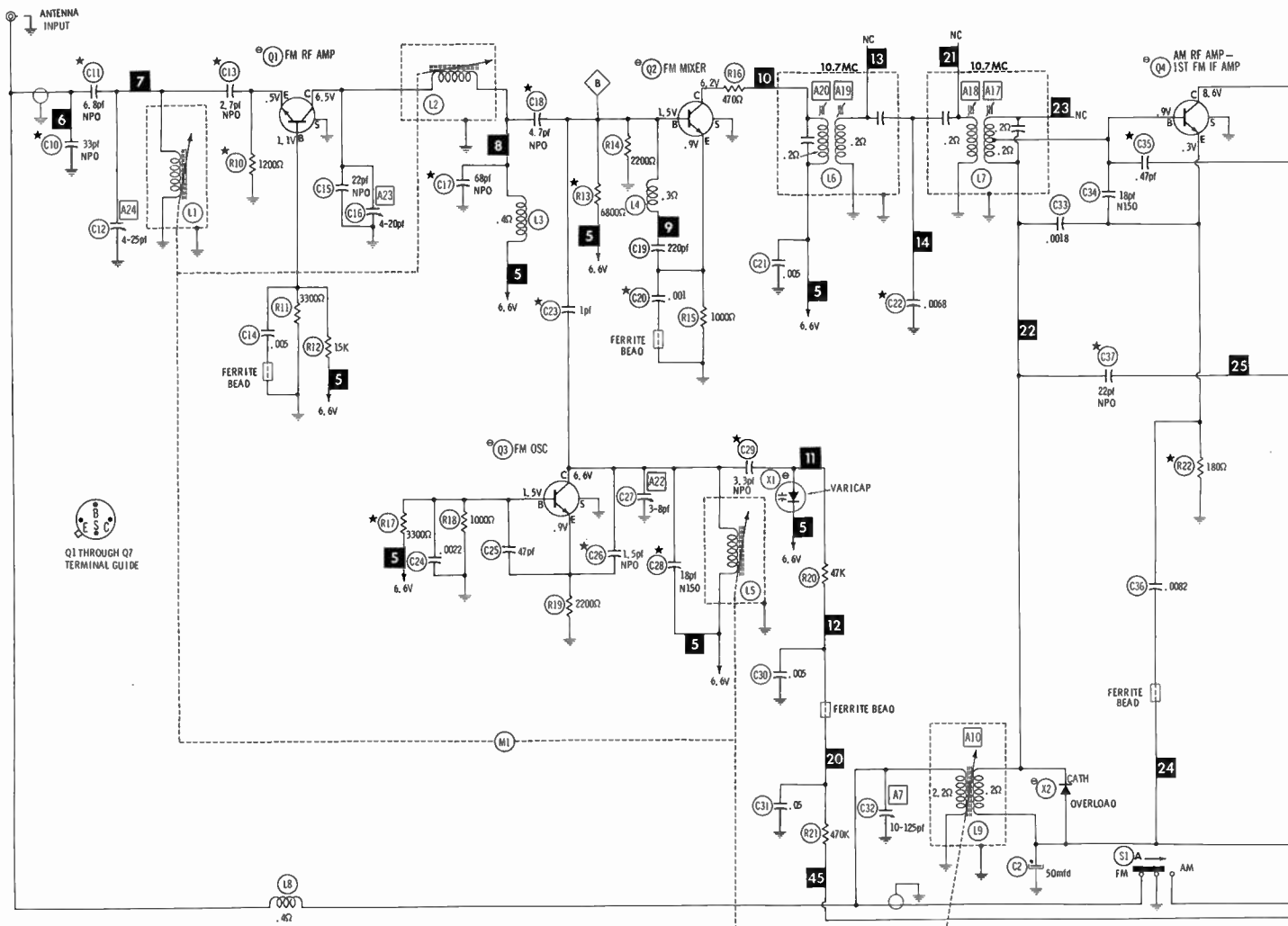
RATING : .25 Amp. @ 12.6 Volts DC



FORD MODELS F7TBF, F7TBS, F7TBZ

HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

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All measurements taken in "FM" position unless otherwise designated.

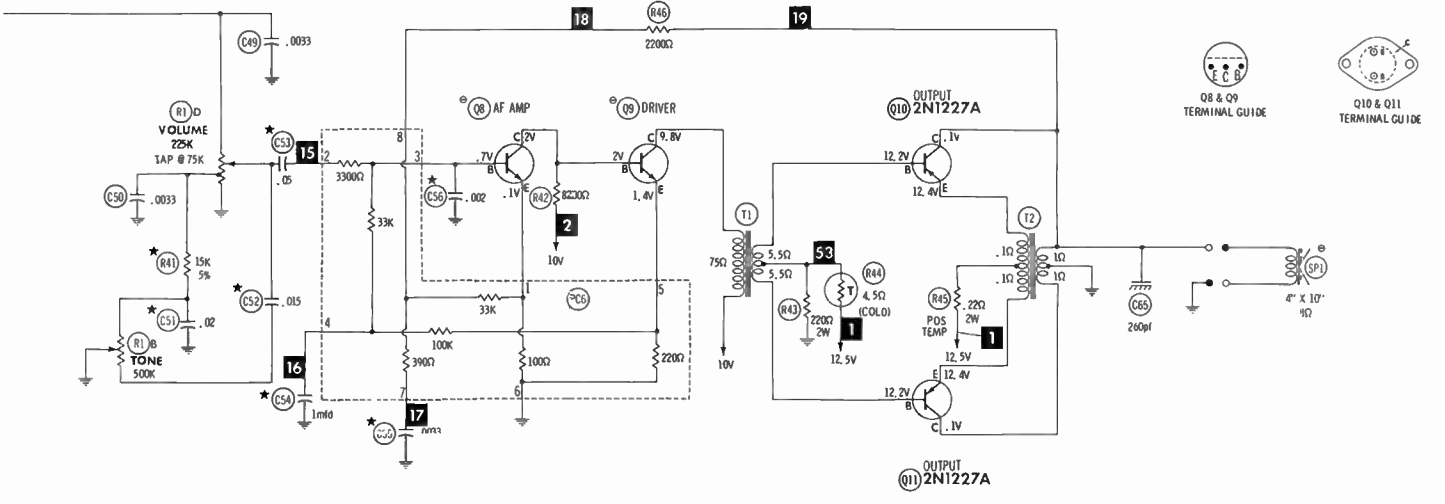
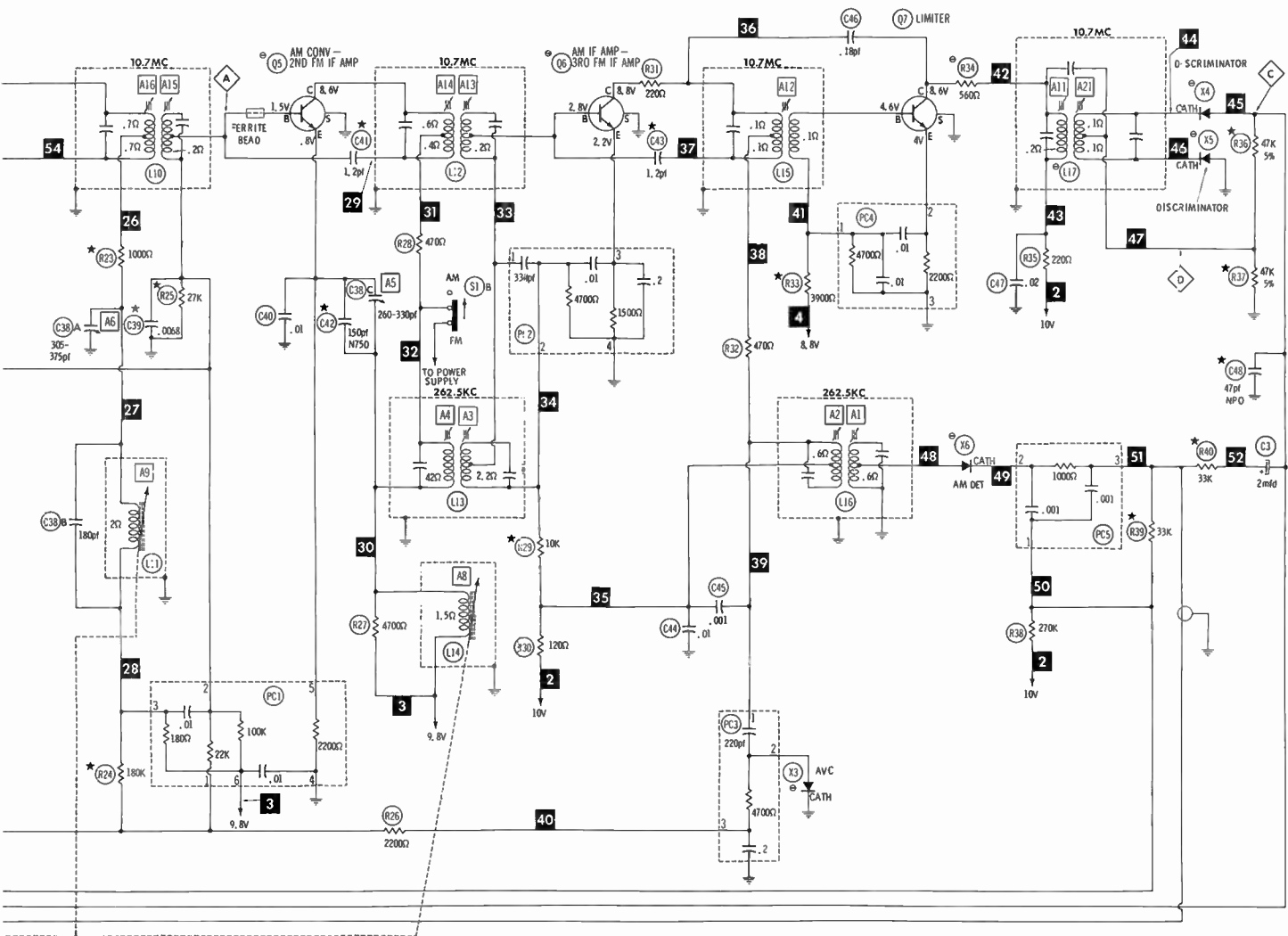
NC No Connection

* Nominal value, may vary.

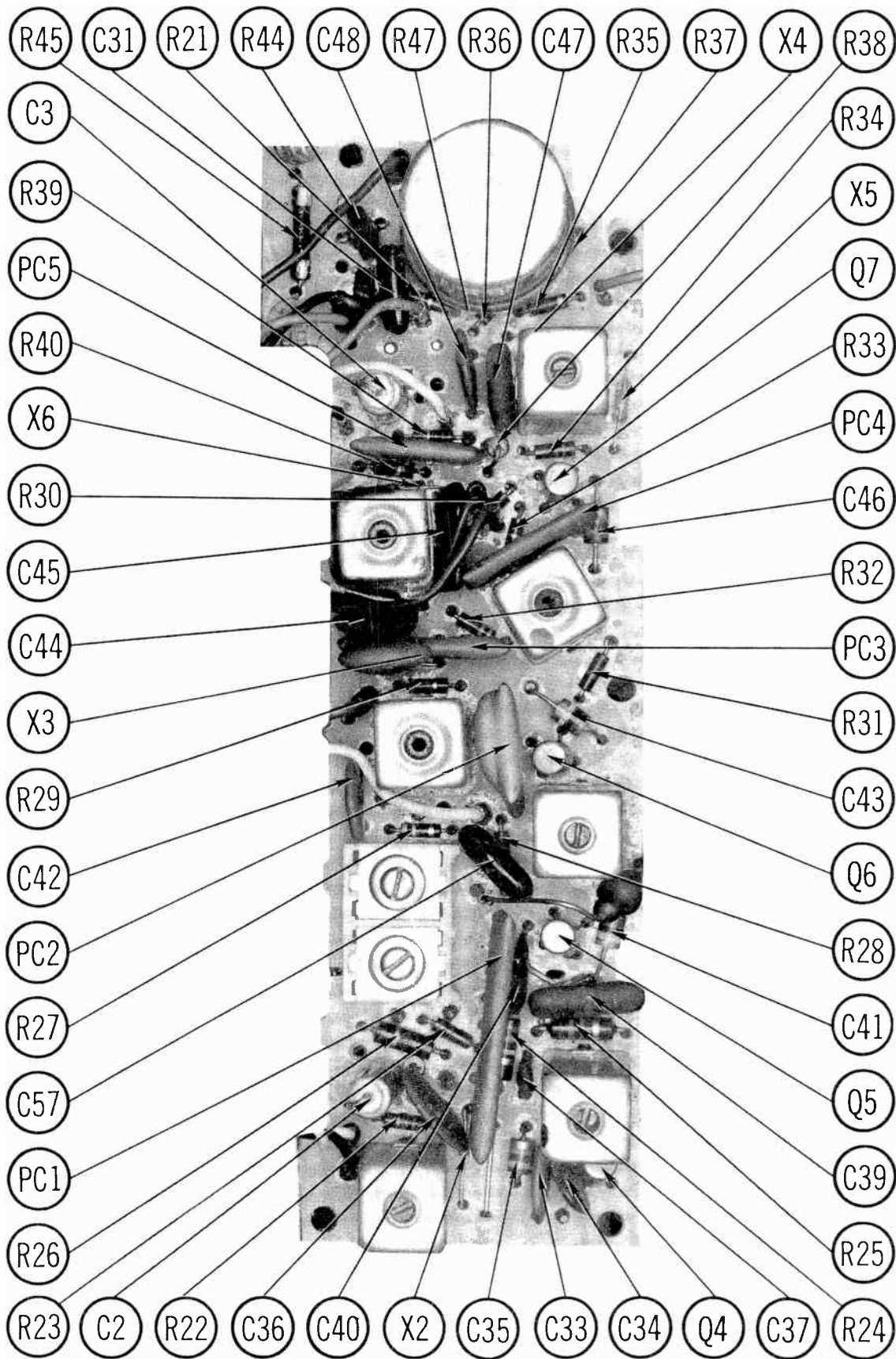
Resistors are 1/2 watt or less, and rated 10% or 20% unless otherwise indicated.

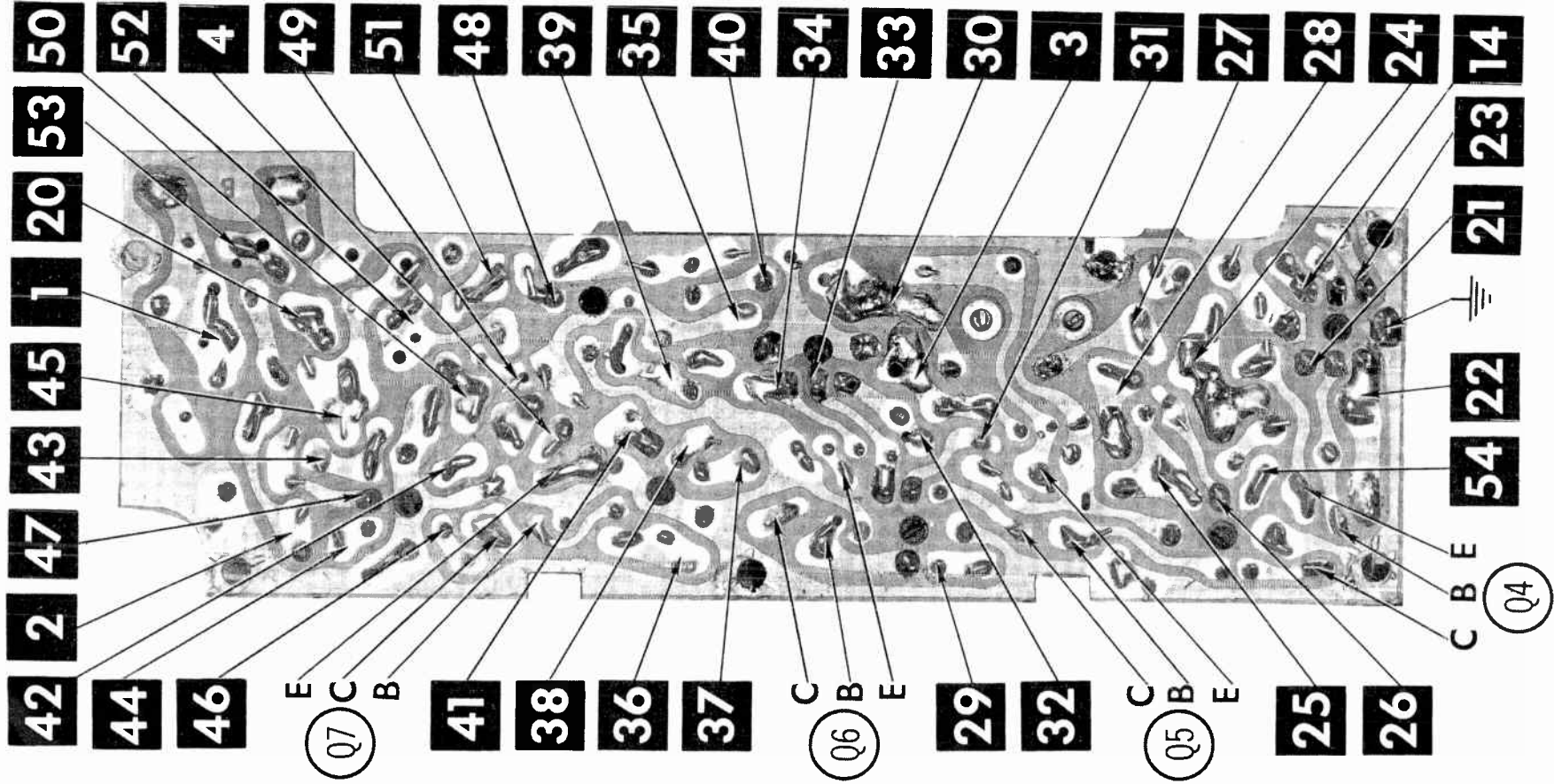
- ① See parts list
- 1. Voltage measurements taken with vacuum tube voltmeter.
- 2. All controls set for normal operation, no signal applied.
- 3. Measured values are from socket pin or terminal to common ground.
- 4. All terminals viewed from bottom unless otherwise designated.
- 5. Numbers assigned to terminals may not be found on the unit.
- 6. Supply voltage maintained at rated value for voltage readings.
- 7. Resistance measurements not given because of the wide variation in internal resistance of transistor.

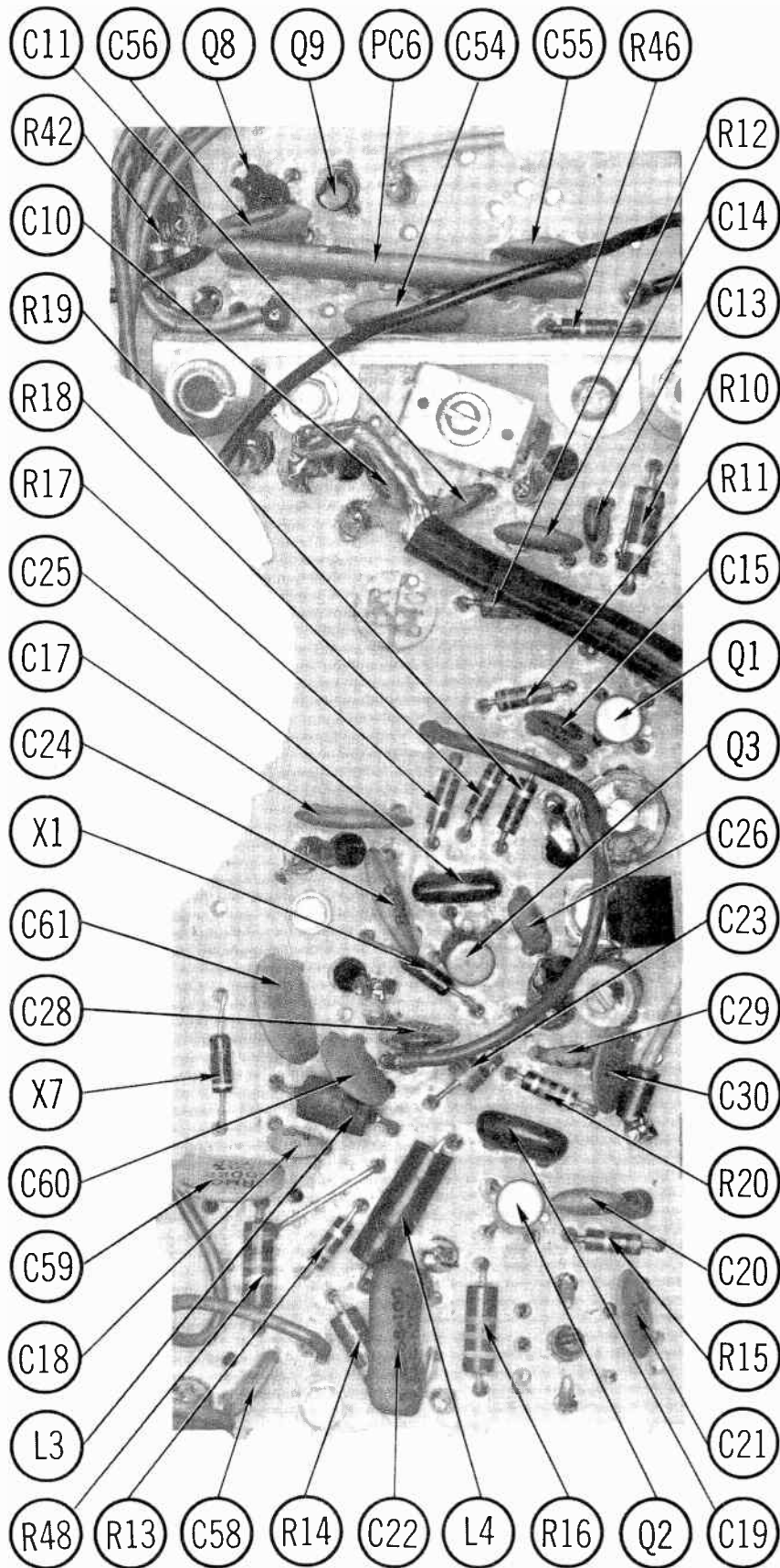
A PHOTOFACIT STANDARD NOTATION SCHEMATIC
with **CircuitTrace**
© Howard W. Sams & Co., Inc. 1967

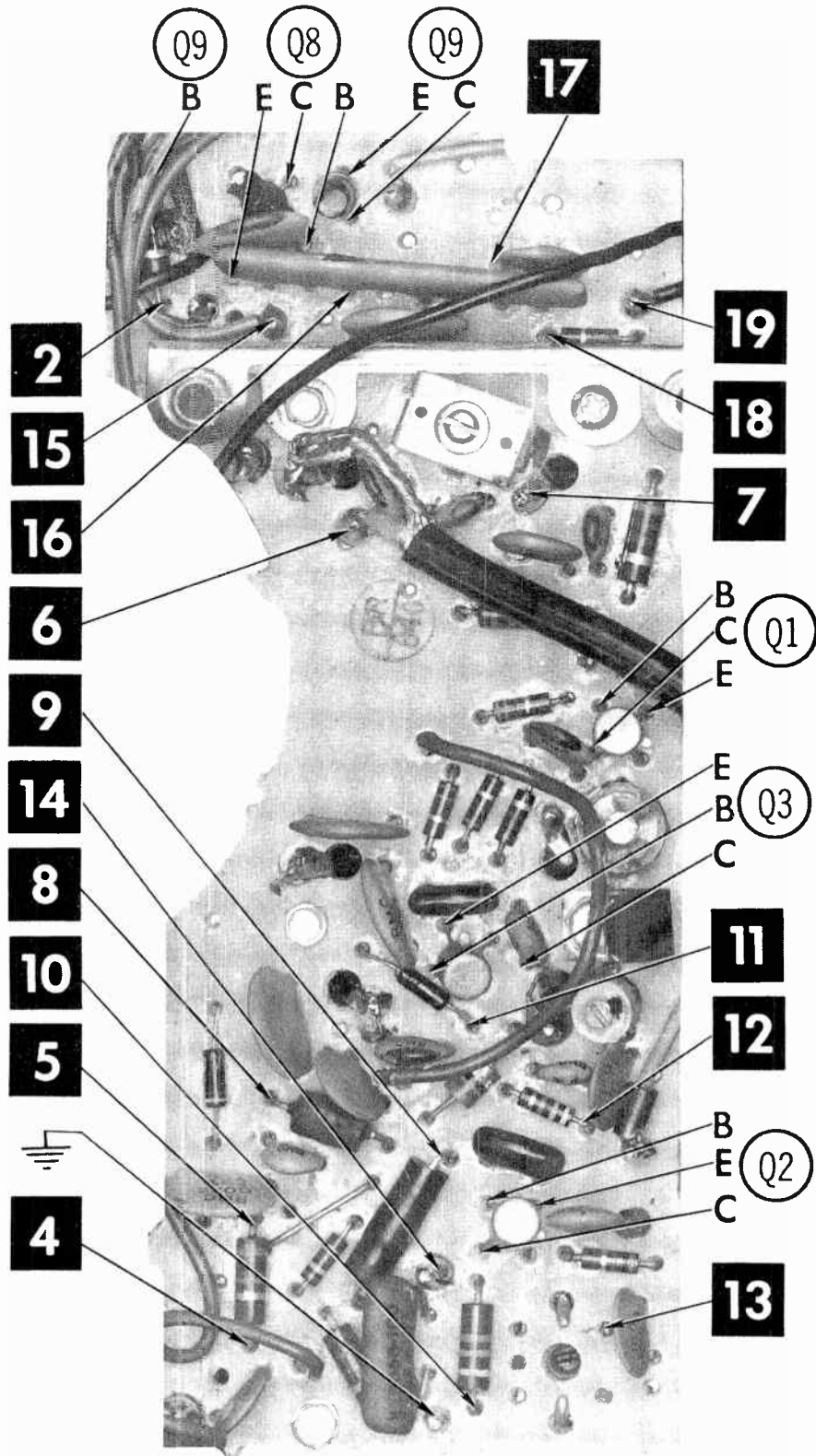


FORD MODELS F7TBF, F7TBS, F7TBZ

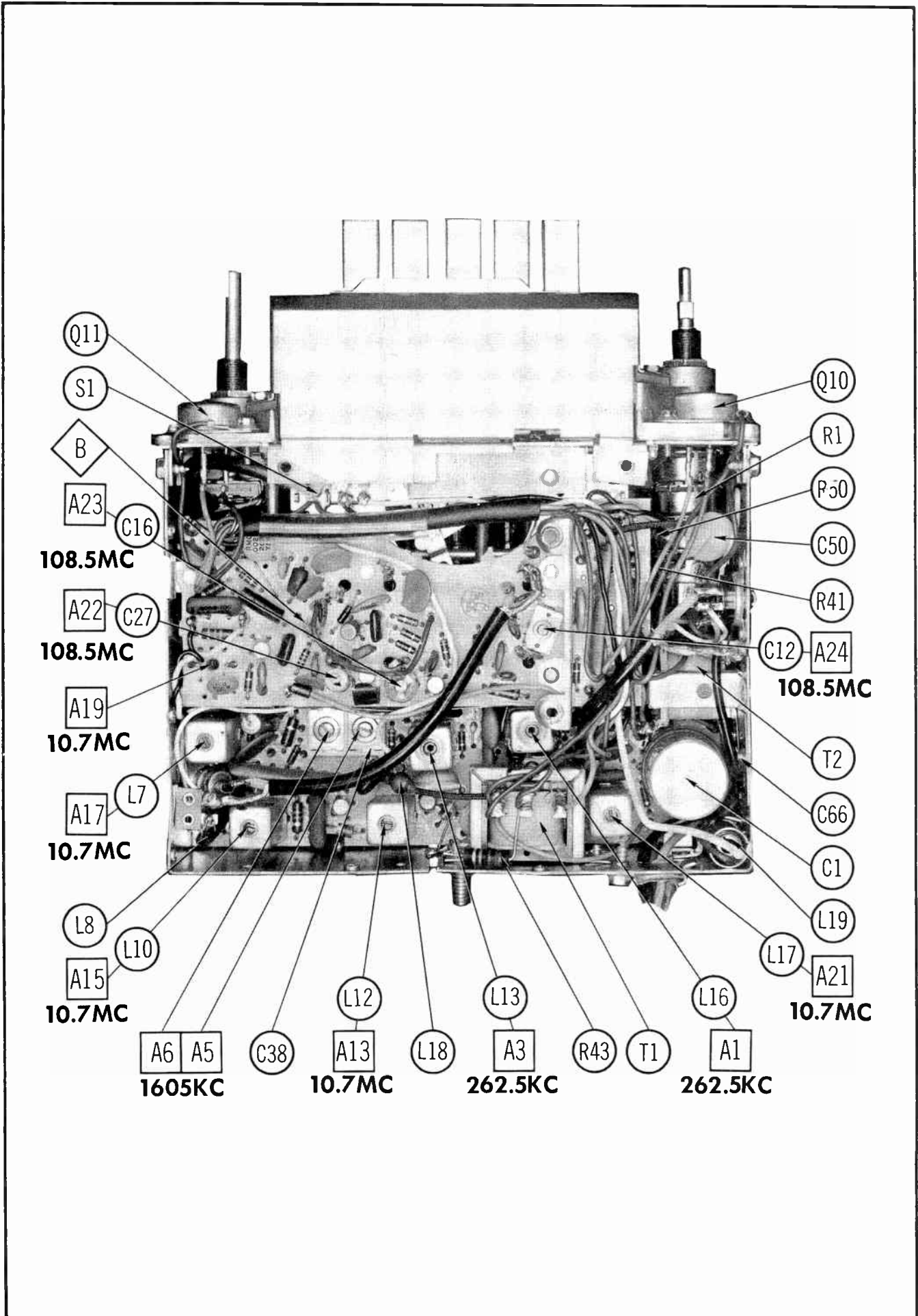








A Howard W. Sams CIRCUITRACE® Photo



- Q11
- S1
- B
- A23
- C16
- 108.5MC**
- A22
- C27
- 108.5MC**
- A19
- 10.7MC**
- A17
- L7
- 10.7MC**
- L8
- L10
- A15
- 10.7MC**
- A6
- A5
- 1605KC**
- C38
- A13
- 10.7MC**
- L12
- L18
- A3
- 262.5KC**
- R43
- T1
- L13
- L16
- 262.5KC**
- A1
- Q10
- R1
- P50
- C50
- R41
- C12
- A24
- 108.5MC**
- T2
- C66
- C1
- L19
- L17
- A21
- 10.7MC**

ALIGNMENT INSTRUCTIONS

Check for specified source voltage.
Use only enough generator output to provide a usable indication.
Suggested Alignment Tools:

A1 thru A23. GENERAL CEMENT: 9440
WALSCO: 2501

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point \diamond , low side to ground.	262.5KC (400v Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1605KC	"	"	A5, A6, A7	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. IF necessary, back tuning cores (A8, A9, A10) out of coils but not out of forms. Repeat step 2.						
3.	Thru dummy (Fig. 1) to antenna receptacle.	1000KC	Tune to Signal.	Output Meter across voice coil.	A8, A9, A10	Adjust for maximum. Repeat steps 2 & 3 until no further improvement is noted.
With radio installed in car and antenna extended 30", tune in a weak station near 1400KC and adjust A7 for maximum output.						

FM ALIGNMENT USING AM SIGNAL GENERATOR - SELECTOR IN FM POSITION

High side thru .01mfd to point \diamond , low side to ground.

	GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS
4.	10.7MC (Unmod.)	Point of non-interference.	DC probe of VTVM to point \diamond ; common to ground.	A11, A12, A13, A14, A15, A16, A17, A18, A19, A20.	Adjust for maximum.
5.	"	"	DC probe to point \diamond ; common to ground.	A21.	Adjust for zero reading. A positive or negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR - SELECTOR IN FM POSITION

High side thru .01mfd to point \diamond , low side to ground. Use only enough marker signal to obtain indication. Use 60% frequency modulated signal with 450KC sweep. Use 120v sawtooth voltage in scope for horizontal deflection.

	GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS
4.	10.7MC (450KC Swp.)	Point of non-interference	Vert. amp. of Scope to point \diamond ; low side to ground.	A11, A12, A13, A14, A15, A16, A17, A18, A19, A20.	Adjust for maximum gain and symmetry of response similar to Fig. 2 with marker as shown.
5.	"	"	Vert. amp. to point \diamond ; low side to ground.	A21.	Adjust A21 (Secondary) to place marker at center of crossover lines similar to Fig. 3. Adjust A11 (Primary) for maximum amplitude and straightness of crossover lines.

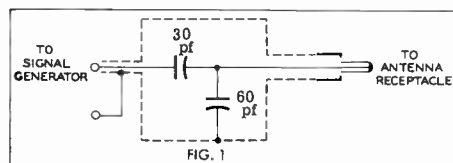
FM RF ALIGNMENT

Connect generator across antenna terminals with 120 Ω carbon resistors in series with each lead.

	GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS
6.	108.5MC	108.5MC	DC probe of VTVM to point \diamond ; common to ground.	A22, A23, A24.	Adjust for maximum.

PUSH-BUTTON ADJUSTMENT

1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.



PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				BENDIX PART No.	NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.		
Q1		FM RF Amp	DS-81	GE-11	TR-22	SK-3018	2092417-0711	NPN
Q2		FM Mixer	DS-81	GE-11	TR-22	SK-3018	2092417-0712	NPN
Q3		FM Oscillator	DS-81	GE-11	TR-22	SK-3018	2092417-0713	NPN
Q4		AM RF/1st FM IF	DS-74	GE-11	TR-22	SK-3018	2092418-0715	NPN
Q5		AM Converter/2nd FM IF	DS-74	GE-11	TR-22	SK-3018	2092418-0716	NPN
Q6		AM IF/3rd FM IF	DS-74	GE-11	TR-22	SK-3018	2092418-0717	NPN
Q7		Limiter	DS-74	GE-11	TR-22	SK-3018	2092418-0716	NPN
Q8		AF Amp	DS-66	GE-10	TR-21	SK-3020	2092609-0707	NPN
Q9		Driver	DS-66	GE-10	TR-21	SK-3020	2092609-0002	NPN
Q10	2N1227A	Output	DS-520	GE-3	TR-01	SK-3009	2091859-0714	PNP
Q11	2N1227A	Output	DS-520	GE-3	TR-01	SK-3009	2091859-0714	PNP

♦ When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS & DIODES		RECTIFIERS	
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	SARKES TARZIAN PART No.
X1		2092055-0003				
X2		2092055-0708	1N34AS	1N34A		
X3		2092055-0708	1N34AS	1N34A		
X4		2092055-0007	1N34AS	1N34A		
X5		2092055-0007	1N34AS	1N34A		
X6		2092055-0001	1N34AS	1N34A		
X7		2092055-0710				

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		BENDIX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500 16V	2091503-0712	PWH2-02-40			XC2-43.05	PFP200, 65	PCL-2177
C1B	500 16V							
C2	50 8V	2093667-0711	CRE417A	EA15-50	NLW50-10	MT1-16	TT10X50	TE-1119
C3	2 16V	2093667-0713	CRE451A	EA30-2	NLW2-50	MT1-1	TT15X2	TE-1149

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C10	33 NPO	↑	NPO-DI 33	DTZ-33	CS601CG330K	CCTO-330	CNO433	10TCC-Q33	
C11	6.8 NPO	↑	NPO-DI 6.8	DTZ-6R8	CZ601CH6R8D	CCTO-6R8	CNO568	10TCC-V68	
C12	4-25	#2093115-0704							
C13	2.7 NPO	↑	NPO-DI 3					10TCC-V27	
C14	.005	↑	TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50	
C15	22 NPO	↑	NPO-DI 22	DTZ-22	CY601CG220K	CCTO-220	CNO422	10TCC-Q22	
C16	4-20	#2094703-0702							
C17	68 NPO	↑	NPO-DI 68	DTZ-68	CX601CG680K	CCTO-680	CNO468	10TCC-Q68	
C18	4.7 NPO	↑	NPO-DI 4.7	DTZ-4R7		CCTO-4R7	CNO547	10TCC-V47	
C19	220	↑	DI-220	DD-221	JBZ601YP221K	CCD-221	GP322	10TS-T22	
C20	.001	↑	DI-1000	DM-102	JBS601YP102K	CCD-102	SM210	5GAB-D10	
C21	.005	↑	TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50	
C22	.0068 100V	↑	DBE6D68	CPR-6800J	DMF6D68	6DP-1-682	PVC6268	6PS-D68	
C23	1pf	↑	NPO-DI 1.0	TCZ-1			CNO510	10TCC-V10	
C24	.0022	↑	DI-2200	DD-222	JBX601YP222K	CCD-222	GP222	10TS-D22	
C25	47	↑	NPO-DI 47	DTZ-47	CX601CG470K	CCTO-470	CNO447	10TCC-Q47	
C26	1.5 NPO	↑	NPO-DI 1.5	DTS-1R5			CNO515	10TCC-V15	
C27	3-8	#2094703-0701							
C28	18 N150	↑				*	*	10TCP-Q18	
C29	3.3 NPO	↑	NPO-DI 3.0	DTZ-3R3		CCTO-3R3	CNO533	10TCC-V30	
C30	.005	↑	TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50	
C31	.05 50V	↑	TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50	
C32	10-125	#2093466-0704				424			
C33	.0018	↑	DI-1800	DD-182	JBX601YP182K	CCD-182	GP218	5GA-D18	
C34	18 N150	↑				*	*	10TCP-Q18	
C35	.47pf	↑	NPO-DI 1.0	TCZ-1			CNO510	10TCC-V10	
C36	.0082	↑		DD-822	RR06CW822K	CCD-822	B282	30GA-D82	
C37	22 NPO	↑	NPO-DI 22	DTZ-22	CY601CG220K	CCTO-220	CNO422	10TCC-Q22	
C38A	305-375	#2092422-0715							
C38B	180								
C38C	260-330								
C39	.0068 100V	↑	DBE6D68	CPR-6800J	DMF6D68	6DP-1-682	PVC6268	6PS-D68	
C40	.01 50V	↑	TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10	

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C41	1.2	†	NPO-DI 1.0	TCZ-1			CNO510	10TCC-V10
C42	150 N750	†	NT50-DI 150	DTN-150			CN7315	10TCU-T15
C43	1.2	†	NPO-DI 1.0	TCZ-1			CNO510	10TCC-V10
C44	.01 100V	†	DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10
C45	.001	†	DI-1000	DM-102	JBS601YP102K	CCD-102	SM210	5GAB-D10
C46	.18pf	†	NPO-DI 1.0	TCZ-1			CNO510	10TCC-V10
C47	.02 100V	†	DBE4S22		DMF4S22	4DP-2-223	PVC6122	4PS-S22
C48	47 NPO	†	NPO-DI 47	DTZ-47	CX601CG470K	CCTO-470	CNO447	10TCC-Q47
C49	.0033 100V	†	DBE6D33	CPR-3300J	DMF6D33	6DP-1-332	PVC6233	6PS-D33
C50	.0033	†	DI-3300	DD-332	JBV601YP332K	CCD-332	GP233	10TS-D33
C51	.02 100V	†	DBE4S22		DMF4S22	4DP-2-223	PVC6122	4PS-S22
C52	.015 100V	†	DBE4S15		DMF4S15	4DP-1-153	PVC6115	4PS-S15
C53	.05 50V	†	DBE6S5		DPMS6S5	6DP-3-503	PVC615	6PS-S50
C54	1mfd	†		UK-105	HXC3R0XR105P		MAG31	HY-135
C55	.0033	†	DI-3300	DD-332	JBV601YP332K	CCD-332	GP233	10TS-D33
C56	.002	†	DI-2000	DM-202	JBX601YP202K	CCD-202	GP220	5GAB-D22
C57	.05 50V	†	DBE6S5		DPMS6S5	6DP-3-503	PVC615	6PS-S50
C58	.005	†	TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	7G-D50
C59	.0022	†	DI-2200	DD-222	JBX601YP222K	CCD-222	GP222	10TS-D22
C60	.005	†	TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	7G-D50
C61	.0022	†	DI-2200	DD-222	JBX601YP222K	CCD-222	GP222	10TS-D22
C62	.033 100V	†	DBE4S33		DMF4S33	4DP-2-333	PVC6133	4PS-S33
C63	.015 100V	†	DBE4S15		DMF4S15	4DP-1-153	PVC6115	4PS-S15
C64	.02 100V	†	DBE4S22		DMF4S22	4DP-2-223	PVC6122	4PS-S22
C65	260	†	#20B3050-0710					
C66	260	†	#20B3050-0710					

† Nominal Value # Bendix Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone	500K	2094914-0701				
B	Tone	500K					
C	Volume	225K Tap @ 75K					
D	Volume/Switch	225K Tap @ 75K					
A	Tone	500K	2094914-0702				
B	Tone	500K	①				
C	Volume	225K Tap @ 75K					
D	Volume/Switch	225K Tap @ 75K					

① Used in Model F7TBF only.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	BENDIX PART No.			IRC PART No.	WORKMAN PART No.	BENDIX PART No.
R44	4.5Ω (Cold)			220629-17	R45	.22Ω 2W (PTC)			2090948-0007

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				
		BENDIX PART No.	MEISSNER Part No.	MERIT PART No.	MILLER PART No.	WORKMAN PART No.
L1	FM Antenna	①				
L2	FM RF	①				
L3	RF Choke (2uh)	2092210-0007	19-1002	BC-563	74F226AP	TA812
L4	10.7MC Trap (1uh)	2092210-0005	19-1000	BC-561	4602	T855
L5	FM Oscillator	①				
L6	1st FM IF	2093587-0706				
L7	2nd FM IF	2093587-0708				
L8	RF Choke (2uh)	2092210-0007	19-1002	BC-563	74F226AP	TA812
L9	AM Antenna	①				
L10	3rd FM IF	2092421-0717				
L11	AM RF	①				
L12	4th FM IF	2093587-0703				
L13	1st AM IF	2092419-0720				
L14	AM Oscillator	①				
L15	Limitter	2092421-0718				
L16	2nd AM IF	2092419-0719				
L17	Discriminator	2093586-0703				
L18	RF Choke (100uh)	2092210-0711	19-3100	TV-194	6112	T305

① Part of M1 or (Coil Assembly Part Number 2057171-0002)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (G CURRENT 1000~)	BENDIX PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L19	250ma	.4Ω	470uh	2094209-0703					

FORD MODELS F7TBF, F7TBS, F7TBZ

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO			REPLACEMENT DATA					NOTES
				BENDIX PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
	PRI.	SEC. 1	SEC. 2						
T1	2.2	1		2092192-0706					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
			BENDIX PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
	PRI.	SEC.						
T2	25Ω Tap	@ 8Ω	2094696-0702					
	TURNS	RATIO						
	PRI.	SEC.						
	60	1						

SPEAKER

ITEM No.	TYPE		REPLACEMENT DATA			NOTES
			BENDIX PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4" X 10" PM	8Ω	2056956-0701	P4X10U8	410A278	Model: F7TBF
	5" X 8" PM	8Ω	2056884-0701	P5X8U9	58A15Z8	Model: F7TBZ

FUSE DEVICES

ITEM No.	DESCRIPTION		REPLACEMENT DATA							
			PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.	
			DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	
F1	SFE	7 1/2		In Fuse Block	30707.5			SFE7 1/2		

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PART NO.	REPLACEMENT DATA
PC1	AM Converter Network	180Ω, 2200Ω, 22K, 100K, .01mfd, .01mfd	2094687-0702	
PC2	IF Network	1500Ω, 4700Ω, 330pf, .01mfd, .2mfd	2094688-0701	
PC3	AVC Network	4700Ω, 220pf, .2mfd	2094690-0701	
PC4	Limiter Network	2200Ω, 4700Ω, .01mfd, .01mfd	2094691-0701	
PC5	AM Det. Network	1000Ω, .001mfd, .001mfd	2094692-0702	
PC6	AF Network	100Ω, 220Ω, 390Ω, 3300Ω, 33K, 33K, 100K	2056721-0701	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Tuner	2094582-0511	TRW (Model: F7TBF)
	Tuner	2094582-0510	TRW (Model: F7TBS)
	Tuner	2093482-0509	TRW (Model: F7TBZ)
	Coil Assembly	2057171-0002	
	Tuner	2094582-0513	GIC (Model: F7TBF)
S1	Coil Assembly	2057171-0004	
	AM-FM Selector Switch	2056700-0701	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
MODEL: F7TBF		MODEL: F7TBZ	
Escutcheon	2094949-0501	Escutcheon	2094946-0501
Dial Glass	2094904-0001	Dial Glass	2094947-0503
Push Button	2093773-0515	Push Button	2093773-0513
Dial Pointer	2090129-0090	Dial Pointer	2090129-0089
Knob, Tuning or Volume	2056868-0001	Knob, Tuning or Volume	2096868-0002
Knob, Tone or Dummy	2056869-0001	Knob, Tone or Dummy	2096869-0002
MODEL: F7TBS			
Escutcheon	2094946-0501		
Dial Glass	2094947-0501		
Push Button	2093773-0518		
Dial Pointer	2090129-0089		



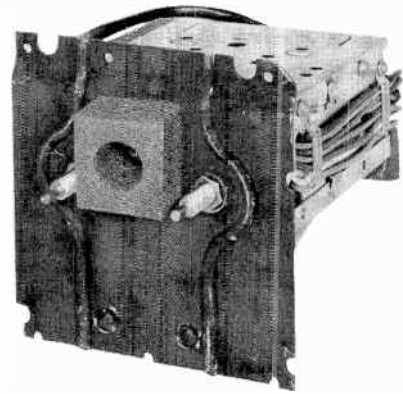
TRADE NAME : Ford or Mercury
 Models M7TB (1967 Comet, Cougar, Galaxie,
 Mustang, Mercury)
 M7TBS (1967 ThunderBird)

SUPPLIER: For Current Address, See Annual Index

TYPE SET: 15 Transistor FM Stereo Adapter

POWER SUPPLY: 12 Volt Storage Battery

RATING: .3 Amp. @ 12.6 Volts DC

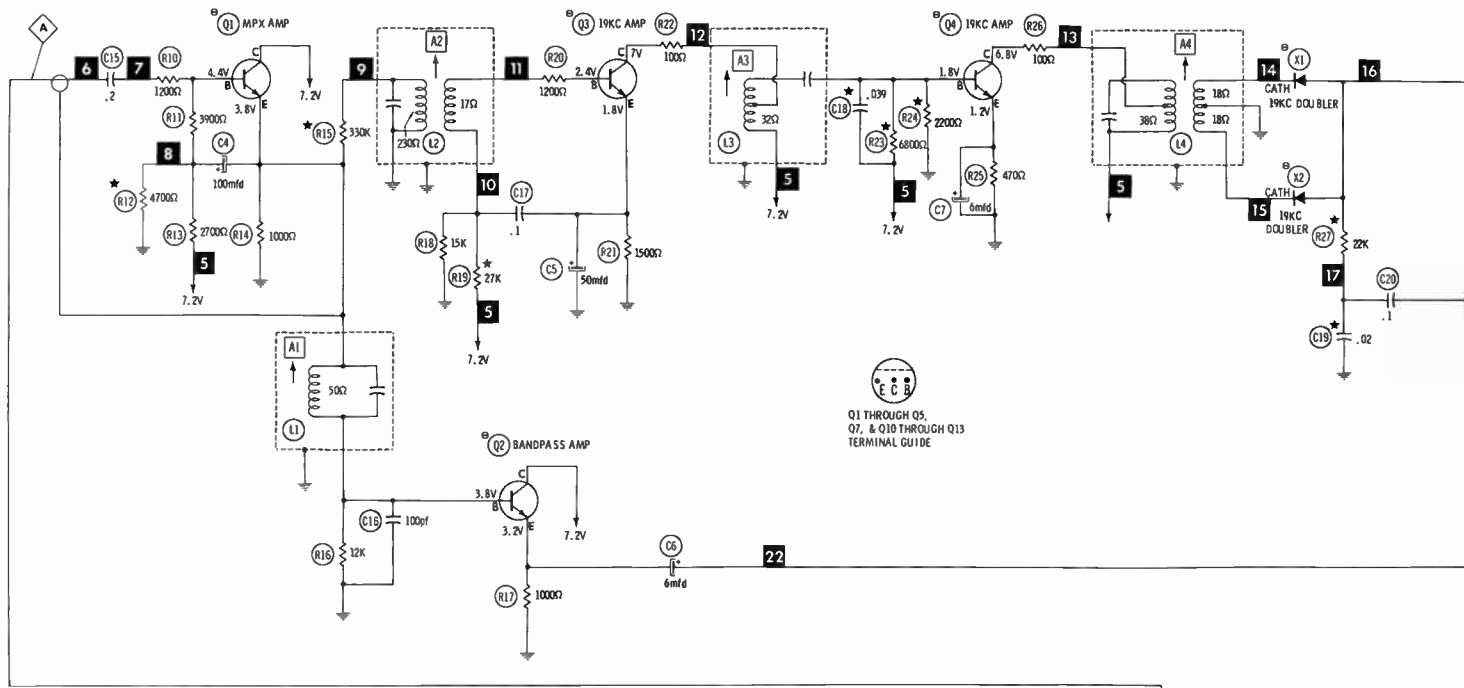


ALIGNMENT INSTRUCTIONS

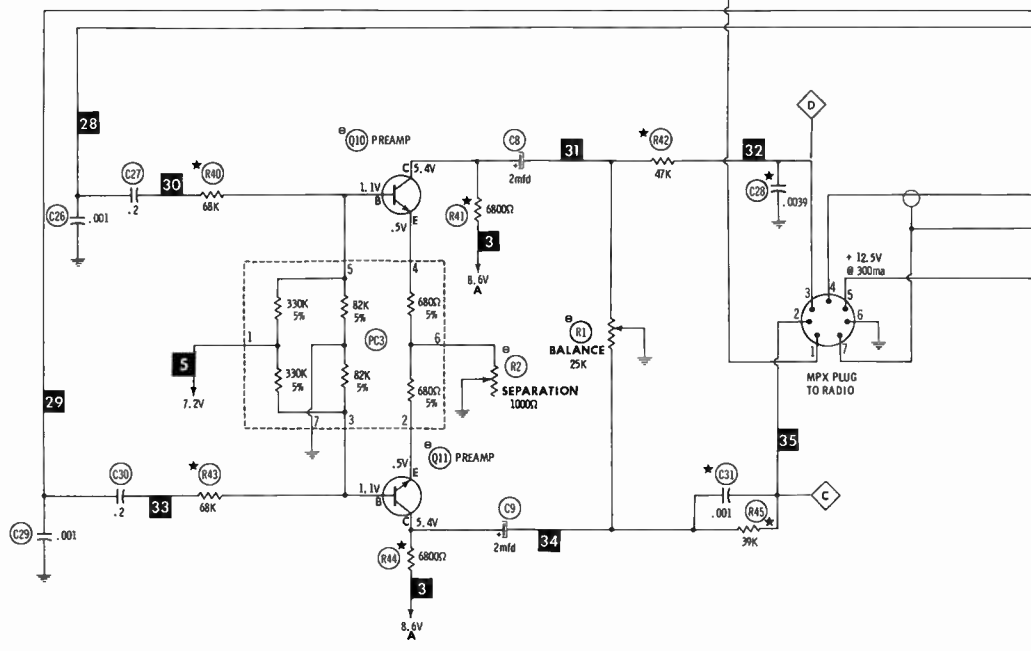
FM STEREO MULTIPLEX ALIGNMENT USING FM STEREO SIGNAL GENERATOR ($\pm .0001\%$) ACCURACY)

Connect high side of generator to point $\diamond A$, low side to ground.			
GENERATOR FREQUENCY	INDICATOR	ADJUST	REMARKS
1. 75KC	Vert. amp. of Scope thru a 1 meg to point $\diamond B$; low side to ground.	A1	Adjust for MINIMUM.
2. 19KC	Vert. amp. thru 47K to point $\diamond B$; low side to ground.	A2, A3, A4, A5	Adjust for maximum. 38KC Response.
3. Modulated Left Channel	Vert. amp. to point $\diamond C$; low side to ground.	A2, A3, A4, A5 R2	Adjust for MINIMUM. This step should require only slight adjustment.
4. Modulated Right Channel	Vert. amp. to point $\diamond D$; low side to ground.		Check for MINIMUM. Make compromise adjustments of A2, A3, A4, A5 & R2 if necessary.

FORD-MERCURY MODELS M7TB, M7TBS



Q1 THROUGH Q5,
Q7, & Q10 THROUGH Q13
TERMINAL GUIDE



★ Nominal value, may vary

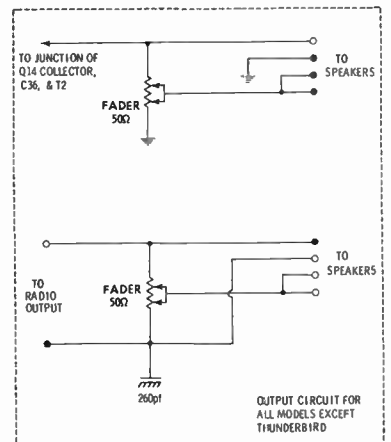
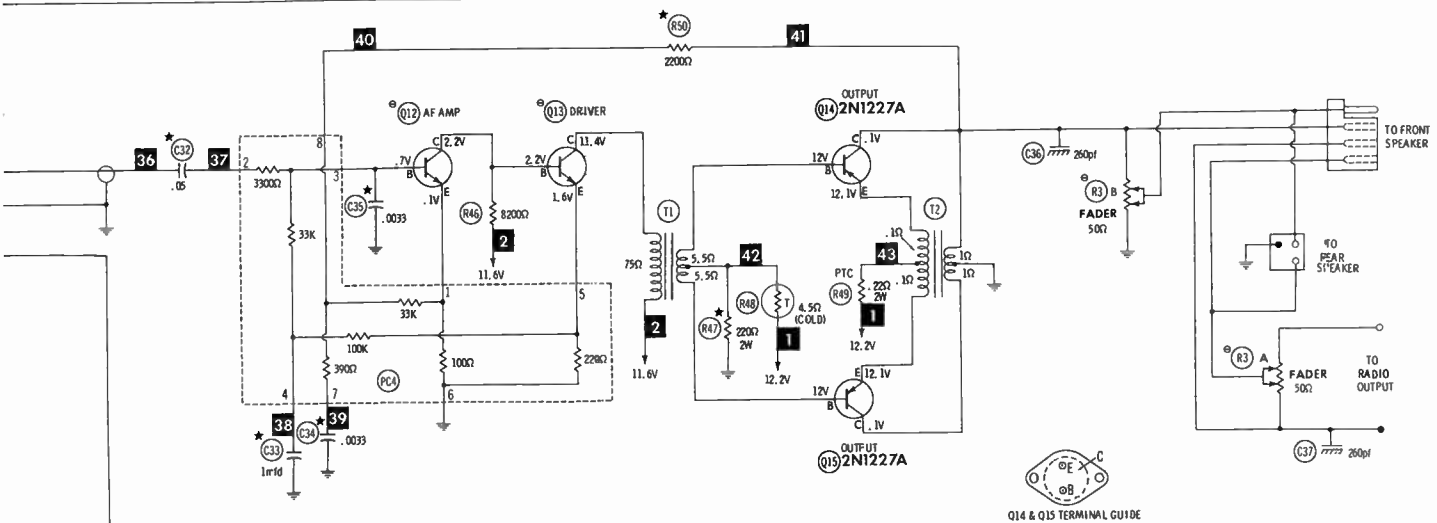
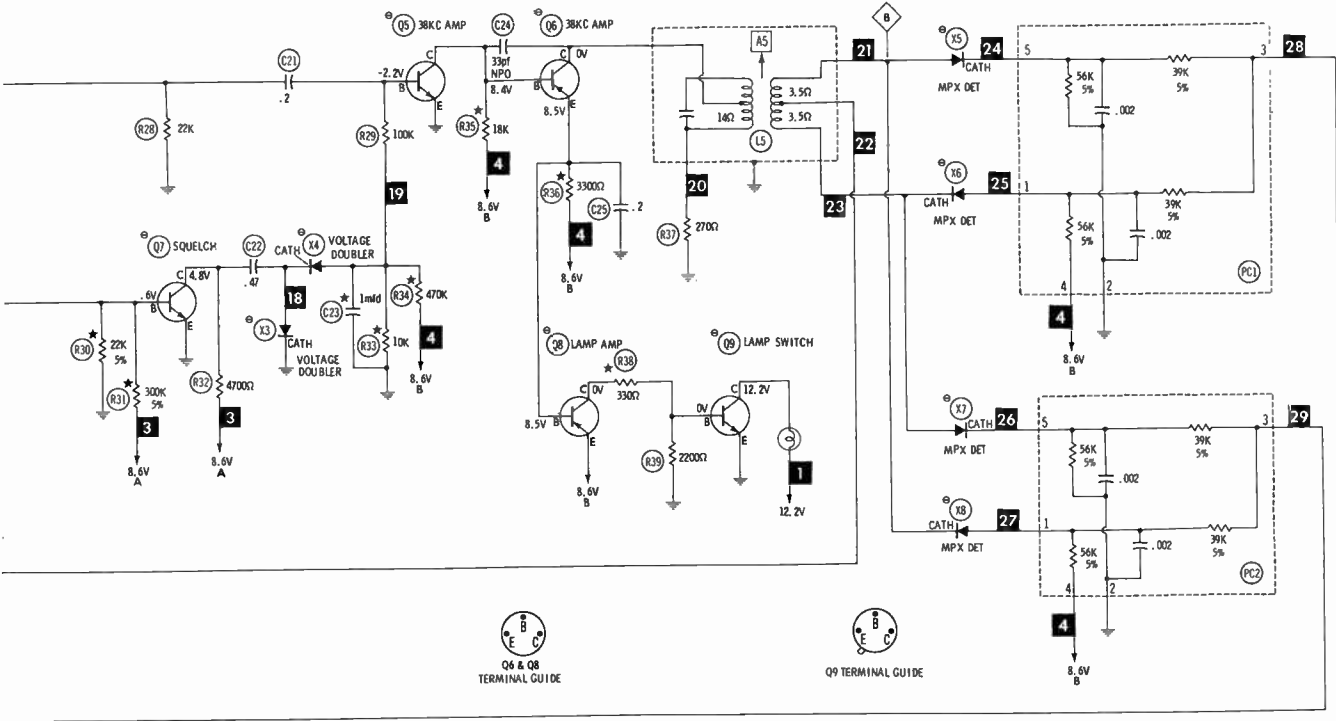
Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.

⊖ See parts list

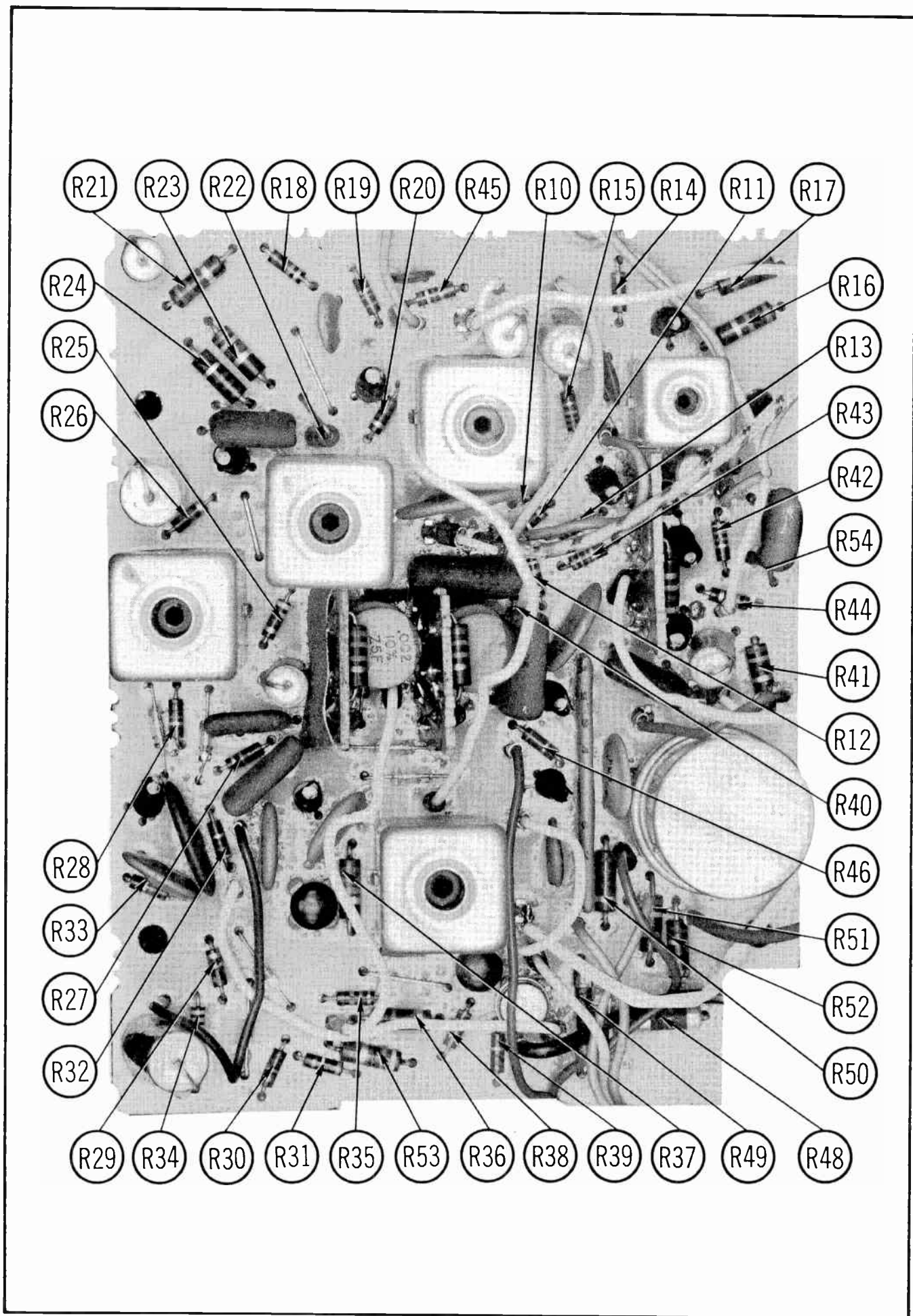
1. Voltage measurements taken with vacuum tube voltmeter.
2. All controls set for normal operation, no signal applied.
3. Measured values are from socket pin or terminal to common ground.
4. All terminals viewed from bottom unless otherwise designated.
5. Numbers assigned to terminals may not be found on the unit.
6. Supply voltage maintained at rated value for voltage readings.
7. Resistance measurements not given because of the wide variation in internal resistance of transistor.

A PHOTOFAC STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

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FORD-MERCURY MODELS M7TB, M7TBS

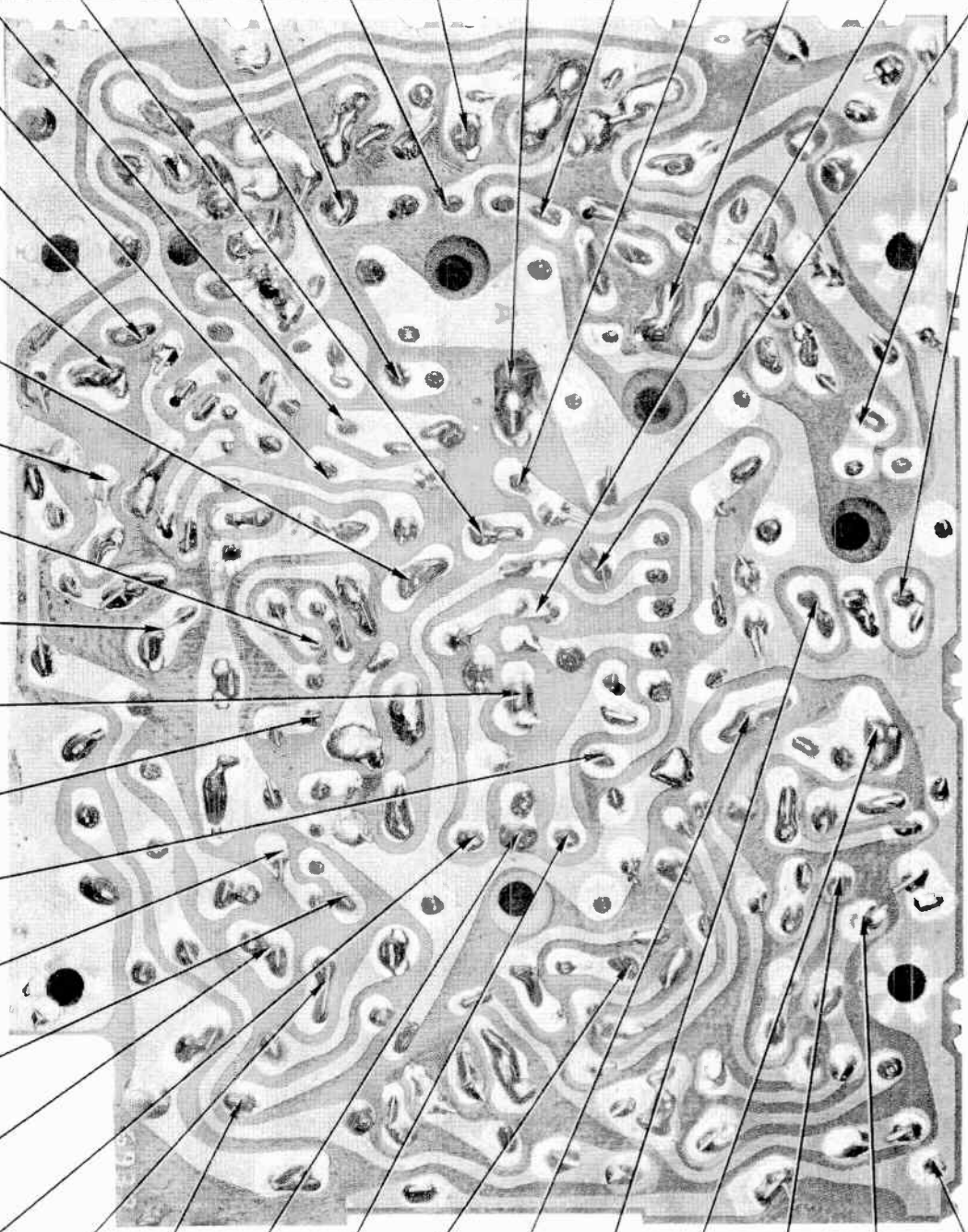


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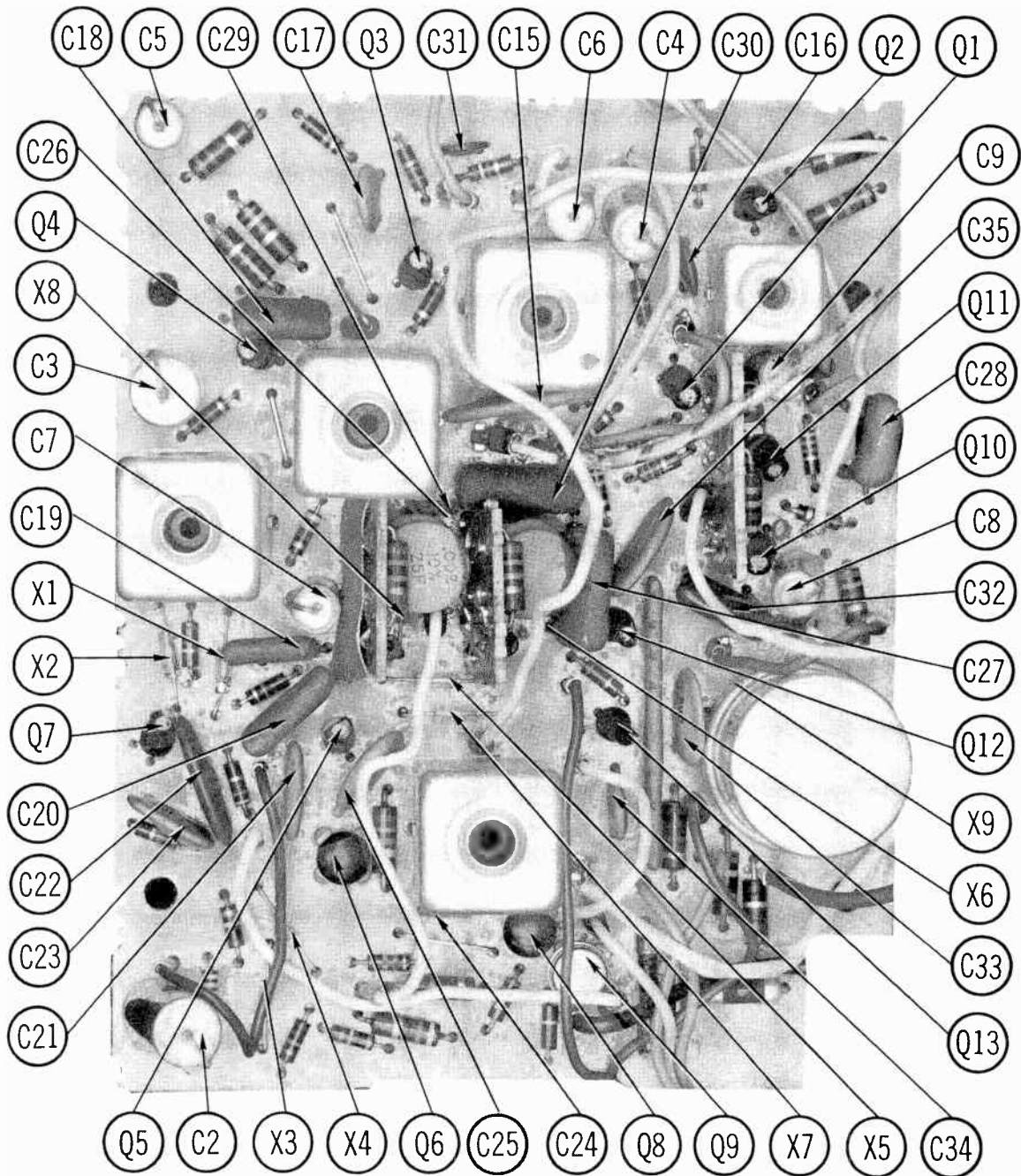
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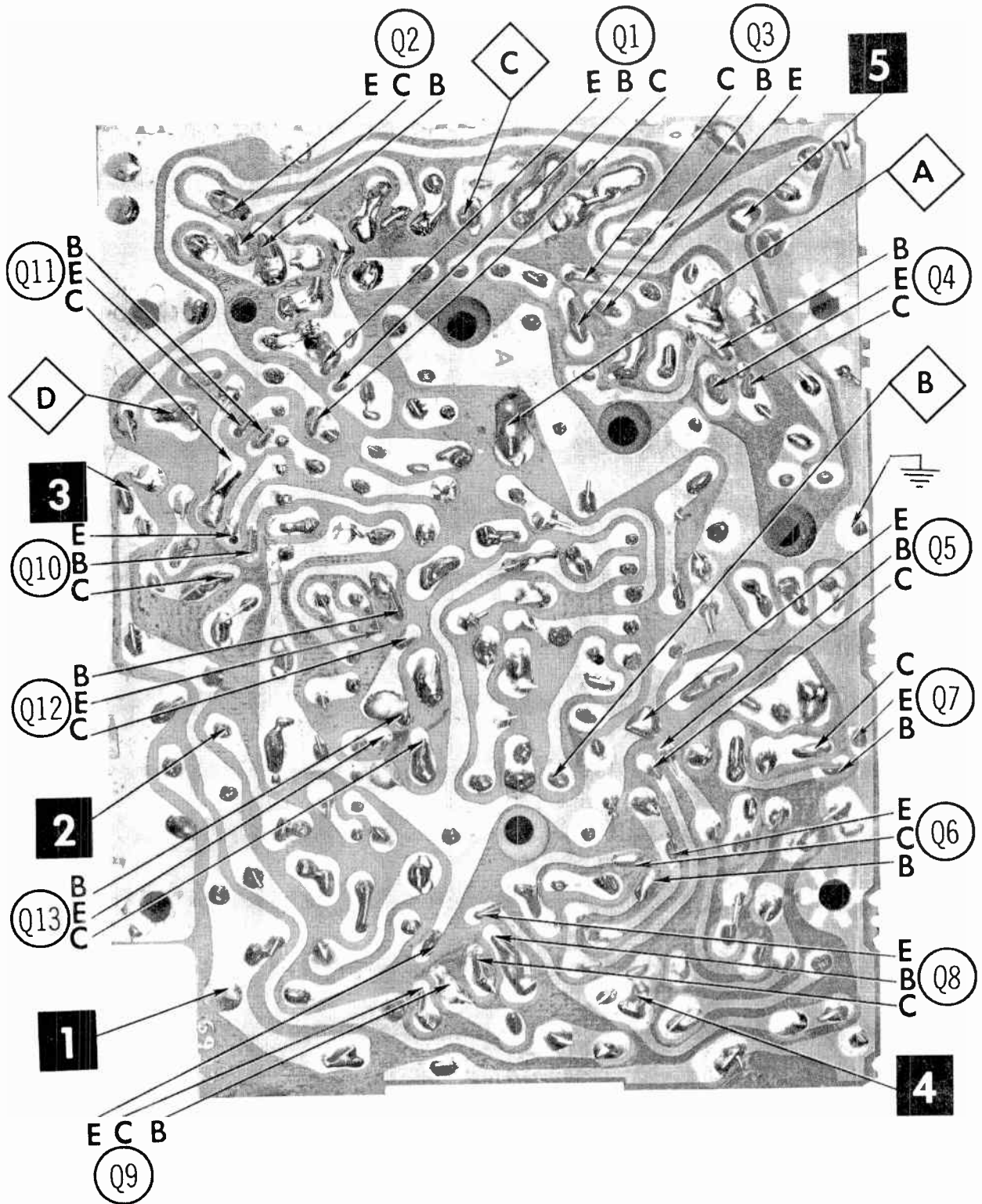
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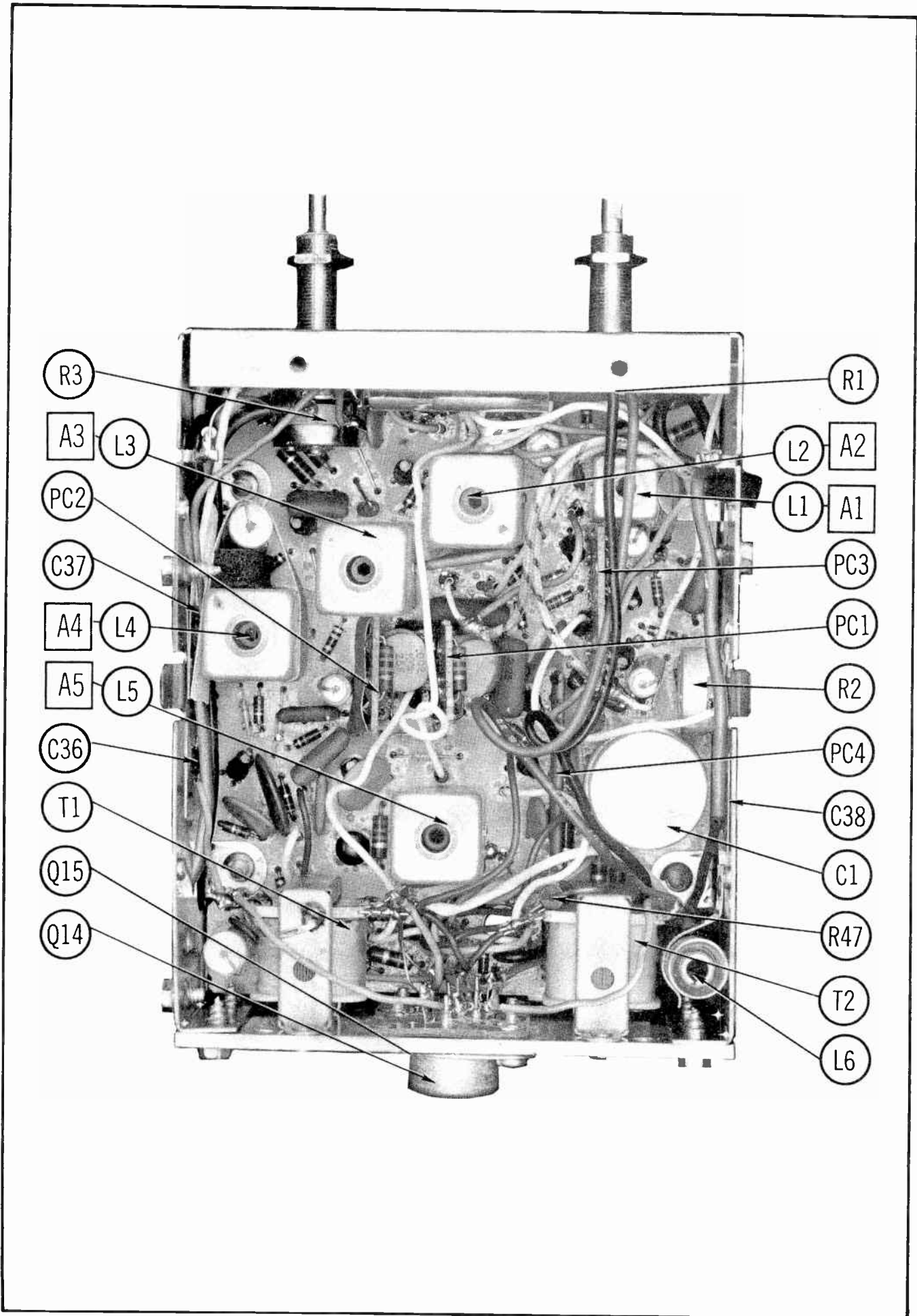


FORD-MERCURY MODELS M7B, M7BS

A Howard W. Sams **CIRCUITRACE** Photo







R3

A3

L3

PC2

C37

A4

L4

A5

L5

C36

T1

Q15

Q14

R1

L2

A2

L1

A1

PC3

PC1

R2

PC4

C38

C1

R47

T2

L6

PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 in.) or 8670 (3/4 in.)

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				BENDIX PART No.	NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.		
Q1		MPX Input Amp	DS-66	GE-10	TR-21	SK-3020	2092609-0707	NPN
Q2		Band Pass Amp	DS-66	GE-10	TR-21	SK-3020	2092609-0707	NPN
Q3		19KC Amp	DS-66	GE-10	TR-21	SK-3020	2092609-0707	NPN
Q4		19KC Amp	DS-66	GE-10	TR-21	SK-3020	2092609-0707	NPN
Q5		38KC Amp	DS-66	GE-10	TR-21	SK-3020	2092609-0707	NPN
Q6		38KC Amp	DS-66	GE-10	TR-25	SK-3020	2057013-0701	PNP
Q7		Squelch	DS-66	GE-10	TR-21	SK-3020	2092609-0707	NPN
Q8		Lamp Amp			TR-25		2057013-0701	PNP
Q9		Lamp Switch	DS-66	GE-10	TR-21	SK-3020	2092609-0720	NPN
Q10		Preamp	DS-66	GE-10	TR-21	SK-3020	2092609-0707	NPN
Q11		Preamp	DS-66	GE-10	TR-21	SK-3020	2092609-0707	NPN
Q12		AF Amp	DS-66	GE-10	TR-21	SK-3020	2092609-0707	NPN
Q13		Driver	DS-66	GE-10	TR-21	SK-3020	2092609-0713	NPN
Q14	2N1227A	Output	DS-520	GE-3	TR-01	SK-3009	2091859-0714	PNP
Q15	2N1227A	Output	DS-520	GE-3	TR-01	SK-3009	2091859-0714	PNP

* When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Port or Type No.	RECTIFIERS & DIODES		RECTIFIERS		
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	RCA PART No.	SARKES TARZIAN PART No.
X1		2092055-0007	1N34AS	1N34A			
X2		2092055-0007	1N34AS	1N34AS			
X3		2092055-0708	1N82A	1N82A			
X4		2092055-0708	1N82A	1N82A			
X5		2092055-0007	1N34AS	1N34A			
X6		2092055-0007	1N34AS	1N34A			
X7		2092055-0007	1N34AS	1N34A			
X8		2092055-0007	1N34AS	1N34A			
X9		2092055-0712 (Zener Diode)	1N34AS	1N34A			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			BENDIX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500 16V		2092983-0709	PWH3-00-94.2					
B	500 16V								
C	500 16V								
C2	200 16V		2093677-0717	CRE481A	EA30-250	NLW200-15	MT1-23	TT15X200	TE-1154
C3	200 16V		2093677-0717	CRE481A	EA30-250	NLW200-15	MT1-23	TT15X200	TE-1154
C4	100 3V		2093677-0715	CRE223A	EA6-100	BR100-6	MT1-21	TT3X100	TE-1059.5
C5	50 8V		2093667-0711	CRE417A	EA15-50	NLW50-10	MT1-16	TT10X50	TE-1119
C6	5 8V		2093677-0716	CRE405A	EA15-10	NLW6-15	MT1-5	TT10X6	TE-1127.1
C7	6 8V		2093677-0716	CRE405A	EA15-10	NLW6-15	MT1-5	TT10X6	TE-1127.1
C8	2 16V		2093667-0713	601A	EA30-2	NLW2-50	MT1-1	TT15X2	TE-1149
C9	2 16V		2093667-0713	601A	EA30-2	NLW2-50	MT1-1	TT15X2	TE-1149

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C15	.2			UK10-204	HCZ3ROXR224P		MAG3022	HY-125
C16	100		NPO-DI 100	DTZ-100	CV601CG101K	CCTO-101	CNO310	10TCC-T10
C17	.1		TTD-1	CK-104	H0V101ZV104Z		TA010	TG-P10
C18	.039 25V	↑	DBE6S39		DPMS6S39	6DP-3-393	PVC6139	6PS-S39
C19	.02 25V	↑	DBE4S22		DMF4S22	4DP-2-223	PVC6122	4PS-S22
C20	.1 25V		DBE2P1		DMF2P1	2DP-3-104	PVC201	2PS-P10
C21	.2			UK10-204	HCZ3ROXR224P		MAG3022	HY-125
C22	.47			UK10-474	HCS3ROXR474P		MAG12047	HY-330
C23	1mfd	↑		UK-105	HXC3ROXR105P		MAG31	HY-135
C24	33 NPO	↑	NPO-DI 33	DTZ-33	CS601CG330K	CCTO-330	CNO433	10TCC-Q33
C25	.2			UK10-204	HCZ3ROXR224P		MAG3022	HY-125
C26	.001		DI-1000	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C27	.2 25V		DBE4P22		DMF4P22	4DP-5-224	PVC4022	4PS-P22
C28	.0039 25V	↑	DBE6D39	CPR-3900J	DPMS6D39	6DP-1-392	PVC6239	6PS-D39
C29	.001		DI-1000	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C30	.2 25V		DBE4P22		DMF4P22	4DP-5-224	PVC4022	4PS-P22
C31	.001		DI-1000	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C32	.05 25V	↑	DBE6S5		DPMS6S5	6DP-3-503	PVC615	6PS-S50
C33	1mfd	↑		UK-105	HXC3ROXR105P		MAG31	HY-135
C34	.0033	↑	DI-3300	DD-332	JBV601YP332K	CCD-332	GP233	10TS-D33
C35	.0033	↑	DI-3300	DD-332	JBV601YP332K	CCD-332	GP233	10TS-D33
C36	260		#2093050-0710					
C37	260		#2093050-0710					
C38	260		#2093050-0710					

↑ Nominal Value # Bendix Part Number

FORD-MERCURY MODELS M7TB, M7TBS

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Balance	25K	2094442-0705 ①				
	Balance	25K	2094442-0704 ②	F1-25K, SFS212, BA100, CA005			QCB4③④, B11-120, TM8 or (BU14③, CF11, SS4, DC1
R2	Separation	1000Ω	219555-0015 ①				
	Separation	600Ω 2W	219555-0018 ②	V-600	U39-600	112-600	MR600F
R3A	Fader	50Ω 2W	2094441-0704 ①				
B	Fader	50Ω 2W					
A	Fader	50Ω 2W	2094441-0703 ②				
B	Fader	50Ω 2W					

① Used in Model: M7TB
② Used in Model: M7TBS

③ Alter Bushing to meet requirements
④ Use QCB4 instead of Tab Mount Plate in TM8

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	BENDIX PART No.			IRC PART No.	WORKMAN PART No.	BENDIX PART No.
R48	4.5Ω Cold Thermistor			220629-16	R49	.22Ω 2W (PTC)			2090948-0007

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				
		BENDIX PART No.	MEISSNER Part No.	MERIT PART No.	MILLER PART No.	WORKMAN PART No.
L1	67KC Trap	2056947-0701				
L2	19KC	2056947-0702				
L3	19KC	2056947-0703				
L4	19KC	2056947-0705				
L5	38KC	2056947-0706				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	BENDIX PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L6	300ma	.4Ω	470uh	2094209-0703					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	BENDIX PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	2, 2	1		2092192-0706					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BENDIX PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	25Ω Tap	@ 8Ω	2094696-0703					
	TURNS RATIO							
	PRI.	SEC.						
	60	1						

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PART NO.	REPLACEMENT DATA
PC1	MPX Det. Network	39K, 39K, 56K, 56K, .002mfd, .002mfd	2056859-0004	
PC2	MPX Det. Network	39K, 39K, 56K, 56K, .002mfd, .002mfd	2056859-0003	
PC3	Biasing Network	680Ω, 680Ω, 82K, 82K, 330K, 330K	2056859-0005	
PC4	Biasing Network	100Ω, 220Ω, 390Ω, 3300Ω, 33K, 33K, 100K	2056721-0701	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Knob, Model M7TB	2056927-0701	Knob, Model M7TBS	2057191-0701



PHOTOFACT[®] with

CIRCUITRACE[®]

TRADE NAME : Motorola Model TM327M
 SUPPLIER : For Current Address, See Annual Index
 TYPE SET : 7 Transistor AM Receiver
 POWER SUPPLY : 12 Volt Storage Battery
 RATING : .65 Amp. @ 12.6 Volts DC

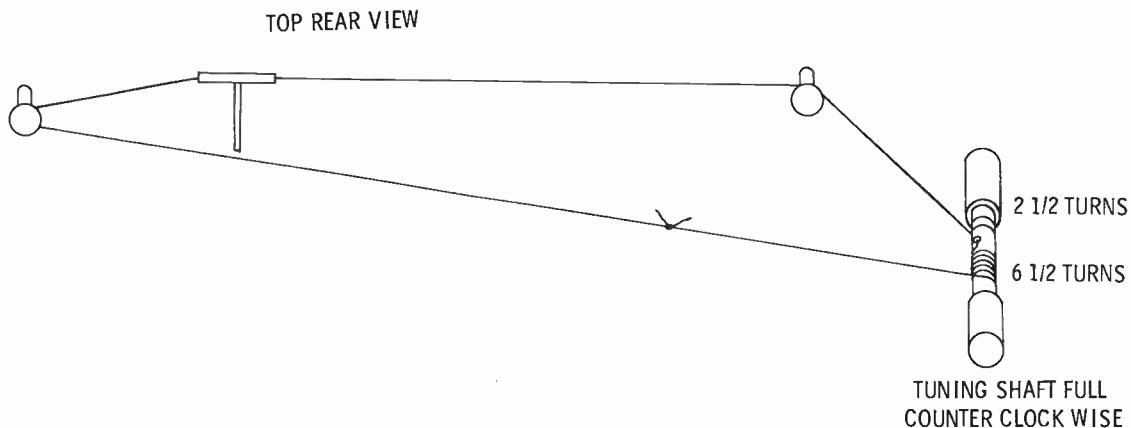


ALIGNMENT INSTRUCTIONS

Check for specified source voltage. Use only enough generator output to provide a usable indication. Suggested Alignment Tools: A1 thru A4. GENERAL CEMENT: 9296, 9297, 9300 WALSCO: 2510, 2546, 2547 A5 thru A8. GENERAL CEMENT: 8290, 8868, 9087 WALSCO: 2525, 2528, 2587		<p>TO SIGNAL GENERATOR TO ANTENNA RECEPTACLE</p> <p>DUMMY ANTENNA</p>			
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1. High side thru .1mfd to point Δ , low side to ground.	262KC (400v Mod.)	High freq. end stop.	Output meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2. Thru dummy antenna to antenna receptacle.	1615KC	"	"	A5, A6, A7, A8	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A9, A10, A11, A12) out of coils but not out of forms. Repeat step 2.					
3. Thru dummy antenna to antenna receptacle.	1000KC	Tune to signal.	Output meter across voice coil.	A9, A10, A11, A12	Adjust for maximum. Repeat Steps 2 and 3 until no further improvement is noted.
With radio installed in car and antenna extended to desired height, tune in a weak station near 1400KC and adjust A8 for maximum output. Antenna adjustment (A8) is located right side above antenna receptacle					

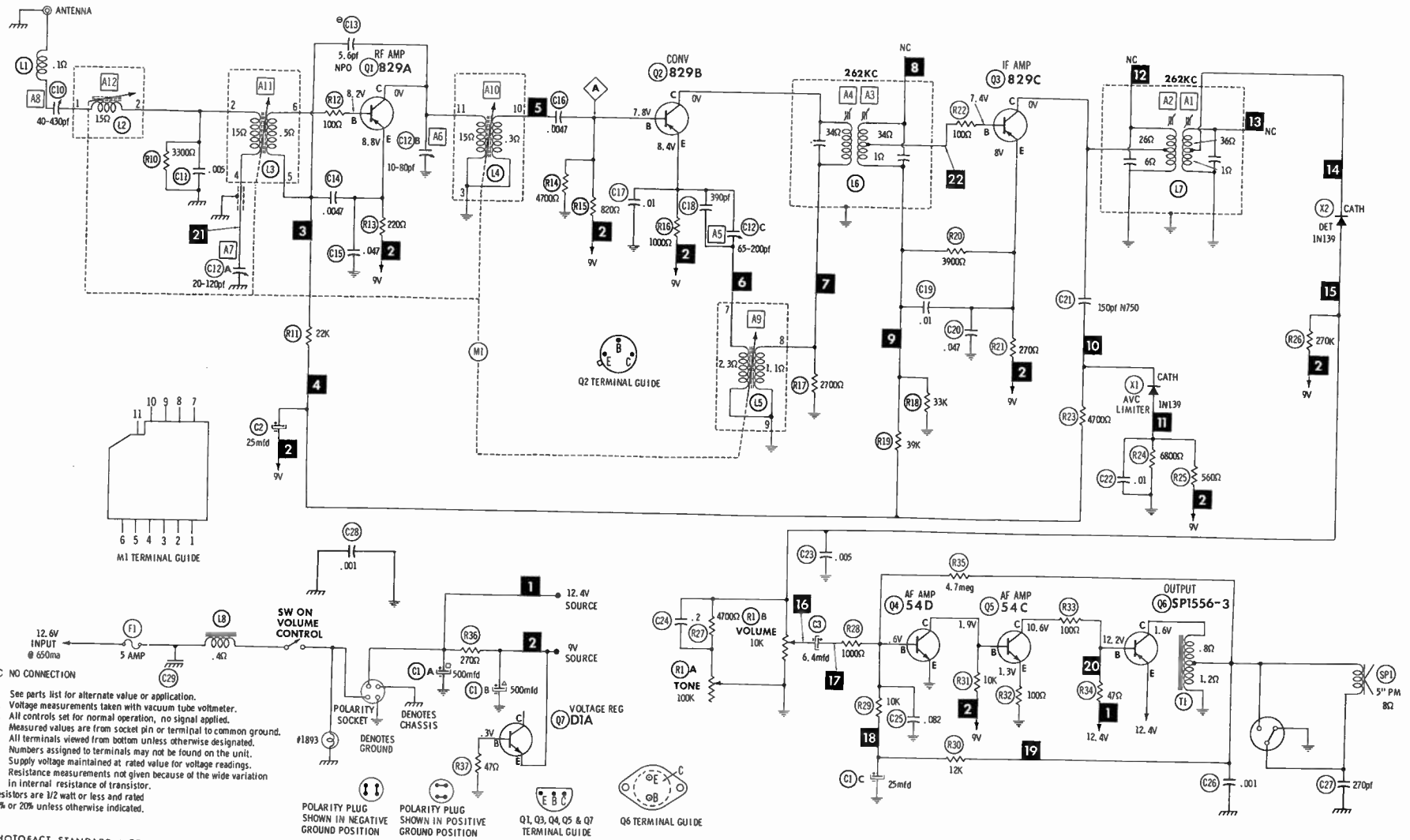
MOTOROLA MODEL TM327M

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

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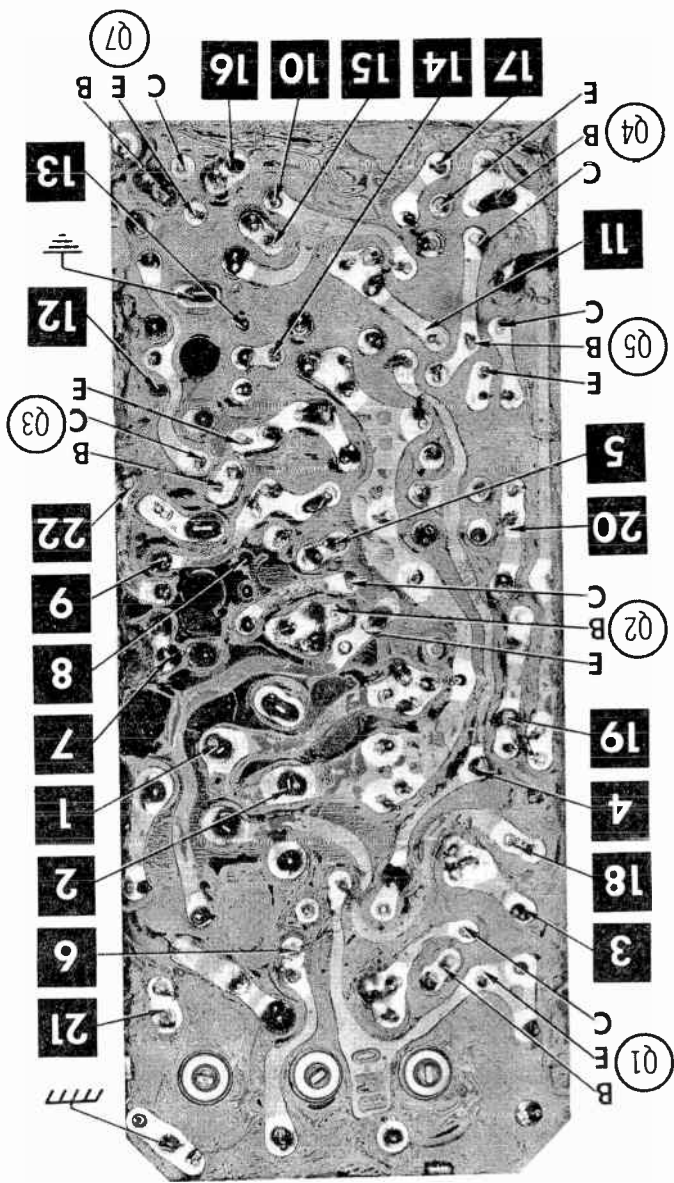
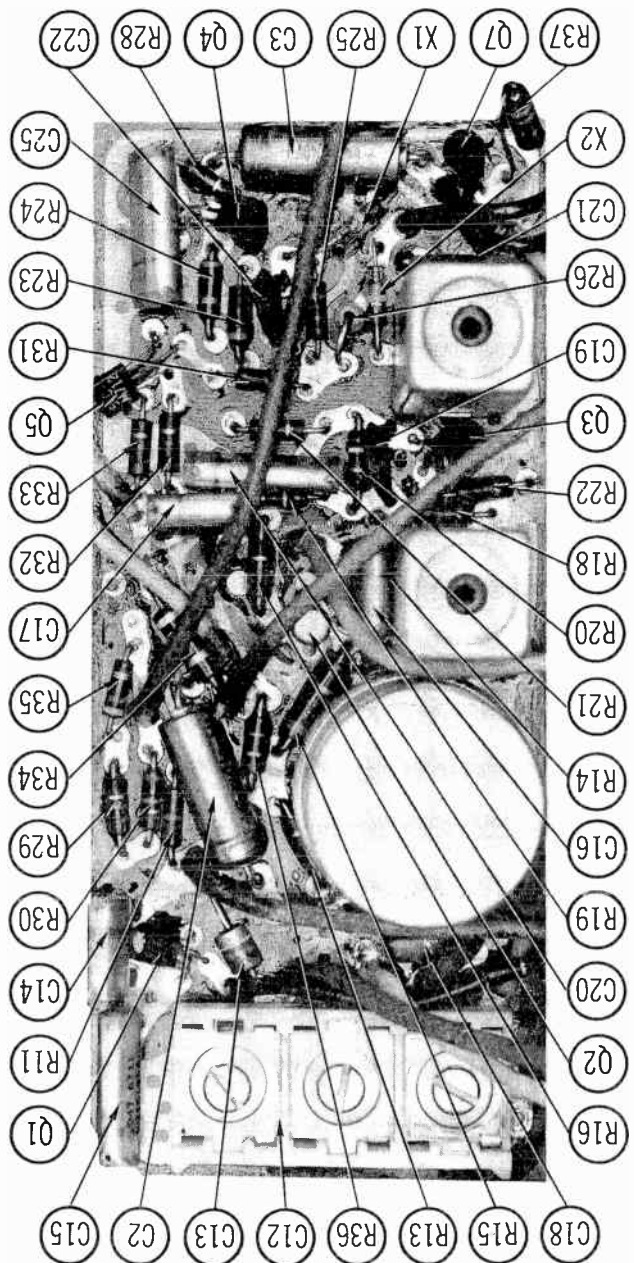


- NC NO CONNECTION
- ⊙ See parts list for alternate value or application.
1. Voltage measurements taken with vacuum tube voltmeter.
 2. All controls set for normal operation, no signal applied.
 3. Measured values are from socket pin or terminal to common ground.
 4. All terminals viewed from bottom unless otherwise designated.
 5. Numbers assigned to terminals may not be found on the unit.
 6. Supply voltage maintained at rated value for voltage readings.
 7. Resistance measurements not given because of the wide variation in internal resistance of transistor.
- Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.

A PHOTOFAC STANDARD NOTATION SCHEMATIC
with **CIRCUITRACE**
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MOTOROLA MODEL TM327M

MOTOROLA MODEL TM327M



A Howard W. Sams "CIRCUITRACE" Photo



A1 A2
262KC

A

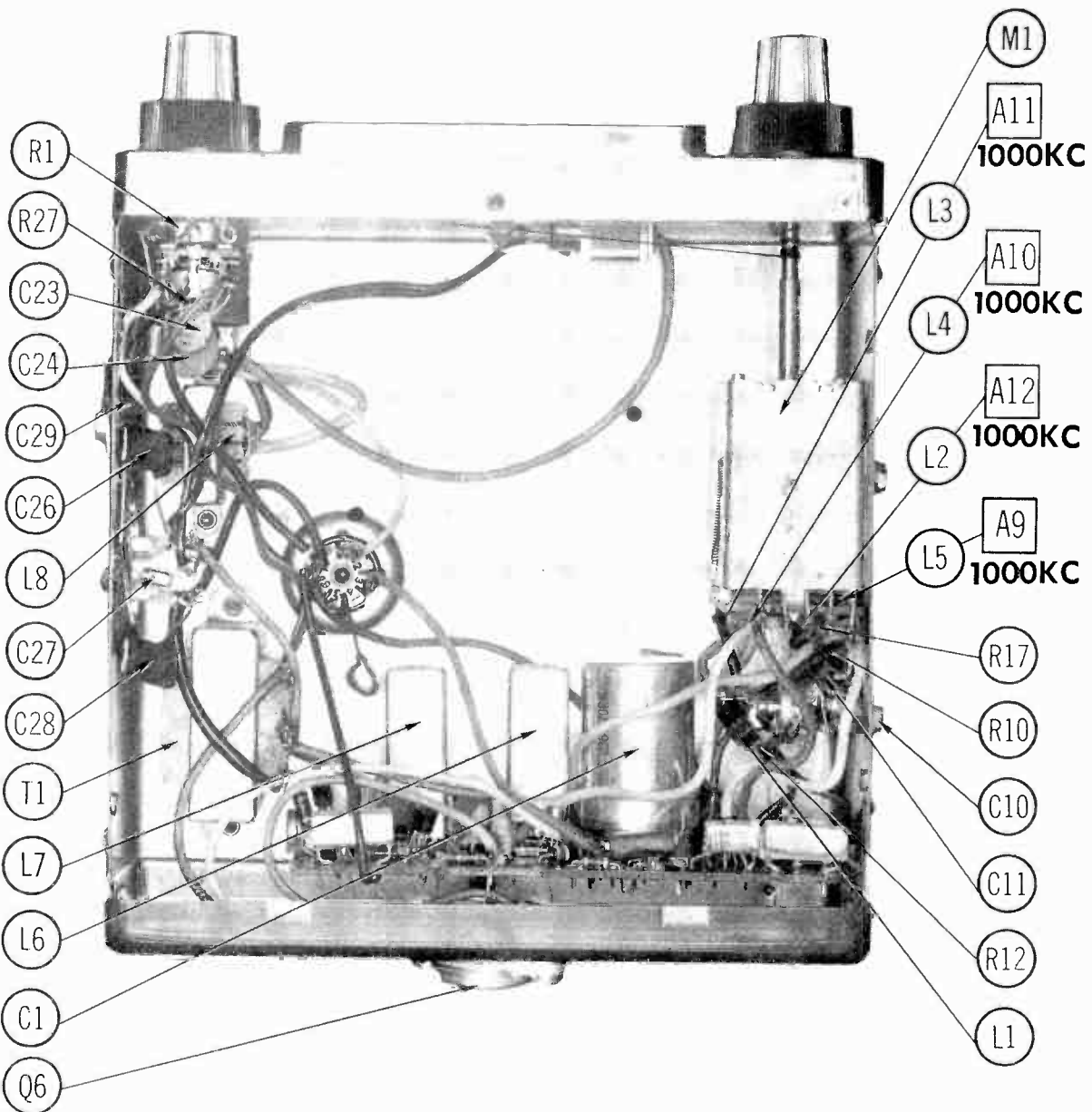
A3 A4
262KC

A5
1615KC

A6
1615KC

A7
1615KC

A8
1615KC



R1

R27

C23

C24

C29

C26

L8

C27

C28

T1

L7

L6

C1

Q6

M1

A11

1000KC

L3

A10

1000KC

L4

A12

1000KC

L2

A9

1000KC

L5

R17

R10

C10

C11

R12

L1

PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				MOTOROLA PART No.	NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.		
Q1	829A	RF Amp			TR-19		43S134830	PNP
Q2	829B	Converter			TR-19		48S134831	PNP
Q3	829C	IF Amp			TR-19		48S134832	PNP
Q4	54D	AF Amp	DS-66	GE-10	TR-21	SK-3020	48S134811	NPN
Q5	54C	AF Amp	DS-66	GE-10	TR-21	SK-3020	48S134810	NPN
Q6	SP1556-2	Output	DS-520	GE-3	TR-01	SK-3009	48S134759	PNP
Q7	D1A	Voltage Regulator	DS-66	GE-3	TR-21	SK-3020	48S134912	NPN

• When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Port or Type No.	RECTIFIERS & DIODES		RECTIFIERS	
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	SARKES TARZIAN PART No.
X1		48C134587 (1N139)	1N295	1N295		
X2		48C134587 (1N139)	1N295	1N295		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500 15V	23S184A01	PWH3-00-94.7				FPF300, 18	PCL-3026, 19
B	500 15V							
C	25 15V							
C2	25 25V	23S187A02	CRE612A	EA30-25	NLW25-25	MT1-11	TT25X25	TE-1207
C3	6.4 40V	23S187A01	CRE755A	EA50-10	NLW6-50	MT1-5	TT50X6	TE-1303, 1

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	40-430	#20B64616A02						
C11	.005 100V		DBE6D5	CPR-5000J	DPMS6D5	6DP-1-502	PVC625	6PS-D50
C12A	20-120	#20C64352A02						
B	10-80							
C	65-200							
C13	5.6							10TCC-V56
C14	.0047 100V		DBE6D47	CPR-4700J	DMF6D47	6DP-1-472	PVC6247	6PS-D47
C15	.047 100V		DBE2S47		DMF2S47	4DP-3-473	PVC2147	2PS-S47
C16	.0047 100V		DBE6D47	CPR-4700J	DMF6D47	6DP-1-472	PVC6247	6PS-D47
C17	.01 100V		DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10
C18	390		ADM-15-391	CPR-390J	CD15F391J500	DM-15-391	SK339	MS-339
C19	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C20	.047 100V		DBE2S47		DMF2S47	4DP-3-473	PVC2147	2PS-S47
C21	150 N750		N750-DI 150	DTN-150		CCTN-151	CN7315	10TCU-T15
C22	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C23	.005		TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C24	.2			UK10-204	HC23R0XR224P		MAG3022	HY-125
C25	.082 100V		DBE6S82		DPMS6S82	6DP-4-823		6PS-S82
C26	.001		ADM-20-102	CPR-1000J	CD19F102J500	DM-19-102J	SK210	MS-21
C27	270			CPR-270J	CD15F271J500	DM-15-271J	SK327	MS-327
C28	.001		ADM-20-102	CPR-1000J	CD19F102J500	DM-19-102J	SK210	MS-21
C29		#64A530177						

Motorola Part Number

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA					
			MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	Tone	100K	18C64734A02	F2-100K,			†QJ-1628A	■UE4434S
B	Volume/Switch	10K		R1-10K, FFS102, RFS109, BA010, CA005, KR-4				

† "CONCENTRIKIT" Equivalent: K8 Kit, with Base Elements and Shafts: B13-128, P17-024 (Panel), B11-116, R16-106 (Rear), S44 (Bushing), 76-1 (Switch)

"SNAPTROL" Equivalent: BU6①, CF52, CR5, SF3, SR39, GC.

■ "STA-LOC" Equivalent: FF15A, RU14L, OX875A, IS1312, US41.

① Alter Bushing to meet requirements.

MOTOROLA MODEL TM327M

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				
		MOTOROLA PART No.	MEISSNER Part No.	MERIT PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (9uh)	24C64003B01	19-1005	BC-566	4622	T860
L2	1st Antenna	①				
L3	2nd Antenna	①				
L4	RF	①				
L5	Oscillator	①				
L6	Input IF	24C64327A03			8009	
L7	Output IF	24C64327A02			8010	

① Part of M1 or (Coil and Mounting Plate Assembly Part Number 1V43800A12)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L8	650ma	.4Ω	5mh	25C64172A01	C-4095	TC-2	TR-157	TY17XT	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	25Ω Tap	@ 8Ω	25D64129A05					

FUSE DEVICES

ITEM No.	DESCRIPTION		REPLACEMENT DATA						
			PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
			DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	
F1	AGA	5 Amp	65S122345	1V64964A32	AGA5	HAF	301005	155004	

SPEAKER

ITEM No.	TYPE		REPLACEMENT DATA			NOTES
			MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	8Ω	50C64119A01		5A07Z8

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Tuner Coil Assembly	77D40898A06 1V43800A12	MT615

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial Glass	34B64358A01	Knob, Tone	36K544812
Dial Pointer	1V64954A07	Knob, Dummy	36K544813
Knob, Tuning or Volume	36K544598	Polarity Plug	28A542751

WIRING DATA

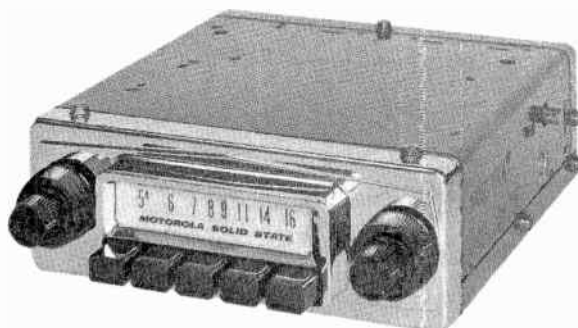
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)



PHOTOFACT[®] with

CIRCUITRACE[®]

TRADE NAME : Motorola Model TM527A
 SUPPLIER : For Current Address, See Annual Index
 TYPE SET : 7 Transistor AM Receiver
 POWER SUPPLY : 12 Volt Storage Battery
 RATING : .65 Amp. @ 12.6 Volts DC



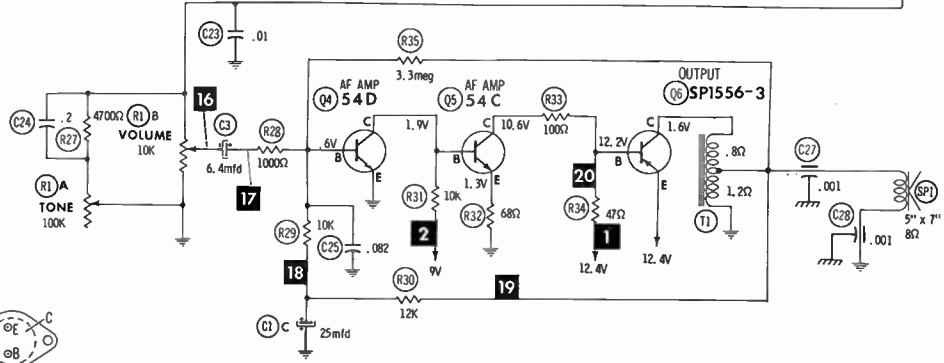
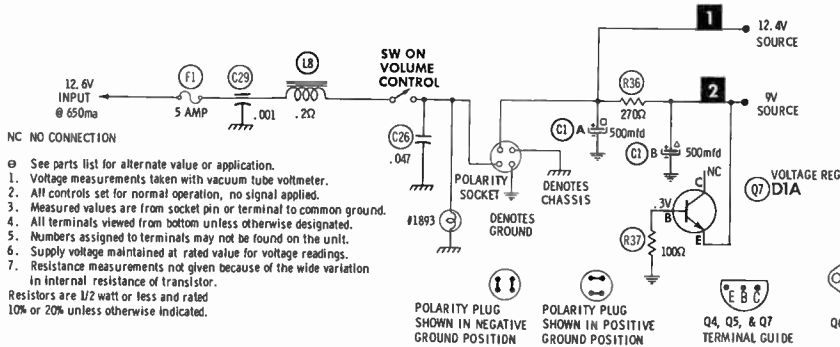
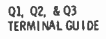
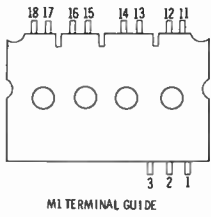
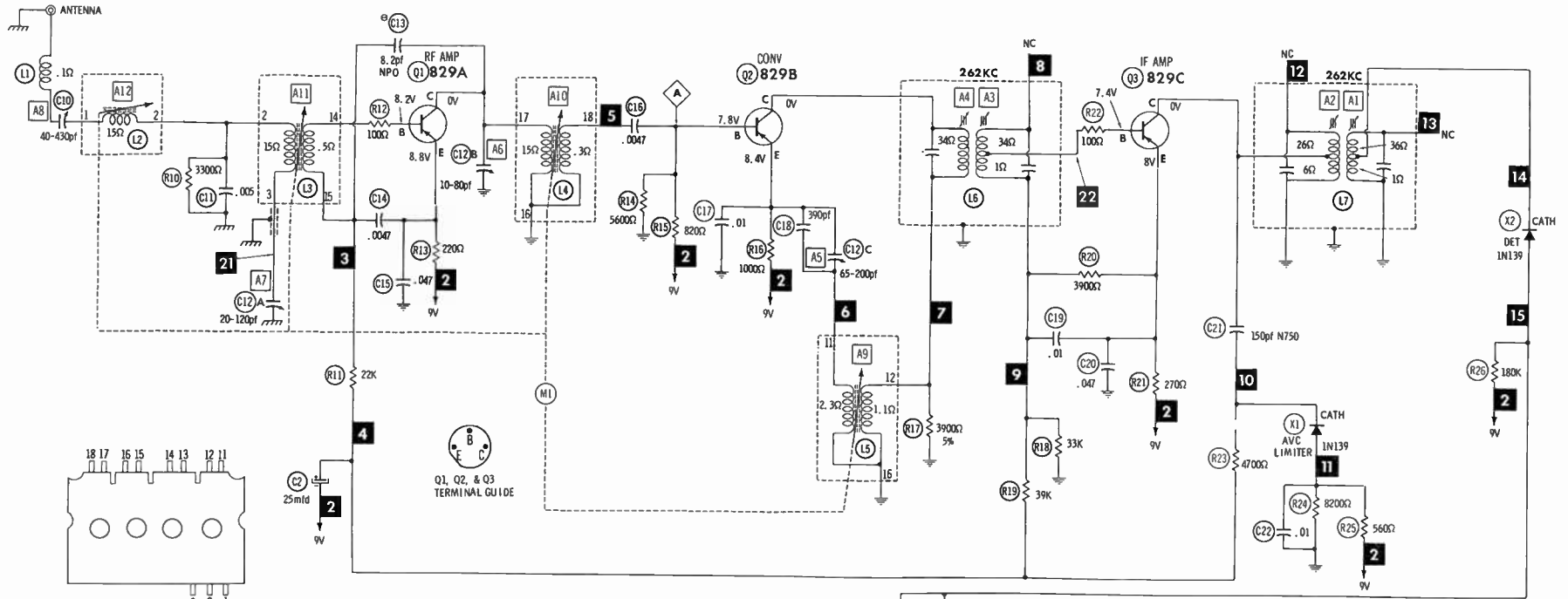
ALIGNMENT INSTRUCTIONS

MOTOROLA MODEL TM527A

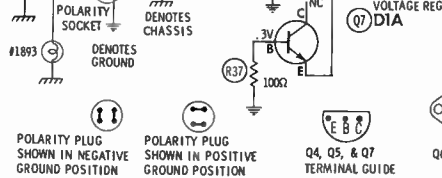
Check for specified source voltage. Use only enough generator output to provide a usable indication. Suggested Alignment Tools: A1 thru A4. GENERAL CEMENT: 9296, 9297, 9300 WALSCO: 2510, 2546, 2547 A5 thru A8. GENERAL CEMENT: 8290, 8868, 9087 WALSCO: 2525, 2528, 2587				PUSH-BUTTON ADJUSTMENT 1. Pull button out. 2. Tune manually to desired station. 3. Press button in firmly. 4. Repeat for remaining buttons.	
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1. High side thru .1mfd to point Δ , low side to ground.	262KC (400% Mod.)	High freq. end stop.	Output meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2. Thru dummy antenna to antenna receptacle.	1615KC	"	"	A5, A6, A7, A8	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A9, A10, A11, A12) out of coils but not out of forms. Repeat Step 2.					
3. Thru dummy antenna to antenna receptacle.	1000KC	Tune to signal.	Output meter across voice coil.	A9, A10, A11, A12	Adjust for maximum. Repeat Steps 2 and 3 until no further improvement is noted.
With radio installed in car and antenna extended to desired height, tune in a weak station near 1400KC and adjust A8 for maximum output. Antenna adjustment (A8) is located right side above antenna receptacle					

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- NC NO CONNECTION
- See parts list for alternate value or application.
1. Voltage measurements taken with vacuum tube voltmeter.
 2. All controls set for normal operation, no signal applied.
 3. Measured values are from bottom unless otherwise designated.
 4. All terminals viewed from socket pin or terminal to common ground.
 5. Numbers assigned to terminals may not be found on the unit.
 6. Supply voltage maintained at rated value for voltage readings.
 7. Resistance measurements not given because of the wide variation in internal resistance of transistor.
- Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.

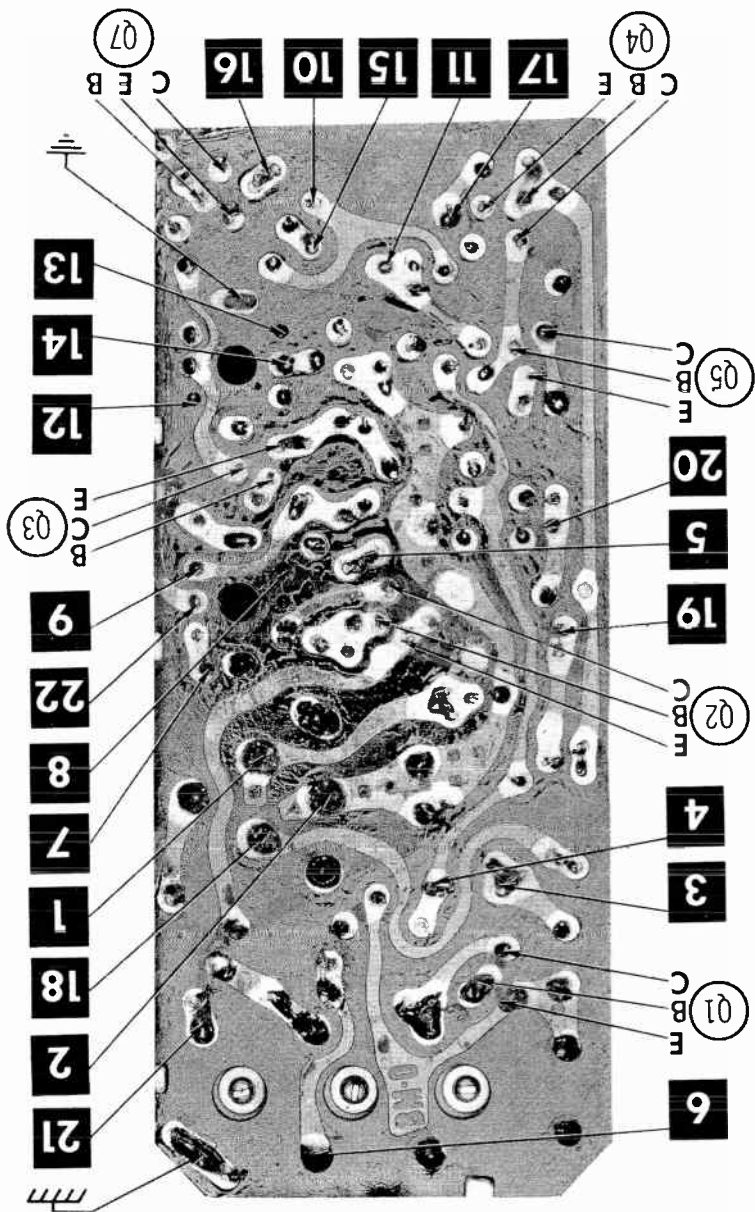
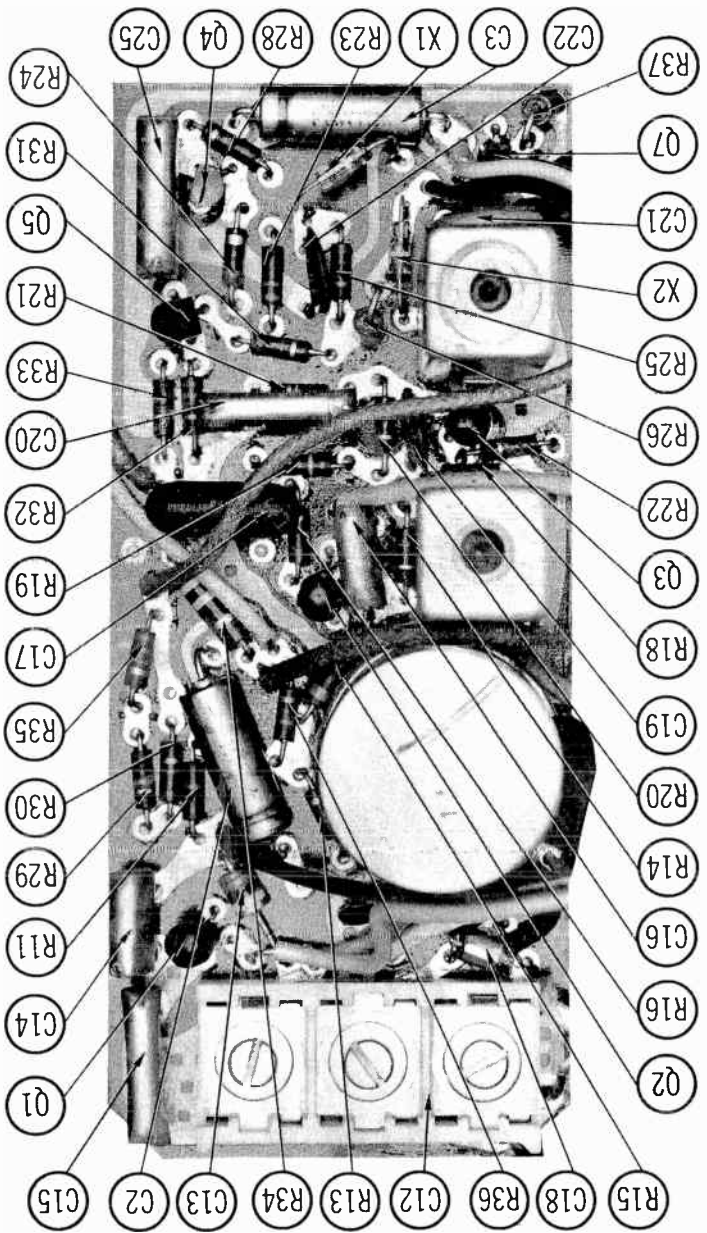


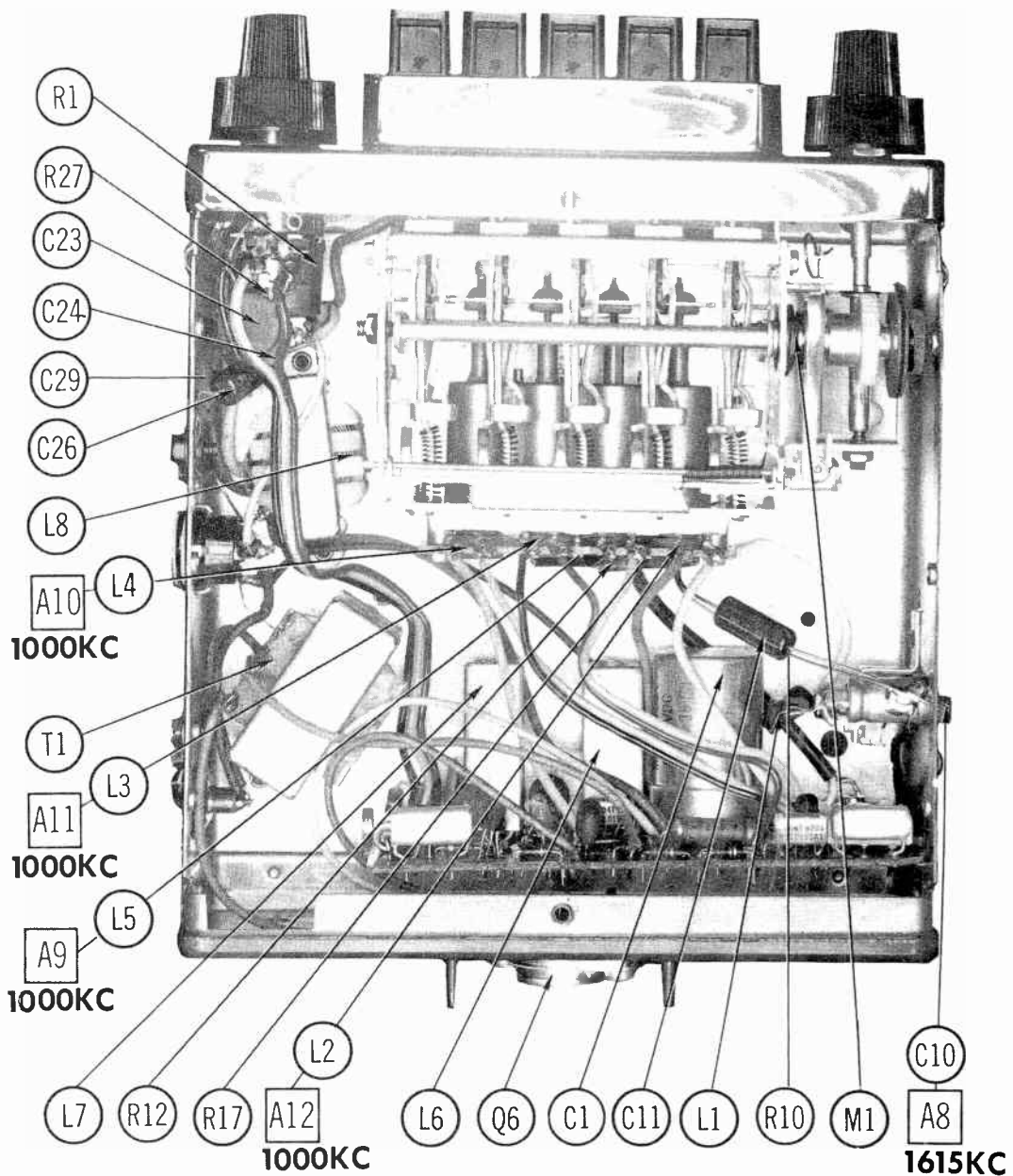
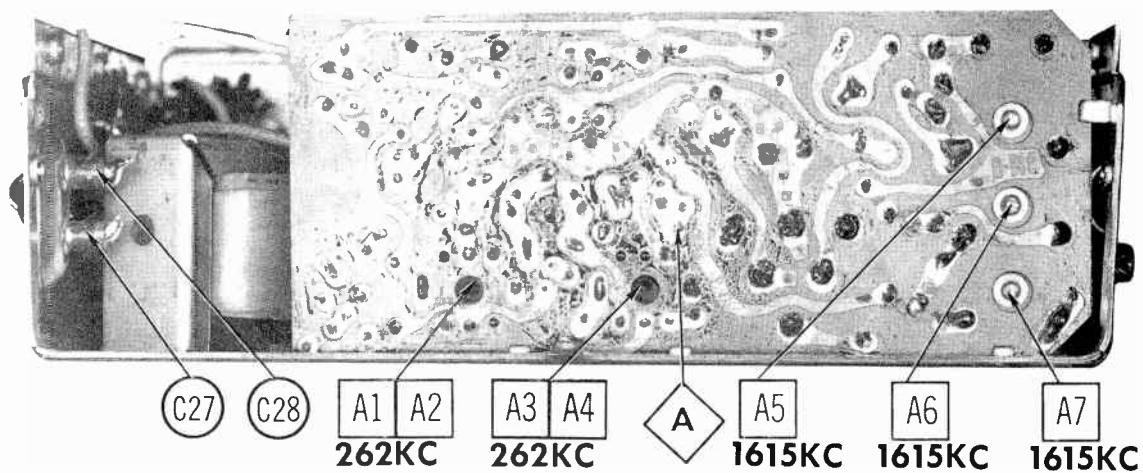
A PHOTOFAC STANDARD NOTATION SCHEMATIC
with **CIRCUITRACE**
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MOTOROLA MODEL TM527A

MOTOROLA MODEL TM527A

A Howard W. Sams CIRCUITRACE® Photo





PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				MOTOROLA PART No.	NOTES	
			DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.			
Q1	829A	RF Amp Converter IF Amp AF Amp AF Amp Output	DS-66	GE-10	TR-19	SK-3020	48S134830	PNP	
Q2	829B						48S134831	PNP	
Q3	829C						48S134832	PNP	
Q4	54D						TR-19	48S134811	NPN
Q5	54C						TR-21	48S134810	NPN
Q6	SP1556-3						TR-01	48S134759	PNP
Q7	D1A	Voltage Regulator	DS-66	GE-10	TR-21	SK-3020	(48S134760) 48S134912	NPN	

* When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS & DIODES		RECTIFIERS	
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	SARKES TARZIAN PART No.
X1		48C134587 (1N139)	1N295	1N295		
X2		48C134587 (1N39)	1N295	1N295		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500 16V	23S184A01	PWH3-00-94				PFP300.18	PCL-3026.17
B	500 16V							
C	25 16V							
C2	25 25V	23S187A02	CRE612A	EA30-25	NLW25-25	MT1-11	TT25X25	TE-1207
C3	6.4 40V	23S187A01	CRE755A	EA50-10	NLW6-50	MT1-5	TT50X6	TE-1303.1

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	40-430	#20B64616A02						
C11	.005 100V		DBE6D5	CPR-5000J	DPMS6D5	6DP-1-502	PVC625	6PS-D50
C12A	20-120	#20C64352A02						
B	10-80							
C	65-200							
C13	8.2		NPO-DI 8.2					10TCC-V82
C14	.0047 100V		DBE6D47	CPR-4700J	DMF6D47	6DP-1-472	PVC6247	6PS-D47
C15	.047 100V		DBE2S47		DMF2S47	4DP-3-473	PVC2147	2PS-S47
C16	.0047 100V		DBE6D47	CPR-4700J	DMF6D47	6DP-1-472	PVC6247	6PS-D47
C17	.01 100V		DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10
C18	390		ADM-15-391	CPR-390J	CD15F391J500	DM-15-391	SX339	MS-339
C19	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C20	.047 100V		DBE2S47		DMF2S47	4DP-3-473	PVC2147	2PS-S47
C21	150 N750		N750-DI 150	DTN-150		CCTN-151	CN7315	10TCU-T15
C22	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C23	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C24	.2			UK10-204	HCZ3R0XR224P		MAG3022	HY-125
C25	.082 100V		DBE6S82		DPMS6S82	6DP-4-823		6PS-S82
C26	.047 50V		DBE2S47		DMF2S47	4DP-3-473	PVC2147	2PS-S47
C27	.001		EF-001	MFT-1000		CCF-102	CT280A	
C28	.001		EF-001	MFT-1000		CCF-102	CT280A	
C29	.001		EF-001	MFT-1000		CCF-102	CT280A	

Motorola Part Number

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone	100K	18C64734A03	F2-100K, R1-10K, FFS103, RFS111, BA012, CA005, KR-4		†QJ-1624A	■UE4434S
B	Volume/Switch	10K					

† "CONCENTRIKIT" Equivalent: K8 Kit, with Base Elements and Shafts: B13-128, P21-029 (Panel), B11-116, R9-110 (Rear), S45 (Bushing), 76-1 (Switch)

"SNAPTROL" Equivalent: BU6, CF52, CR5, SF5, SR40, GC.

■ "STA-LOC" Equivalent: FF15A, RU14L, OX875A, IS1312, US41.

MOTOROLA MODEL TM527A

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				
		MOTOROLA PART No.	MEISSNER Part No.	MERIT PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (9uh)	24C64003B01	19-1005	BC-566	4622	T860
L2	1st Antenna	①				
L3	2nd Antenna	①				
L4	RF	①				
L5	Oscillator	①				
L6	Input IF	24C64327A03			8009	
L7	Output IF	24C64327A02			8010	

① Part of M1 or (Coils and Mounting Plate Assembly Part Number 1V43800A04)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
LB	650ma	.2Ω	5mh	25C64172A05	C-4095	TC-2	TR-157	TY17XT	

SPEAKER

ITEM No.	TYPE		REPLACEMENT DATA			NOTES
			MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5" X 7" PM	8Ω	50C64137A01	P5X7V8	57A15Z8	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
	T1	24Ω Tap	@ 8Ω	25D64129A01				

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA							
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.	
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	
F1	AGA 5 Amp	65S122345	1V64964A32	AGA5	HAF	301005	155004		

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Tuner Coil Assembly	77D42636A04 1V43800A04	AT-575

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial Glass	34B64285A01	Knob, Tone	36B543877
Dial Pointer	1B40875A02	Knob, Dummy	36K543878
Push Button	38B563819	Polarity Plug	28A542751
Knob, Tuning or Volume	38B543876		

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)



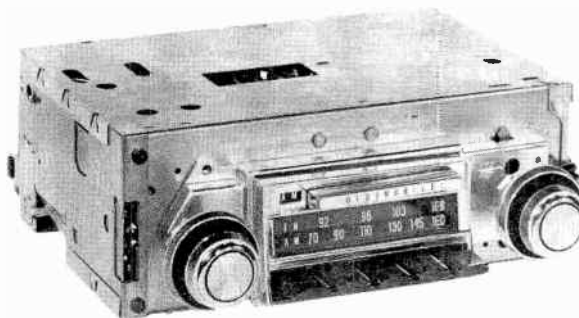
TRADE NAME : Oldsmobile Model 7300113
(1967 Oldsmobile F-85)

SUPPLIER : For Current Address, See Annual Index.

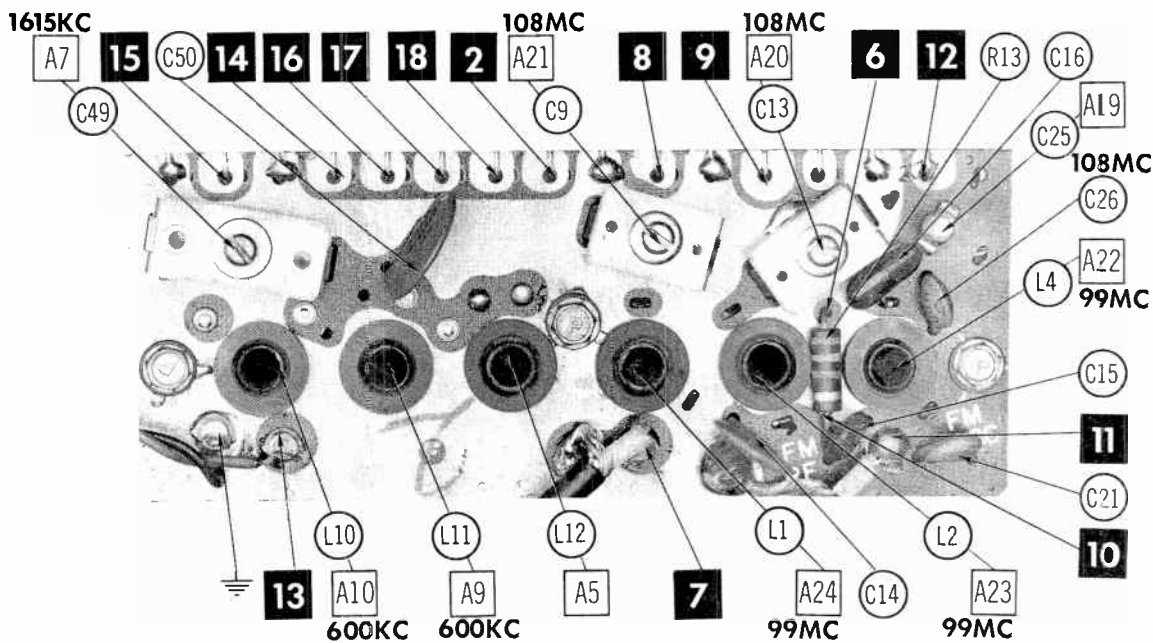
TYPE SET : 13 Transistor AM-FM Receiver

POWER SUPPLY : 12 Volt Storage Battery

RATING : 1.3 Amp. @ 12.6 Volts DC



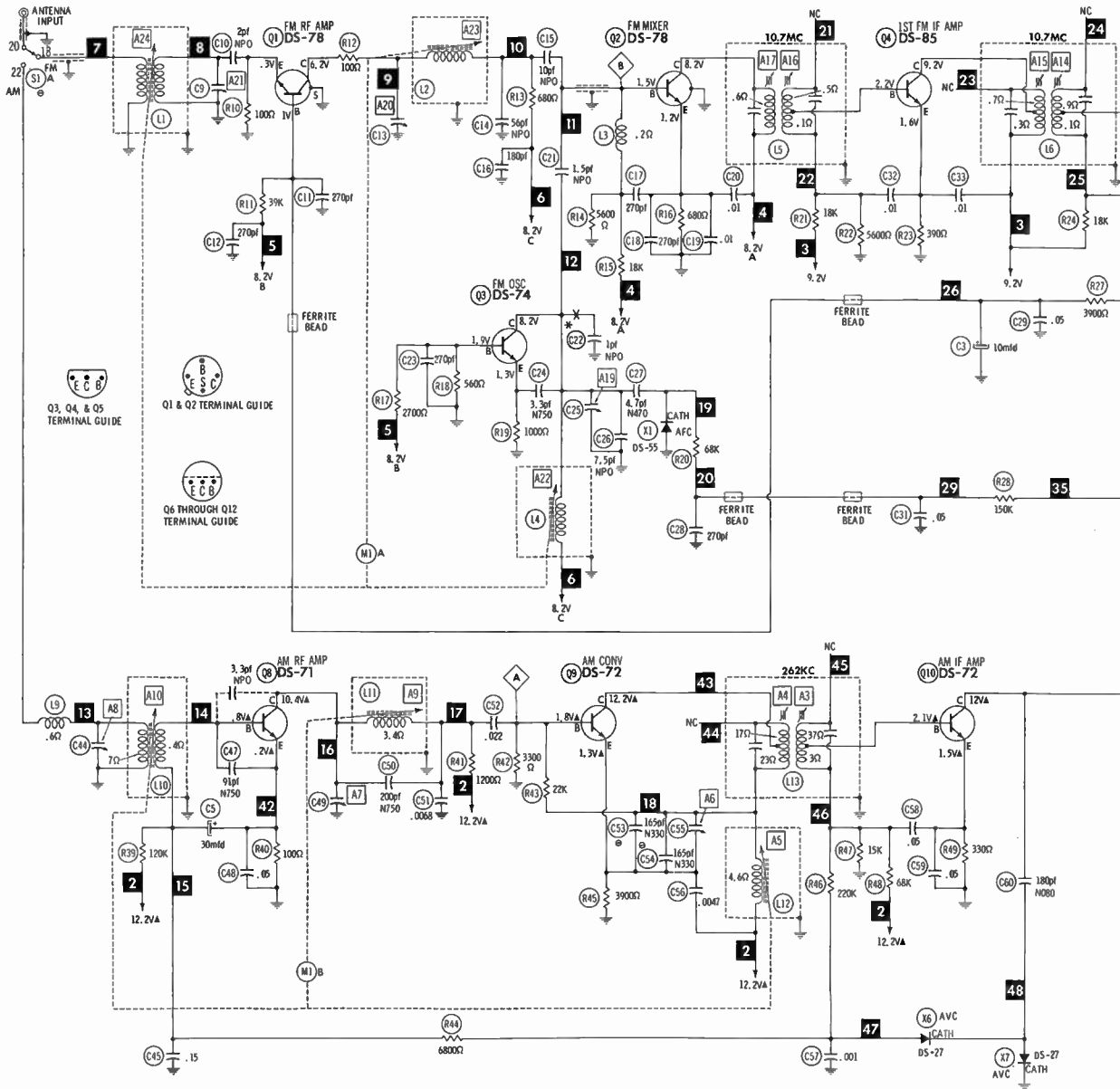
OLDSMOBILE MODEL 7300113



A Howard W. Sams **CIRCUITRACE[®]** Photo

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All measurements taken in "FM" position unless otherwise designated.

Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.

▲ Measured in "AM" position.

* Not used in some versions.

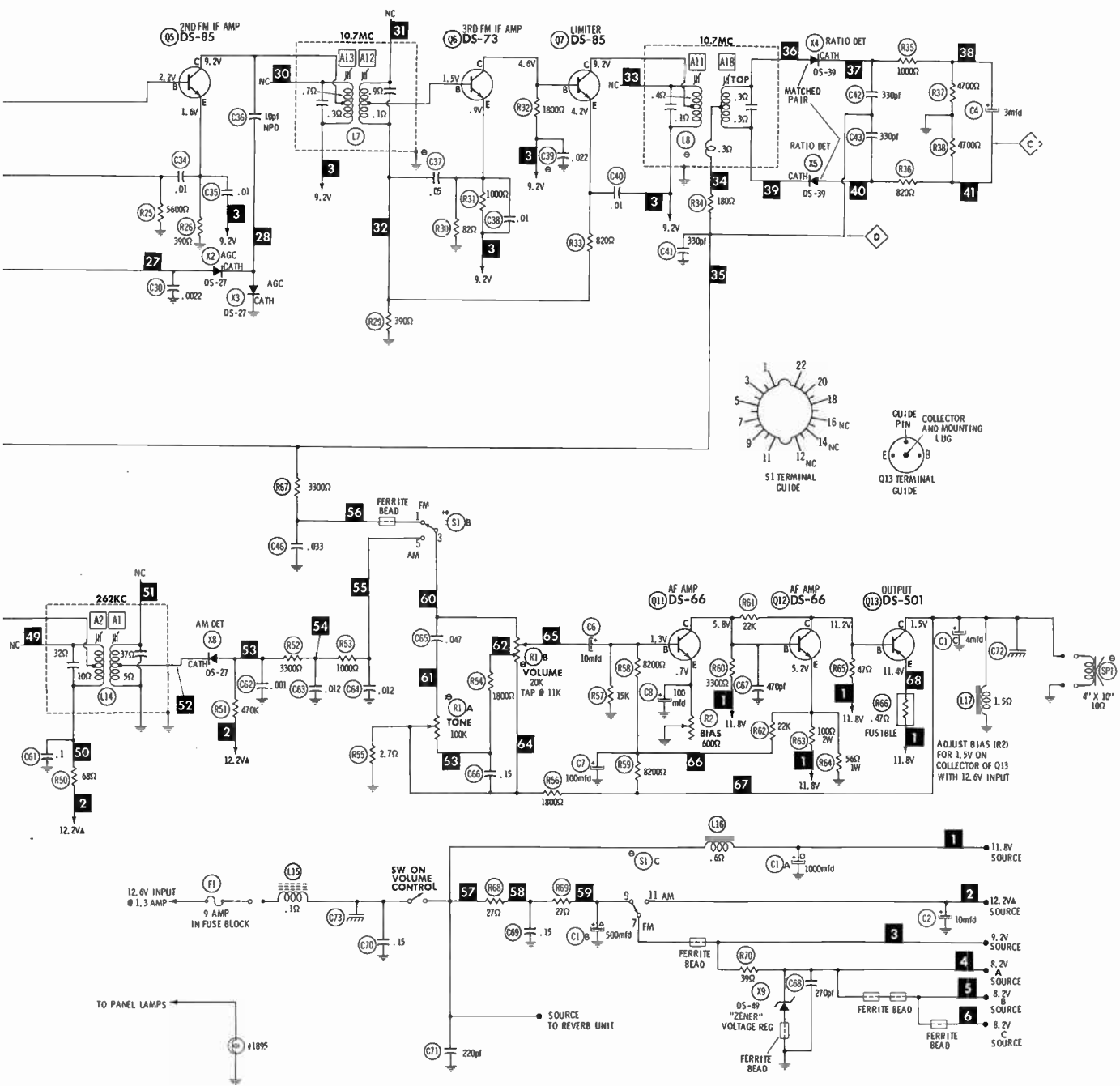
NC No Connection

⊙ See parts list

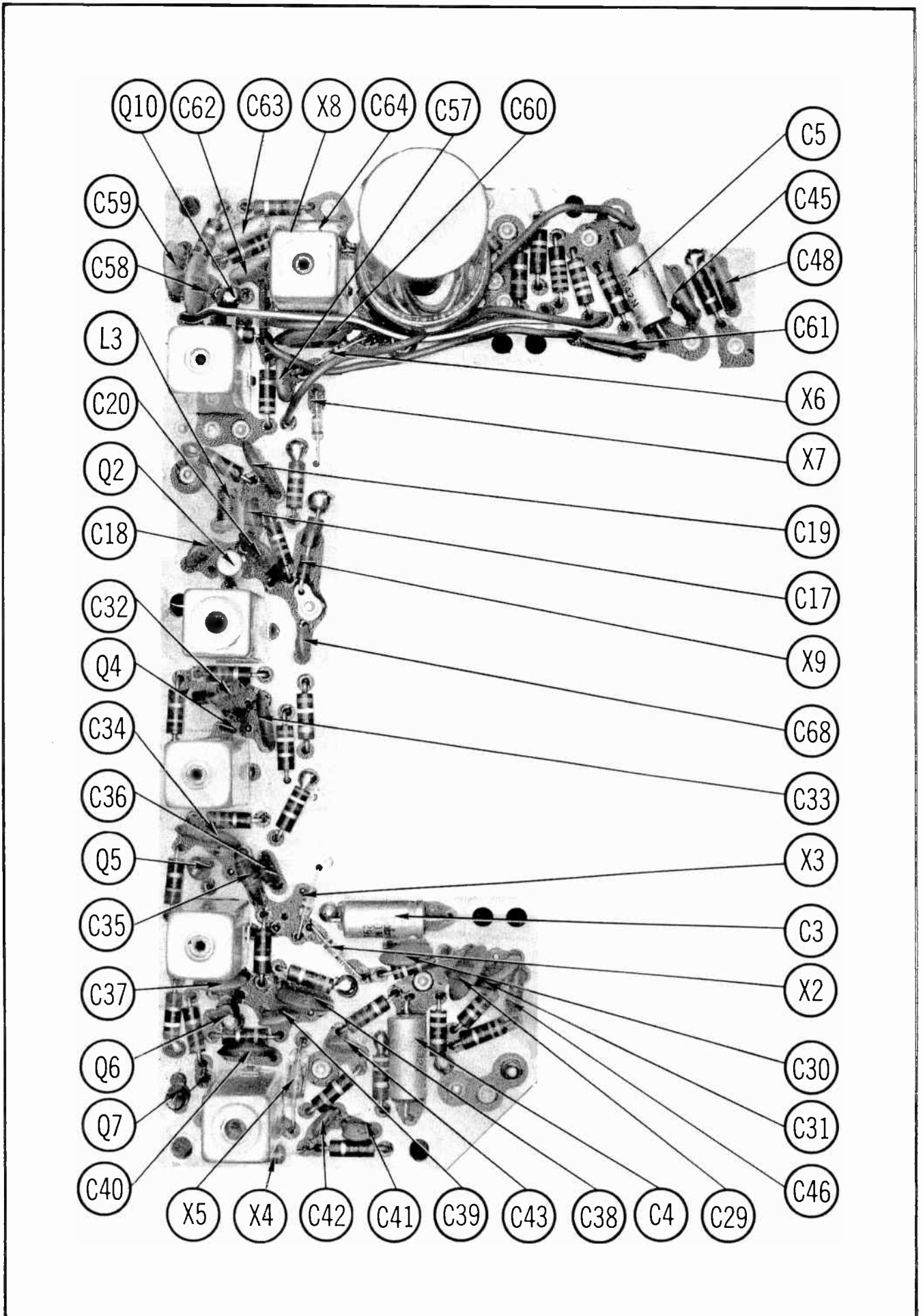
1. Voltage measurements taken with vacuum tube voltmeter.
2. All controls set for normal operation, no signal applied.
3. Measured values are from socket pin or terminal to common ground.
4. All terminals viewed from bottom unless otherwise designated.
5. Numbers assigned to terminals may not be found on the unit.
6. Supply voltage maintained at rated value for voltage readings.
7. Resistance measurements not given because of the wide variation in internal resistance of transistor.

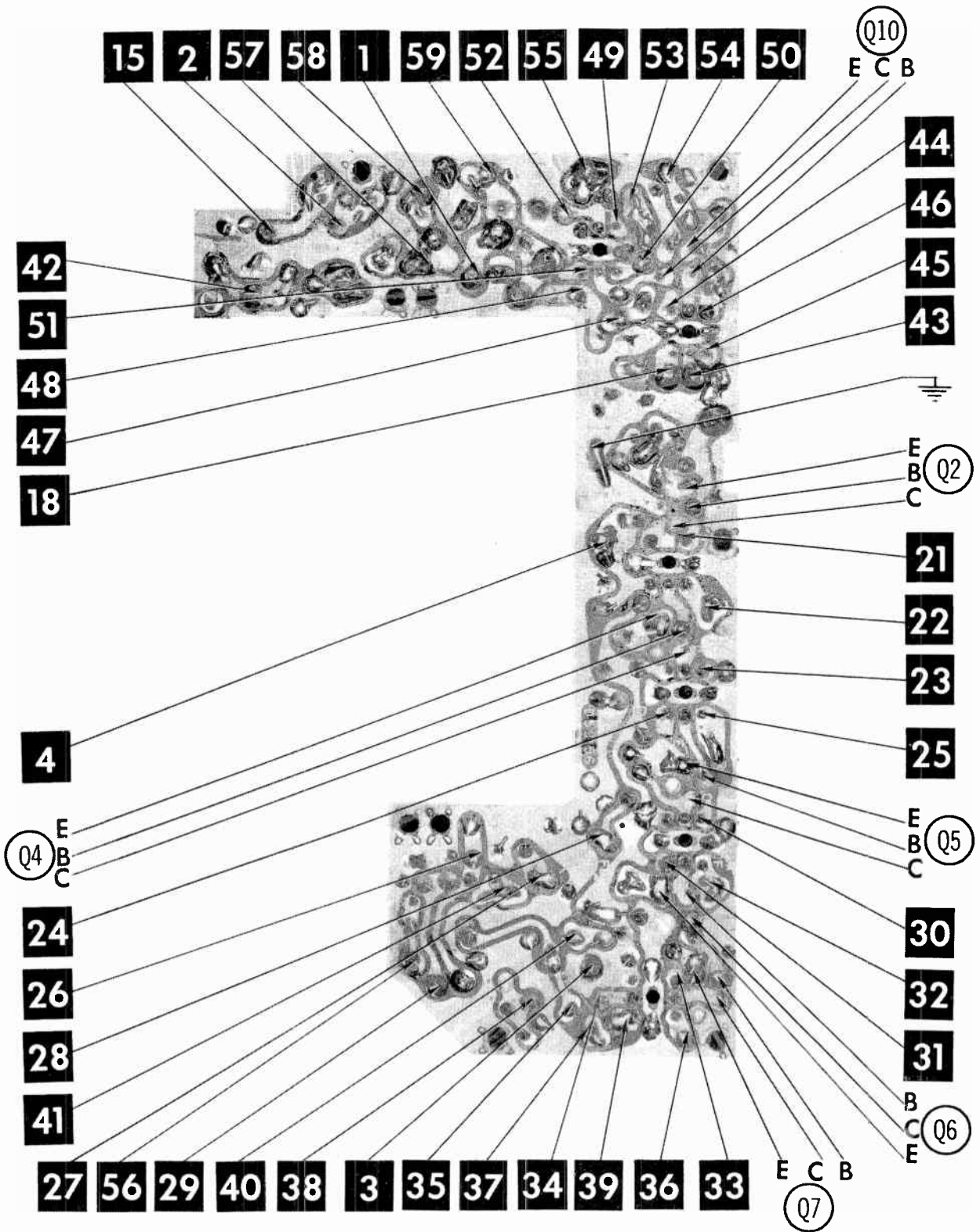
A PHOTOFAC STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

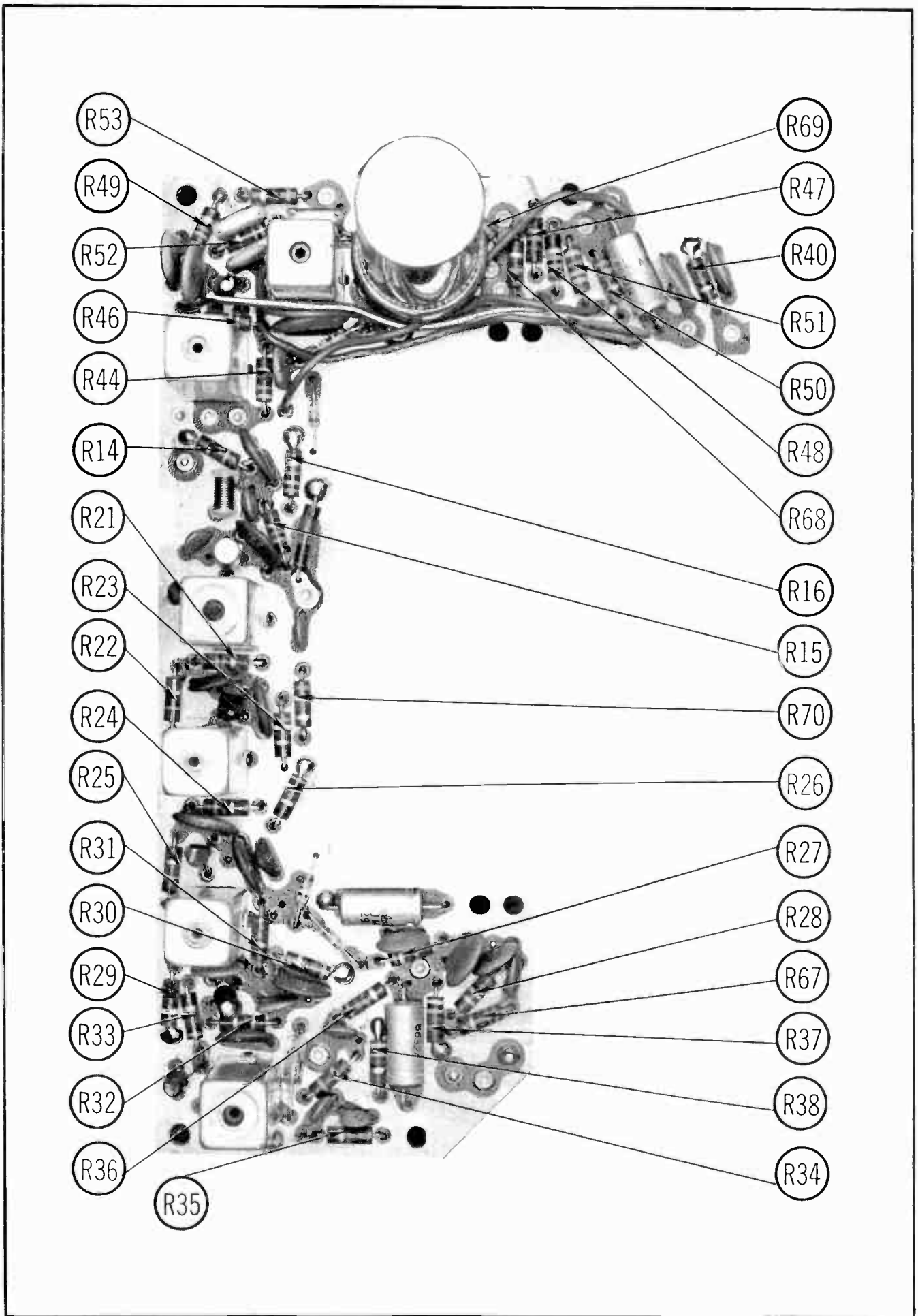
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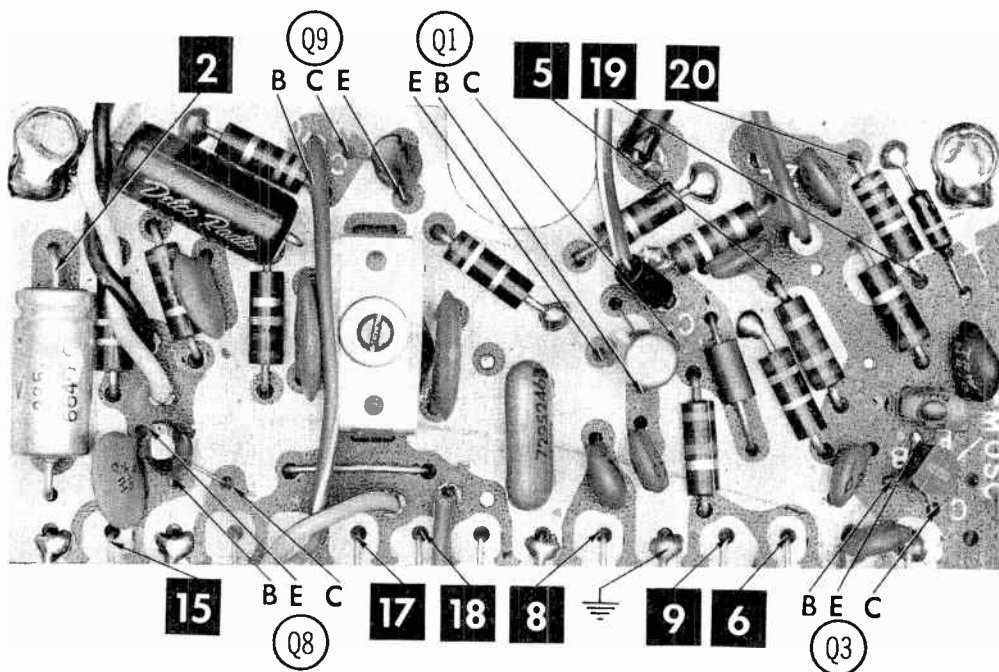
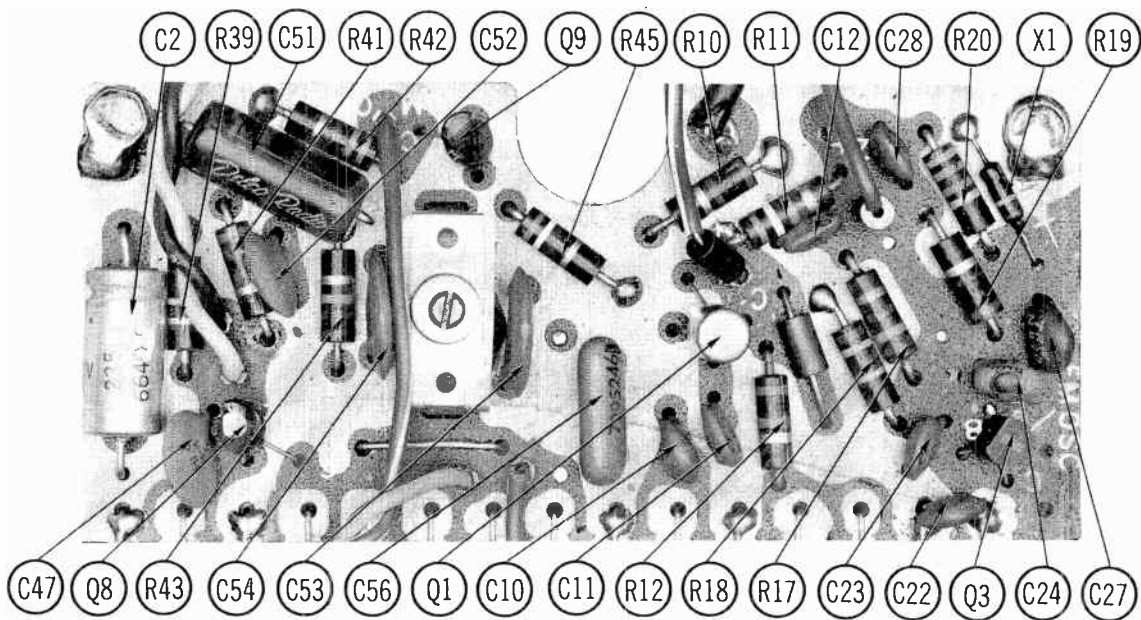


OLDSMOBILE MODEL 7300113

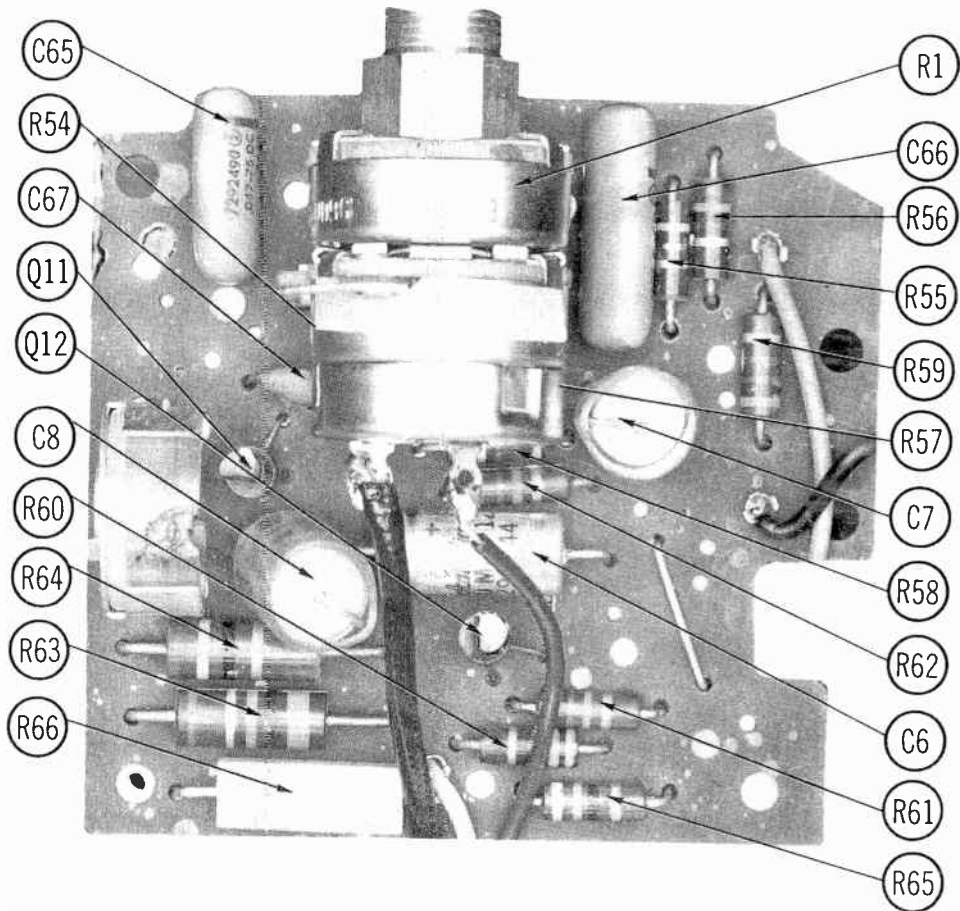
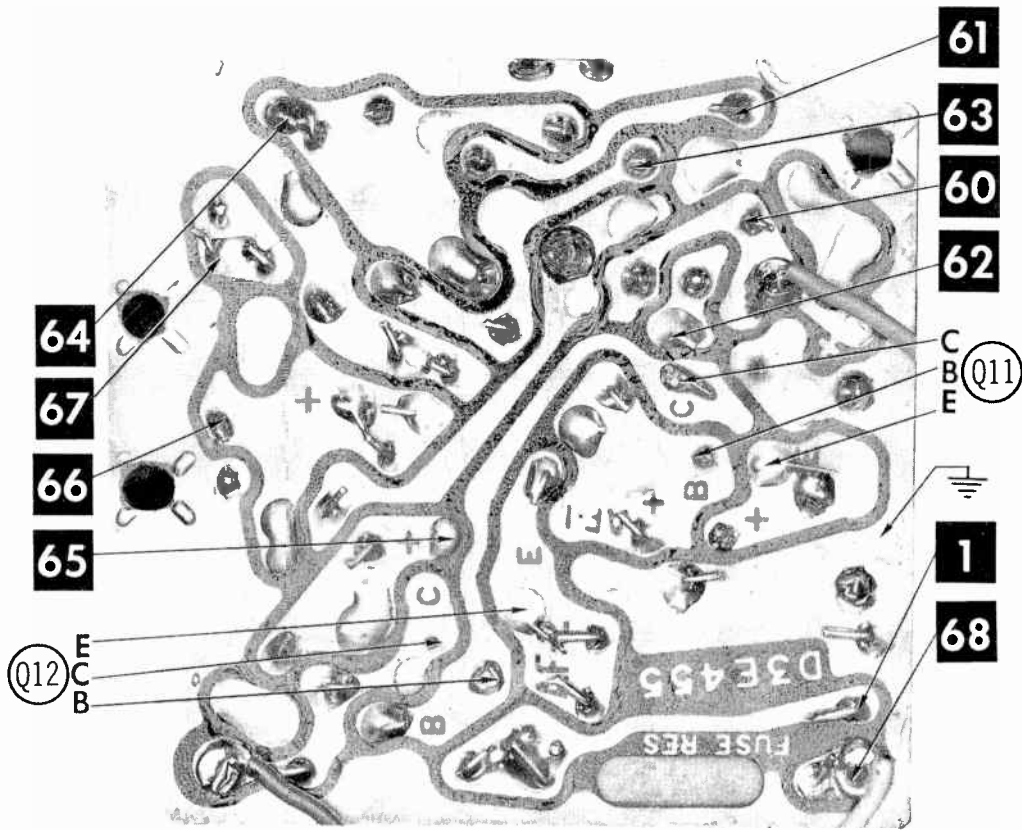


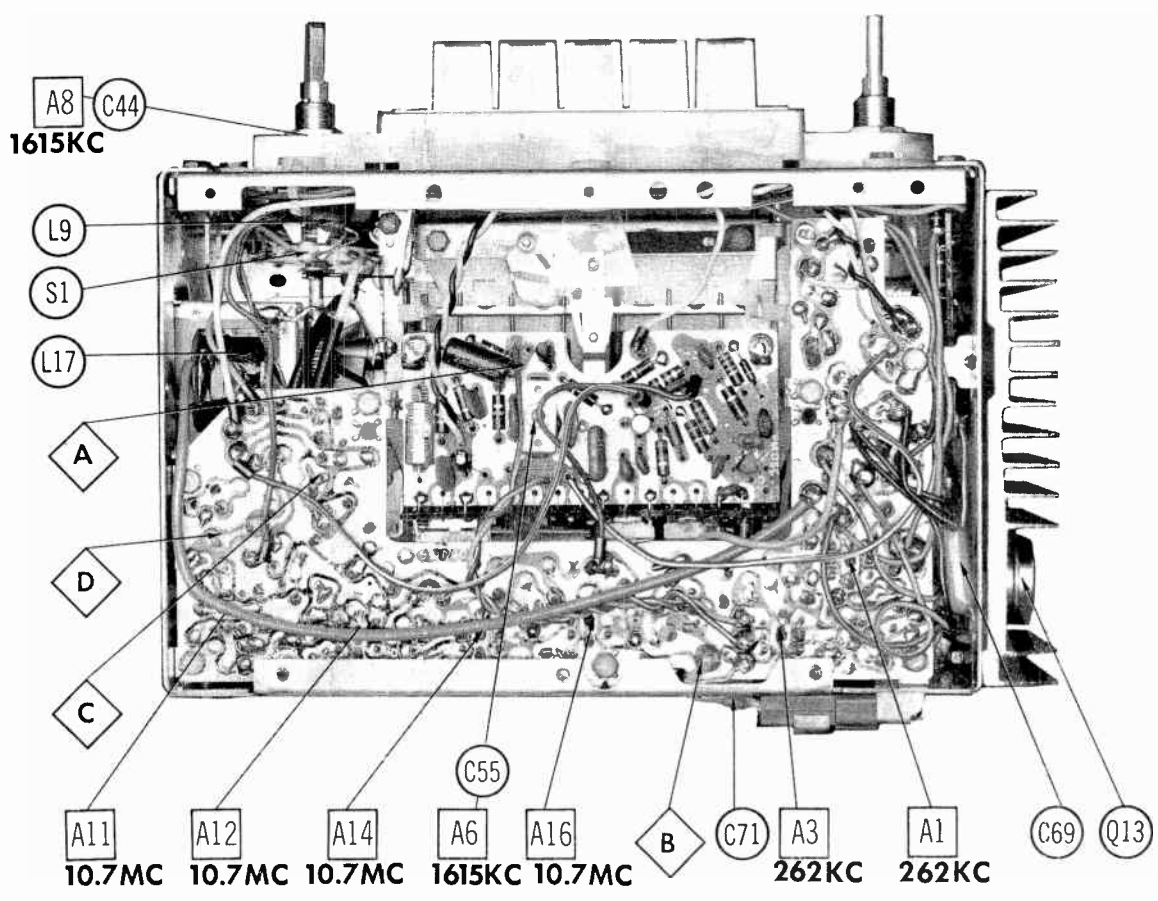
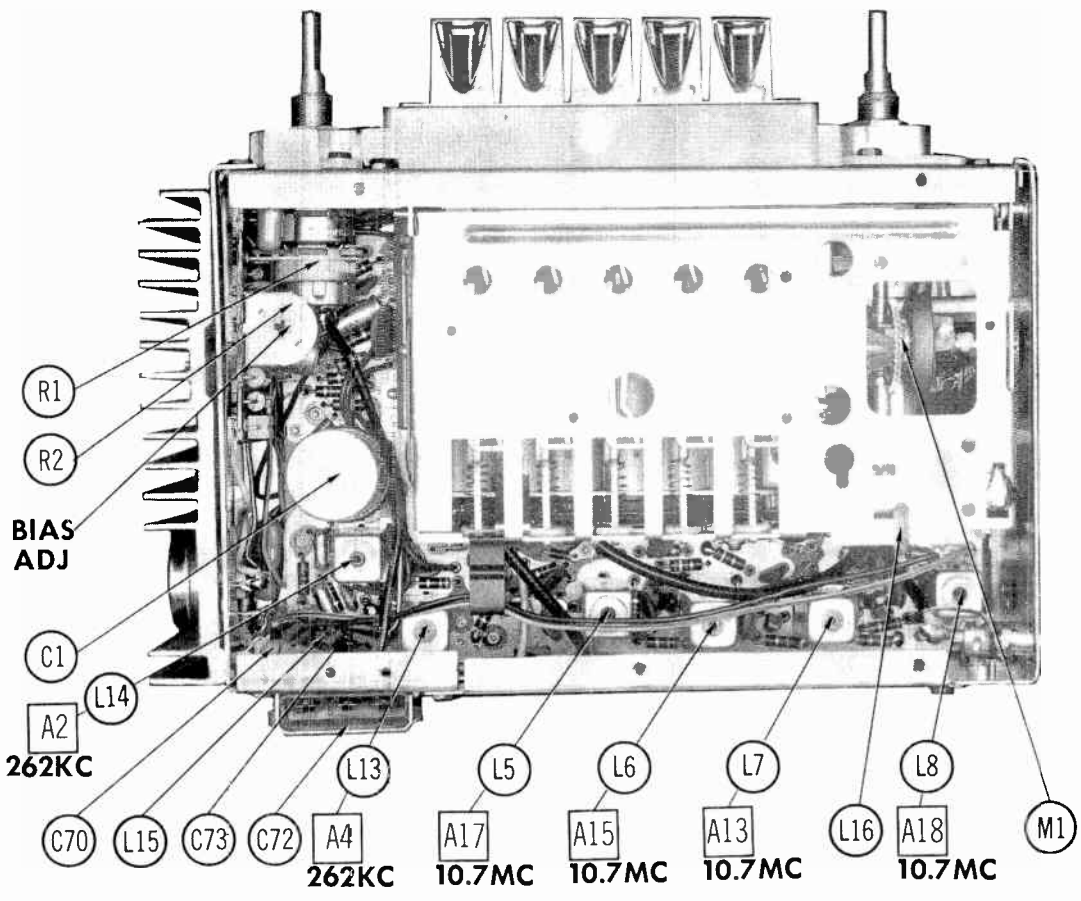






A Howard W. Sams **CIRCUITRACE** Photo





ALIGNMENT INSTRUCTIONS

Check for specified source voltage.
Use only enough generator output to provide a usable indication.
Suggested Alignment Tools:

A1 thru A4, A11 thru A18.

GENERAL CEMENT: 9296, 9297, 9300

WALSCO: 2510, 2546, 2547

A6, A7, A8, A20, A21, A22.

GENERAL CEMENT: 8290, 8868, 9087

WALSCO: 2525, 2528, 2587

PUSH-BUTTON ADJUSTMENT

1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1. High side thru .1mfd to point \diamond A, low side to ground.	262KC (400v Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
Check setting of AM Oscillator coil core (A5). Rear of core should be 1 3/8" from mounting end of coil form.					
2. High side thru 82mmf to antenna receptacle, low side to ground.	1615KC	High Freq. End Stop.	Output Meter across voice coil.	A6, A7, A8	Adjust for maximum.
3. "	600KC	600KC Signal	"	A9, A10	Adjust for maximum. Repeat step 2.
With radio installed in car and antenna extended 31", tune in a weak station near 1400KC and adjust A8 for maximum output.					

FM ALIGNMENT USING AM SIGNAL GENERATOR – SELECTOR IN FM POSITION

High side thru .1mfd to point \diamond B, low side to ground.

GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS
4. 10.7MC (Unmod.)	Point of non-interference.	DC probe of VTVM to point \diamond C; common to ground.	A11, A12, A13, A14, A15, A16, A17.	Adjust for maximum.
5. "	"	DC probe to point \diamond D; common to ground.	A18.	Adjust for zero reading. A positive or negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR – SELECTOR IN FM POSITION

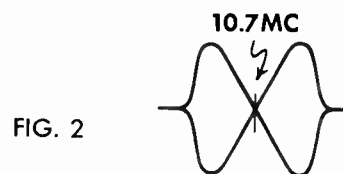
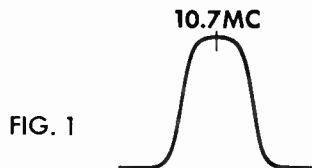
High side thru .1mfd to point \diamond B, low side to ground. Use only enough marker signal to obtain indication. Use 60v frequency modulated signal with 450KC sweep. Use 120v sawtooth voltage in scope for horizontal deflection.

GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS
4. 10.7MC (450KC Swp.)	Point of non-interference	Vert. amp. of Scope to point \diamond C; low side to ground.	A11, A12, A13, A14, A15, A16, A17.	Disconnect stabilizing capacitor C4. Adjust for maximum gain and symmetry of response similar to Fig. 1 with marker as shown. Reconnect C4.
5. "	"	Vert. amp. to point \diamond D; low side to ground.	A18.	Adjust A18(Secondary) to place marker at center of crossover lines similar to Fig. 2. Adjust A11(Primary) for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT Check setting of FM Oscillator coil core (A22). Rear of core should be 1 3/8" from mounting end of coil form.

Connect generator across antenna terminals with 120Ω carbon resistors in series with each lead.

GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS
6. 108MC	Set at high end.	DC probe of VTVM to point \diamond C; common to ground.	A19, A20, A21	Ground Circuittrace Point 29. Adjust for maximum.
7. 99MC	Tune to signal.	"	A23, A24.	Rock tuning and adjust for maximum. Repeat steps 6 and 7 until no further improvement can be made.



PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	
Q1	DS-78	FM RF Amp.	DS-81		TR-22	SK-3018	NPN
Q2	DS-78	FM Mixer	DS-81			SK-3018	NPN
Q3	DS-74	FM Oscillator	DS-74	GE-11	TR-24	SK-3018	NPN
Q4	DS-85	1st FM IF	DS-74	GE-11	TR-24	SK-3018	NPN
Q5	DS-85	2nd FM IF	DS-74	GE-11	TR-24	SK-3018	NPN
Q6	DS-73	3rd FM IF	DS-74	GE-11	TR-21	SK-3018	NPN
Q7	DS-85	FM Limiter	DS-74	GE-11	TR-24	SK-3018	NPN
Q8	DS-71	AM RF Amp.	DS-71	GE-10	TR-21	SK-3018	NPN
Q9	DS-72	AM Converter	DS-72	GE-10	TR-21	SK-3018	NPN
Q10	DS-72	AM IF Amp.	DS-72	GE-10	TR-21	SK-3018	NPN
Q11	DS-66	AF Amp.	DS-66	GE-10	TR-21	SK-3020	NPN
Q12	DS-66	AF Amp.	DS-66	GE-10	TR-21	SK-3020	NPN
Q13	DS-501	Output	DS-501	GE-4	TR-03	SK-3012	PNP

* When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely. Check bias adjustment.

OLDSMOBILE MODEL 7300113

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS & DIODES		RECTIFIERS		
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	RCA PART No.	SARKES TARZIAN PART No.
X1		DS-55					
X2		DS-27	1N34AS	1N34A			
X3		DS-27	1N34AS	1N34A			
X4		DS-39	1N34AS	1N34A			
X5		DS-39	1N34AS	1N34A			
X6		DS-27	1N34AS	1N34A			
X7		DS-27	1N34AS	1N34A			
X8		DS-27	1N34AS	1N34A			
X9		DS-49					

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA					
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	1000	16	7283675	AFH3-54-11	CC0006		FPS300.91	PCL-3021.8
B	500	16						
C	4	11.5rms						
C2	10	12	7292738	PTT53	NLW10-15	MT1-5	TT12X10	TL-1128
C3	10	12	7292738	PTT53	NLW10-15	MT1-5	TT12X10	TL-1128
C4	3	12	7291860	PTT50	NLW3-15	MT1-3	TT12X3	TE-1122
C5	30	6	7279896	PTT27	NLW30-6	MT1-13	TT6X30	TE-1092
C6	10	12	7292738	PTT53	NLW10-15	MT1-5	TT12X10	TL-1128
C7	100	4	7291810	PTT30	NLW125-6	MT1-21	TT6X100	TE-1102
C8	100	4	7291810	PTT30	NLW125-6	MT1-21	TT6X100	TE-1102

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C9		#7293221							
C10	2 NPO		NPO-DI 2.2	DTZ-2R2	CZ601CJ2R2D	CCTO-2R2	CNO522	10TCC-V22	
C11	270		DI-270	DD-271	RR05CW271K	CCD-271	GP327	5GA-T27	
C12	270		DI-270	DD-271	RR05CW271K	CCD-271	GP327	5GA-T27	
C13		#7291003							
C14	56 NPO			TCZ-56		CCTO-560	CNO456	10TCC-Q56	
C15	10 NPO		NPO-DI 10	DTZ-10	CZ601CG100J	CCTO-100	CNO410	10TCC-Q10	
C16	180		DI-180	DD-181	JBZ601YP181K	CCD-181	GP318	5GA-T18	
C17	270		DI-270	DD-271	RR05CW271K	CCD-271	GP327	5GA-T27	
C18	270		DI-270	DD-271	RR05CW271K	CCD-271	GP327	5GA-T27	
C19	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10	
C20	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10	
C21	1.5 NPO		NPO-DI 1.5	DTZ-1R5			CNO515	10TCC-V15	
C22	1 NPO	①	NPO-DI 1.0	TCZ-1			CNO510	10TCC-V10	
C23	270		DI-270	DD-271	RR05CW271K	CCD-271	GP327	5GA-T27	
C24	3.3 N750			TCN-3R3			CN7533	10TCU-V33	
C25		#7292611							
C26	7.5 NPO		NPO-DI 6.8	DTZ-6R8	CZ601CH6R8D	CCTO-6R8	CNO568	10TCC-V68	
C27	4.7 N470							10TCT-V47	
C28	270		DI-270	DD-271	RR05CW271K	CCD-271	GP327	5GA-T27	
C29	.05		BPD-05	DD-503		CCD-503	GP150	5HK-S50	
C30	.0022		DI-2200	DD-222	JBX601YP222K	CCD-222	GP222	10TS-D22	
C31	.05		BPD-05	DD-503		CCD-503	GP150	5HK-S50	
C32	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10	
C33	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10	
C34	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10	
C35	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10	
C36	10 NPO		NPO-DI 10	DTZ-10	CZ601CG100J	CCTO-100	CNO410	10TCC-Q10	
C37	.05	(.01)†	TTD-05	CK-503	HOV101ZV503Z	CCD-103	TA150	TG-S50	
C38	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10	
C39	.022	(.01)†	TTD-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20	
C40	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10	
C41	330		DI-330	DD-331	JBZ601YP331K	CCD-331	GP331	10TS-T33	
C42	330		DI-330	DD-331	JBZ601YP331K	CCD-331	GP331	10TS-T33	
C43	330		DI-330	DD-331	JBZ601YP331K	CCD-331	GP331	10TS-T33	
C44		#7283618							
C45	.15		TTD-1	CK-104	HOV101ZV104Z		TA010	TG-P10	
C46	.033		TTD-03	CK-303		CCD-303	GP130	TG-S30	
C47	.91			DD-910		CCD-910	GP491	5GA-Q91	
C48	.05		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50	
C49		#7295193							
C50	200 N750		N750-DI 200	DTN-200		CCTN-201	CN7320	10TCU-T20	
C51	.0068 75V		DBE6D68	CPR-6800J	WMF1D68	1DP-1-682	PVC4268	6PS-D68	
C52	.022		TTD-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20	
C53	165 N330	②							
C54	165 N330	②							
C55		#7295192							
C56	.0047 75V		DBE6D47	CPR-4700J	WMF1S47	6DP-1-472	PVC6247	6PS-D47	
C57	.001		DI-1000	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10	
C58	.05		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50	
C59	.05		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50	
C60	180 N080							10CTCN-T80	
C61	.1		TTD-1	CK-104	HOV101ZV104Z		TA010	TG-P10	
C62	.001		DI-1000	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10	
C63	.012 75V		DBE4S15		DMF4S15	4DP-1-153	PVC6115	4PS-S15	
C64	.012 75V		DBE4S15		DMF4S15	4DP-1-153	PVC6115	4PS-S15	
C65	.047 75V		DBE2S47		DMF2S47	4DP-3-473	PVC2147	2PS-S47	
C66	.15 75V		DBE4P15		DMF4P15	4DP-4-154	PVC6015	4PS-P15	
C67	470		DI-470	DD-471	JBZ601YP471K	CCD-471	GP347	10TS-T47	
C68	270		DI-270	DD-271	RR05CW271K	CCD-271	GP327	5GA-T27	
C69	.15 75V		DBE4P15		DMF4P15	4DP-4-154	PVC6015	4PS-P15	
C70	.15 75V		DBE4P15		DMF4P15	4DP-4-154	PVC6015	4PS-P15	
C71	220		DI-220	DD-221	JBZ601YP221K	CCD-221	GP322	10TS-T22	
C72		#7271564							
C73		#7271564							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Delco Part Number. † Alternate Value. ① Not used in some versions.
② May be replaced with a single unit, 330pf, Part #7297598.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA					
			DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA	Tone	100K	7300579	F2-100K,			†QJ-2390A	
B	Volume/Switch	20K Tap @ 11K		R14-25K, FFS111, RFS206, BB106, SB004, KR4				
R2	Bias	600Ω ZW	7286601	V-600	U39-600		110-600	MR600P

† CONCENTRIKIT

† "CONCENTRIKIT" Equivalent: K8 Kit with Base Elements and Shafts: B13-128, P17-123 (Panel), B19-119X, R9-211 (Rear), S8 ① (Bushing), N4 (Spacer Nut), 76-1 (Switch)

"SNAPTROL" Equivalent: BU8 ①, CF52, CR50T, SF14, SR16, N4, GC.
① Alter Bushing and adjust Spacer Nut to meet requirements.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	DELCO PART No.			IRC PART No.	WORKMAN PART No.	DELCO PART No.
R66	.47Ω Fusible			7281890					

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				
		DELCO PART No.	MEISSNER Part No.	MERIT PART No.	MILLER PART No.	WORKMAN PART No.
L1	FM Antenna	①				
L2	FM RF	①				
L3	FM IF Trap (1uh)	7296856	19-1000	BC-565	4602	T855
L4	FM Oscillator	①				
L5	1st FM IF	7296100				
L6	2nd FM IF	7296101				
L7	3rd FM IF	7296102				
L8	Ratio Detector	7296103				
L9	RF Choke (8uh)	7299984②	19-1009	BC-566	4611	T822
L10	AM Antenna	7255738				
L11	AM RF	①				
L12	AM Oscillator	①				
L13	1st AM IF	7295189				
L14	2nd AM IF	7295170				

① Part of M1.

② Alternate Part Number used in some versions.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L15	1.3 Amp.	.1Ω	245uh	7302543					
L16	1.3 Amp.	.6Ω	8MH	1221623	C-4095	TC-2	TR-154	TY17XT	

CHOKE (AUDIO OUTPUT)

ITEM No.	INDUCTANCE	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L17	30MH	1222297					

SPEAKER

ITEM No.	TYPE	RATING	REPLACEMENT DATA			NOTES
			DELCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4" X 10" PM	10Ω	7289653	P4X10T9	410A2Z10	

FUSE DEVICES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
F1	SFE	9 Amp.		In Fuse Block	307009			SFE 9	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Tuner Coil Assembly	1222504	
S1	AM-FM Selector Sw.	7284009	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

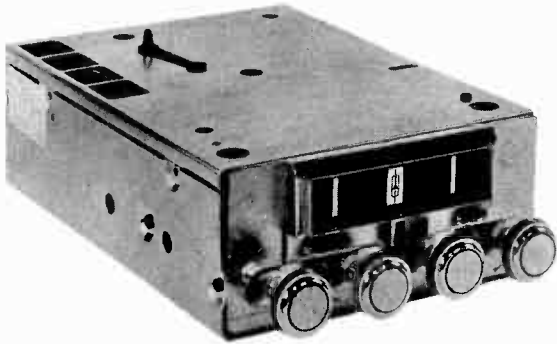
ITEM	PART No.	ITEM	PART No.
Escutcheon	7300712	Knob, Tuning or Volume	394149
Dial Glass	7300752	Knob, Tone	396502
Dial Pointer	7300713	Knob, Dummy	386242
Push Button	7289750		

OLDSMOBILE MODEL 7300113



PHOTOFACT[®] with

CIRCUITRACE[®]



TRADE NAME : Oldsmobile Models 7301703 (1967 Oldsmobile),
7302503 (1967 Toronado)
SUPPLIER : For Current Address, See Annual Index
TYPE SET : 10 Transistor Stereo Tape Player
POWER SUPPLY : 12 Volt Storage Battery
RATING : 1.6 Amp. @ 12.6 Volts DC

OLDSMOBILE MODELS 7301703, 7302503

OPERATING INSTRUCTIONS

1. Insert a tape cartridge, label side up, through the tape slot until it is seated firmly. This turns the unit on and begins playing immediately.
2. Adjust the Volume, Tone and Balance Controls as desired.
3. Select the desired tracks with the Push Tape knob (track selector), or the unit may be allowed to play through all the tracks automatically.
4. Remove the tape cartridge to turn the unit off.

CLEANING

Tape residue should be wiped off the tape head, tape guide, capstan and foil sensor elements with a cloth or cotton swab moistened with rubbing alcohol.

HEAD DEMAGNETIZING

The tape head and other metal elements that contact the tape should be demagnetized periodically. Follow the directions supplied with the demagnetizer.

ADJUSTMENTS

IMPORTANT: Before making any adjustments, refer to "General Servicing Information" on page 4.

ADJUST	REMARKS
Head Height	With the head on tracks other than on the edge of the tape, adjust B1 for maximum volume with no interference from adjacent tracks. Adjust B2 for maximum output. Press a tape strobe against the capstan with the motor running. Stop the motor, remove the masking tape that is covering the adjustment hole and turn the motor shaft until the adjustment screw is accessible. Turning the screw clockwise increases the motor speed, counterclockwise decreases the motor speed.
Head Azimuth	
Speed	

TROUBLE CHART

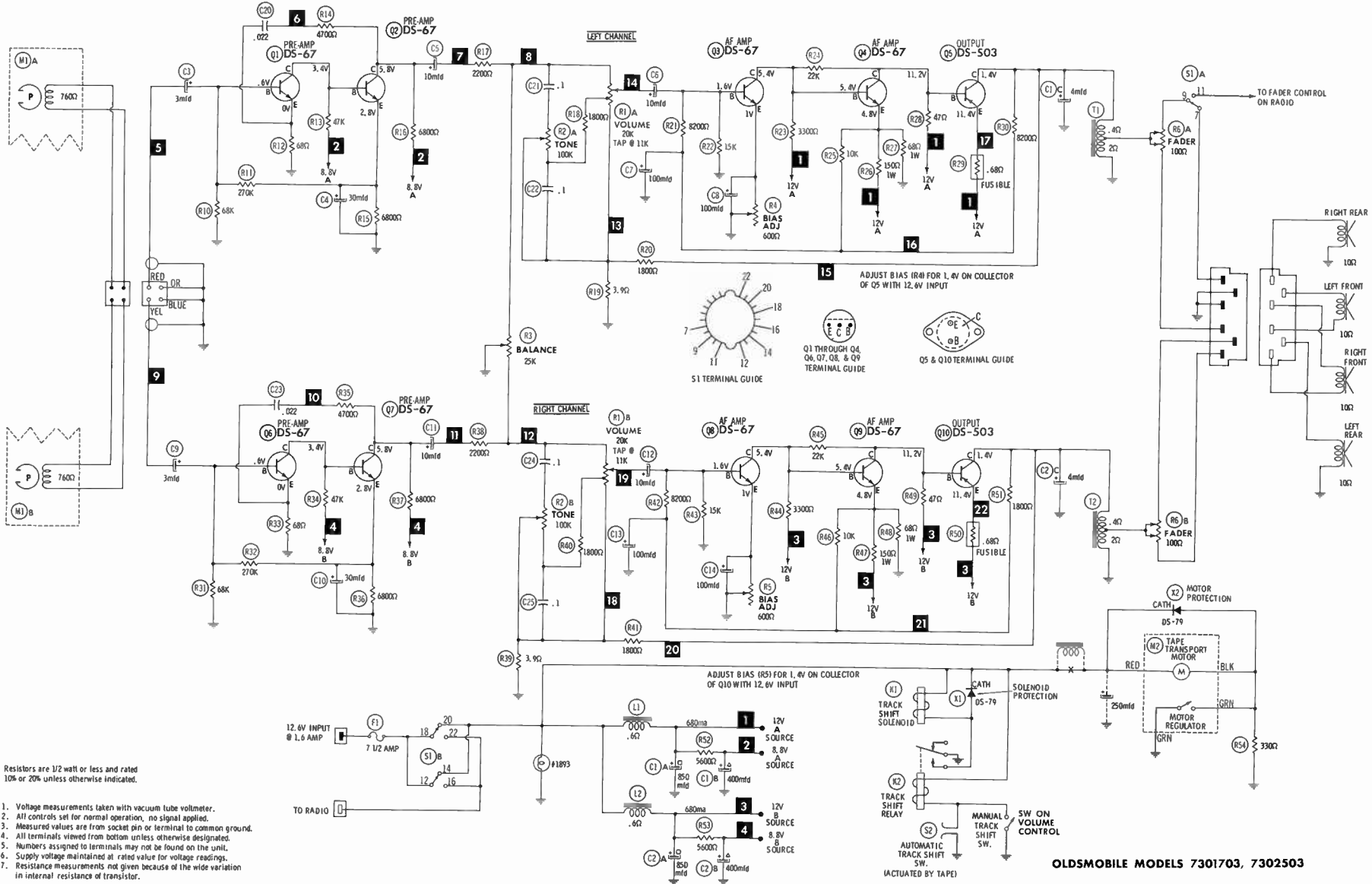
SYMPTOM	REMARKS
Capstan does not rotate.	1. Drive Belt (1) broken, loose or dirty. 2. Motor (M2) defective. 3. Flywheel (14) binding.
Wow or flutter	1. Drive Belt (1), Flywheel (14) and motor pulley dirty. 2. Capstan dirty. 3. Capstan bent. 4. Motor (M2) defective.
Distortion or weak sound.	1. Head (M1) dirty, misadjusted or worn. 2. Cartridge defective.
Head will not change tracks automatically or manually.	1. Pawl Arm Spring (7) loose, weak or broken. 2. Pawl Arm (6) damaged. 3. Head Shifting Cam binding. 4. Foil Sensor (16) dirty. 5. Solenoid (K1) defective.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1 *	1222710 *	Drive Belt *	8	1222624	Cartridge Catch
2	1222626	Head Shifting Cam	9		Cartridge Catch Spring
3	7299083	Head Mounting Arm (Includes Head)	10	1222737	Switch Arm
4	7298880	Height Screw (Part of 3)	11		Switch Arm Spring (Part of 10)
5	7298987	Nut for Height Screw (Part of 3)	12	7298979	Head Arm Spring
6	1222627	Pawl Arm	13	7298985	Azimuth Screw
7	7298980	Pawl Arm Spring (Part of 6)	14	1222705	Flywheel
			15	1222706	Bearing Plate Assembly
			16	7298942	Foil Sensor

* WALSCO Replacement 1410-61

OLDSMOBILE MODELS 7301703, 7302503

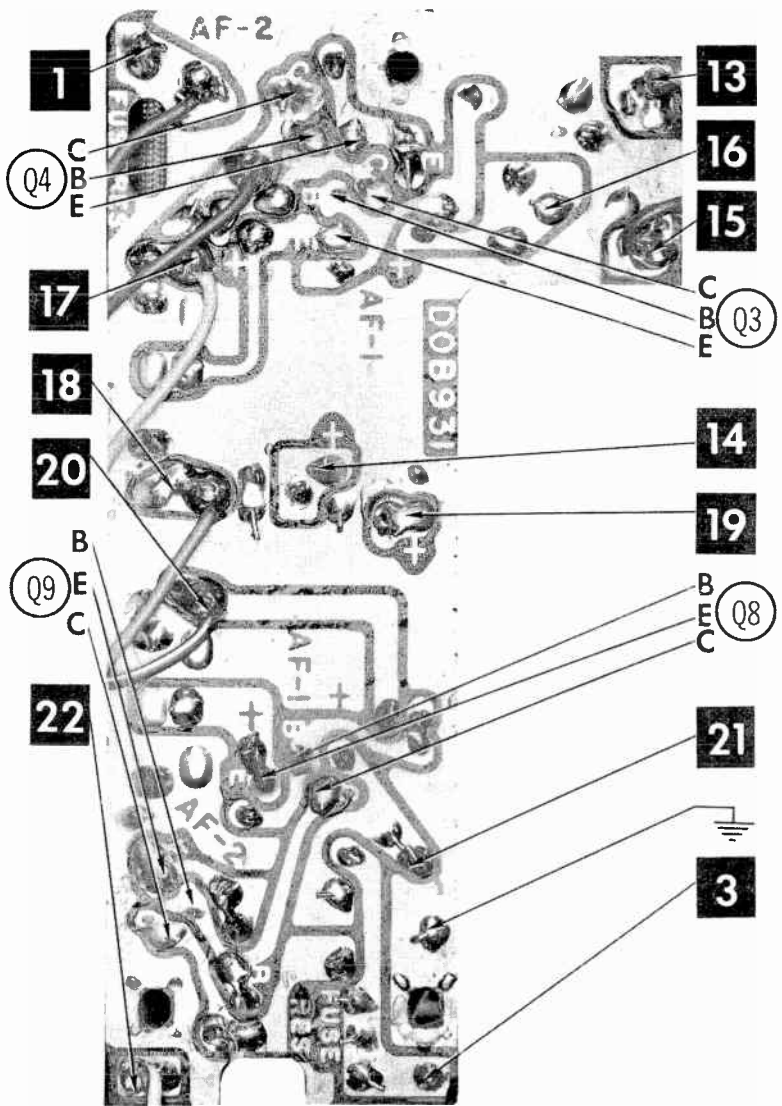
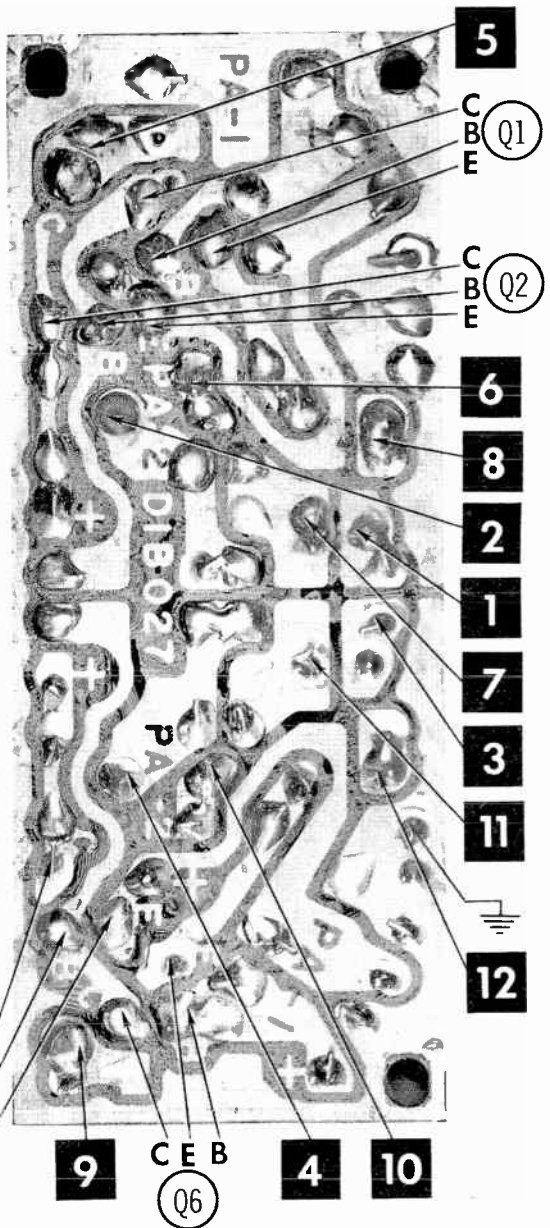


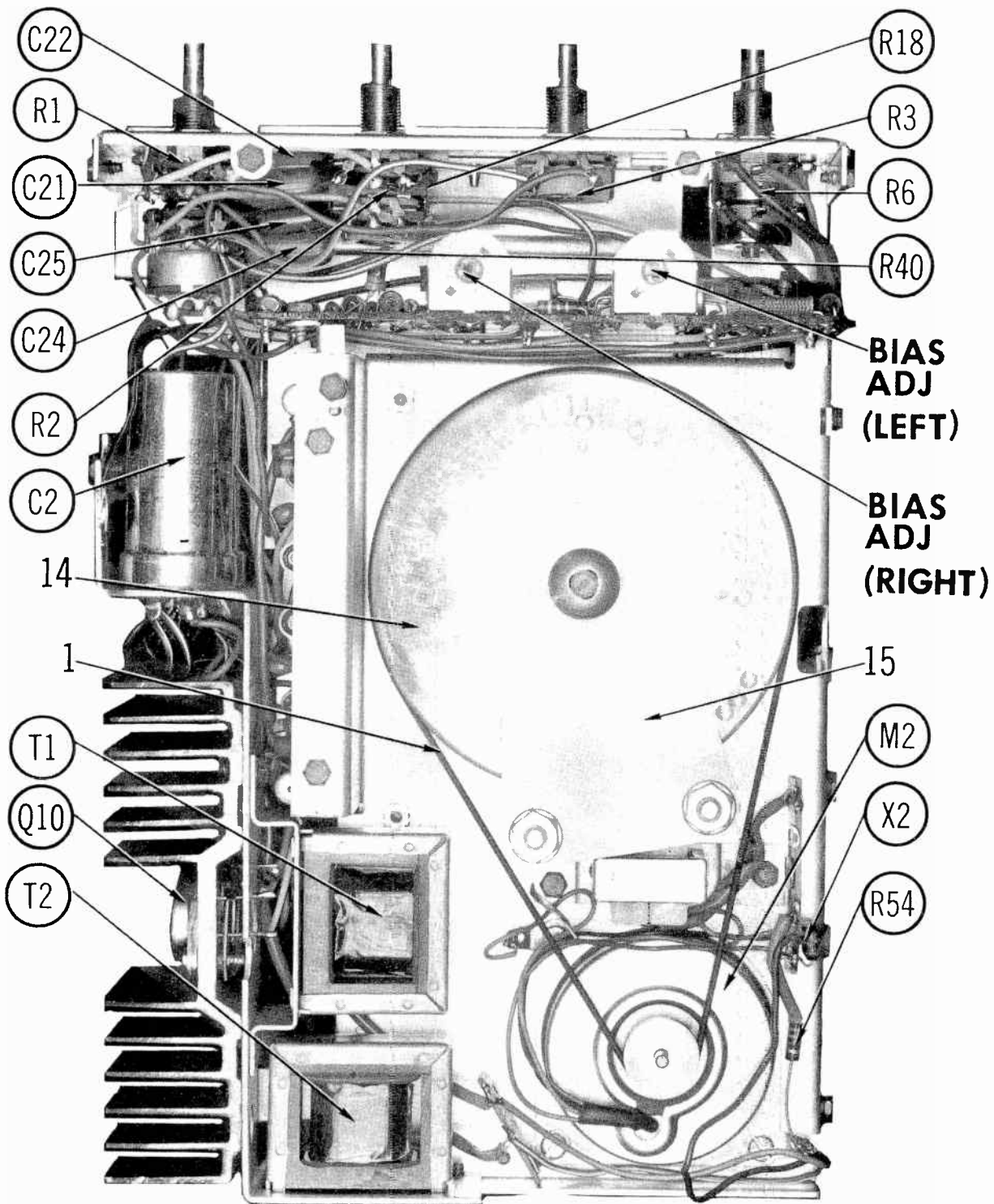
Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.

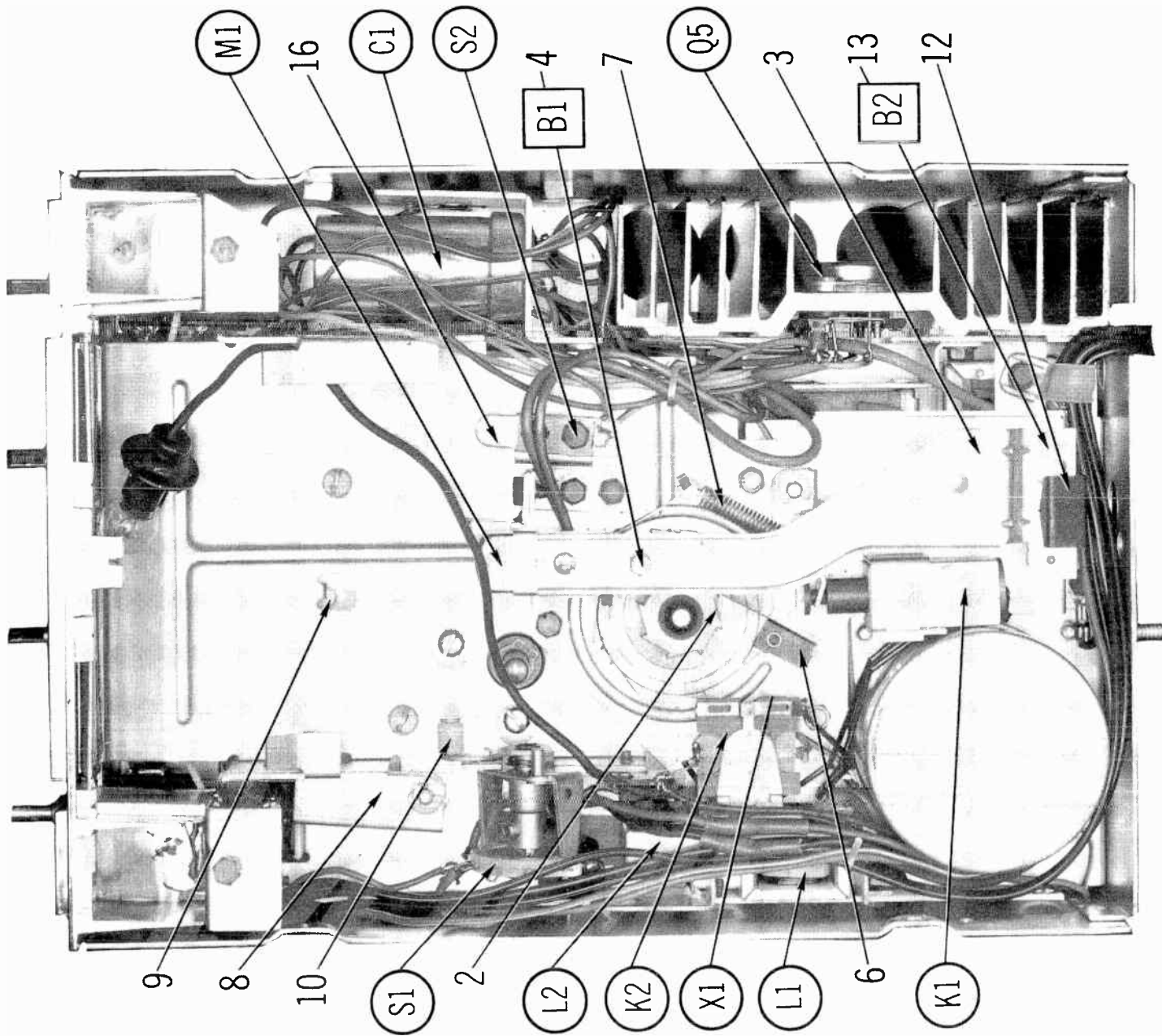
1. Voltage measurements taken with vacuum tube voltmeter.
2. All controls set for normal operation, no signal applied.
3. Measured values are from socket pin or terminal to common ground.
4. All terminals viewed from bottom unless otherwise designated.
5. Numbers assigned to terminals may not be found on the unit.
6. Supply voltage maintained at rated value for voltage readings.
7. Resistance measurements not given because of the wide variation in internal resistance of transistor.

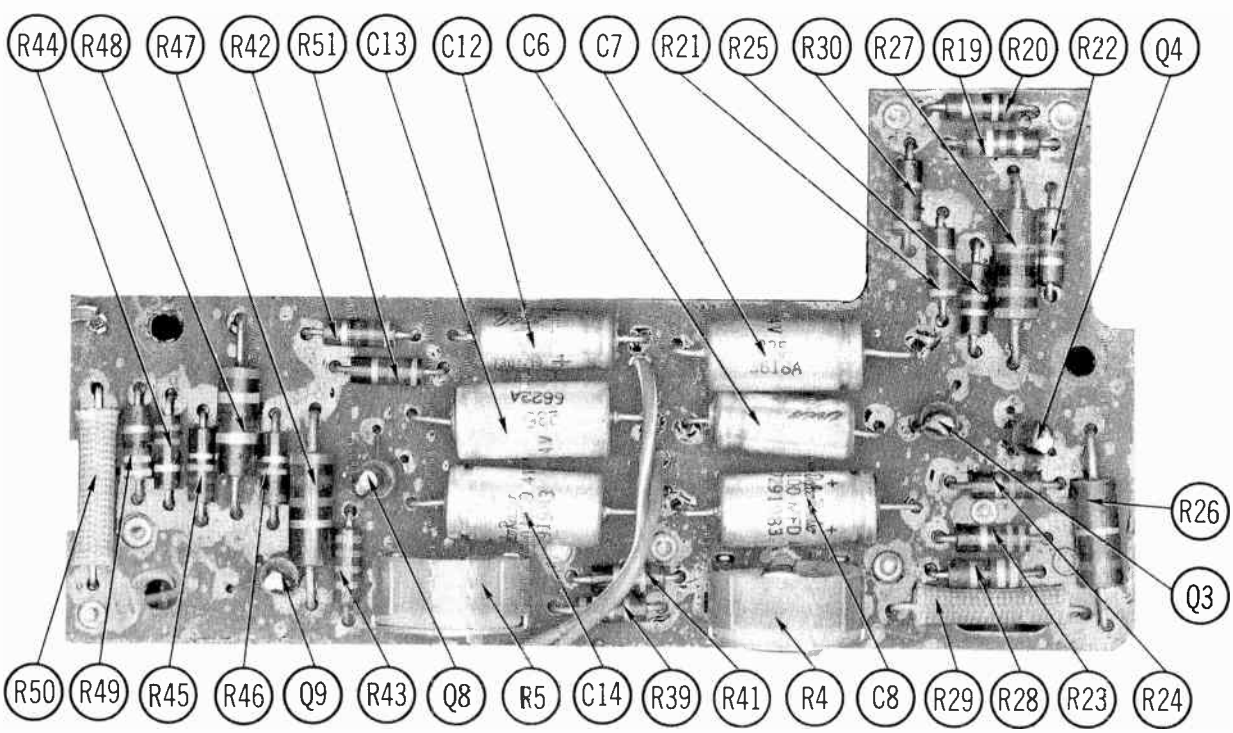
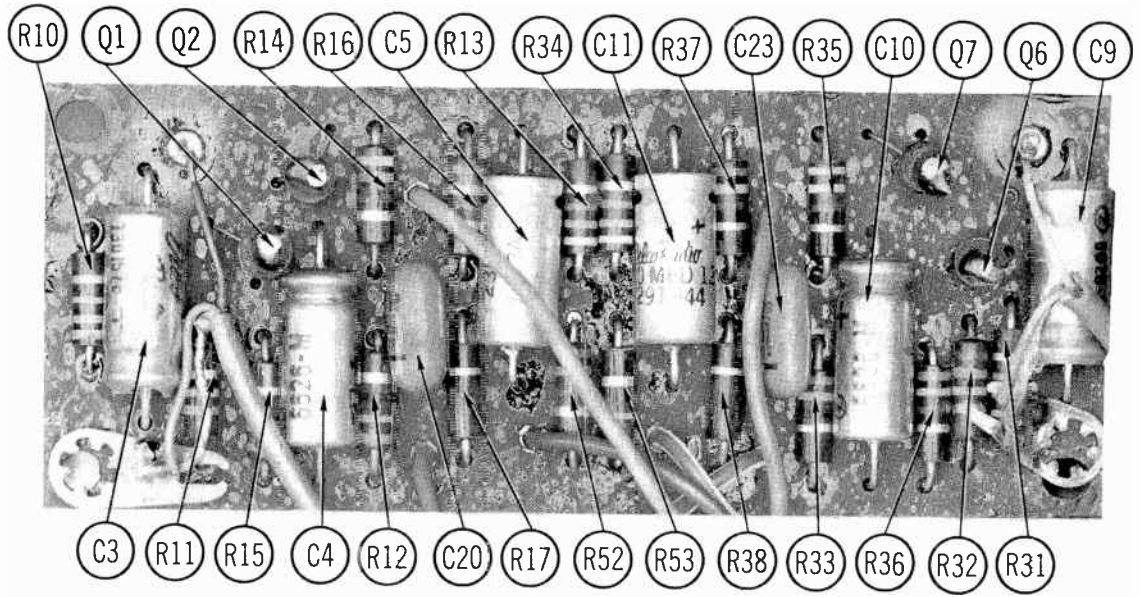
A PHOTOFAC STANDARD NOTATION SCHEMATIC with CIRCUITRACE
 © Howard W. Sams & Co., Inc. 1967

OLDSMOBILE MODELS 7301703, 7302503









PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	
Q1	DS-67	Preamp	DS-66	GE-10	TR-21	SK-3020	NPN
Q2	DS-67	Preamp	DS-66	GE-10	TR-21	SK-3020	NPN
Q3	DS-67	AF Amp	DS-66	GE-10	TR-21	SK-3020	NPN
Q4	DS-67	AF Amp	DS-66	GE-10	TR-21	SK-3020	NPN
Q5	DS-503	Output	DS-503	GE-3	TR-01	SK-3009	PNP
Q6	DS-67	Preamp	DS-66	GE-10	TR-21	SK-3020	NPN
Q7	DS-67	Preamp	DS-66	GE-10	TR-21	SK-3020	NPN
Q8	DS-67	AF Amp	DS-66	GE-10	TR-21	SK-3020	NPN
Q9	DS-67	AF Amp	DS-66	GE-10	TR-21	SK-3020	NPN
Q10	DS-503	Output	DS-503	GE-3	TR-01	SK-3009	PNP

♦ When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely. Check bias adjustment.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS & DIODES		RECTIFIERS		
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	RCA PART No.	SARKES TARZIAN PART No.
X1		DS-79	1N34AS	1N34A			
X2		DS-79	1N34AS	1N34A			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA					
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	850	16	7282272	AFH3-54-30	CC0002	XC3-6.1	WP300.7A	TVL-3021
B	400	16						
C	4	11.5rms						
C2A	850	16	7282272	AFH3-54-30	CC0002	XC3-6.1	WP300.7A	TVL-3021
B	400	16						
C	4	11.5rms						
C3	3	12	729186G	PTT50	NLW3-50	MT1-3	TT12X3	TE-1122
C4	30	6	7279896	PTT27	NLW30-6	MT1-13	TT6X30	TE-1092
C5	10	12	7292738	PTT53	NLW10-15	MT1-5	TT12X10	TL-1128
C6	10	12	7292738	PTT53	NLW10-15	MT1-5	TT12X10	TL-1128
C7	100	4	7291810	PTT30	NLW125-6	MT1-21	TT6X100	TE-1102
C8	100	4	7291810	PTT30	NLW125-6	MT1-21	TT6X100	TE-1102
C9	3	12	729186G	PTT50	NLW3-50	MT1-3	TT12X3	TE-1122
C10	30	6	7279896	PTT27	NLW30-6	MT1-13	TT6X30	TE-1092
C11	10	12	7292738	PTT53	NLW10-15	MT1-5	TT12X10	TL-1128
C12	10	12	7292738	PTT53	NLW10-15	MT1-5	TT12X10	TL-1128
C13	100	4	7291810	PTT30	NLW125-6	MT1-21	TT6X100	TE-1102
C14	100	4	7291810	PTT30	NLW125-6	MT1-21	TT6X100	TE-1102

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C20	.022	75V	DBE4S22		DMF4S22	4DP-2-223	PVC6122	4PS-S22
C21	.1	75V	DBE2P1		DMF2P1	2DP-3-104	PVC201	2PS-P10
C22	.1	75V	DBE2P1		DMF2P1	2DP-3-104	PVC201	2PS-P10
C23	.022	75V	DBE4S22		DMF4S22	4DP-2-223	PVC6122	4PS-S22
C24	.1	75V	DBE2P1		DMF2P1	2DP-3-104	PVC201	2PS-P10
C25	.1	75V	DBE2P1		DMF2P1	2DP-3-104	PVC201	2PS-P10

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA					
			DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	Volume	20K Tap @ 11K	7301757	F16-25K, R16-25K, SFS212, BA012, CA005			QCB4①④, B19-119X, B19-119X, TM8, QCM	
B	Volume	20K Tap @ 11K						
R2A	Tone	100K	7301755					
B	Tone	100K						
R3	Balance	25K	7301756	F1-25K ②③, SFS212, BA012, CA005			QCB4①④, B11-120③, TM8 or (BU14①, CF11③, SS4, DC1)*	RU253L③, SL41, IS1375
R4	Bias	600Ω 2W	7296937	V-600	U39-600		110-600	
R5	Bias	600Ω 2W	7296937	V-600	U39-600		110-600	
R6	Fader	100Ω 2W	7300611					

① Alter Bushing and adjust Spacer Nut to meet requirements. ③ Ground center term.
② Use only when available space permits. ④ Use QCB4 instead of Tab Mount Plate in TM8 kit.
* "SNAPTROL"

OLDSMOBILE MODELS 7301703, 7302503

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	DELCO PART No.			IRC PART No.	WORKMAN PART No.	DELCO PART No.
R29	.68Ω (Fusible)			7287480	R50	.68Ω (Fusible)			7287480

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES	
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.		TRIAD PART No.
L1	.680A	.6Ω	6mh	7294608	C-4095	TC-2	TR-155	TY17XT	
L2	.680A	.6Ω	6mh	7294608	C-4095	TC-2	TR-155	TY17XT	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA				NOTES	
	PRL	SEC.	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.		TRIAD PART No.
T1	12Ω Tap	@ 10Ω	7282057					
T2	12Ω Tap	@ 10Ω	7282057					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA			NOTES	
		DELCO PART No.	JENSEN PART No.	QUAM PART No.		
	4" X 10" PM	10Ω	7289969	P4X10T9	410A2Z10	(Front) Oldsmobile and Toronado (Front) F85 (Rear) Oldsmobile and F85 Sedan (Rear) Oldsmobile convertible, Toronado, F85 (Except Sedan)
	4" X 10" PM	10Ω	7289653	P4X10T9	410A2Z10	
	4" X 10" PM	10Ω	7301803	P4X10T9	410A2Z10	
	4" X 10" PM	10Ω	7300614	P4X10T9	410A2Z10	

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	AGC 7 1/2		7300814	AGC 7 1/2	HDJ	31107.5	155020	

TAPE HEADS

ITEM NO.	MEASURED			DELCO PART NO.	NORTONICS PART NO.	DESCRIPTION
	INDUCTANCE	BIAS/ERASE VOLTS (RMS)	BIAS FREQ.			
M1	395 mh				5800	8-Track Stereo Play (Includes Arm and Head)

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
S3	Manual Track Selector Switch	7301573	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Knob, Control	394149		

WIRING DATA

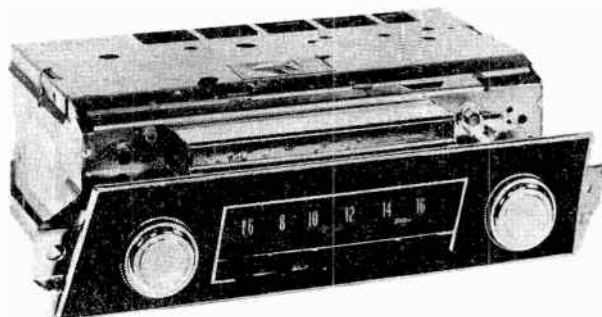
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)



PHOTOFACT[®] with

CIRCUITRACE[®]

TRADE NAME : Pontiac Model 986823 (1967 1/2 Pontiac Firebird)
 SUPPLIER : For Current Address, See Annual Index.
 TYPE SET : 6 Transistor AM Receiver
 POWER SUPPLY : 12 Volt Storage Battery
 RATING : .6 Amp. @ 12.6 Volts DC (Less Lamp)



PONTIAC MODEL 986823

ALIGNMENT INSTRUCTIONS

Check for specified source voltage.

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools: A1 thru A4.

GENERAL CEMENT: 5009, 8728A, 8987

WALSCO: 2531-X, 2536

A6, A7, A8.

GENERAL CEMENT: 8290, 8868, 9087

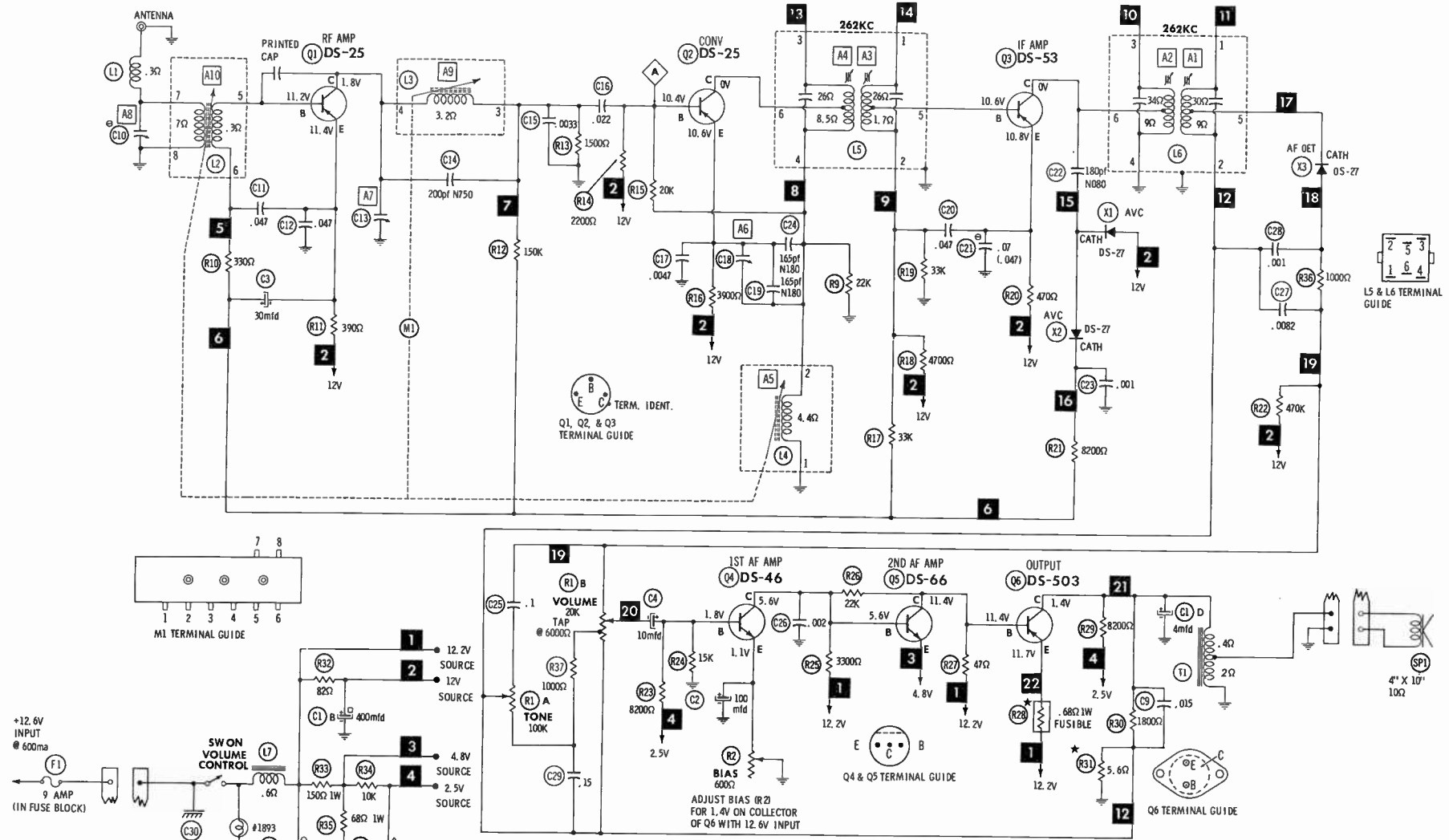
WALSCO: 2525, 2528, 2587

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point Δ , low side to ground.	262KC (400% Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
Check setting of oscillator coil core (A5). Rear of core should be 1 3/8" from mounting end of coil form.						
2.	High side thru 82pf to antenna receptacle, low side to ground.	1615KC	High Freq. End Stop.	Output Meter across voice coil.	A6, A7, A8	Adjust for maximum.
3.	"	600KC	600KC Signal	"	A9, A10	Adjust for maximum. Repeat step 2.
With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A8 for maximum output.						

Remove tuning and dummy knobs for access to Antenna Trimmer (A8).

PUSH-BUTTON ADJUSTMENT

1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.



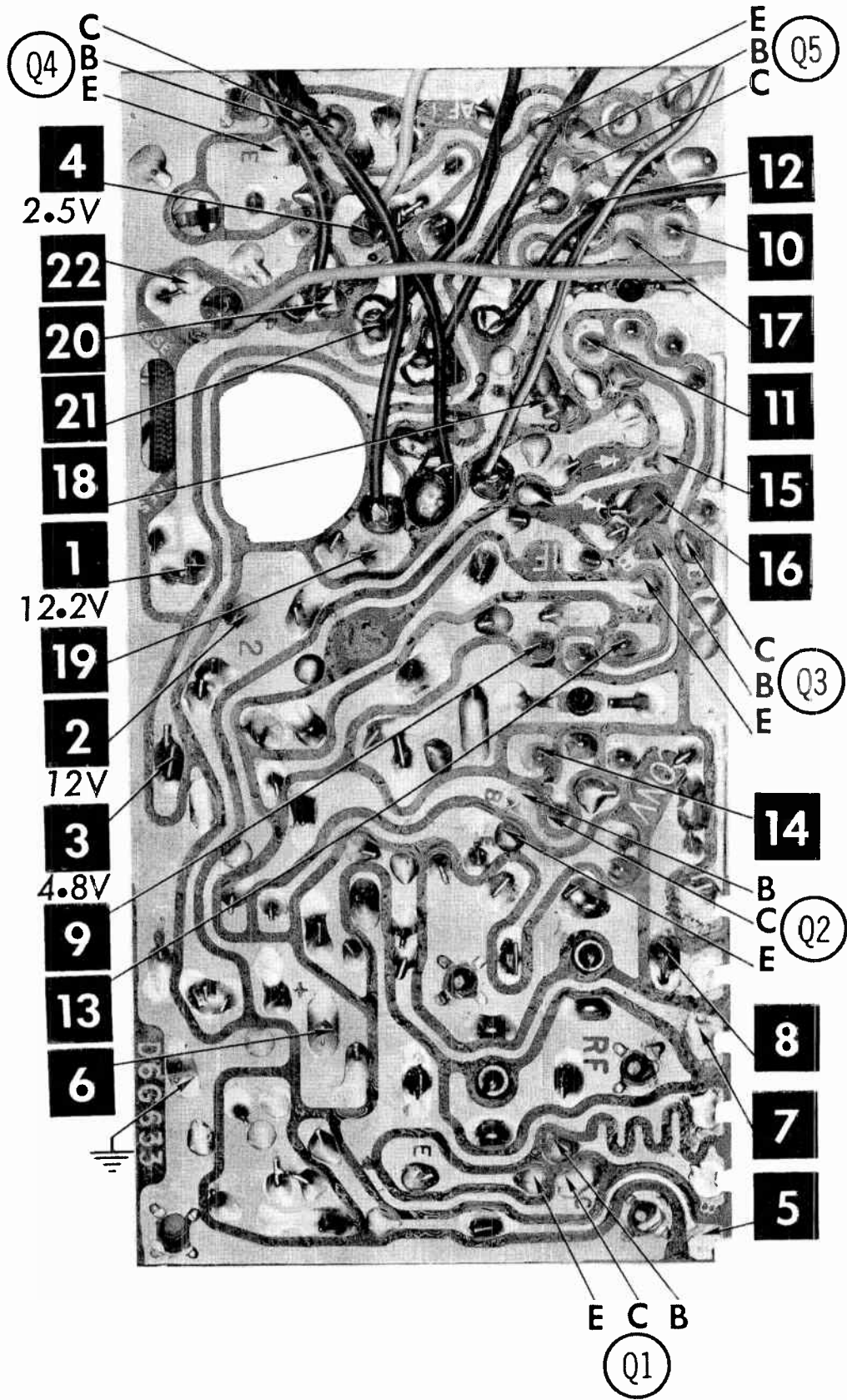
* NOMINAL VALUE, MAY VARY.
Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.

A PHOTOFAC STANDARD NOTATION SCHEMATIC
with **CIRCUITRACE**

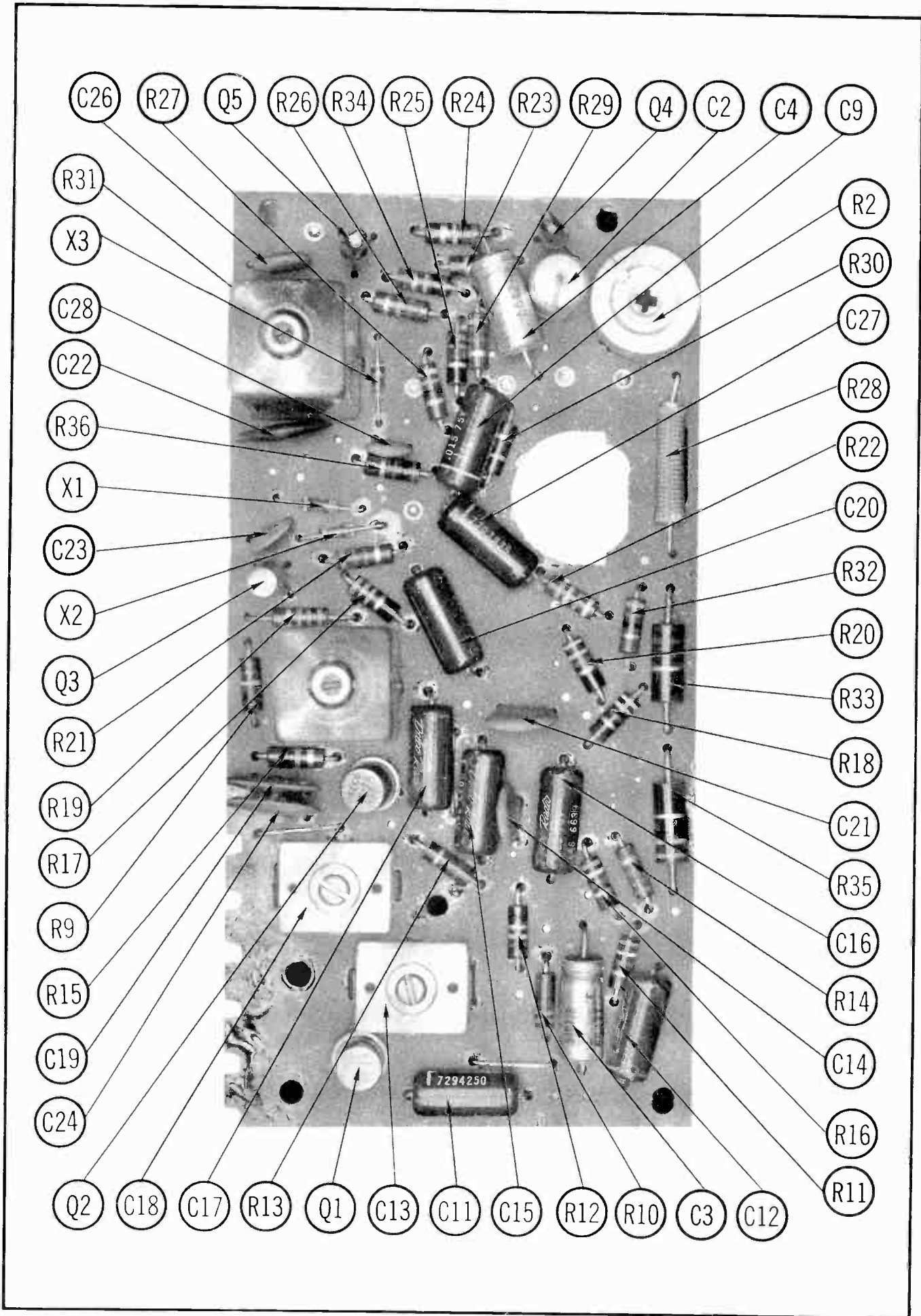
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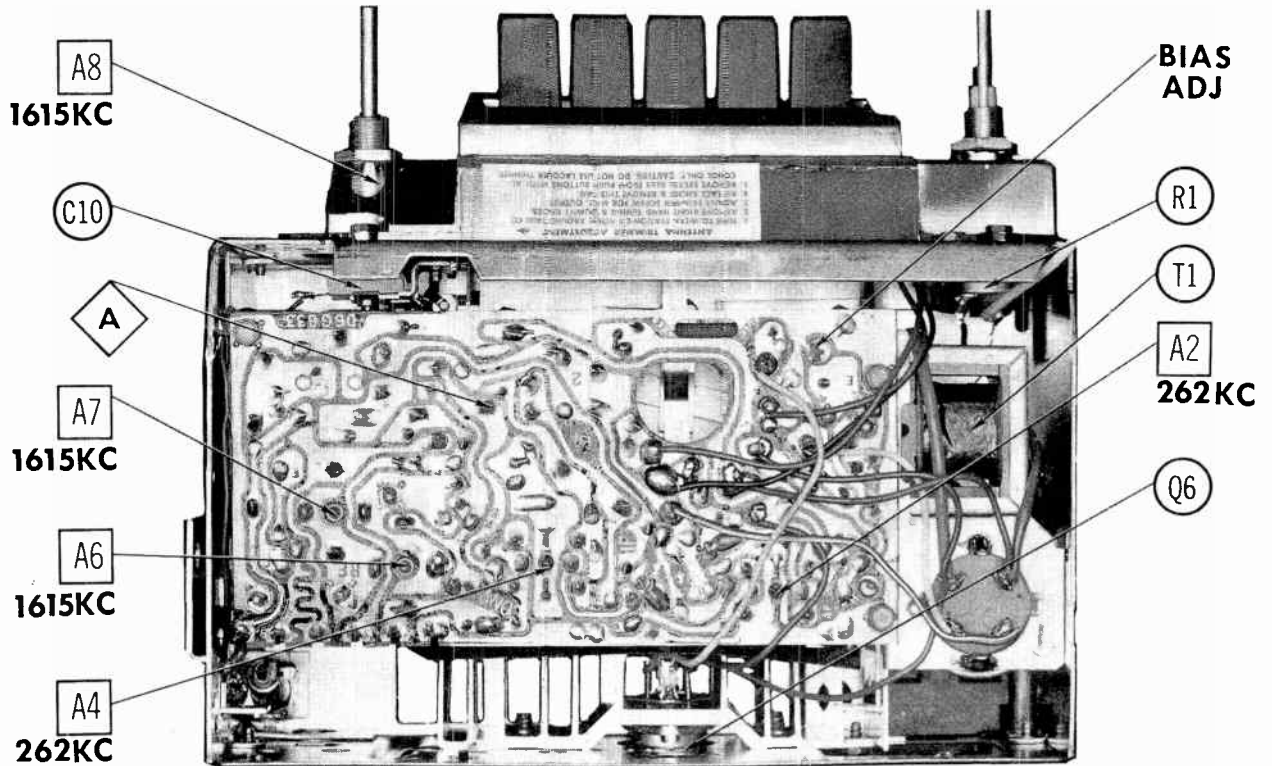
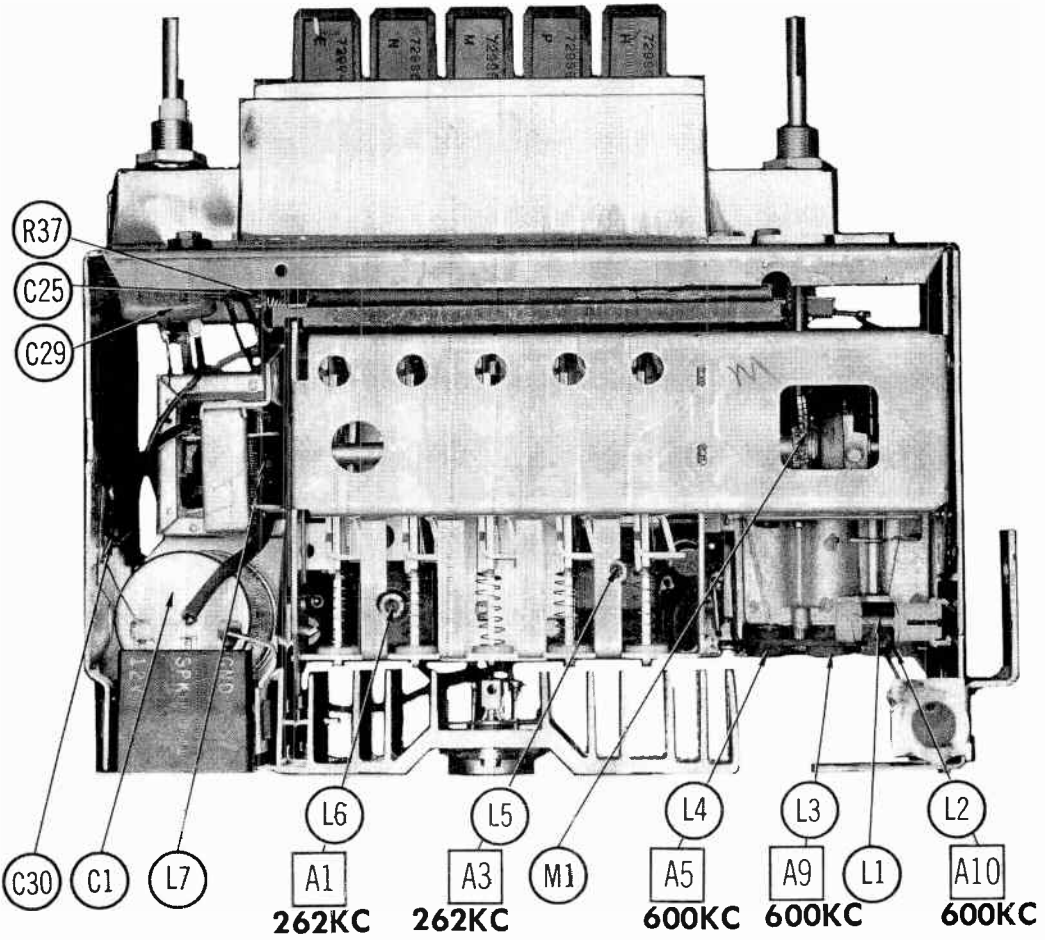
- © See parts list.
1. Voltage measurements taken with vacuum tube voltmeter.
 2. All controls set for normal operation, no signal applied.
 3. Measured values are from socket pin or terminal to common ground.
 4. All terminals viewed from bottom unless otherwise designated.
 5. Numbers assigned to terminals may not be found on the unit.
 6. Supply voltage maintained at rated value for voltage readings.
 7. Resistance measurements not given because of the wide variation in internal resistance of transistor.

PONTIAC MODEL 986823



A Howard W. Sams **CIRCUITRACE** Photo





PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8861 (3/8 In.) or 8870 (3/4 In.)

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	
Q1	DS-25	RF Amp.	DS-25	GE-9	TR-06	SK-3008	PNP
Q2	DS-25	Converter	DS-25	GE-9	TR-06	SK-3008	PNP
Q3	DS-53	IF Amp.	DS-53	GE-9	TR-06	SK-3008	PNP
Q4	DS-66	AF Amp.	DS-66	GE-10	TR-21	SK-3020	NPN
Q5	DS-66	AF Amp.	DS-66	GE-10	TR-21	SK-3020	NPN
Q6	DS-503	Output	DS-503	GE-3	TR-01	SK-3009	PNP *

* When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely. Check bias adjustment.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS & DIODES		RECTIFIERS		
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	RCA PART No.	SARKES TARZIAN PART No.
X1		DS-27	1N34AS	1N34A			
X2		DS-27	1N34AS	1N34A			
X3		DS-27	1N34AS	1N34A			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		DELCO PART No.	REPLACEMENT DATA				
	CAP.	VOLT.		AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	850	16	7292515	AFH4-96-10	DD0005		FP401.85	TVL-4206.1
B	400	16						
C	100	16						
D	4	11.57ms						
C2	100	4	7291810	PTT30	NLW125-6	MT1-21	TT6X100	TE-1102
C3	30	6	7279896	PTT27	NLW30-6	MT1-13	TT6X30	TE-1092
C4	10	12	7292738	PTT53	NLW10-15	MT1-5	TT12X10	TL-1128

CAPACITORS

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENC0 PART No.	MALLORY PART No.	SPRAGUE PART No.
C9	.015	75V	#7299291	DBE4S15		DMF4S15	4DP-1-153	PVC6115	4PS-S15
C10			#7294507						
C11	.047	75V		DBE2S47		DMF2S47	4DP-3-473	PVC2147	2PS-S47
C12	.047	75V		DBE2S47		DMF2S47	4DP-3-473	PVC2147	2PS-S47
C13			#7287935						
C14	200	N750		N750-DI200	DTN-200	CV601UJ201K	CCTN-201	CN7320	10TCU-T20
C15	.0033	75V		DBE6D33	CPR-3300J	WMF1D33	6DP-1-332	PVC4J33	8PS-D33
C16	.022	75V		DBE4S22		DMF4S22	4DP-2-223	PVC6122	4PS-S22
C17	.0047	75V		DBE6D47	CPR-4700J	WMF1S47	6DP-1-472	PVC6247	6PS-D47
C18			#7282165						
C19	165	N180					*	*	
C20	.047	75V		DBE2S47		DMF2S47	4DP-3-473	PVC2147	2PS-S47
C21	.07		(.047)▲						
C22	180	N080					*	*	10TCN-T18
C23	.001			DI-1000	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C24	165	N180					*	*	
C25	.1	75V		DBE2P1	DMF2P1	2DP-3-104	2DP-3-	PVC201	2PS-P10
C26	.002			DI-2000	DM-202	JBX601YP202K	CCD-202	GP220	5GAB-D22
C27	.0082	75V		DBE6D82	CPR-8200J	WMF1S82	6DP-2-822	PVC628	6PS-D82
C28	.001			DI-1000	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C29	.15	75V		TTD-1	CK-104	HOV101ZV104Z		TA010	TG-P10
C30			#7271564						

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

Delco Part Number. ▲ Alternate Value.

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA					
			DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A B	Tone Volume/Switch	100K 20K Tap @ 600Ω	7298828	F2-100K, R14-25K, FFS100 RFS108, BB012, SB004, KR-4			†QJ-2305A	
R2	Bias	600Ω 2W	7286601	V-600	U39-600		110-600	MR600P

† "CONCENTRIKIT" Equivalent: K8 Kit, with Base Elements and Shafts: B13-128, P22-027 (Panel), B19-119X, R9-110 (Rear), S6 ① (Bushing), N4 (Spacer Nut), 76-1 (Switch)

"SNAPTROL" Equivalent: BU8 ①, CF52, CR50T, SF4, SR5, N4, GC.
① Alter Bushing and adjust Spacer Nut to meet requirements.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	DELCO PART No.			IRC PART No.	WORKMAN PART No.	PART No.
R28	.68Ω (Fusible)			7287480					

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				
		DELCO PART No.	MEISSNER Part No.	MERIT PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (6.2uh)	7281946	19-1004	BC-565	4610	T859
L2	Antenna	①				
L3	RF	①				
L4	Oscillator	①				
L5	Input IF	1221856	16-6704		6542	TA653
L6	Output IF	1221857	16-6705		6543	TA653

① Part of M1.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L7	600ma	.6Ω	8MH	1221623	C-4095	TC-2	TR-154	TY17XT	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
	T1	12Ω Tap @ 10Ω		7282057				

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA			NOTES
				DELCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4" X 10"	PM	10Ω	7298001	P4X10T9	410A2Z10	

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	SFE 9 Amp		In Fuse Block	SFE9		307009		

MISCELLANEOUS

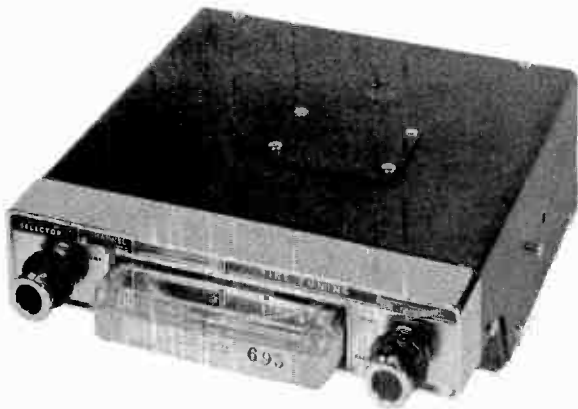
ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner Coil Assembly	7287957	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Escutcheon	7299001	Knob, Tuning or Volume	9786795
Dial Glass	7298999	Knob, Tone	3886995
Dial Pointer	7299003	Knob, Dummy	3886994
Push Button	7298250		

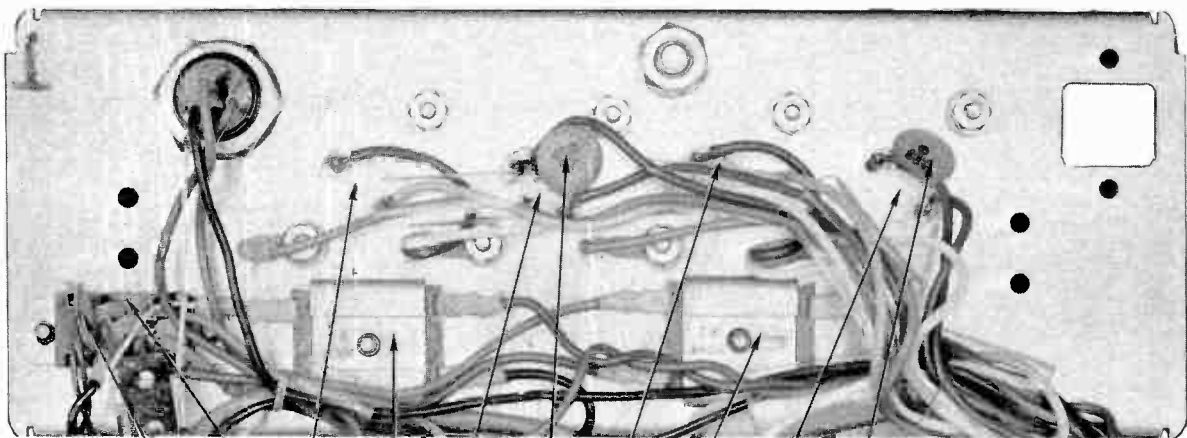
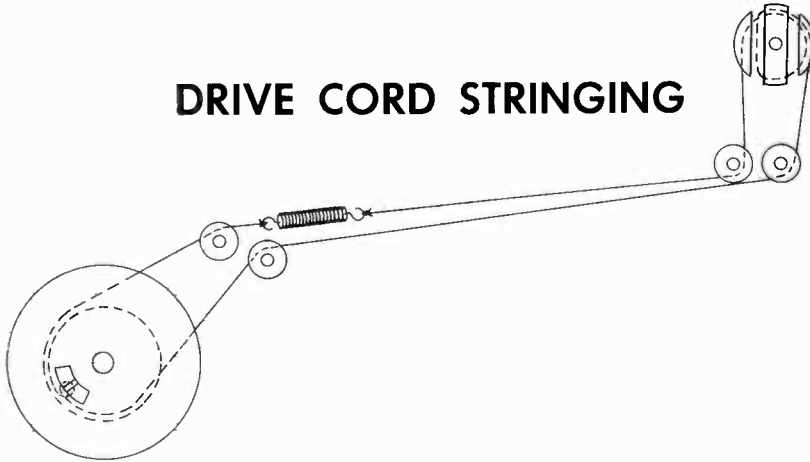
PONTIAC MODEL 986823



TRADE NAME: Ranger Model RR-41-T
 SUPPLIER: For Current Address, See Annual Index
 TYPE SET: 12 Transistor Tape Player
 POWER SUPPLY: 12 Volt Storage Battery
 RATING: .45 Amp. @ 12.6 Volts DC

RANGER MODEL RR-41-T

DRIVE CORD STRINGING



C46 S1 Q5 C48 Q6 C36 Q11 C47 Q12 C43

OPERATING INSTRUCTIONS

1. Insert a cartridge until firmly seated and adjust Volume, Tone and Balance controls as desired.
2. Adjust Fine Tuning knob to eliminate any cross-talk.
3. Select position 1 or 2 with Channel Selector for best reproduction of program 1 on four-track tapes and select position 3 or 4 for best reproduction of program 2.
4. Eight-track tapes will automatically select programs in sequence or Channel Selector may be used to manually select programs.
5. Fully withdraw the cartridge to shut the unit off. The unit may not play if the cartridge is partially withdrawn and then reinserted.

DISASSEMBLY

1. Remove eightscrews from sides and rear of top and remove top.
2. Remove six screws from bottom of unit and remove case bottom.

SEQUENCE OF OPERATION

Four-Track Cartridge

Inserting a four-track cartridge pivots Lever (7) which turns Latch (5), pulled by Spring (6), to allow Latch (5) to clear Lockout (4).

The cartridge also pivots Gear (14) which allows Arm (12), pulled by Spring (13), to allow Clutch (16), pushed by Spring (15), to mesh with Gear (14).

Gear (14) turns Clutch (16) which moves Arm (10), pulled by Spring (9), to move Roller (1) against the capstan.

Shaft (16) turns Screw (18) on Lever (21) to move Bracket (20), depressing Cap (37). Cap (37) moves

Cam (25) and Plate (32) to reposition the Tape Head for a four-track tape.

Eight-Track Cartridge

Inserting an eight-track cartridge moves Lockout (4) to block the movement of Latch Lever (7). The cartridge moves Latch Lever (7) which turns Latch (5), pulled by Spring (6), against Lockout (4). The cartridge also moves Gear (14) which releases Arm (12), pulled by Spring (13), to allow Clutch (16), pushed by Spring (15), to contact Latch (5).

Eight-Track Detent (40) locks the cartridge in place.

CLEANING

Free the unit from the mounting bracket and remove three of the screws holding the Service Access Plate. Turn the Service Access Plate and gasket to one side. Using a cotton swab or soft cloth dampened with isopropyl alcohol or commercial recorder cleaning solution, clean the Tape Guide, Pressure Roller, Capstan, and Tape Head.

LUBRICATING

HEAD DEMAGNETIZING

Following the directions supplied with the tape head demagnetizer, demagnetize the Tape Guide, Capstan, and Tape Head.

Apply head lubricant sparingly to the Tape Head with a fresh applicator. Apply one drop of light household lubricant to the capstan bearing and the pressure roller shaft.

ADJUSTMENTS

Head Azimuth

Play an azimuth test tape and adjust B1, Screw (35), for maximum output measured across the speaker leads.

Head Height

Center the Fine Tuning. Lift Pulley (29) off Screw (30). Play a height test tape and adjust Screw (30) for the correct output as described in the instructions with the tape.

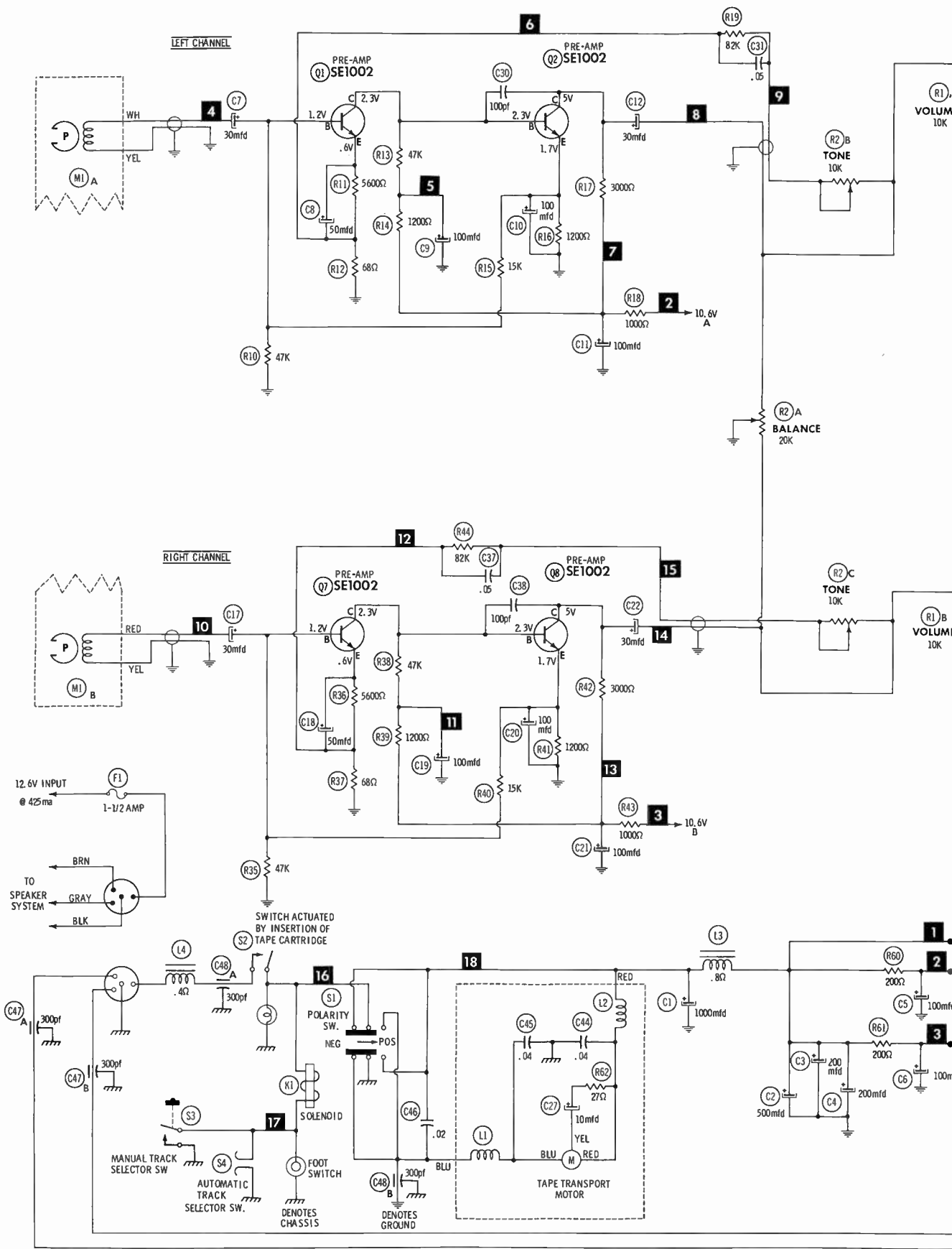
Slip the cord on Pulley (29) until the center hole matches the position of Screw (30) and slip Pulley (29) back over Screw (30).

Pressure Roller Snap Action

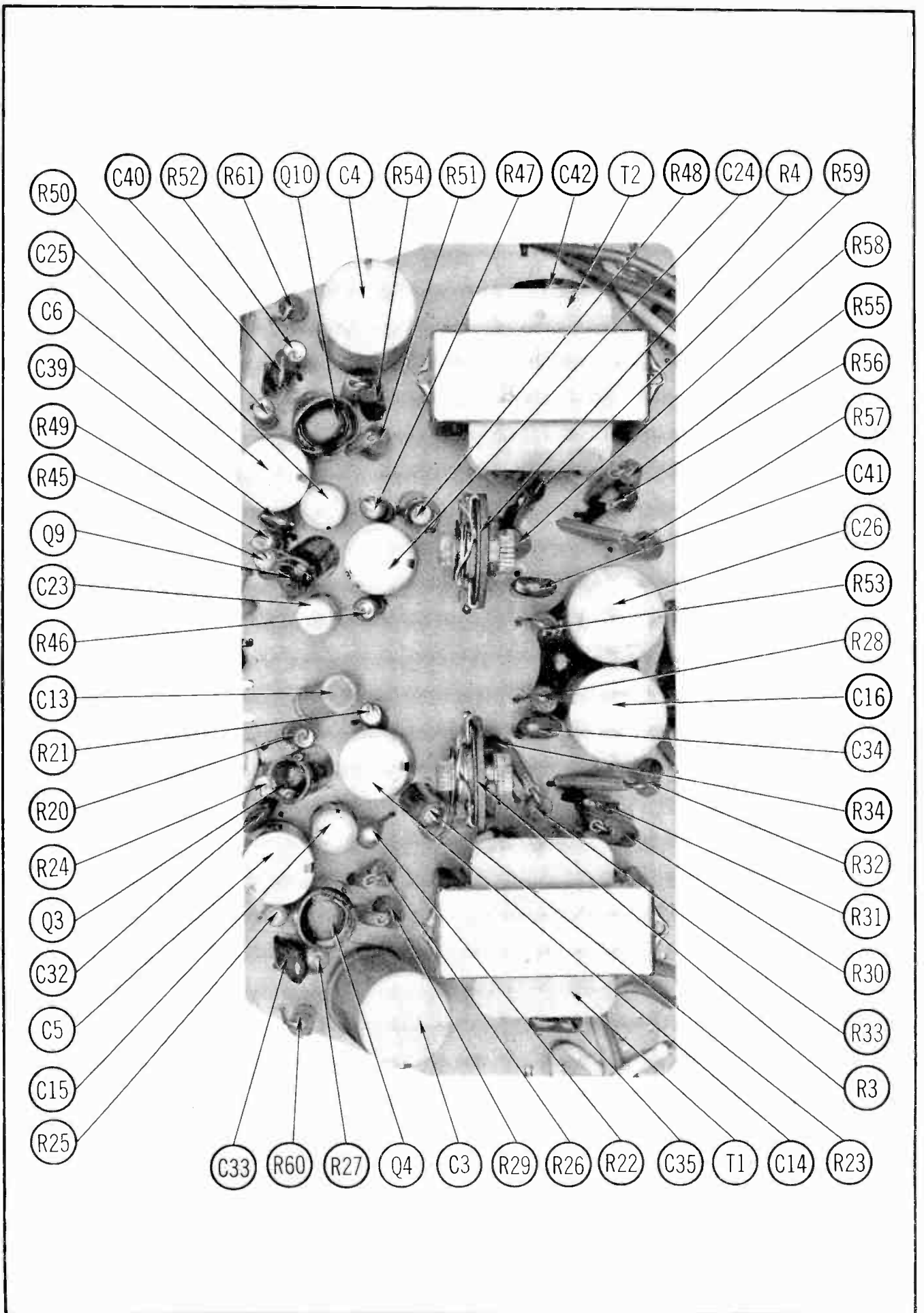
Position Spring (9) on Bracket (36), causing a positive raising of the Pressure Roller when a four-track cartridge is inserted very slowly and lowering the Pressure Roller, without catching on the cartridge, when the cartridge is withdrawn.

Pressure Roller Clutch

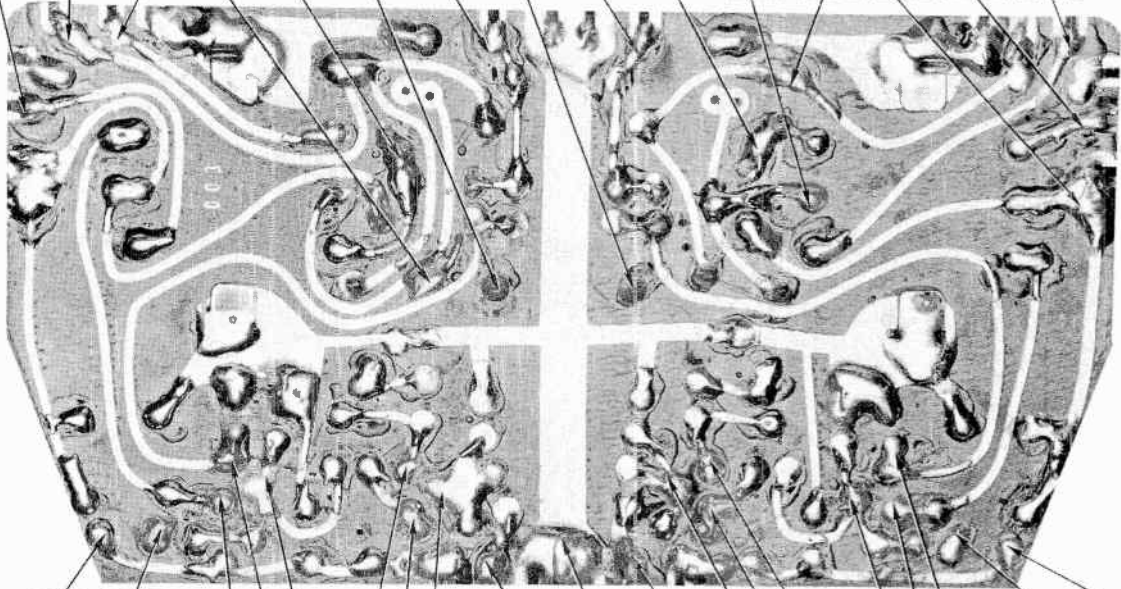
Fingers on Arm (12) can be bent to allow positive meshing of Clutch (16) with Gear (14) when a four-track cartridge is inserted. This should only be necessary if Arm (12) is replaced.



A PHOTOFAC STANDARD NOTATION SCHEMATIC
 with **CIRCUITRACE**
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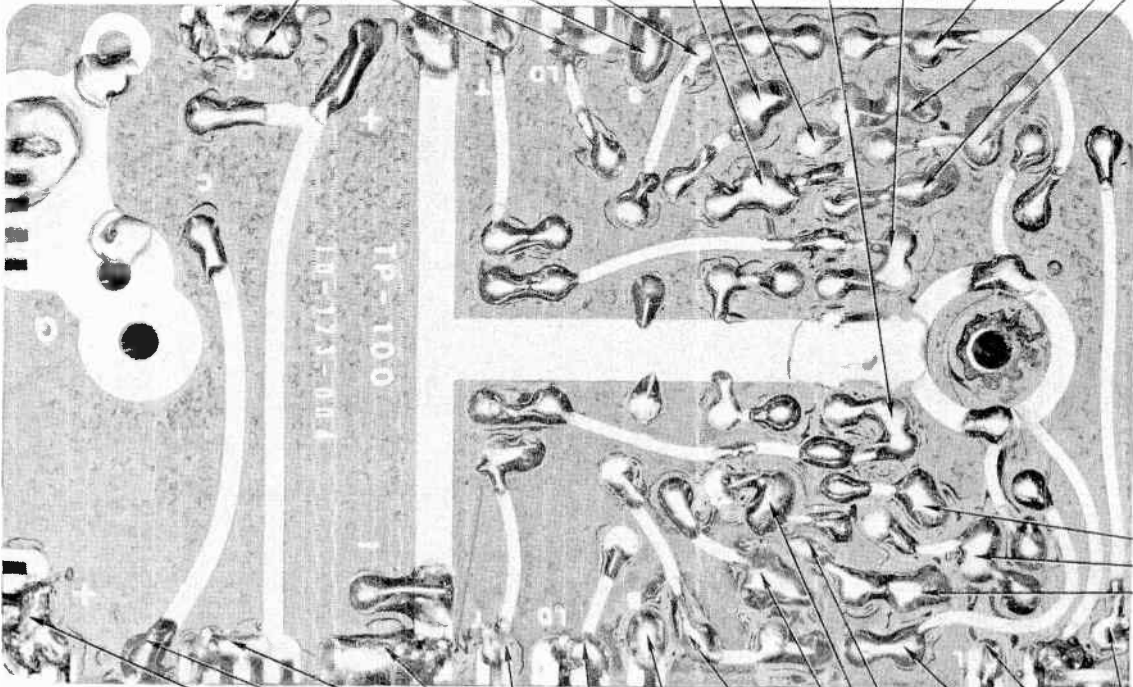


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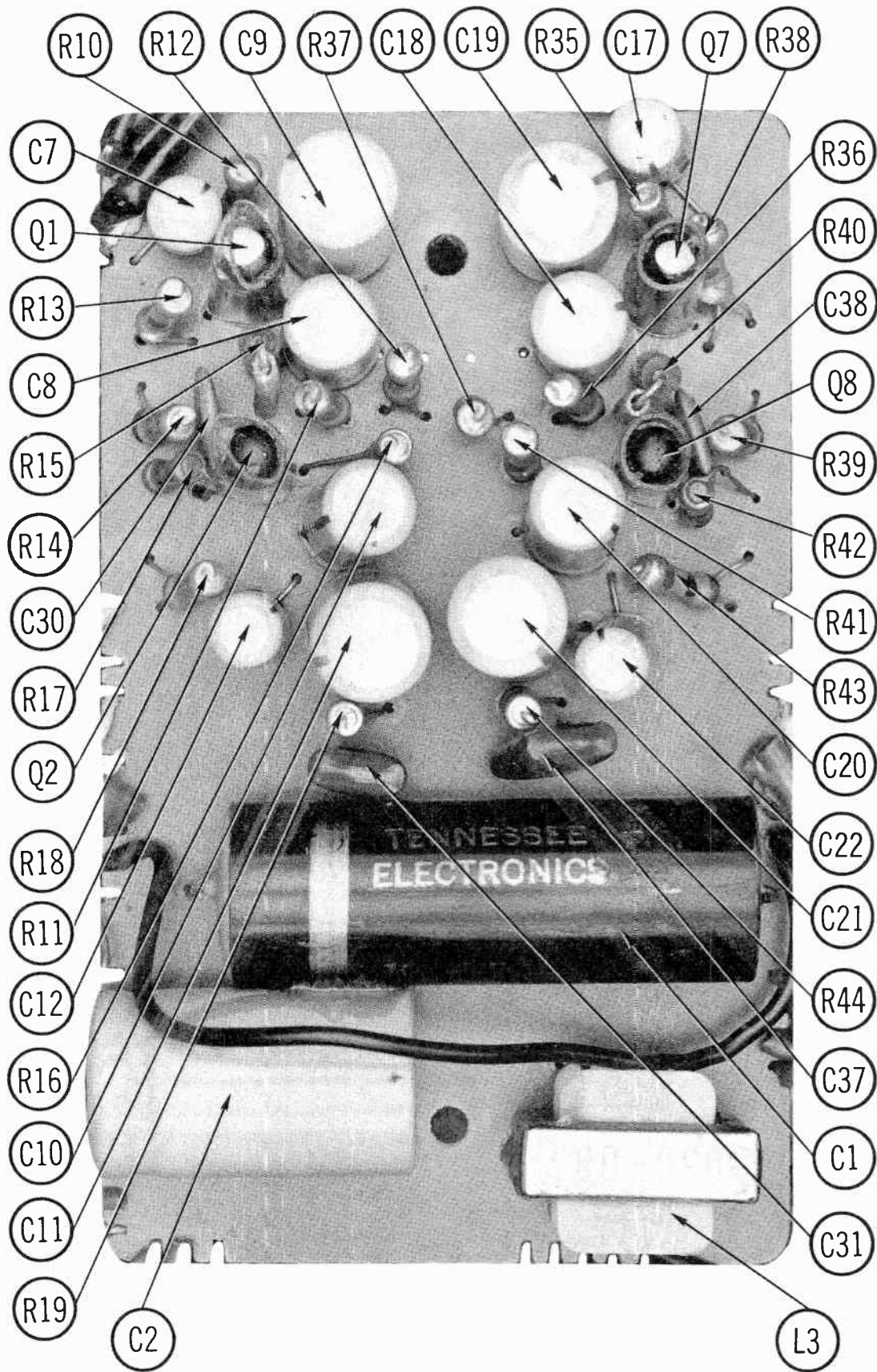


2 20 C E B Q4 E C B Q3 19 28 B C E Q9 B C E Q10 29 3

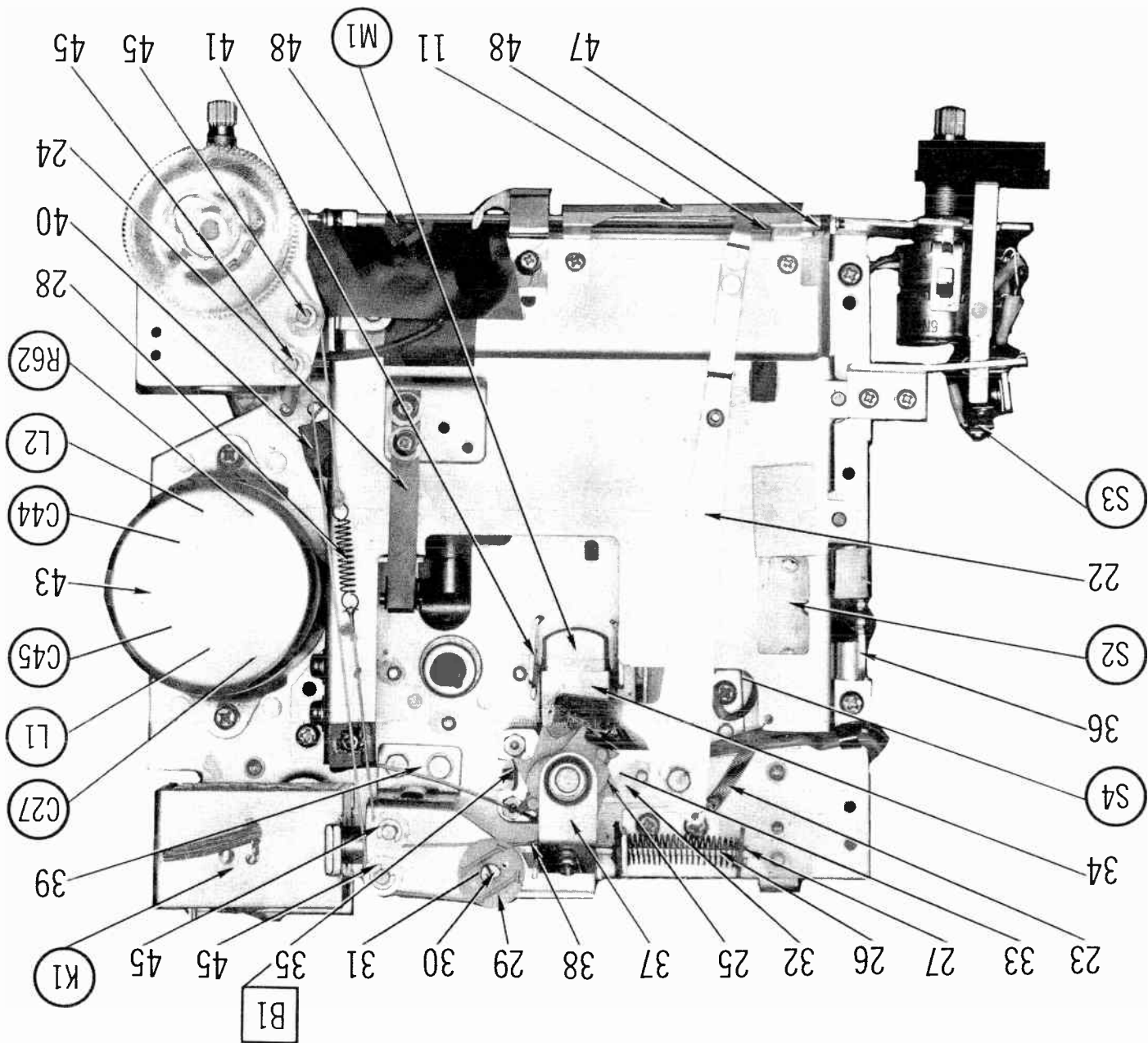
17 15 14 3 13 Q8 E C B 6 12 11 Q7 C E B

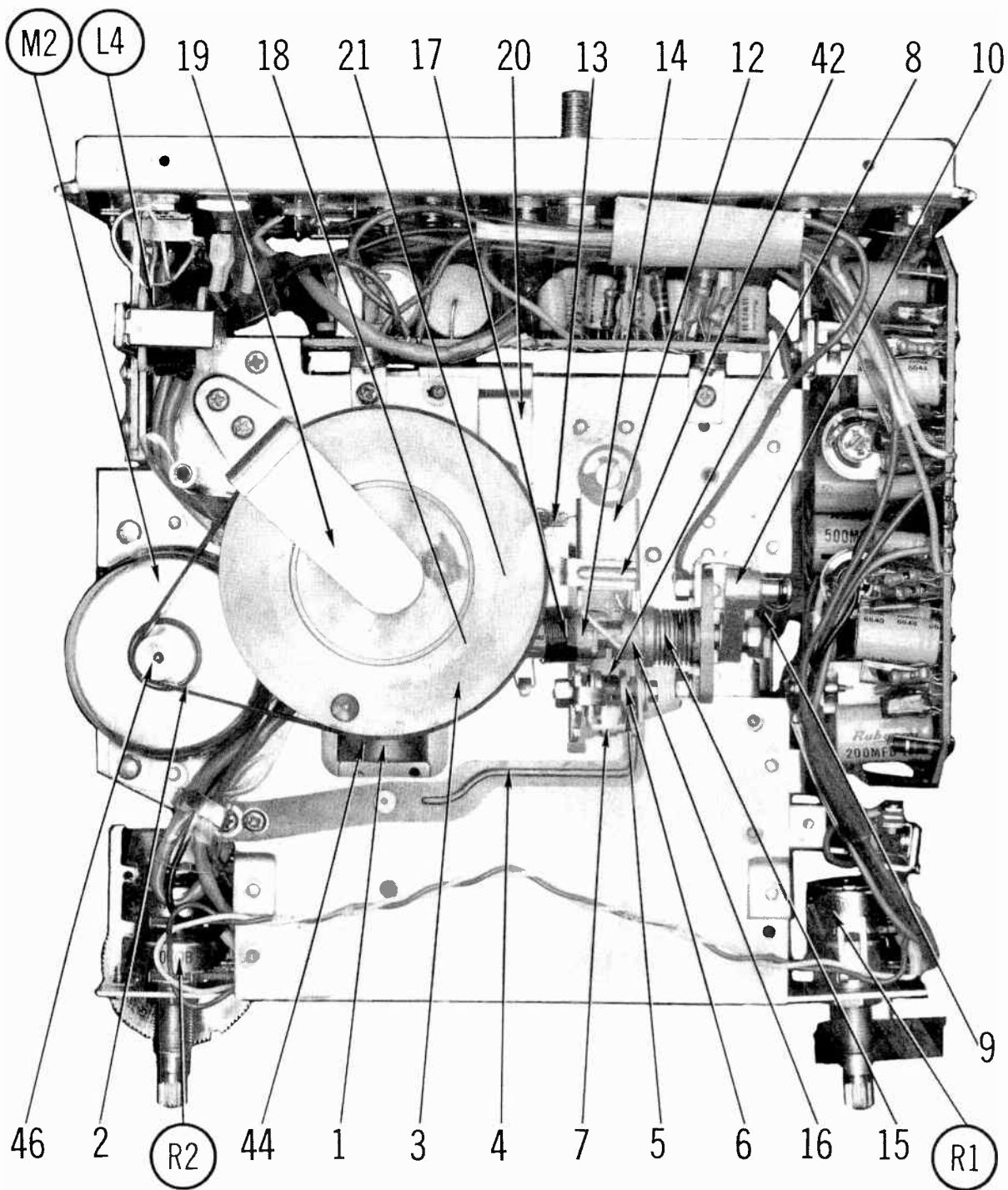


16 1 18 9 8 2 7 C E B Q2 5 4 10



RANGER MODEL RR-41-T





MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	175007-126	Pinch Roller (Pressure Roller)	25	175007-143	Channel Selector Cam
2	175007-133	Drive Belt	26	175007-105	Solenoid Spring
3	175007-134	Flywheel Assembly	27	175007-107	Cam Actuating Lever Ass'y.
4	175007-137	Four-Track Lockout	28	175007-166	Dial Cord Spring
5		Eight-Track Latch	29		Fine Tuning Pulley
6		Eight-Track Latch Spring	30		Fine Tuning Screw
7		Latch Lever	31		Fine Tuning Screw Spring
8		Latch Lever Spring	32		Head Height Cam Plate
9	175007-167	Pinch Roller Spring	33	175007-106	Cam Spring
10		Pinch Roller Shaft Arm	34		Head Mounting Arm
11	175007-156	Channel Indicator Plate	35		Azimuth Screw
12	175007-138	Clutch Separator Arm	36		Pinch Roller Spring Bracket
13	175007-139	Clutch Separator Arm Spring	37		Adjustment Bracket Cap (Part of Ref. No. 20)
14		Four-Track Gear	38		Head Height Pawl (Part of Ref. No. 27)
15	175007-132	Clutch Tension Spring	39		Head Height Cam Detent
16	175007-131	Pinch Roller Clutch & Shaft Assembly	40		Eight-Track Cartridge Detent
17		Four-Track Gear Spring	41	175007-163	Tape Guide
18		Four-Track Height Screw	42	175007-142	Separator Arm Bracket
19	175007-141	Capstan Thrust Bracket	43	175007-157	Motor Cover
20	175007-161	Head Adjustment Bracket (Includes Ref. No. 37)	44		Pinch Roller Center Spring
21		Four Track Height Lever	45	175007-164	Dial Cord Idler Pulleys (4 used)
22	175007-128	Channel Indicator Pointer	46	175007-135	Motor Pulley
23	175007-130	Channel Pointer Spring	47	175007-151	Tape Door Assembly
24	175007-165	Cartridge Roller	48	175007-152	Door Springs (2 used)

RANGER MODEL RR-41-T

TROUBLE CHART

SYMPTOM	REMARKS
Four-Track Cartridges do not play.	<ol style="list-style-type: none"> 1. Drive Belt (2) dirty, worn, loose, or broken. 2. Flywheel (3) binding. 3. Clutch Tension Spring (15) broken or weak. 4. Clutch Separator Arm (12) binding. 5. Eight-Track Latch Spring (6) weak, loose, or broken. 6. Pinch Roller Spring (9) weak. 7. Pinch Roller (1) worn. 8. Cartridge not fully removed between playings.
Eight Track Cartridges do not play.	<ol style="list-style-type: none"> 1. Drive Belt (2) dirty, worn, loose or broken. 2. Flywheel (3) binding. 3. Motor (M2) or Head (M1) defective. 4. Cartridge not fully removed between playings
Unit does not change tracks.	<ol style="list-style-type: none"> 1. Dirty switch contacts. 2. Solenoid (K1) defective. 3. Indicator Pointer (22) binding. 4. Head Height Pawl (38) damaged. 5. Head Height Cam Plate (32) binding.

PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	
Q1	SE1002	Preamp	DS-66	GE-10	TR-21	SK-3020	NPN
Q2	SE1002	Preamp	DS-66	GE-10	TR-21	SK-3020	NPN
Q3	SE1002	AF Amp	DS-66	GE-10	TR-21	SK-3020	NPN
Q4	SE6001	Driver	DS-66	GE-10	TR-21	SK-3020	NPN
Q5	2SB391	Output	DS-520	GE-3	TR-01	SK-3009	PNP *
Q6	2SB391	Output	DS-520	GE-3	TR-01	SK-3009	PNP *
Q7	SE1002	Preamp	DS-66	GE-10	TR-21	SK-3020	NPN
Q8	SE1002	Preamp	DS-66	GE-10	TR-21	SK-3020	NPN
Q9	SE1002	AF Amp	DS-66	GE-10	TR-21	SK-3020	NPN
Q10	SE6001	Driver	DS-66	GE-10	TR-21	SK-3020	NPN
Q11	2SB391	Output	DS-520	GE-3	TR-01	SK-3009	PNP *
Q12	2SB391	Output	DS-520	GE-3	TR-01	SK-3009	PNP *

* When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	RANGER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	1000 15V	175007-025	PRS1230	EA30-1000	BR1000-15	QTI-32	TC1501	TL-1166.5
C2	500 15V	175007-017	PRS1220	EA15-500	BR500-15	QTI-30	MTV500DN15	TL-1166
C3	200 15V	175007-024	CRE481A	EA15-250	NLW200-15	MTI-23	MTV200CP15	TE-1164
C4	200 15V	175007-024	CRE481A	EA15-250	NLW200-15	MTI-23	MTV200CP15	TE-1164
C5	100 15V	175007-015	CRE473A	EP15-100	NLW100-15	MTI-19	MTV100CF15	TE-1162
C6	100 15V	175007-015	CRE473A	EP15-100	NLW100-15	MTI-19	MTV100CF15	TE-1162
C7	30 6V	175007-010	BCD6035	EP6-50	NLW30-6	MTI-13	MTV30CB25	TE-1092
C8	50 3V	175007-012	BCD3050	EP6-50	NLW50-3	MTI-15	MTV50CB15	TE-1058
C9	100 12V	175007-025	BCD12100	EP15-100	NLW100-12	MTI-19	MTV100CF15	TE-1135
C10	100 6V	175007-022	BCD6100	EP6-100	NLW100-12	MTI-21	MTV100CB6	TE-1102
C11	100 12V	175007-023	BCD12100	EP15-100	NLW100-12	MTI-19	MTV100CF15	TE-1135
C12	30 6V	175007-010	BCD6035	EP6-50	NLW30-6	MTI-13	MTV30CB25	TE-1092
C13	5 6V	175007-009	BCD6005	EP30-5	NLW5-15	MTI-3	MTV5CB50	TE-1084
C14	100 3V	175007-013	CRE223A	EP6-100	NLW100-3	MTI-21	MTV100CB6	TE-1059.5
C15	30 6V	175007-010	BCD6035	EP6-50	NLW30-6	MTI-13	MTV30CB25	TE-1092
C16	500 10V	175007-016	PRS1170	EA15-500	BR500-12	QTI-30	MTV500DN15	TL-1141
C17	30 6V	175007-010	BCD6035	EP6-50	NLW30-6	MTI-13	MTV30CB25	TE-1092
C18	50 3V	175007-012	BCD3050	EP6-50	NLW50-3	MTI-15	MTV50CB15	TE-1058
C19	100 12V	175007-023	BCD12100	EP15-100	NLW100-12	MTI-19	MTV100CF15	TE-1135
C20	100 6V	175007-022	BCD6100	EP6-100	NLW100-12	MTI-21	MTV100CB6	TE-1102
C21	100 12V	175007-023	BCD12100	EP15-100	NLW100-12	MTI-19	MTV100CF15	TE-1135
C22	30 6V	175007-010	BCD6035	EP6-50	NLW30-6	MTI-13	MTV30CB25	TE-1092
C23	5 6V	175007-009	BCD6005	EP30-5	NLW5-15	MTI-3	MTV5CB50	TE-1084
C24	100 3V	175007-013	CRE223A	EP6-100	NLW100-3	MTI-21	MTV100CB6	TE-1059.5
C25	30 6V	175007-010	BCD6035	EP6-50	NLW30-6	MTI-13	MTV30CB25	TE-1092
C26	500 10V	175007-016	PRS1170	EA15-500	BR500-12	QTI-30	MTV500DN15	TL-1141
C27	10 15V	175007-021	BCD15010	EP15-10	NLW10-15	MTI-5	MTV10CB50	TE-1155

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCOPART No.	MALLORY PART No.	SPRAGUE PART No.
C30	100		NPO-DI 100	DTZ-100	CV601CG101K	CCTO-101	CNO310	10TCC-T10
C31	.05		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C32	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TC-S10
C33	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TC-S10
C34	.02		TTD-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20
C35	.03		TTD-03	CK-303		CCD-303	GP130	TG-S30
C36	.04		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C37	.05		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C38	100		NPO-DI 100	DTZ-100	CV601CG101K	CCTO-101	CNO310	10TCC-T10
C39	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C40	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C41	.02		TTD-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20
C42	.03		TTD-03	CK-303		CCD-303	GP130	TG-S30
C43	.04		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C44	.04		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C45	.04		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C46	.02		TTD-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20
C47A	300	#175007-002						
B	300							
C48A	300	#175007-002						
B	300							

Ranger Part Number

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			RANGER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Volume	10K					
B	Volume	10K					
R2A	Balance	20K					
B	Tone	10K					
C	Tone	10K					
R3	Bias	500Ω	175007-057	T-500		X201R501B	MTC52L1
R4	Bias	500Ω	175007-057	T-500		X201R501B	MTC52L1

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	RANGER PART No.			IRC PART No.	WORKMAN PART No.	RANGER PART No.
R31	6Ω (Cold) Thermistor			175007-075	R56	6Ω (Cold) Thermistor			175007-075
R34	6Ω (Cold) Thermistor			175007-075	R59	6Ω (Cold) Thermistor			175007-075

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				
		RANGER PART No.	MEISSNER Part No.	MERIT PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (10uh)	175007-104	19-1005	BC-566	4612	T860
L2	RF Choke (10uh)	175007-104	19-1005	BC-566	4612	T860

FILTER CHOKE

ITEM No.	RATINGS		REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	RANGER PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	
L3		.8Ω	2mh	175007-102				
L4		.4Ω	8mh	175007-103				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	RANGER PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	3, 6	1	1	175007-101					
T2	3, 6	1	1	175007-101					

TAPE HEADS

ITEM NO.	MEASURED			PART NO.	NORTRONICS PART NO.	DESCRIPTION
	INDUCTANCE	BIAS/ERASE VOLTS (RMS)	BIAS FREQ.			
M1	370mh			175007-123	5800 *	8 Track Stereo Play

* Cement to Original Mount

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	1.5Amp	175007-113		AGC1 1/2	HDJ	31201.5	155020	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
K1	Solenoid	175007-121	
M2	Motor	175007-122	
S1	Polarity Switch	175007-111	
S2	On-Off Switch	175007-144	
S3	Manual Track Sel. Sw	175007-145	
S4	Automatic Track Sel. Sw.	175007-124	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Knob, Volume or Tone	175007-147	Knob, Fine Tuning	175007-162
Knob, Balance	175007-148	Door Assembly	175007-151
Knob, Dummy	175007-153		

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)

RANGER MODEL RR-41-T



PHOTOFACT[®] with

CIRCUITRACE[®]



TRADE NAME : Sterling Models UDR-100, UDR-102

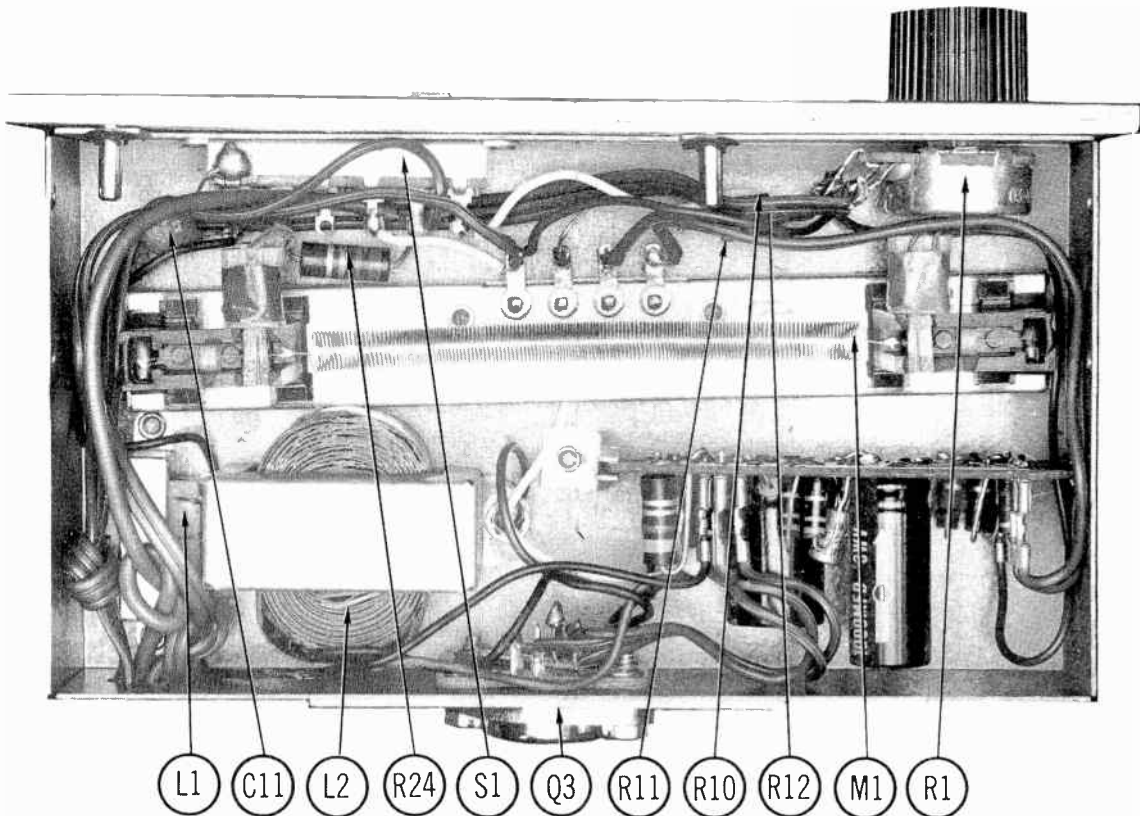
SUPPLIER : For Current Address, See Annual Index.

TYPE SET : 3-Transistor Reverberation Unit

POWER SUPPLY : 12-Volt Storage Battery

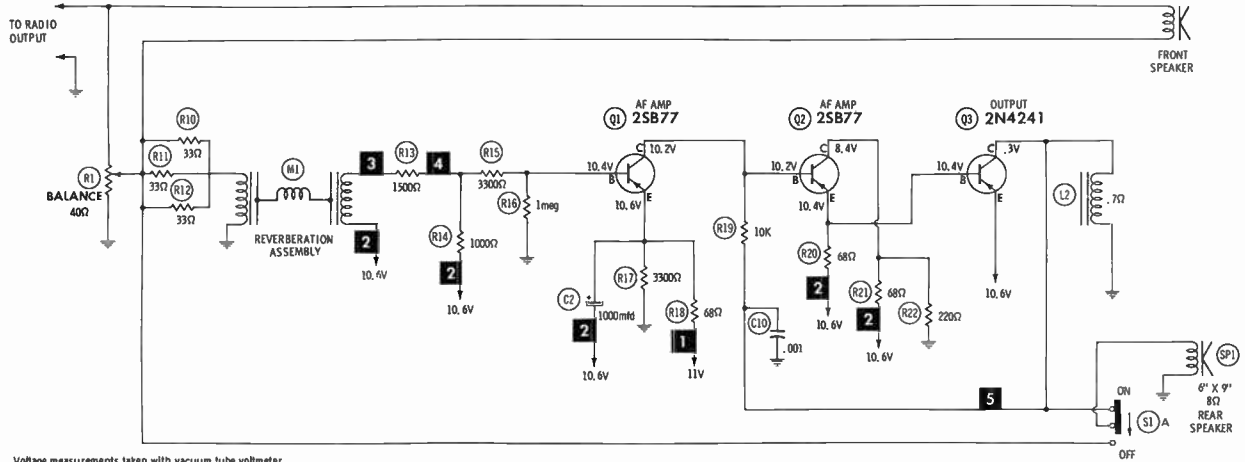
RATING : .525 Amp. @ 12.6 Volts DC

STERLING MODELS UDR-100, UDR-102



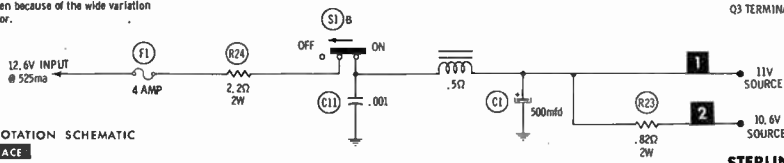
HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

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1. Voltage measurements taken with vacuum tube voltmeter.
2. All controls set for normal operation, no signal applied.
3. Measured values are from socket pin or terminal to common ground.
4. All terminals viewed from bottom unless otherwise designated.
5. Numbers assigned to terminals may not be found on the unit.
6. Supply voltage maintained at rated value for voltage readings.
7. Resistance measurements not given because of the wide variation in internal resistance of transistor.

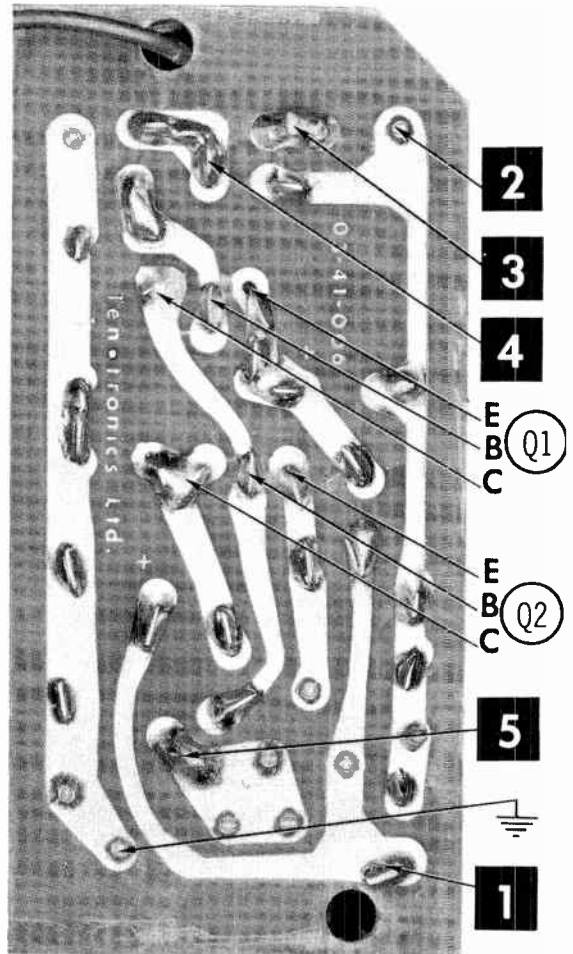
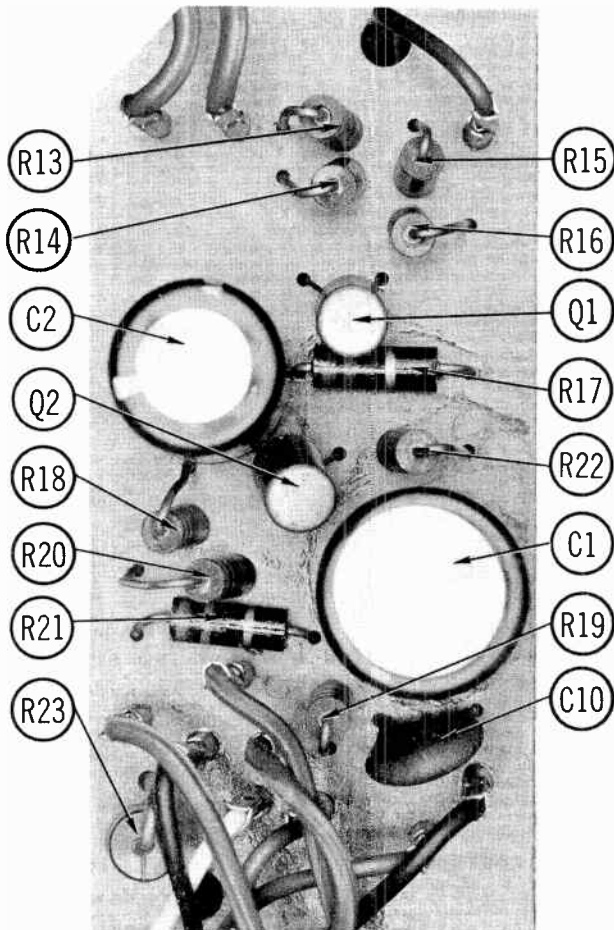
Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.



A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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STERLING MODELS UDR-100, UDR-102



A Howard W. Sams CIRCUITRACE® Photo

STERLING MODELS UDR-100, UDR-102

PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	
Q1	2SB77	AF Amp.	DS-26	GE-2	TR-05	SK-3004	PNP
Q2	2SB77	AF Amp.	DS-26	GE-2	TR-05	SK-3004	PNP
Q3	2N4241	Output	DS-520	GE-3	TR-01	SK-3009	PNP *

* When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	STERLING PART No.	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	500 15V	03-11-104	BCD15500					
C2	1000 3V						TC310	

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	.001		DI-1000	DM-102	JBS801Y P120K	CCD-102	SM210	5GAB-D10
C11	.001		DI-1000	DM-102	JBS801Y P120K	CCD-102	SM210	5GAB-D10

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			STERLING PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Balance	40Ω 2W	03-44-606				

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	STERLING PART No.			IRC PART No.	WORKMAN PART No.	STERLING PART No.
R23	.82Ω 2W	BWH.82	WS.82		R24	2.2Ω 2W	BWH2.2	WS2.2	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	STERLING PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L1	.525 ma	.5Ω	3.5 mh		R-4095	TC-2	TR-157	TY17X1	

CHOKE (AUDIO OUTPUT)

ITEM No.	INDUCTANCE	REPLACEMENT DATA					NOTES
		STERLING PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L2	13 mh				TR-152		

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA			NOTES
		STERLING PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6" x 9" PM 8Ω	03-48-024	P6X9UB	69A2Z10	

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA							
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.	
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	
F1	AGC 4 Amp.	03-25-003	03-01-038	AGC 4	HDJ	312004	155020		

MISCELLANEOUS

ITEM No.	PART NAME	STERLING PART No.	NOTES
M1 S1	Reverberation Ass'y On-Off Switch	03-64-001 03-63-001	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

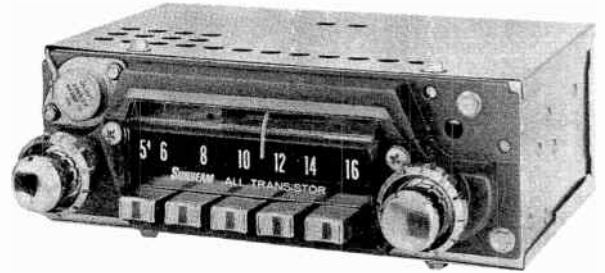
ITEM	PART No.	ITEM	PART No.
Knob	03-29-011		



PHOTOFACT[®] with

CIRCUTRACE[®]

TRADE NAME : Sunbeam Model 7BSU (1967 Sunbeam)
 SUPPLIER : For Current Address, See Annual Index.
 TYPE SET : 6 Transistor AM Receiver
 POWER SUPPLY : 12 Volt Storage Battery
 RATING : 1.2 Amp. @ 12.6 Volts DC



SUNBEAM MODEL 7BSU

ALIGNMENT INSTRUCTIONS

Check for specified source voltage.
 Use only enough generator output to provide a usable indication.
 Suggested Alignment Tools:

A1, A2. GENERAL CEMENT: 9296, 9297, 9300
 WALSCO: 2510, 2546, 2547
 A5 thru A7. GENERAL CEMENT: 9440
 WALSCO: 2501

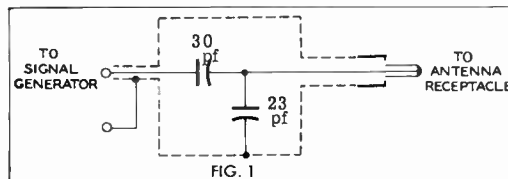
PUSH-BUTTON ADJUSTMENT

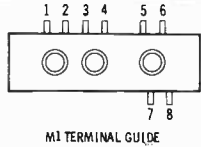
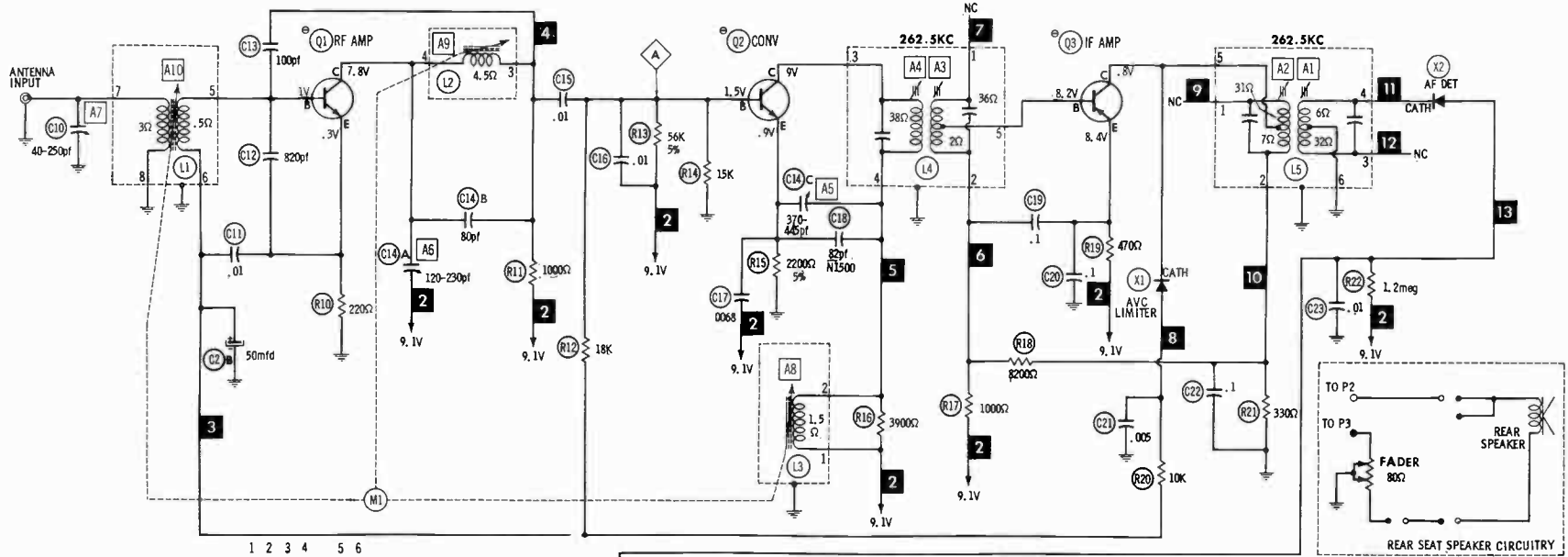
1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point A , low side to ground.	262.5KC (400% Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1605KC	"	"	A5, A6, A7	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. IF necessary, back tuning cores (A8, A9, A10) out of coils but not out of forms. Repeat step 2.						
3.	Thru dummy (Fig. 1) to antenna receptacle.	1000KC	Tune to Signal.	Output Meter across voice coil.	A8, A9, A10	Adjust for maximum. Repeat steps 2 & 3 until no further improvement is noted.

With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and adjust A7 for maximum output.

Antenna Adjustment (A7) located center rear.

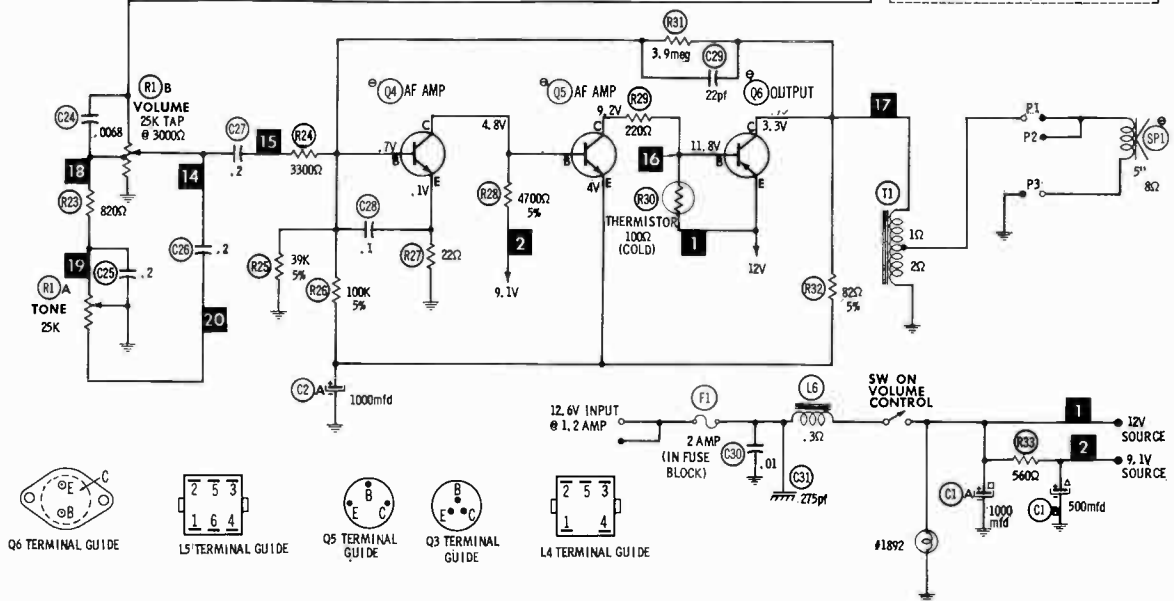
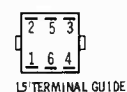




Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.

NC No Connection.

- ⊙ See parts list
- 1. Voltage measurements taken with vacuum tube voltmeter.
- 2. All controls set for normal operation, no signal applied.
- 3. Measured values are from socket pin or terminal to common ground.
- 4. All terminals viewed from bottom unless otherwise designated.
- 5. Numbers assigned to terminals may not be found on the unit.
- 6. Supply voltage maintained at rated value for voltage readings.
- 7. Resistance measurements not given because of the wide variation in internal resistance of transistor.



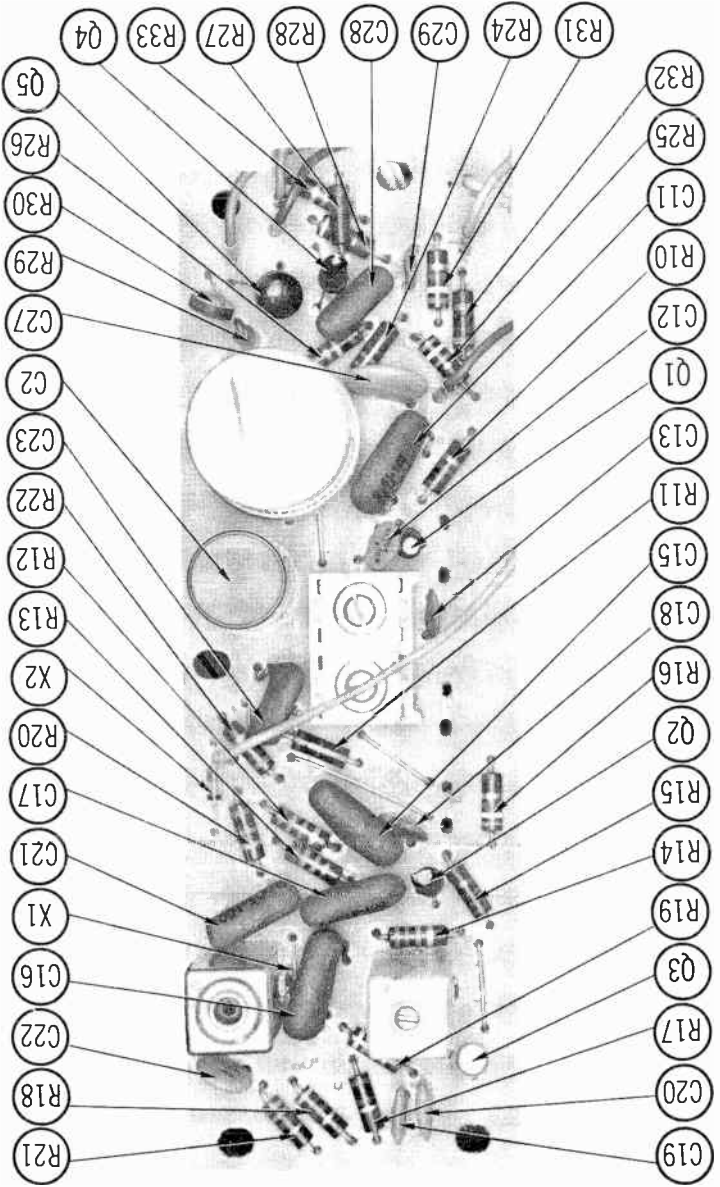
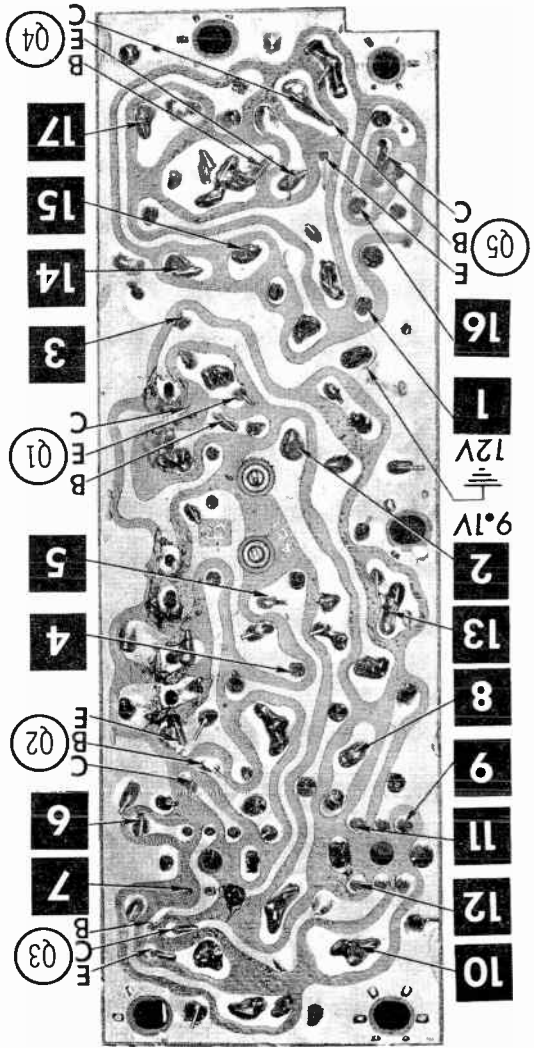
A PHOTOFAC STANDARD NOTATION SCHEMATIC with CIRCUITRACE

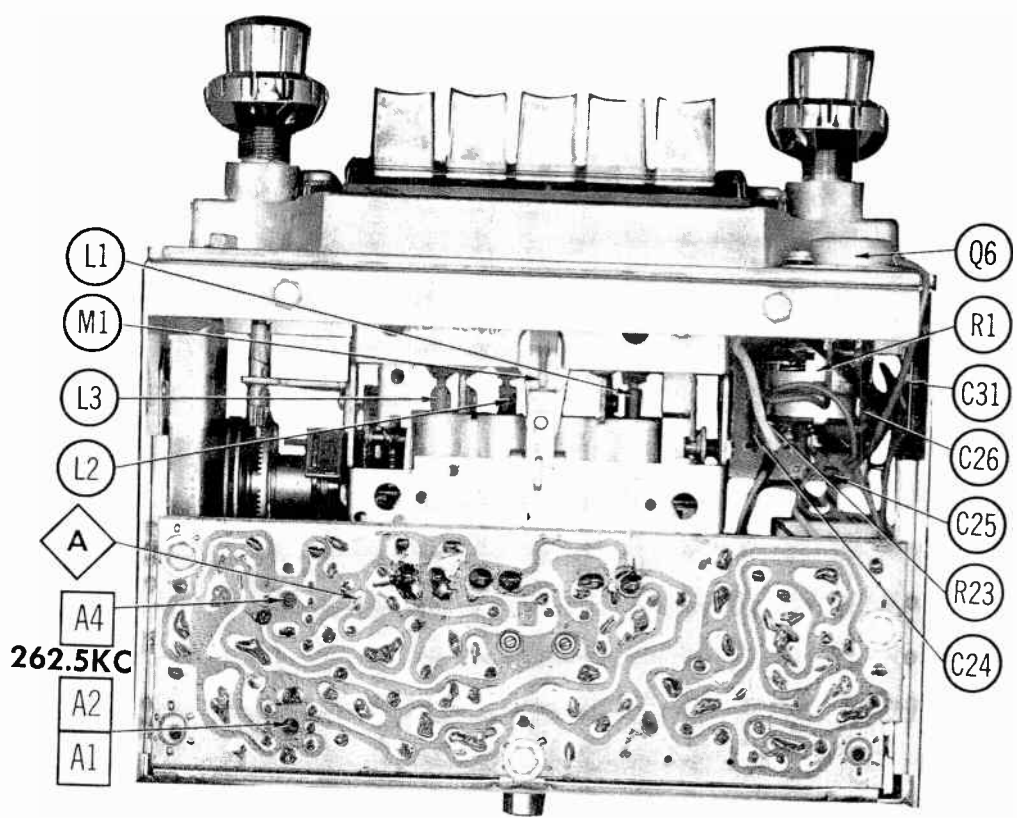
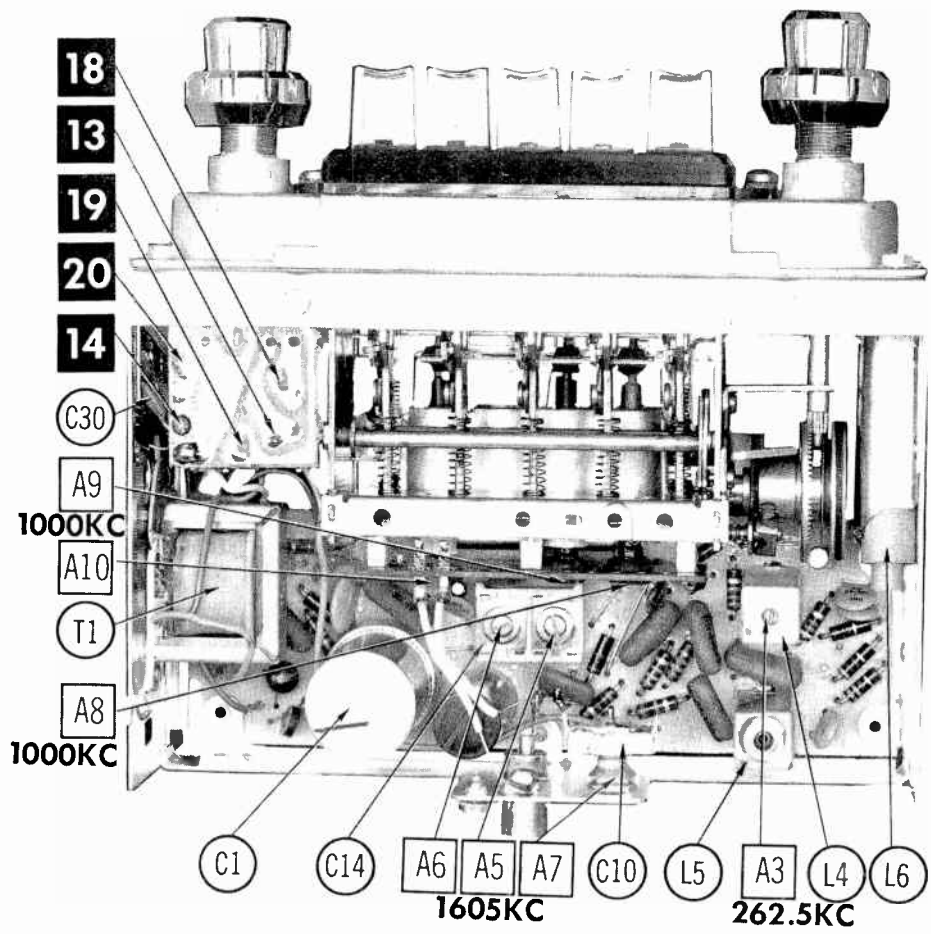
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SUNBEAM MODEL 7BSU

SUNBEAM MODEL 7BSU

Howard W. Sams CIRCUITRACE® Photo





PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES	BENDIX PART No.
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.		
Q1		RF Amp. Converter IF Amp. AF Amp. AF Amp. AF Output	D8-75	GE-11	SK-3018	NPN	2093308-0701
Q2			D8-75	GE-11	SK-3018	NPN	2093308-0702
Q3			D8-26	GE-9	SK-3008	PNP	2091241-0719
Q4			D8-86	GE-10	SK-3020	NPN	2092800-0715
Q5			D8-86	GE-10	SK-3020	NPN	2092800-0713
Q6			D8-520	GE-3	SK-3009	PNP *	2091859-0723

* When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS & DIODES		RECTIFIERS		
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	RCA PART No.	SARKES TARZIAN PART No.
X1		2092055-0001	1N34AS	1N34A			
X2		2092055-0001	1N34AS	1N34A			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		BENDIX PART No.	REPLACEMENT DATA			
	CAP.	VOLT.		AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.
C1A	1000	16	2091503-0714				
B	500	16					
C2A	1000	4	2092246-0705	BCD1.5-3190050			PCL-2185.2
B	50	4				PET295	

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	40-250	2091504-0007				464		
C11	.01 100V		DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10
C12	820		DI-820	DD-821	JBY601YP821K	CCD-821	GP382	10TS-T82
C13	100		NPO-DI100	DTZ-100	CV601CG101K	CCD-101	CN0310	10TCC-T10
C14A	120-230	2092422-0712						
B	80							
C	370-445							
C15	.01 100V		DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10
C16	.01 100V		DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10
C17	.0088 100V		DBE8D68	CPR-6800J	DPMS6D68	6DP-1-682	PVC6268	6PS-D68
C18	82 N1500					*	*	*
C19	.1		TTD-1	CK-104	HCZ3R0XR104P		TA010	TG-P10
C20	.1		TTD-1	CK-104	HCZ3R0XR104P		TA010	TG-P10
C21	.005 100V		DBE6D5	CPR-5000J	DPMS6D5	6DP-1-502	PVC625	6PS-D50
C22	.1		TTD-1	CK-104	HCZ3R0XR104P		TA010	TG-P10
C23	.01 25V		DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10
C24	.0068		DI-6800	DD-682	BYX601ZU103P	CCD-682	GP268	10TS-D68
C25	.2			UK10-204	HCZ3R0XR224P		MAG3022	
C26	.2			UK10-204	HCZ3R0XR224P		MAG3022	
C27	.2			UK10-204	HCZ3R0XR224P		MAG3022	
C28	.1 25V		DBE2P1		DMF2P1	2DP-3-104	PVC201	2PS-P10
C29	22		NPO-DI22	DTZ-22	CY601CG220K	CCTO-220	CN0422	10TCC-Q22
C30	.01		TTD-01	CK-103	HCZ3R0XR103P	CCD-103	TA110	TG-S10
C31	275	2093050-0705						

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Bendix Part Number

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA					
			BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA	Tone Volume & Switch	25K 25K Tap @ 3000Ω	2094545-0705	F2-25K, R14-25K, FFS115, RFS207, AK38, KR-4			†QJ-2242A	
B								

† "CONCENTRIKIT" Equivalent: K8 Kit with Base Elements and Shafts:
B13-120, P17-123 (Panel), B19-119X, R9-202 (Rear),
R-5 (Tab Mount), T6-1 (Switch)

"SNAPTROL" Equivalent: BU7, CF11, CR50T, SF13, SR49, GC.

SUNBEAM MODEL 7BSU

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	BENDIX PART No.			IRC PART No.	WORKMAN PART No.	BENDIX PART No.
R30	100Ω (Cold) Thermistor			220629-12					

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				
		BENDIX PART No.	MEISSNER Part No.	MERIT PART No.	MILLER PART No.	WORKMAN PART No.
L1	Antenna	①				
L2	RF	①				
L3	Oscillator	①				
L4	Input IF	2094080-0701				
L5	Output IF	2094080-0702			8006	

① Part of M1, Part #2090131-0094.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	BENDIX PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L6	1.2A DC	.3Ω	140MH	2082050-0725					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BENDIX PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
	T1	17Ω Tap @	8Ω	2082245-0707				

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA			NOTES
		BENDIX PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5" PM 8Ω	2094857-0701		5A128	

FUSE DEVICES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
F1	AGA 2	2Amp. 32V	2091811-0007	In Fuse Block	301002			AGA 2	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Tuner Coil Assembly	2094086-0508 2090131-0094	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Escutcheon	2094551-0503	Knob, Tuning or Volume	2091420-0502
Dial Glass	2094767-0003	Knob, Tone or Dummy	2094480-0001
Push Button	2056519-0001	Dial Pointer	2090129-0076

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)



PHOTOFACT[®] with

CIRCUITRACE[®]

TRADE NAME :Tenna MODELS

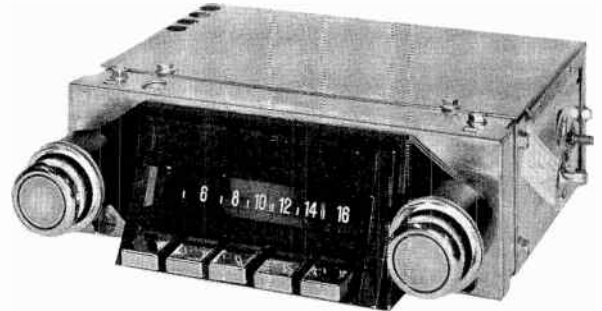
- BU-67PB (1966 & 1967 Buick)
- CII-67PB (1966 & 1967 Chevy II)
- CA-67PB (1967 Camaro)
- CH-67PB (1967 Chevrolet)
- CHT-67M, PB (1967 Chevrolet Truck)
- CL-67PB (1966 & 1967 Chevelle)
- CO-67PB (1966 & 1967 Corvair)
- OF-67PB (1967 Oldsmobile F-85)
- OL-67PB (1967 Oldsmobile)
- PO-67PB (1967 Pontiac)
- SP-67PB (1966 & 1967 Buick Special)
- TE-67PB (1966 & 1967 Pontiac Tempest)

SUPPLIER: For Current Address, See Annual Index

TYPE SET: 5 Transistor AM Receiver

POWER SUPPLY: 12 Volt Storage Battery

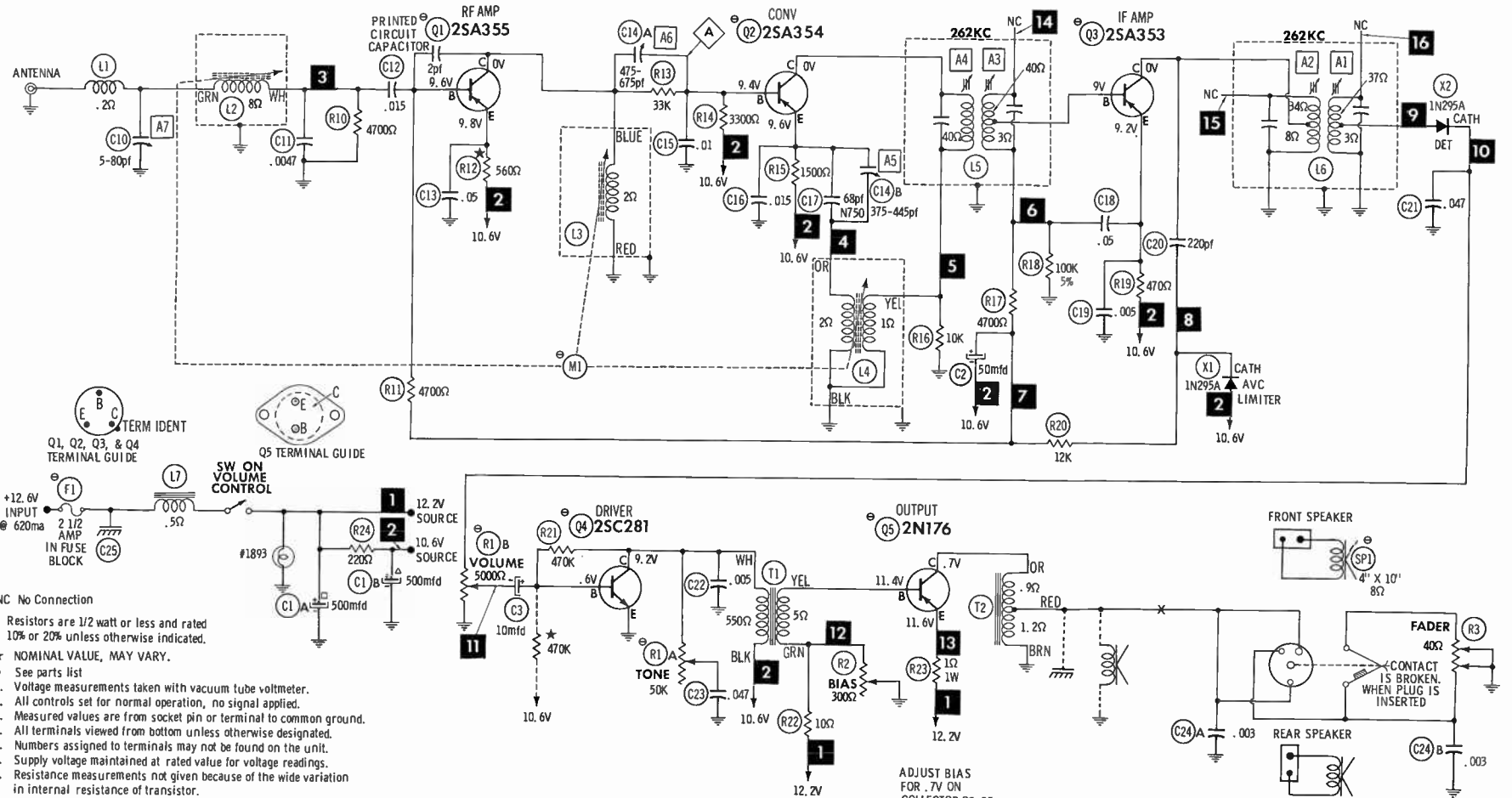
RATING: .62 Amp. @ 12.6 Volts DC



ALIGNMENT INSTRUCTIONS

<p>Check for specified source voltage. Use only enough generator output to provide a usable indication. Suggested Alignment Tools: A1 thru A4. GENERAL CEMENT: 8606, 8606L, 8869 WALSCO: 2543, 2544, 2588 A5, A6, A7. GENERAL CEMENT: 8290, 8868, 9087 WALSCO: 2525, 2528, 2587</p>		<p>TO SIGNAL GENERATOR 30pf TO ANTENNA RECEPTACLE 30pf DUMMY ANTENNA</p>		<p>PUSH-BUTTON ADJUSTMENT</p> <ol style="list-style-type: none"> 1. Pull button out. 2. Tune manually to desired station. 3. Press button in firmly. 4. Repeat for remaining buttons. 	
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1. High side thru .1mfd to point , low side to ground.	262KC (400% Mod.)	High freq. end stop.	Output meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2. Thru dummy antenna to antenna receptacle.	1615KC	"	"	A5, A6, A7	"
<p>With radio installed in car and antenna extended to desired height, tune in a weak station near 1400KC and adjust A7 for maximum output. Antenna adjustment (A7) is located right side above antenna receptacle.</p>					

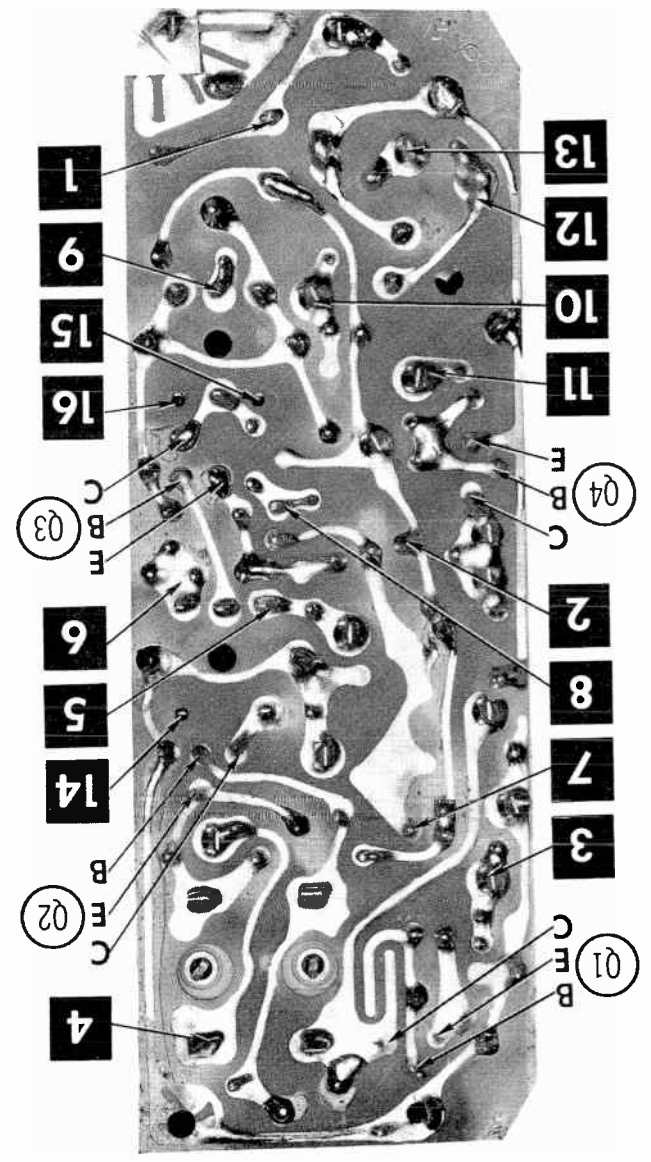
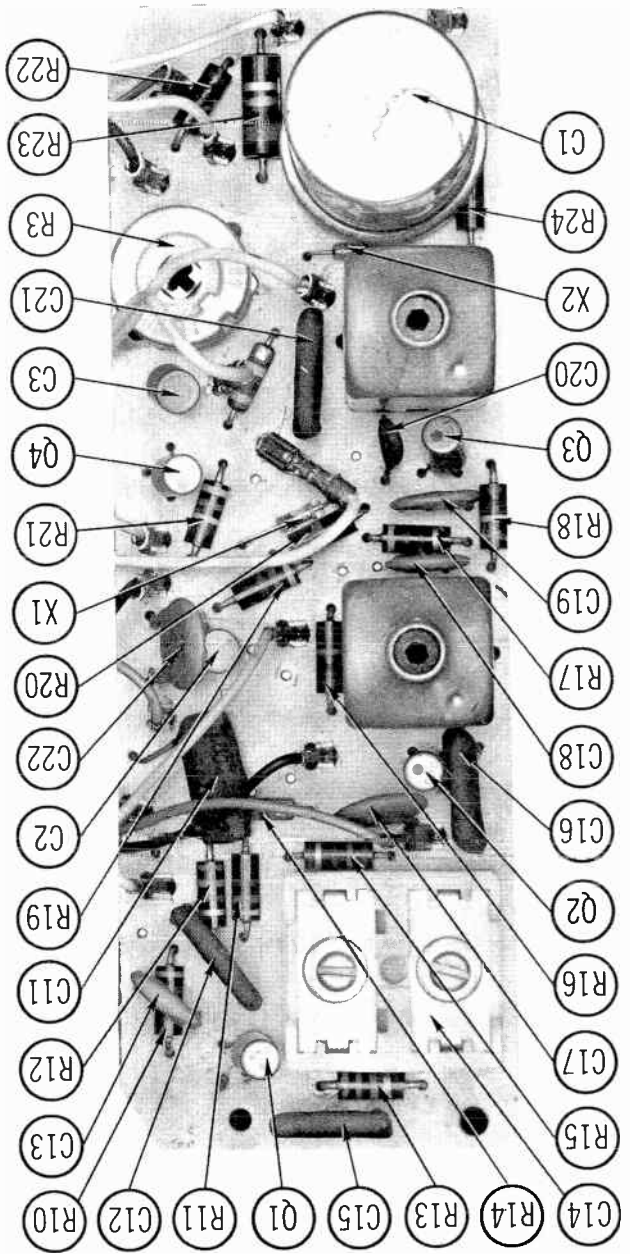
TENNA MODELS BU/CII/CA/CH/CL/CO/OF/OL/PO/SP/TE-67PB, CHT-67PB/M

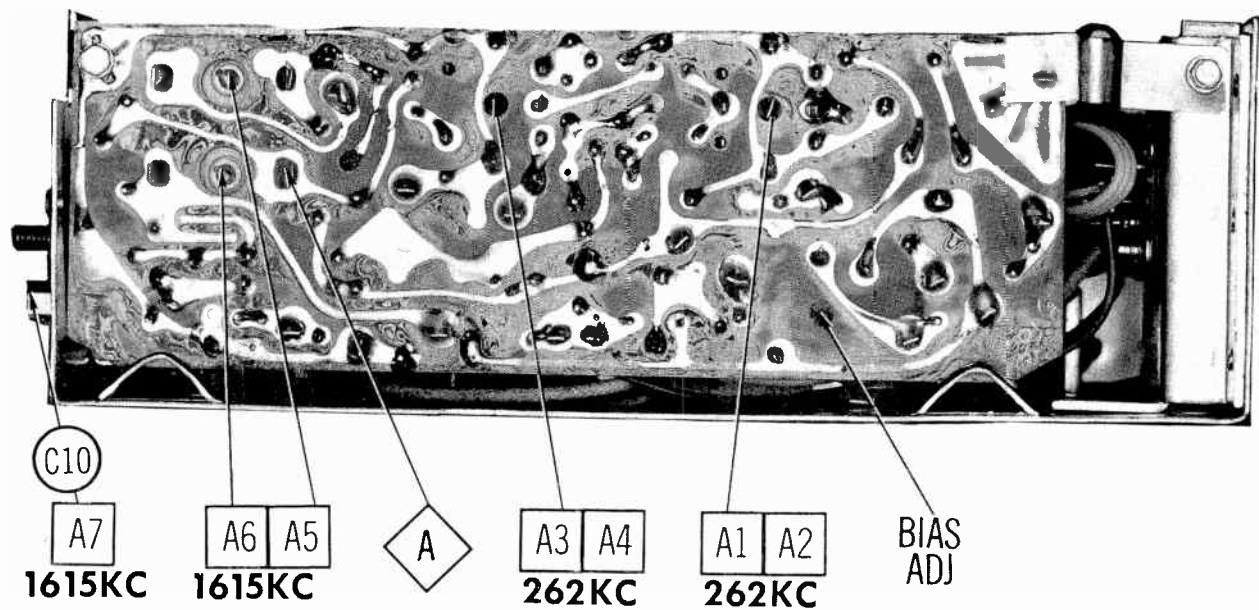
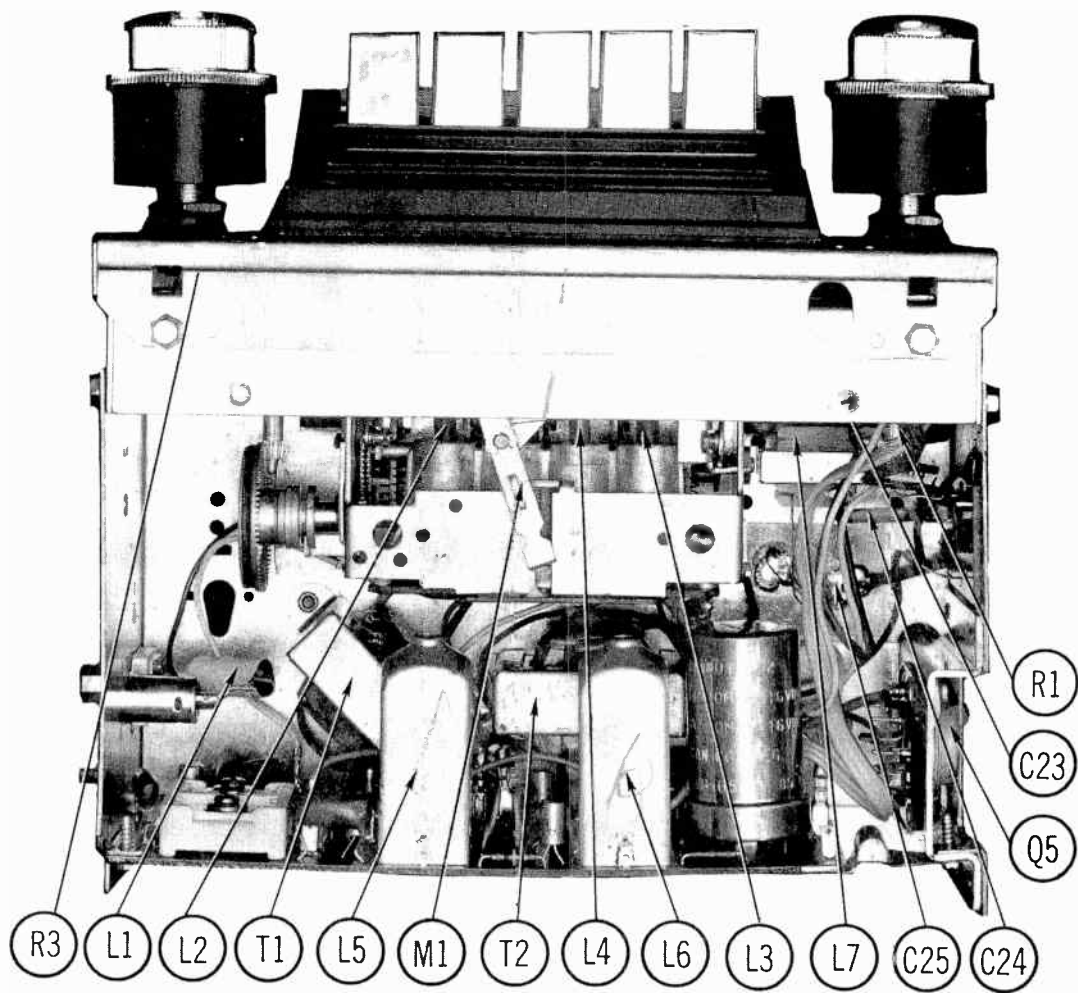


- NC No Connection
Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.
- ★ NOMINAL VALUE, MAY VARY.
⊕ See parts list
1. Voltage measurements taken with vacuum tube voltmeter.
 2. All controls set for normal operation, no signal applied.
 3. Measured values are from socket pin or terminal to common ground.
 4. All terminals viewed from bottom unless otherwise designated.
 5. Numbers assigned to terminals may not be found on the unit.
 6. Supply voltage maintained at rated value for voltage readings.
 7. Resistance measurements not given because of the wide variation in internal resistance of transistor.

A PHOTOFACIT STANDARD NOTATION SCHEMATIC
with **CIRCUITRACE**[®]
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**TENNA MODELS BU/CII/CA/CH/CL/CO/
OF/OL/PO/SP/TE-67PB, CHT-67PB/M**





PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	
Q1	2SA355 (2N1637)	RF Amp	DS-25	GE-9	TR-06	SK-3008	PNP
Q2	2SA354 (2N1639)	Converter	DS-25	GE-9	TR-06	SK-3008	PNP
Q3	2SA353 (2N1638)	IF Amp	DS-25	GE-9	TR-06	SK-3008	PNP
Q4	2SC281 (2N2712)	Driver	DS-66	GE-10	TR-21	SK-3020	NPN
Q5	2N176	Output	DS-520	GE-3	TR-01	SK-3009	PNP *

* When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS & DIODES		RECTIFIERS		
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	RCA PART No.	SARKIS TARZIAN PART No.
X1		1N295A	1N295	1N295			
X2		1N295A	1N295	1N295			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		TENNA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500 16V	111001-512	PWH2-02-40		BPC010	XC2-45	PFP200.64	PCL-2177
B	500 16V							
C2	50 3V	111002-104	BCD3050	EP6-50	NLW50-3	MT1-15	MTV50CB15	TE-1058
C3	10 15V	111002-103	BCD15010	EP15-10	NLW10-15	MT1-5	MTV10CB50	TE-1155

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	5-80	#110000-087				S462		
C11	.0047 100V		DBE6D47	CPR-4700J	DMF6D47	6DP-1-472	PVC6247	6PS-D47
C12	.015 100V		DBE4S15		DMF4S15	4DP-1-153	PVC6115	4PS-S15
C13	.05		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C14A	475-875	#110000-080						
B	375-445							
C15	.01 100V		DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10
C16	.015		DBE4S15		DMF4S15	4DP-1-153	PVC6115	4PS-S15
C17	68 N750		N750-DI 68	DTN-68	CS601UJ680K	CCTN-680	CN7468	10TCU-Q68
C18	.05 100V		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C19	.005		TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C20	.220		DI-220	DD-221	JBZ601YP221K	CCD-221	GP322	10TS-T22
C21	.047 100V		DBE2S47		DMF2S47	4DP-3-473	PVC2147	2PS-S47
C22	.005		TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C23	.047 100V		DBE2S47		DMF2S47	4DP-3-473	PVC2147	2PS-S47
C24A	.003		DI-3000	DM-302	BYS601ZU302P	CCD-302	GP230	10TS-D30
B	.003		DI-3000	DM-302	BYS601ZU302P	CCD-302	GP230	10TS-D30
C25		#110000-021						

Tenna Part Number

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA					
			TENNA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	Tone	50K	145006-013	F1-50K, R2-5000, FFS108, RFS205, BB104, KR-4			Ⓐ QJ-2208A	Ⓟ UE4847S
B	Volume/Switch	5000Ω						
	Tone	50K	145006-022	F1-50K, R2-5000, FFS109, RFS200, BB106, KR-4			Ⓒ QJ-2209A	Ⓓ UE4845S
	Volume/Switch	5000Ω						
	Tone	50K	145006-020	F1-50K, R2-5000Ω, FFS202, RFS208, BB114, KR-4			Ⓔ QJ-1847A	Ⓙ UE4656S
	Volume/Switch	5000Ω						
	Tone	50K	145007-015	F1-50K, R2-5000, FFS108, RFS200, BB104, KR-4			Ⓖ QJ-2407A	
	Volume	5000Ω						
	Tone	50K	145005-028	F1-50K, R2-5000, FFS201, RFS209, BB114, KR-4			Ⓗ QJ-1847A	Ⓢ UE4656S
	Volume/Switch	5000Ω						
	Tone	50K	146006-025	F1-50K, R2-5000, FFS107, RFS115, BB104, KR-4			Ⓡ QJ-2211A	Ⓛ UE4846S
	Volume/Switch	5000Ω						
	Tone	50K	145005-025	F1-50K, R2-5000, FFS110, RFS202, BB104, KR-4			Ⓣ QJ-1846A	Ⓜ UE4649S
	Volume/Switch	5000Ω						
	Tone	50K	145005-030	F1-50K, R2-5000, FFS114, RFS204, BB110, KR-4			Ⓤ QJ-2150A	Ⓨ UE4655S
	Volume/Switch	5000Ω						

TENNA MODELS BU/CII/CA/CH/CL/CO/OFL/OL/PO/SP/TE-67PB, CHT-67PB/M

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA				
			TENNA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
A	Tone	50K	145006-014	F1-50K, R2-5000		QJ-2212A	UE4848S
B	Volume/Switch	5000Ω	②	FFS105, RFS115, BB104, KR-4			
A	Tone	50K	145006-011	F1-50K, R2-5000		QJ-2213A	UE4844S
B	Volume/Switch	5000Ω	①	FFS113, RFS205			
R2	Bias	300Ω 2W	145000-207	V-300	U39-300	110-300	
R3	Fader	40Ω 2W	145006-002				
	Fader	40Ω 2W	①				
	Fader	40Ω 2W	③				
	Fader	40Ω 2W	⑦				
	Fader	40Ω 2W	⑧				

- ① Used in Model BU67PB
 ② Used in Model CH67PB
 ③ Used in Model CA67PB, CH67PB, CL67PB
 ④ Used in Model CHT67-M, CHT67PB
 ⑤ Used in Model CO67PB
 ⑥ Used in Model OF67PB
 ⑦ Used in Model OL67PB
 ⑧ Used in Model PO67PB
 ⑨ Used in Model SP67PB
 ⑩ Used in Model TE67PB
 ⑪ Alter Bushing to meet requirements.
- ⑫ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-123, P22-115 (Panel), B13-114, R26-206 (Rear), S51 (Bushing), 76-1 (Switch)
- "SNAPTROL" Equivalent: BU8 ①, CF12, CR51, SF11, SR50, GC.
 ⑬ "STA-LOC" Equivalent: FR54L, RU53A, OX1687, IS2562, US41
 ⑭ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-123, P17-118 (Panel), B13-114, R1-130 (Rear), S8 ① (Bushing), 76-1 (Switch)
- "SNAPTROL" Equivalent: BU8 ①, CF12, CR51, SF12, SR47, GC.
 ⑮ "STA-LOC" Equivalent: FR54L, RU53A, OX1562A, IS2062, US41
 ⑯ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-123, P22-203 (Panel), B13-114, R26-215 (Rear), S9 (Bushing), 76-1 (Switch)
- "SNAPTROL" Equivalent: BU8, CF12, CR51, SF18, SR53, GC.
 ⑰ "STA-LOC" Equivalent: FN54L, RU53A, OX2062, IS2562, GC.
 ⑱ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-123, P22-115 (Panel), B13-114, R1-130 (Rear), S51 (Bushing), 76-1 (Switch)
- "SNAPTROL" Equivalent: BU8 ①, CF12, CR51, SF11, SR47, GC.
 ⑲ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-123, P22-115 (Panel), B13-114, R16-127 (Rear), S51 (Bushing), 76-1 (Switch)
- "SNAPTROL" Equivalent: BU8 ①, CF12, CR51, SF11, SR46, GC.
 ⑳ "STA-LOC" Equivalent: FR54L, RU53A, OX1625, IS2187, US41
 ㉑ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-123, P22-121 (Panel), B13-114, R9-202 (Rear), S51 (Bushing), 76-1 (Switch)
- "SNAPTROL" Equivalent: BU8 ①, CF12, CR51, SF13, SR49, GC.
 ㉒ "STA-LOC" Equivalent: FE54A, RU53A, OX1625, IS2187, US41
 ㉓ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-123, P17-129 (Panel), B13-114, R26-206 (Rear), S8 (Bushing), 76-1 (Switch)
- "SNAPTROL" Equivalent: BU8 ①, CF12, CR51, SF15, SR50, GC.
 ㉔ "STA-LOC" Equivalent: FJ54L, RU53A, OX2000, IS2375, US41
 ㉕ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-123, P22-109 (Panel), B13-114, R26-124 (Rear), S51 (Bushing), 76-1 (Switch)
- "SNAPTROL" Equivalent: BU8 ①, CF12, CR51, SF9, SR45, GC.
 ㉖ "STA-LOC" Equivalent: FR54L, RU53A, OX1500A, IS2125, US41
 ㉗ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-123, P17-126 (Panel), B13-114, R26-206 (Rear), S8 (Bushing), 76-1 (Switch)
- "SNAPTROL" Equivalent: BU8 ①, CF12, CR51, SF14, SR50, GC.
 ㉘ "STA-LOC" Equivalent: FO54L, RU53A, OX1812A, IS2312, US41

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				
		TENNA PART No.	MEISSNER Part No.	MERIT PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (5.6uh)	114000-282	19-1008	SW-631	4609	T959
L2	Antenna	①				
L3	RF	①				
L4	Oscillator	①				
L5	Input IF	114000-217	16-6712		8011	
L6	Output IF		16-6719		8012	

① Part of M1

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	TENNA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L7	620ma	.5Ω	3mh	161000-146	C-4124	TC-1	TR-159	TY16XT	

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO			REPLACEMENT DATA				NOTES
				TENNA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	
	PRI.	SEC. 1	SEC. 2					
T1	10	1		161005-003				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
			TENNA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
	PRI.	SEC.						
T2	25Ω Tap	@ 8Ω	161005-001			TR-169		

SPEAKER

ITEM No.	TYPE		REPLACEMENT DATA			NOTES
			TENNA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4" X 10" PM	8Ω	155009-167	P4X10U8	410A2Z10	Model: BU67PB, CHT67PB, CHT67PB
	4" X 10" PM	8Ω	155009-166	P4X10U8	410A2Z10	Model: CI67PB, CH67PB, CL67PB
	4" X 10" PM	8Ω	155009-148	P4X10U8	410A2Z10	Model: CA67PB, OF67PB, OL67PB,
	6" X 9" PM	8Ω	155009-160	P6X9U8	69A2Z10	PO67PB, SP67PB, TE67PB
						Model: CO67PB

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	AGW 2 1/2 Amp AGC 2 Amp	128000-012① 128000-015②	In Fuse Block In Fuse Block	AGW 2 1/2 AGC 2		30302.5 312002		

① Used in Models: BU67PB, OF67PB, OL67PB, PO67PB, TE67PB

② Used in Models: CI67PB, CA67PB, CH67PB, CHT67M, CHT67PB, CL67PB, CO67PB, SP67PB

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Tuner	164005-006	Models: BU67PB, CI67PB, CL67PB, CO67PB, OF67PB, OL67PB, PO67PB, SP67PB, TE67PB
	Tuner	164007-002	Models: CA67PB, CH67PB, CHT67PB
	Tuner	164007-004	Models: CHT67M

CABINETS & CABINET PARTS

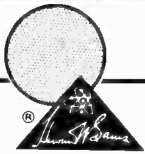
(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
MODEL: BU67PB		MODEL: CO67PB	
Dial Glass	122006-010	Dial Glass	122005-022
Push Button #1	107006-005	Push Button	107005-018
Push Button #2	107006-006	Knob, Tuning or Volume	134007-014
Push Button #3	107006-007	Knob, Tone or Dummy	134005-030
Push Button #4	107006-008	MODEL: OF67PB	
Push Button #5	107006-009	Dial Glass	122006-024
Knob, Tuning or Volume	134007-024	Push Button #1	107000-079
Knob, Tone or Fader	134006-014	Push Button #2	107000-080
MODEL: CI67PB		Push Button #3	107000-081
Push Button	107006-004	Push Button #4	107000-082
Knob, Tuning or Volume	134007-014	Push Button #5	107000-083
Knob, Tone or Dummy	134000-224	Knob, Tuning or Volume	134007-020
MODEL: CA67PB		Knob, Tone	134006-038
Dial Glass	122007-012	Knob, Dummy	134006-040
Push Button	107007-005	MODEL: OL67PB	
Knob, Tuning or Volume	134007-032	Dial Glass	122005-012
Knob, Tone or Fader	134007-034	Push Button	107000-106
MODEL: CH67PB		Knob, Tuning or Volume	134007-020
Dial Glass	122007-008	Knob, Tone or Fader	134007-022
Push Button	107007-005	MODEL: PO67PB	
Knob, Tuning or Volume	134007-014	Dial Glass	122006-006
Knob, Tone or Fader	134007-012	Push Button #1	107000-110
MODELS: CHT67M, CHT67PB		Push Button #2	107000-111
Dial Glass	122007-014	Push Button #3	107000-112
Push Button	107007-006	Push Button #4	107000-113
Knob, Tuning or Volume	134007-032	Push Button #5	107000-114
Knob, Tone or Dummy	134007-038	Knob, Tuning or Volume	134006-010
MODEL: CL67PB		Knob, Tone or Fader	134006-008
Dial Glass	122006-008	MODEL: SP67PB	
Push Button	107006-002	Dial Glass	122000-133
Knob, Tuning or Volume	134007-032	Push Button	107006-010
Knob, Tone or Dummy	134007-028	Knob, Tuning or Volume	134007-024
		Knob, Tone or Dummy	134007-026
		MODEL: TE67PB	
		Dial Glass	122006-006
		Push Button	107000-106
		Knob, Tuning or Volume	134006-010
		Knob, Tone or Dummy	134006-010

WIRING DATA

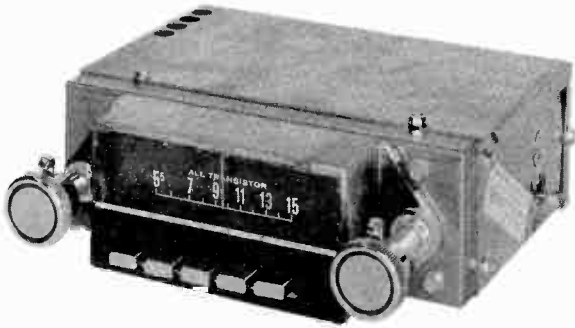
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)

TENNA MODELS BU/CI/CA/CH/CL/CO/OF/OL/PO/SP/TE-67PB, CHT-67PB/M



PHOTOFACT[®] with

CIRCUITRACE[®]



TRADE NAME : Tenna Models

CG-67PB (1967 Cougar) FL-67PB (1967 Fairlane)
 CM-67PB (1967 Comet, 202, Capri) FT-67M (1967 Ford Truck)
 EC-67M (1967 Enconline Track) FO-67PB (1967 Ford)
 FA-67PB (1967 Falcon) MU-67PB (1967 Mustang)

SUPPLIER : For Current Address, See Annual Index

TYPE SET : 5 Transistor AM Receiver

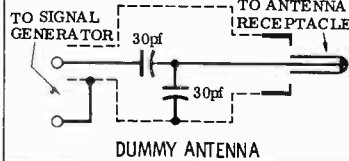
POWER SUPPLY : 12 Volt Storage Battery

RATING : .62 Amp. @ 12.6 Volts DC

ALIGNMENT INSTRUCTIONS

Check for specified source voltage.
 Use only enough generator output to provide a usable indication.
 Suggested Alignment Tools:

A1 thru A4. GENERAL CEMENT: 8606, 8606L, 8869
 WALSCO: 2543, 2544, 2588
 A5, A6, A7. GENERAL CEMENT: 8290, 8868, 9087
 WALSCO: 2525, 2528, 2587

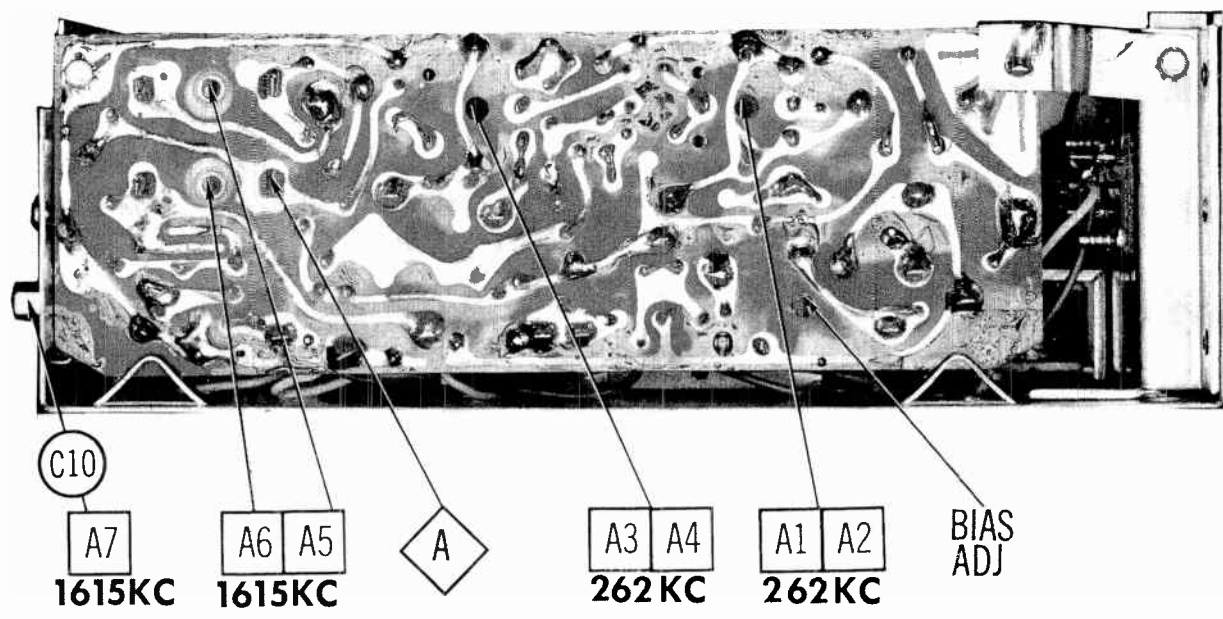
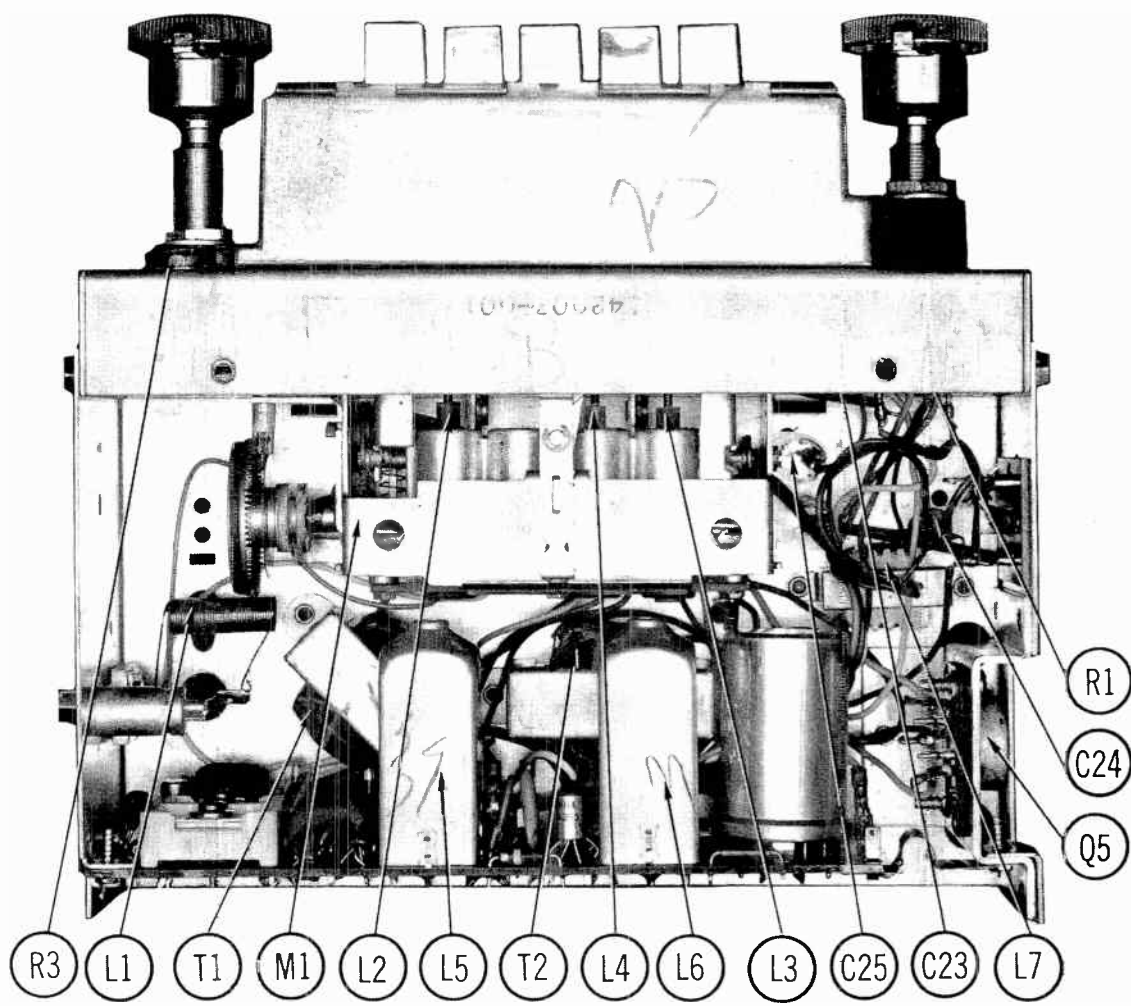


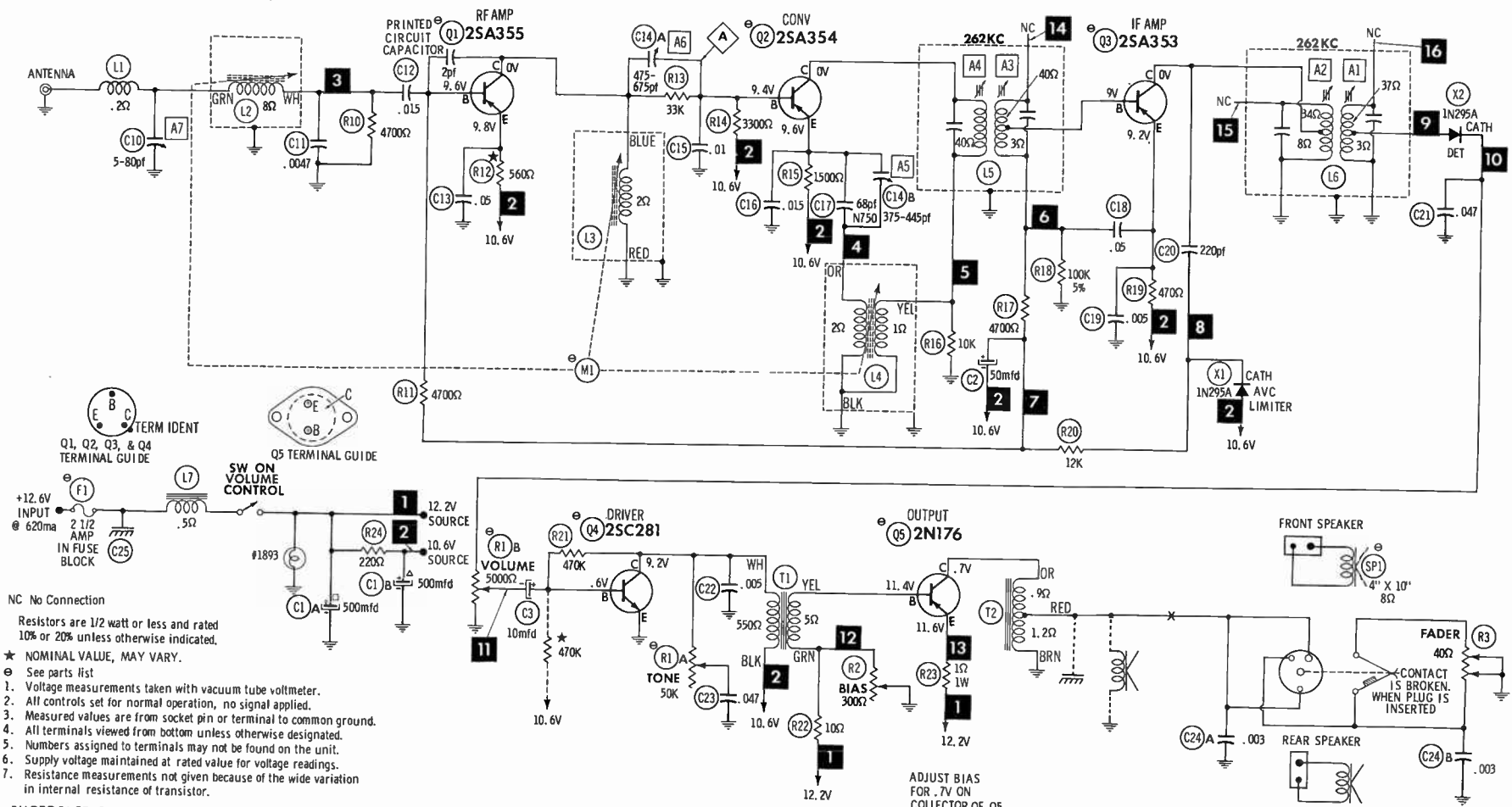
- PUSH-BUTTON ADJUSTMENT**
1. Pull button out.
 2. Tune manually to desired station.
 3. Press button in firmly.
 4. Repeat for remaining buttons.

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1. High side thru .1mfd to point Δ , low side to ground.	262KC (400% Mod.)	High freq. end stop.	Output meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2. Thru dummy antenna to antenna receptacle.	1615KC	"	"	A5, A6, A7	"

With radio installed in car and antenna extended to desired height, tune in a weak station near 1400KC and adjust A7 for maximum output. Antenna adjustment (A7) is located right side above antenna receptacle.

TENNA MODELS CG/CM/FA/FL/FO/MU-67PB, EC/FT-67M



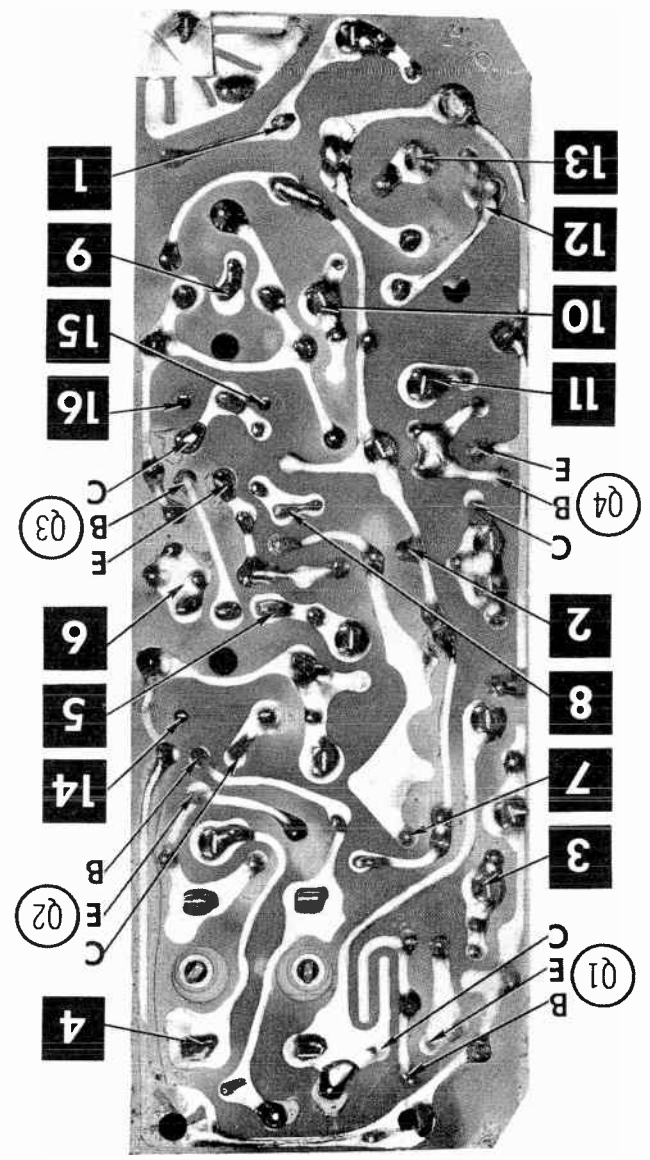
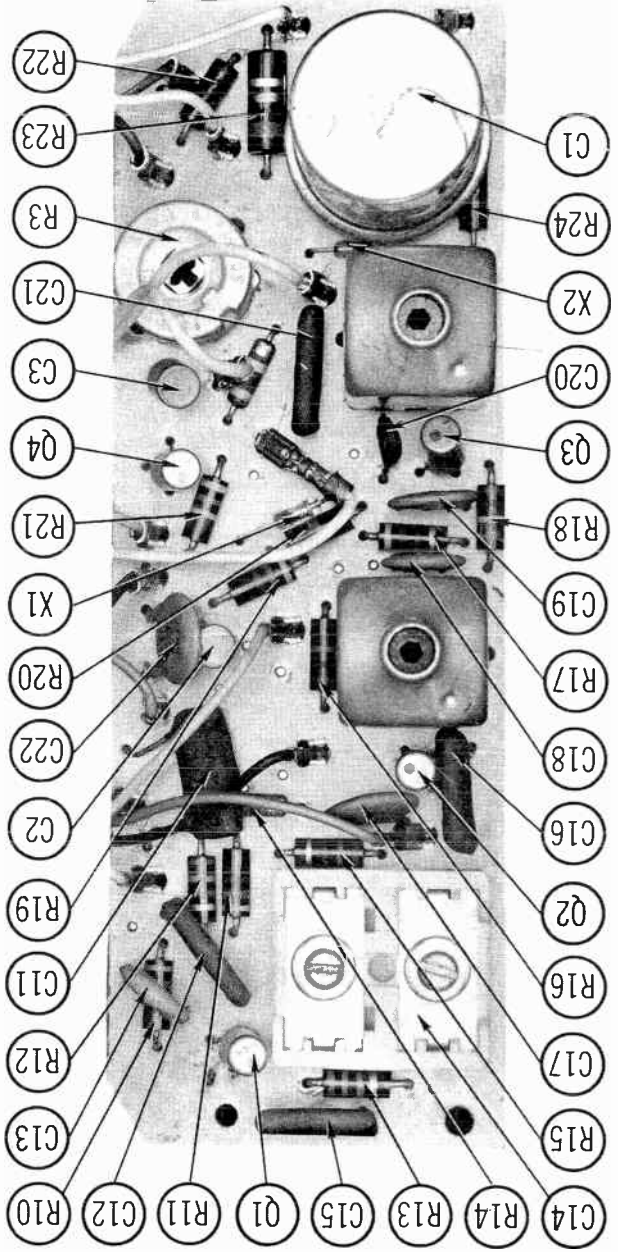


NC No Connection
Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.

- ★ NOMINAL VALUE, MAY VARY.
- ⊕ See parts list
- 1. Voltage measurements taken with vacuum tube voltmeter.
- 2. All controls set for normal operation, no signal applied.
- 3. Measured values are from socket pin or terminal to common ground.
- 4. All terminals viewed from bottom unless otherwise designated.
- 5. Numbers assigned to terminals may not be found on the unit.
- 6. Supply voltage maintained at rated value for voltage readings.
- 7. Resistance measurements not given because of the wide variation in internal resistance of transistor.

A PHOTOFACE STANDARD NOTATION SCHEMATIC
with **CIRCUITRACE**
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**TENNA MODELS CG/CM/FA/FL/FO/
MU-67PB, EC/FT-67M**



PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8681 (3/8 In.) or 8670 (3/4 In.)

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	
Q1	2SA355 (2N1637)	RF Amp	DS-25	GE-9	TR-06	SK-3008	PNP
Q2	2SA354 (2N1639)	Converter	DS-25	GE-9	TR-06	SK-3008	PNP
Q3	2SA353 (2N1638)	IF Amp	DS-25	GE-9	TR-06	SK-3008	PNP
Q4	2SC281 (2N2712)	Driver	DS-66	GE-10	TR-21	SK-3020	PNP
Q5	2N176	Output	DS-520	GE-3	TR-01	SK-3009	PNP *

* When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS & DIODES		RECTIFIERS		
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	RCA PART No.	SARKES TARZIAN PART No.
X1		1N295A	1N295	1N295			
X2		1N295A	1N295	1N295			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		TENNA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500 16V	111001-512	PWH2-02-40		BPC010	XC2-45	PF200, 64	PCL-2177
C2	50 3V	111002-104	BCD3050	EP6-50	NLW50-3	MT1-15	PET1575	TE-1058
C3	10 15V	111002-103	BCD15010	EP15-10	NLW10-15	MT1-5	PET1760	TE-1155

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	5-80	#110000-087				S462		
C11	.0047 100V		DBE6D47	CPR-4700J	DMF6D47	4DP-1-472	PVC6247	6PS-D47
C12	.015 100V		DBE4S15		DMF4S15	4DP-1-153	PVC6115	4PS-S15
C13	.05		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C14A	475-675	#110000-080						
C14B	375-445							
C15	.01 100V		DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10
C16	.015		DBE4S15		DMF4S15	4DP-1-153	PVC6115	4PS-S15
C17	68 N750		N750-DI 68	DTN-68	CS601UJ680K	CCTN-680	CN7468	10TCU-Q68
C18	.05 100V		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C19	.005		TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C20	220		DI-220	DD-221	JBZ601YP221K	CCD-221	GP322	10TS-T22
C21	.047 100V		DBE2S47		DMF2S47	4DP-3-473	PVC2147	2PS-S47
C22	.005		TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C23	.047 100V		DBE2S47		DMF2S47	4DP-3-473	PVC2147	2PS-S47
C24A	.003		DI-3000	DM-302	BYS601ZU302P	CCD-302	GP230	10TS-D30
C24B	.003		DI-3000	DM-302	BYS601ZU302P	CCD-302	GP230	10TS-D30
C25		#110000-021						

Tenna Part Number

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESIST- ANCE	REPLACEMENT DATA				
			TENNA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone Volume/Switch	50K 5000Ω	145007-011①	F1-50K, R2-5000, FFS113, RFS205, BA104, CA005, KR-4		Ⓐ QJ-2411A	
	Tone Volume/Switch	50K 5000Ω	145005-022②	F1-50K, R2-5000, FFS113, RFS205, BA100, CA005, KR-4		Ⓑ QJ-2153A	Ⓒ UE4652S
	Tone Volume/Switch	50K 5000Ω	145005-001③	F1-50K, R2-5000, FFS110, RFS201, BA012, CA005, KR-4		Ⓓ QJ-2152A	Ⓔ UE4650S
	Tone Volume/Switch	50K 5000Ω	145007-014④	F1-50K, R2-5000, FFS112, RFS203, BA105, CA005, KR-4		Ⓘ QJ-2414A	
	Tone Volume/Switch	50K 5000Ω	145007-013⑤	F1-50K, R2-5000, FFS114, RFS205, BA108, CA005, KR-4		Ⓢ QJ-2413A	
	Tone Volume/Switch	50K 5000Ω	145004-001⑥	F1-50K, R2-5000, FFS115, RFS207, BA106, CA005, KR-4		Ⓣ QJ-2182A	Ⓣ UE4651S
	Tone Volume/Switch	50K 5000Ω	145007-012⑦	F1-50K, R2-5000, FFS200, RFS208, BA108, CA005, KR-4		Ⓚ QJ-2412A	
R2	Bias	300Ω 2W	145000-207	V-300	U39-600	110-300	
R3	Fader	40K 2W	145007-001①				
	Fader	40K 2W	145007-002⑦				

① Used in Model: CE67PB, MU67PB

② Used in Model: CM67PB

③ Used in Model: EC67M

④ Used in Model: FA67PB

⑤ Used in Model: FL67PB

⑥ Used in Model: FT67M

⑦ Used in Model: FO67PB

⑧ Alter Bushing to meet requirements.

⑨ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-123, P22-115 (Panel), B13-114, R1-130 (Rear), QCB5A Ⓒ (Bushing), 76-1 (Switch)

"SNAPTROL" Equivalent: BU15A Ⓓ, CF12, CR51, SF12, SR47, GC.

Ⓐ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-123, P22-115 (Panel), B13-114, R1-130 (Rear), QCB5A Ⓒ (Bushing), 76-1 (Switch)

"SNAPTROL" Equivalent: BU15A Ⓓ, CF12, CR51, SF12, SR47, GC.

Ⓑ "STA-LOC" Equivalent: FL15L, RU53A, OX1500A, IS2000, US41

Ⓒ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-123, P22-109 (Panel), B13-114, R26-121 (Rear), S45 (Bushing), 76-1 (Switch)

"SNAPTROL" Equivalent: BU6, CF12, CR51, SF9, SR44, GC.

Ⓓ "STA-LOC" Equivalent: FK54L, RU53A, OX1312, IS1750, US41

Ⓔ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-123, P22-115 (Panel), B13-114, R26-124 (Rear), QCB5A Ⓒ (Bushing), 76-1 (Switch)

"SNAPTROL" Equivalent: BU15A Ⓓ, CF12, CR51, SF11, SR46, GC.

Ⓢ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-123, P17-118 (Panel), B13-114, R1-130 (Rear), QCB5A Ⓒ (Bushing), 76-1 (Switch)

"SNAPTROL" Equivalent: BU15A Ⓓ, CF12, CR51, SF12, SR47, GC.

Ⓣ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-123, P22-121 (Panel), B13-114, R9-202 (Rear), QCB5A Ⓒ (Bushing), 76-1 (Switch)

"SNAPTROL" Equivalent: BU15A Ⓓ, CF12, CR51, SF13, SR48, GC.

Ⓚ "STA-LOC" Equivalent: FH54L, RU53A, OX1625, IS2125, US41

Ⓚ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-123, P22-121 (Panel), B13-114, R9-202 (Rear), QCB5A Ⓒ (Bushing), 76-1 (Switch)

"SNAPTROL" Equivalent: BU15A Ⓓ, CF12, CR51, SF13, SR49, GC.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				
		TENNA PART No.	MEISSNER Part No.	MERIT PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (5.6uh)	114000-282	19-1008	SW-631	4609	T959
L2	Antenna	①				
L3	RF	①				
L4	Oscillator	①				
L5	Input IF	114000-217	16-6712		8011	
L6	Output IF	114000-217	16-6719		8012	

① Part of M1

TENNA MODELS CG/CM/FA/FL/FO / MU-67PB, EC/FT-67M

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	TENNA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L7	620ma	.5Ω	3mh	161000-146	C-4124	TC-1	TR-159	TY16XT	

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	TENNA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	10	1		161005-003					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	TENNA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	25Ω Tap	@ 8Ω	161005-001			TR-169		

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA			NOTES
				PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5" X 8" PM	8Ω	155009-180	P5X8U9	58A15Z8	Model: CG67PB, MU67PB Model: CM67PB, FA67PB, FL67PB, FO67PB	
	4" X 10" PM	8Ω	155009-167	P4X10U8	410A2Z10		
	5" X 7" PM	8Ω	155009-145	P5X7U8	57A2MT	Model: EC67M	
	5" X 8" PM	8Ω	155009-201	P5X7U8	57A2MT	Model: FT67M	

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA							
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.	
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER
F1	AGW 2 1/2 Amp AGA 2 Amp	128000-013 ①	128006-016 In Fuse Block	AGW 21/2 AGA2	HDH	30302,5 301002	155009		

① Used in Models: CG67PB, FA67PB, FL67PB, FO67PB, FT67M, MU67PB

② Used in Models: CM67PB, EC67M

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Tuner Tuner Tuner	164005-006 164005-001 164007-001	Model: CG67PB, CM67PB, FA67PB, FL67PB, FO67PB, MU67PB Model: EC67M Model: FT67M

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

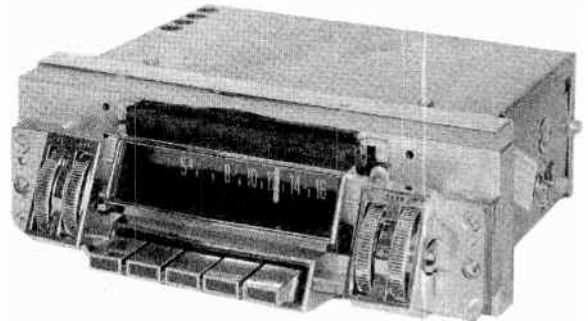
ITEM	PART No.	ITEM	PART No.
MODEL: CG67PB, CM67PB, MU67PB		MODEL: FO67PB	
Dial Glass	122007-002	Dial Glass	122005-019
Push Button	107005-008	Push Button	107005-020
Knob, Tuning or Volume	134007-008	Knob, Tuning or Volume	131007-008
Knob, Tone or Fader	134007-004	Knob, Tone or Fader	134007-004
MODEL: EC67PB		MODEL: FT-67M	
Dial Glass	122005-018	Dial Glass	122007-004
Knob, Volume	134005-002	Knob, Tuning or Volume	134006-006
Knob, Tone	134005-007	Knob, Tone or Dummy	134007-005
Knob, Tuning	134005-010		
Dial Pointer	144005-002		
MODEL: FA67PB, FL67PB			
Dial Glass	122004-012		
Push Button	107005-003		
Knob, Tuning or Volume	134007-008		
Knob, Tone or Dummy	134007-010		



PHOTOFACT[®] with

CIRCUITRACE[®]

TRADE NAME : Tenna Models
 CR-67PB (1967 Chrysler)
 DA-67PB (1967 Dodge Dart)
 DAX-67PB (1967 Dodge Dart 270)
 DD-67PB (1967 Dodge Monaco, Polara)
 DO-67PB (1966/67 Dodge)
 DS-67M (1967 Dodge Sportsman, A-100)
 DT-67M (1967 Dodge Truck)
 PD-67PB (1967 Plymouth Fury)
 PL-67PB (1966/67 Plymouth)
 VA-67PB (1967 Plymouth Valiant)
 SUPPLIER : For Current Address, See Annual Index
 TYPE SET : 5 Transistor AM Receiver
 POWER SUPPLY : 12 Volt Storage Battery
 RATING : .62 Amp. @ 12.6 Volts DC



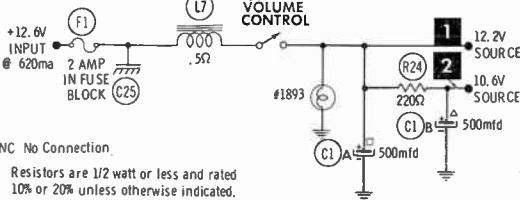
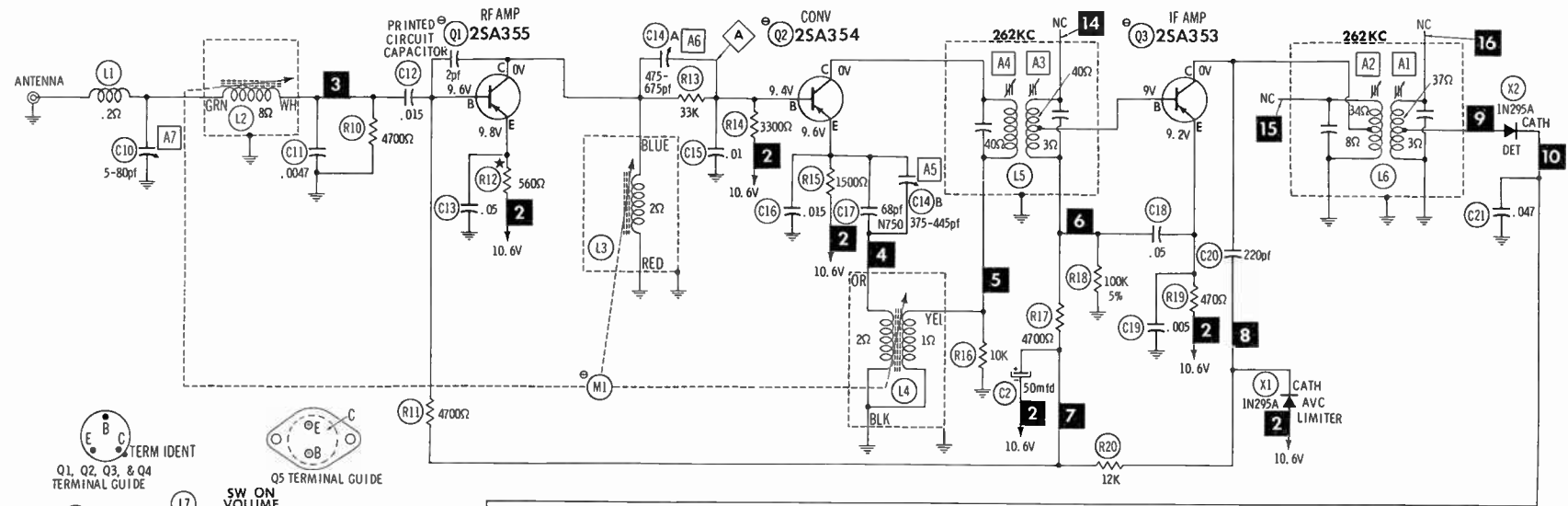
TENNA MODELS CR/DA/DAX/DD/DO/PD/PL/VA-67PB, DS/DT-67M

ALIGNMENT INSTRUCTIONS

Check for specified source voltage. Use only enough generator output to provide a usable indication. Suggested Alignment Tools: A1 thru A4. GENERAL CEMENT: 8606, 8606L, 8869 WALSCO: 2543, 2544, 2588 A5, A6, A7. GENERAL CEMENT: 8290, 8868, 9087 WALSCO: 2525, 2528, 2587		<p>TO SIGNAL GENERATOR</p> <p>TO ANTENNA RECEPTACLE</p> <p>DUMMY ANTENNA</p>		PUSH-BUTTON ADJUSTMENT 1. Pull button out. 2. Tune manually to desired station. 3. Press button in firmly. 4. Repeat for remaining buttons.	
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1. High side thru .1mfd to point Δ , low side to ground.	262KC (400% Mod.)	High freq. end stop.	Output meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2. Thru dummy antenna to antenna receptacle.	1615KC	"	"	A5, A6, A7	"
With radio installed in car and antenna extended to desired height, tune in a weak station near 1400KC and adjust A7 for maximum output. Antenna adjustment (A7) is located right side above antenna receptacle.					

HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

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NC No Connection.

Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.

★ NOMINAL VALUE, MAY VARY.

⊖ See parts list

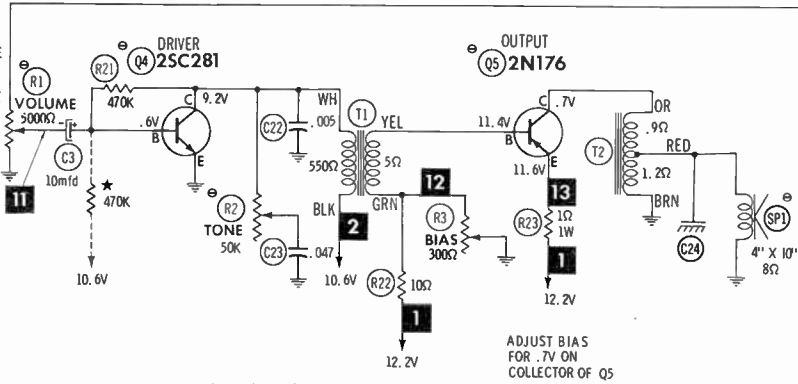
1. Voltage measurements taken with vacuum tube voltmeter.
2. All controls set for normal operation, no signal applied.
3. Measured values are from socket pin or terminal to common ground.
4. All terminals viewed from bottom unless otherwise designated.
5. Numbers assigned to terminals may not be found on the unit.
6. Supply voltage maintained at rated value for voltage readings.
7. Resistance measurements not given because of the wide variation in internal resistance of transistor.

A PHOTOFACIT STANDARD NOTATION SCHEMATIC

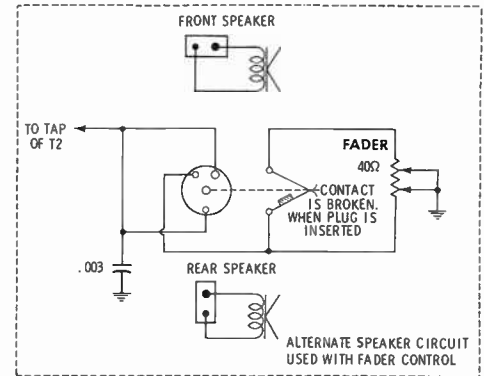
with **CIRCUITRACE**

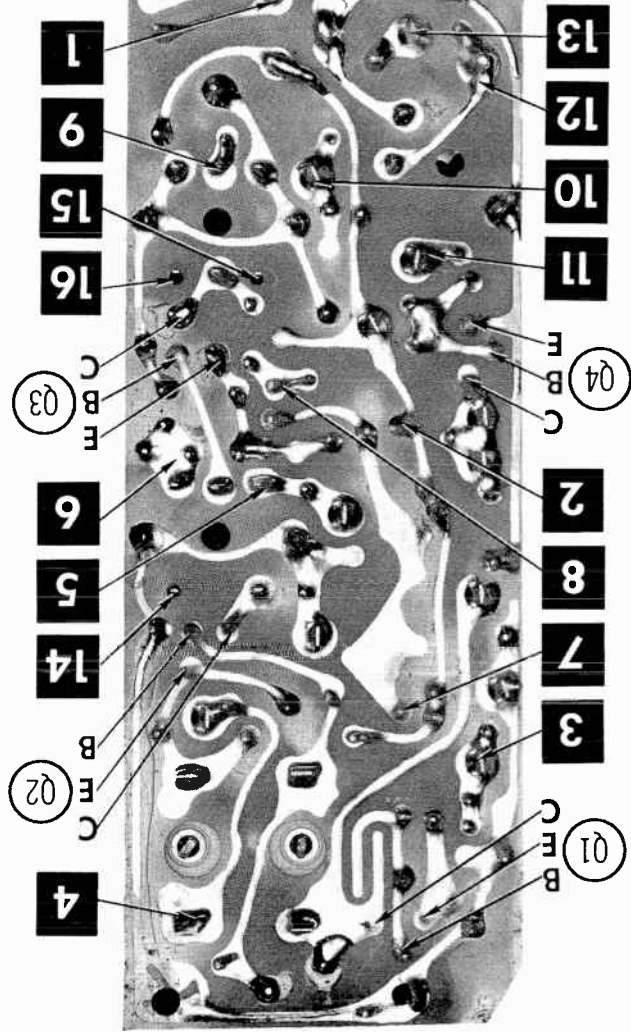
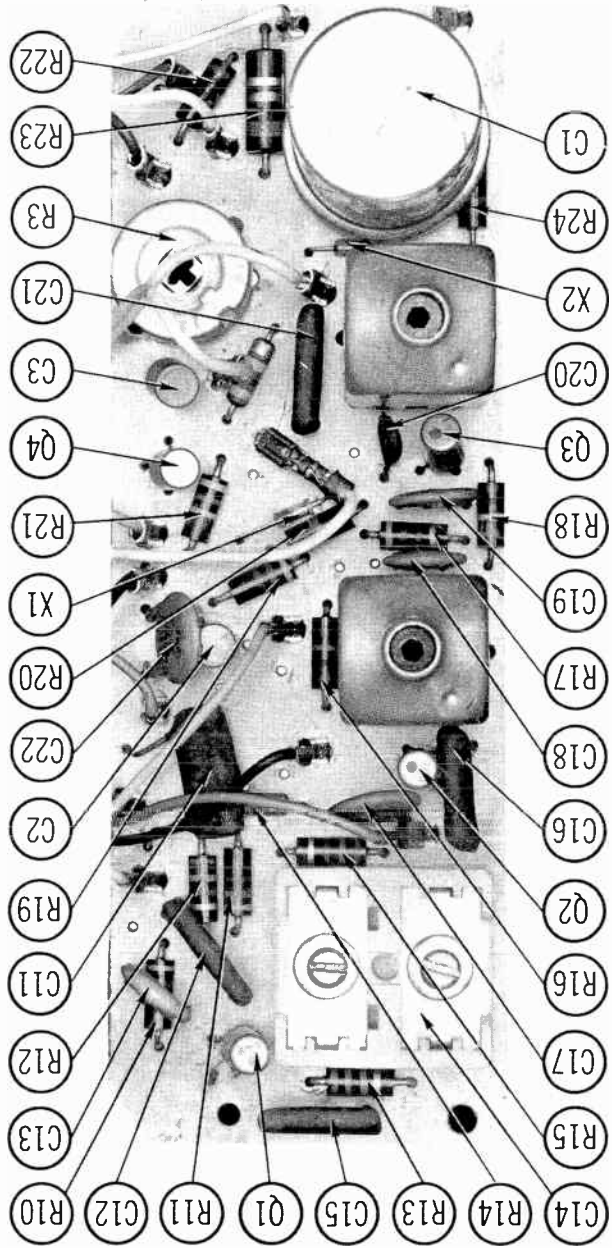
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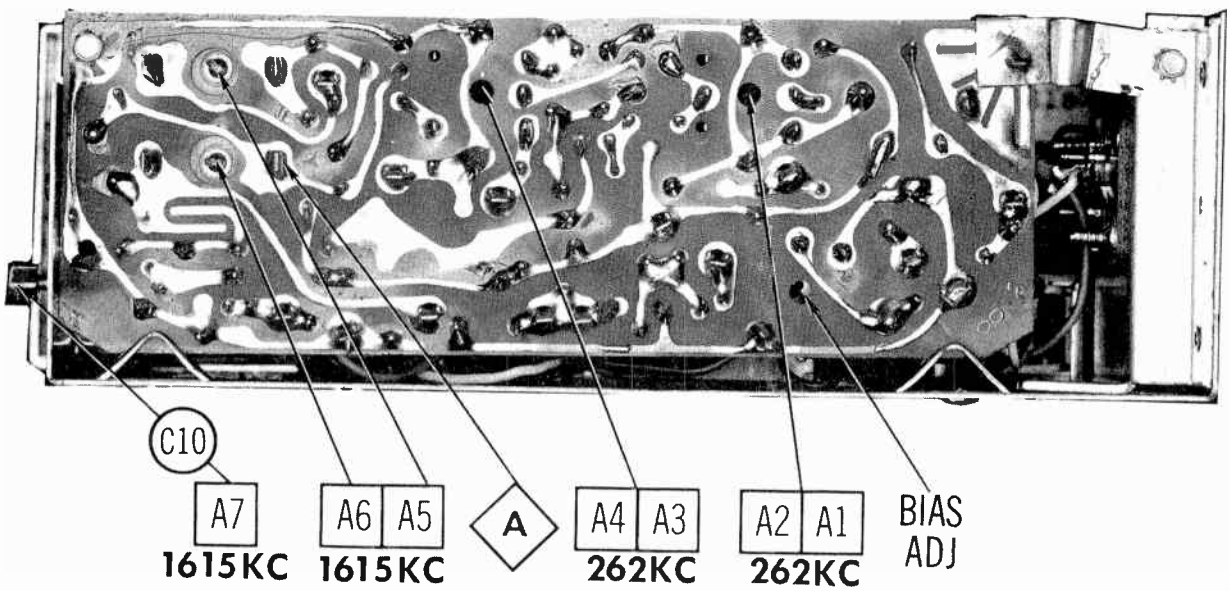
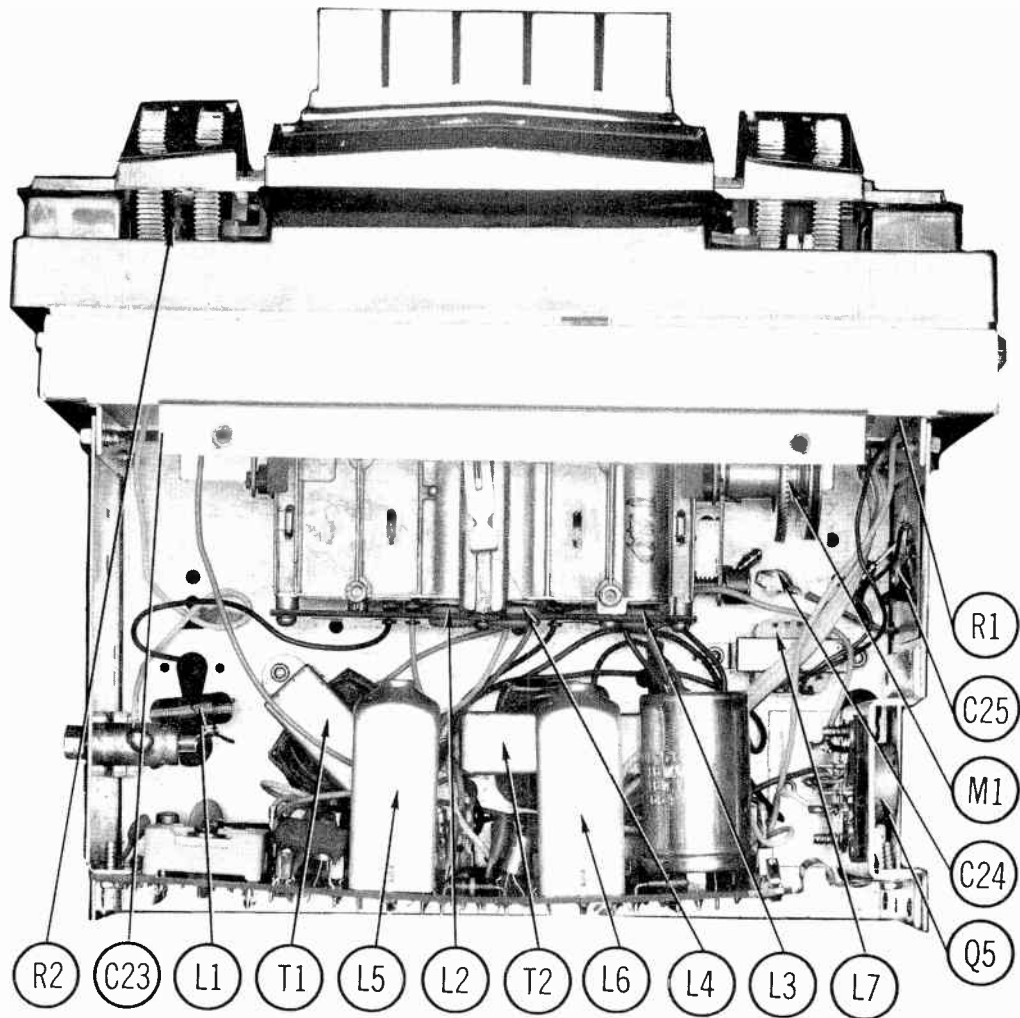
**TENNA MODELS CR/DA/DAX/DD/DO/
PD/PL/VA-67PB, DS/DT-67M**



ADJUST BIAS FOR .7V ON COLLECTOR OF Q5







PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	
Q1	2SA355 (2N1637)	RF Amp	DS-25	GE-9	TR-06	SK-3008	PNP
Q2	2SA354 (2N1639)	Converter	DS-25	GE-9	TR-06	SK-3008	PNP
Q3	2SA353 (2N1638)	IF Amp	DS-25	GE-9	TR-06	SK-3008	PNP
Q4	2SC281 (2N2712)	Driver	DS-66	GE-10	TR-21	SK-3020	NPN
Q5	2N176	Output	DS-520	GE-3	TR-01	SK-3009	PNP *

* When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS & DIODES		RECTIFIERS		
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	RCA PART No.	SARKES TARZIAN PART No.
X1		1N295A	1N295	1N295			
X2		1N295A	1N295	1N295			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		TENNA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500 16V	111001-512	PWH2-02-40		BPC010	XC2-45	PFP200.64	PCL-2177
B	500 16V							
C2	50 3V	111002-104	BCD3050	EP6-50	NLW50-3	MT1-15	MTV50CB15	TE-1058
C3	10 15V	111002-103	BCD15010	EP15-10	NLW10-15	MT1-5	MTV10CB50	TE-1155

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	5-80	#110000-087				S462		
C11	.0047 100V		DBE6D47	CPR-4700J	DMF6D47	6DP-1-472	PVC6247	6PS-D47
C12	.015 100V		DBE4S15		DMF4S15	4DP-1-153	PVC6115	4PS-S15
C13	.05		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C14A	475-675	#110000-080						
B	375-445							
C15	.01 100V		DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10
C16	.015 100V		DBE4S15		DMF4S15	4DP-1-153	PVC6115	4PS-S15
C17	68 N750		N750-DI 68	DTN-68	CS601UJ680K	CCTN-680	CN7468	10TCU-Q68
C18	.05		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C19	.005		TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C20	220		DI-220	DD-221	JBZ601YP221K	CCD-221	GP322	10TS-T22
C21	.047 100V		DBE2S47		DMF2S47	4DP-3-473	PVC2147	2PS-S47
C22	.005		TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C23	.047 100V		DBE2S47		DMF2S47	4DP-3-473	PVC2147	2PS-S47
C24		#110000-020						
C25		#110000-021						

Tenna Part Number.

TENNA MODELS CR/DA/DAX/DD/DO/PD/PL/VA-67PB, DS/DI-67M

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA				
			TENNA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-HRC PART No.	MALLORY PART No.
R1	Volume	5000Ω	145007-032 ①				
R2	Tone	50K	145007-031 ①				
	Tone	50K	145006-016 ②	F1-50K, R2-5000, FFS108, RFS200, BC104, KR-4		④ QJ-2193A	
	Volume/Switch	5000Ω					
	Tone	50K	145006-015 ③	F1-50K, R2-5000, FFS112, RFS204, BC108, KR-4		⑤ QJ-2192A	
	Volume	5000Ω					
	Tone	50K	145005-001 ④	F1-50K, R2-5000, RFS110, RFS201, BA012, CA005, KR4		⑥ QJ-2152A	⑦ UE4650S
	Volume/Switch	5000Ω					
R3	Bias	300Ω, 2W	145000-207	V-300	U39-300	110-300	
	Fader	40Ω, 2W	145006-004 ⑤				

- ① Used in Models CR-67PB, DD-67PB
 ② Used in Models DA-67PB, DAX-67PB
 ③ Used in Models DO-67PB, PD-67PB, PL-67PB, VA-67PB
 ④ Used in Models DS-67PB, DT-67M
 ⑤ Used in Model PD-67PB
 ⑥ Alter Bushing to meet Requirement.
 ⑦ "CONCENTRIKIT" Equivalent: K8 Kit with Base Elements and Shafts: B11-123, P22-115 (Panel)
 B13-114, R1-130 (Rear)
 S14 (Bushing)
 76-1 (Switch)
 "SNAPTROL" Equivalent: BU10 ⑥, CF12, CR51, SF11, SR47, GC
 ⑧ "CONCENTRIKIT" Equivalent: K8 Kit with Base Elements and Shafts: B11-123, P17-126 (Panel)
 B13-114, R26-206 (Rear)
 S15 (Bushing)
 76-1 (Switch)
 "SNAPTROL" Equivalent: BU10 ⑥, CF12, CR51, SF14, SR50, GC
 ⑨ "CONCENTRIKIT" Equivalent: K8 Kit with Base Elements and Shafts: B11-123, P22-109 (Panel)
 B13-114, R26-121 (Rear)
 S45 (Bushing)
 76-1 (Switch)
 "SNAPTROL" Equivalent: BU6, CF12, CR51, SF9, SR44, GC
 ⑩ "STA-LOC" Equivalent: FK54L, RU53A, OX1312, IS1750, US41

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				
		TENNA PART No.	MEISSNER Part No.	MERIT PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (5.6uh)	114000-282	19-1008	SW-631	4609	T959
L2	Antenna	①				
L3	RF	①				
L4	Osc.	①				
L5	Input IF	114000-217	16-6712		8011	
L6	Output IF	114000-218	16-6719		8012	

① Part of M1.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
			TENNA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
	PRI.	SEC.						
T2	25Ω Tap	@ 8Ω	161005-001				TR-169	

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA			NOTES
		TENNA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4" x 10" PM 8Ω	155009-167	P4X10U8	410A2Z10	Models: CR-67PB, DA-67PB, DAX-67PB, DD-67PB, PD-67PB, VA-67PB
	4" x 10" PM 8Ω	155009-148	P4X10U8	410A2Z10	Models: DO-67PB, PL-67PB
	5" x 7" PM 8Ω	155009-145	P5X7U8	57A15Z8	Models: DS-67M, DT-67M

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	TENNA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L7	620ma	.5Ω	3mh	161000-146	C-4124	TC-1	TR-159	TY16XT	

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	TENNA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	10	1		161005-003					

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	AGC 2		In Fuse Block	AGC 2		312002		

MISCELLANEOUS

ITEM No.	PART NAME	TENNA PART No.	NOTES
M1	Tuner	164007-006	Models CR-67PB, DD-67PB
	Tuner	164005-006	Models DA-67PB, DAX-67PB, DO-67PB, PD-67PB, PL-67PB, VA-67PB
	Tuner	164005-001	Models DS-67M, DT-67M

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
MODEL CR-67PB		MODELS DS-67M, DT-67M	
Dial Glass	122007-018	Dial Glass	122005-018
Knob, Volume	134007-050	Knob, Tuning	134005-010
Knob, Tone	134007-052	Knob, Volume	134005-002
Knob, Tone	134007-054	Knob, Tone	134005-007
Knob, Tuning	134007-056	Dial Pointer	144005-002
Push Button	107007-008		
MODELS DA-67PB, BAX-67PB		MODEL PD-67PB	
Dial Glass	122006-012	Dial Glass	122007-010
Knob, Tuning or Volume	134006-022	Knob, Tuning or Volume	134007-016
Knob, Tone or Dummy	134007-036	Knob, Tone or Fader	134007-018
Push Button	107006-012	Push Button	107006-012
MODEL DD-67PB		MODEL PL-67PB	
Dial Glass	122007-020	Dial Glass	122006-012
Push Button	107007-010	Knob, Tuning or Volume	134006-018
		Knob, Tone or Dummy	134006-030
		Push Button	107006-012
MODEL DO-67PB		MODEL VA-67PB	
Dial Glass	122006-016	Dial Glass	122006-012
Knob, Tuning or Volume	134006-022	Knob, Tuning or Volume	134005-034
Knob, Tone or Dummy	134006-024	Knob, Tone or Dummy	134005-042
Push Button	107006-012	Push Button	107006-012

TENNA MODELS CR/DA/DAX/DD/DO/PD/PL/VA-67PB, DS/DT-67M



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CIRCUITRACE[®]

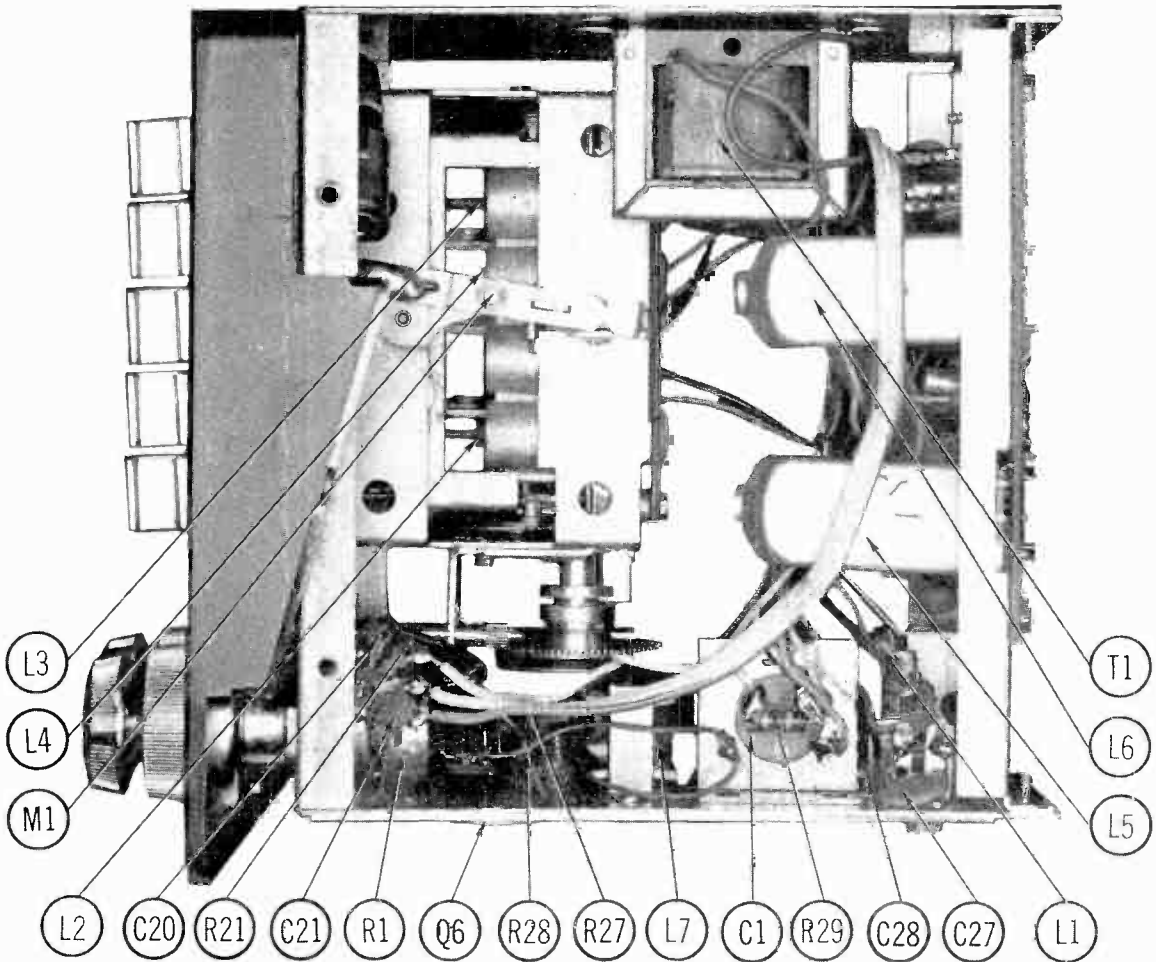
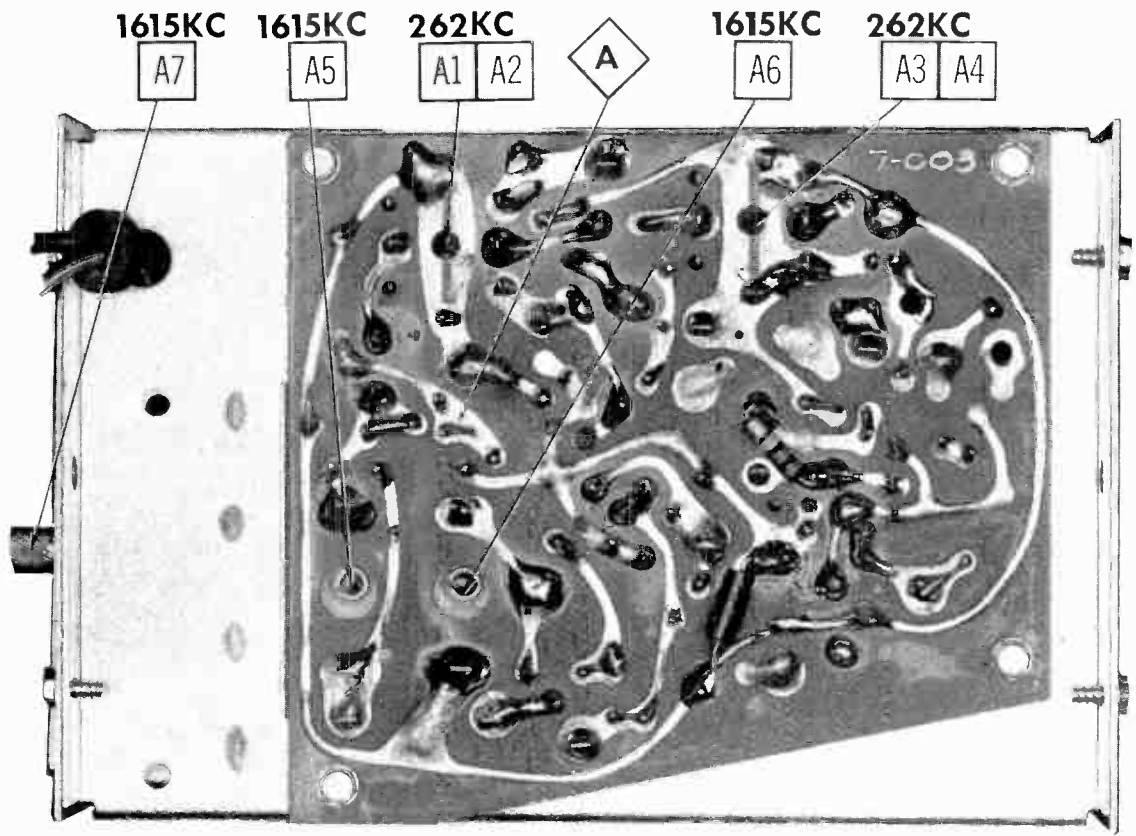


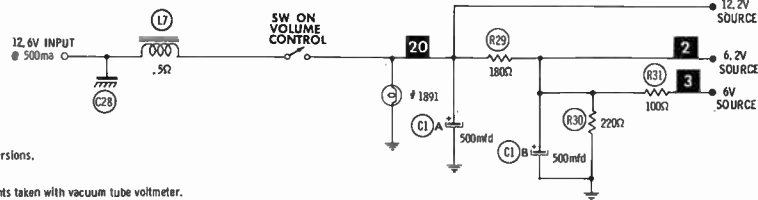
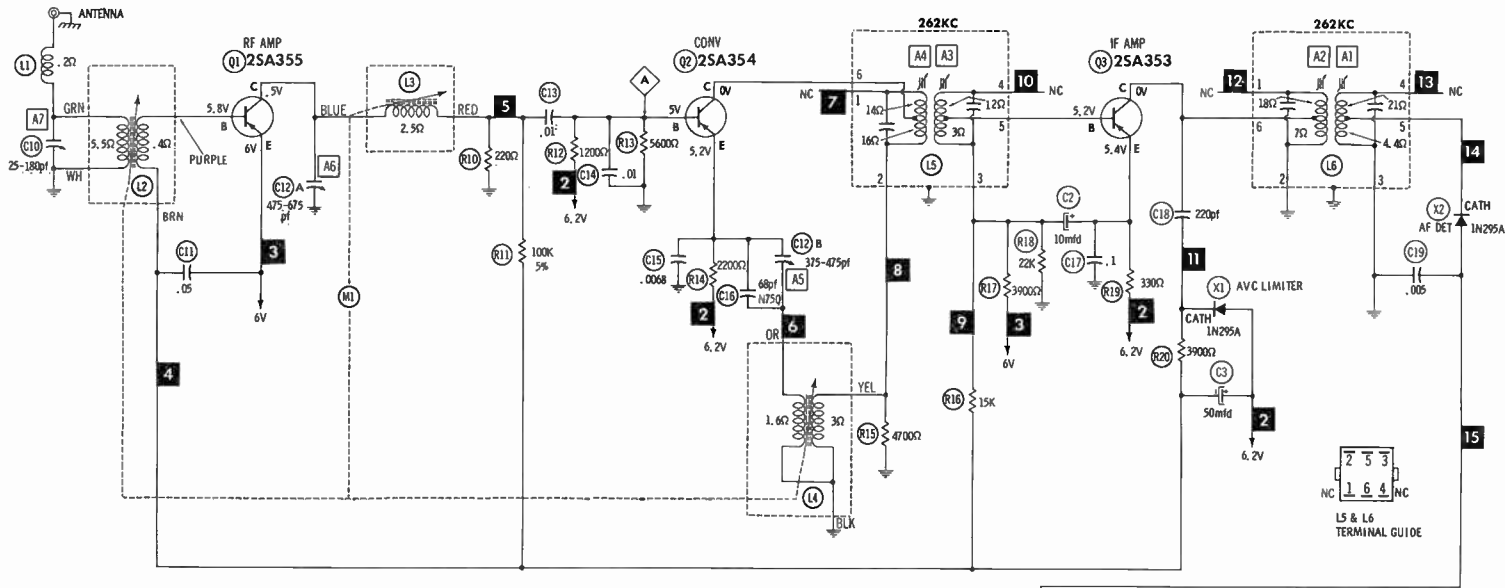
TRADE NAME : Tenna Model RA-67PB (1967 Rambler)
 SUPPLIER : For Current Address, See Annual Index
 TYPE SET : 6 Transistor AM Receiver
 POWER SUPPLY : 12 Volt Storage Battery
 RATING : .5 Amp. @ 12.6 Volts DC

TENNA MODEL RA-67PB

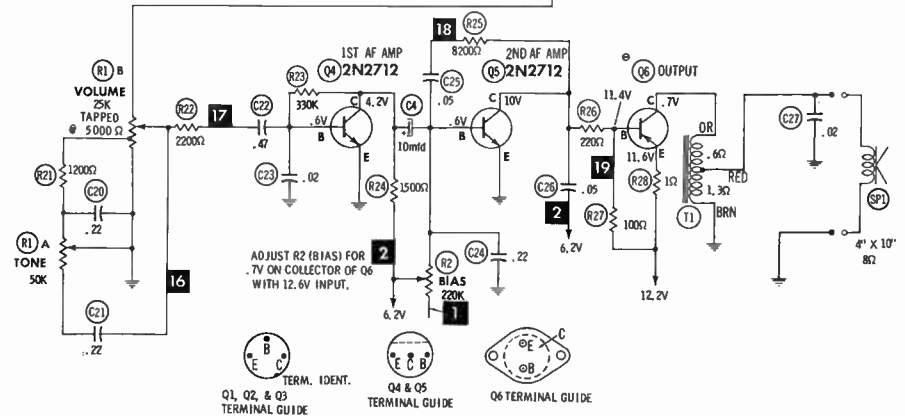
ALIGNMENT INSTRUCTIONS

Check for specified source voltage. Use only enough generator output to provide a usable indication. Suggested Alignment Tools: A1 thru A4. GENERAL CEMENT: 8606, 8606L, 8869 WALSCO: 2543, 2544, 2588 A5, A6, A7. GENERAL CEMENT: 8290, 8868, 9087 WALSCO: 2525, 2528, 2587					PUSH-BUTTON ADJUSTMENT 1. Pull button out. 2. Tune manually to desired station. 3. Press button in firmly. 4. Repeat for remaining buttons.	
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS	
1. High side thru .1mfd to point Δ , low side to ground.	262KC (400 μ Mod.)	High freq. end stop.	Output meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.	
2. Thru dummy antenna to antenna receptacle.	1615KC	"	"	A5, A6, A7	"	
With radio installed in car and antenna extended to desired height, tune in a weak station near 1400KC and adjust A7 for maximum output. Antenna adjustment (A7) is located right side above antenna receptacle.						





Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.



TENNA MODEL RA-67PB

* Not used in some versions.

© See parts list

1. Voltage measurements taken with vacuum tube voltmeter.
2. All controls set for normal operation, no signal applied.
3. Measured values are from socket pin or terminal to common ground.
4. All terminals viewed from bottom unless otherwise designated.
5. Numbers assigned to terminals may not be found on the unit.
6. Supply voltage maintained at rated value for voltage readings.
7. Resistance measurements not given because of the wide variation in internal resistance of transistor.

A PHOTOFAC STANDARD NOTATION SCHEMATIC
with **CIRCUITACE**

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PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	
Q1	2SA355	RF Amp	DS-25	GE-9	TR-06	SK-3008	PNP
Q2	2SA354	Converter	DS-25	GE-9	TR-06	SK-3008	PNP
Q3	2SA353	IF Amp	DS-25	GE-9	TR-06	SK-3008	PNP
Q4	2N2712	AF Amp	DS-66	GE-10	TR-21	SK-3020	NPN
Q5	2N2712	AF Amp	DS-66	GE-10	TR-21	SK-3020	NPN
Q6		Output	DS-520		TR-01	SK-3009	PNP

* When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS & DIODES		RECTIFIERS		
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	RCA PART No.	SARKES TARZIAN PART No.
X1		1N295A	1N295	1N295			
X2		1N295A	1N295	1N295			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		TENNA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500 16V	111000-080	AFH2-02-40		BPC010	XC2-43, 05	FPF200, 64	TVL-2157
B	500 16V							
C2	10 15V	111002-103	BCD15010	EP15-10	NLW10-15	MT1-5	MTV10CB50	TE-1155
C3	50 6V		CRE317A	EA6-50	NLW50-6	MT1-15	TT6X50	TE-1100
C4	10 15V	111002-103	BCD15010	EP15-10	NLW10-15	MT1-5	MTV10CB50	TE-1155

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	25-180	#110000-087				S463		
C11	.05		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C12A	475-875	#110000-080						
B	375-475							
C13	.01 200V		DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10
C14	.01 200V		DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10
C15	.0088 200V		DBE6D68	CPR-6800J	DMF6D68	6DP-1-682	PVC6268	6PS-D68
C16	68 N750		N750-DI 68	DTN-68	CS601UJ680K	CCTN-680	CN7468	10TCU-Q68
C17	.1		TTD-1	CK-104	HOV101ZV104Z		TA010	TG-P10
C18	220		DI-220	DD-221	JBZ601YP221K	CCD-221	GP322	10TS-T22
C19	.005		TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C20	.22			UK-224	HCZ3ROXR224P		MAG3022	HY-125
C21	.22			UK-224	HCZ3ROXR224P		MAG3022	HY-125
C22	.47			UK10-474	HCS3ROXR474P		MAG12047	HY-330
C23	.02		TTD-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20
C24	.22			UK-224	HCZ3ROXR224P		MAG3022	HY-125
C25	.05		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C26	.05		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C27	.02		TTD-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20
C28		#110000-020						

Tenna Part Number

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA					
			TENNA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	Tone	50K	145004-024	F1-50K,			† QJ-2433A	
B	Volume/Switch	25K Tap @ 5000Ω		R14-25K, FFS014, RFS106, BC012, KR-4				
R2	Bias	220K		T-250K			X201R254B	MTC254L1

† "CONCENTRIKIT" Equivalent: K8 Kit with Base Elements and Shafts: B11-123, P21-029 (Panel), B19-119X, R9-110 (Rear), S40 (Bushing), 76-1 (Switch)

"SNAP-TROL" Equivalent: BU10①, CF12, CR50T, SF5, SR40, GC.

① Alter Bushing to meet requirements.

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				
		TENNA PART No.	MEISSNER Part No.	MERIT PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (5.6uh)		19-1008	SW-631	4609	T959
L2	Antenna	①				
L3	RF	①				
L4	Oscillator	①				
L5	Input IF	114000-283	16-6711		6520	
L6	Output IF	114000-284	16-6711		6521	

① Part of M1

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (O CURRENT 1000—)	TENNA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L7	500ma	.5Ω	3mh	161000-146	C-4124	TC-1	TR-159	TY16XT	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRL.	SEC.	TENNA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
	T1	25Ω Tap	@ 8Ω	161005-001			TR-169	

SPEAKER

ITEM No.	TYPE		REPLACEMENT DATA			NOTES
			TENNA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4" X 10" PM	8Ω	155009-167	P4X10U8	410A2Z8	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Tuner	164007-003	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial Glass	122007-024	Knob, Tone	134000-137
Push Button	107007-012	Knob, Dummy	134000-139
Knob, Tuning or Volume	134007-058		

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)

TENNA MODEL RA-67PB



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CIRCUITRACE[®]



TRADE NAME : Volkswagen
 Models: 7BVG (1967 Karmann GHIA)
 7BVT (1967 Transporter)
 7BVW (1967 Sedan)
 7BV3 (1967 Type 3)

SUPPLIER : For Current Address, See Annual Index

TYPE SET : 5 Transistor AM Receiver

POWER SUPPLY : 12 Volt Storage Battery

RATING : .62 Amp. @ 12.6 Volts DC

VOLKSWAGEN MODELS 7BVG, 7BVT, 7BVW, 7BV3

ALIGNMENT INSTRUCTIONS

Check for specified source voltage.
 Use only enough generator output to provide a usable indication.
 Suggested Alignment Tools:

A1 thru A4: GENERAL CEMENT: 8606, 8606L, 8869 WALSICO: 2543, 2544, 2588

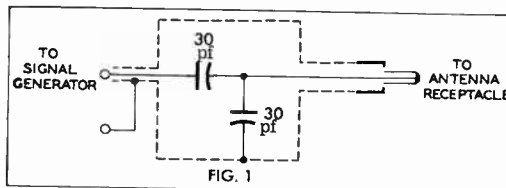
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point Δ , low side to ground.	262KC (400 ν Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1615KC	"	"	A5, A6, A7	"

With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.

Antenna adjustment (A7) located right side.

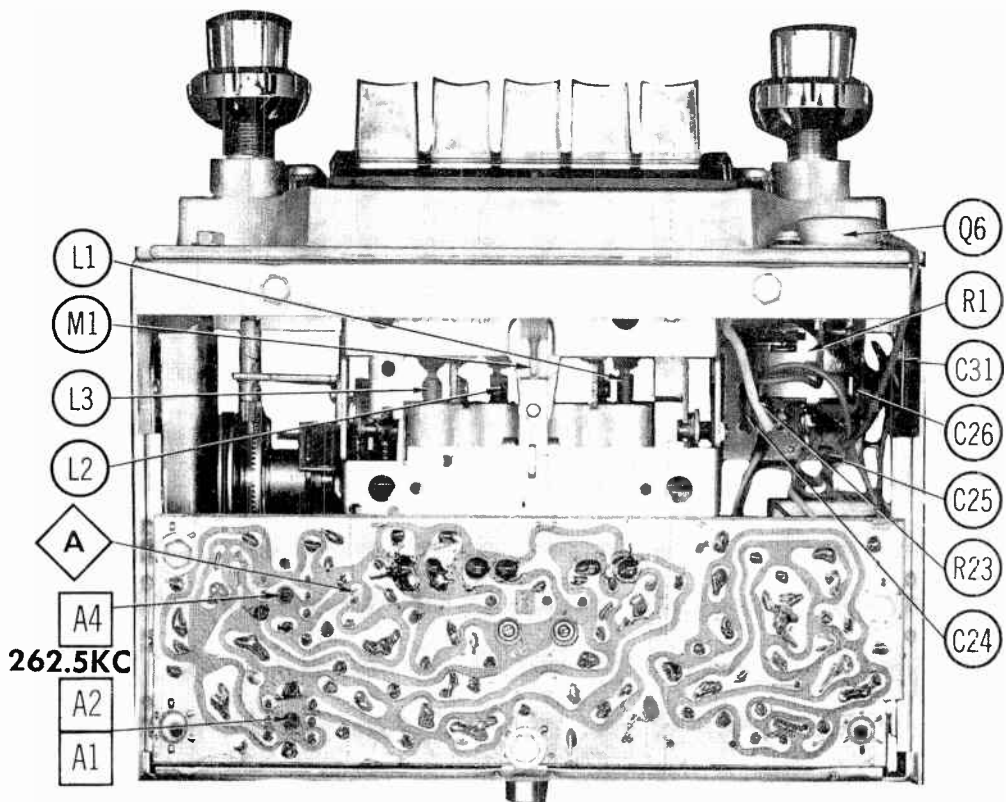
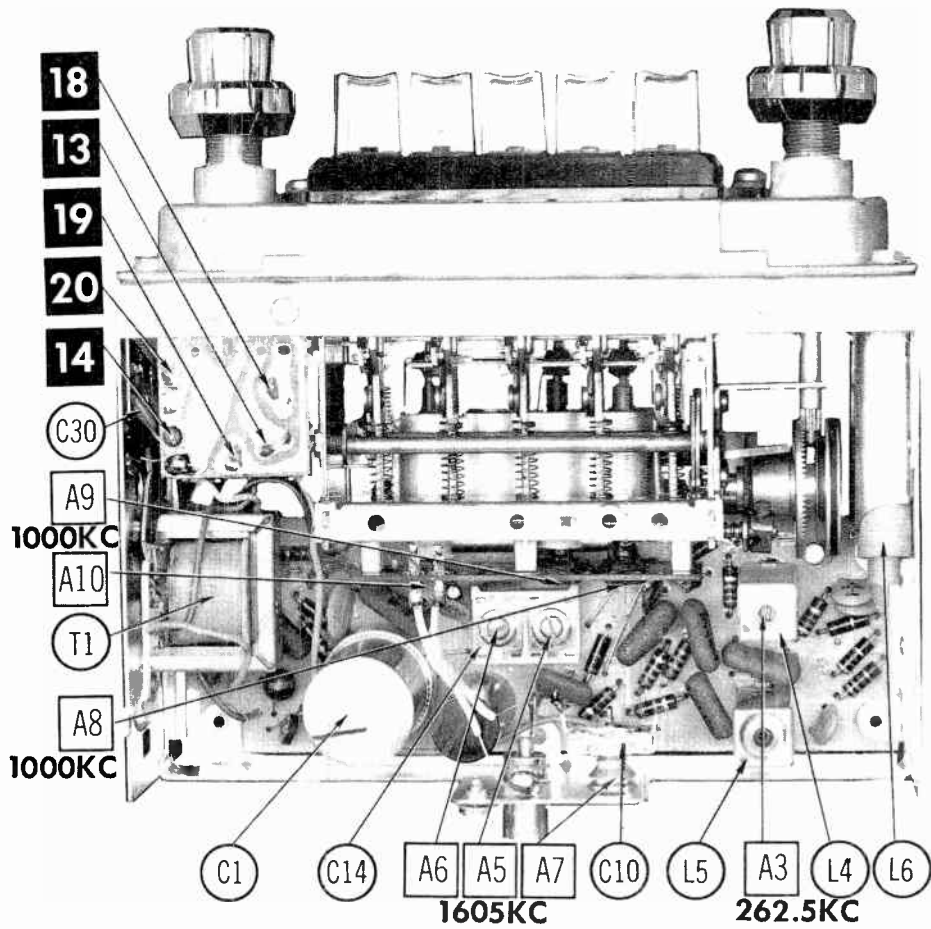
PUSH-BUTTON ADJUSTMENT

1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

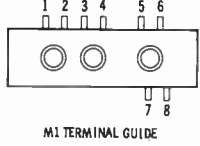
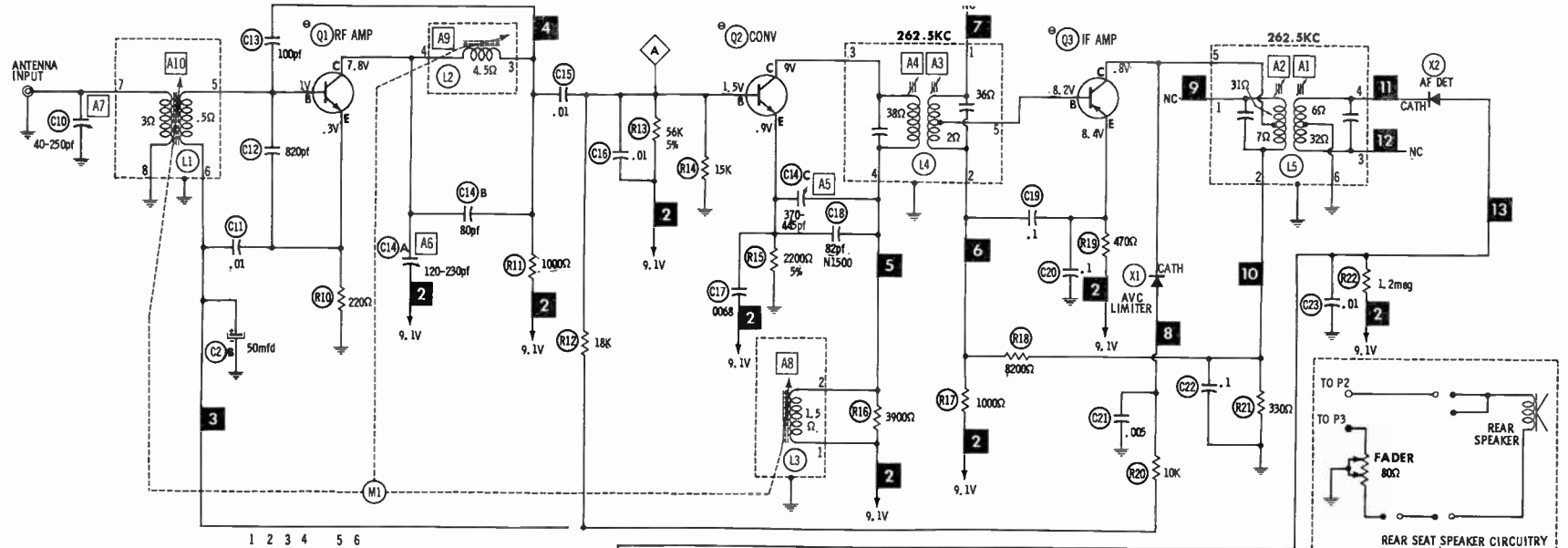


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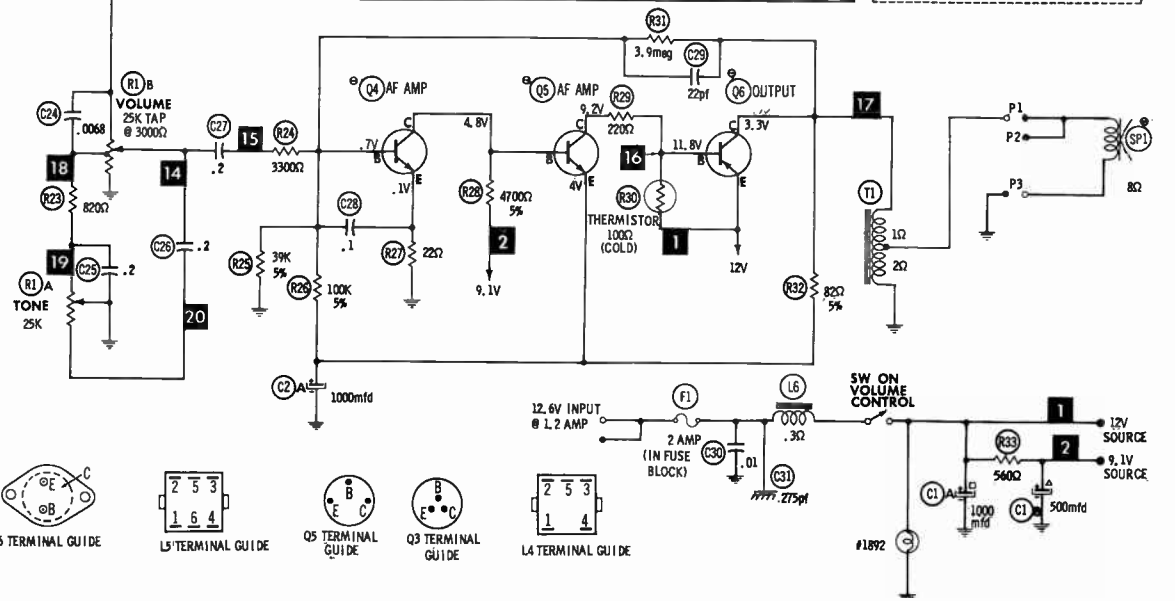
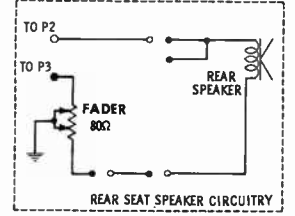
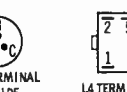
VOLKSWAGEN MODELS 7BVG, 7BVT, 7BVW, 7BV3



Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.

NC No Connection.

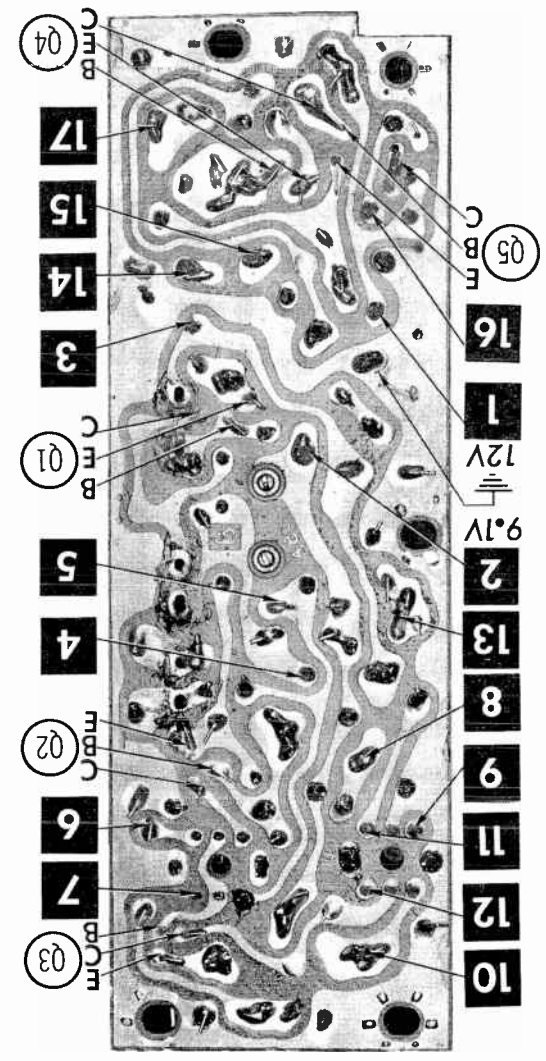
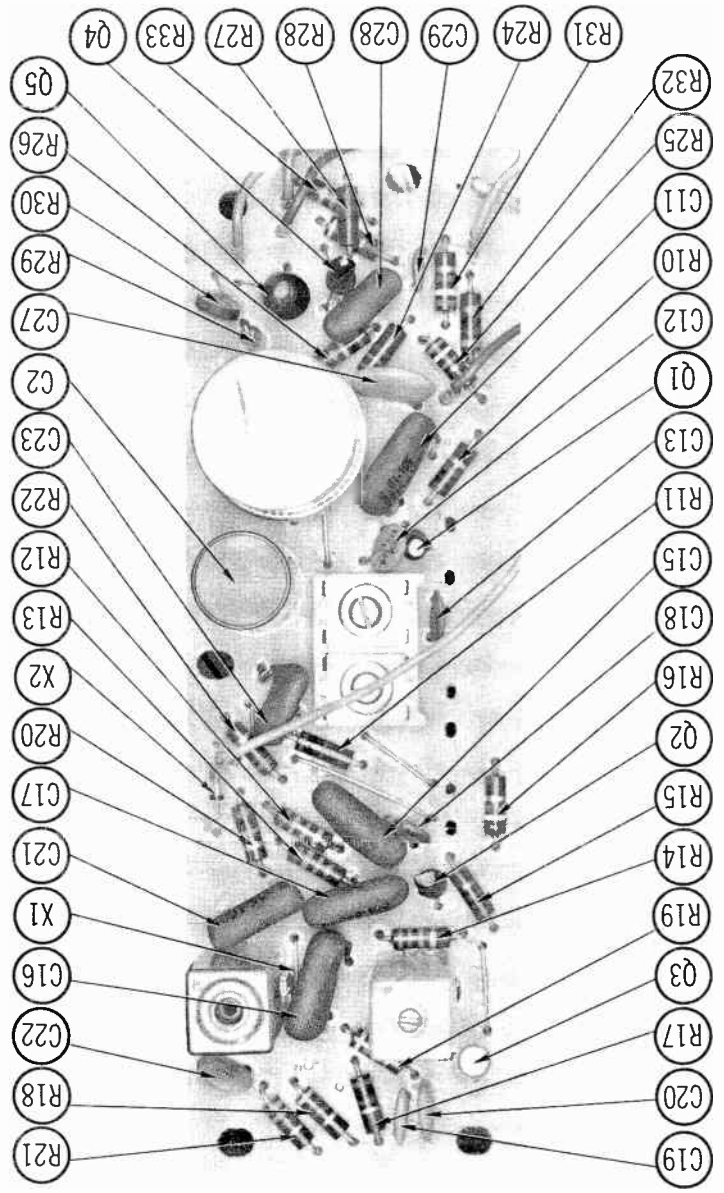
- ⊙ See parts list
- 1. Voltage measurements taken with vacuum tube voltmeter.
- 2. All controls set for normal operation, no signal applied.
- 3. Measured values are from socket pin or terminal to common ground.
- 4. All terminals viewed from bottom unless otherwise designated.
- 5. Numbers assigned to terminals may not be found on the unit.
- 6. Supply voltage maintained at rated value for voltage readings.
- 7. Resistance measurements not given because of the wide variation in internal resistance of transistor.



A PHOTOFAC STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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VOLKSWAGEN MODELS 7BVG, 7BVT, 7BVW, 7BV3



PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES	BENDIX PART No.
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.		
Q1		RF Amp.	DS-75	GE-11	SK-3018	NPN	2093308-0701
Q2		Converter	DS-75	GE-11	SK-3018	NPN	2093308-0702
Q3		IF Amp.	DS-25	GE-9	SK-3008	PNP	2091241-0719
Q4		AF Amp.	DS-88	GE-10	SK-3020	NPN	2092609-0715
Q5		AF Amp.	DS-88	GE-10	SK-3020	NPN	2092609-0713
Q6		AF Output	DS-520	GE-3	SK-3009	PNP *	2091859-0723

* When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS & DIODES		RECTIFIERS		
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	RCA PART No.	SARKES TARZIAN PART No.
X1		2092055-0001	1N34AS	1N34A			
X2		2092055-0001	1N34AS	1N34A			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		BENDIX PART No.	REPLACEMENT DATA				
	CAP.	VOLT.		AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	1000	18	2091503-0714					
B	500	18						PCL-2185, 2
C2A	1000	4	2092246-0705	BCD1.5-3100050			PET295	
B	50	4						

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C10	40-250	#2091504-0007				484			
C11	.01 100V		DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10	
C12	820		DI-820	DD-821	JBY601YP821K	CCD-821	GP382	10TS-T82	
C13	100		NPO-DI 100	DTZ-100	CV801CG101K	CCD-101	CN0310	10TCC-T10	
C14A	120-230	#2092422-0712							
B	80								
C	370-445								
C15	.01 100V		DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10	
C16	.01 100V		DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10	
C17	.0088 100V		DBE6D68	CPR-6800J	DPMS6D68	6DP-1-682	PVC8268	6PS-D68	
C18	82 N1500					*	*		
C19	.1		TTD-1	CK-104	HCZ3R0XR104P		TA010	TG-P10	
C20	.1		TTD-1	CK-104	HCZ3R0XR104P		TA010	TG-P10	
C21	.005 100V		DBE6D5	CPR-5000J	DPMS6D5	6DP-1-502	PVC825	6PS-D50	
C22	.1		TTD-1	CK-104	HCZ3R0XR104P		TA010	TG-P10	
C23	.01 25V		DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10	
C24	.0068		DI-6800	DD-682	BYX601ZU103P	CCD-682	GP268	10TS-D68	
C25	.2			UK10-204	HCZ3R0XR224P		MAG3022		
C26	.2			UK10-204	HCZ3R0XR224P		MAG3022		
C27	.2			UK10-204	HCZ3R0XR224P		MAG3022		
C28	.1 25V		DBE2P1	DTZ-22	DMF2P1	2DP-3-104	PVC201	2PS-P10	
C29	22		NPO-DI 22	DTZ-22	CY601CG220K	CCTO-220	CN0422	10TCC-Q22	
C30	.01		TTD-01	CK-103	HCZ3R0XR103P	CCD-103	TA110	TG-S10	
C31	275	#2093050-0705							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Bendix Part Number

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA					
			BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	Tone	25K	2094545-0701	F2-25K,			† QJ-2199A	
B	Volume/Switch	25K Tap @ 3000Ω		R14-25K, FFS200, RFS208, AK38, KR-7				

"CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts:
B13-120, P17-123 (Panel)
B19-119X, R26-206 (Rear)
R5 (Tab Mount)
76-2 (Switch)

"SNAPTROL" Equivalent: BU7, CF11, CR50T, SF14, SR50, WF.

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	BENDIX PART No.			IRC PART No.	WORKMAN PART No.	BENDIX PART No.
R30	100Ω (Cold) Thermistor			220829-12					

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				
		BENDIX PART No.	MEISSNER Part No.	MERIT PART No.	MILLER PART No.	WORKMAN PART No.
L1	Antenna	Ⓛ				
L2	RF	Ⓛ				
L3	Oscillator	Ⓛ				
L4	Input IF	2094080-0701				
L5	Output IF	2094080-0702			8006	

Ⓛ Part of M1, Part #2090131-0094.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES	INDUCTANCE (0 CURRENT 1000~)	BENDIX PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L6	1.2A DC	.3Ω	140MH	2092050-0725					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BENDIX PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	17Ω Tap	@ 8Ω	2092245-0707					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA			NOTES
		BENDIX PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6" PM 8Ω	2057037-0701	C6T8	6A15MT	Model 7BVT Models 7BVG, 7BVW Model 7BV3
	5" PM 8Ω	2094857-0701		5A1Z8	
	4" x 8" PM 8Ω	2057038-0701			

FUSE DEVICES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
F1	AGA 2	2 Amp. 32V	2091811-0007	In Fuse Block	301002			AGA 2	

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M1	Tuner Coil Assembly	2094066-0508 2090131-0094	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Escutcheon	2094551-0501	Dial Pointer	2090129-0078
Dial Glass	2094549-0502	Knob, Tuning or Volume	2057270-0501
Push Button	2056519-0001	Knob, Tone or Dummy	2094480-0001

WIRING DATA

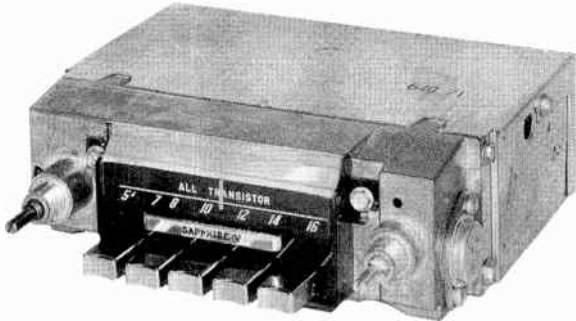
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8681 (3/8 In.) or 8670 (3/4 In.)

VOLKSWAGEN MODELS 7BVG, 7BVT, 7BVW, 7BV3



PHOTOFACT[®] with

CIRCUITRACE[®]



TRADE NAME : Volkswagen Models:
 7SMVG (1967 Karmann Ghia)
 7SMVT (1967 Transporter)
 7SMVF (1967 Fastback and Squareback)
 7SMVW (1967 Sedan)

SUPPLIER : For Current Address, See Annual Index

TYPE SET : 6 Transistor AM Receiver

POWER SUPPLY : 12 Volt Storage Battery

RATING : .9 Amp. @ 12.6 Volts DC

VOLKSWAGEN MODELS 7SMVG, 7SMVT, 7SMVW

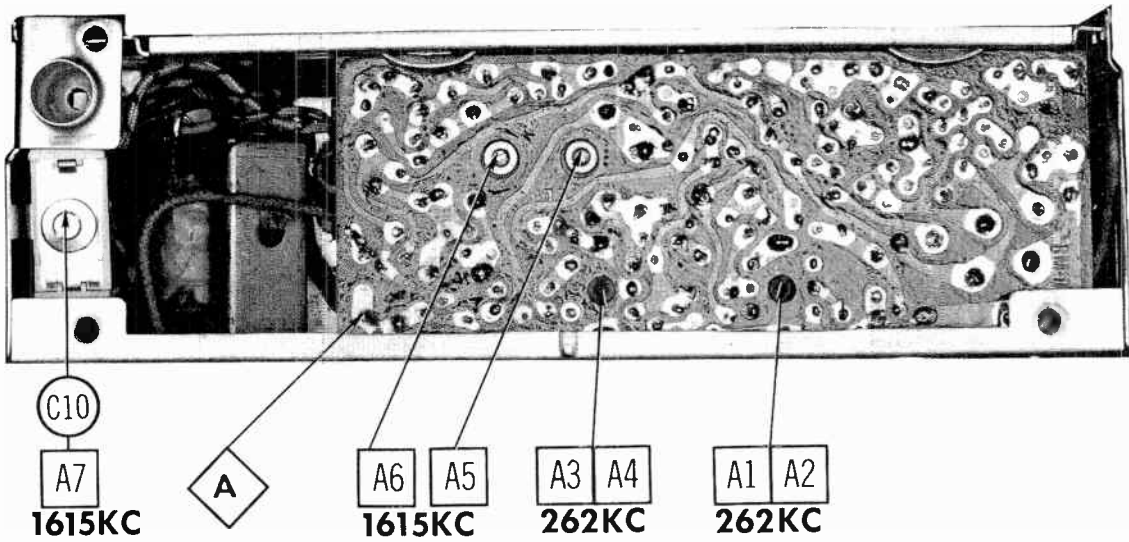
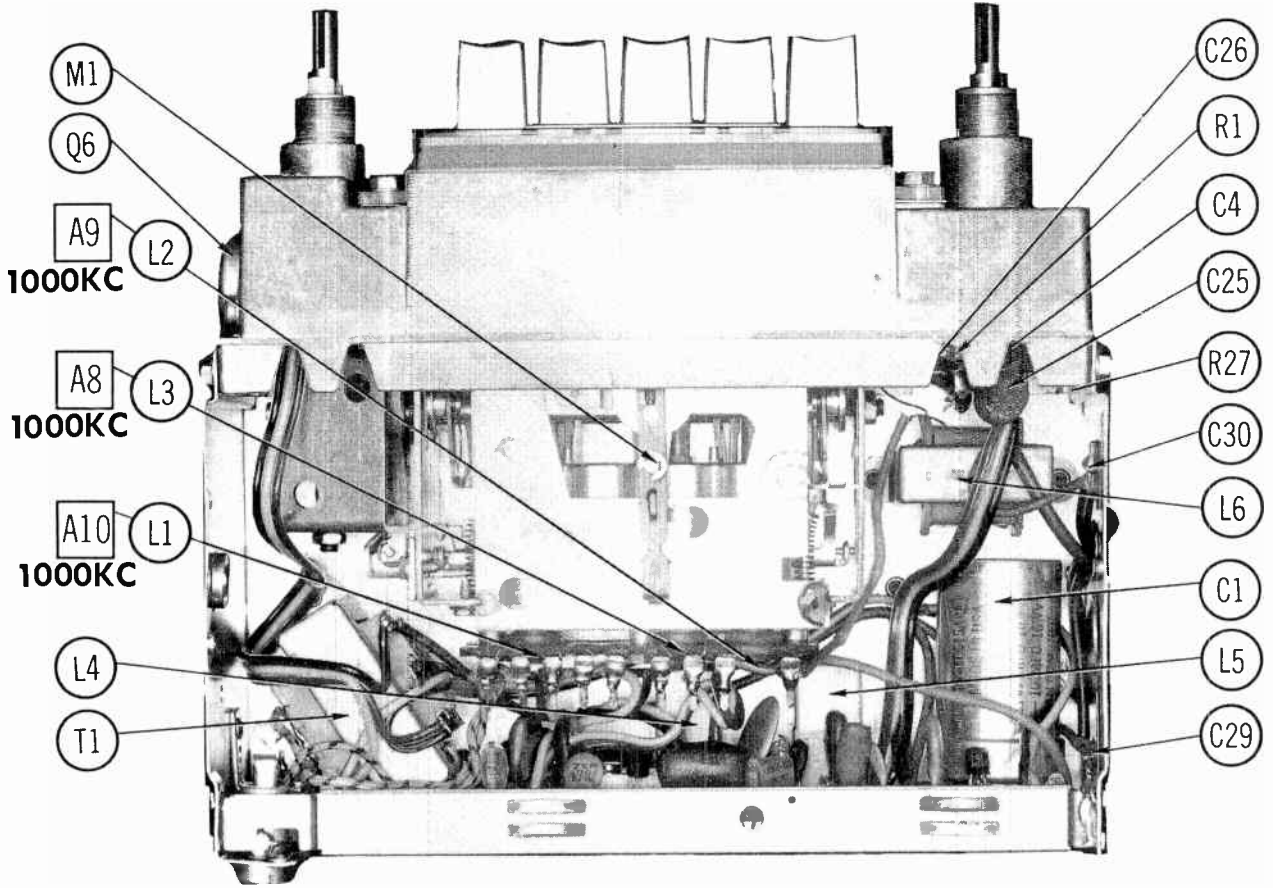
ALIGNMENT INSTRUCTIONS

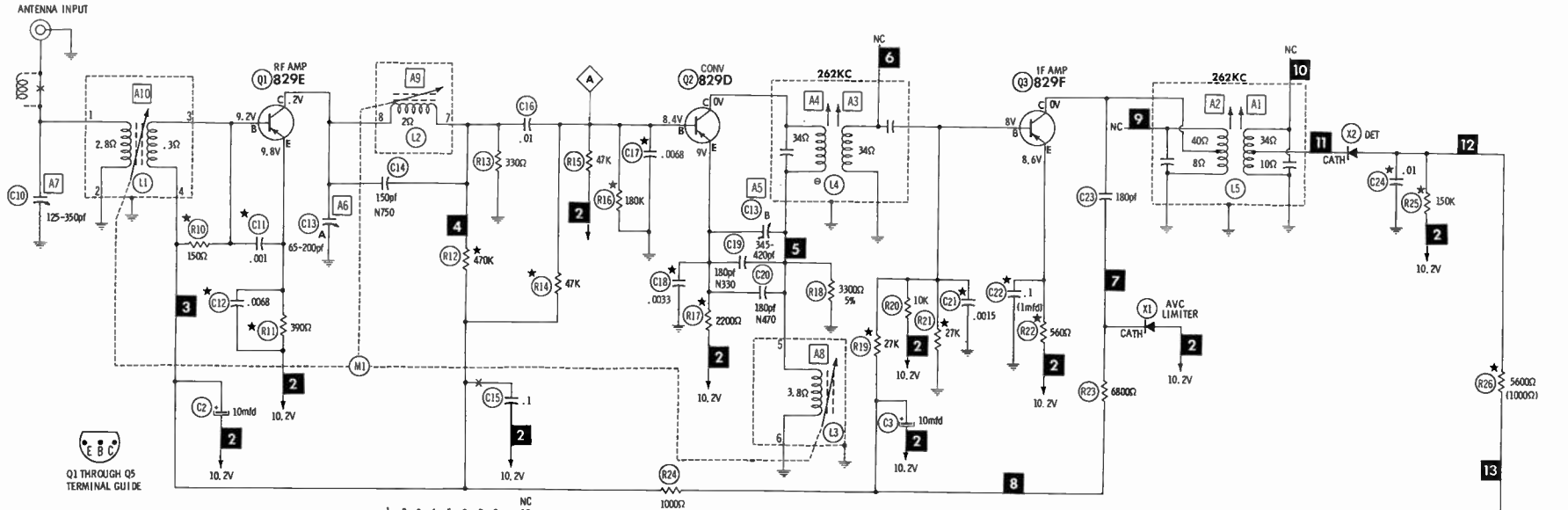
Check for specified source voltage. Use only enough generator output to provide a usable indication. Suggested Alignment Tools: A1 thru A4. GENERAL CEMENT: 9296, 9297, 9300 WALSCO: 2510, 2546, 2547 A5, A6, A7. GENERAL CEMENT: 8290, 8868, 9087 WALSCO: 2525, 2528, 2587			PUSH-BUTTON ADJUSTMENT 1. Pull button out. 2. Tune manually to desired station. 3. Press button in firmly. 4. Repeat for remaining buttons.		
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1. High side thru .1mfd to point Δ , low side to ground.	262KC (400v Mod.)	High freq. end stop.	Output meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2. Thru dummy antenna to antenna receptacle.	1615KC	"	"	A5, A6, A7	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, A10) out of coils but not out of forms. Repeat Step 2.					
3. Thru dummy antenna to antenna receptacle.	1000KC	Tune to signal.	Output meter across voice coil.	A8, A9, A10	Adjust for maximum. Repeat Steps 2 and 3 until no further improvement is noted.
With radio installed in car and antenna extended to desired height, tune in a weak station near 1400KC and adjust A7 for maximum output. Antenna adjustment (A7) is located right rear below antenna receptacle.					

HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

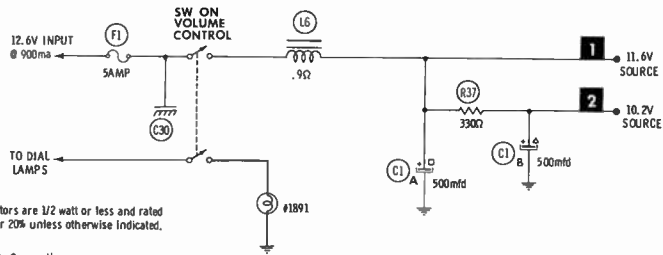
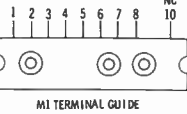
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World Radio History





Q1 THROUGH Q5
TERMINAL GUIDE



Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.

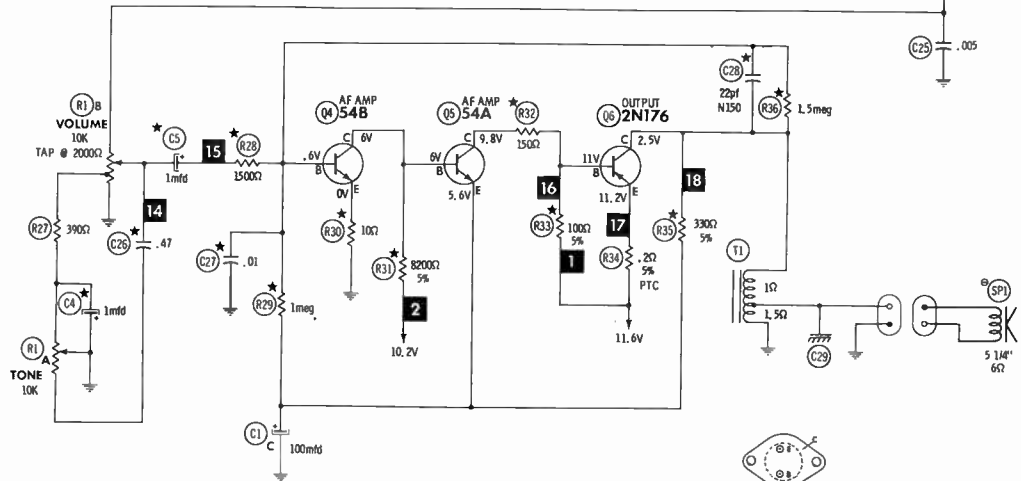
NC No Connection

* Nominal value, may vary.

- ⊙ See parts list
- 1. Voltage measurements taken with vacuum tube voltmeter.
- 2. All controls set for normal operation, no signal applied.
- 3. Measured values are from socket pin or terminal to common ground.
- 4. All terminals viewed from bottom unless otherwise designated.
- 5. Numbers assigned to terminals may not be found on the unit.
- 6. Supply voltage maintained at rated value for voltage readings.
- 7. Resistance measurements not given because of the wide variation in internal resistance of transistor.

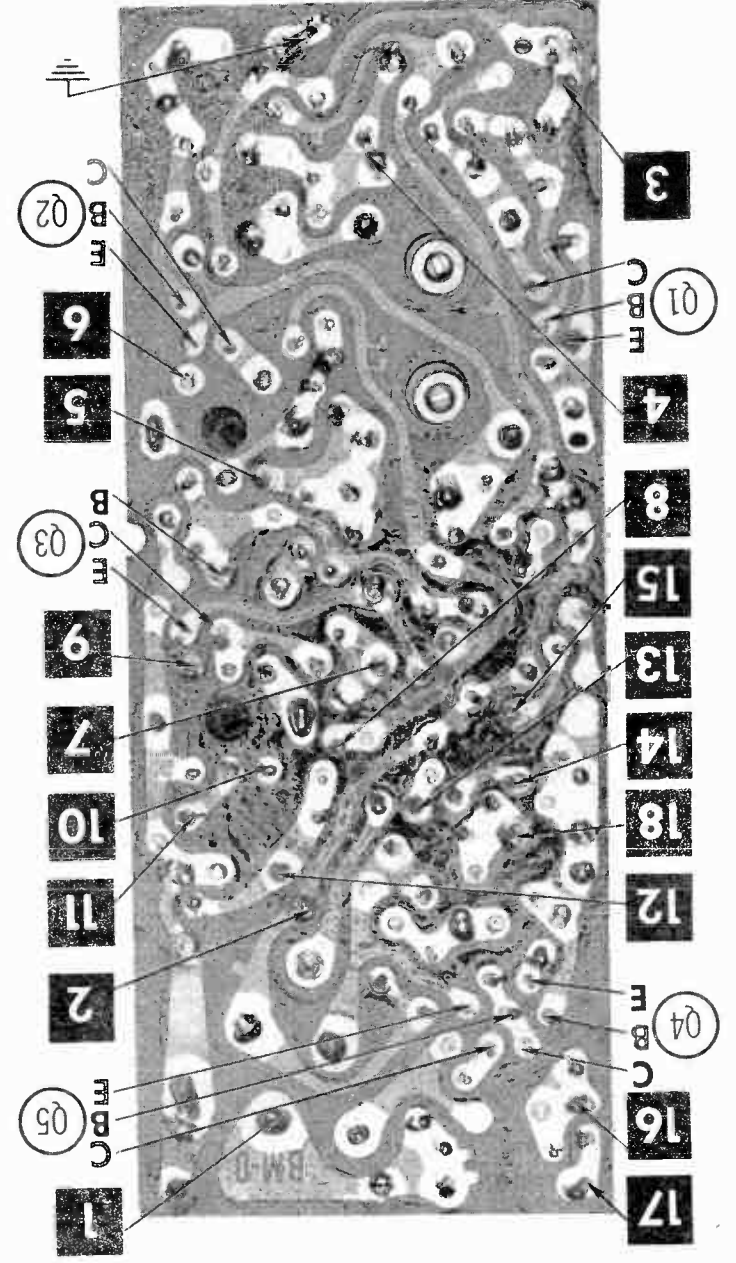
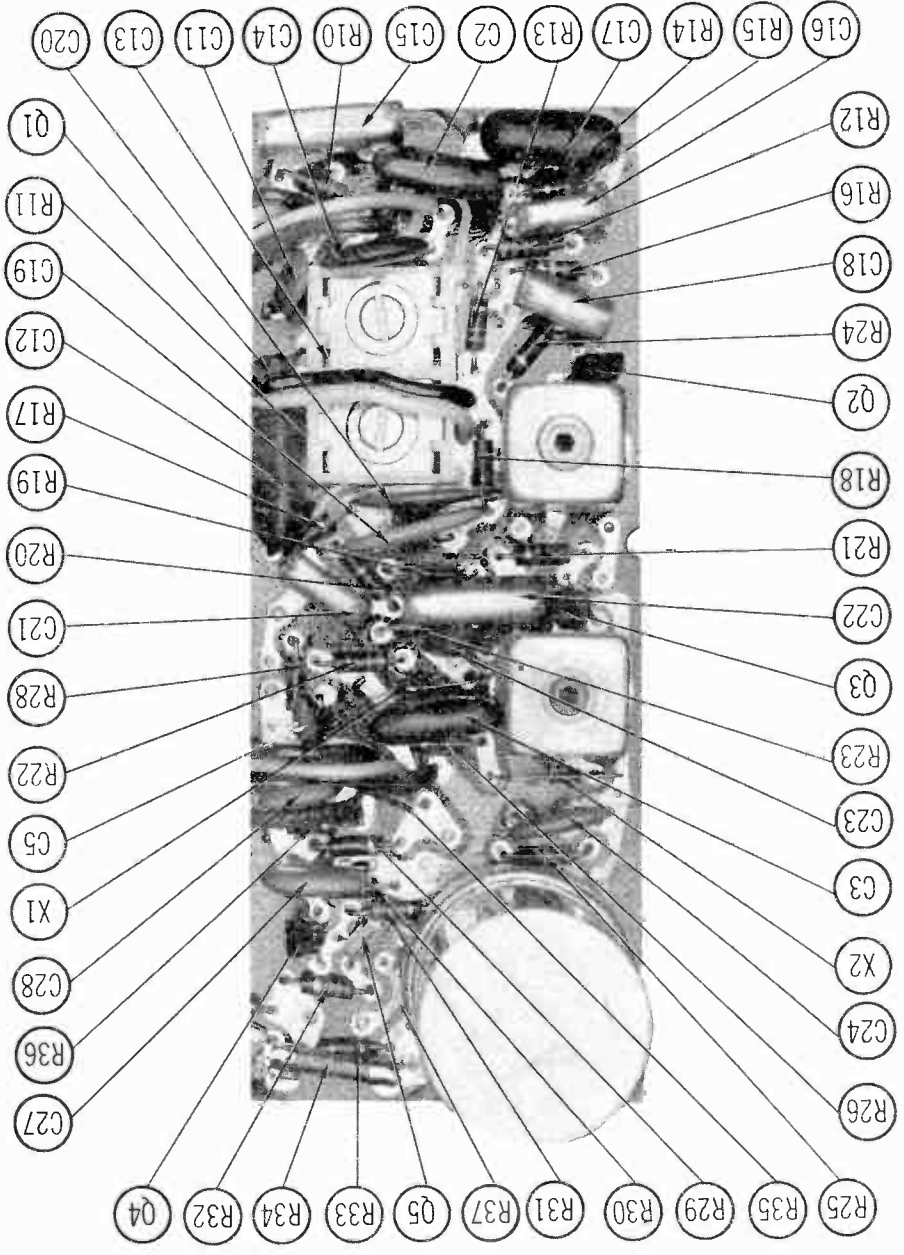
A PHOTOFAC STANDARD NOTATION SCHEMATIC
with **CIRCUITRACE**

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Q6 TERMINAL GUIDE

**VOLKSWAGEN MODELS 75MVG, 75MVT,
75MVW**



PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				Motorola PART No.	NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.		
Q1	829E	RF Amp Converter			TR-19		48S134914	PNP
Q2	829D				TR-19		48S134913	PNP
Q3	829F	IF Amp			TR-19		(48S134914) 48S134915	PNP
Q4	54B	AF Amp	DS-66	GE-10	TR-21	SK-3020	(48S134914) 48S134809	NPN
Q5	54A	AF Amp	DS-66	GE-10	TR-21	SK-3020	(48S134810) 48S134808	NPN
Q6	2N176	Output	DS-520	GE-3	TR-01	SK-3009	48S134846	PNP

* When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS & DIODES		RECTIFIERS		
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	RCA PART No.	SARKES TARZIAN PART No.
X1		48S134816 (1N461)	1N82A	1N82A			
X2		48S134816 (1N461)	1N82A	1N82A			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	Motorola PART No.	REPLACEMENT DATA					SPRAGUE PART No.
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	
C1A	500	23C40516A02	PWH3-00-95		CC0013	XC3-48	PFP300.18	PC-L-3026.11
B	500	(23C40302A04)						
C	100							
C2	10 6V	23C43280A03	CRE307A	EA6-10	NLW10-6	MT1-5	TT6X10	TE-1087
C3	10 6V	23C43280A03	CRE307A	EA6-10	NLW10-6	MT1-5	TT6X10	TE-1087
C4	1 10V	23C43280A06	BCD12001	EP50-2	NLW1-50	MT1-1	MTV1CB50	TE-1120
		(23C43280A01)						
C5	1 10V	23C43280A06	BCD12001	EP50-2	NLW1-50	MT1-1	MTV1CB50	TE-1120
		(23C43280A01)						

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	125-350	#20B43088A02				428		
C11	.001	†	DAC-2	DD30-102	HVX162XP102M			
C12	.0068 100V	†	DBE6D68	CPR-6800J	DMF6D68	6DP-1-682	PVC6268	30GA-D10 6PS-D68
C13A	65-200	#20C40254A15						
B	345-420							
C14	150 N750		N750-DI 150	DTN-150		CCTN-151	CN7315	10TCU-T15
C15	.1 100V		DBE2P1		DMF2P1	2DP-3-104	PVC201	2PS-P10
C16	.01 100V		DBE4S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10
C17	.0068 100V	†	DBE6D68	CPR-6800J	DMF6D68	6DP-1-682	PVC6268	6PS-D68
C18	.0033 100V	†	DBE6D33	CPR-3300J	DMF6D33	6DP-1-332	PVC6233	6PS-D33
C19	180 N330	†				*	*	10TCS-T18
C20	180 N470	†				*	*	10TCT-T18
C21	.0015 100V	†	DBE6D15	CPR-1500J	DMF6D15	6DP-1-152	PVC6215	6PS-D15
C22	.1 100V	†	DBE2P1		DMF2P1	2DP-3-104	PVC201	2PS-P10
C23	180	†	DI-150	DD-151		CCD-151	GP315	10TS-T15
C24	.01	†	TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C25	.005		TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C26	.47			UK-474	HC Z3ROXR474P		MAG3047	HY-130
C27	.01	†	TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C28	22 N150	†				*	*	10TCP-Q22
C29		#64A41668A04						
C30		#64A41668A08						

Motorola Part Number † Nominal Value
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			Motorola PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone	20K	18C42340A02	F1-25K①,		†QJ-2443A	FA24L①,
B	Volume/Switch	10K Tap @ 2000Ω		R14-7500 FFS104, RFS113, KR-7			RU14T53, OX1250A, IS1812, US42

① Use original spring mounting clips
② Cut off tab ears (R5) and use original spring mounting clips
† "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-119, P22-109 (Panel), B19-116X, R26-124 (Rear), R-5② (Tab Mount), 76-2 (Switch)

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	Motorola PART No.			IRC PART No.	WORKMAN PART No.	PART No.
R34	.2Ω (PTC)			17B40757A03					

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				
		Motorola PART No.	MEISSNER Part No.	MERIT PART No.	MILLER PART No.	WORKMAN PART No.
L1	Antenna	①				
L2	RF	①				
L3	Oscillator	①				
L4	Input IF	24D40310B05				
L5	Output IF	24D40310B06				

① Part of M1 or (Coils and mounting plate assembly Part Number 1V43200A09)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Motorola PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	18Ω Tap	@ 6Ω	25D43922A13					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	Motorola PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L6	900ma	.9Ω	11mh	25D40755B08	C-4095	TC-2	TR-154	TY17XT	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA			NOTES
				Motorola PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5 1/4" PM	6Ω	50C40261B01			5A15Z6 Model: 7SMVG Model: 7SMVT Model: 7SMVW Model: 7SMVF	
	6" PM	6Ω	50C42592A01				
	5" PM	6Ω	50C41265B01				
	4" X 8" PM	8Ω	50C41451B01				

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	AGA 5 Amp	65S122345	9C4105A14	AGA 5	HAF	301005	155004	

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(When Ordering Specify Model, Chassis & Color)

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Knob, Tuning or Volume	36B41423B01	Push Button	38D40009B01
Knob, Tone or Dummy	36C40039B01		

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Tuner Coil Assembly	77D43175A04 1V43200A09	AT588

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)

VOLKSWAGEN MODELS 7SMVG, 7SMVT, 7SMVW

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