

SAMS PHOTOFACT[®]

AUTO RADIO SERIES



AR-72
72
FEBRUARY 1970



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PONTIAC

(69) Pontiac
92BPB1 (7307312)

(69) Grand Prix
92GPB1 (7307332)

UNIVERSAL

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Lear Jet A-250
Masterwork M8200
Motorola FM2101A
TM713S

UNIVERSAL(CONT.)

Ranger RR-35-MPX
RR-35-MPX-2
RR-35-MPX-4

Truetone MIC4050A-07

\$3.25
\$4.10 IN CANADA
Cat. No. AR-72



SAMS PHOTOFAC[®] AUTO RADIO SERIES



VOLUME

72



by the *Howard W. Sams* ENGINEERING STAFF



HOWARD W. SAMS & CO., INC.
INDIANAPOLIS INDIANA

**FIRST EDITION
FIRST PRINTING – FEBRUARY 1970**

**PHOTOFACT®
AUTO RADIO SERIES
VOLUME 72**

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Library of Congress Catalog Card Number: 49-11493



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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 2. Remove knobs.

Step 3. Remove nuts from control bushings and cabinet braces.

Step 4. Remove radio from under dash.

Step 5. Remove nuts holding speaker and remove speaker from under dash.

PONTIAC - 1969 BEAUMONT, BONNEVILLE, CATALINA

Step 1. Remove screws from lower steering column cover and remove cover.

Step 2. Remove screws from air-condition duct and pull down.
Refer to General Removal Information.

PONTIAC - 1969 - EXECUTIVE - GRAND PRIX

Step 1. Remove screw from lower air-condition duct and remove duct.
Refer to General Removal Information.



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index



AUTOMATIC MODEL SEA-6801
(8-Track Stereo Player)

AUTOMATIC MODEL SEA-6801

OPERATING INSTRUCTIONS

Insert cartridge until it locks and turns unit on.

Set operating controls as desired.

Press program selector to play desired tracks, or allow unit to select tracks automatically.

Remove cartridge to turn unit off.

CLEANING

Clean all tape contact surfaces with a soft, lint-free material and head cleaner or methyl alcohol. Use alcohol to remove oil and grease from all driving surfaces.

CAUTION: Avoid getting head cleaner on any plastic surface.

LUBRICATING

Lubricate bearings and bushings lightly with #20 machine oil. Use a light film of non-hardening grease on cam surfaces.

HEAD DEMAGNETIZING

Demagnetize head when unit is serviced. Avoid using magnetic materials near head.

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TQ691

ADJUSTMENTS

ADJUST	REMARKS
Head Height	Play a test cartridge, follow instructions with cartridge, and adjust B1 for proper response.
Head Azimuth	Connect an AC VTVM across right output. Play a test cartridge and adjust B2 for maximum.
Head Tension	Adjust B6 for 2 ounces measured at head clamping screw.

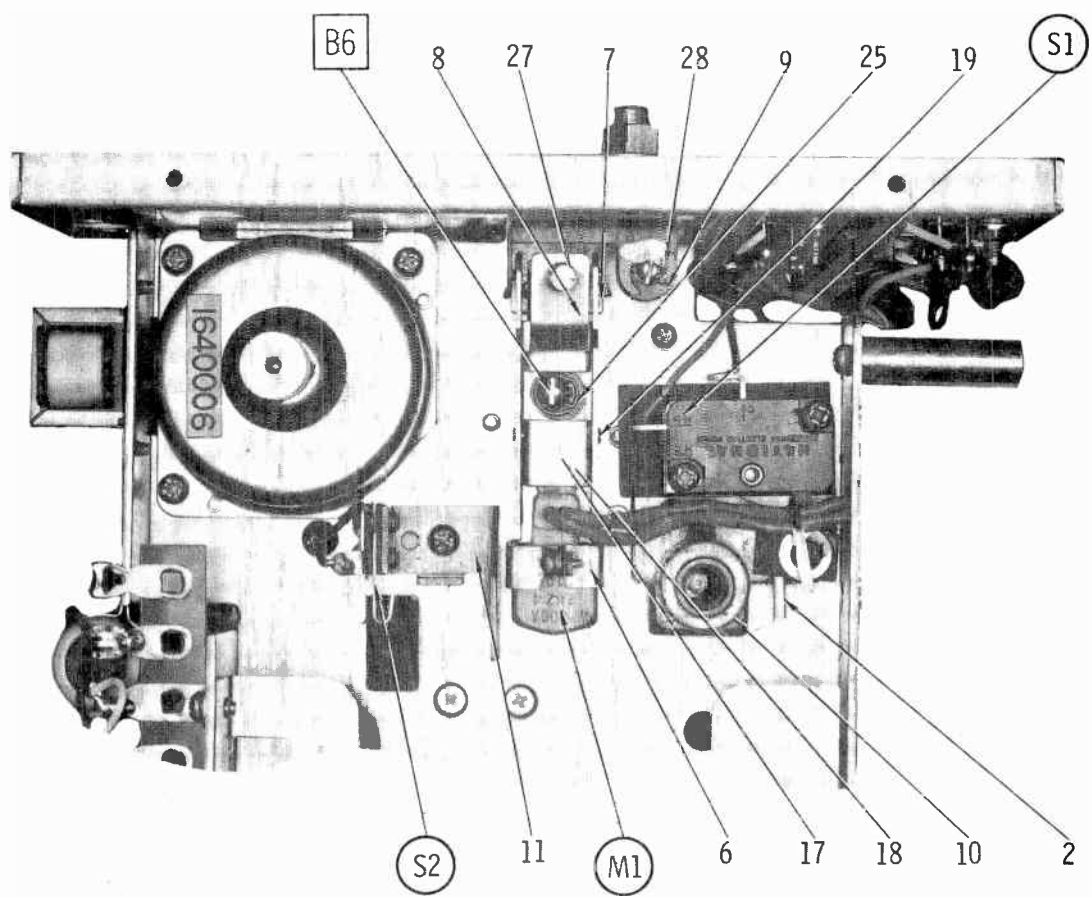
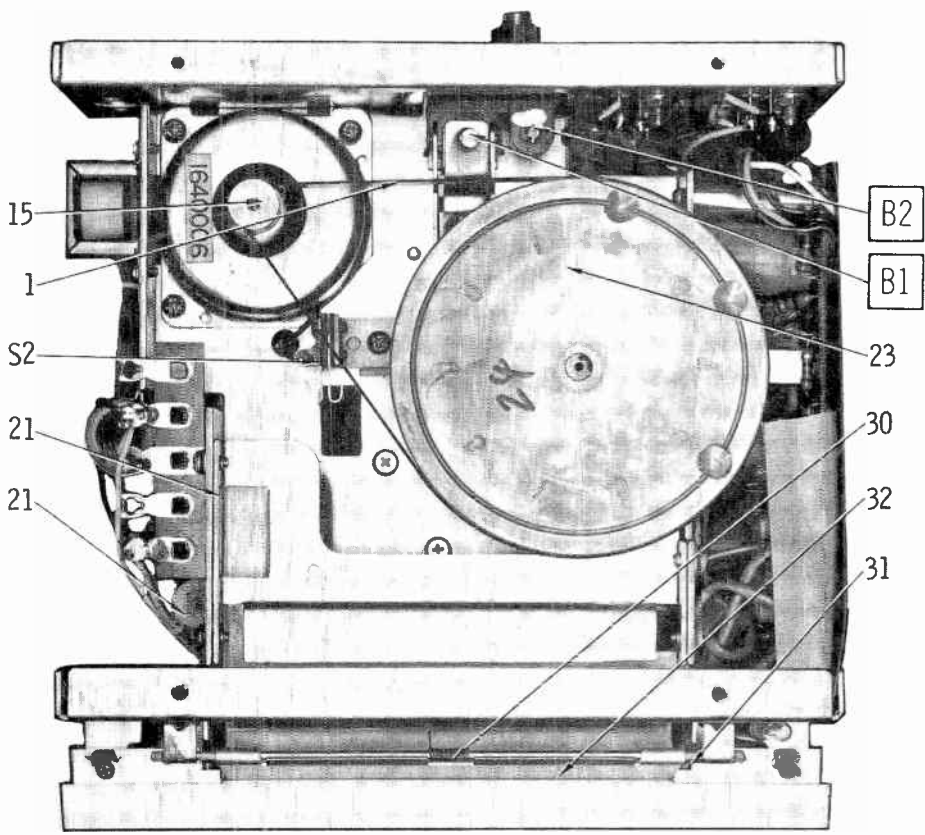
TROUBLE CHART

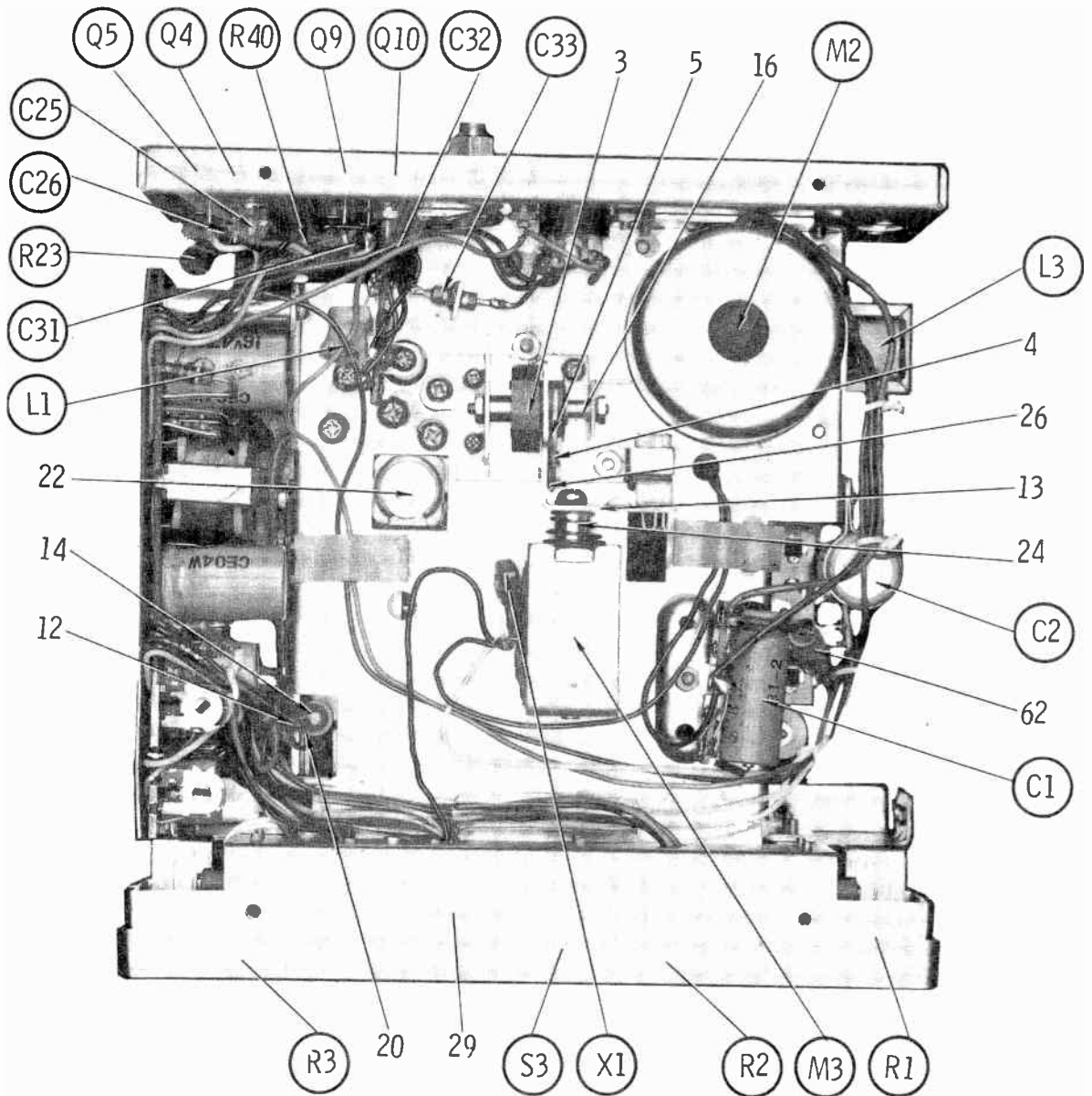
SYMPTOM	REMARKS
Capstan does not rotate.	Belt (1) dirty, worn, or broken. Assembly (10) binding. Motor defective or not supplied with power.
Head-shift mechanism inoperative	Switch (S2) dirty. Cam (3) binding or worn. Arms (4) and (5) worn. Spring (26) weak or missing. Solenoid defective or not supplied with power. Cartridge defective.
Wow or Flutter.	Belt (1) dirty or worn. Capstan dirty or binding. Cartridge defective. Motor defective.
Sound weak or distorted.	Head dirty, misaligned, or defective. Cartridge defective. Amplifiers defective.
Tape is pulled from cartridge.	Cartridge defective. Capstan dirty or scored.

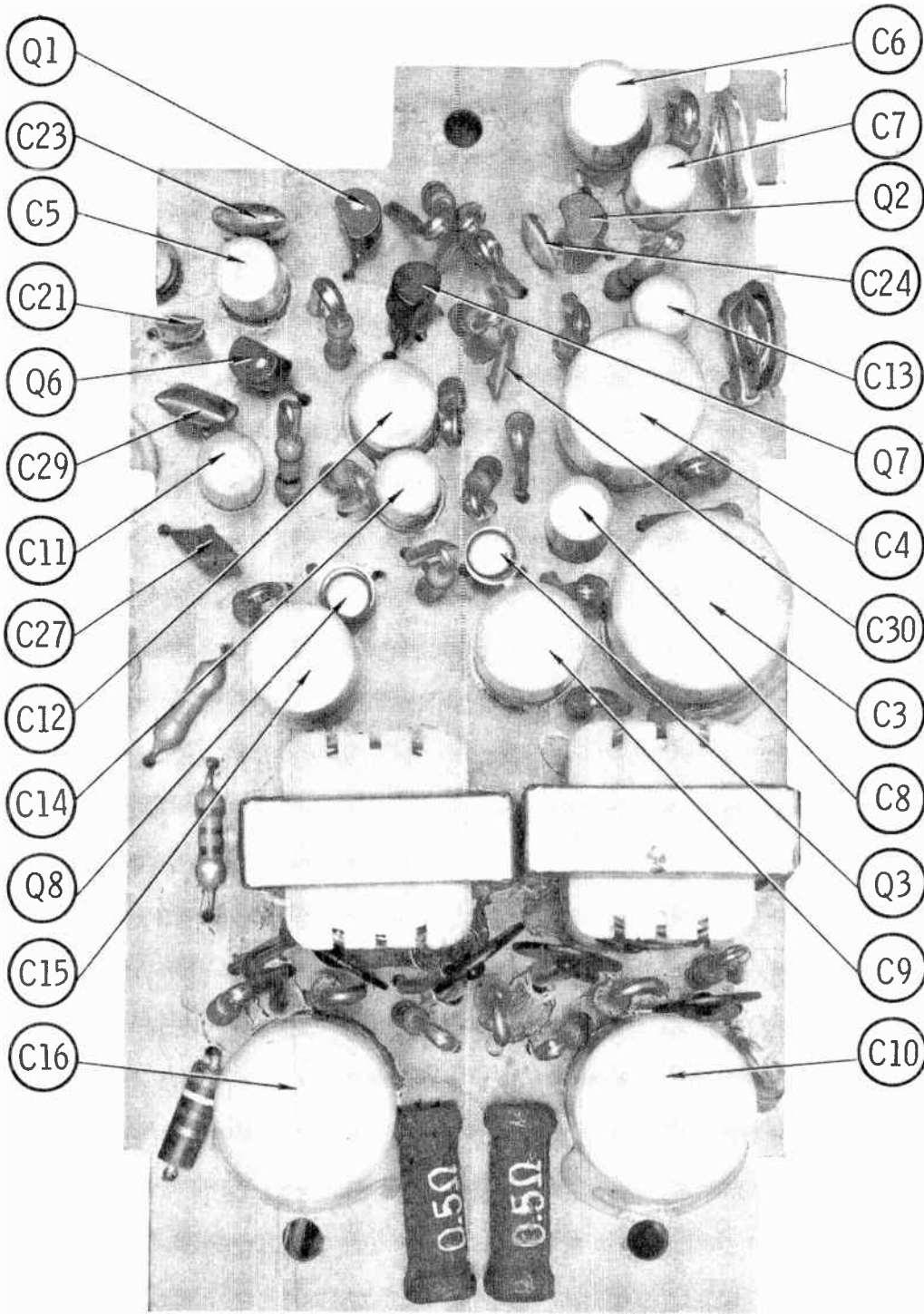
MECHANICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1*	67A10338*	Drive Belt *	17	135A10325	Head Shaft
2	52A10308	Switch Arm	18	69A10326	Head Support
3	69A10337	Cam	19	135A10328	Head Adjust Arm Shaft
4	135A10317	Cam Arm (B)	20	67A10330	Guide Roller (B)
5	135A10316	Cam Arm (A)	21	67A10333	Guide Roller (2 used)
6	52A10304	Head Arm (A)	22	118A10335	Flywheel Bearing
7	52A10305	Azimuth Adjusting Arm	23	54A10336	Flywheel
8	135A10306	Height Adjusting Arm	24	45A10339	Solenoid Spring
9	52A10307	Head Arm (B)	25	45A10340	Head Arm Spring
10	135A10334	Flywheel Housing Assembly (Stand)	26	45A10341	Cam Arm Spring
11	52A10301	Tape Guide	27	45A10342	Stop Spring
12	52A10309	Guide Arm (B)	28	45A10343	Head Adjusting Spring
13	52A10315	Solenoid Arm	29	45A10344	Channel Selector Spring
14	45A10321	Guide Roller Shaft	30	45A10345	Door Spring
15	69A10322	Motor Pulley	31	135A10356	Door Shaft
16	69A10324	Cam Shaft	32	55A10296	Door

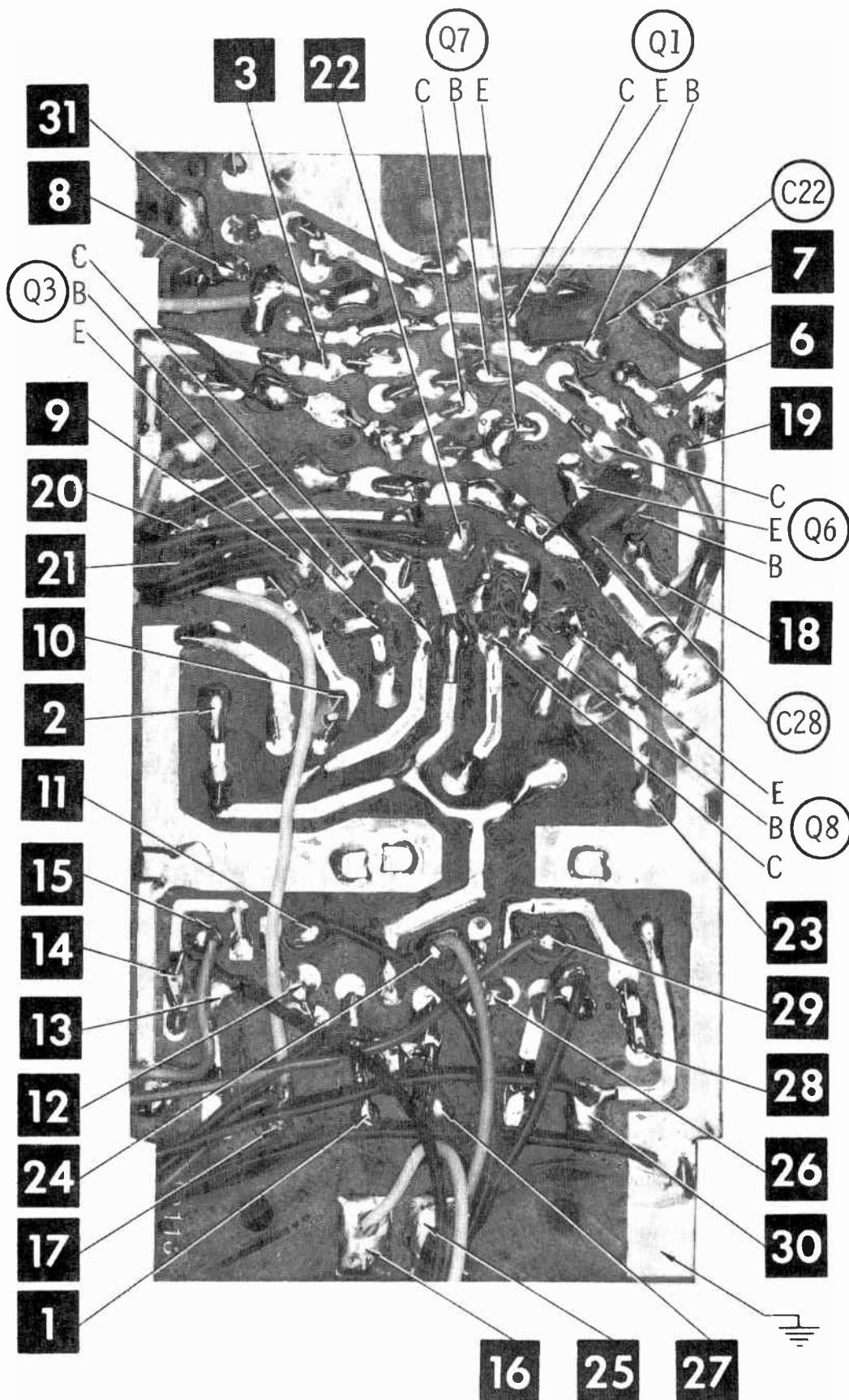
* Drive Belt -- WALSCO Replacement Part No. 1424-06.



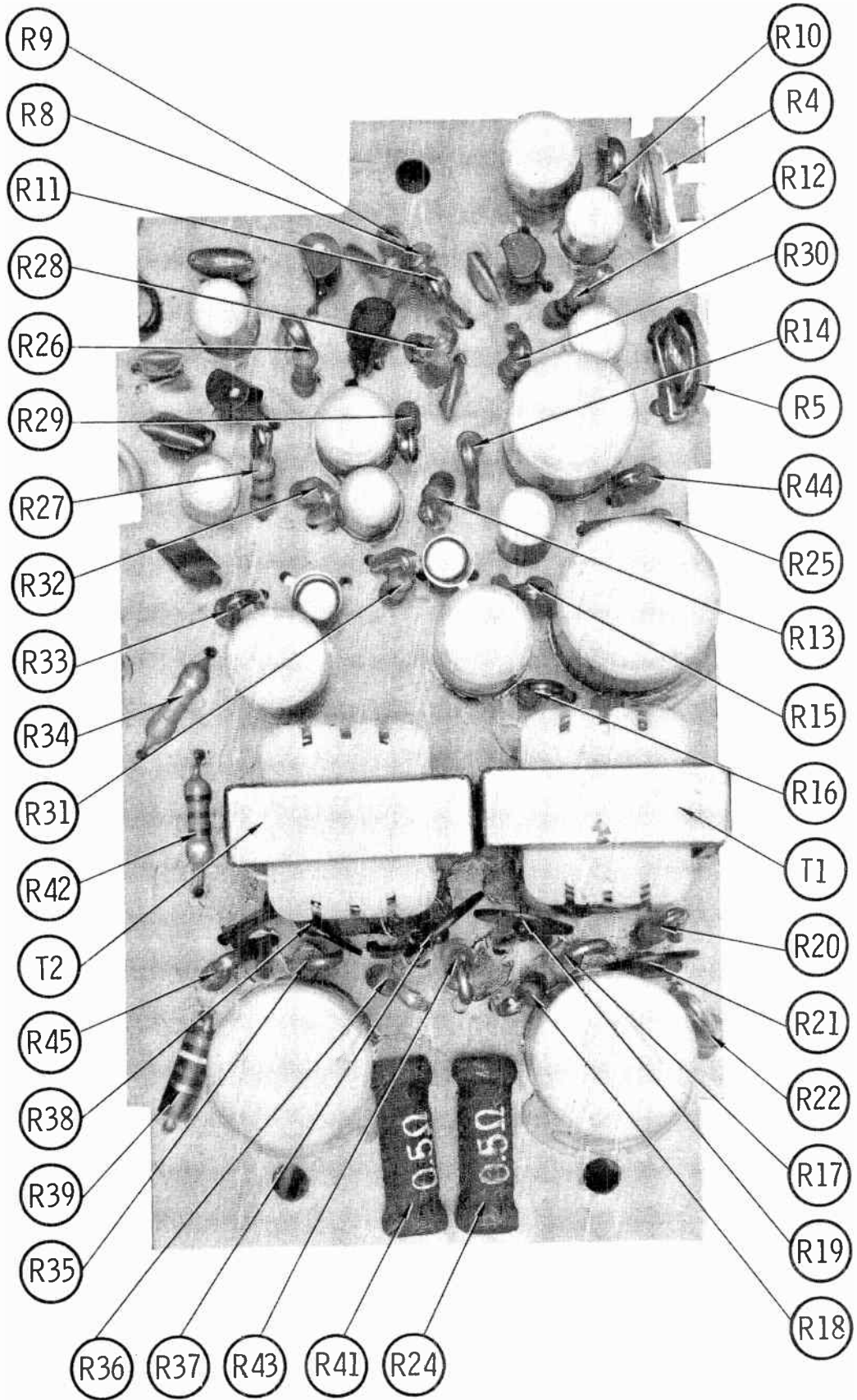




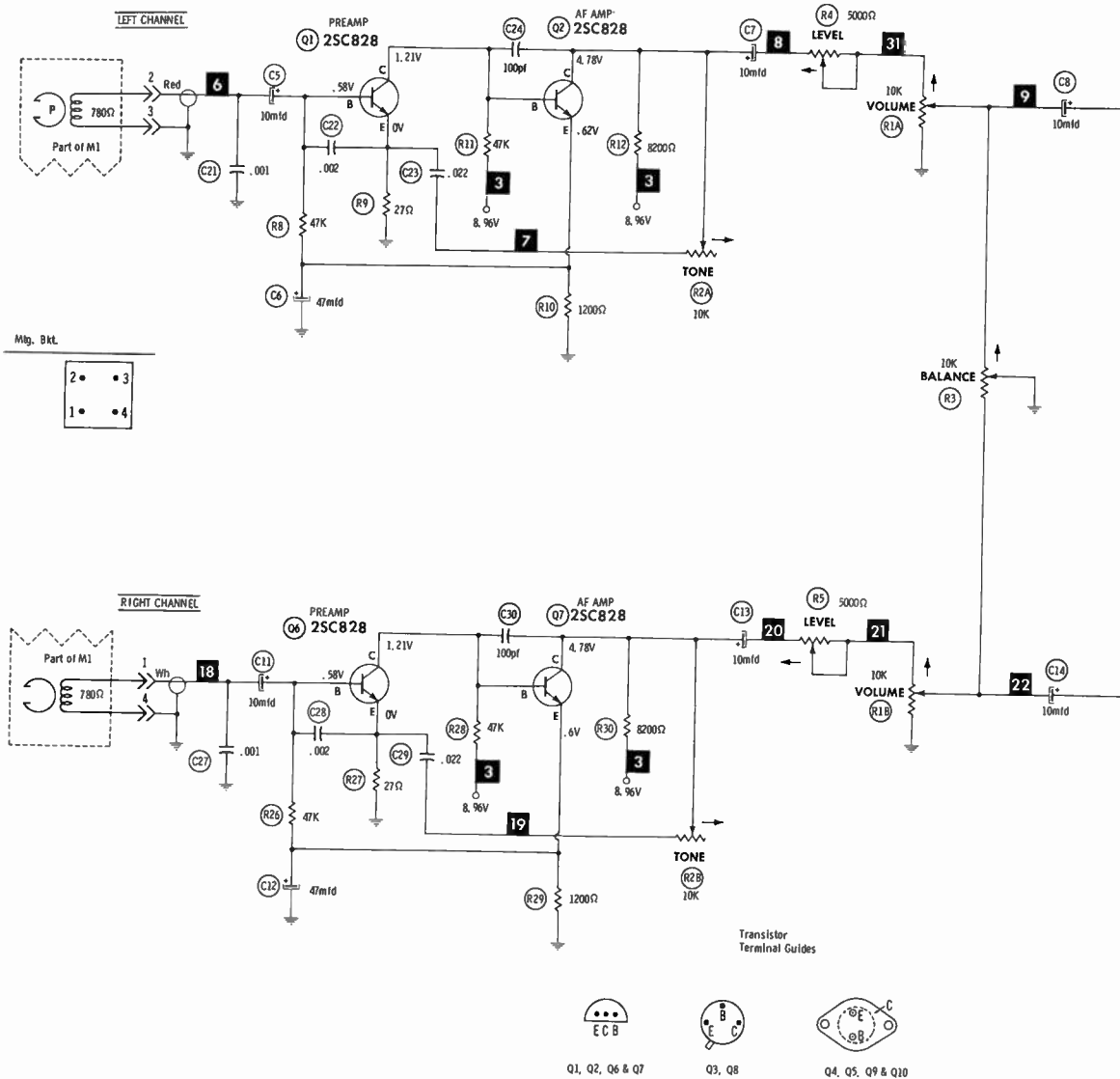
- Q1
- C23
- C5
- C21
- Q6
- C29
- C11
- C27
- C12
- C14
- Q8
- C15
- C16
- C6
- C7
- Q2
- C24
- C13
- Q7
- C4
- C30
- C3
- C8
- Q3
- C9
- C10



A Howard W. Sams CIRCUITRACE Photo

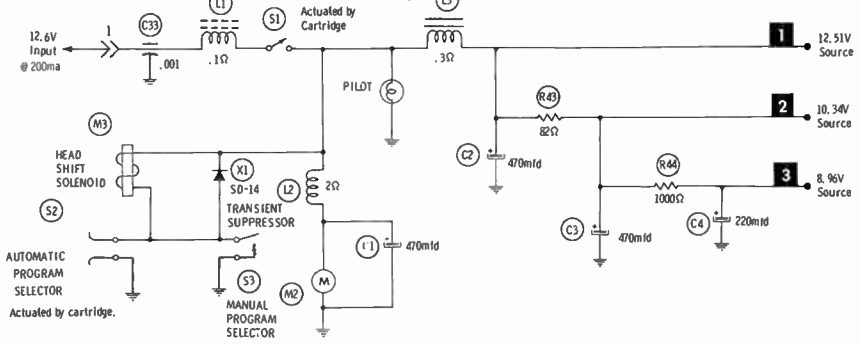
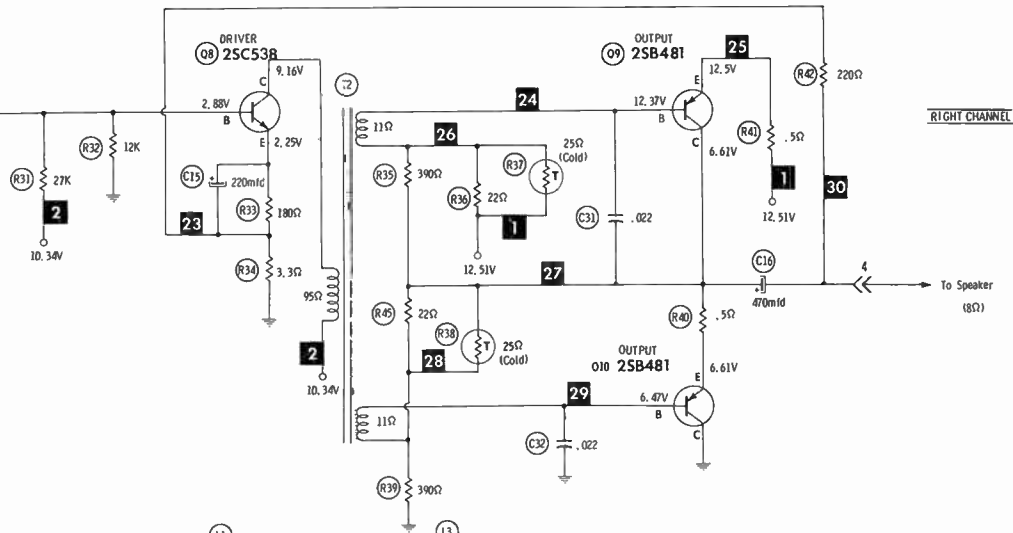
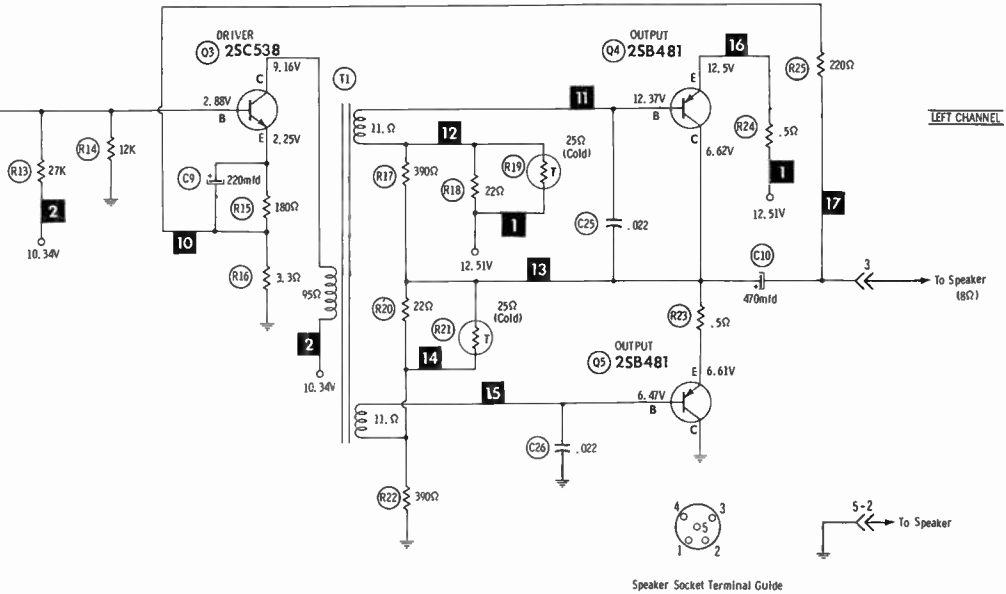


NOTE: DEMAGNETIZE HEADS AFTER SERVICING



Resistors are 1/2W or less, 10% or 20%, unless otherwise indicated.
 Supply voltage maintained at rated value for measurements.
 Voltage and resistance measured with VVM or equivalent meter,
 no signal applied and controls adjusted for normal operation.
 Controls viewed from actuator end. Arrow indicates clockwise rotation.
 Numbers assigned to terminals may not be found on the unit.
 Transistor resistances vary widely. No resistance measurements taken.

A PHOTOFACIT STANDARD NOTATION SCHEMATIC
 with **CIRCUITRACE**
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AUTOMATIC MODEL SEA-6801

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.	TYPE No.	FUNCTION	REPLACEMENT DATA					
			MFGR. PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q1	2SC828	Preamp	6A10227	GE-10	TR-21	HEP55	SK3020	ECG 128
Q2	2SC828	Preamp	6A10227	GE-10	TR-21	HEP55	SK3020	ECG 128
Q3	2SC538	Driver	6A10228	GE-17	TR-24	HEP54	SK3020	ECG 128
Q4	2SB481	Output (1)	6A10229					ECG 131MP*
Q5	2SB481	Output (1)	6A10229					ECG 131MP*
Q6	2SC828	Preamp	6A10227	GE-10	TR-21	HEP55	SK3020	ECG 128
Q7	2SC828	Preamp	6A10227	GE-10	TR-21	HEP55	SK3020	ECG 128
Q8	2SC535	Driver	6A10228	GE-17	TR-24	HEP54	SK3020	ECG 128
Q9	2SB481	Output (1)	6A10229					ECG 131MP*
Q10	2SB481	Output (1)	6A10229					ECG 131MP*

(1) When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.
* Matched Pair

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES			REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.	RCA PART No.	
X1	SD-1Y	GE-504A	5A4D	ECG 116	SK3017A	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	470 16	20A10432	PRS1220	EA15-500	WBR500-35	QT1-30A	TC1505A	TL-1166
C2	470 16	20A10236	BCD15500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166
C3	470 16	20A10236	BCD15500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166
C4	220 16	20A10530	BCD20200	EA15-250	PC200-16	MT1-23	MTV200CK15	TE-1164
C5	10 16	20A10427	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C6	47 6.3	20A10233	BCD6050	EP6-50	PC50-16	MT1-15	MTV50CB15	TE-1133
C7	10 16	20A10427	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C8	10 16	20A10427	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C9	220 6.3	20A10234	BCD6200	EA6-250	PC200-16	MT1-23	MTV200CK10	TE-1104
C10	470 16	20A10236	BCD15500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166
C11	10 16	20A10427	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C12	47 6.3	20A10233	BCD6050	EP6-50	PC50-16	MT1-15	MTV50CB15	TE-1133
C13	10 16	20A10427	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C14	10 16	20A10427	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C15	220 6.3	20A10234	BCD6200	EA6-250	PC200-16	MT1-23	MTV200CK10	TE-1104
C16	470 16	20A10236	BCD15500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166

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.
C21	.001		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	25S-D10
C22	.002		GPD X5F202K	OM-202	GP2000	CCD-202	GP220	25S-D20
C23	.022		TTP-02	CK-203	MGPO2	CCD-203	TA120	TG-S20
C24	100		NPO-DI 100	DTZ-100	NPO100	CCTO-101	CNO310	10TCC-T10
C25	.022		TTP-02	CK-203	MGPO2	CCO-203	TA120	TG-S20
C26	.022		TTP-02	CK-203	MGPO2	CCD-203	TA120	TG-S20
C27	.001		GPD X5F102K	OM-102	GP1000	CCD-102	SM210	25S-010
C28	.002		GPD X5F202K	OM-202	GP2000	CCD-202	GP220	25S-020
C29	.022		TTP-02	CK-203	MGPO2	CCD-203	TA120	TG-S20
C30	100		NPO-OI 100	OTZ-100	NPO100	CCTO-101	CNO310	10TCC-T10
C31	.022		TTP-02	CK-203	MGPO2	CCD-203	TA120	TG-S20
C32	.022		TTP-02	CK-203	MGPO2	CCO-203	TA120	TG-S20
C33	.001		EF-6-1000	FT-1000		CCF-102		

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Volume (Left)	10K	80A10404				
B	Volume (Right)	10K					
R2A	Tone (Left)	10K	80A10403				
B	Tone (Right)	10K					
R3	Balance	10K	80A10507				
R4	Level (Left)	5000 Ohm	62A10208	T-5000 (1)		X201R502B (1)	MTC53L1 (1)
R5	Level (Right)	5000 Ohm	62A10208	T-5000 (1)		X201R502B (1)	MTC53L1 (1)

(1) Cut off one of the end terminals and bend to fit "PC" Board.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.
R19	25 Ohm (Cold)			5A10230
R21	25 Ohm (Cold)			5A10230

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.
R37	25 Ohm (Cold)			5A10230
R38	25 Ohm (Cold)			5A10230

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (10 uh)	14A10517	19-1005	4622	T860
L2	RF Choke (10 uh)	14A10408	19-1005	4612	T860

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L3	200ma	.3 Ohm	1.5 mh	14A10512					

AUTOMATIC MODEL SEA-6801

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
	PRI.	SEC. 1	SEC. 2	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD Part No.	
T1	4	1	1	75A10411					
T2	4	1	1	75A10411					

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	3 Amp			AGC3	HDJ	312003	150145	

TAPE HEADS

ITEM No.	MEASURED			PART No.	NORTRONICS PART No.	DESCRIPTION
	INDUCTANCE	BIAS/ERASE VOLTS (RMS)	BIAS FREQ.			
M1	400 mh			130A10399	5800 (1)	8-Track Stereo Play (1) Use original mounting.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M2	Motor	130A10400	
M3	Solenoid	130A10413	
S1	Switch, ON-OFF	94A10401	
S2	Switch, Automatic Program Selector	94A10302	
S3	Switch, Manual Selector	94A10349	
	Switch, Contacts	94A10350	
	Indicator Lamp	130A10410	

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Escutcheon	54A10284	Tape Door	55A10296
Knob, Volume or Tone	47A10288	Indicator Lens	55A10298
Knob, Manual Program Selector	47A10289		



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index



LEAR JET MODEL A-250
(8-Track Stereo Player)

LEAR JET MODEL A-250

OPERATING INSTRUCTIONS

Press Volume control to turn power on, and insert a cartridge until it locks and turns unit on.

Set operating controls as desired.

Press program selector to play desired tracks, or allow unit to select tracks automatically.

Removing power from unit will automatically cause ejection of cartridge.

CLEANING

Clean all tape contact surfaces with a soft, lint-free material and head cleaner or methyl alcohol. Use alcohol to remove oil and grease from all driving surfaces.

CAUTION: Avoid getting head cleaner on any plastic surface.

LUBRICATING

Lubricate bearings and bushings lightly with #20 machine oil. Use a light film of non-hardening grease on cam surfaces.

HEAD DEMAGNETIZING

Demagnetize head when unit is serviced. Avoid using magnetic materials near head.

ADJUSTMENTS

ADJUST	REMARKS
Head Height	Play a test cartridge, follow instructions with cartridge, and adjust B1 for proper response.
Head Azimuth	Connect an AC VTVM across right output. Play a test cartridge and adjust B2 for maximum.
Motor Speed	Play a test cartridge with a timed-interval track, follow instructions with cartridge, and adjust B3 for correct interval between tones. (Make only a slight adjustment before rechecking speed.) Adjust B8 to increase or decrease the speed range that B3 will control.
Flywheel Play	Adjust B5 for a slight vertical play of flywheel.
Equalization Adjustment	Select tape mode, apply a 1000-cycle tone across left (right) section of Play Head, connect an AC VTVM across left (right) output, and note reading. Without moving Volume control, change the tone across the head to 7000 cycles at the same level and adjust R5 (R9) for the same output as obtained with the 1000-cycle tone.

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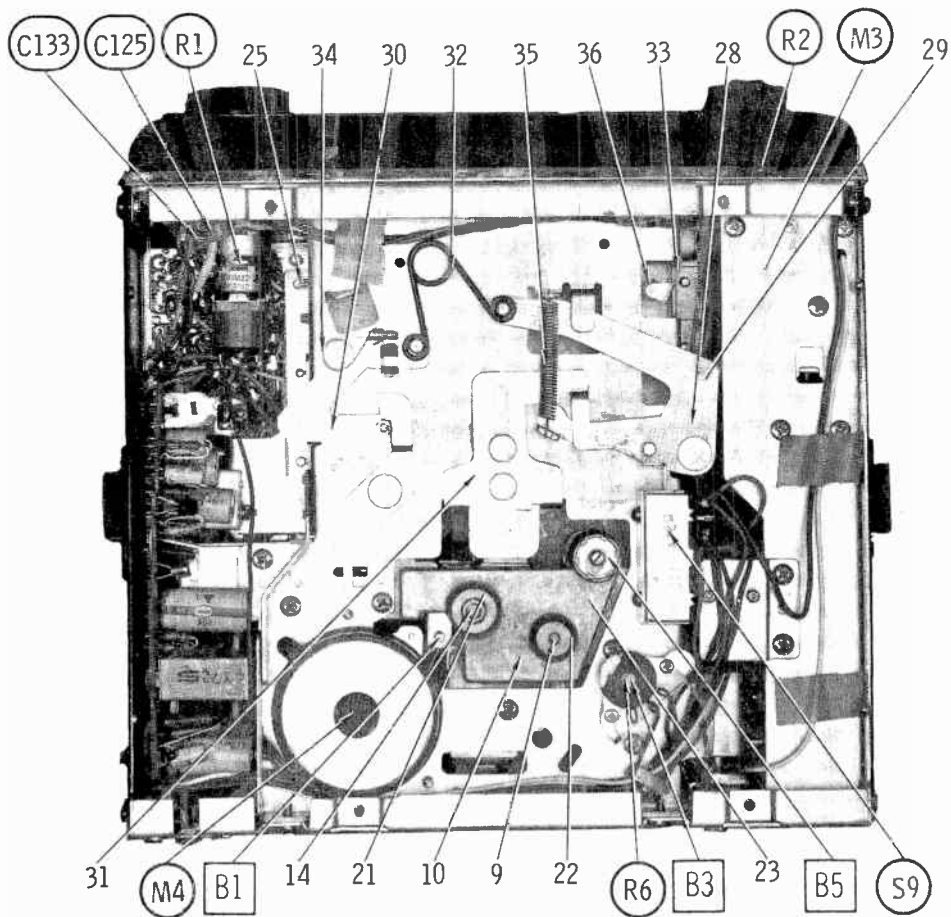
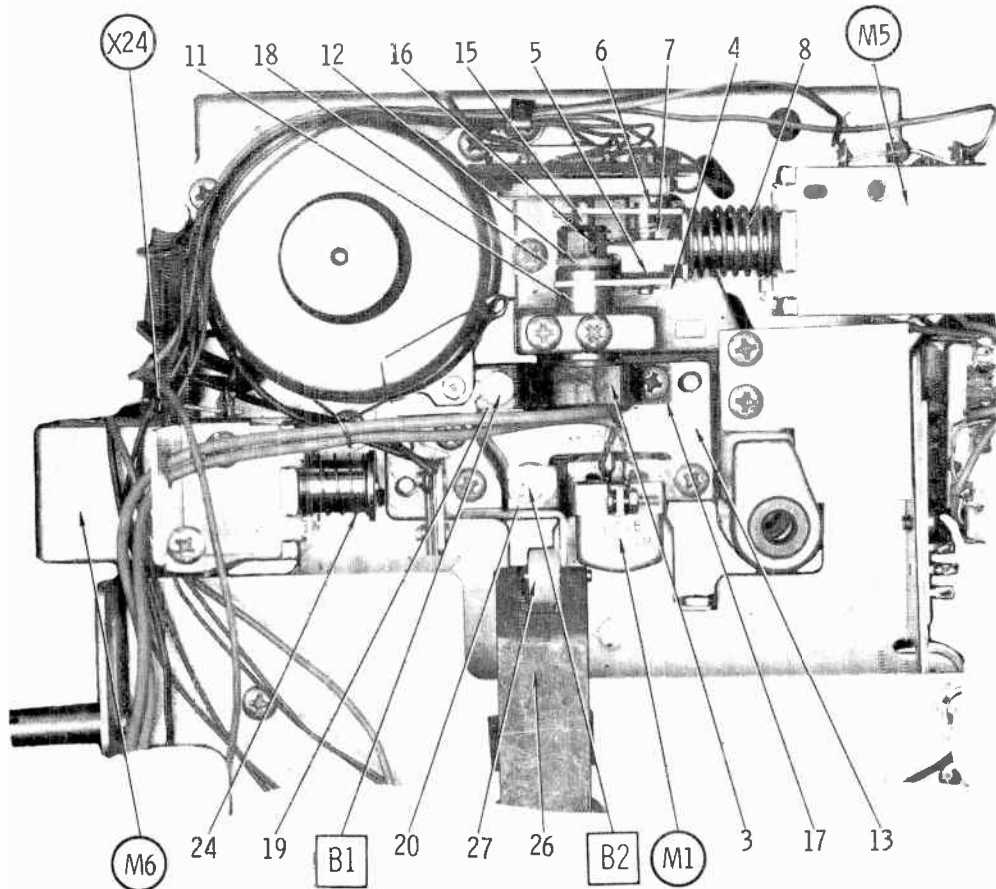
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TROUBLE CHART

SYMPTOM	REMARKS
Capstan does not rotate.	Belt (1) dirty, worn, or broken. Assembly (10) binding. Motor defective or not supplied with power.
Track-shift mechanism inoperative.	Switch (S2) dirty. Cam (3) binding. Spring (7) weak or missing. Spring (8) weak or missing. Shaft (15) binding. Solenoid (M5) defective or not supplied with power. Cartridge defective.
Wow or Flutter.	Belt (1) dirty or worn. Capstan dirty or binding. Cartridge defective. Motor defective. Speed regulator circuit defective.
Sound weak or distorted.	Head dirty, misaligned, or defective. Cartridge defective. Amplifiers defective.
Tape is pulled from cartridge.	Cartridge defective. Capstan dirty or scored.
Ejector mechanism inoperative.	Spring (35) weak or missing. Spring (32) weak or missing. Spring (34) weak or missing. Levers (28), (30), or (31) binding. Solenoid (M6) defective or not supplied with power.

MECHANICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	773-6400-001	Drive Belt	20	768-6900-006	Azimuth Adjustment Spring
2	757-6600-001	Flywheel	21	768-6900-007	Head Sliding Spring
3	727-6000-001	Track Changing Cam	22	768-6900-008	Guide Post Spring
4	718-6000-013	Ratchet Bracket	23	768-6900-009	Balance Spring
5	726-6000-002	Ratchet	24	768-6900-010	Plunger Spring
6	768-6800-002	Ratchet Pin	25	772-6000-001	Cartridge Guide
7	768-6900-002	Ratchet Spring	26	718-6000-021	Spring Plate
8	768-6900-003	Plunger Spring	27	723-6000-001	Roller
9	718-6000-014	Head Sliding Guide	28	773-6800-001	Pressure Lever
10	741-6000-001	Capstan Block Assembly	29	723-6000-002	Pressure Roller
11	718-6000-015	Cam Shaft Metal	30	773-6800-002	Lock Lever
12	718-6000-016	Thrust Stopper	31	773-6800-003	Eject Lever
13	718-6000-017	Head Sliding Plate	32	768-6900-011	Pressure Spring
14	726-6000-003	Head Sliding Shaft	33	768-6900-012	Stopper Roller Spring
15	726-6000-004	Cam Shaft	34	768-6900-013	Lock Lever Spring
16	771-6500-004	Ratchet Wheel	35	768-6900-014	Eject Spring
17	768-6900-004	Leaf Spring	36	718-6000-023	Stopper Roller
18	719-6000-005	Ratchet Stopper	37	718-6000-022	Flywheel Bracket
19	768-6900-005	Height Adjustment Spring			



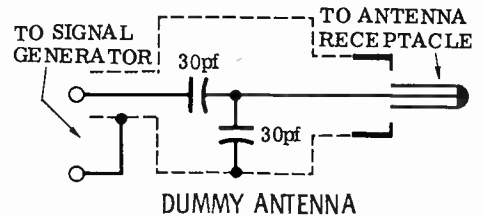
ALIGNMENT INSTRUCTIONS

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

A1 thru A4, A9 thru A18....GENERAL CEMENT #9296, 9297, 9300
WALSCO #2510, 2546, 2547
A5 thru A8, A9 thru A24....GENERAL CEMENT #8290, 8868, 9087
WALSCO #2525, 2528, 2587

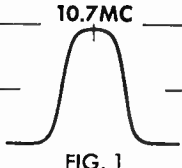
	GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point $\diamond A$, low side to ground.	262KC 400 cycle modulation	High freq. end stop.	Output meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	Thru dummy antenna to antenna input.	1615KC	"	"	A5, A6, A7, A8	"

With radio installed in car and antenna extended 33", tune in a weak station near 1400KC and adjust A8 for maximum output. Antenna adjustment (A8) is located on right rear cover under antenna input.



FM IF ALIGNMENT USING AM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001mfd to point $\diamond B$, low side to ground.

	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
3.	10.7MC Unmodulated	Point of non-interference	DC probe of VTVM to point $\diamond C$, common to ground.	A9 thru A17	Adjust for maximum. 
4.	"	"	DC probe of VTVM 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.
5.	"	"	DC probe of VTVM to point $\diamond L$, common to ground.	A19	Adjust for maximum.

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

High side of generator thru .001mfd to point $\diamond B$, low side to ground. Use only enough marker signal for indication. Use 60 cycle frequency modulated signal with 450KC sweep. Use 60 cycle sawtooth voltage in scope for horizontal deflection.

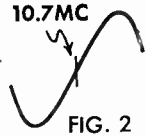
	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
3.	10.7MC 450KC Sweep	Point of non-interference	Vert. amp of scope to point $\diamond C$, low side to ground.	A9 thru A17	Disconnect stabilizing capacitor C 7. Adjust for maximum gain and symmetry of response similar to Fig.1 with marker as shown. Reconnect C 7.
4.	"	"	Vert. amp of scope to point $\diamond D$, low side to ground.	A18	Adjust A 18 (secondary) to place marker at center of "S" curve similar to Fig. 2. Readjust A9 (primary) for maximum amplitude and straightness of line.

ALIGNMENT INSTRUCTIONS (Continued)

FM RF ALIGNMENT—SELECTOR IN FM POSITION

Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
6. 90MC Unmodulated	Tune to signal.	DC probe of VTVM to point $\diamond C$, common to ground.	A20, A21, A22	Rock tuning and adjust for maximum. Repeat steps 6 and 7 until no further improvement can be made.

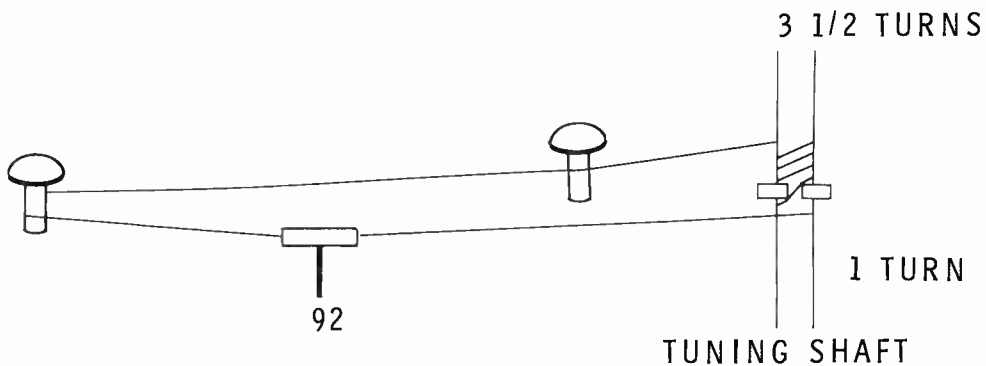


FM STEREO MULTIPLEX ALIGNMENT USING FM STEREO SIGNAL GENERATOR ($\pm .0001\%$ ACCURACY)

High side of generator thru 47K to point $\diamond E$, low side to ground.

GENERATOR FREQUENCY	INDICATOR	ADJUST	REMARKS
7. 67KC	Vert. amp of scope thru 47K to point $\diamond F$, low side to ground.	A21	Adjust for MINIMUM
8. 72KC		A22	
9. 19KC	Vert. amp of scope thru 47K to point $\diamond G$, low side to ground.	A23	Adjust for maximum.
10. "	Vert. amp of scope thru 47K to point $\diamond H$, low side to ground.	A24	Adjust for maximum 38KC response.
11. Modulated Left Channel	Vert. amp of scope to point $\diamond J$, low side to ground.	A23 A24	Adjust for MINIMUM. This step should require only slight adjustment.
12. Modulated Right Channel	Vert. amp of scope to point $\diamond K$, low side to ground		Check for MINIMUM. If necessary make compromise adjustment of A23, A24

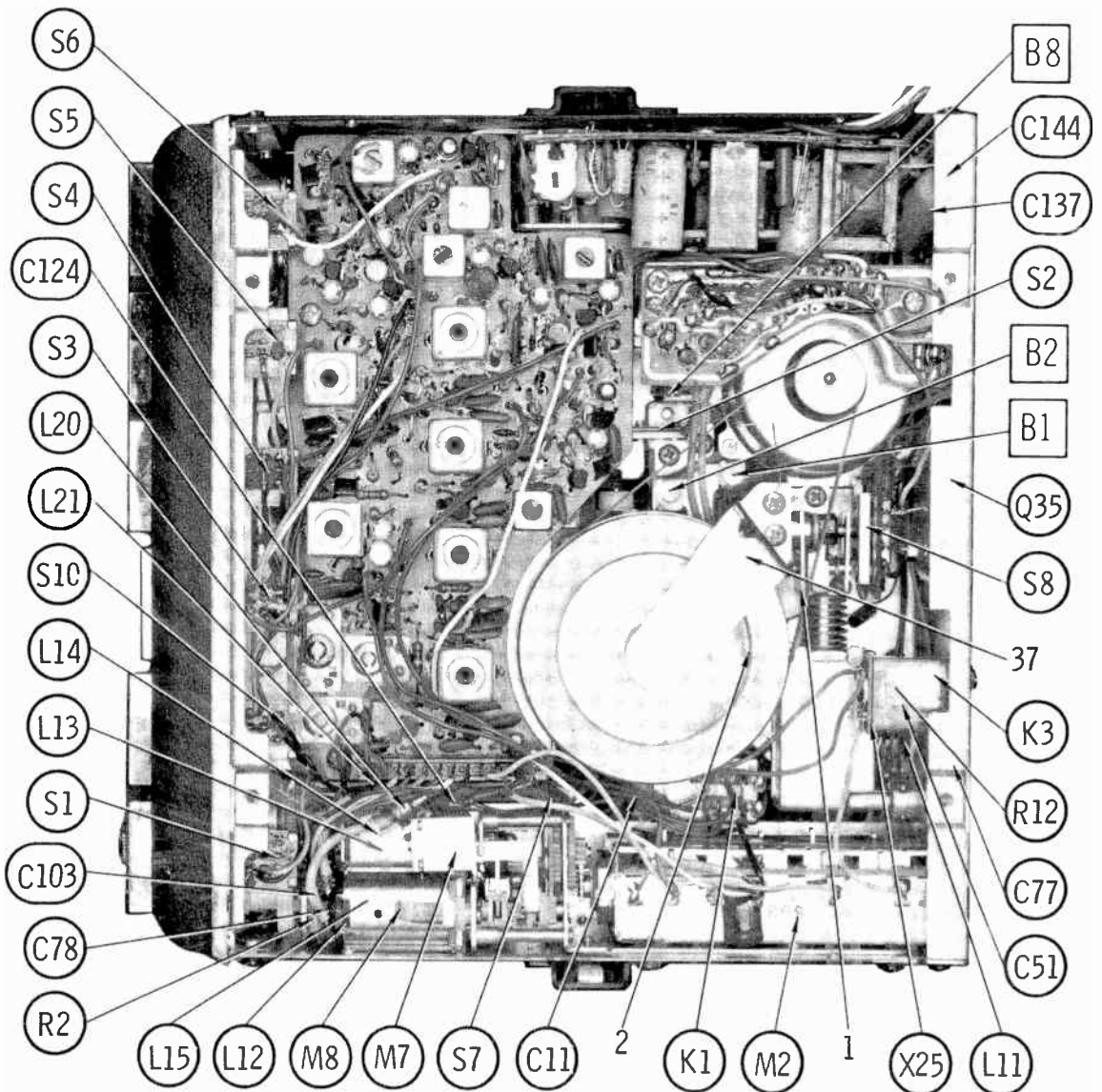
LEAR JET MODEL A-250

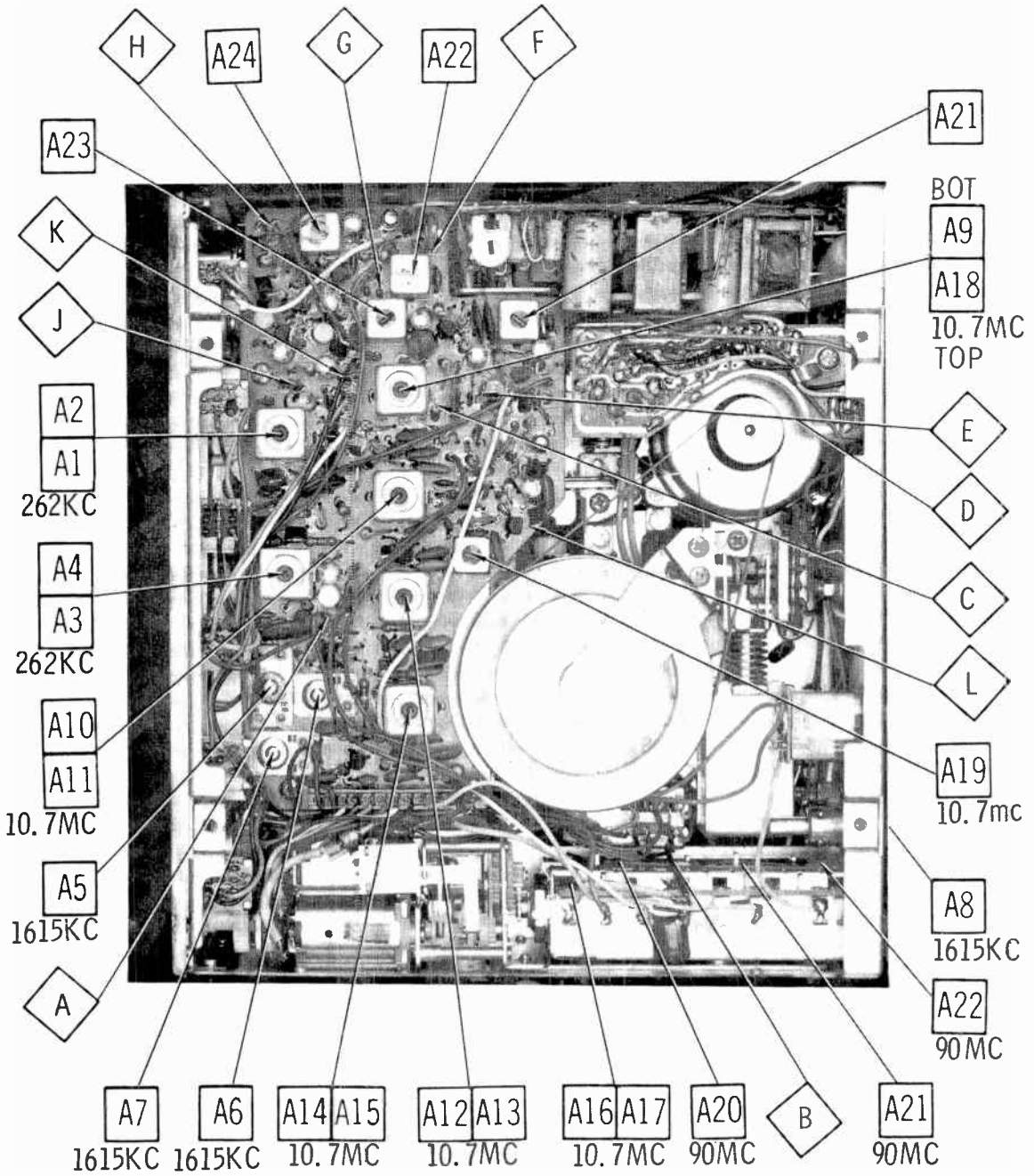


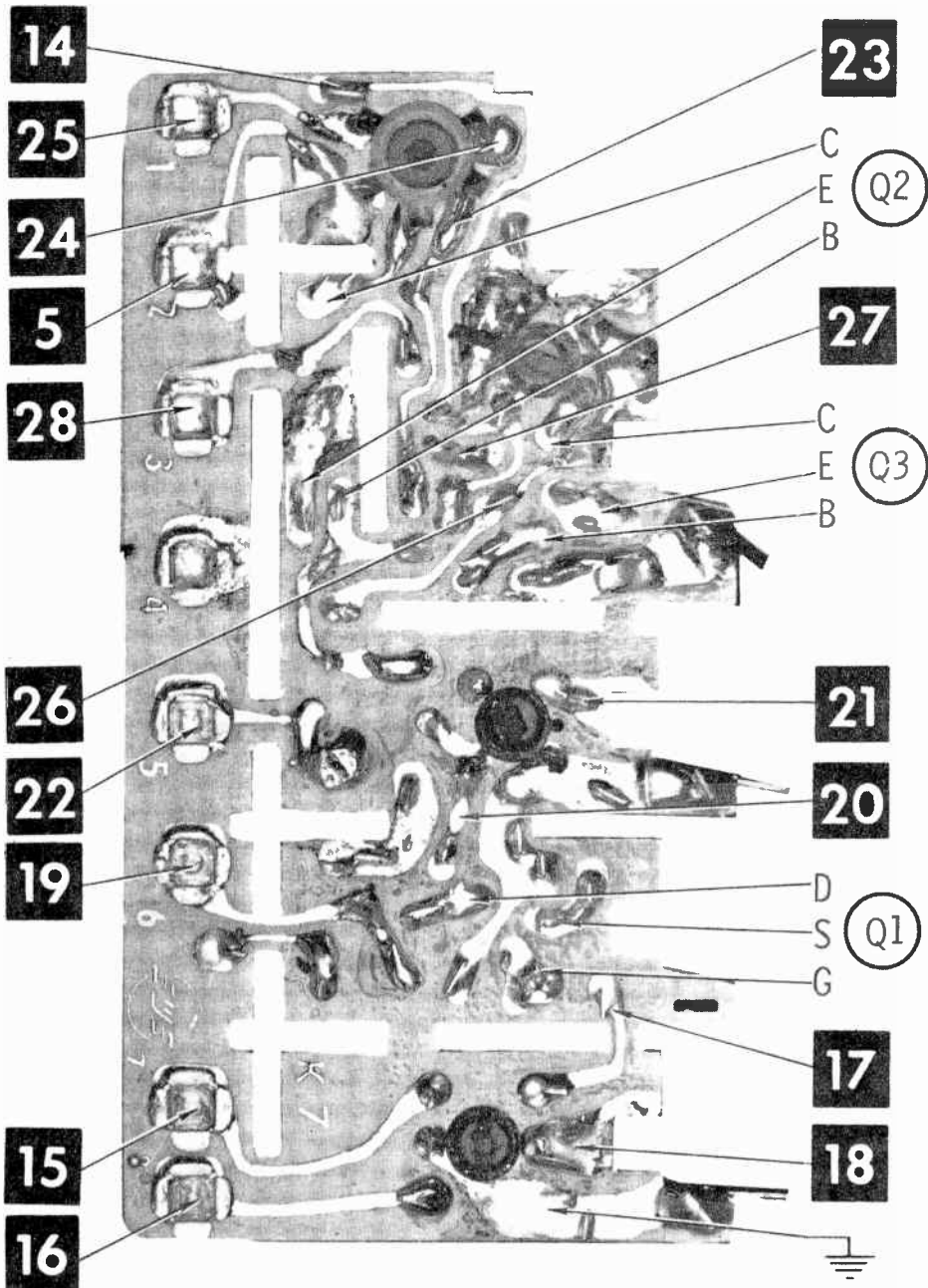
POINTER SET TO "9" on 92MC

FRONT

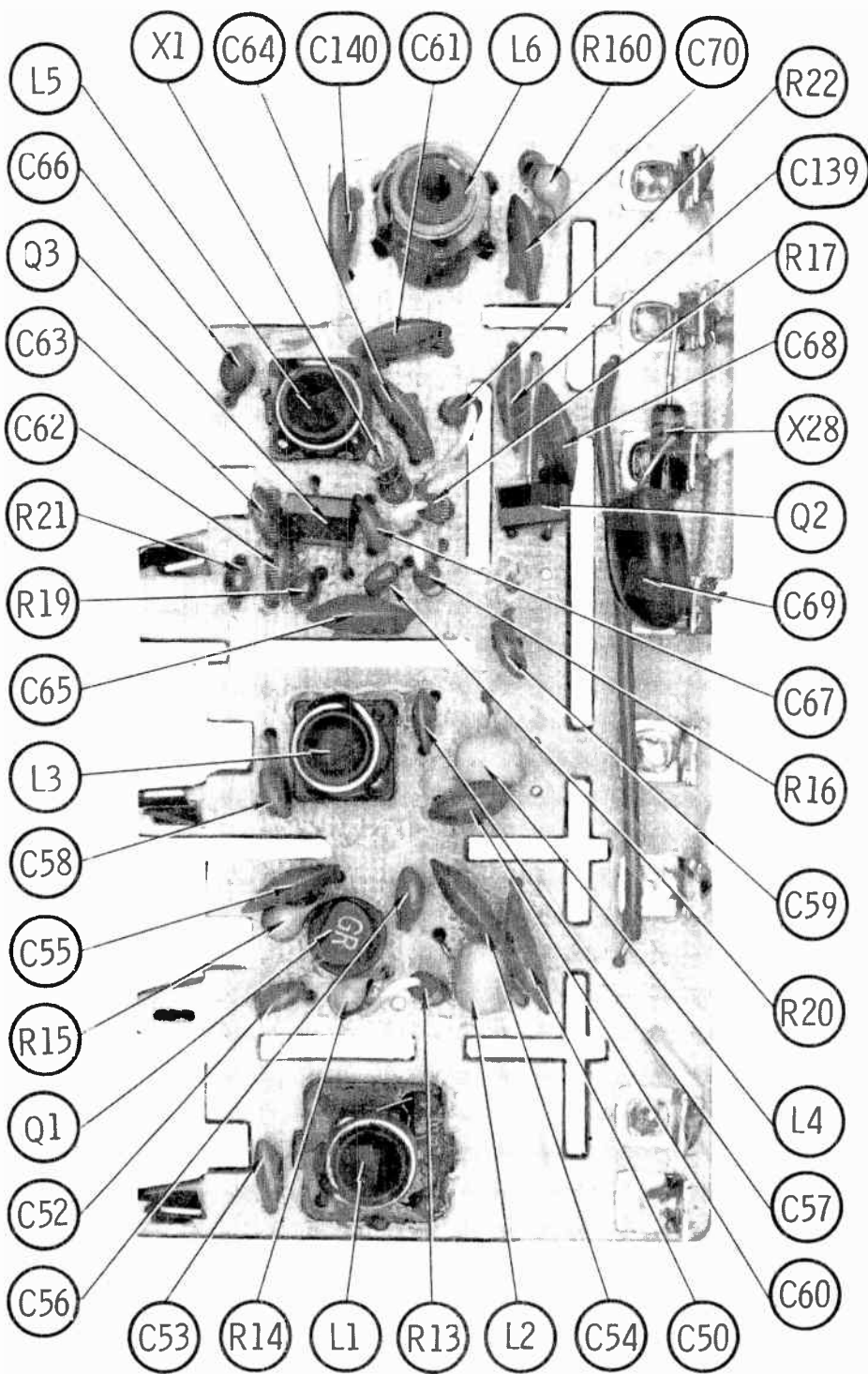
DIAL CORD STRINGING—TOP VIEW

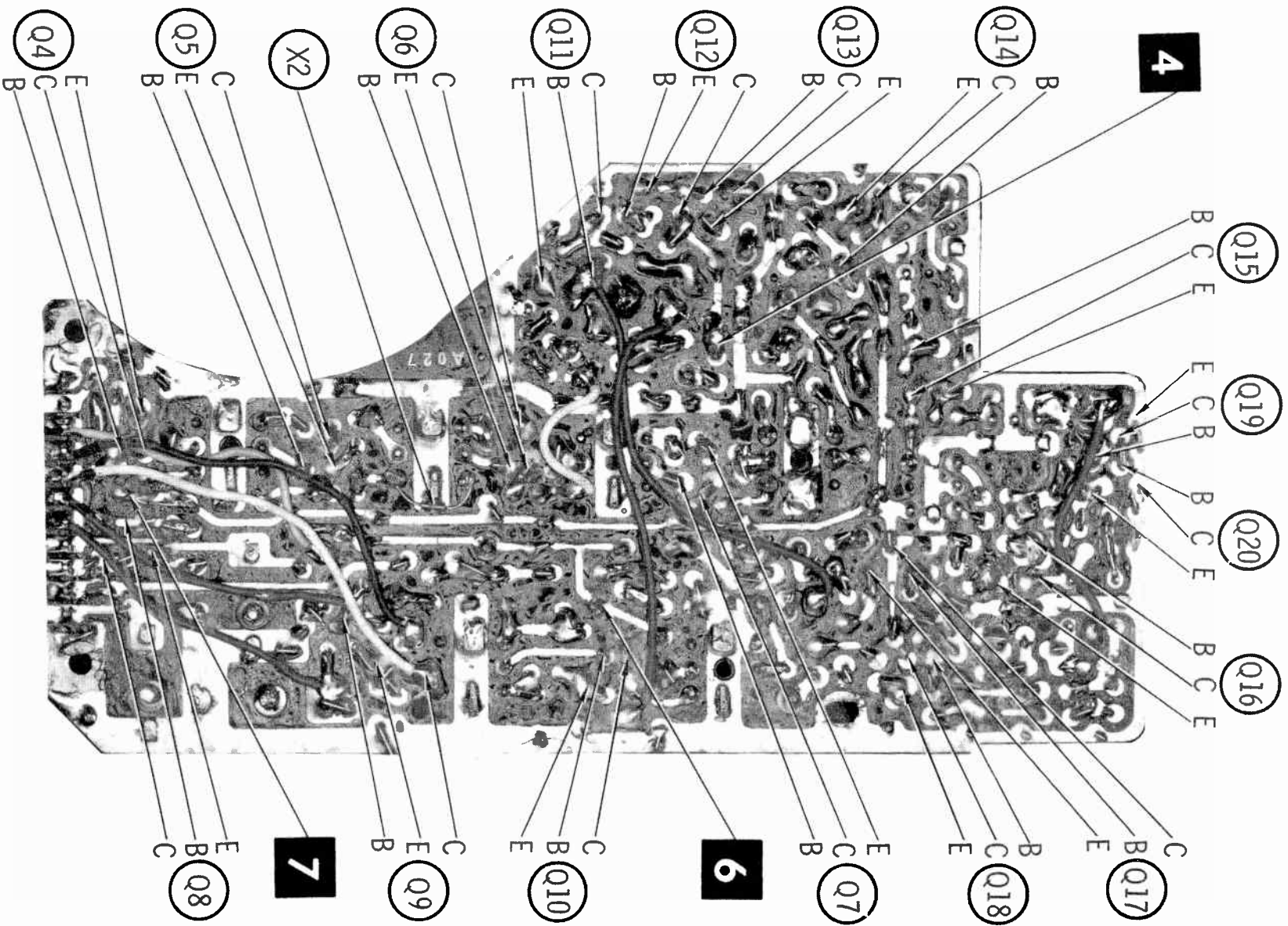




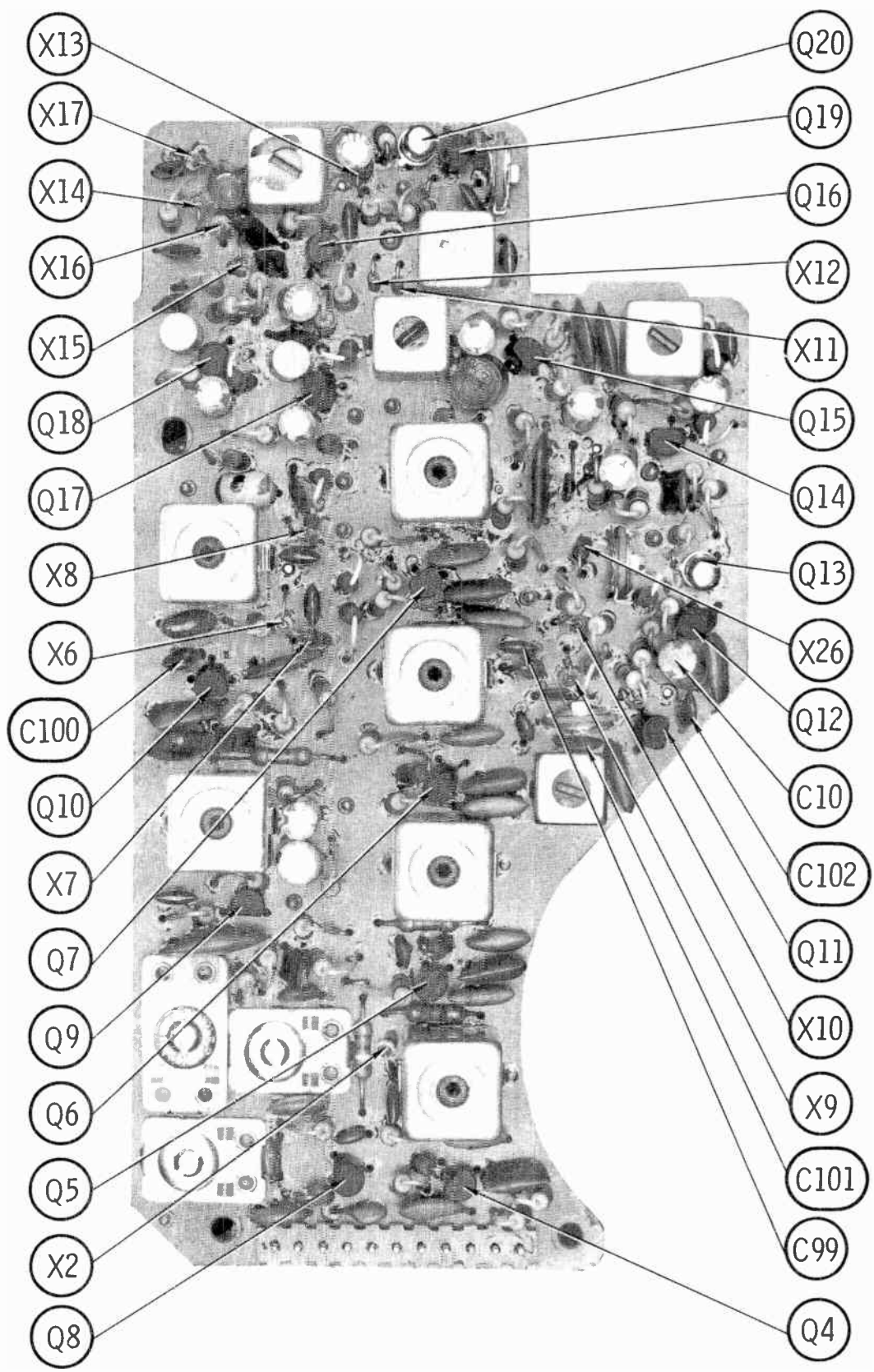


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162 55 60 67 66 52 48 63 64 65 62 68 73

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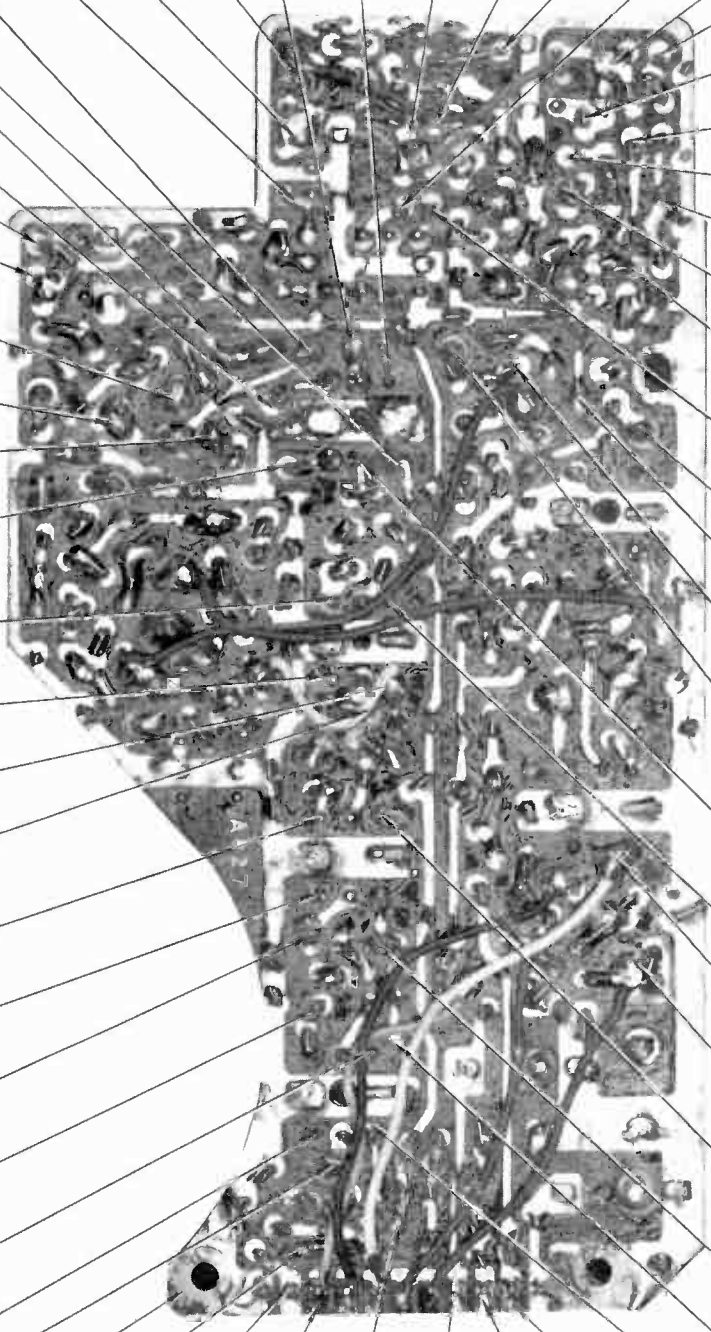
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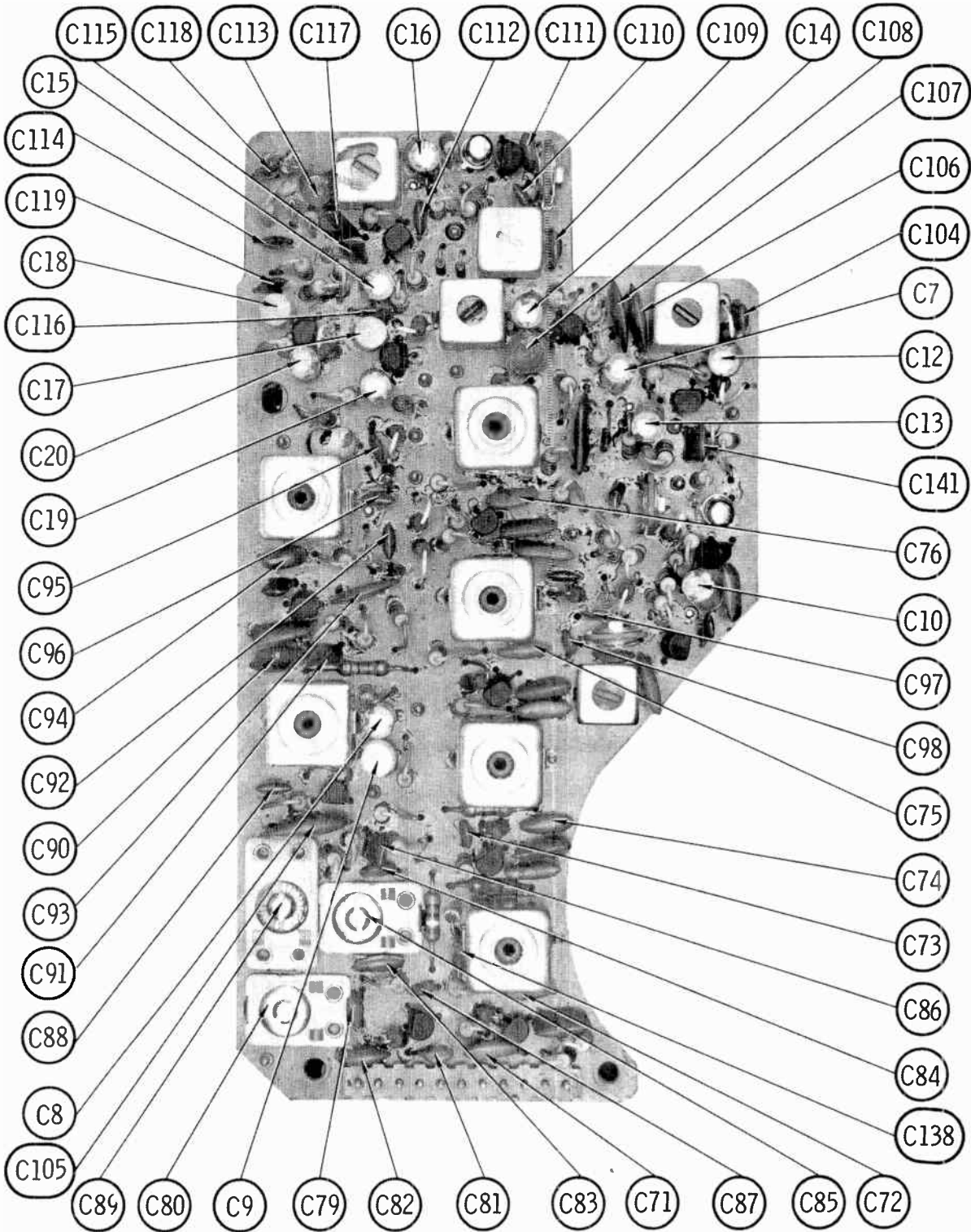
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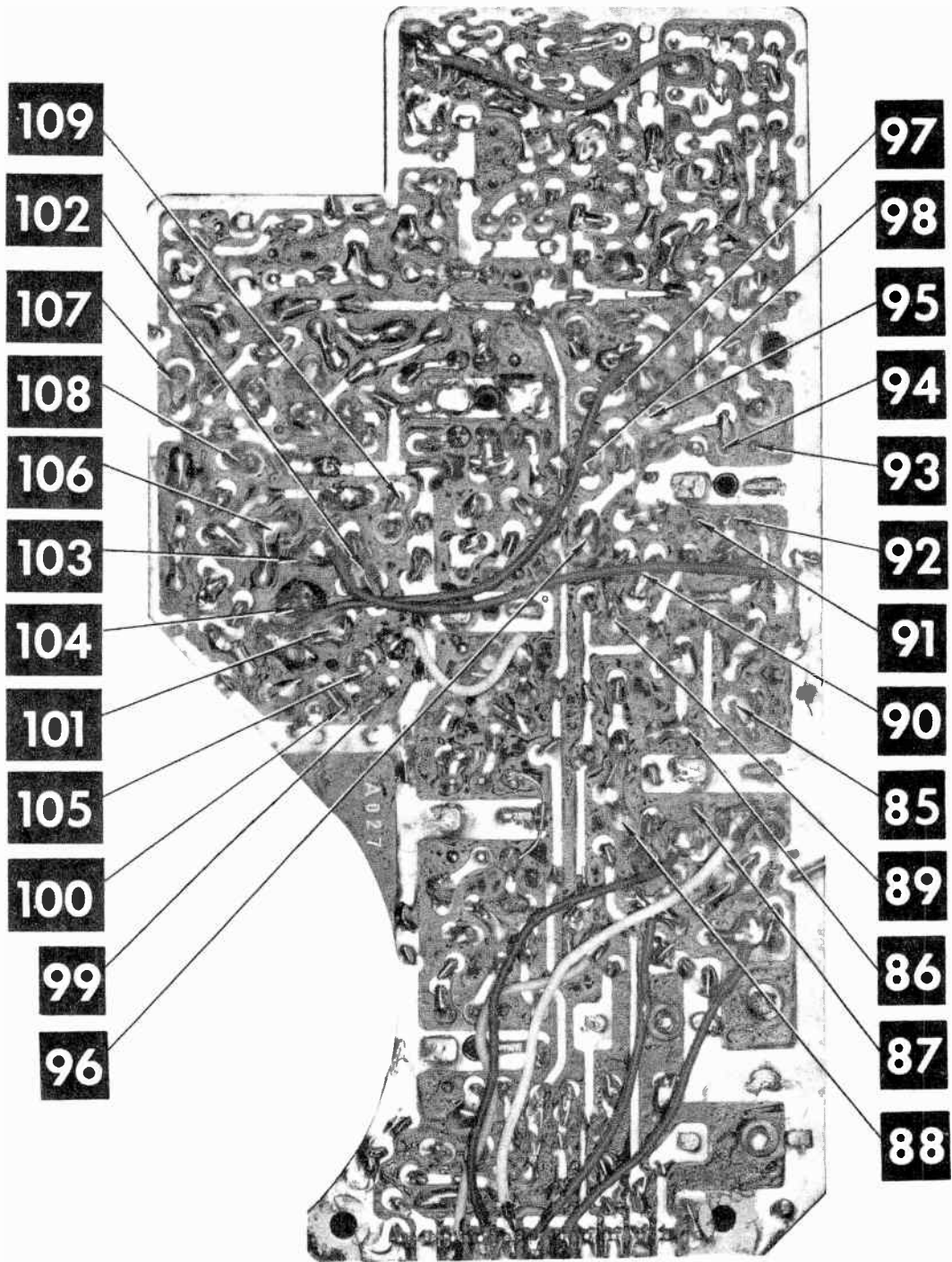
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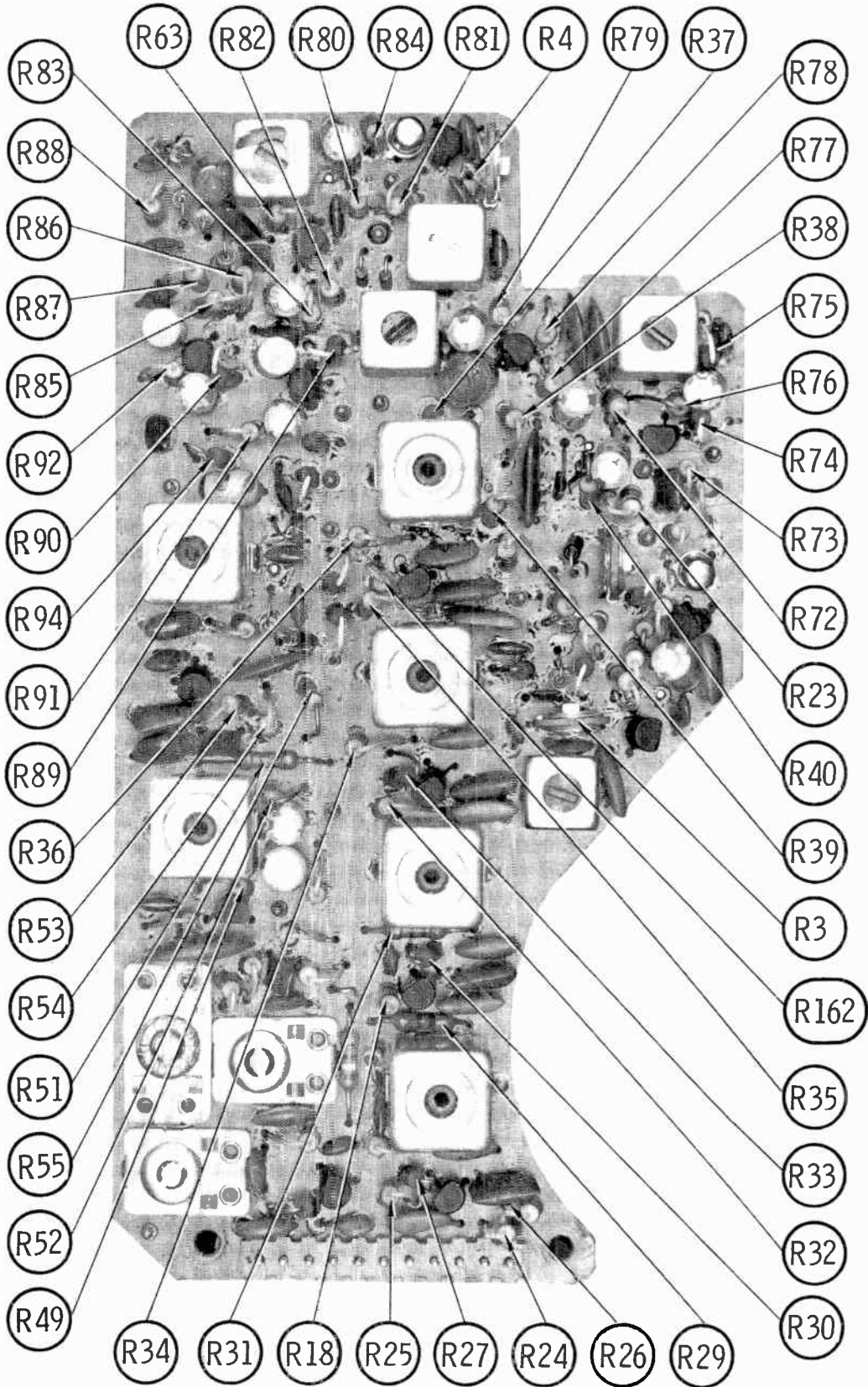


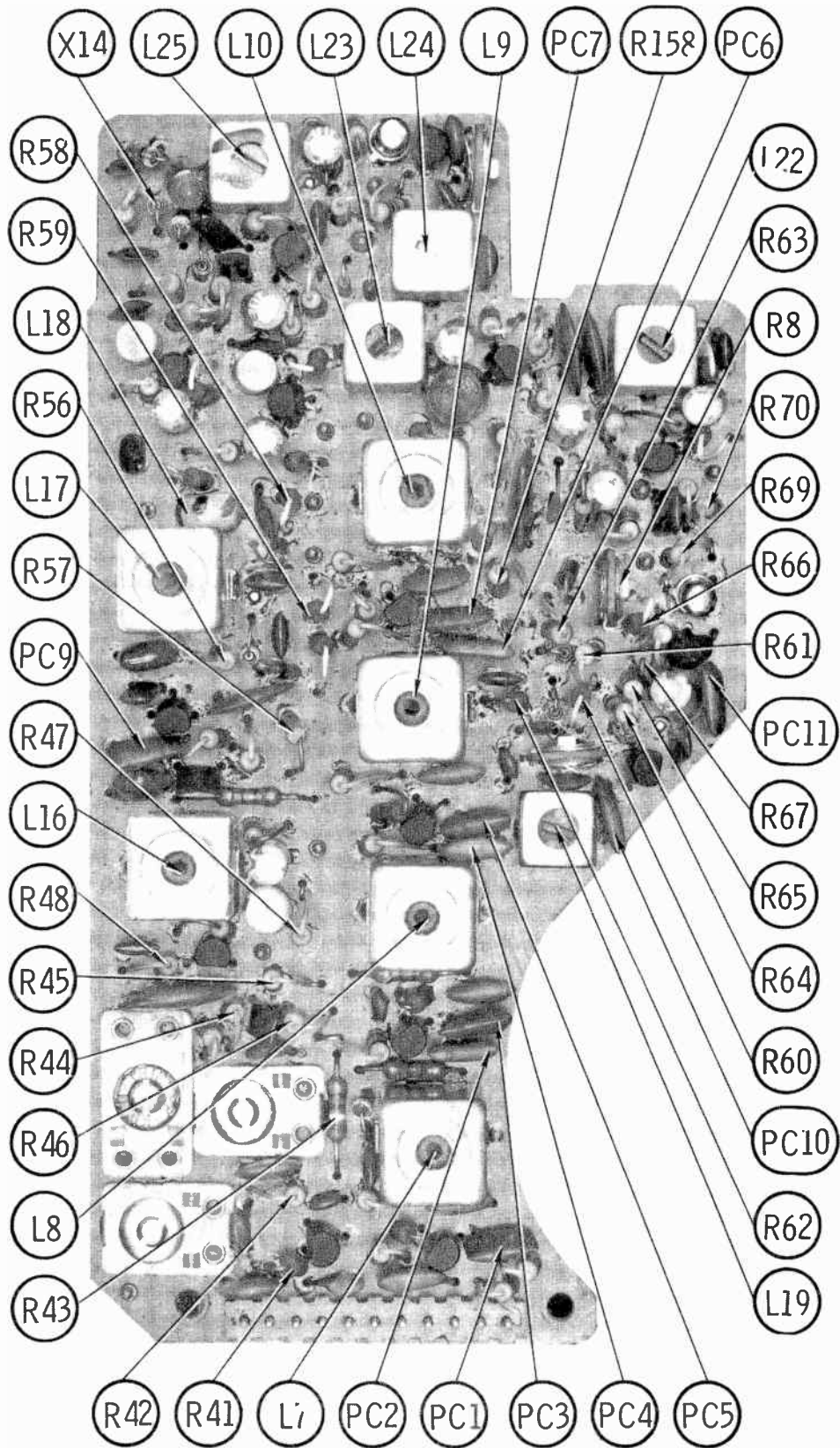
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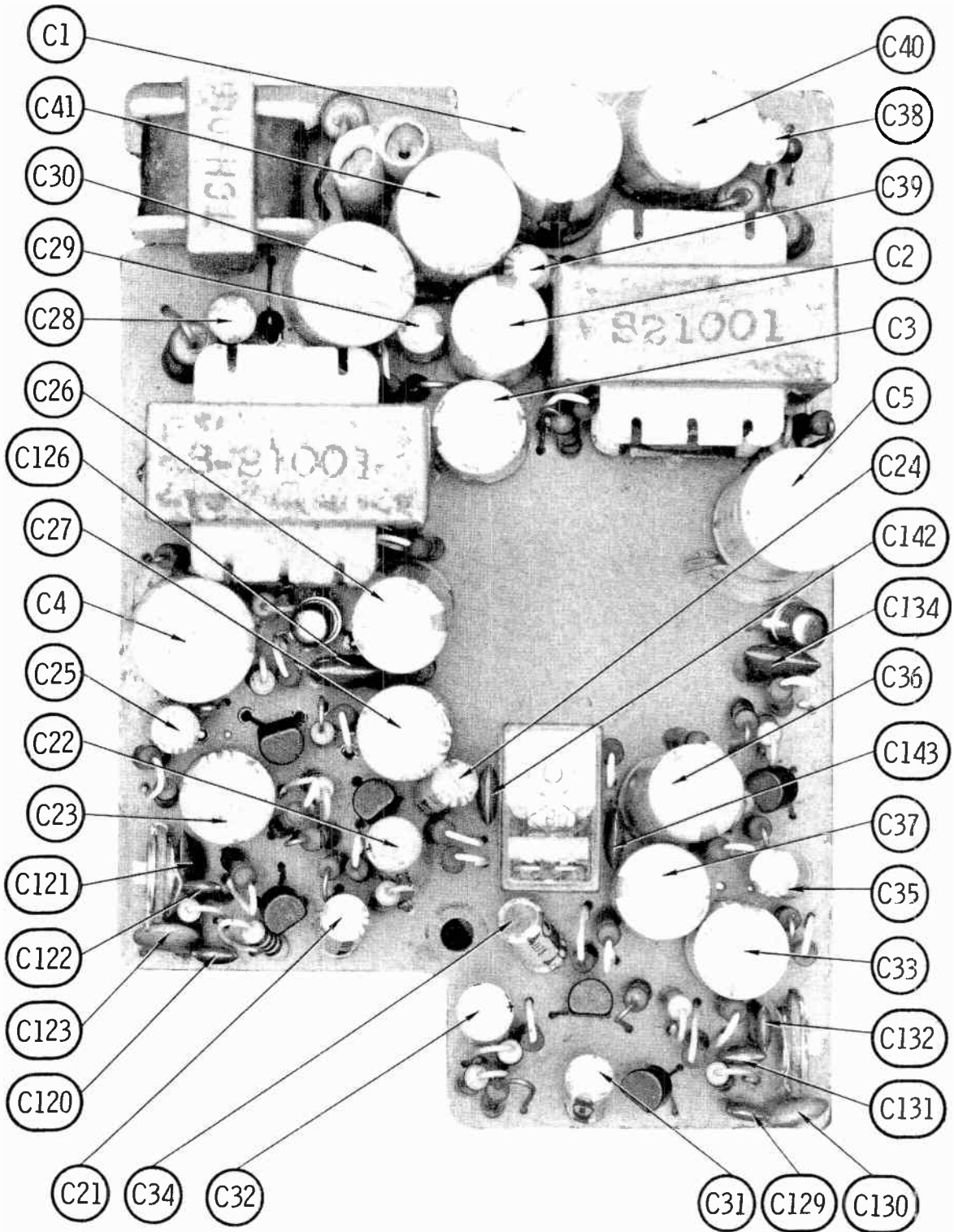


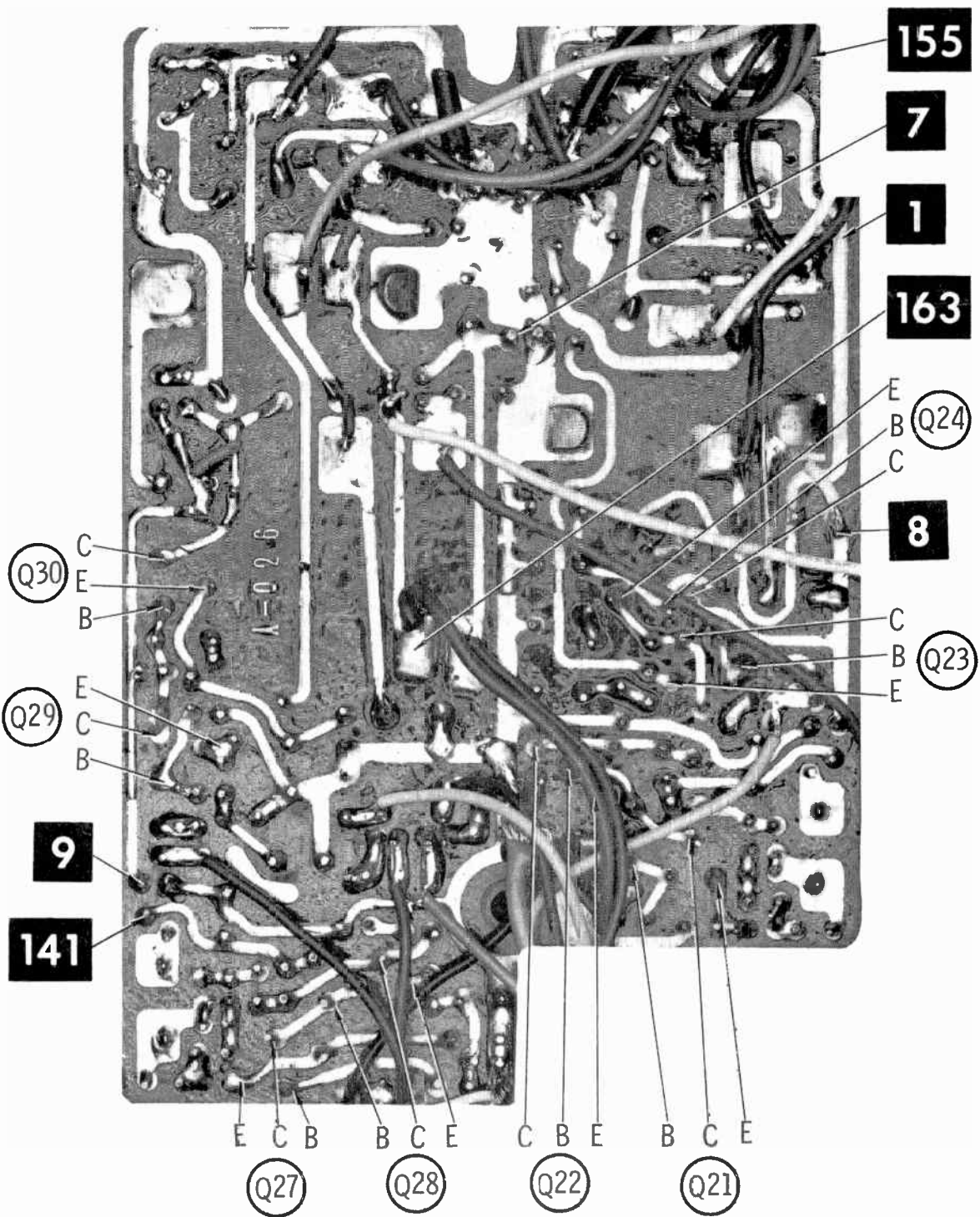


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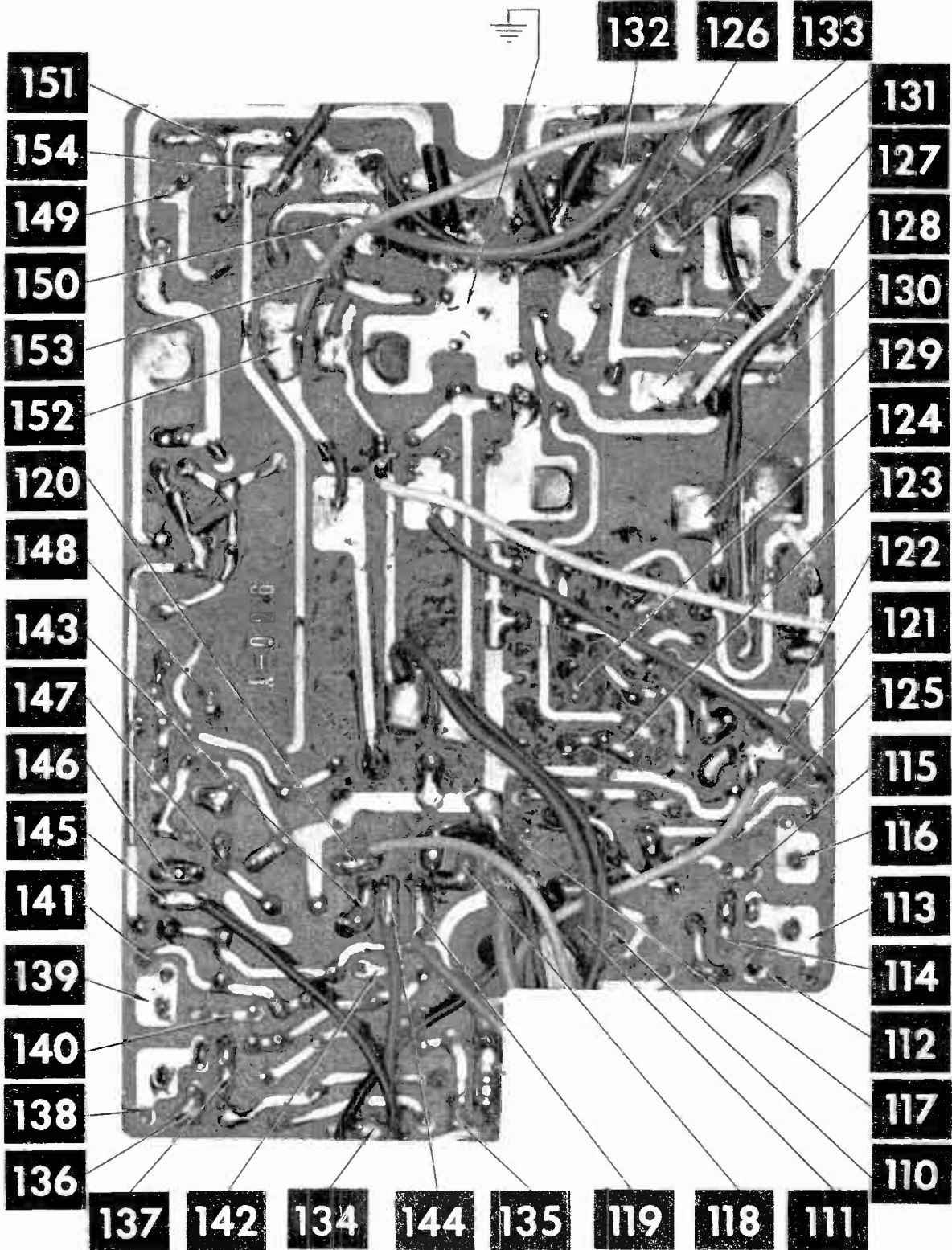




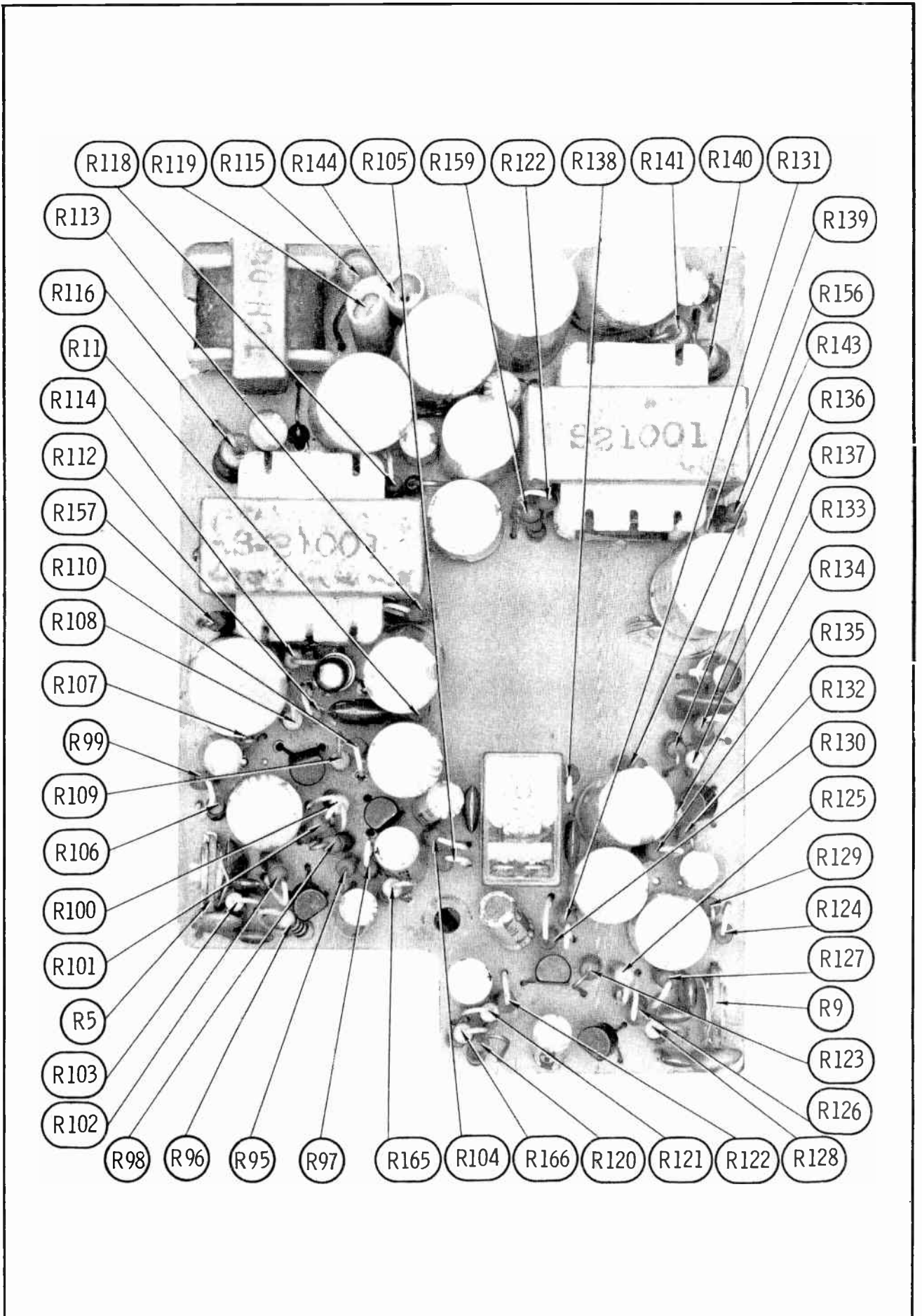


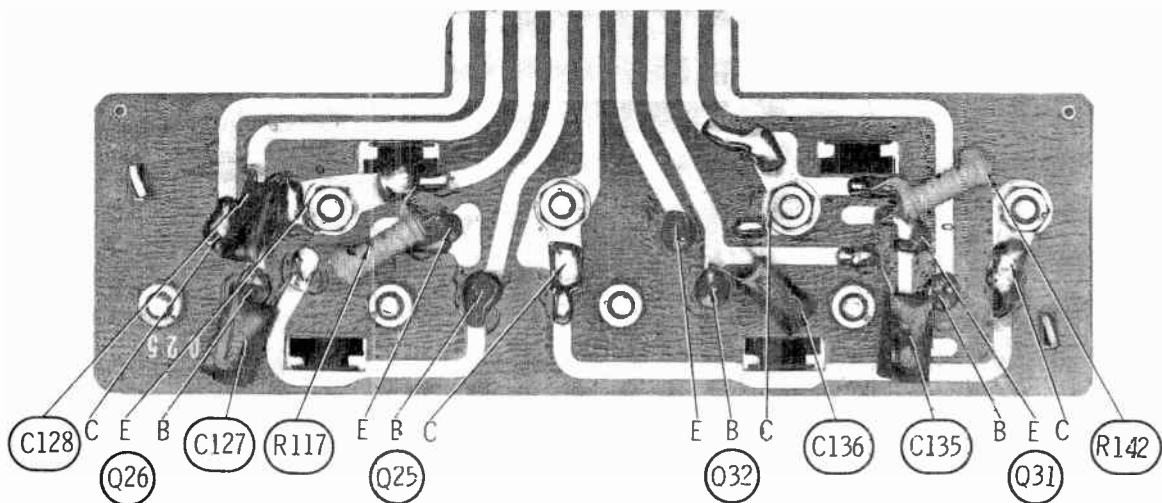
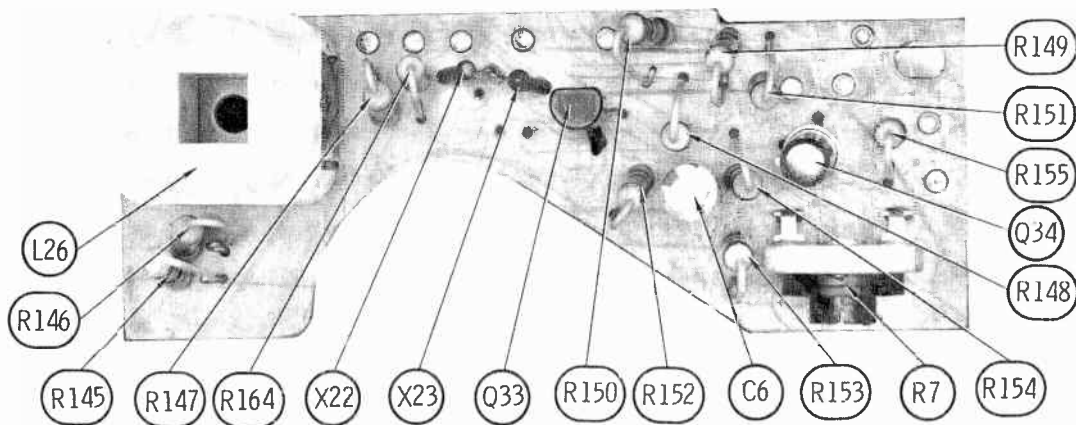
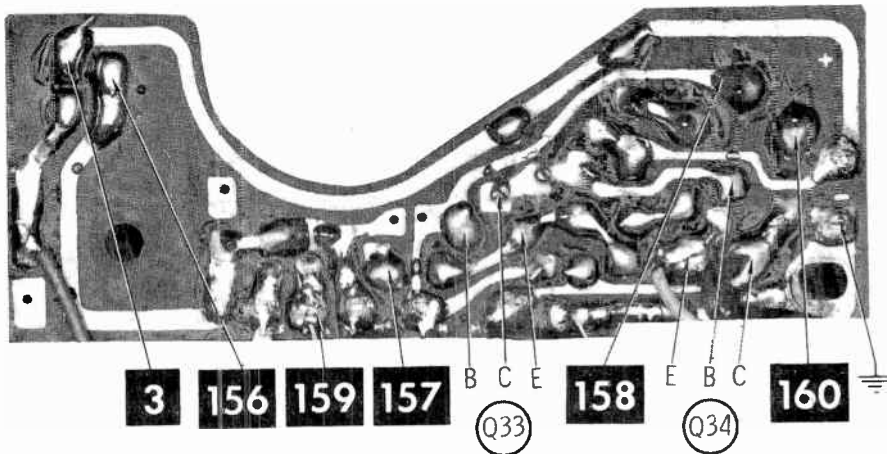


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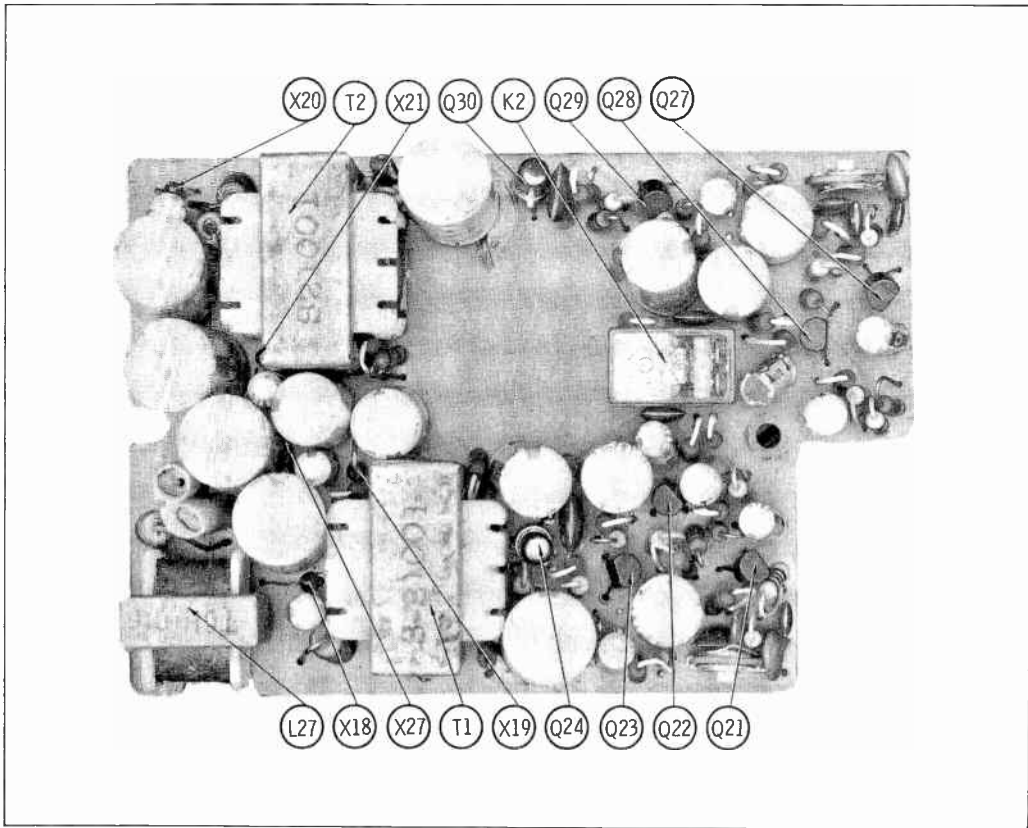


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LEAR JET MODEL A-250



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

TRANSISTORS

ITEM No.	TYPE No.	FUNCTION	REPLACEMENT DATA					
			MFGR. PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q1	SK-19	FM RF Amp		GE-FE-1	FE-100	HEP802		ECC 132
Q2	2SC535	FM Mixer		GE-17	TR-21	HEP56	SK3018	ECC 108
Q3	2SC460	FM Osc		GE-11	TR-21	HEP53	SK3018	ECC 108
Q4	2SC829	1st FM IF Amp		GE-17	TR-21	HEP50	SK3018	ECC 108
Q5	2SC829	2nd FM IF Amp		GE-17	TR-21	HEP50	SK3018	ECC 108
Q6	2SC829	3rd FM IF Amp		GE-17	TR-21	HEP50	SK3018	ECC 108
Q7	2SC829	4th FM IF Amp		GE-17	TR-21	HEP50	SK3018	ECC 108
Q8	2SC829	AM RF Amp		GE-17	TR-21	HEP50	SK3018	ECC 108
Q9	2SC829	AM Converter		GE-17	TR-21	HEP50	SK3018	ECC 108
Q10	2SC829	AM IF Amp		GE-17	TR-21	HEP50	SK3018	ECC 108
Q11	2SC828	Trigger		GE-10	TR-21	HEP55	SK3020	ECC 123
Q12	2SC828	Trigger Amp		GE-10	TR-21	HEP55	SK3020	ECC 123
Q13	2SC538	Motor Switch		GE-17	TR-21	HEP54	SK3020	ECC 123
Q14	2SC828	MPX Input Amp		GE-10	TR-21	HEP55	SK3020	ECC 123
Q15	2SC828	19KC Amp		GE-10	TR-21	HEP55	SK3020	ECC 123
Q16	2SA564	38KC Amp		GE-21	TR-20	HEP57	SK3025	ECC 129
Q17	2SC828	Preamp		GE-10	TR-21	HEP55	SK3020	ECC 123
Q18	2SC828	Preamp		GE-10	TR-21	HEP55	SK3020	ECC 123
Q19	2SC828	Lamp Amp		GE-10	TR-21	HEP55	SK3020	ECC 123
Q20	2SA550	Lamp Switch		GE-21	TR-20	HEP57	SK3025	ECC 129
Q21	2SC828	Preamp		GE-10	TR-21	HEP55	SK3020	ECC 123
Q22	2SC828	Preamp		GE-10	TR-21	HEP55	SK3020	ECC 123
Q23	2SC828	AF Amp		GE-10	TR-21	HEP55	SK3020	ECC 123
Q24	2SC538	O-iver		GE-17	TR-21	HEP54	SK3020	ECC 123
Q25	2S0141	Output (1)		GE-24MP*	TR-23	HEP243	SK3028*	ECC 124
Q26	2S0141	Output (1)		GE-10	TR-21	HEP243	SK3020	ECC 124
Q27	2SC828	Preamp		GE-10	TR-21	HEP55	SK3020	ECC 123
Q28	2SC828	Preamp		GE-10	TR-21	HEP55	SK3020	ECC 123
Q29	2SC828	AF Amp		GE-10	TR-21	HEP55	SK3020	ECC 123
Q30	2SC538	Driver		GE-17	TR-21	HEP54	SK3020	ECC 123
Q31	2S0141	Output (1)		GE-24MP*	TR-23	HEP243	SK3028*	ECC 124
Q32	2S0141	Output (1)		GE-10	TR-21	HEP243	SK3020	ECC 124
Q33	2SC828	Motor Speed Regulator		GE-10	TR-21	HEP55	SK3020	ECC 123
Q34	2SA550	Motor Regulator		GE-21	TR-20	HEP57	SK3025	ECC 129
Q35	2S0142	Motor Regulator (1)		GE-24	TR-23	HEP703	SK3026	ECC 124

(1) When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.
* Matched Pair.

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.

POWER RECTIFIERS & SIGNAL DIODES

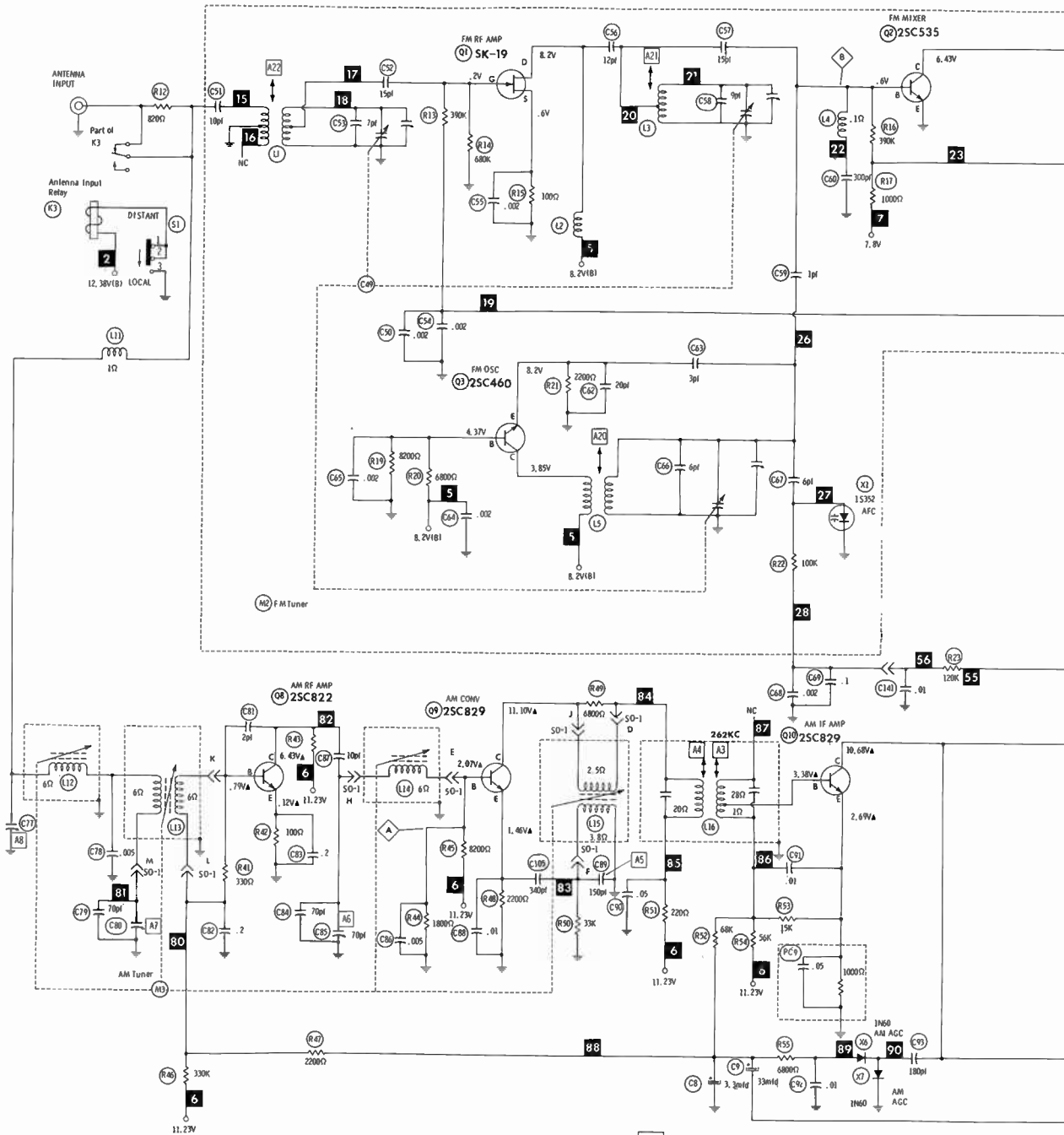
ITEM No.	MFR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES			REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.	RCA PART No.	
X1	1S352					Varactor
X2						Part of L10 Part of L10
X3						
X4						
X5						
X6	1N60	1N60	1N60	ECG 109		
X7	1N60	1N60	1N60	ECG 109		
X8	1N60	1N60	1N60	ECG 109		
X9	1N60	1N60	1N60	ECG 109		
X10	1N60	1N60	1N60	ECG 109		
X11	1S1555	1N82A	1N82AG	ECG 112		
X12	1S1555	1N82A	1N82AG	ECG 112		
X13	1S1555	1N82A	1N82AG	ECG 112		
X14	1N60	1N60	1N60	ECG 109		
X15	1N60	1N60	1N60	ECG 109		
X16	1N60	1N60	1N60	ECG 109		
X17	1N60	1N60	1N60	ECG 109		
X18	1S1209	GE-504A	804 or 5A4-0	ECG 116 or ECG 117	SK3030 or SK3031	
X19	1S1209	GE-504A	804 or 5A4-0	ECG 116 or ECG 117	SK3030 or SK3031	
X20	1S1209	GE-504A	804 or 5A4-0	ECG 116 or ECG 117	SK3030 or SK3031	
X21	1S1209	GE-504A	804 or 5A4-0	ECG 116 or ECG 117	SK3030 or SK3031	
X22	1S1212	GE-504A	804 or 5A4-0	ECG 116 or ECG 117	SK3030 or SK3031	
X23	1S1210	GE-504A	804 or 5A4-0	ECG 116 or ECG 117	SK3030 or SK3031	
X24	1002	GE-504A	804 or 5A4-0	ECG 116 or ECG 117	SK3030 or SK3031	
X25	1002	GE-504A	804 or 5A4-0	ECG 116 or ECG 117	SK3030 or SK3031	
X26	1N756A	GE-X11	1ZM8.2			
X27	AW01-08J	GE-X11	1ZM8.2			Zener (8.2V)
X28	1N757A	GEZ0-9.1	1ZM9.1-T10	ECG 139		Zener (9.1V)

LEAR JET MODEL A-250

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	470 16V	750-2500-016	8C015500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166
C2	220 16	750-2500-022	8C020200	EA15-250	PC200-16	MT1-23	MTV200CK15	TE-1164
C3	100 10V	750-2500-021	9C010100	EP15-100	PC100-16	MT1-19	MTV100CD10	TE-1135
C4	470 16V	750-2500-016	8C015500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166
C5	470 16V	750-2500-016	8C015500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166
C6	1 50V		8C050001		PC1-100	MT1-1	MTV1CB50	TE-1300
C7	10 10V	750-2500-018	8C025010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C8	3.3 25V	750-2500-023	8C050003	EP30-2	PC5-100	MT1-3	MTV3CB50	TL-1201.1
C9	33 6V	750-2500-024	CRE413A	EA6-25	AL30-6	MT1-13	MTA30015	TE-1093
C10	3.3 25V	750-2500-023	8C050003	EP30-2	PC5-100	MT1-3	MTV3CB50	TL-1201.1
C11	2.2 50V	750-2500-024	PTT88	EA50-2	AL2-50	MT1-1	MTA2050	TE-1301
C12	10 10V	750-2500-018	8C025010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C13	10 10V	750-2500-018	8C025010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C14	10 10V	750-2500-018	8C025010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C15	10 10V	750-2500-018	8C025010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C16	10 10V	750-2500-018	8C025010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C17	.47 25V	750-6501-301		UK10-474			TAS474K035POA	1960474X003 508
C18	.47 25V	750-6501-001		UK10-474			TAS474K035POA	1960474X003 508
C19	10 10V	750-2500-018	8C025010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C20	10 10V	750-2500-018	8C025010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C21	10 10V	750-2500-018	8C025010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C22	50 6V	750-2500-019	8C06050	EP6-50	PC50-16	MT1-15	MTV50CB15	TE-1100
C23	100 10V	750-2500-021	8C010100	EP15-100	PC100-16	MT1-19	MTV100CD10	TE-1135
C24	10 10V	750-2500-018	8C025010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C25	10 10V	750-2500-018	8C025010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C26	330 6V	750-2500-015	8C015300	EA6-250	PC500-16	QT1-30A	MTV300CK6	TE-1106
C27	220 6V	750-2500-020	8C06200	EA6-250	PC200-16	MT1-23	MTV200CK10	TE-1104
C28	10 10V	750-2500-018	8C025010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C29	10 10V	750-2500-018	8C025010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C30	470 16V	750-2500-016	8C015500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166
C31	10 10V	750-2500-018	8C025010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C32	50 6V	750-2500-019	8C06050	EP6-50	PC50-16	MT1-15	MTV50CB15	TE-1133
C33	100 10V	750-2500-021	8C010100	EP15-100	PC100-16	MT1-19	MTV100CD10	TE-1135
C34	10 10V	750-2500-018	8C025010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C35	10 10V	750-2500-018	8C025010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128

(CONTINUED ON PAGE 44)



All voltages measured in FM position unless otherwise indicated.
 Ⓞ See parts list.
 * Measured in SEEK position.
 ▲ Measured in AM position.
 Resistors are 1/2W or less, 10% or 20%, unless otherwise indicated.
 Supply voltage maintained at rated value for measurements.
 Voltage and resistance measured with VTVM or equivalent meter.
 No signal applied and controls adjusted for normal operation.
 Controls viewed from actuator end. Arrow indicates clockwise rotation.
 Numbers assigned to terminals may not be found on the unit.
 Transistor resistances vary widely. No resistance measurements taken.

K3 Terminal Guide

7	○	○14
6	○	○13
5	○	○12
4	○	○11
3	○	○10
2	○	○9
1	○	○8

SO-1 (IF SOCKET) Terminal Guide

3	○	6	○	9	○
2	○	5	○	8	○
1	○	4	○	7	○

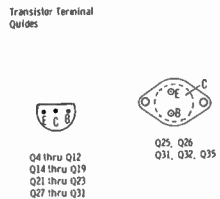
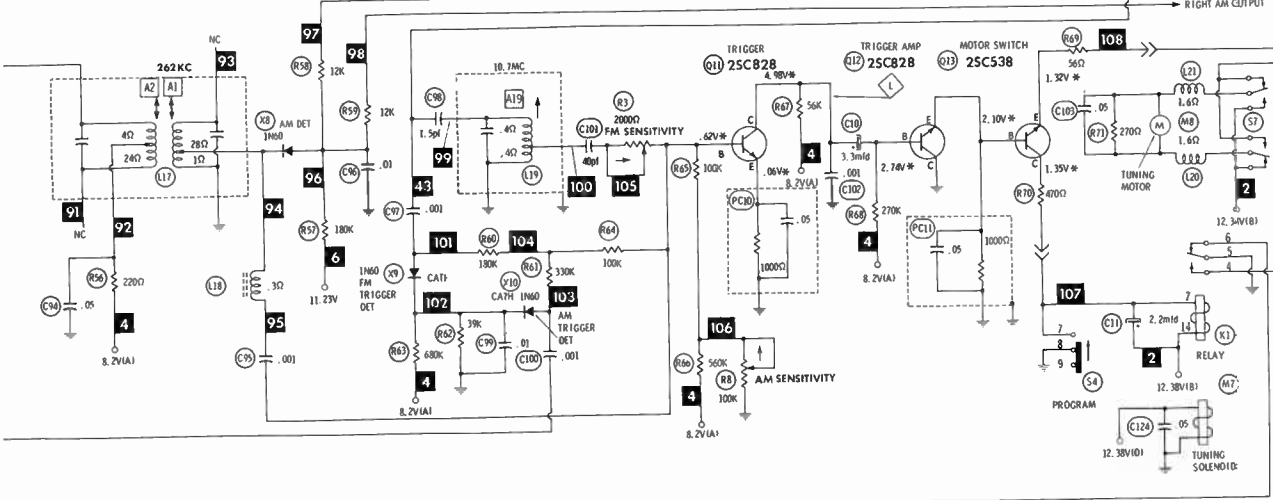
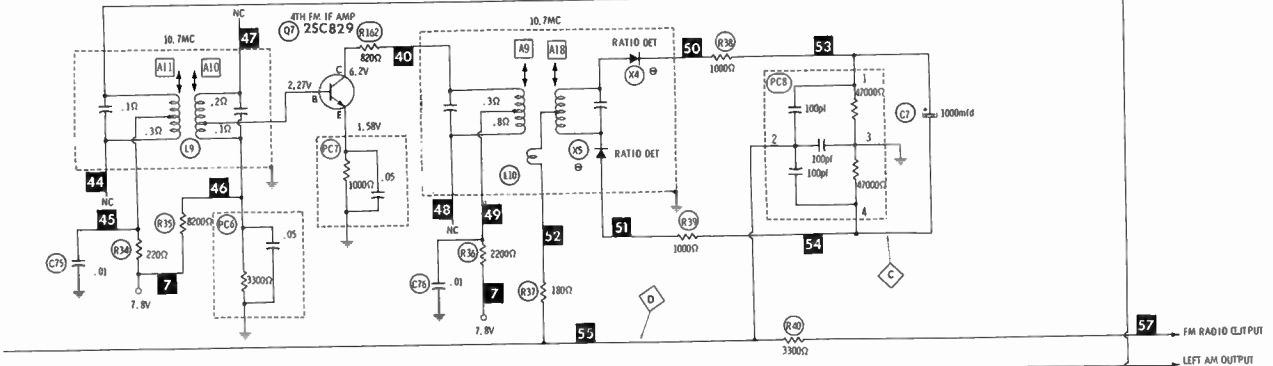
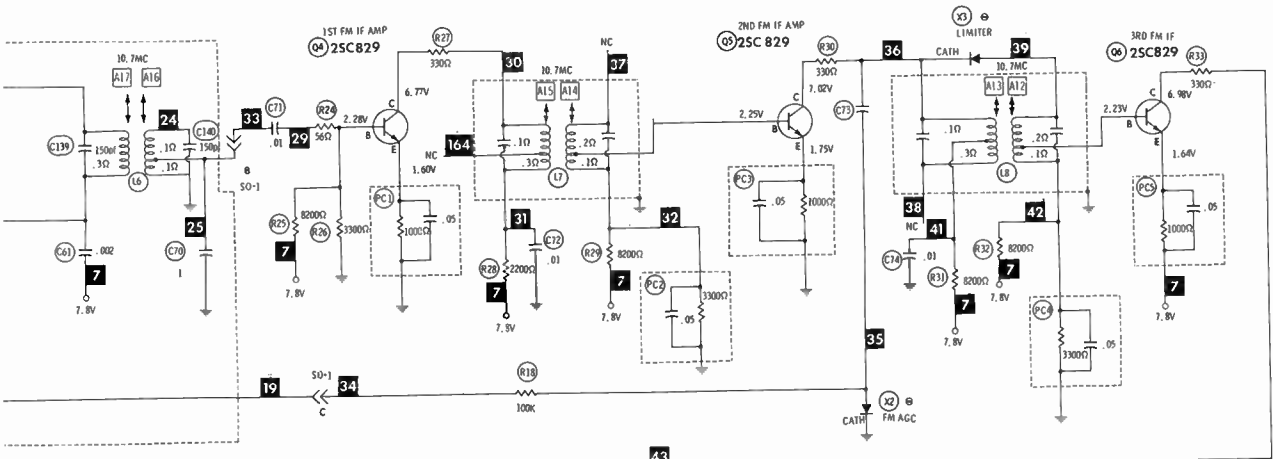
SO-2 (OUTPUT SOCKET) Terminal Guide

1	○	4	○
2	○	5	○
3	○	6	○
4	○	7	○
5	○	8	○
6	○	9	○
7	○	10	○

S7 Terminal Guide

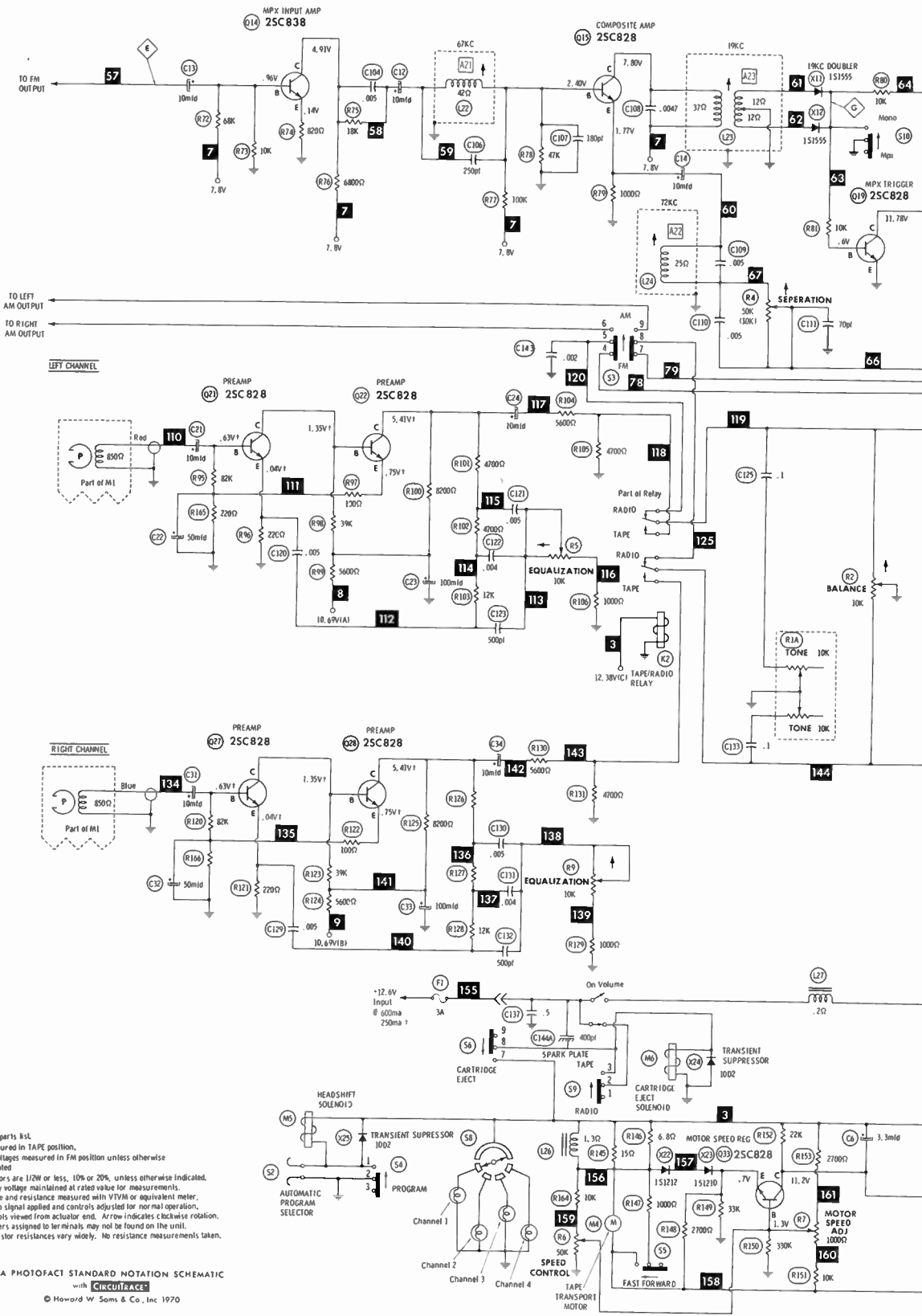
3	○	6	○
2	○	5	○
1	○	4	○

A PHOTOFAC STANDARD NOTATION SCHEMATIC
 with CIRCUITFACT
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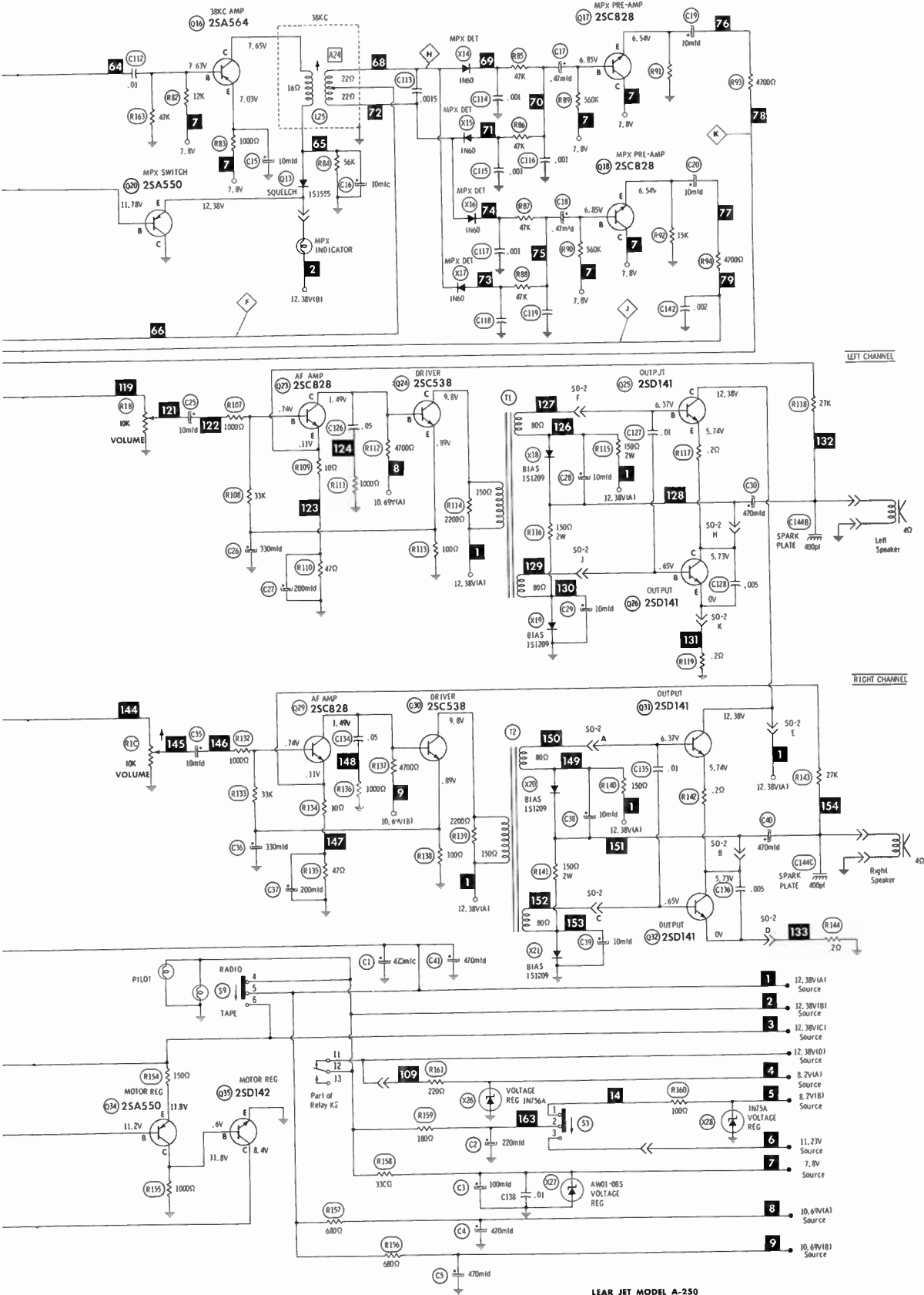
LEAR JET MODEL A-250

NOTE: DEGAUSS HEADS AFTER SERVICING



e See parts list.
 † Measured in TAPE position.
 All voltages measured in FM position unless otherwise indicated.
 Resistors are 1/2W or less, 10% or 20%, unless otherwise indicated.
 Supply voltage maintained at rated value for measurements.
 Voltage and resistance measured with VIVM or equivalent meter,
 no signal applied and controls adjusted for normal operation.
 Controls viewed from actuator end. Arrow indicates clockwise rotation.
 Numbers assigned to terminals may not be found on the unit.
 Transistor resistances vary widely. No resistance measurements taken.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
 with **CIRCUITRACE**
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LEFT CHANNEL

RIGHT CHANNEL

LEAR JET MODEL A-250

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 Soms COUNTER FACTS for the most up-to-date replacement.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
			PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C36	330	6V	750-2500-D15	BCD15300	EA6-250	PC500-16	QT1-30A	MTV300CK6	TE-1106
C37	220	6V	750-2500-020	BC06200	EA6-250	PC200-16	MT1-23	MTV200CK10	TE-1104
C38	10	10V	750-2500-018	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C39	10	10V	750-2500-018	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C40	470	16V	750-2500-016	BC015500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166
C41	470	16V	750-2500-016	BC015500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166

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.
C49			GPO X5F202K	DM-202	GP2000	CCD-202	GP220	2SS-020
C50	.002		NPO-01 10	OTZ-10	NPO10	CCTO-100	CN0410	10TCC-Q10
C51	10		GPD U2J120K	TCZ-12	NPO12	CCTO-120	CN0412	10TCC-Q12
C52	12		GPD U2J120K	TCZ-12	NPO12	CCTO-120	CN0412	10TCC-Q12
C53	7		NPO-DI 6.8	DTZ-6R8	NPO6P8		CN0568	10TCC-V68
C54	.002		GPD X5F202K	DM-202	GP2000	CCO-202	GP220	2SS-D20
C55	.002		GPD X5F202K	DM-202	GP2000	CCO-202	GP220	2SS-D20
C56	12		GPO U2J120K	TCZ-2	NPO12	CCTO-120	CN0412	10TCC-Q12
C57	15		NPO-DI 15	OTZ-15	NPO15	CCTO-150	CN0415	10TCC-Q15
C58	8		NPO-DI 8.2	TCZ-1	NPO8P2		CN0510	10TCC-V10
C59	1		NPO-DI 1.0	TCZ-1			CN0510	10TCC-V10
C60	300		GPO X5F301K	DM-301	GP300	CCD-301	GP330	10TS-T30
C61	.002		GPD X5F202K	DM-202	GP2000	CCD-202	GP220	2SS-020
C62	20		NPO-DI 20	DTZ-20	HP020	CCTO-200	CN0420	10TCC-Q20
C63	3		NPO-DI 3.0					10TCC-V30
C64	.002		GPO X5F202K	DM-202	GP2000	CCD-202	GP220	2SS-020
C65	.002		GPD X5F202K	DM-202	GP2000	CCO-202	GP220	2SS-020
C66	5		NPO-DI 5.0		NPO5		GP220	10TCC-V50
C67	6							10TCC-V56
C68	.002		GPD X5F202K	DM-202	GP2000	CCD-202	GP220	2SS-D20
C69	.1		TTP-1	CK-104			TA010	TG-P10
C70	.002		GPO X5F202K	DM-202	GP2000	CCD-202	GP220	2SS-D20
C71	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C72	.01		TTP-01	CK-103	MGP01	CCO-103	TA110	TG-S10
C73	10		NPO-01 10	OTZ-10	NPO10	CCTO-100	CN0410	10TCC-Q10
C74	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C75	.01		TTP-01	CK-103	MGP01	CCO-103	TA110	TG-S10
C76	.01		TTP-01	CK-103	MGP01	CCO-103	TA110	TG-S10
C77	70	#750-6000-003						TG-S10
C78	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-D50
C79	70		NPO-DI68	DTN-68	NPO68	CCTO-680	CN0468	10TCC-Q68
C80	70	#750-6000-001						
C81	2		NPO-DI 2.2	OTZ-2R2	NPO2P2		CN0522	10TCC-V22
C82	.2			UK20-204	HCZ3R0X224P		MAG025022	HY-470
C83	.2			UK20-204	HCZ3R0X224P		MAG025022	HY-470
C84	70		NPO-0168	OTN-68	HP068	CCTO-680	CN0468	10TCC-Q68
C85	70	#750-6000-001						
C86	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-D50
C87	10		NPO-DI 10	OTZ-10	NPO10	CCTO-100	CN0410	10TCC-Q10
C88	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C89	150	#750-6000-002						
C90	.05		TTP-05	CK-503	MGP05	CCO-503	TA150	TGL-S50
C91	.01		TTP-01	CK-103	MGP01	CCO-103	TA110	TG-S10
C92	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C93	180		GPD X5F181K	OD-181	GP180	CCD-181	GP318	10TS-T18
C94	.05		TTP-05	CK-503	MGP05	CCO-503	TA150	TGL-S50
C95	.001		GPD X5F102K	DM-102	GP1000	CCO-102	SM210	2SS-D10
C96	.01		TTP-01	CK-103	MGP01	CCO-103	TA110	TG-S10
C97	.001		GPO X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C98	1.5		NPO-DI 1.5	OTZ-1R5	NPO1P5		CN0515	10TCC-V15
C99	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C100	.001		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C101	40		NPO-DI39	TCZ-39		CCTO-390	CN0439	10TCC-Q39
C102	.001		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C103	.05		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C104	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-050
C105	340		GPO X5F331K	OD-331	GP330	CCD-331	GP333	10TS-T33
C106	250		GPD X5F251K	TCZ-240		CCD-251	GP325	5GA-T25
C107	180		GPD X5F181K	OD-181	GP180	CCD-181	GP318	10TS-T18
C108	.0047			CPR-4700J	C019F0472J03	DM-19-472	SX247	MS-247
C109	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-050
C110	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-050
C111	70		NPO-DI68	DTN-68	NPO68	CCTO-680	CN0468	10TCC-Q68
C112	.01		TTP-01	CK-103	MGP01	CCO-103	TA110	TG-S10
C113	.0015			CPR-1500J	C019F0152J03	DM-19-152	SX251	MS-215
C114	.001		GPD X5F102K	DM-102	GP1000	CCO-102	SM210	2SS-D10
C115	.001		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C116	.001		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C117	.001		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C118	.001		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10

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(cont)

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.
C119	.001		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C120	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-050
C121	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-050
C122	.004		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-050
C123	500		GPD X5F501K	DM-501	GP500	CCD-501	GP350	10TS-T50
C124	.05		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C125	.1		TTP-1	CK-104			TA010	TG-P10
C126	.05		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C127	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C128	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-050
C129	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-050
C130	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-050
C131	.004		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-050
C132	500		GPD X5F501K	DM-501	GP500	CCD-501	GP350	10TS-T50
C133	.1		TTP-1	CK-104			TA010	TG-P10
C134	.05		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C135	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C136	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-050
C137	.5	150V	DBE2P47		DPMS2P5	1DP-4-504	PVC105	2PS-P50
C138	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C139	150		GPD X5F151K	DM-151	GP150	CCD-151	GP315	10TS-T15
C140	150		GPD X5F151K	DM-151	GP150	CCD-151	GP315	10TS-T15
C141	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C142	.002		GPD X5F202K	DM-202	GP2000	CCD-202	GP220	2SS-020
C143	.002		GPD X5F202K	DM-202	GP2000	CCD-202	GP220	2SS-020
C144a	400	#718-6000-001						
C144b	400							
C144c	400							

Lear Jet Part Number.

(1) Nominal Value.

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone	10K	751-6000-005				
B	Volume	10K					
C	Volume	10K					
D	Channel Selector Switch						
R2	Balance	10K	751-6000-006				
R3	Gain	2000	751-6000-002	T-2500 (2)		X201R252B (2)	MTC23L1 (2)
R4	Separation	50K		T-50K (2)		X201R503B (2)	MTC54L1 (2)
	Separation	10K	(1)				
R5	Equalization Adjust	10K		T-10K		X201R103B (2)	MTC14L1 (2)
R6	Speed Control	50K					
R7	Motor Speed Adjust	1000		T-1000		X201R102	MTC13L1
R8	AM Sensitivity	100K	751-6000-004	T-100K (2)		X201R104B (2)	MTC15L1 (2)
R9	Equalization Adjust	10K		T-10K (2)		X201R103B (2)	MTC14L1 (2)

(1) May be used in some versions.

(2) Cut off one of the outside terminals and bend to fit "PC" Board.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	FM Antenna	(1)			
L2	RF Choke (.6uh)	(1)			
L3	FM RF	(1)			
L4	10.7MC Trap (.74uh)	(1)			
L5	FM Osc	(1)			
L6	FM Input IF				
L7	FM Interstage IF	756-6022-715			
L8	FM Interstage IF	756-6022-715			
L9	FM Interstage IF	756-6022-715			
L10	Ratio Detector	756-6022-722 (2)			
L11	RF Choke (8.6uh)	756-6500-004	19-1009	4611	T960
L12	AM Antenna	(3)			
L13	AM Antenna	(3)			
L14	AM RF	(3)			
L15	AM Osc	(3)			
L16	AM Input IF	756-6022-515			
L17	AM Output IF	756-6022-516			
L18	RF Choke (30uh)	756-6700-001			
L19	FM IF Trigger Input	756-6022-723			
L20	RF Choke (30uh)	756-6700-003			
L21	RF Choke (30uh)	756-6700-003			
L22	67KC Trap	756-6022-051			
L23	19KC	756-6022-050			
L24	72KC Trap	756-6010-144			
L25	38KC	756-6022-052			

(1) Part of M2 (2) Includes X4 and X5. (3) Part of M3.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L26	75ma	1.3	1mh						* Measured in Tape Position
L27	600ma 250ma*	.2	1.5mh	756-6700-002					

LEAR JET MODEL A-250

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD Part No.	
T1	2.5	1	1	756-6021-001					
T2	2.5	1	1	756-6021-001					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		PART No.	QUAM PART No.	
	PM 4 ohms			

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	3 Amp		774-6200-001	AGC3	HOJ	312003	150145		

TAPE HEADS

ITEM No.	MEASURED			PART No.	NORTRONICS PART No.	DESCRIPTION
	INDUCTANCE	BIAS/ERASE VOLTS (RMS)	BIAS FREQ.			
M1	430mh			759-6000-001	5800 (1)	8-Track Stereo Play (1) Use original mounting.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
K1	Seek Relay	758-6000-002	Includes Tape Guide.
K2	Radio/Tape Relay	758-6000-001	
K3	Local/Distant Relay	758-6000-003	
M2	FM Tuner	742-6000-001	
M3	AM Tuner		
M4	Tape Motor	757-6100-001	
M5	Head Shift Solenoid	758-6300-001	
M6	Eject Solenoid	758-6300-002	
M7	Tuning Solenoid	741-6000-003	
M8	Tuning Motor	742-6000-004	
PC1	Bias Network	742-6000-001	
PC2	Bias Network	742-6000-002	
PC3	Bias Network	742-6000-001	
PC4	Bias Network	742-6000-002	
PC5	Bias Network	742-6000-001	
PC6	Bias Network	742-6000-002	
PC7	Bias Network	742-6000-001	
PC8	De-emphasis Network	742-6000-003	
PC9	Bias Network	742-6000-001	
PC10	Bias Network	742-6000-001	
PC11	Bias Network	742-6000-001	
S1	Switch, Local - Distant	765-6400-004	
S2	Switch, Automatic Program Selector	719-6000-004	
S3	Switch, AM-FM	765-6400-004	
S4	Switch, Manual Program Selector	765-6400-003	
S5	Switch, Fast Forward	765-6400-004	
S6	Switch, Eject	765-6400-003	
S7	Switch, Tuning Motor Reversing	741-6000-008	
S8	Switch, Program Indicator Selector	761-6100-002	
S9	Switch, Radio - Tape Selector	761-6000-001	
S10	Switch, MPX - Mono	765-6400-004	

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

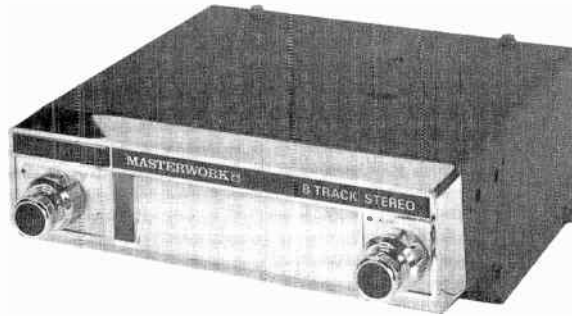
ITEM	PART No.	ITEM	PART No.
Escutcheon	732-6000-001	Push Button, Eject	765-6400-005
Dial Glass	718-6000-005	Push Button, Fast Forward	765-6400-006
Knob, Tuning or Volume	765-6400-002	Push Button, Program	765-6400-007
Knob, Balance or Tone	765-6400-001	Push Button, FM-AM	765-6400-008
Tape Door	724-6000-001	Push Button, MPX-Mono	765-6400-009
Dial Pointer	765-6500-001	Push Button, DX-Loc	765-6400-010



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index



MASTERWORK MODEL M8200
(8-Track Stereo Player)

MASTERWORK MODEL M8200

OPERATING INSTRUCTIONS

Insert cartridge until it locks and turns unit on.

Set operating controls as desired.

Press program selector to play desired tracks, or allow unit to select tracks automatically.

Remove cartridge to turn unit off.

CLEANING

Clean all tape contact surfaces with a soft, lint-free material and head cleaner or methyl alcohol. Use alcohol to remove oil and grease from all driving surfaces.

CAUTION: Avoid getting head cleaner on any plastic surface.

LUBRICATING

Lubricate bearings and bushings lightly with #20 machine oil. Use a light film of non-hardening grease on cam surfaces.

HEAD DEMAGNETIZING

Demagnetize head when unit is serviced. Avoid using magnetic materials near head.

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

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TQ722

ADJUSTMENTS

ADJUST	REMARKS
Head Height	Play a test cartridge, follow instructions with cartridge, and adjust B1 for proper response.
Head Azimuth	Connect an AC VTVM across right output. Play a test cartridge and adjust B2 for maximum.
Indexing Solenoid	Press program selector to continuously cycle indexing mechanism, turn Screw B4 clockwise until cycling stops, and then turn screw counter-clockwise 1/4 turn past restart of cycling.

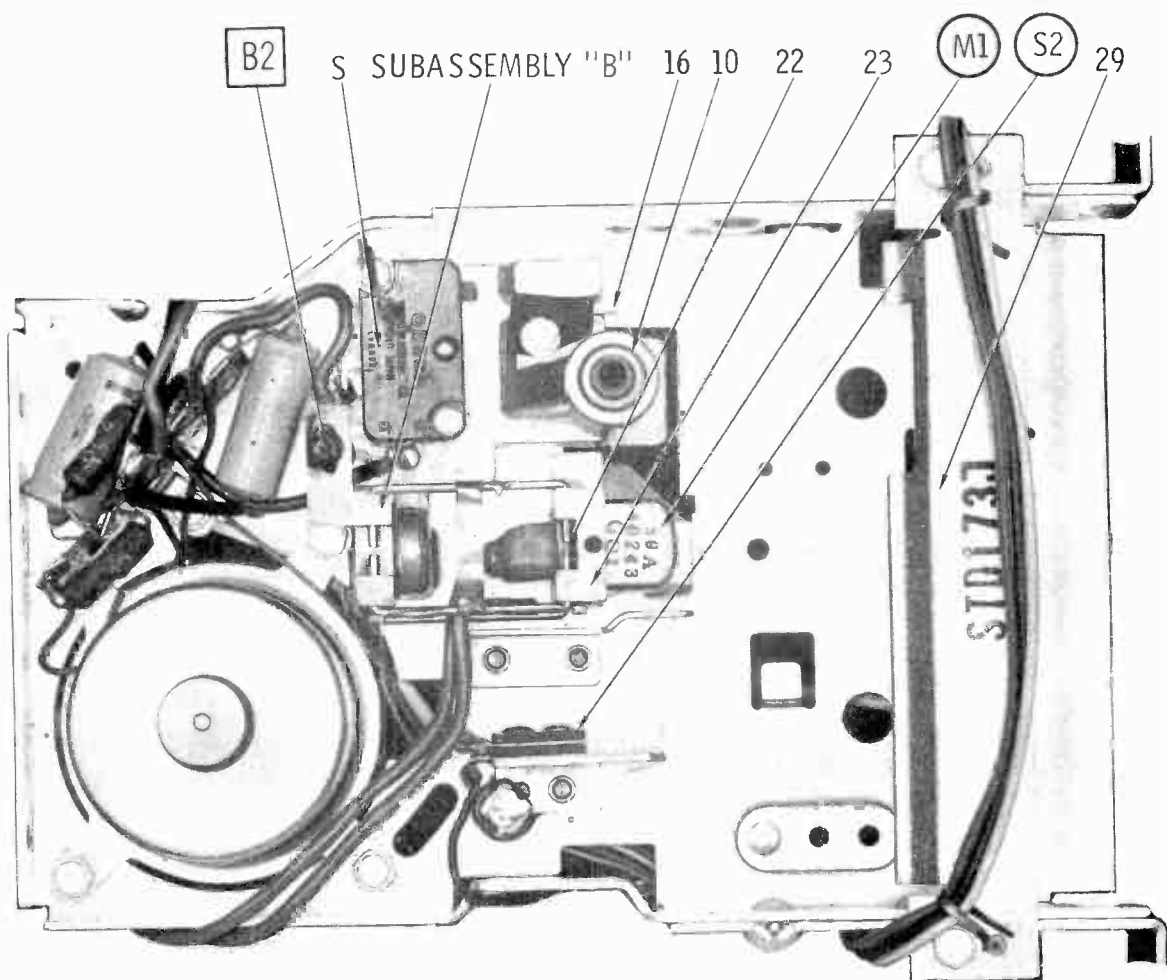
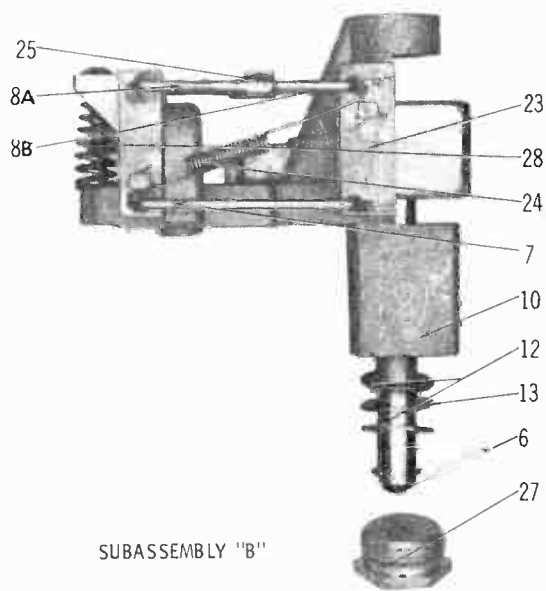
TROUBLE CHART

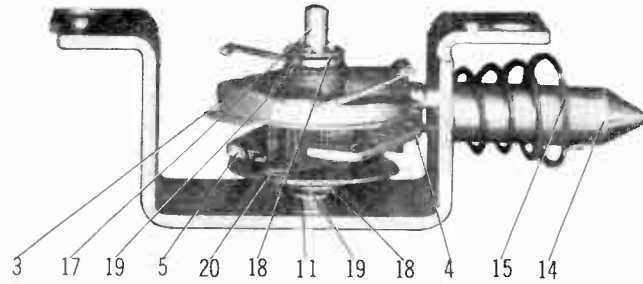
SYMPTOM	REMARKS
Capstan does not rotate.	Belt (1) dirty, worn, or broken. Assembly (10) binding. Motor defective or not supplied with power.
Track-shift mechanism inoperative.	Switch (S2) dirty. Cam (3) binding or worn. Pawls (4) and (5) worn. Arms (7) and (8) binding. Solenoid (M3) defective or not supplied with power. Cartridge defective.
Wow or Flutter.	Belt (1) dirty or worn. Capstan dirty or binding. Cartridge defective. Motor defective.
Sound weak or distorted.	Head dirty, misaligned, or defective. Cartridge defective. Amplifiers defective.
Tape is pulled from cartridge.	Cartridge defective. Capstan dirty or scored.

MECHANICAL PARTS LIST

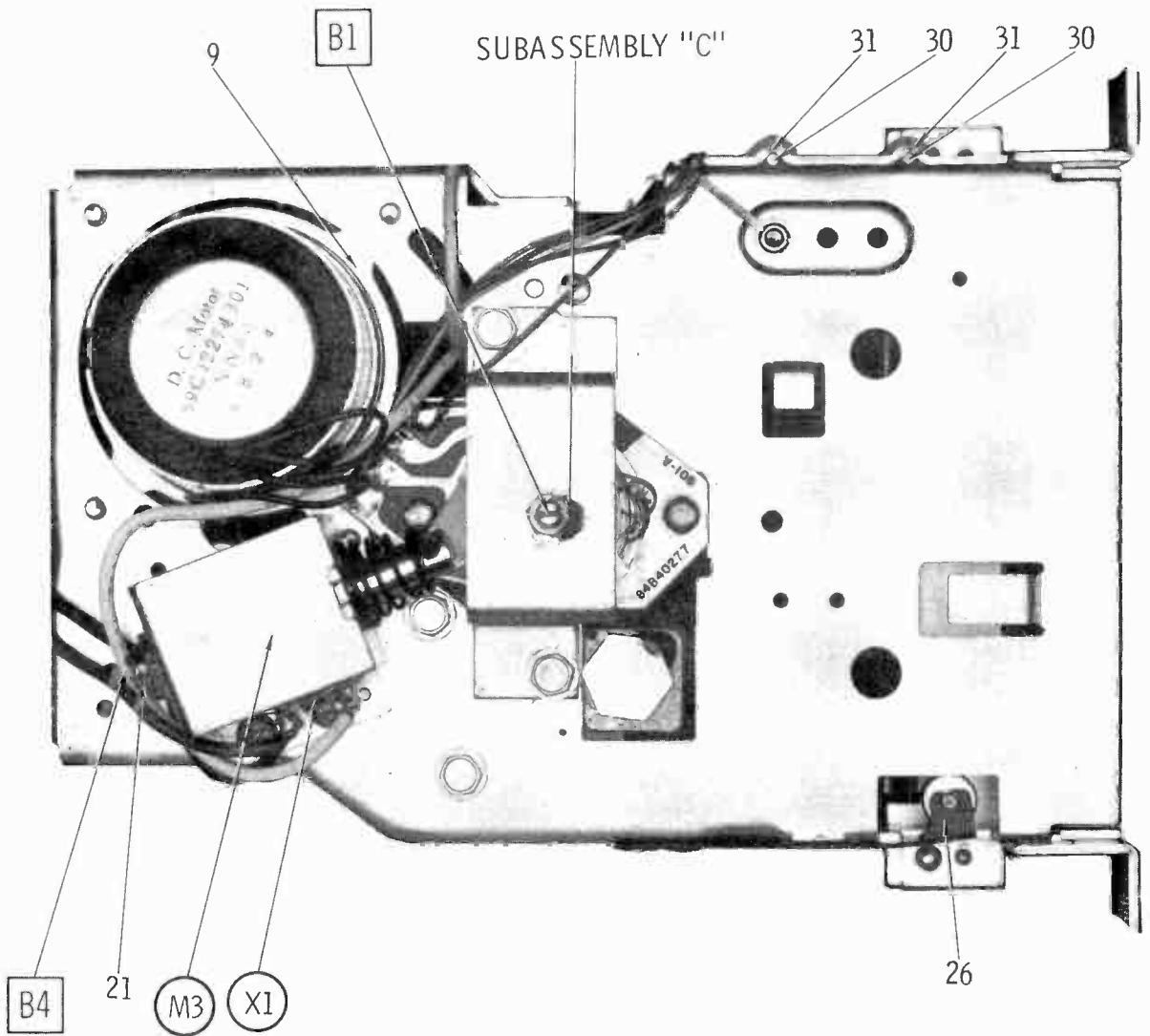
REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1*	42-42683B01*	Drive Belt*	17	47-40714B01	Cam Shaft
2	49-40416B02	Flywheel	18	4-40409B02	Thrust Washer (3 used)
3	45-40337G01	Ratchet Cam	19	43-40411B01	Thrust Bearing
4	55-40605B01	Push Pawl	20	41-40365G01	Pawl Spring
5	55-40606B01	Pull Pawl	21	46-40299B01	Solenoid Stop
6	47-40059A58	Capstan Shaft	22	22-40711B01	Transfer Pin
7	45-40708B02	Radius Arm (2 used)	23	46-40707B01	Head Block
8	45-40708B01	Radius Arm	24	41-41282B01	Head Tension Spring
9	26-43657A01	Motor Shield	25	41-40713B01	Keeper Spring
10	1-41500B19	Capstan Housing	26	1-40104G50	Cartridge Retaining Spring
11	4-40104A12	Spring Washer	27	2-40859B01	Thrust End Nut
12	4-40409B01	Thrust Washer (2 used)	28	41-40710B01	Azimuth Adjust Spring
13	43-40411B02	Thrust Bearing	29	7-40568B01	Hold Down Bracket
14	47-40298B01	Solenoid Plunger	30	22-42038A06	Roller Pin (2 used)
15	41-40445B02	Solenoid Spring	31	49-41580B01	Roller (2 used)
16	45-40480B01	Motor Switch Actuating Arm			

* Drive Belt-WALSCO Replacement Part Number 1499-24

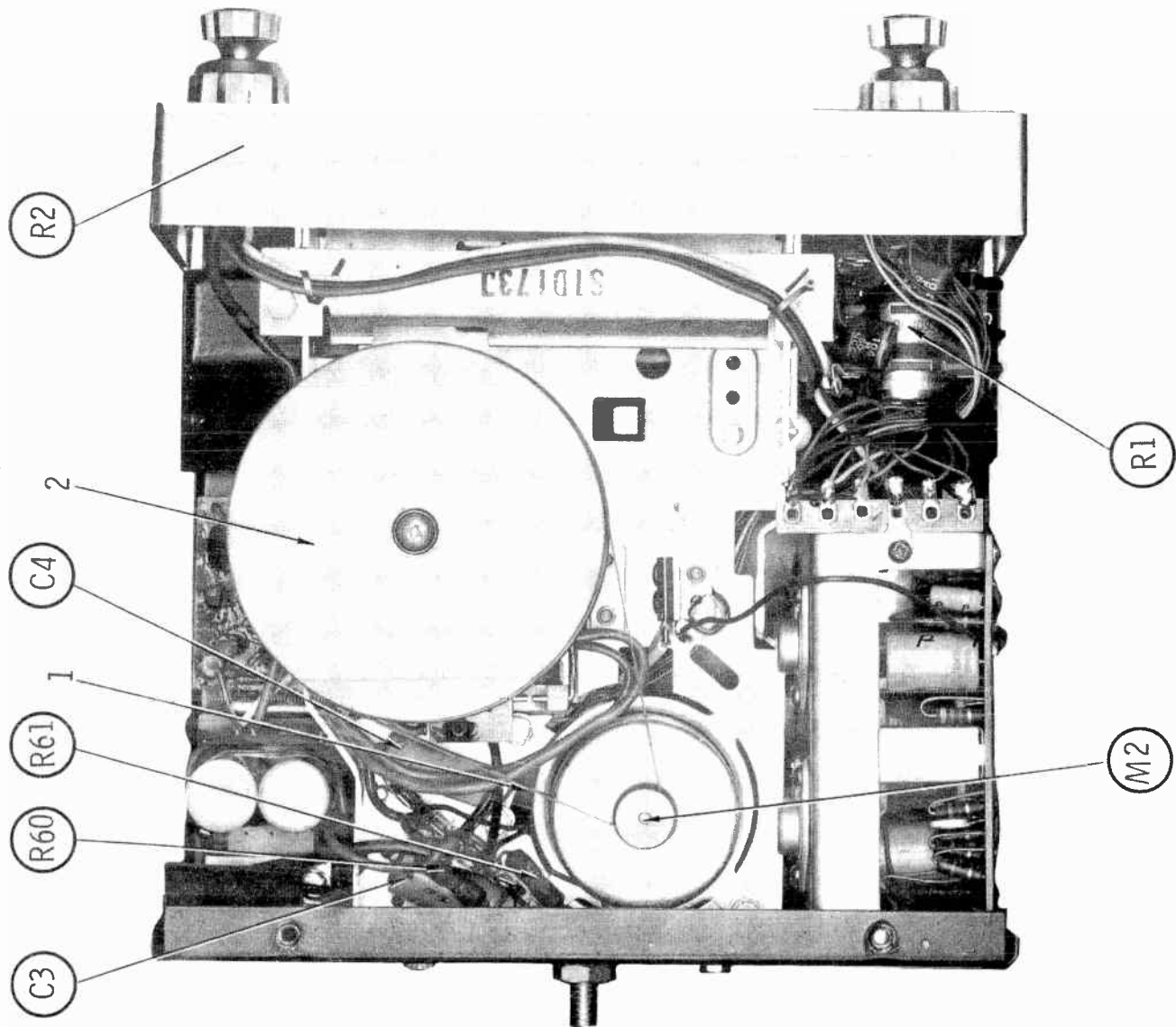


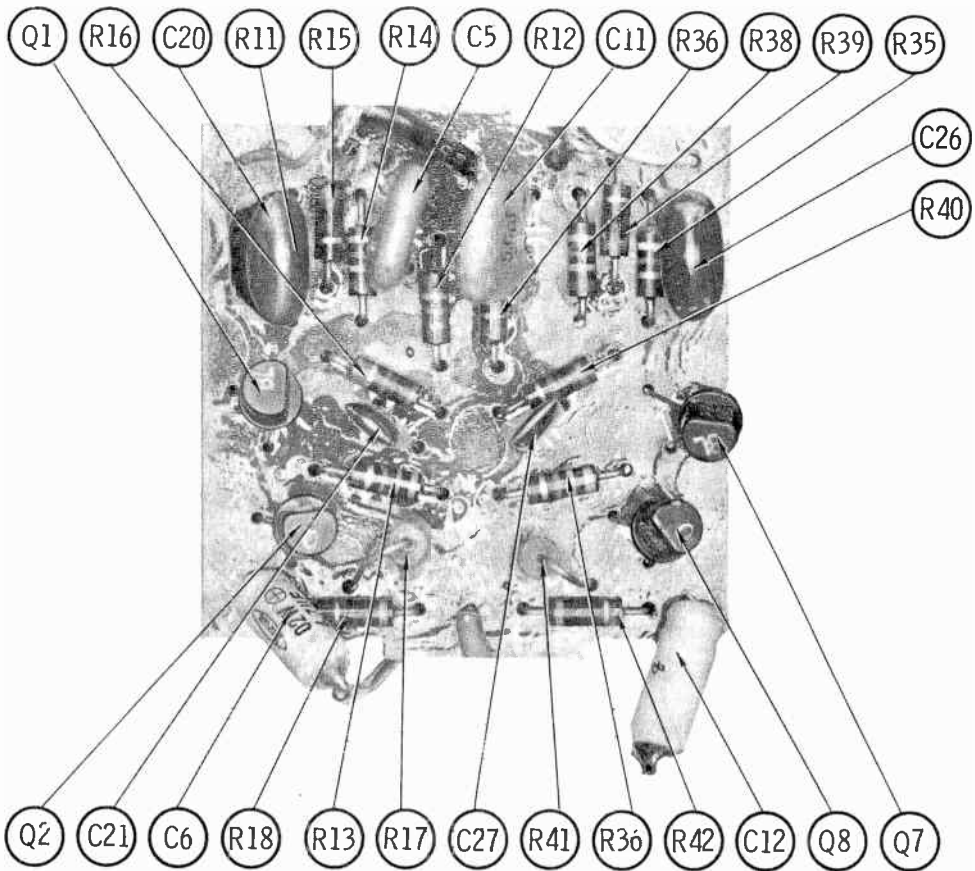
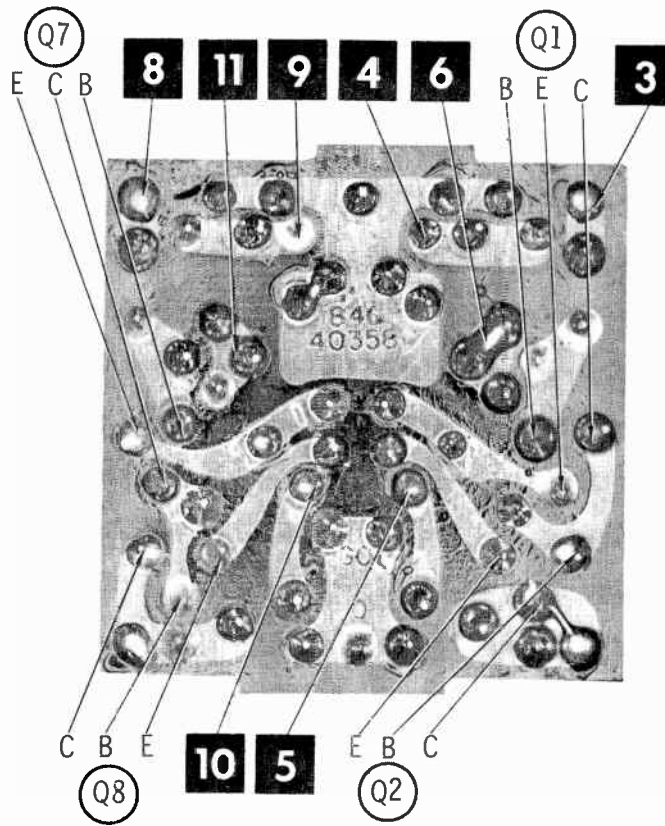


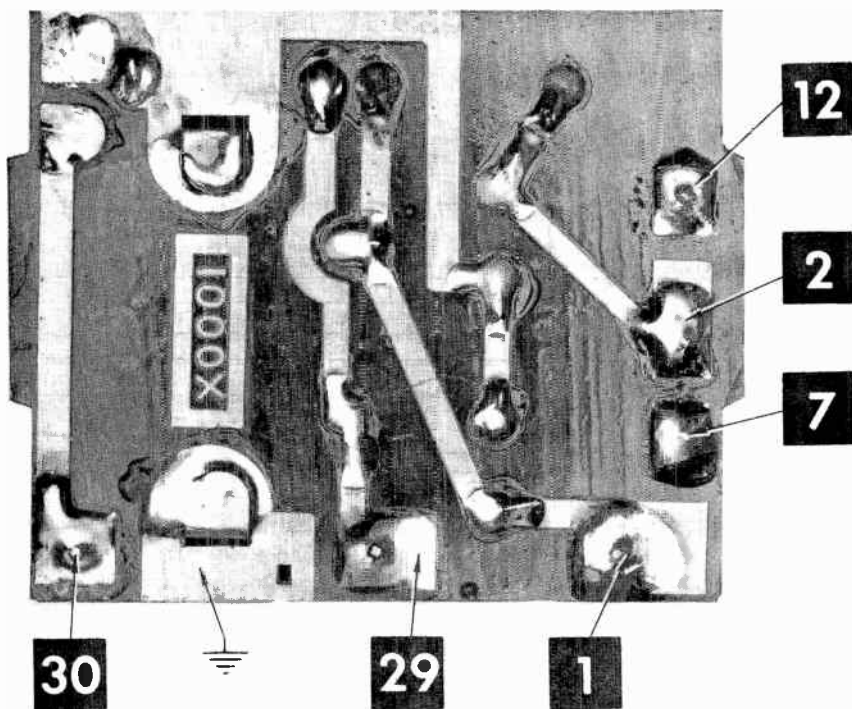
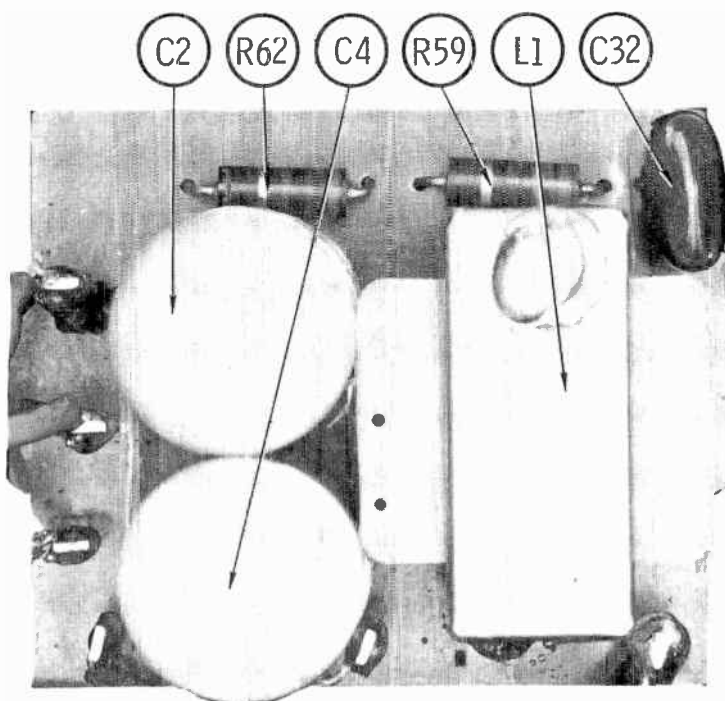
SUBASSEMBLY "C"



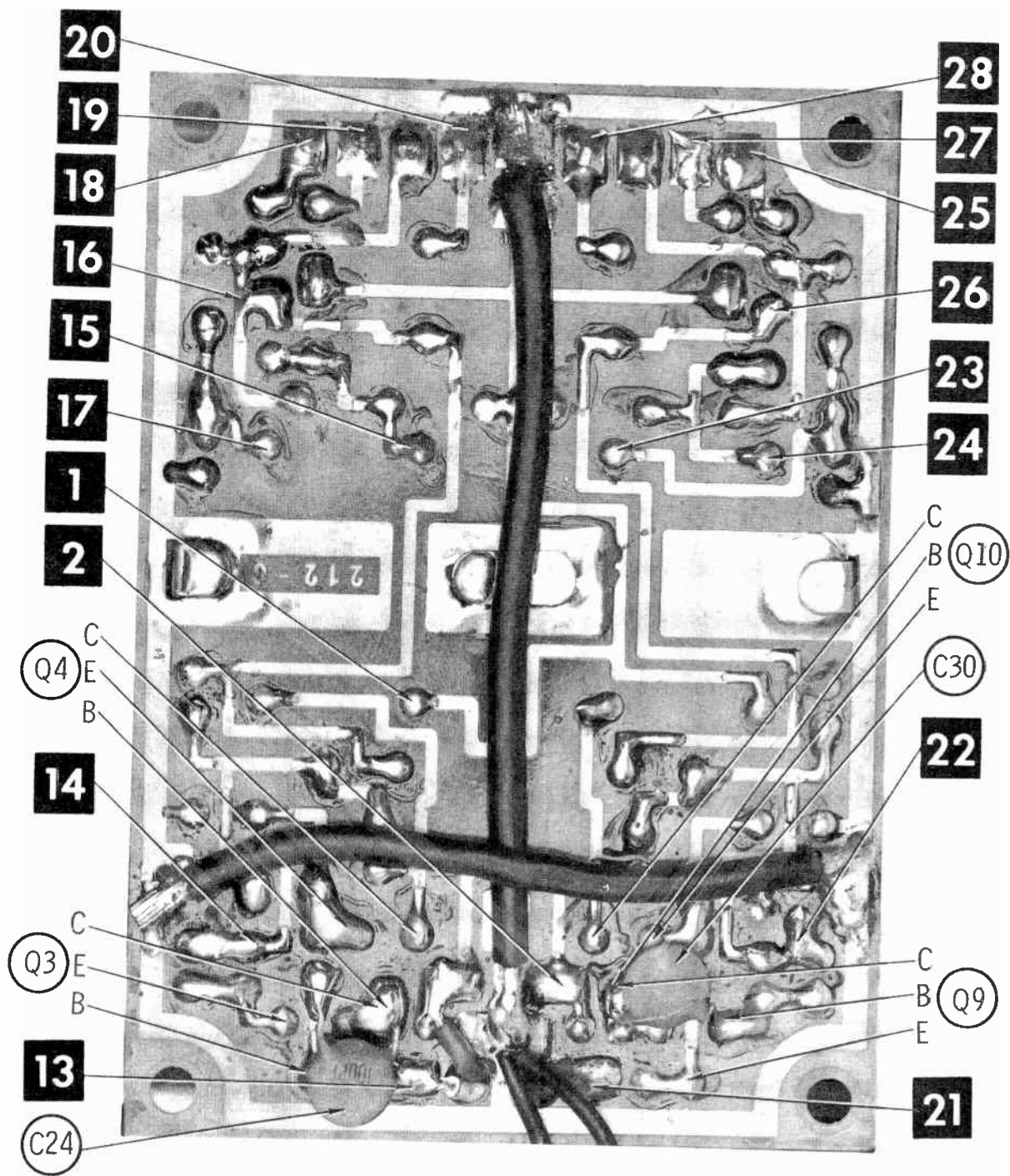
MASTERWORK MODEL M8200



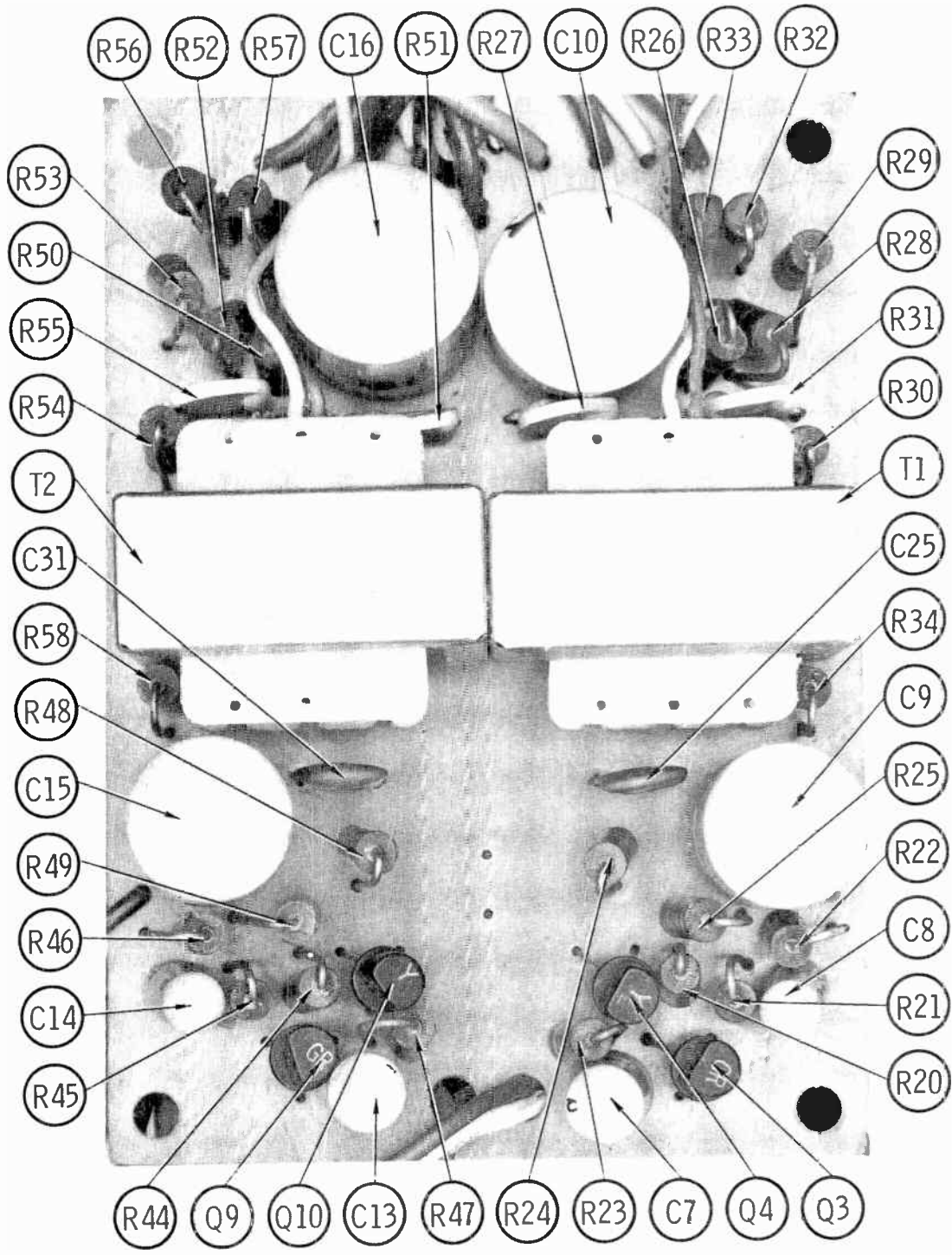




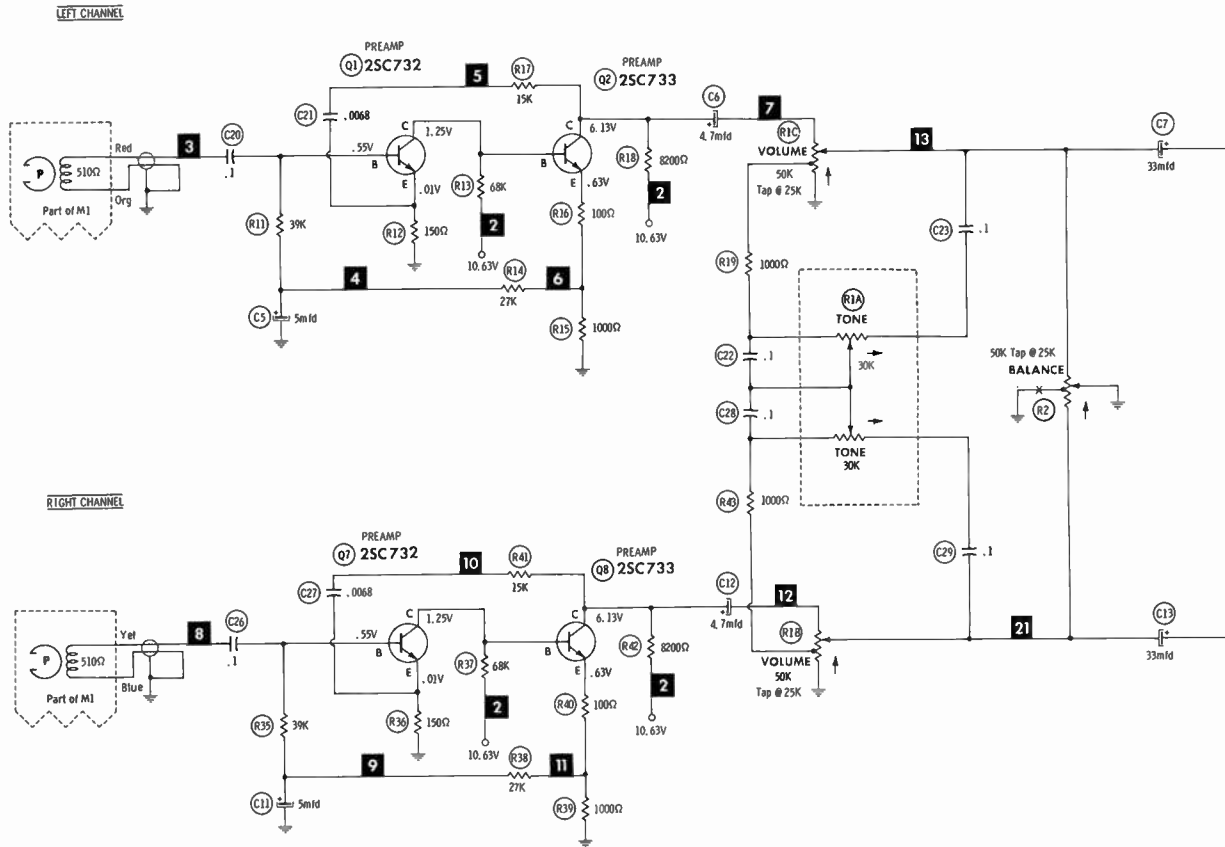
A Howard W. Sams CIRCUITRACE™ Photo



A Howard W. Sams **CIRCUITRACE** Photo

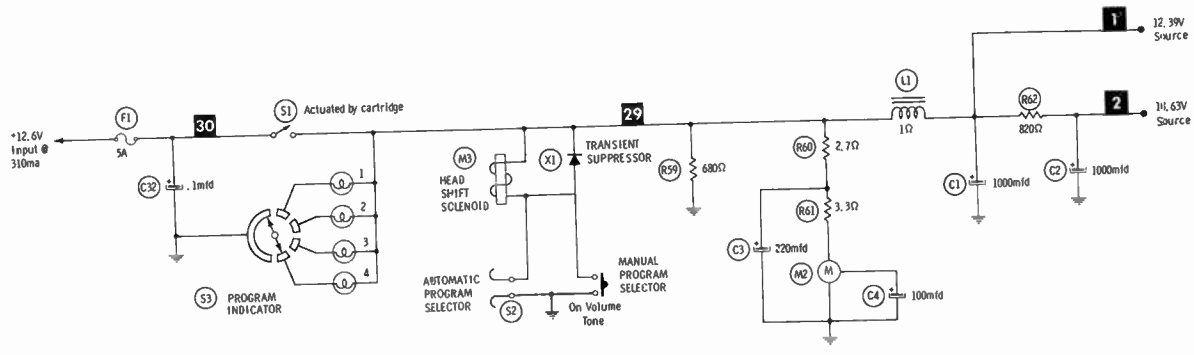
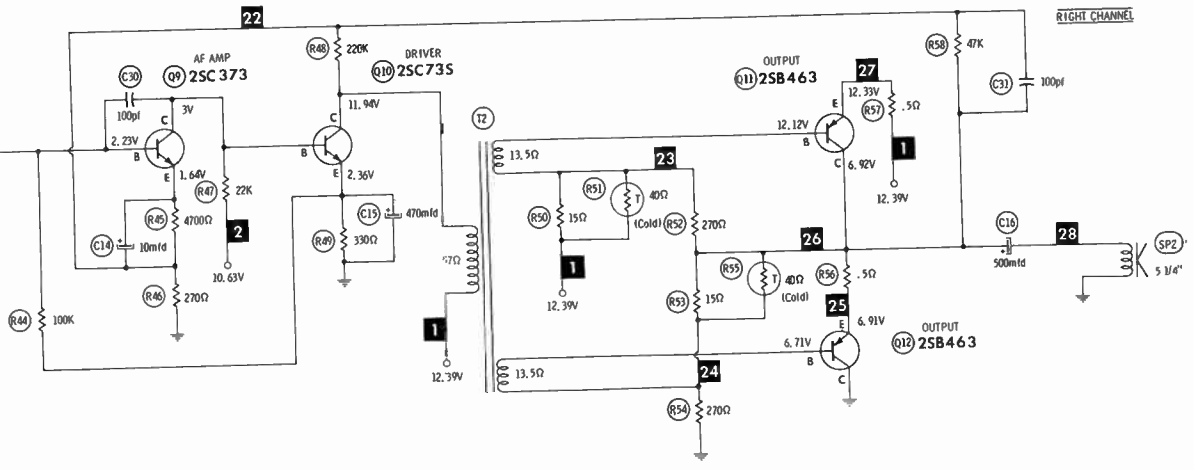
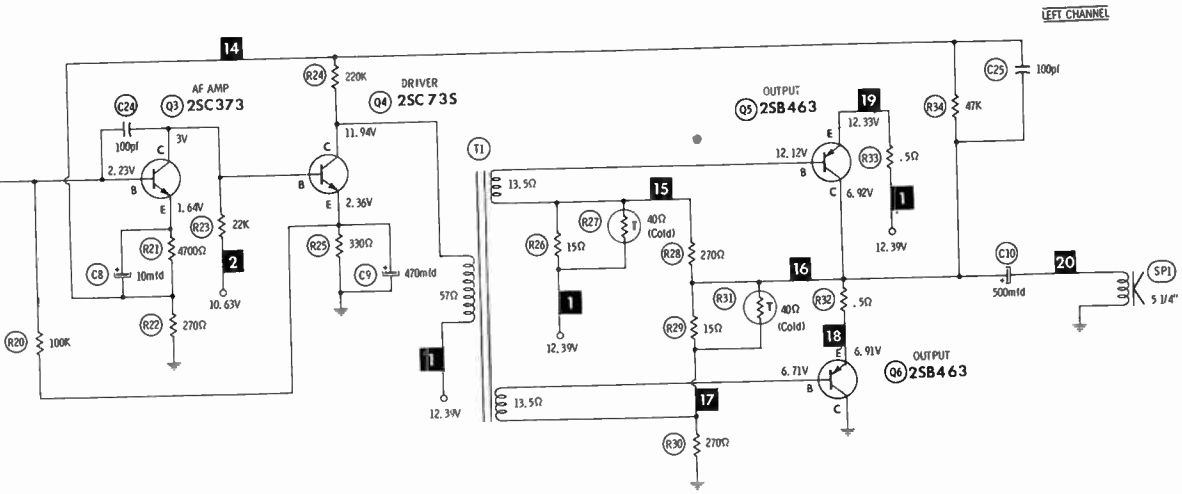


NOTE: DEMAGNETIZE HEADS AFTER SERVICING



Resistors are 1/2W or less, 10% or 20%, unless otherwise indicated.
 Supply voltage maintained at rated value for measurements.
 Voltage and resistance measured with VTVM or equivalent meter,
 no signal applied and controls adjusted for normal operation.
 Controls viewed from actuator end. Arrow indicates clockwise rotation.
 Numbers assigned to terminals may not be found on the unit.
 Transistor resistances vary widely. No resistance measurements taken.

A PHOTOFAC STANDARD NOTATION SCHEMATIC
 with **CIRCUITRACE**
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MASTERWORK MODEL M8200

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.	TYPE No.	FUNCTION	REPLACEMENT DATA					
			MFGR. PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q1	2SC732	Preamp		GE-20	TR-21	HEP726	SK3020	ECG 123
Q2	2SC733	Preamp		GE-20	TR-21	HEP726	SK3020	ECG 123
Q3	2SC373	AF Amp		GE-20	TR-21	HEP55	SK3020	ECG 123
Q4	2SC735	Driver		GE-20	TR-21	HEP53	SK3020	ECG 123
Q5	2SB463	Output (1)						ECG 131mp*
Q6	2SB463	Output (1)						
Q7	2SC732	Preamp		GE-20	TR-21	HEP726	SK3020	ECG 123
Q8	2SC733	Preamp		GE-20	TR-21	HEP726	SK3020	ECG 123
Q9	2SC373	AF Amp		GE-20	TR-21	HEP55	SK3020	ECG 123
Q10	2SC735	Driver		GE-20	TR-21	HEP53	SK3020	ECG 123
Q11	2SB463	Output (1)						ECG 131mp*
Q12	2SB463	Output (1)						ECG 131mp*

(1) When replacing, apply silicone grease to both sides of insulator.

* Matched pair

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES			REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.	RCA PART No.	
X1	1001	GE-504A	5A4D	ECG 116	SK3016	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	1000 16V	D11628	PRS1230	EA15-1000	WBR1000-16	QT1-32	TC1501A	TL-1166.5
C2	1000 16V	D11628	PRS1230	EA15-1000	WBR1000-16	QT1-32	TC1501A	TL-1166.5
C3	220 16V	D11629	BCD20200	EA15-250	PC200-16	MT1-23	MTV200CK15	TE-1164
C4	100 16V	D11630	CRE473A	EA15-100	AL100-16	MT1-19	MTA100E15	TE-1162
C5	5 6V	D11623	BCD25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084
C6	4.7 25V	D11624	BCD25005	EP30-5	PC5-100	MT1-3	MTV5CB50	TE-1202
C7	33 10V	D11625	BCD15025	EP15-25	PC30-35	MT1-13.5	MTV30CB25	TE-1132.1
C8	10 10V	D11626	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C9	470 6.3V	D11627	BCD15500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1141
C10	500 15V	D11631	BCD15500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166
C11	5 6V	D11623	BCD25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084
C12	4.7 25V	D11624	BCD25005	EP30-5	PC5-100	MT1-3	MTV5CB50	TE-1202
C13	33 10V	D11625	BCD15025	EP15-25	PC30-35	MT1-13.5	MTV30CB25	TE-1132.1
C14	10 10V	D11626	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128
C15	470 6.3V	D11627	BCD15500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1141
C16	500 15V	D11631	BCD15500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166

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.	
C20	.1		TTP-1	CK-104				TA010	TG-P10
C21	.0068		GPOX5R682K	00-682	GP6800		CC0-682	GP268	5GA-068
C22	.1		TTP-1	CK-104				TA010	TG-P10
C23	.1		TTP-1	CK-104				TA010	TG-P10
C24	100		NPC-DI 100	DTZ-100	NP0100		CCT0-101	CN0310	10TCC-T10
C25	100		NPO-DI 100	OTZ-100	NP0100		CCT0-101	CN0310	10TCC-T10
C26	.1		TTP-1	CK-104				TA010	TG-P10
C27	.0068		GPOX5R682K	DD-682	GP6800		CC0-682	GP268	5GA-068
C28	.1		TTP-1	CK-104				TA010	TG-P10
C29	.1		TTP-1	CK-104				TA010	TG-P10
C30	100		NPC-OI 100	DTZ-100	NP0100		CCT0-101	CN0310	10TCC-T10
C31	100		NPO-DI 100	DTZ-100	NP0100		CCT0-101	CN0310	10TCC-T10
C32	.1		TTP-1	CK-104				TA010	TG-P10

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone	30K	D9391				
8	Track Selector						
C	Switch						
	Volume	50K Tap @ 25K					
D	Volume	50K Tap @ 25K					
R2	Balance	50K Tap @ 25K	D9392				

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.
R27	40 (Cold)			D16230
R31	40 (Cold)			D16230

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.
R51	40 (Cold)			D16230
R55	40 (Cold)			D16230

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L1	310ma	1	20MH	D210488					

MASTERWORK MODEL M8200

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.

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	5 Amp	65-40348G01	1-40431G01	AGC5	HDJ	311005	150145	

TAPE HEADS

ITEM No.	MEASURED			PART No.	NORTRONICS PART No.	DESCRIPTION
	INDUCTANCE	BIAS/ERASE VOLTS (RMS)	BIAS FREQ.			
M1	355mh			D-19788 (59-40243G01)	5800 (1)	8-Track Stereo Play (1) Use original mounting

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M2	Motor	D-6121 (59-42274B01)	4 used
M3	Solenoid	D-10179	
S1	Switch, Power	D-4274	
S2	Switch, Automatic	D-4272	
S3	Program Selector	84-40277G01	
	Switch Program Indicator Selector	D-19789	
	Program Indicator Lamp		

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Door	15-40323G01	Knob, Tone or Dummy	36-40329G01
Eseutcheon	15-40330G01	Indicator Lens	35-40440G01
Knob, Volume or Balance	36-40059G01		

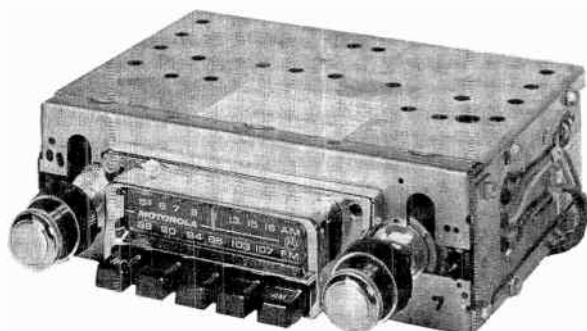
WIRING DATA

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.)



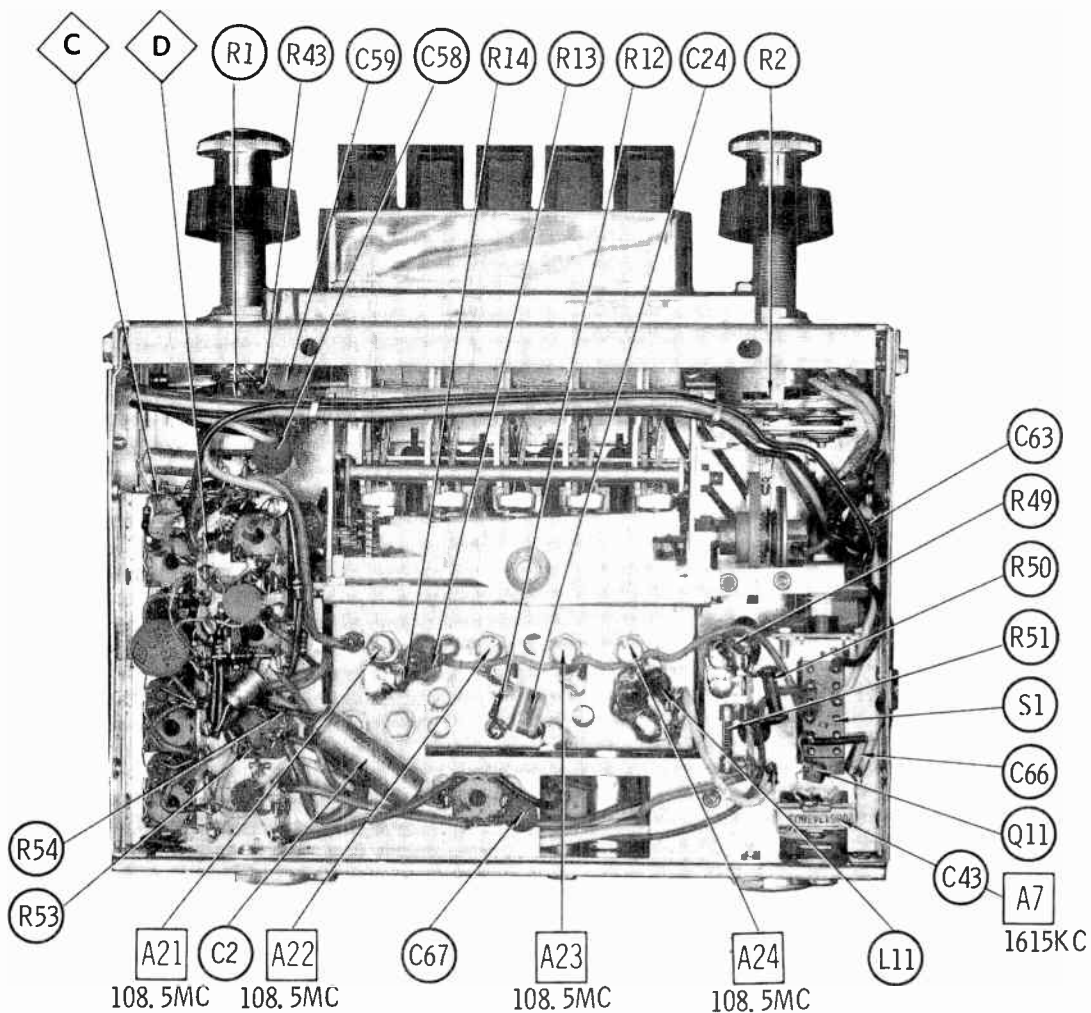
PHOTOFACT®

For Supplier Address See PHOTOFACT Index



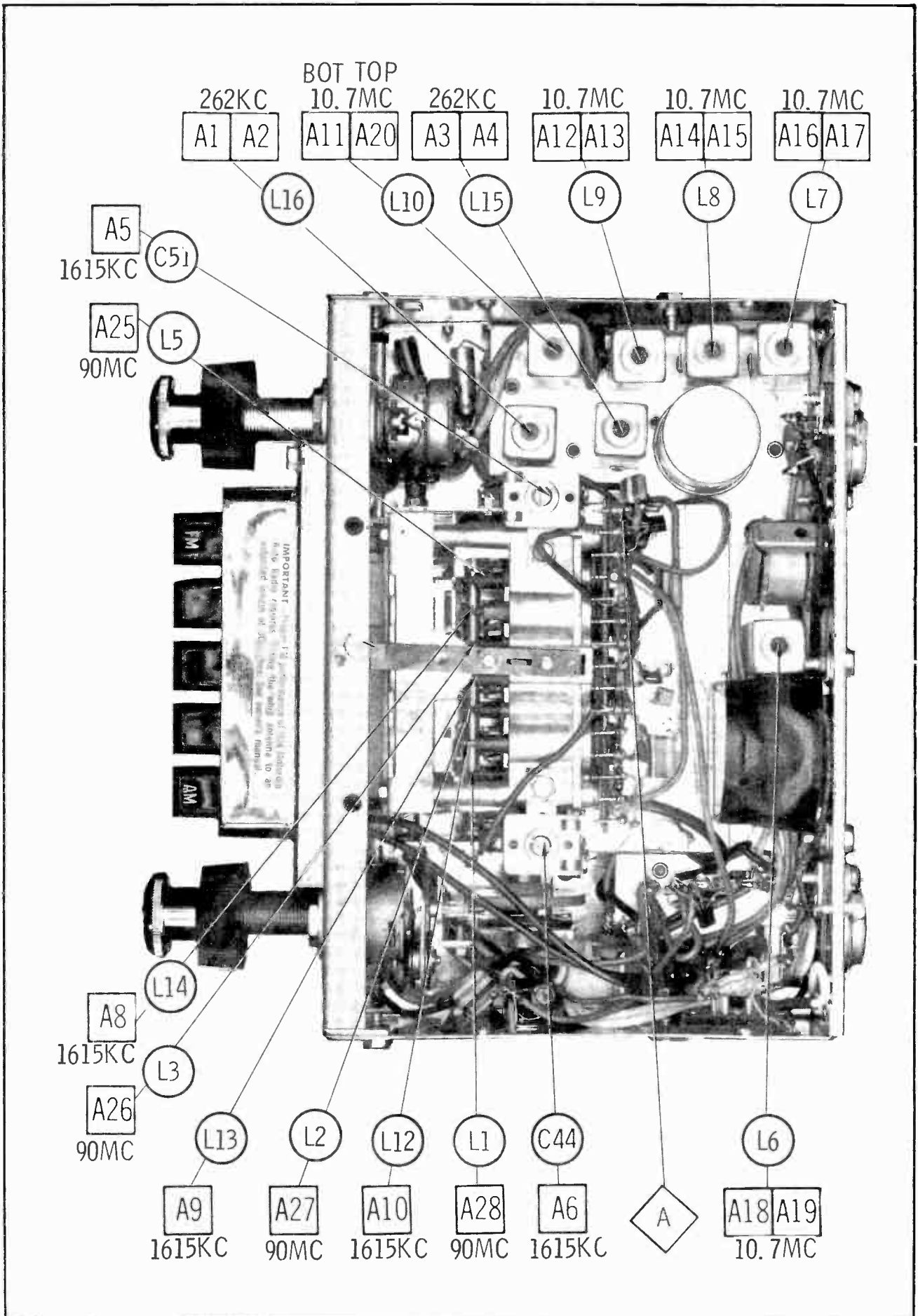
MOTOROLA MODEL FM210A

MOTOROLA MODEL FM210A



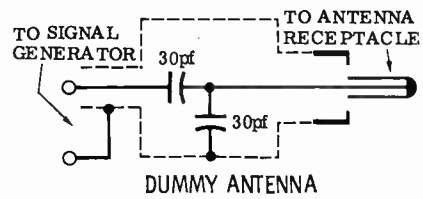
HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

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ALIGNMENT INSTRUCTIONS

Check for specified source voltage. Use only enough generator output to provide a usable indication. Suggested Alignment Tools: GENERAL CEMENT# WALSCO# A1 thru A4 9296,9297,9300 2510,2546,2547 A11 thru A20 A5, A6, A7 8290,8868,9087..... 2525,2528,2587 A21 thru A24				PUSH-BUTTON ADJUSTMENT 1. Pull button out. 2. Tune manually to desired station. 3. Press button in firmly. 4. Repeat for remaining buttons.	
GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1. High side thru .1mfd to point \diamond A, low side to ground.	262KC 400 cycle modulation	High freq. end stop.	Output meter across voice coil.	A1,A2, A3,A4	Adjust for maximum.
2. Thru dummy antenna to antenna input.	1615KC	"	"	A5,A6, A7	"
Step 3 is not necessary unless tuner or associated components have been disturbed. 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 input.	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 33", tune in a weak station near 1400KC and adjust A7 for maximum output. Antenna adjustment (A7) is located Right Rear Bottom Corner.					



FM IF ALIGNMENT USING AM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001mfd to point \diamond B, low side to ground.				
GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
4. 10.7MC Unmodulated	Point of non-interference	DC probe of VTVM to point \diamond C, common to ground.	A11 Thru A19	Adjust for maximum.
5. "	"	DC probe of VTVM to point \diamond D, common to ground.	A20	Adjust for zero reading. A positive or negative reading will be obtained on either side of the correct setting.

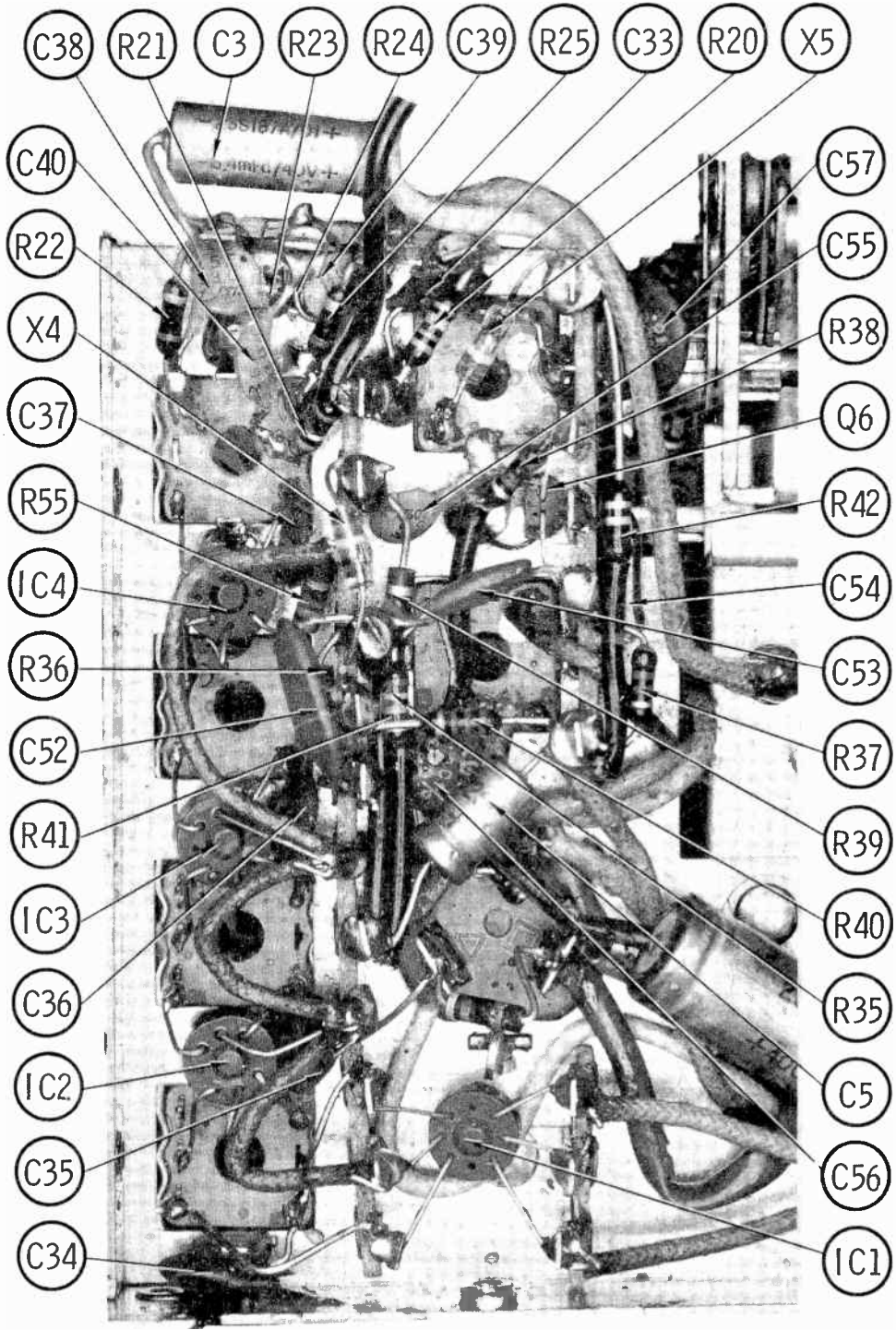
FM IF ALIGNMENT USING FM SIGNAL GENERATOR—SELECTOR IN FM POSITION

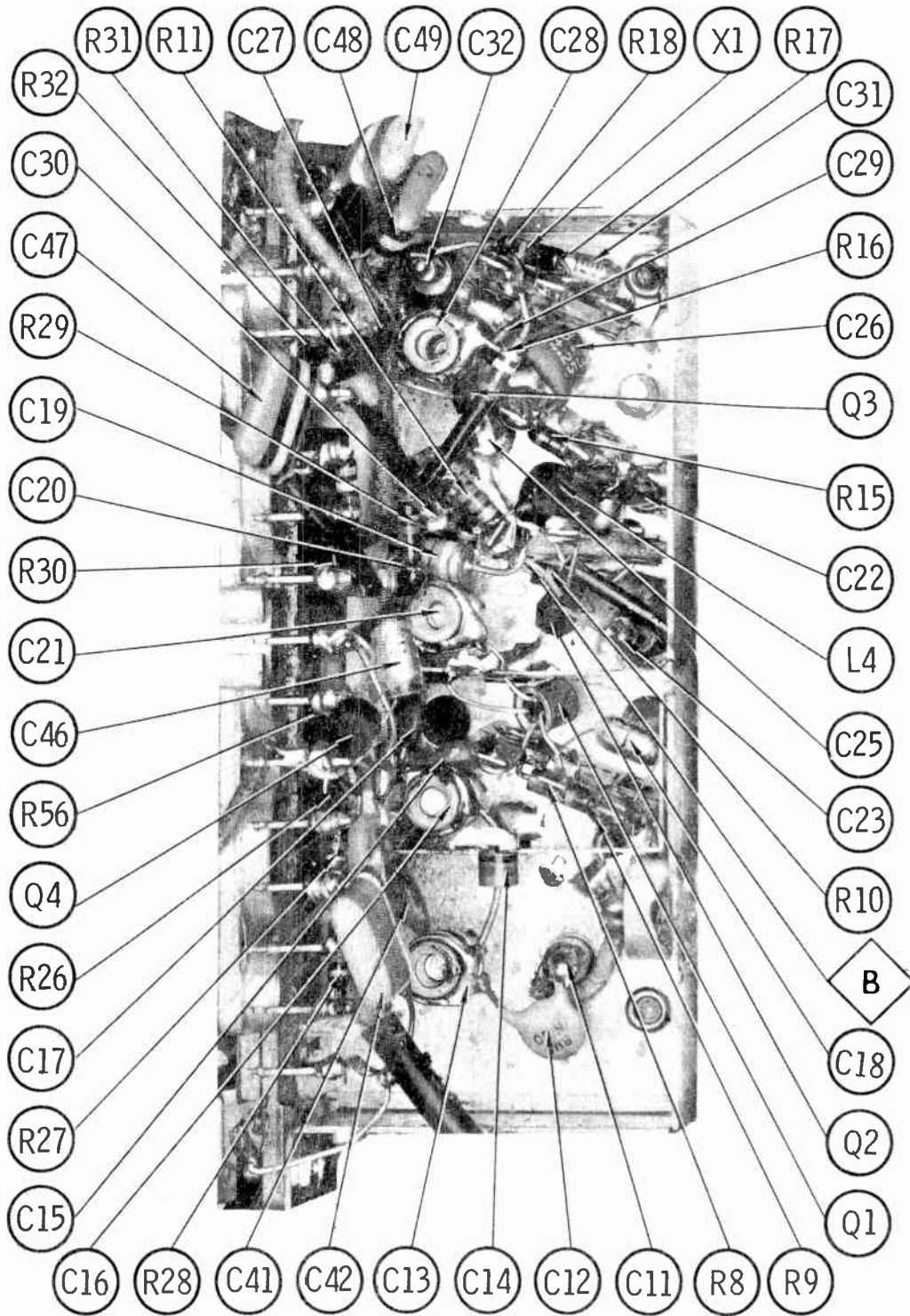
High side of generator thru .001mfd to point \diamond B, low side to ground. Use only enough marker signal for indication. Use 60 cycle frequency modulated signal with 450KC sweep. Use 60 cycle sawtooth voltage in scope for horizontal deflection.				
GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
4. 10.7MC 450KC Sweep	Point of non-interference	Vert. amp of scope to point \diamond C, low side to ground.	A11 Thru A19	Disconnect stabilizing capacitor C3. Adjust for maximum gain and symmetry of response similar to Fig. 1 with marker as shown. Reconnect C 3.
5. "	"	Vert. amp of scope to point \diamond D, low side to ground.	A20	Adjust A 20 (secondary) to place marker at center of "S" curve similar to Fig. 2. Readjust A 11 (primary) for maximum amplitude and straightness of line.

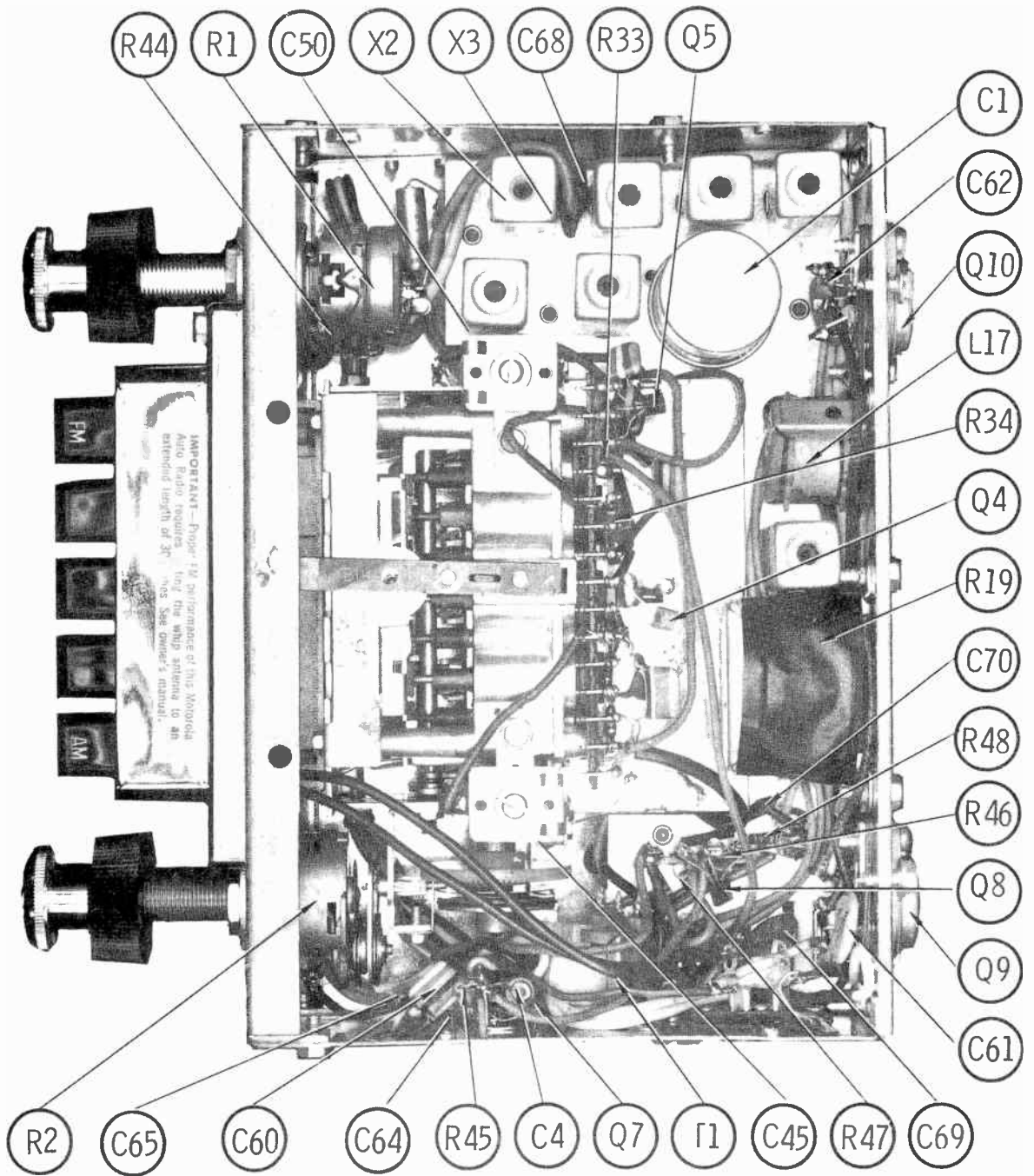
FM RF ALIGNMENT—SELECTOR IN FM POSITION

Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead.				
GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
6. 108.5MC	High freq. end	DC probe of VTVM to point \diamond C, common to ground.	A21 Thru A24	Adjust for maximum.
7. 90MC Unmodulated	Tune to signal.	"	A25 Thru A28	Rock tuning and adjust for maximum. Repeat steps 6 and 7 until no further improvement can be made.

MOTOROLA MODEL FM210A







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.	TYPE No.	FUNCTION	REPLACEMENT DATA					
			MFGR. PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q1	W1E	FM RF Amp	48S137070					
Q2	M4857	FM Mixer	48S134837	GE-17	TR-22	HEP718	SK3018	ECG 108
Q3	M4857	FM Oscillator	48S134837	GE-17	TR-22	HEP718	SK3018	ECG 108
Q4	829A	AM RF Amp	48S134830 (1)	GE-22	TR-19	HEP57		ECG 106
Q5	829B	AM Converter	48S134831	GE-22	TR-19	HEP57		ECG 106
Q6	829C	AM IF	48S134832 (1)	GE-22	TR-19	HEP57		ECG 106
Q7	54C	AF Amp	48S134810	GE-20	TR-21	HEP725	SK3020	ECG 123
Q8	54D	Driver	48S134811	GE-20	TR-21	HEP726	SK3020	ECG 123
Q9	SP1556-3	Output (+)	48S134760 (2)	GF-13MP*	TR-01	HEP624	SK3013*	ECG 104MP*
Q10	SP1556-3	Output (+)	48S134760 (2)	GF-13MP*	TR-01	HEP624	SK3013*	ECG 104MP*
Q11	D1A	Voltage Regulator	48S134912	GE-20	TR-21		SK3020	ECG 123

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

(1) Manufacturer recommends #48S134831.

(2) Manufacturer recommends #48S134759.

* Matched Pair.

INTEGRATED CIRCUITS

ITEM No.	FUNCTION	MFGR. PART No.	REMARKS
IC1	1st FM IF	51S10302A01	
IC2	2nd FM IF	51S10302A01	
IC3	3rd FM IF	51S10302A01	
IC4	4th FM IF	51S10302A01	

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES			REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.	RCA PART No.	
X1	48A42383A01					(1) Part of L10.
X2	(1)					
X3	(1)					
X4	1N139	1N295	1N295	ECG 109		
X5	1N139	1N295	1N295	ECG 109		

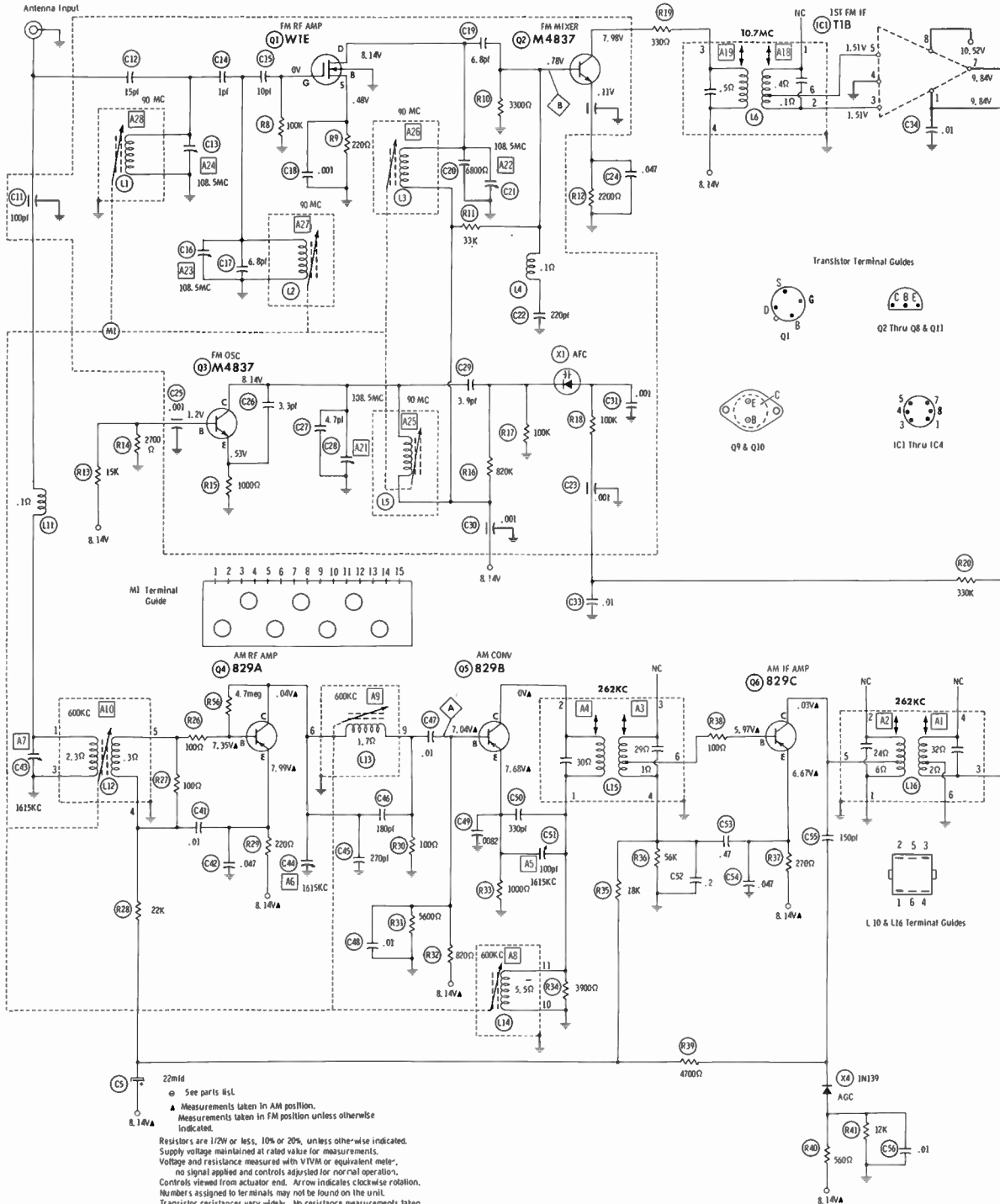
ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		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	23S184A05 (1)	AFH3-00-95		CC0018A	XC3-48	WP300.85B	TVL-3026.8
b	500 16V							
c	500 16V							
C2	400 16V	23S187A22	PRS1220	EA15-500	WBR500-35	QT1-30A	TC1505A	TL-1166
C3	4.7 63V	23S187A14	CRE903A	EA50-5	WBR5-150	MT1-4	MTA5D50	TE-1403
C4	4.7 63V	23S187A14	CRE903A	EA50-5	WBR5-150	MT1-4	MTA5D50	TE-1403
C5	22 25V	23S187A20	PTT82	EA30-25	WBR25-50	MT1-11	MTA25E35	TE-1207

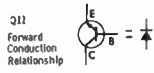
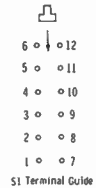
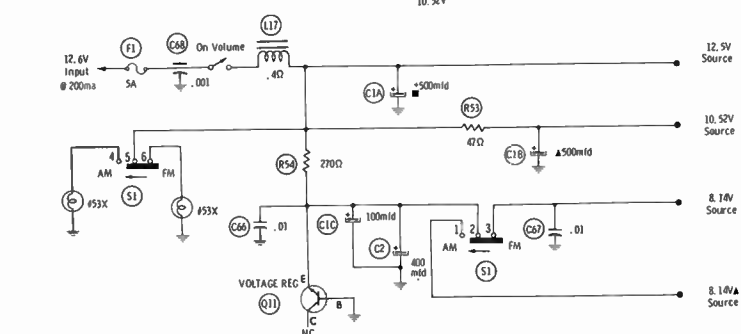
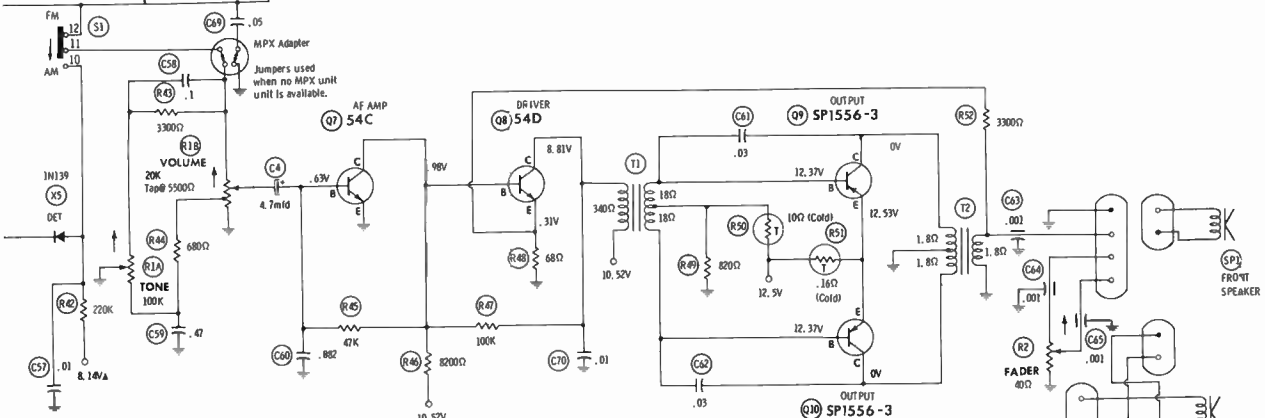
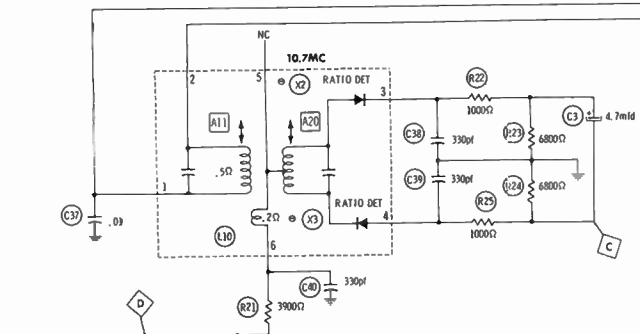
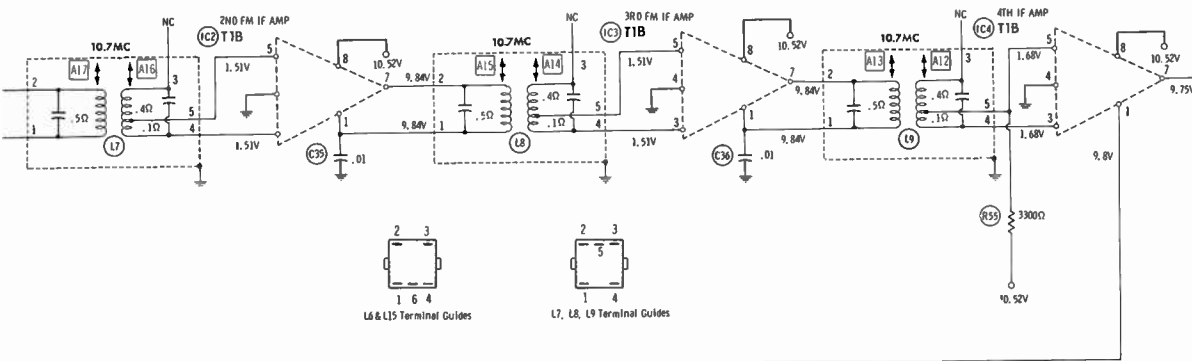
(1) Manufacturer Recommends Part #23C64722A02.

(CONTINUED ON PAGE 70)

MOTOROLA MODEL FM210A



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MOTOROLA MODEL FM210A

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.	
C11	100	N47D	#21S136110							
C12	15	NPO		NPO-DI 15	DTZ-15	NP015	CCT0-150	CN0415	10TCC-Q15	
C13	2.5-12		#2DS1D123AD6							
C14	1				TCZ-1			CN0510	10TCC-V10	
C15	1D	NPO		NPO-DI 10	DTZ-10	NP010	CCT0-100	CN0410	10TCC-Q10	
C16	2.5-12		#20S10123A06							
C17	6.8	NPO		NPO-OI 6.8	OTZ-6R8	NP06PB		CN0568	10TCC-V68	
C18	.001			GPO X5F102K	OM-102	GP100D	CCO-102	SM210	25S-010	
C19	6.8				OTZ-6R8	NP06PB		CN0568	10TCC-V68	
C20	6.8	NPO		NPO-OI 6.8	DTZ-6R8	NP06PB		CN0568	10TCC-V68	
C21	2.5-12		#20S10123A06							
C22	220			GPD X5F221K	00-221	GP220	CCO-221	GP322	10TS-T22	
C23	.001		#21S135870							
C24	.047			V1612S47		OPMS6S47	1DP-2-473	PVC1147	225P47391W03	
C25	.001		#21S135870							
C26	3.3	NPO		NPO-DI 3.3	OTZ-3R3	NP03P3		CN0533	10TCC-V33	
C27	4.7				OTZ-4R7	NP04P7		CN0547	10TCC-V47	
C28	2.5-12		@20S10123A06							
C29	3.9	NPO				NP03P9			10TCC-V39	
C30	.001		#21S135870							
C31	.001			GPO X5F102K	DM-102	GP1000	CCO-102	SM210	25S-010	
C32	.001		#21S135870							
C33	.01			TTP-01	CK-103	MGP01	CCO-103	TA110	TG-S10	
C34	.01			TTP-01	CK-103	MGP01	CCO-103	TA110	TG-S10	
C35	.01			TTP-01	CK-103	MGP01	CCO-103	TA110	TG-S10	
C36	.01			TTP-01	CK-103	MGP01	CCO-103	TA110	TG-S10	
C37	.01			TTP-01	CK-103	MGP01	CCO-103	TA110	TG-S10	
C38	330			GPD X5F331K	00-331	GP330	CCO-331	GP333	10TS-T33	
C39	330			GPD X5F331K	00-331	GP330	CCD-331	GP333	10TS-T33	
C40	330			GPO X5F331K	00-331	GP330	CCO-331	GP333	10TS-T33	
C41	.01			TTP-01	CK-103	MGP01	CCO-103	TA110	TG-S10	
C42	.047			V1612S47		OPMS6S47	10P-2-473	PVC1147	225P47391W03	
C43	40-430		#20B64343B03							
C44	30-180		#20B64343B01							
C45	270			ADM-15-271	CPR-270J	C015FD271J03	DM-10-271	SX327	MS-327	
C46	180			GPD X5F181K	00-181	GP180	CCD-181	GP318	10TS-T18	
C47	.01			V1612S1	CPR-10000J	OPMS6S1	10P-1-103	PVC211	225P10391W03	
C48	.01			V1612S1	CPR-10000J	DPMS6S1	10P-1-103	PVC211	225P10391W03	
C49	.0082			DBE6D82	CPR-820DJ	6D82	60P-2-822	PVC6282	6PS-082	
C50	330			GPO X5F331K	00-331	GP330	CCD-331	GP333	10TS-T33	
C51	30-180		#20B64343B02							
C52	.2				UK10-204			MAG12D22	HY-47D	
C53	.47				UK10-474			MAG3047	HY-330	
C54	.047			V1612S47		OPMS6S47	1DP-2-473	PVC1147	225P47391W03	
C55	150			GPD X5F151K	00-151	GP150	CCD-151	GP315	10TS-T15	
C56	.01			TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10	
C57	.01			TTP-01	CK-103	MGP01	CCO-103	TA110	TG-S10	
C58	.1			TTP-1	CK-104			TA110	TG-S10	
C59	.47				UK10-474			TAD10	TG-P10	
C60	.082			DBE6S82		6S82	60P-4-823	MAG3D47	HY-330	
C61	.03			TTP-03	CK-303		CCO-303	GP130	6PS-S82	
C62	.03			TTP-03	CK-303		CCD-303	GP130	TG-S30	
C63	.001		#21A560232							
C64	.001		#21A560232							
C65	.001		#21A560232							
C66	.01			V1612S1	CPR-10000J	OPMS6S1	10P-1-103	PVC211	225P10391W03	
C67	.01			TTP-01	CK-103	MGP01	CCO-103	TA110	TG-S10	
C68	.01		#21A560232							
C69	.05			TTP-05	CK-503	MGP05	CCO-503	TA150	TGL-S50	
C70	.01			TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10	

Motorola Part Number.

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA					
			MFRG. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A B	Tone Volume/Switch	100K 20K	18C64412A02	F2-10DK, R14-25K, FFS110 RFS202, BB106,KR-4			* QJ-2633A	P15A,4114, RU24T14, CS3500,US41
R2	Fader	Tap @ 5500 ohm 4D ohm 2 Watt	18B42217BD1					

* "Concentrik" Equivalent: K8 Kit with base elements & shafts B13-128,P17-188 (Panel)
B19-119X, R1-130 (Rear)
"Snaptrol" Equivalent : BUB (1),CF52,CR69TT (2),SF12,SR48,GC. S51 (Bushing)
76-1 (Switch)

(1) Alter Bushing to meet requirements.

(2) Do not use 15K Tap.

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		
		IRC PART No.	WORKMAN PART No.	MFR. PART No.
R50	10 ohm (Cold)			6K544646

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFR. PART No.
R51	.16 ohm (PTC)			17B64753A01

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	FM Antenna	24C42626B03			
L2	FM Antenna	24C42626B03			
L3	FM RF	24C42626B03			
L4	10.7MC Trap (1uh)	24C64003B04	19-1000	4602	T855
L5	FM Oscillator	24C42626B03			
L6	FM Input IF	24C64104A02			
L7	FM Interstage IF	24C64104A02			
L8	FM Interstage IF	24C64104A02			
L9	FM Interstage IF	24C64104A02			
L10	Ratio Detector	24D64235B01 (1)			
L11	RF Choke (1uh)	24C64003B04	19-1000	4602	T855
L12	AM Antenna				
L13	AM RF				
L14	AM Oscillator				
L15	AM IF Input	24C64105A01		8009	
L16	AM IF Output	24C64105A02		8010	

(1) Includes X2 and X3.

(2) Part of X1.

MOTOROLA MODEL FM210A

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	
L17	200ma	.4 ohm	3 MH	25D64172A23	C-4095	TC-1	TR-155	TY16XT

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MFR. PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	30 ohm CT	8 ohm	25D64023A11					

TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD Part No.	
T1	8	1		25D64174A07					

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.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA			NOTES
		PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4" X 8" PM 8 ohm	50064089B02		48A2Z8	Front Rear
SP2	6" X 9" PM 8 ohm	50D64024A01		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	AGA 5 Amp	65S122345	1V64964A32	AGA5	HAF	301005	150145	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Tuner	77U42901B05	FTS663
	AM Tuning Coil Assy.	1V43000B88	
S1	Switch, Selector	40C64303B01	

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Escutcheon	13C64661A01	Dial Pointer	52B42479B15
Knob, Tuning or Volume	36C64336B01	Pushbutton "AM"	38C41956B03
Knob, Tone or Fader	36K544812	Pushbutton "FM"	38C41956B02
Dial Glass	34B64404B01	Pushbutton	38C41956B01

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 BELOEN No. 8885
Rear Seat Speaker Extension Cable	Use BELOEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELOEN No. 8661 (3/8 In.) or 8670 (3/4 In.)



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index



MOTOROLA MODEL TM713S
(8-Track Stereo Player)

MOTOROLA MODEL TM713S

OPERATING INSTRUCTIONS

Turn the power on with Volume control/
Power On/Off switch. Insert cartridge until
it locks and turns the motor on.

Set operating controls as desired.

Press program selector to play desired tracks,
or allow unit to select tracks automatically.

Remove cartridge to turn the motor off.

CLEANING

Clean all tape contact surfaces with a soft,
lint-free material and head cleaner or methyl
alcohol. Use alcohol to remove oil and grease
from all driving surfaces.

CAUTION: Avoid getting head cleaner on any
plastic surface.

LUBRICATING

Lubricate bearings and bushings lightly with
#20 machine oil. Use a light film of non-
hardening grease on cam surfaces.

HEAD DEMAGNETIZING

Demagnetize head when unit is serviced. Avoid
using magnetic materials near head.

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

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TQ652

ADJUSTMENTS

ADJUST	REMARKS
Head Height	Play a test cartridge, follow instructions with cartridge, and adjust B1 for proper response.
Head Azimuth	Connect an AC VTVM across right output. Play a test cartridge and adjust B2 for maximum.
Indexing Solenoid	Press program selector to continuously cycle indexing mechanism, turn Screw B4 clockwise until cycling stops, and then turn screw counter-clockwise 1/4 turn past restart of cycling.

TROUBLE CHART

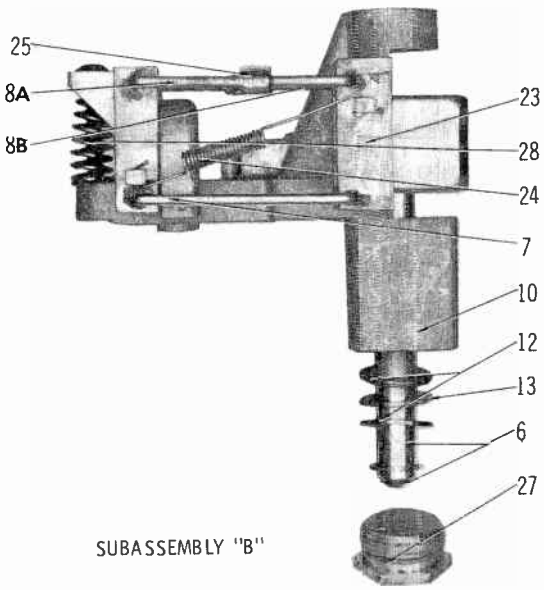
SYMPTOM	REMARKS
Capstan does not rotate.	Belt (1) dirty, worn, or broken. Assembly (10) binding. Motor defective or not supplied with power.
Track-shift mechanism inoperative.	Switch (S2) dirty. Cam (3) binding or worn. Pawls (4) and (5) worn. Arms (7) and (8) binding. Solenoid (M3) defective or not supplied with power.
Wow or Flutter.	Cartridge defective. Belt (1) dirty or worn. Capstan dirty or binding. Cartridge defective. Motor defective. Speed regulator circuit defective.
Sound weak or distorted.	Head dirty, misaligned, or defective. Cartridge defective. Amplifiers defective.
Tape is pulled from cartridge.	Cartridge defective. Capstan dirty or scored.

MECHANICAL PARTS LIST

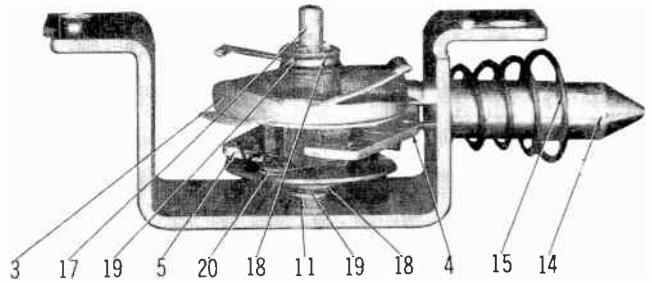
REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1*	42B42683B01*	Drive Belt*	18	4A40409B02	Thrust Washer (3 used)
2	49C40416B02	Flywheel	19	43A40411B01	Thrust Bearing (2 used)
3	45B40337G01	Track Ratchet Cam	20	41B40365G01	Cam Pawl Spring
4	55B40605B01	Push Pawl	21	46B40299B01	Solenoid Stop
5	55B40606B01	Pull Pawl	22	22A40711B01	Transfer Pin
6	47P40059A58	Capstan Shaft and Bearing	23	46B40707B01	Head Block
7	45B40708B01	Radius Arm	24	41A41282B01	Head Mount Spring
8	45B40708B02	Radius Arm (2 used)	25	41A40713B01	Spring Clip
9	26B43657A01	Motor Shield	26	1V41800B87	Ejector Lever Assembly
10	1V40104G04	Capstan Housing Assembly	27	2A40859B01	Capstan Cap Nut
11	4C40104A12	Spring Washer	28	41A40710B01	Azimuth Adjust Spring
12	4A40409B01	Thrust Washer (2 used)	29	(1)	Ejector Slide Bracket
13	43B40411B02	Thrust Bearing	30	41A42071B01	Ejector Lever Spring
14	47A40298B01	Solenoid Plunger	31	49A41580B01	Guide Roller (2 used)
15	41A40445B02	Plunger Spring	32	(1)	Cartridge Roller
16	45B40480B01	Motor Actuating Arm	33	7C43782A01	Cam, Bracket, and Roller Assembly
17	47B40714B01	Cam Shaft			

(*) Part of Assembly (26).

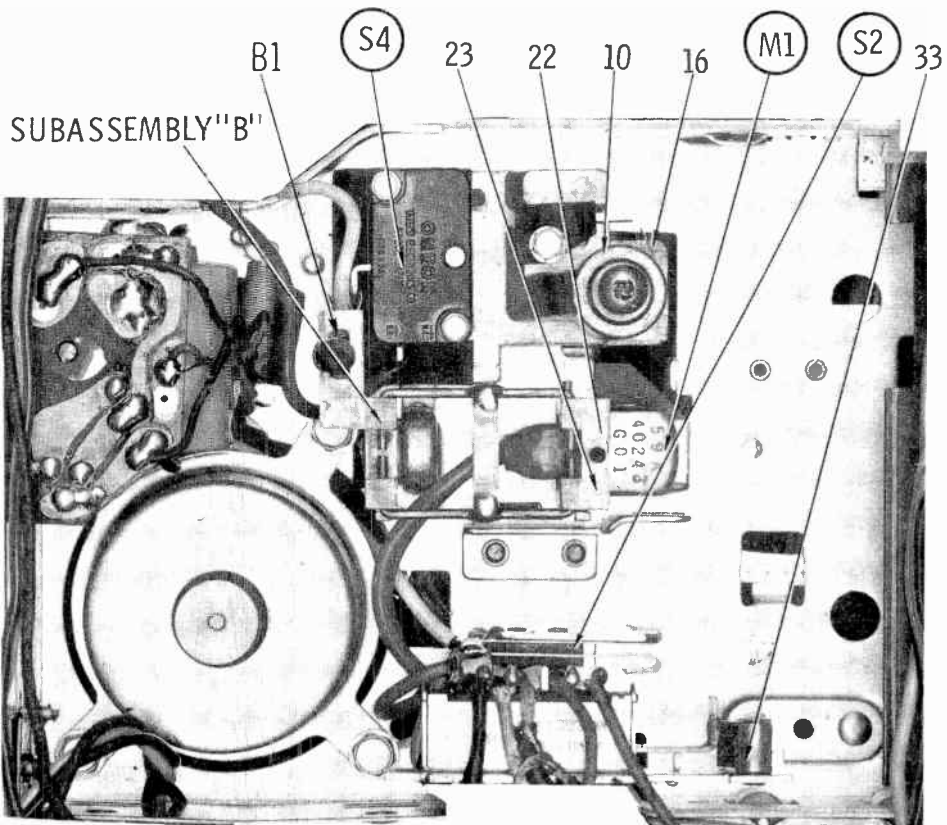
* Drive Belt - WALSCO Replacement Part No. 1499-24.

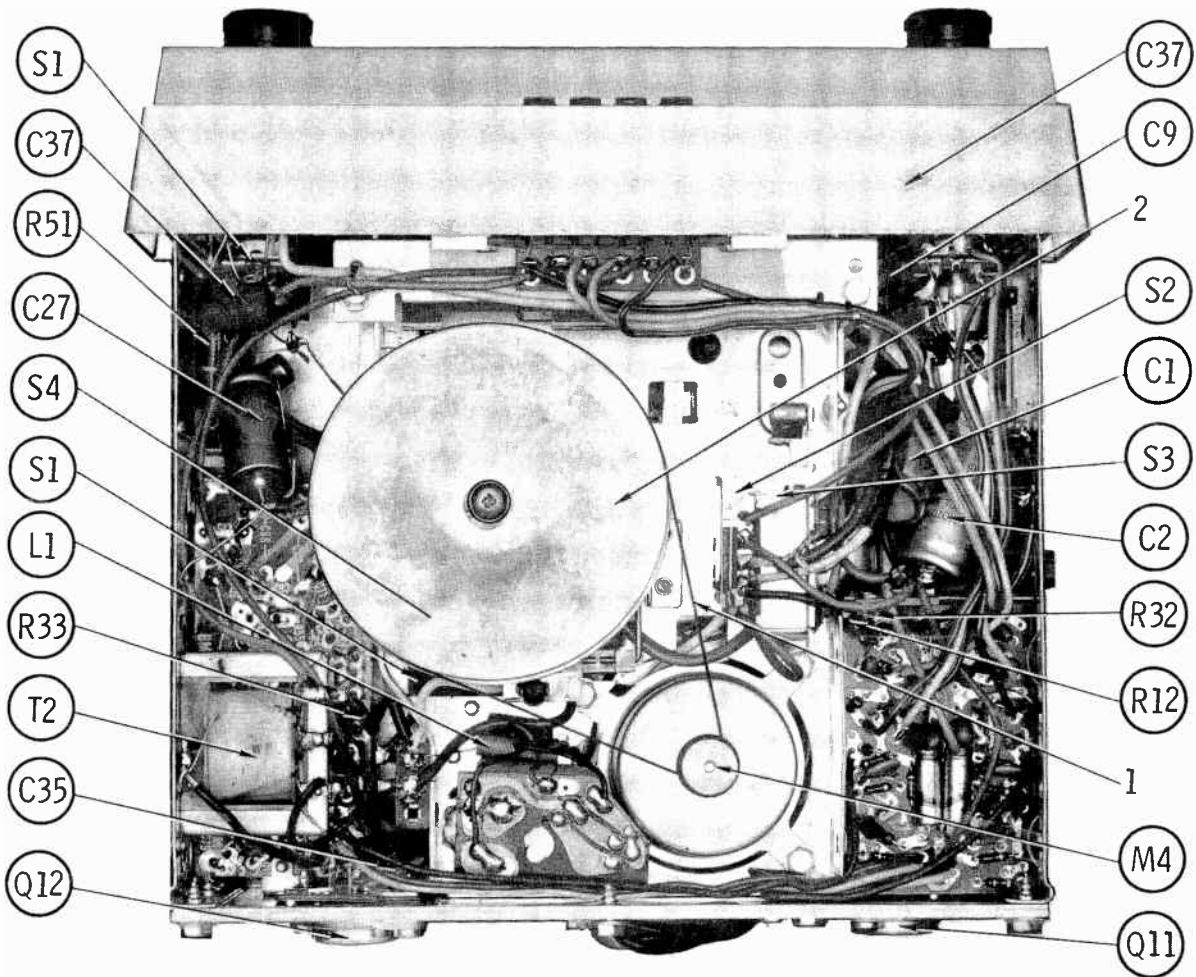


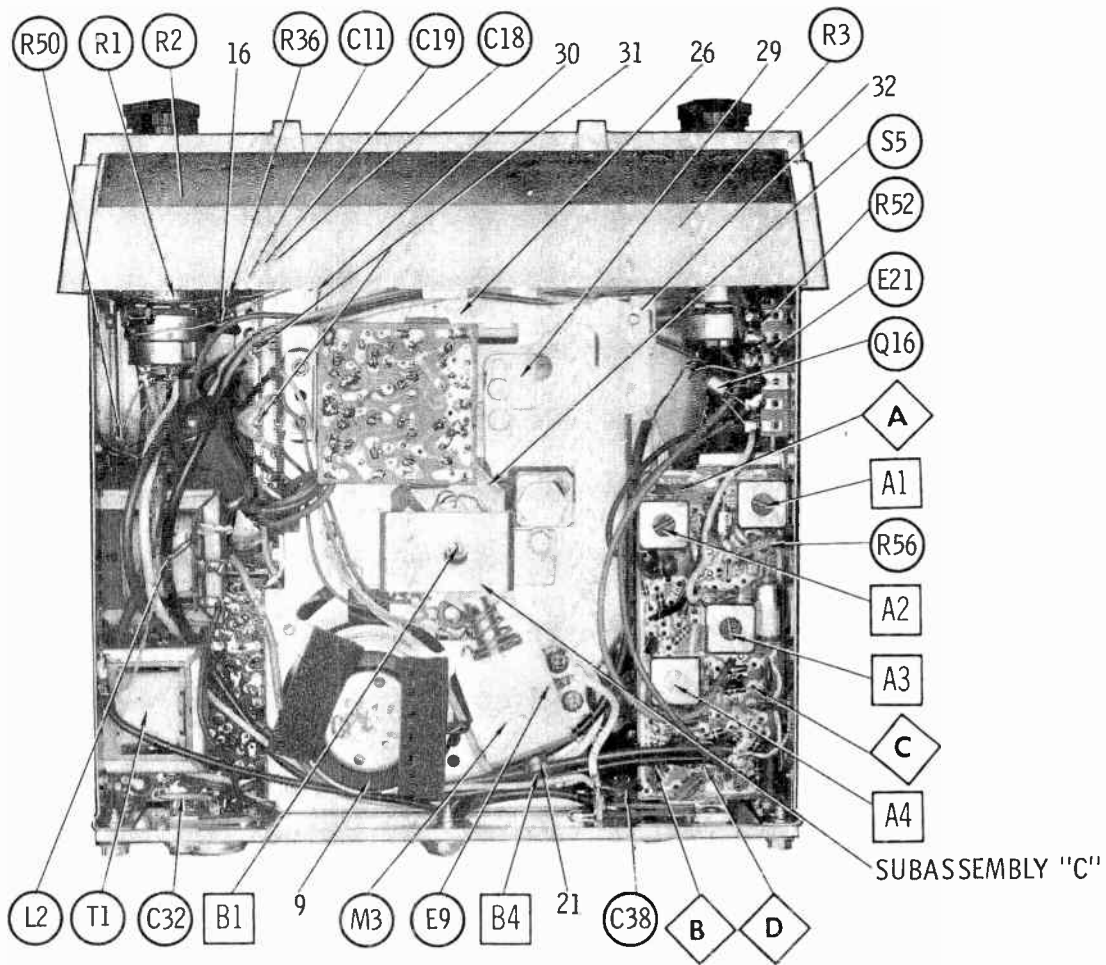
SUBASSEMBLY "B"



SUBASSEMBLY "C"







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 #9440
 WALSCO #2501

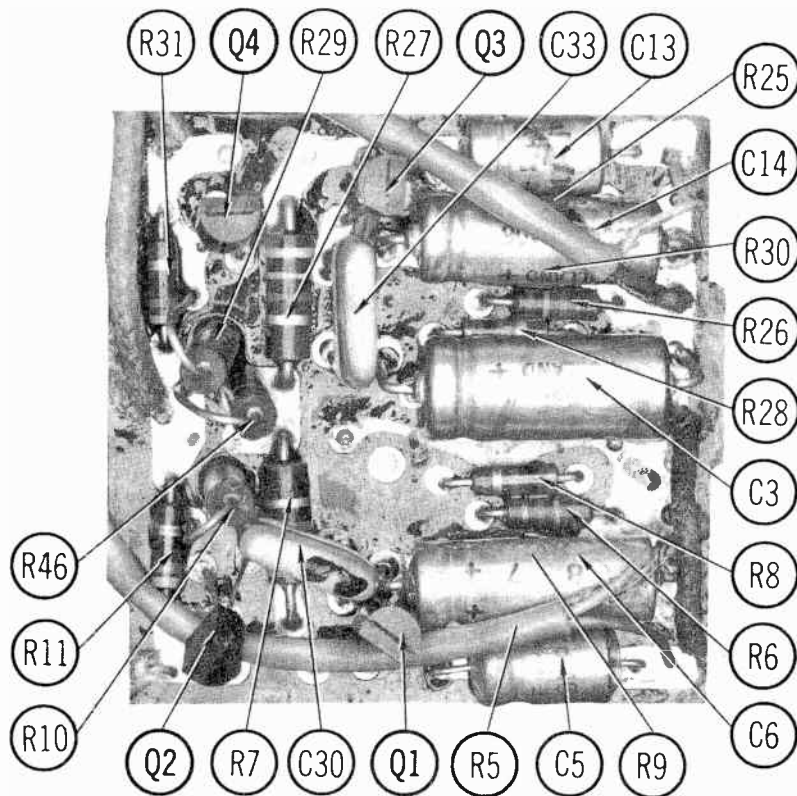
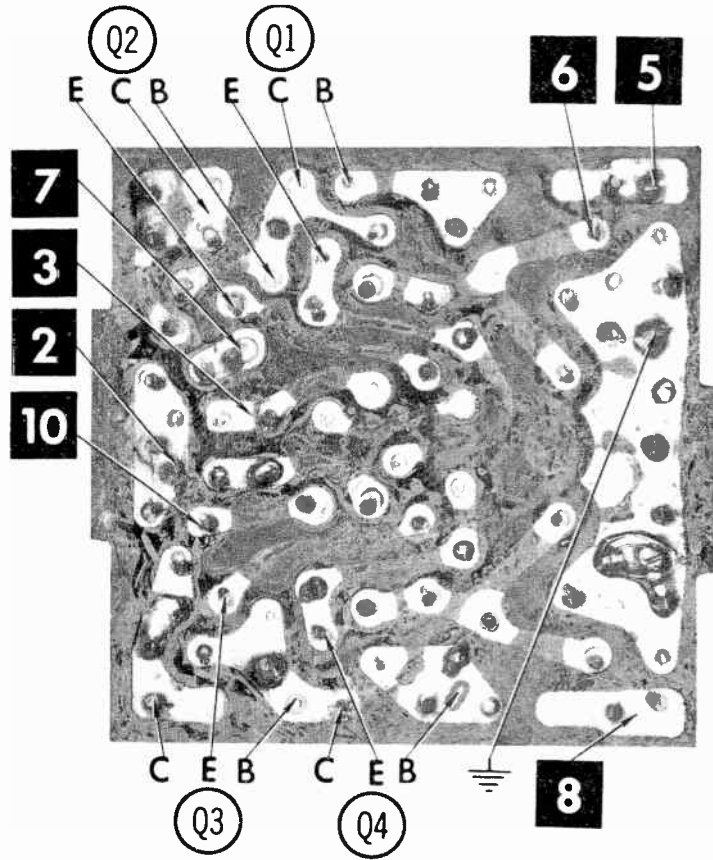
FM STEREO MULTIPLEX ALIGNMENT USING FM STEREO SIGNAL GENERATOR ($\pm .0001\%$ ACCURACY)

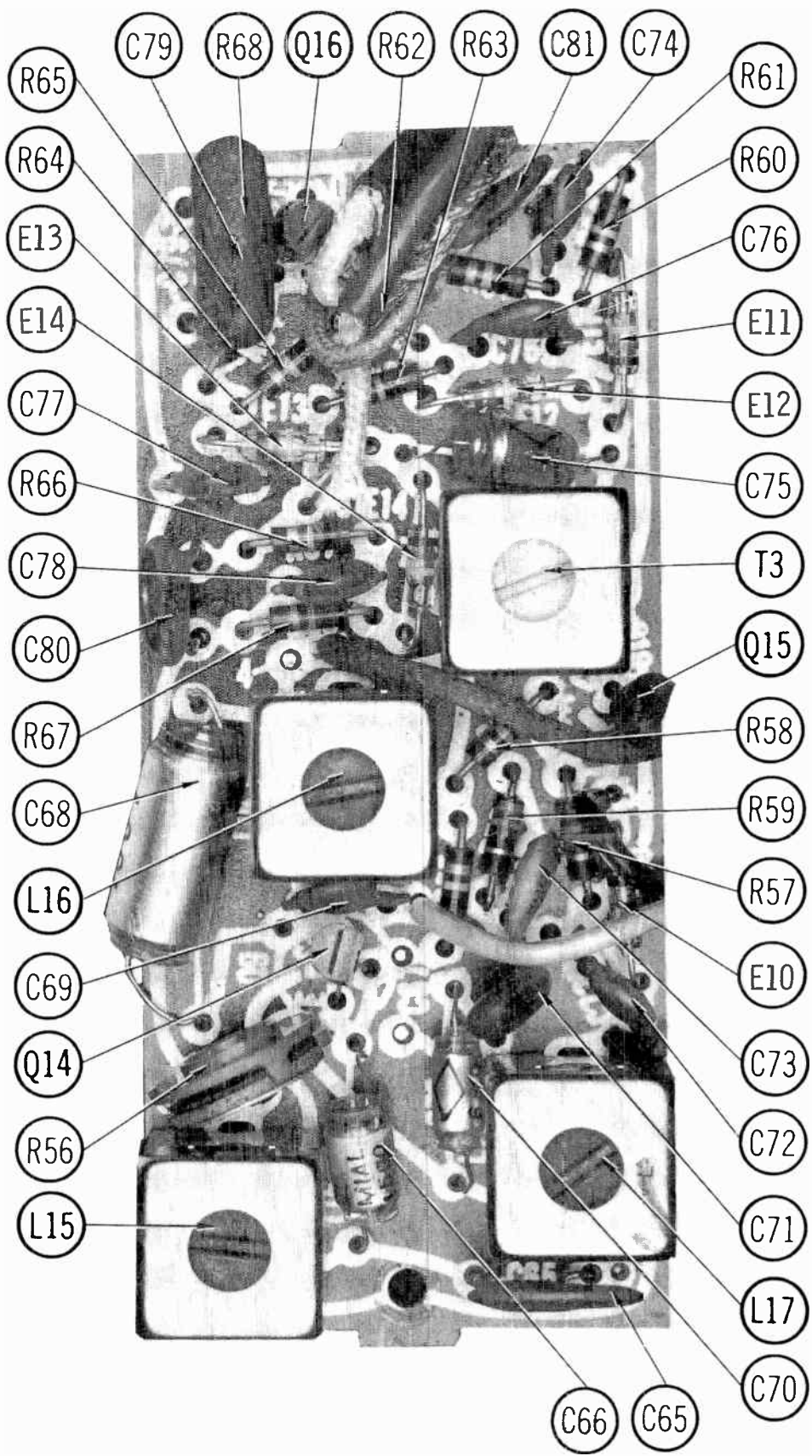
High side of generator thru 47K to point $\diamond A$, low side to ground.

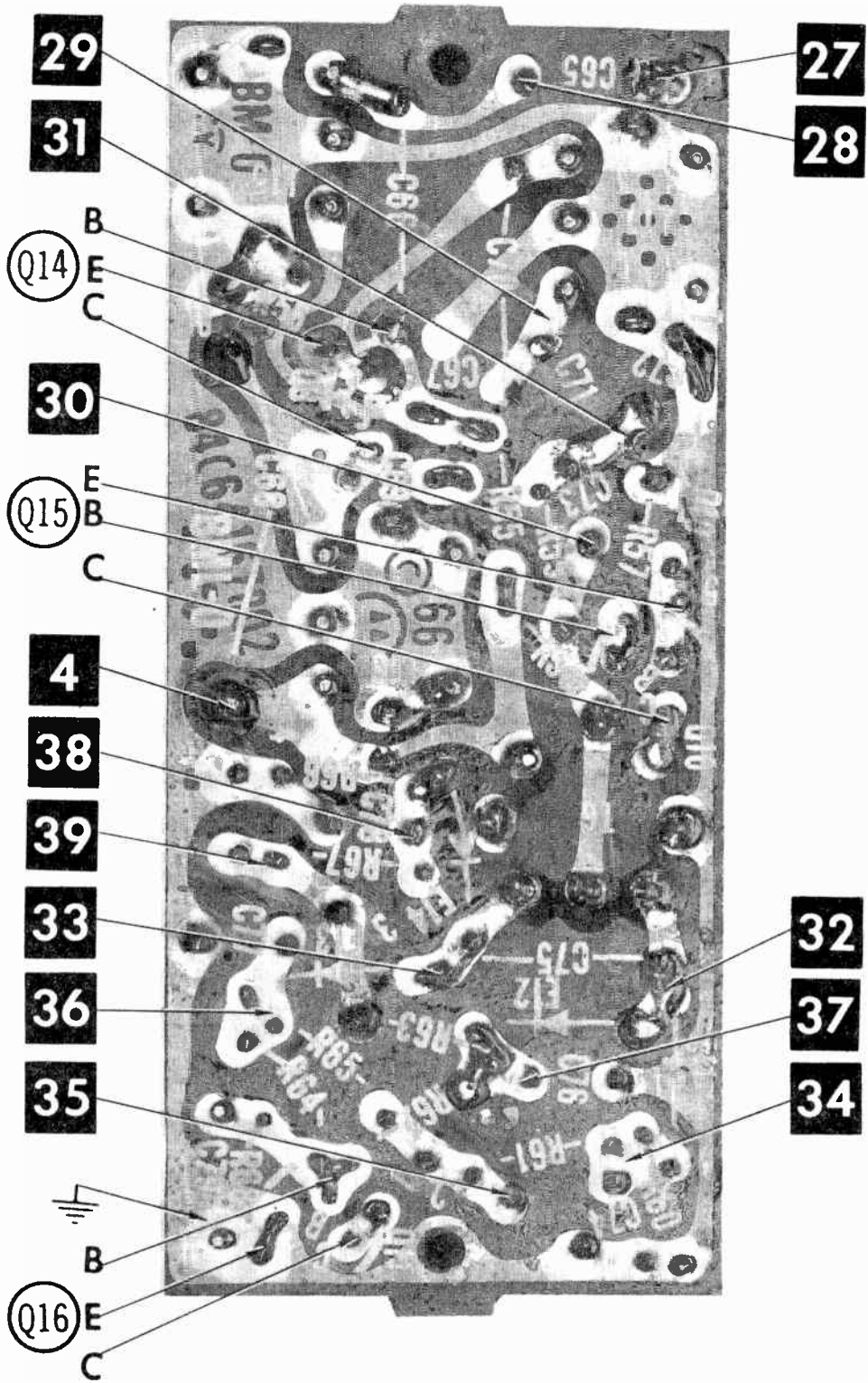
GENERATOR FREQUENCY	INDICATOR	ADJUST	REMARKS
1. 53KC	Vert. amp of scope thru 47K to point $\diamond B$, low side to ground.	A1	Adjust for MINIMUM
2. 67KC		A2	
3. 19KC	Vert. amp of scope thru 47K to point $\diamond B$, low side to ground.	A3	Adjust for maximum.
4. "	Vert. amp of scope thru 47K to point $\diamond B$, low side to ground.	A4	Adjust for maximum 38KC response.
5. Modulated Left Channel	Vert. amp of scope to point $\diamond C$, low side to ground.	A3, A4	Adjust for MINIMUM. This step should require only slight adjustment.
6. Modulated Right Channel	Vert. amp of scope to point $\diamond D$, low side to ground		Check for MINIMUM. If necessary make compromise adjustment of

FM Stereo Threshold Adjustment (R56)

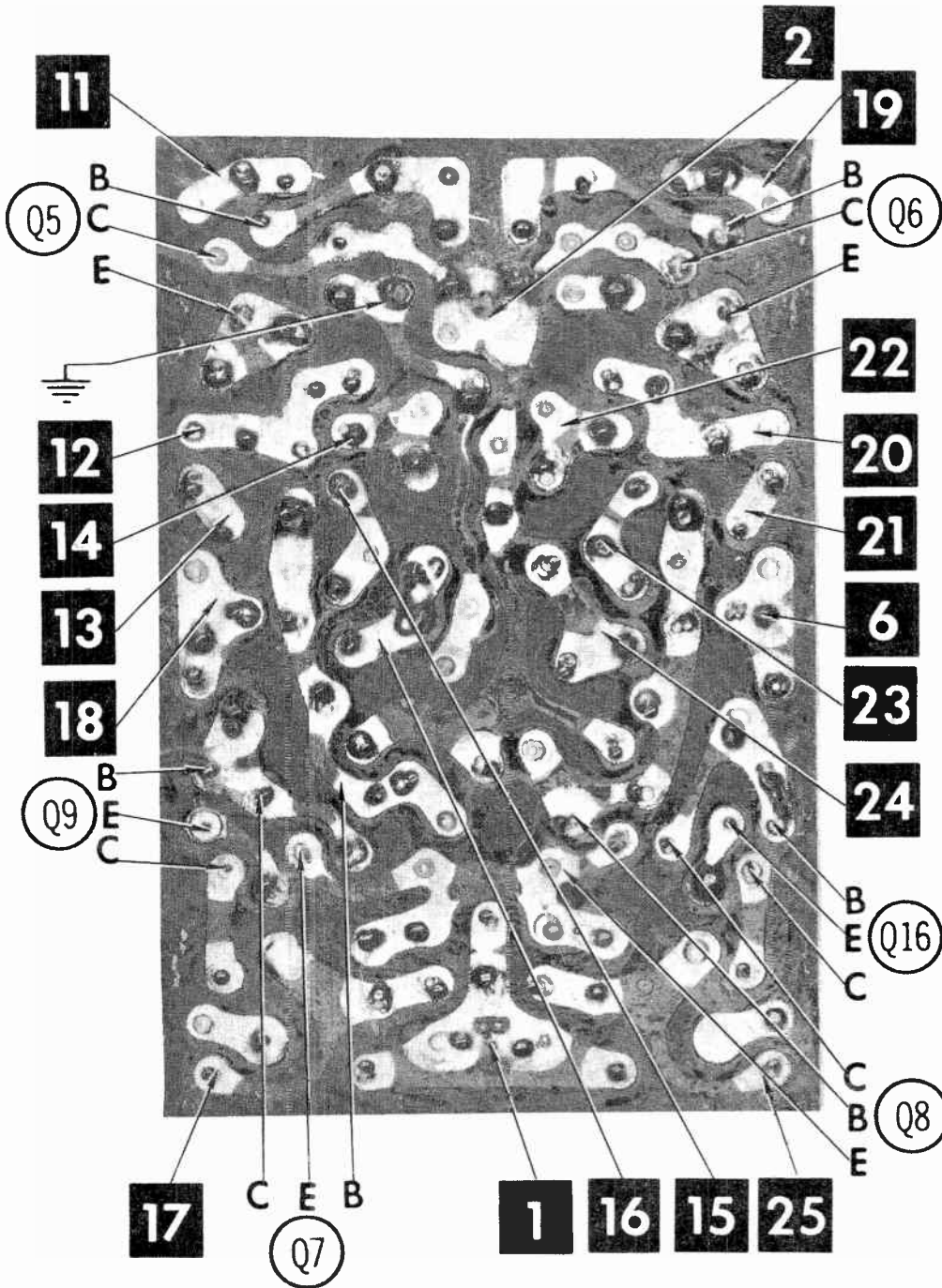
Tune across dial (with AFC off), noting operation of stereo indicator lamp. Adjust R56 until lamp glows on weak stereo stations but not on noise pulses.



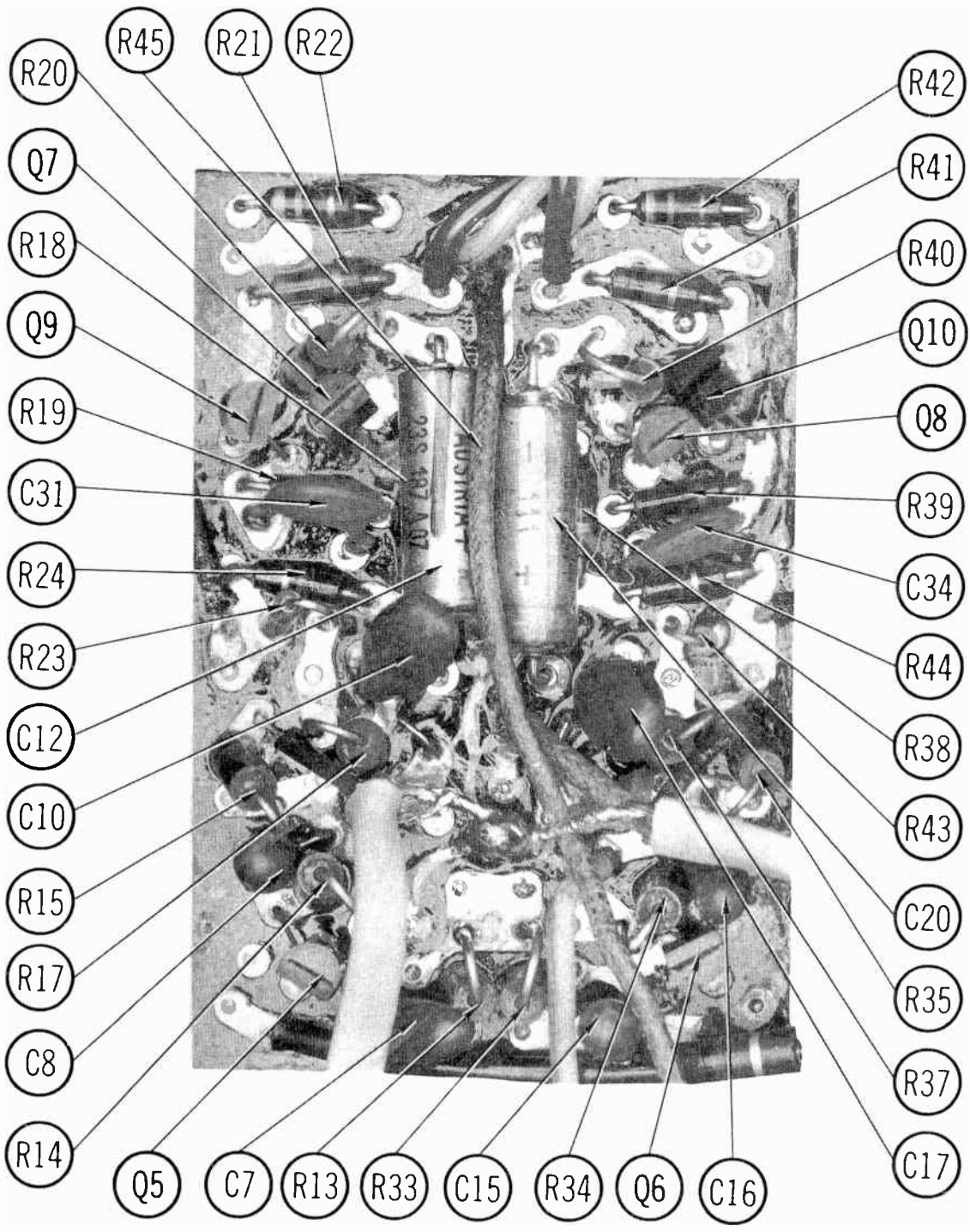


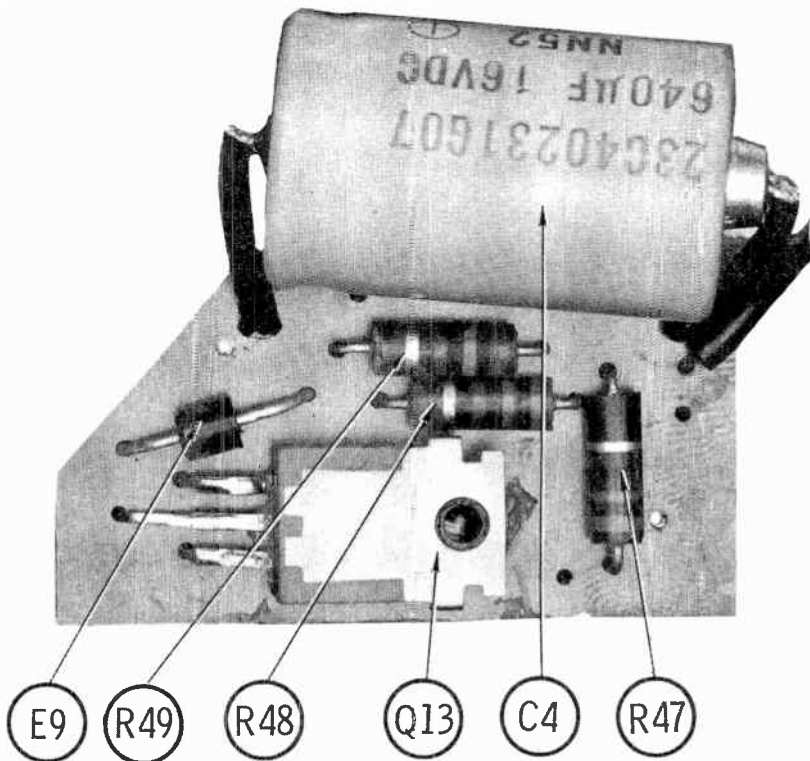
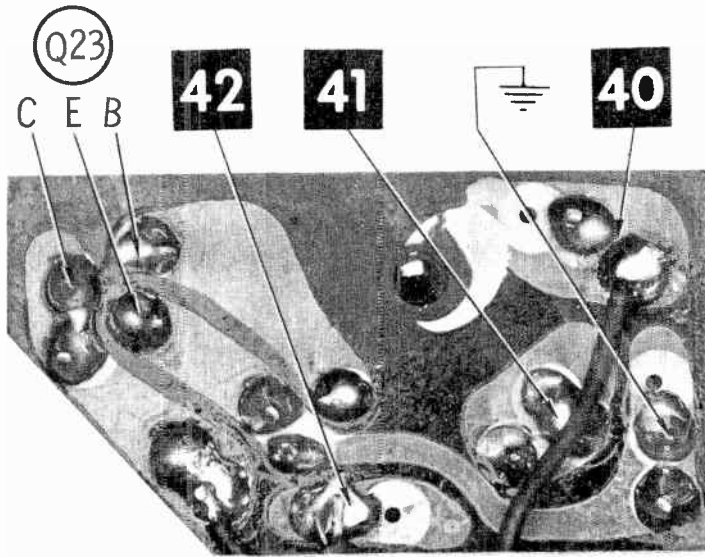


A Howard W. Sams **CIRCUITRACE** Photo

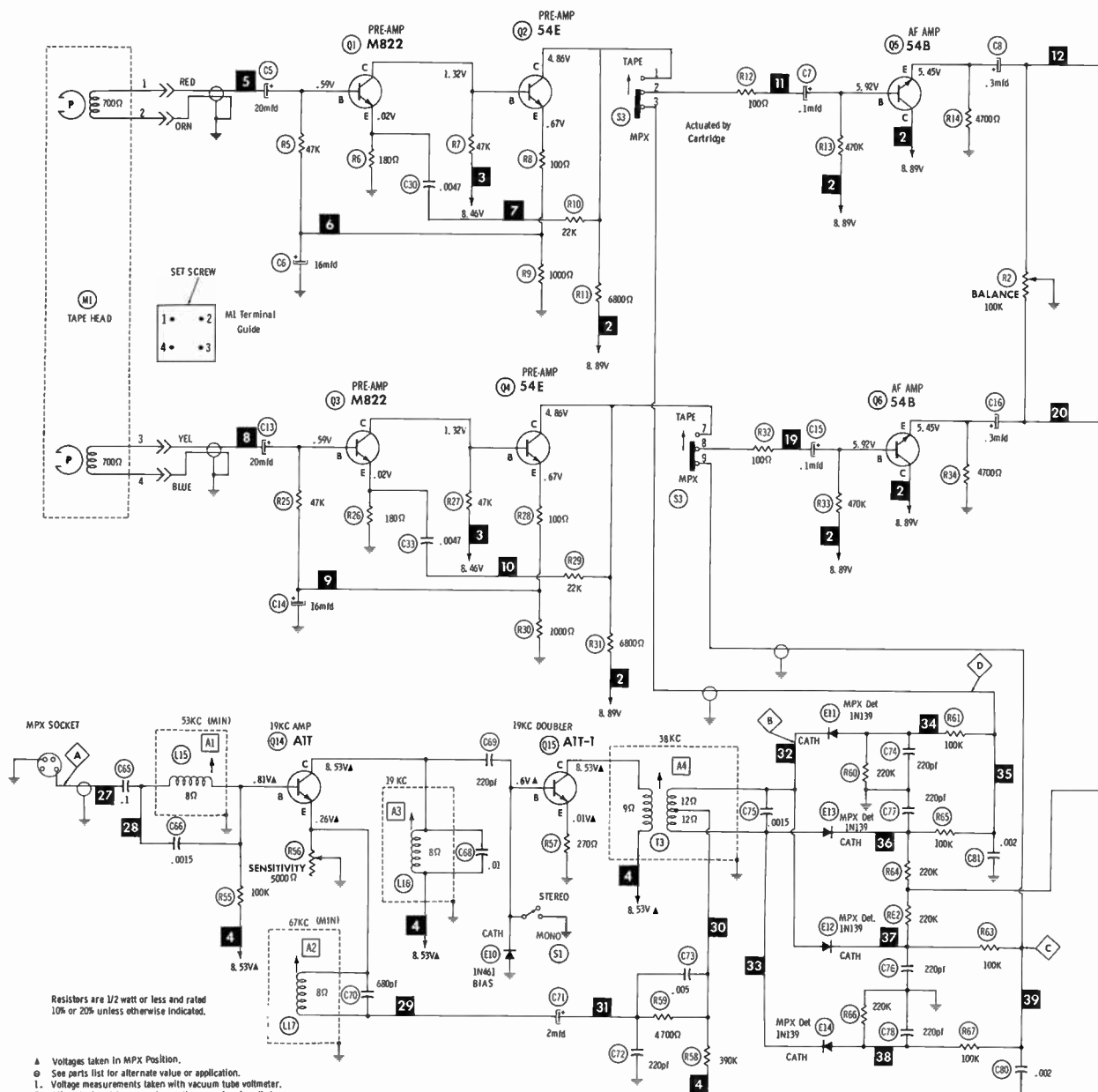


A Howard W. Sams **CIRCUITRACE** Photo





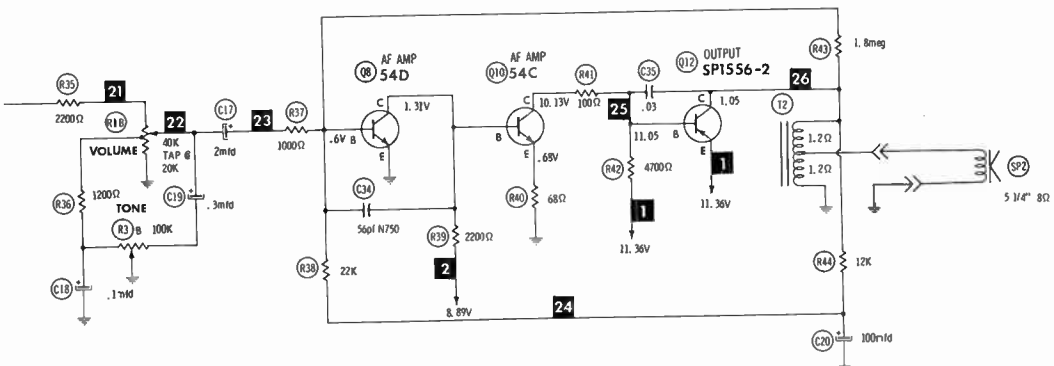
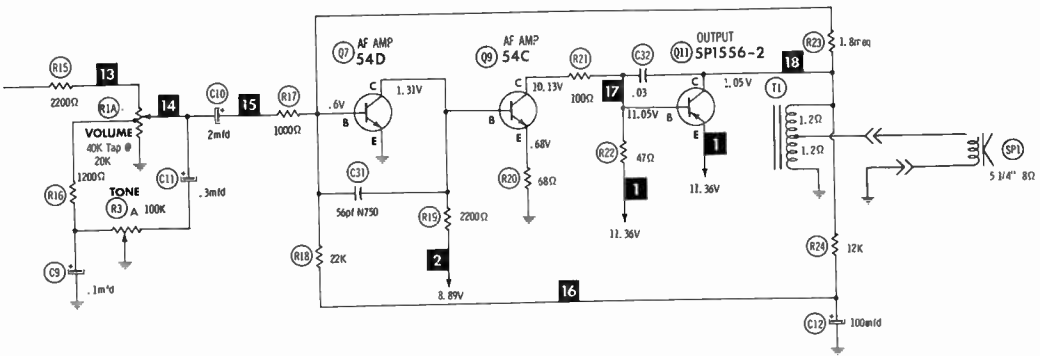
MOTOROLA MODEL TM713S



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

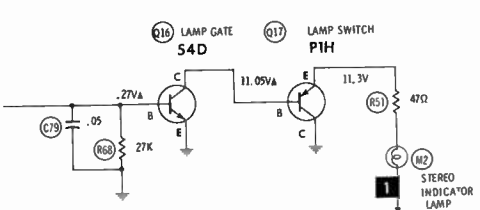
- A Voltages taken in MPX Position.
- ⊙ See parts list for alternate value or application.
- 1. Voltage measurements taken with vacuum tube voltmeter.
- 2. All controls set for normal operation, no signal applied.
- 3. Measured values are from socket pin or terminal to common ground.
- 4. All terminals 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

A PHOTOFAC STANDARD NOTATION SCHEMATIC
with **CIRCUITRACE**
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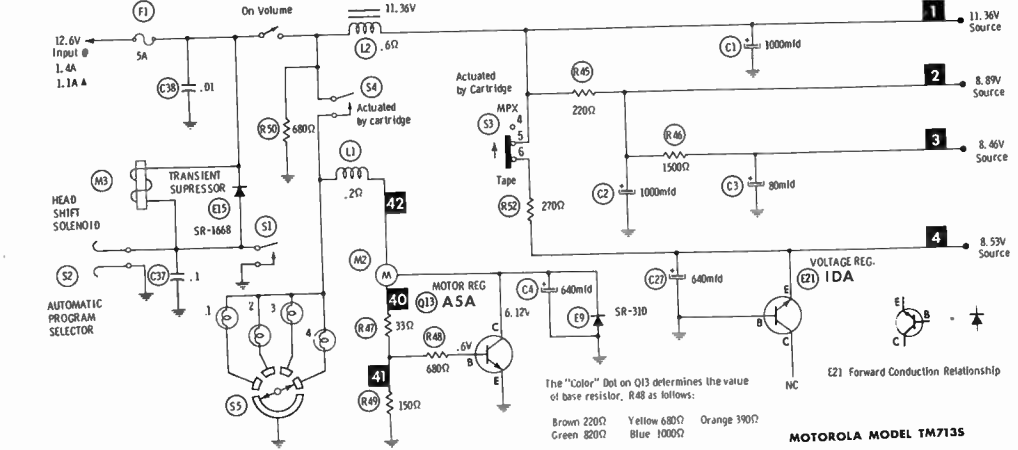
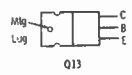


Transistor Terminal Guide

S3 Terminal Guide



1	2	3	4	5	6
---	---	---	---	---	---
7	8	9	10	11	12



The "Color" Dot on Q13 determines the value of base resistor, R48 as follows:
 Brown 220Ω Yellow 680Ω Orange 390Ω
 Green 820Ω Blue 1000Ω

MOTOROLA MODEL TM7135

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.	TYPE No.	FUNCTION	REPLACEMENT DATA					
			MFGR. PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q1	M822	Preamp		GE-20	TR-21	HEP730	SK3020	ECG 123
Q2	54E	Preamp		GE-20	TR-21	HEP724	SK3020	ECG 123
Q3	M822	Preamp		GE-20	TR-21	HEP730	SK3020	ECG 123
Q4	54E	Preamp		GE-20	TR-21	HEP724	SK3020	ECG 123
Q5	54B	AF Amp	48S134809 (1)	GE-20	TR-21	HEP725	SK3020	ECG 123
Q6	54B	AF Amp	48S134809 (1)	GE-20	TR-21	HEP725	SK3020	ECG 123
Q7	54D	AF Amp	48S134811	GE-20	TR-21	HEP726	SK3020	ECG 123
Q8	54D	AF Amp	48S134811	GE-20	TR-21	HEP726	SK3020	ECG 123
Q9	54C	AF Amp	48S134810	GE-20	TR-21	HEP725	SK3020	ECG 123
Q10	54C	AF Amp	48S134810	GE-20	TR-21	HEP725	SK3020	ECG 123
Q11	SP1556-2	Output *	48S134759	GE-3	TR-01	HEP628	SK3009	ECG 104
Q12	SP1556-2	Output *	48S134759	GE-3	TR-01	HEP628	SK3009	ECG 104
Q13	A5A	Motor Regulator	48S137080	GE-28		HEP700	SK3041	ECG 152
Q14	A1T	19KC Amp	48S134928 (2)	GE-10	TR-21	HEP735	SK3020	ECG 123
Q15	A1T-1	19KC Doubler	48S134929	GE-10	TR-21	HEP735	SK3020	ECG 123
Q16	54D	Lamp Gate	48S134811	GE-20	TR-21	HEP725	SK3020	ECG 123
Q17	P1H	Lamp Switch	48S134940	GE-21	TR-19	HEP52	SK3025	ECG 106
E21	O1A	Voltage Regulator	48S134912	GE-10	TR-21	HEP54	SK3020	ECG 123

* When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.
(1) Manufacturer recommends Part #48S134810.
(2) Manufacturer recommends Part #48S134929.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES			REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.	RCA PART No.	
E9	SR-390	GE-504A	5A40	ECG 116	SK3016	
E10	1N461	1N82A	1N82A	ECG 112		
E11	1N139	1N295	1N295	ECG 109		
E12	1N139	1N295	1N295	ECG 109		
E13	1N139	1N295	1N295	ECG 109		
E14	1N139	1N295	1N295	ECG 109		
E15	SR-1668	1N295	1N295	ECG 109		

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.
C1	1000 16V	23S187A06	PRS1230	EA15-1000	WBR1000-16	QT1-32	TC1501A	TL-1166.5
C2	1000 16V	23S187A06	PRS1230	EA15-1000	WBR1000-16	QT1-32	TC1501A	TL-1166.5
C3	80 16V	23C41928A23	CRE620A	EA30-100	AL100-16	MT1-19	MTA80E15	TE-1161
C4	640 16V	23C40231G07	PRS1220	EA15-500	WBR500-35	QT1-30A	TC1505A	TL-1166
C5	20 16V	23C41928A24	CRE761A	EA15-25	AL20-16	MT1-10	MTA20D30	TL-1157
C6	16 16V	23C41928A06	CRE609A	EA15-15	AL20-16	MT1-10	MTA15D35	TL-1156
C7	.1 15V	23S10229A05		UK20-104	TYR13BE104K	MT1-11	TAS104K015POA	196D104X0035 DB
C8	.3 10V	23S10229A01		UK10-474	TYR13BC334K		TAS334K010POA	196D334X0035 DB
C9	.1 15V	23C10229A09		UK20-104	TYR13BE104K		TAS104K015POA	196D104X0035 DB
C10	2 10V	23S10229A03	BC050002	EP15-2	PC2-100	MT1-1	MTV2CB50	TE-1121
C11	.3 10V	23S10229A02		UK10-474	TYR13BC334K		TAS334K010POA	196D334X0035 DB

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.

ELECTROLYTIC CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA						
			PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C12	100	6.4V	23S187A07	BCD10100	EP6-100	PC100-16	MT1-21	MTV100CB6	TE-1102
C13	20	16V	23C41928A24	CRE761A	EA15-25	AL20-16	MT1-10	MTA20D30	TL-1157
C14	16	16V	23C41928A06	CRE609A	EA15-15	AL20-16	MT1-11	MTA15D35	TL-1156
C15	.1	15V	23S10229A05		UK20-104	TYR13BE104K		TAS104K015POA	196D104X0035 DB
C16	.3	10V	23S10229A01		UK10-474	TYR13BC334K		TAS334K010POA	196D334X0035 DB
C17	2	10V	23S10229A03	8CD50002	EP15-2	PC2-100	MT1-1	MTV2CB50	TE-1121
C18	.1	15V	23S10229A09		UK20-104	TYR13BE104K		TAS104K015POA	196D104X0035 DB
C19	.3	10V	23S10229A02		UK10-474	TYR13BC474K		TAS334K010POA	196D334X0035 DB
C20	100	6.4V	23S187A07	BCD10100	EP6-100	PC100-16	MT1-21	MTV100CB6	TE-1102
C27	640	16V	23S187A09	PRS1220	EA15-500	WBR50D-35	QT1-30A	TC1505A	TL-1166
C71	2	10V	23S10229A03	BCD50002	EP15-2	PC2-100	MT1-1	MTV2CB50	TE-1121

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.
C30	.0047 100V		DBE6D5	CPR-5000J	DPMS6D5	1DP-1-502	PVC625	6PS-D50
C31	56 N750			TCN-56		CCTN-560	CN7456	10TCU-Q56
C32	.03		TTP-03	CK-303		CCD-303	GP130	TG-S30
C33	.0047 100V		DBE6D5	CPR-5000J	DPMS6D5	1DP-1-502	PVC625	6PS-D50
C34	56 N750			TCN-56		CCTN-560	CN7456	10TCU-Q56
C35	.03		TTP-03	CK-303		CCD-303	GP130	TG-S30
C37	.1 100V		DBE2P1		DPMS2P1	1DP-2-104	PVC101	225P10491WD3
C38	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C65	.1		TTP-1	CK-104			TA010	TG-P10
C66	.0015			DD-152		CCD-152	GP215	10TS-D15
C68	.01			CK-103	MGP01	CCD-103	TA110	TG-S10
C69	220		GPD X5F221K	DD-221	GP220	CCD-221	GP322	10TS-T22
C70	680			CPR-680J	CD19F681J500	DM-16-681	SX368	MS-368
C72	220		GPD X5F221K	DD-221	GP220	CCD-221	GP322	10TS-T22
C73	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-D50
C74	220		GPD X5F221K	DD-221	GP220	CCD-221	GP322	10TS-T22
C75	.0015		GPD X5F152K	DD-152		CCD-152	GP215	10TS-D15
C76	220		GPD X5F221K	DD-221	GP220	CCD-221	GP322	10TS-T22
C77	220		GPD X5F221K	DD-221	GP220	CCD-221	GP322	10TS-T22
C78	220		GPD X5F221K	DD-221	GP220	CCD-221	GP322	10TS-T22
C79	.05 100V		Y1612S47		DPMS6S47	1DP-2-473	PVC1147	225P47391WD3
C80	.002		GPD X5F202K	DM-202	GP2000	CCD-202	GP220	25S-D20
C81	.002		GPD X5F202K	DM-202	GP2000	CCO-202	GP220	25S-D20

MOTOROLA MODEL TM713S

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA					
			MFRG. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	Volume (Left)	40K Tap @ 20K	18D64240B04				BU2,CF105TT(1), CR70TT(1),SS4, SS7A,GC *	
8	Volume (Right)	40K Tap @ 20K						
R2	Balance	100K	18C64358B01					
R3A	Tone (Left)	100K	18C64357B01					
B	Tone (Right)	100K						
R56	Sensitivity	5000	18B64125B01	T-5000			X201R502B	MTC53L1

* "SNAPTROL"

(1) Do not use 12K Tap.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L2	RF Choke (1.5uh)	24C40788A04	19-1001	4604	T856
L15	53KC Trap	24C63463A01			
L16	19KC	24C63463A01			
L17	67KC Trap	24C63463A01			
T3	38KC	24C63463A02			

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~)	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L1	1.4 Amp 1.1 Amp *	.6	10mh	25C64172A15	C-4095	TC-2	TR-152	TY17XT	* MPX

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MFGR. PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	24 Tap@	8	25D64129A01					
T2	24 Tap@	8	25D64129A01					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		PART No.	QUAM PART No.	
SP1	5 1/4" PM 8 ohms	50B64311B01	52A1Z8	
SP2	5 1/4" PM 8 ohms	50B64311B01	52A1Z8	

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	65S122345	1V64964A32	AGA 5	NAF	301005	150145	

TAPE HEADS

ITEM No.	MEASURED			PART No.	NORTRONICS PART No.	DESCRIPTION
	INDUCTANCE	BIAS/ERASE VOLTS (RMS)	BIAS FREQ.			
M1	430mh			59A40243G01	5800 (1)	3-Track Stereo Play (1) Use original mounting

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M2	Motor	59C42274B02	4 used
M3	Solenoid	1V40104G02	
S1	Switch, Stereo-Mono/ Manual Program Sel.	40B64372B01	
S2	Switch, Automatic Program Sel.	40B40409G01	
S3	Switch, Tape-MPX Sel.	40B41363B01	
S4	Switch, Motor	40B40160G02	
S5	Switch, Program Indicator Sel.	84B40277G01	
	MPX Indicator Lamp	65S135698	
	Program Indicator Lamp	65S136266	

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

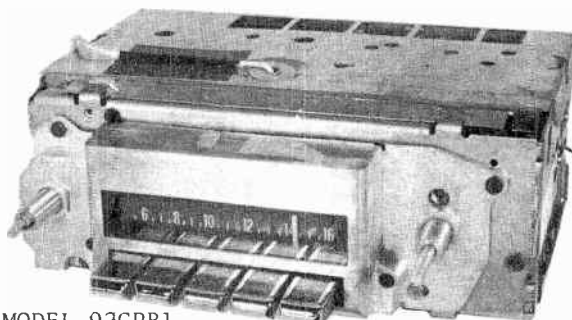
ITEM	PART No.	ITEM	PART No.
Escutcheon Knob, Volume or Program Selector	1V64996A55 36C64325B02	Knob, Tone or Balance Door	36B64347B01 15C60139B04



PHOTOFACT[®] with CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index

NOTE: Manufacturer Part Numbers Shown Are UNITED DELCO



MODEL 92GPB1

PONTIAC MODELS 92BPB1
(7307312)
(69 Pontiac)
92GPB1
(7307332)
(69 Grand Prix)

PONTIAC MODELS 92BPB1/GPB1

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 #2531X, 2536

A5 thru A8.....GENERAL CEMENT #8290,8868,9087

WALSCO #2525,2528,2587

PUSH-BUTTON ADJUSTMENT

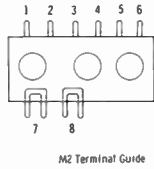
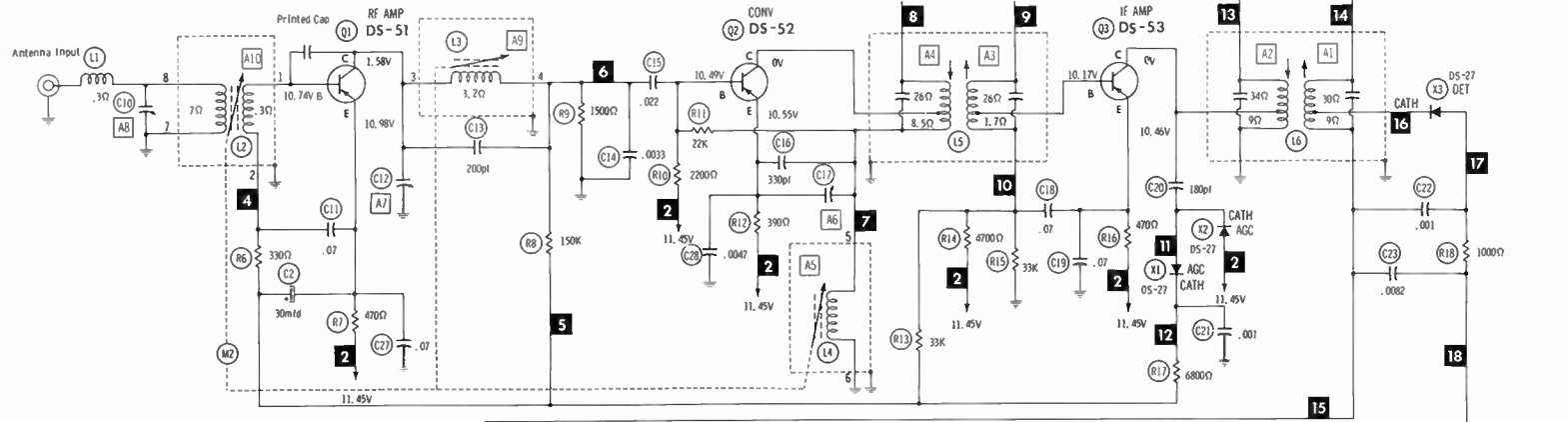
1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

	GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point \diamond , low side to ground.	262KC 400 cycle modulation	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 input, 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 to desired height, tune in a weak station near 1400KC and adjust A8 for maximum output. Antenna adjustment (A8) is located behind Tone & Dummy Knob.						

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

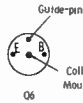
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TD645R

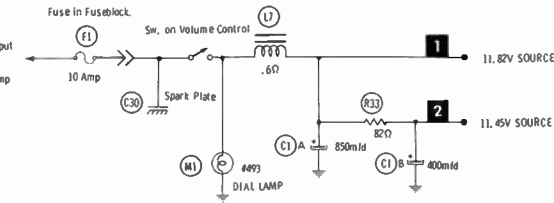
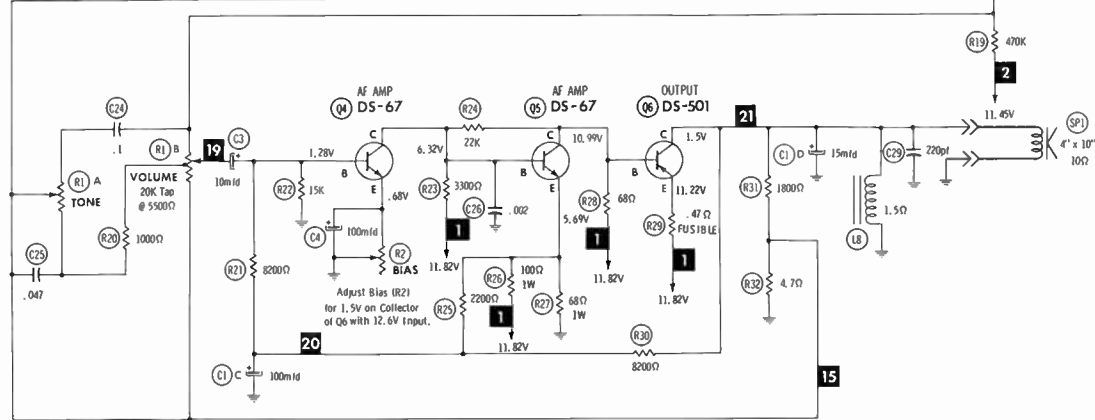


Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.

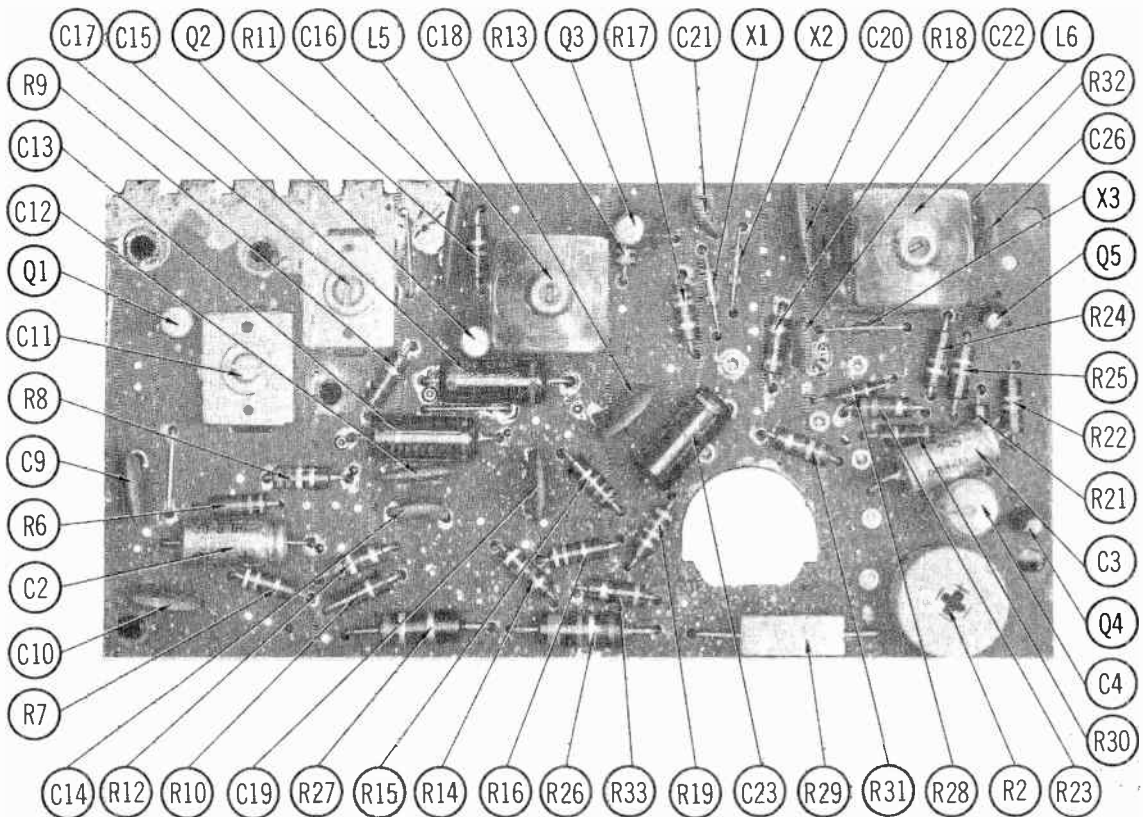
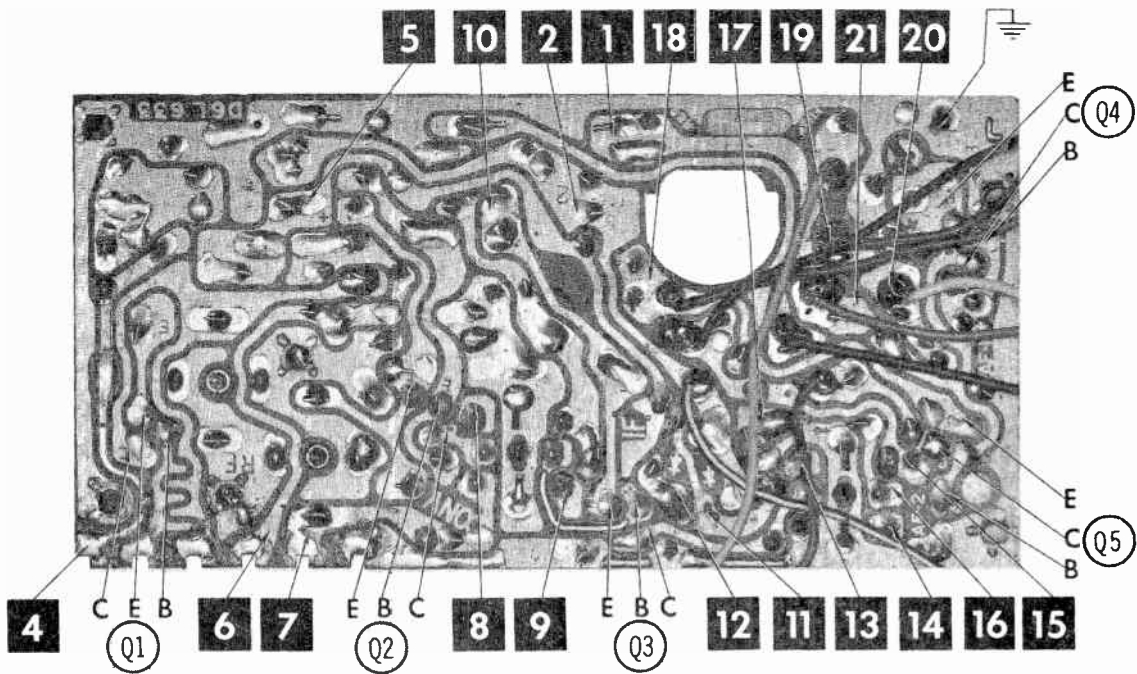
Transistor Terminal Guide



- Ø 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.



A PHOTOFAC STANDARD NOTATION SCHEMATIC
with **CIRCUITRACE**
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PONTIAC MODELS 92BPB1/GPB1

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.	TYPE No.	FUNCTION	REPLACEMENT DATA					
			MFGR. PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q1	OS-51	RF Amp	OS-25	GE-9A	TR-06	HEP2	SK3006	ECG 126
Q2	OS-52	Converter	OS-25	GE-9A	TR-06	HEP2	SK3006	ECG 126
Q3	OS-53	IF Amp	OS-25	GE-9A	TR-06	HEP2	SK3006	ECG 126
Q4	OS-67	AF Amp	OS-66	GE-10	TR-21	HEP54	SK3020	ECG 123
Q5	OS-67	AF Amp	OS-66	GE-10	TR-21	HEP54	SK3020	ECG 123
Q6	OS-501	Output *	OS-501	GE-4	TR-03	HEP233	SK3012	ECG 105

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

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES			REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.	RCA PART No.	
X1	OS-27	1N34AS	1N34A	ECG 109		
X2	OS-27	1N34AS	1N34A	ECG 109		
X3	OS-27	1N34AS	1N34A	ECG 109		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	850 16V	7291786	AFH4-96-10		000009A		FP401.9	TVL-4206
B	400 16V							
C	100 16V							
D	15 11.5V rms							
C2	30 6V	7296313	PTT27	EA6-25	AL50-16	MT1-13	MTA30D15	TE-1132.1
C3	10 12V	7292738	PTT114	EA15-10	AL10-25	MT1-5	MTA10035	TL-1128
C4	100 4V	7291810	PTT30	EP6-100	AL100-16	MT1-21	MTA100E10	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.
C8		#7294355						
C9	.07							
C10	.07							
C11		#7287935						
C12	200 N750		N750-01 200	0TN-200	N220	CCTN-201	CN7201	10TCU-T20
C13	.0033 75V		08E6033	CPR-3300J	6033	6DP-1-332	PVC6233	6PS-033
C14	.022		TTP-02	CK-203	HOR101ZV203P	CCO-203	TA120	TG-S20
C15	.0047 75V		08E605	CPR-5000J	WMF105	10P-1-502	PVC625	6PS-050
C16	330 N180					*	*	
C17		#7282165						
C18	.07							
C19	.07							
C20	180 N80					*	*	10TCN-T18
C21	.001		GPO X5F102K	OM-102	J8S601YP102K	CCO-102	SM210	25S-010
C22	.001		GPO X5F102K	OM-102	J8S601YP102K	CCO-102	SM210	25S-010
C23	.0082 75V		08E6082	CPR-8200J	6082	60P-2-822	PVC6282	6PS-082
C24	.1		TTP-1	CK-104	H0V101ZV104Z		TA010	TG-P10
C25	.047 75V		V1612S47		OMF1S47	10P-2-473	PVC1147	225P47391W03
C26	.002		GPO X5F202K	DM-202	J8X601YP202K	CCO-202	GP220	25S-020
C27	220		GPO X5F221K	00-221	J8Z601YP221K	CCO-221	GP322	10TS-T22
C28		#7271564						

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

Delco Part Number.

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA					
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	Tone Volume/Switch	100K 20K Tap @ 5000	7308960 (1)	F1-100K,R14-25K, B8104,S8004, FFS108,RFS200, KR-4			* QJ-2637A	P15L, SH4250, 4114,RU253T53, OX1437,IS1937, US41
A	Tone Volume/Switch	100K 20K Tap @ 5000	7307366 (2)	F1-100K,R14-25K, B8102,S8004, FFS106,RFS114, KR-4			** QJ-2636A	P15L,SH4250, 4118,RU253T53, OX1187,IS1750, US41
R2	Bias	600 2W	7286601	V-600	U39-600		110-600	MR600P

* "CONCENTRIKIT" Equivalent: KB Kit with Base Elements & Shafts: B11-128, P17-112 (Panel), B19-119X, R1-200 (Rear), S51 (Bushing), N4 (Nut), 76-1 (Switch)

"SNAPTROL" Equivalent: BUB (3), CF13, CR50T, SF10, SK10, N4, GC

** "CONCENTRIKIT" Equivalent: K-B Kit with Base Elements & Shafts: B11-128, P22-109 (Panel), B19-119X, R16-118 (Rear), S51(3) (Bushing), N4 (Nut), 76-1 (Switch)

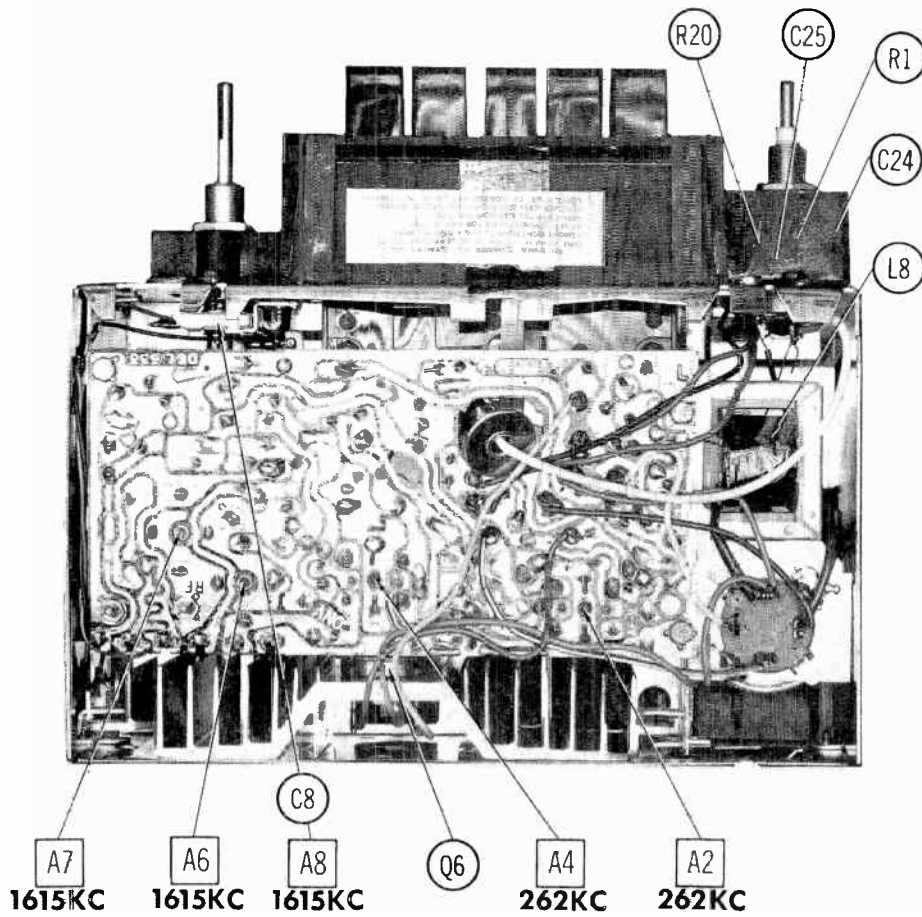
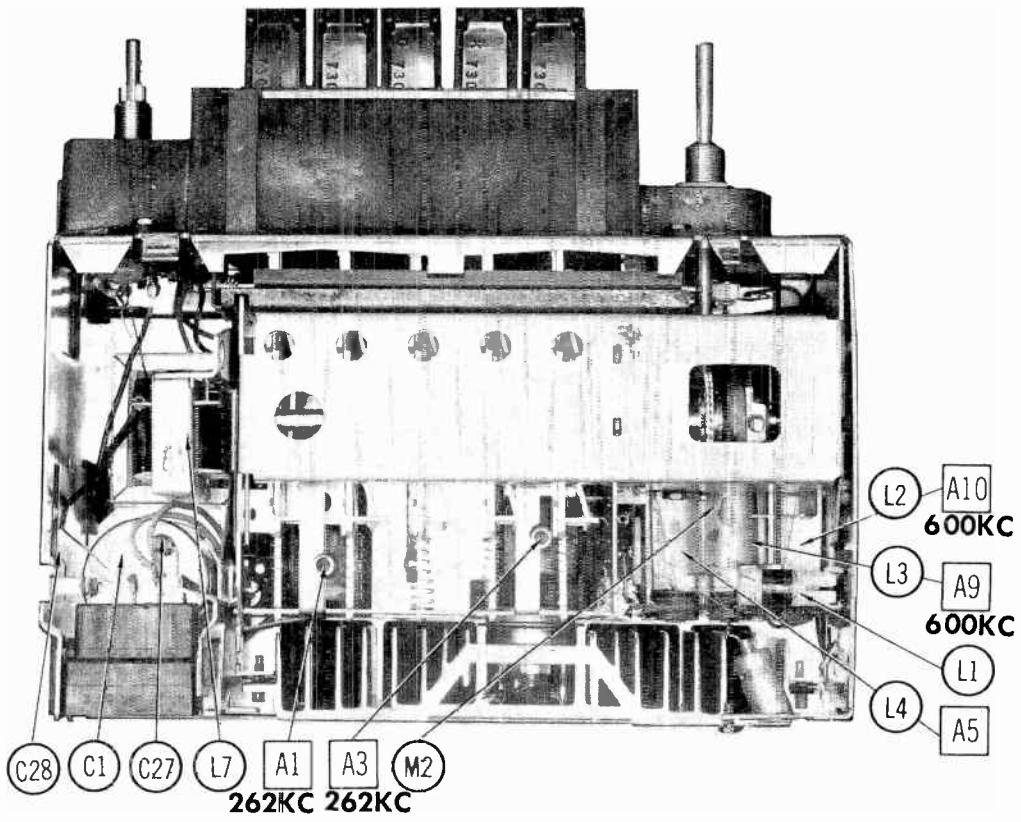
"SNAPTROL" Equivalent: BUB(3), CF13, CR50T, SF9, SR9, N4, GC

(1) Used in Model 92GPB1

(2) Used in Model 928PB1

(3) Alter Bushing to meet requirements.

(CONTINUED ON PAGE 94)



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.	MFR. PART No.			IRC PART No.	WORKMAN PART No.	MFR. PART No.
R29	.47 (Fusible)			7281890					

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (6.2uh)	7281946	19-1004	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 M2.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L7	1 Amp	.6	.8mh	1221623	C-4095	TC-2	TR-154	TY17XT	

CHOKE (Audio Output)

ITEM No.	INDUCTANCE	REPLACEMENT DATA					NOTES
		PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L8	30mh	1222297					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFR. PART No.	QUAM PART No.	
SP1	4" x 10" PM 10 ohms 4" x 10" PM 10 ohms	7311412 7310082	410A2Z10	Model 92BPB1 Model 92GPB1

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	3AG 10 Amp			AGC 10	311010			

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1 M2	Dial Lamp Tuner Coil Assembly	7287957	#493

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Escutcheon	7308228	Knob, Tuning or Volume	9796901
Dial Glass	7307457	Knob, Tone	9791115
Dial Pointer	7308230	Knob, Dummy	9784349
Push Button	7307451		

WIRING DATA

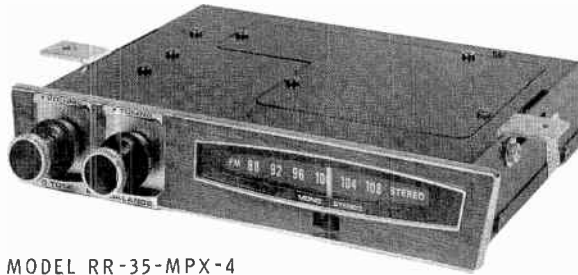
General-use Unshielded Hook-up Wire	Use BELOEN No. 8530 (Solid) Available in 12 Colors
	8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELOEN No. 8885
Rear Seat Speaker Extension Cable	Use BELOEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELOEN No. 8661 (3/8 In.) or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



PHOTOFACT[®] with

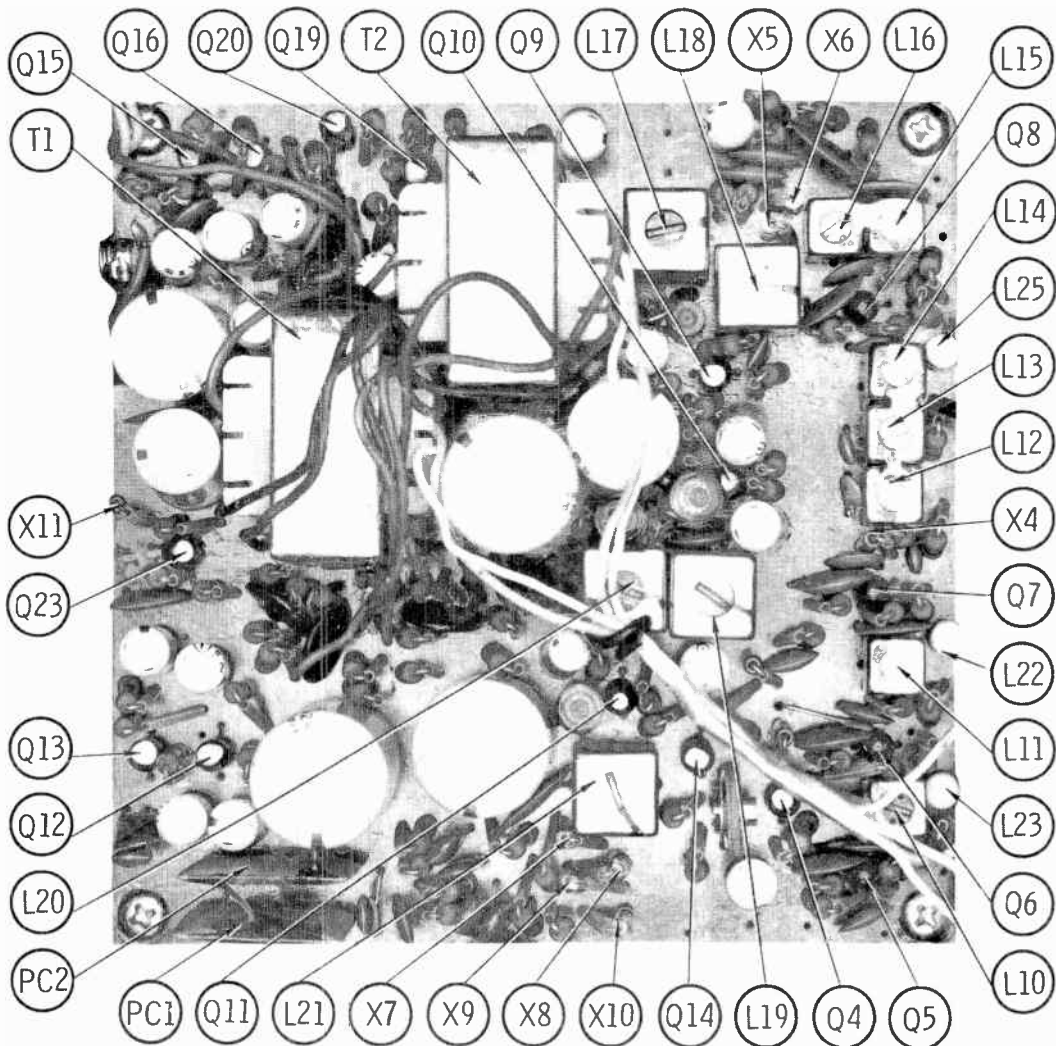
CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index



MODEL RR-35-MPX-4

RANGER MODELS RR-35-MPX
RR-35-MPX-2
RR-35-MPX-4



RANGER MODEL RR-35-MPX

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

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TD535

ALIGNMENT INSTRUCTIONS

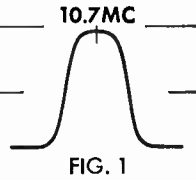
Check for specified source voltage.
Use only enough generator output
to provide a usable indication.
Suggested Alignment Tools:

A1 Thru A17 . . . GENERAL CEMENT #9440 . . . WALSCO #2501

FM IF ALIGNMENT USING AM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001mfd to point $\diamond B$, low side to ground.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1. 10.7MC Unmodulated	Point of non-interference	DC probe of VTVM to point $\diamond C$, common to ground.	A1 Thru A7	Adjust for maximum.
2. "	"	DC probe of VTVM to point $\diamond D$, common to ground.	A8	Adjust for zero reading. A positive or negative reading will be obtained on either side of the correct setting.
3. "	"	DC probe of VTVM to point $\diamond C$, common to ground.		Adjust for MINIMUM.



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

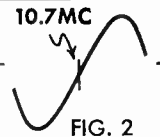
High side of generator thru .001mfd to point $\diamond B$, low side to ground. Use only enough marker signal for indication. Use 60 cycle frequency modulated signal with 450KC sweep. Use 60 cycle sawtooth voltage in scope for horizontal deflection.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1. 10.7MC 450KC Sweep	Point of non-interference	Vert. amp of scope to point $\diamond C$, low side to ground.	A1 Thru A7	Disconnect stabilizing capacitor C7. Adjust for maximum gain and symmetry of response similar to Fig. 1 with marker as shown. Reconnect C7.
2. "	"	Vert. amp of scope to point $\diamond D$, low side to ground.	A8	Adjust A8 (secondary) to place marker at center of "S" curve similar to Fig. 2. Readjust A1 (primary) for maximum amplitude and straightness of line.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead.

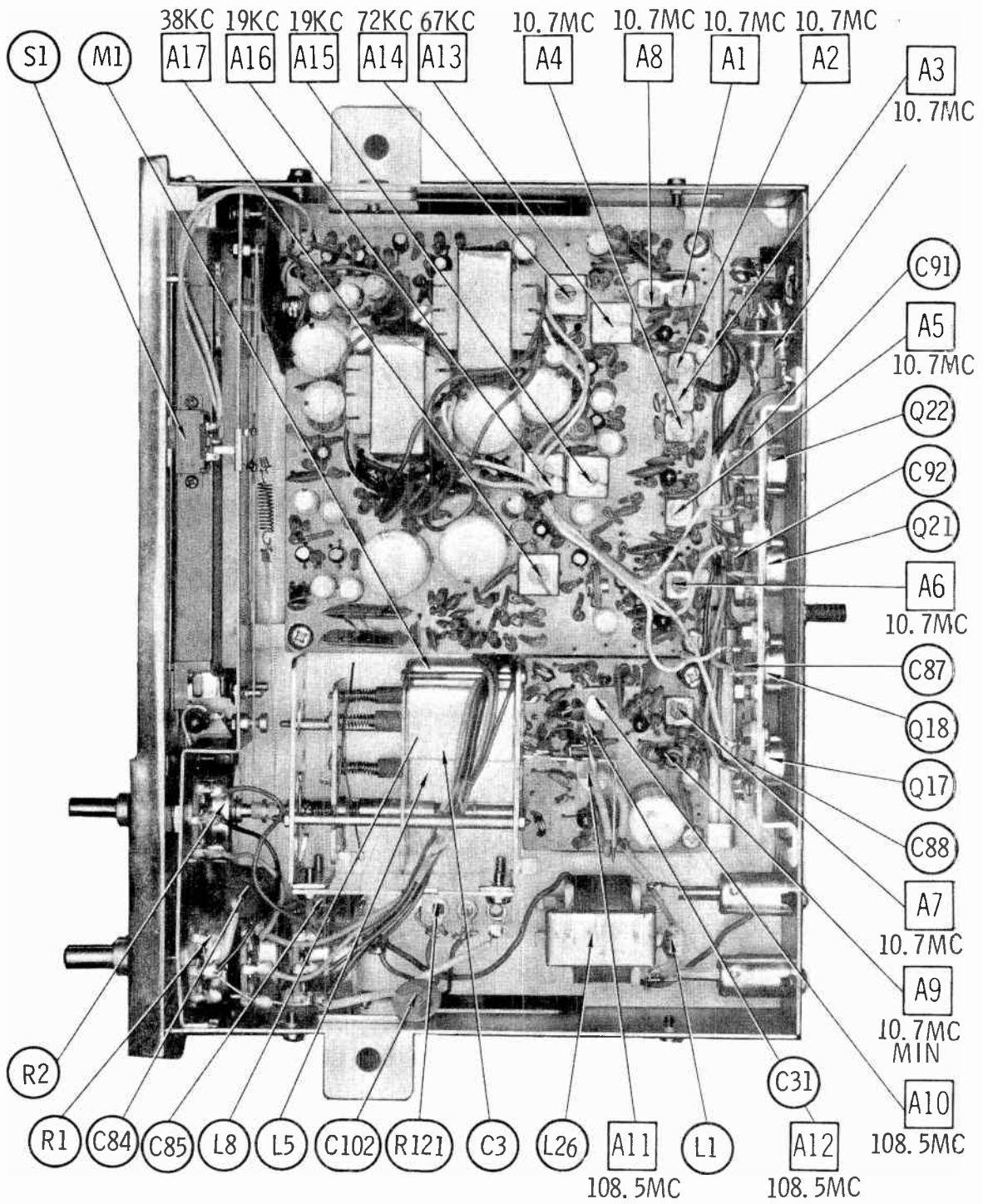
GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
4. 108.5MC	High freq. end	DC probe of VTVM to point $\diamond C$, common to ground.	A10, A11 A12	Adjust for maximum.

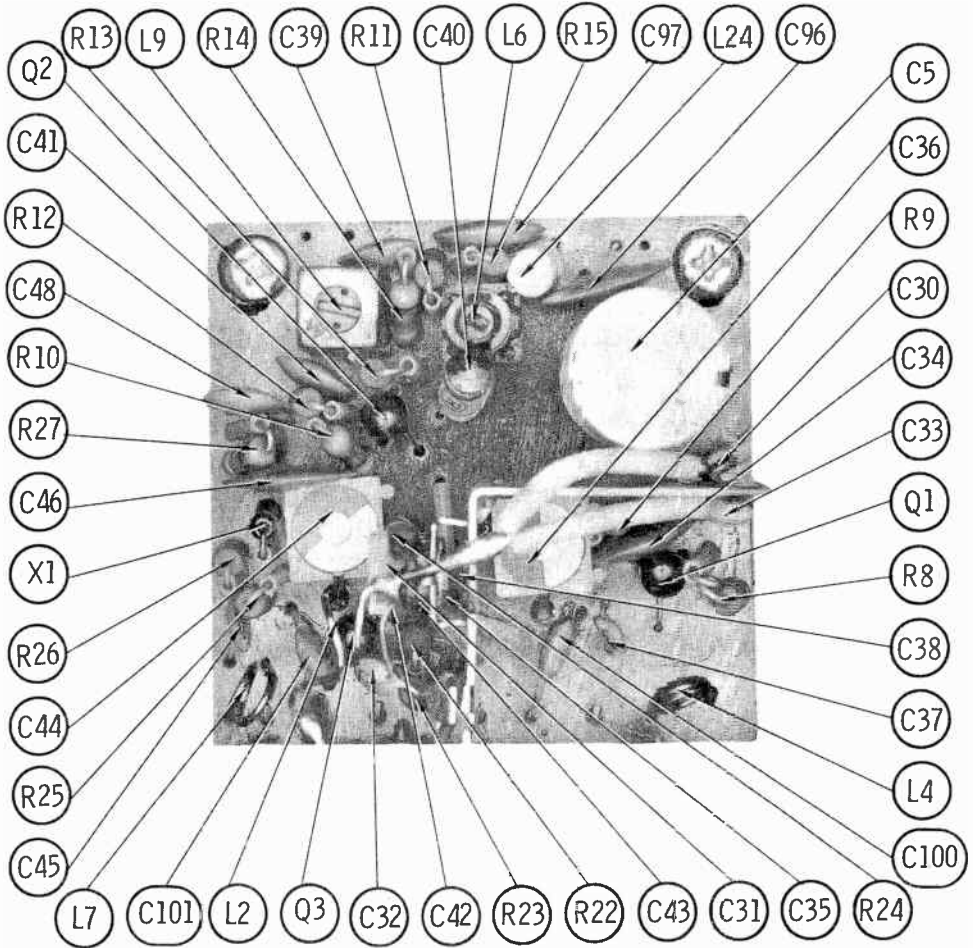
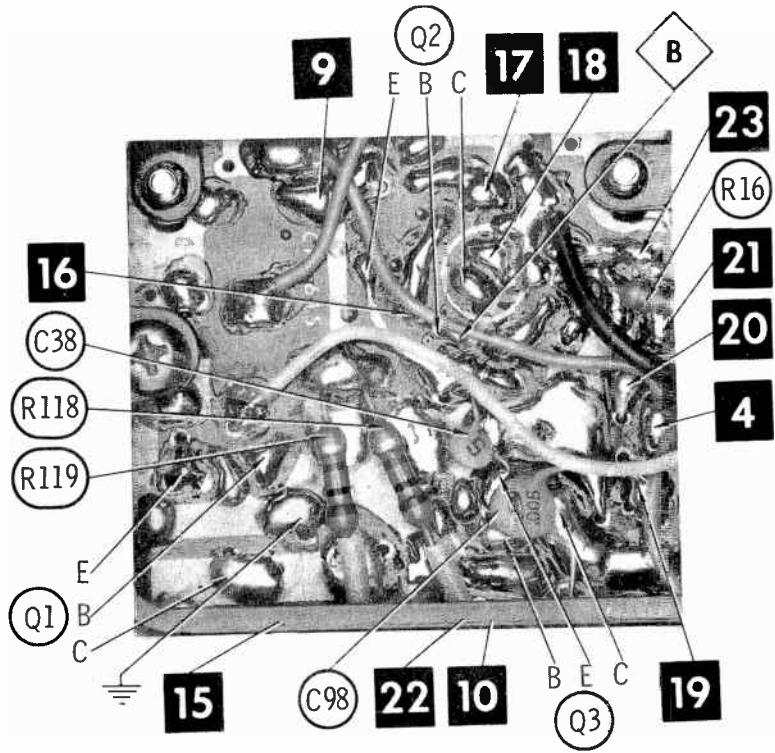


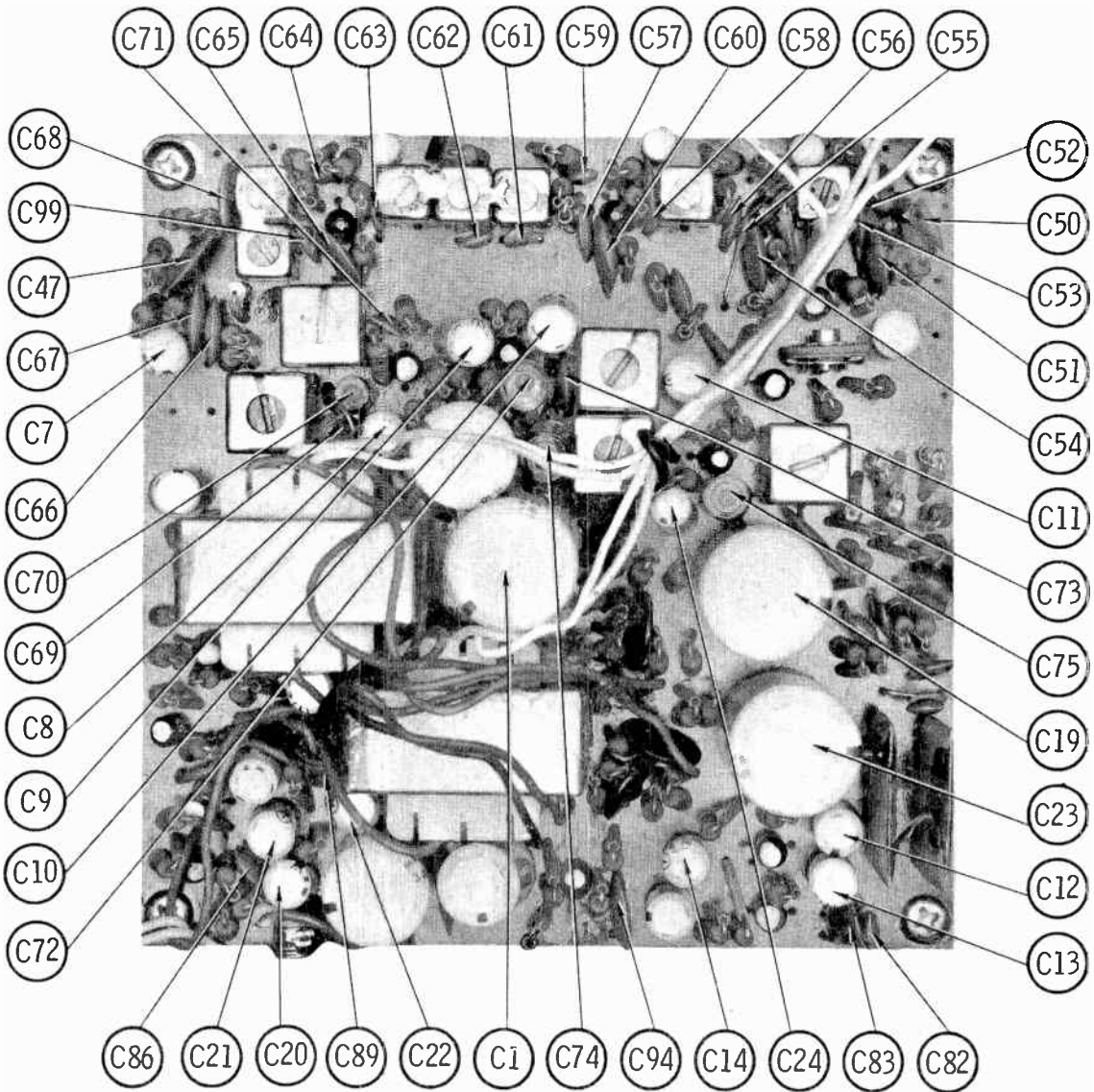
FM STEREO MULTIPLEX ALIGNMENT USING FM STEREO SIGNAL GENERATOR ($\pm .0001\%$ ACCURACY)

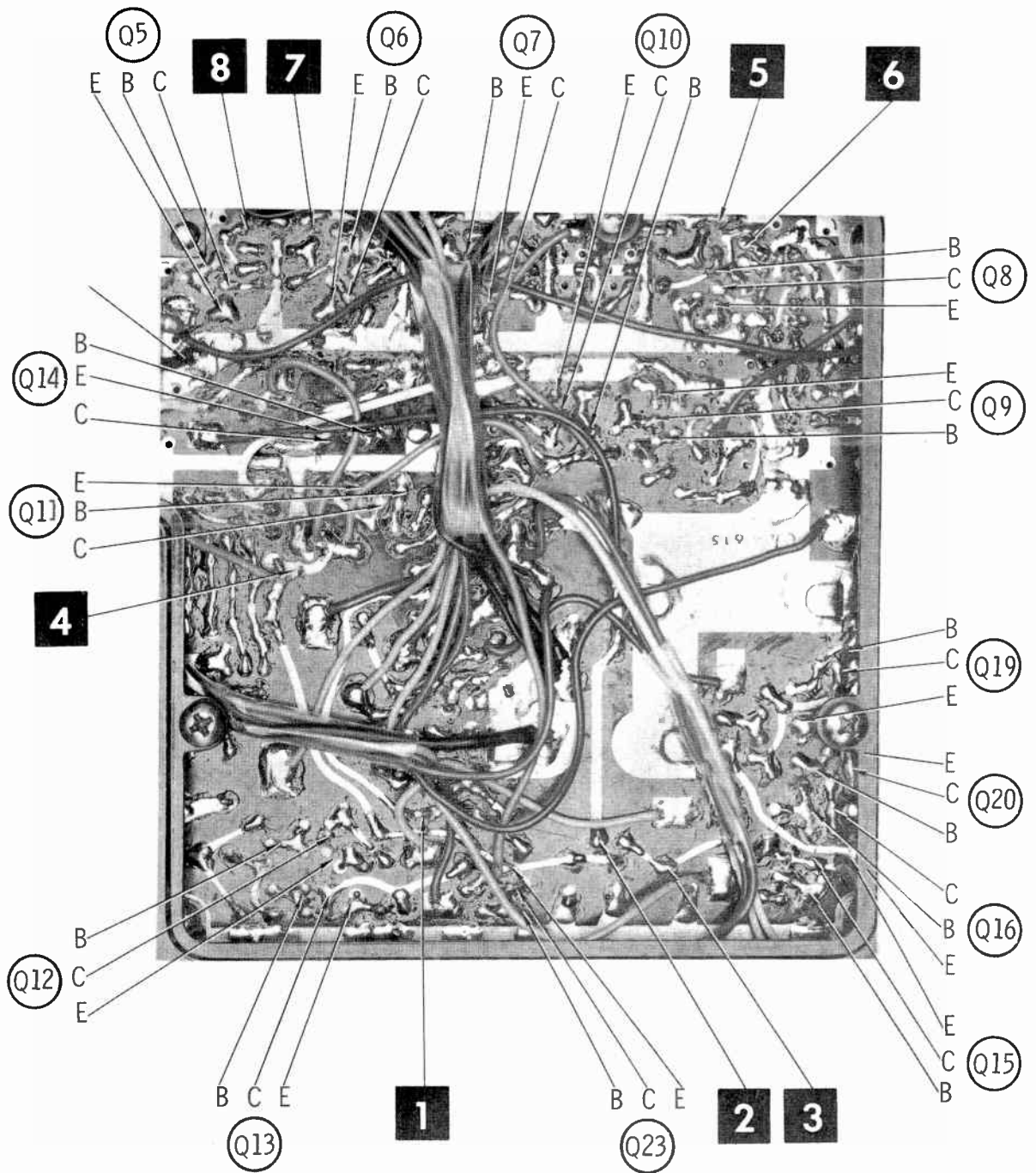
High side of generator thru 47K to point $\diamond E$, low side to ground.

GENERATOR FREQUENCY	INDICATOR	ADJUST	REMARKS
5. 67KC	Vert. amp of scope thru 47K to point $\diamond F$, low side to ground.	A13	Adjust for MINIMUM
6. 72KC		A14	
7. 19KC	Vert. amp of scope thru 47K to point $\diamond G$, low side to ground.	A15 A16	Adjust for maximum.
8. "	Vert. amp of scope thru 47K to point $\diamond H$, low side to ground.	A17	Adjust for maximum 38KC response.
9. Modulated Left Channel	Vert. amp of scope to point $\diamond J$, low side to ground.	A15, A16 A17	Adjust for MINIMUM. This step should require only slight adjustment.
10. Modulated Right Channel	Vert. amp of scope to point $\diamond K$, low side to ground		Check for MINIMUM. If necessary make compromise adjustment of A15, A16, A17.



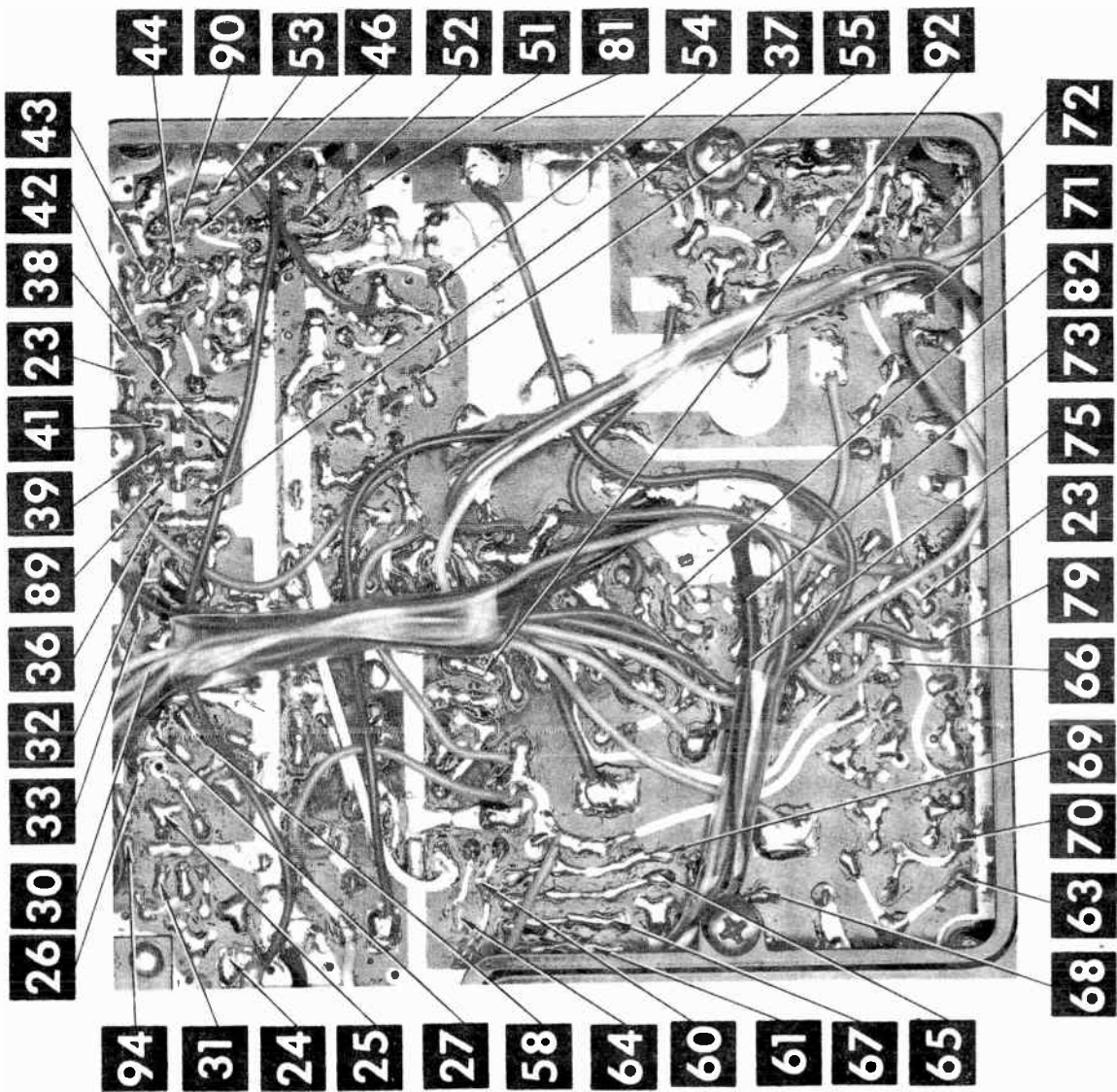


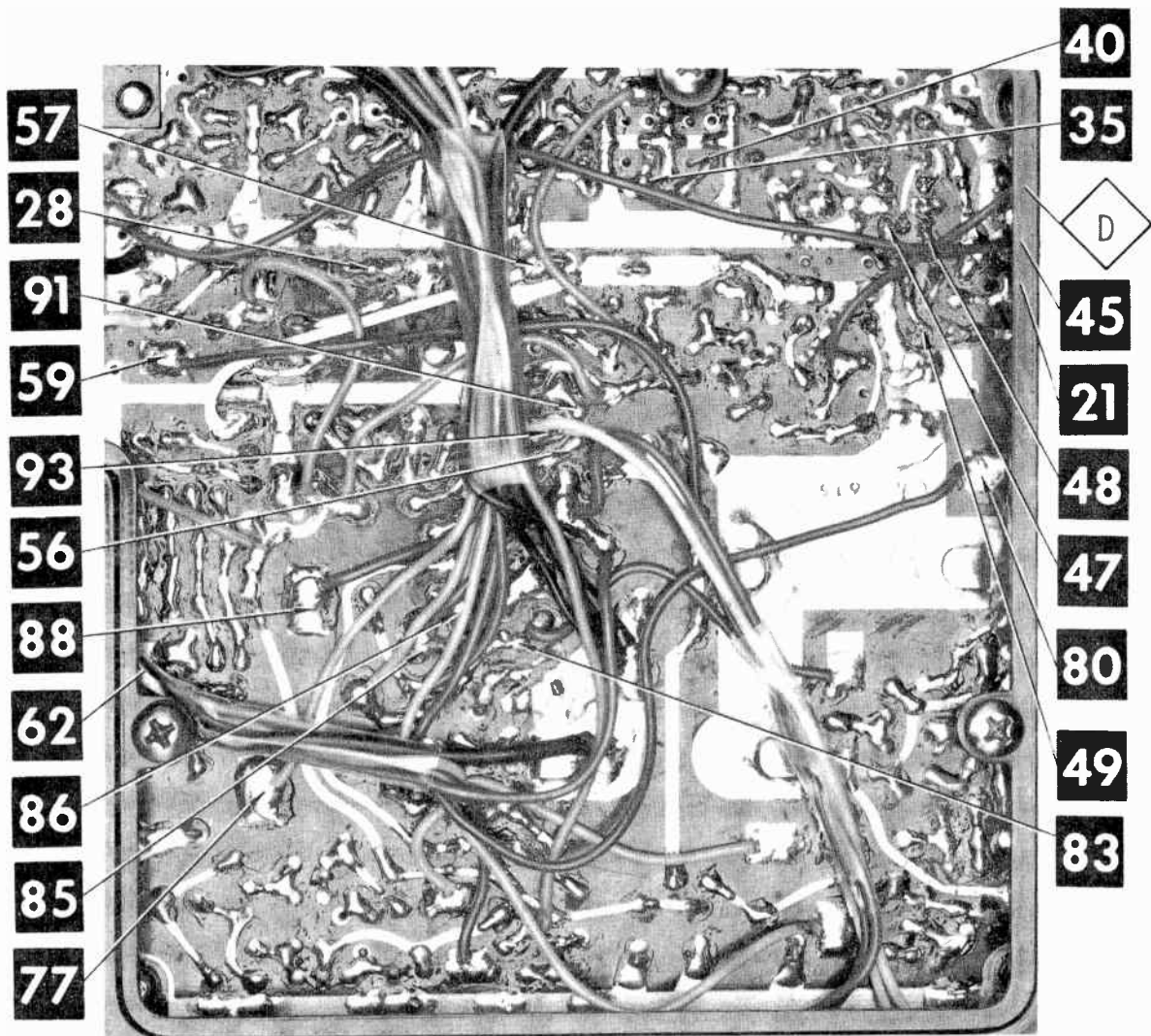




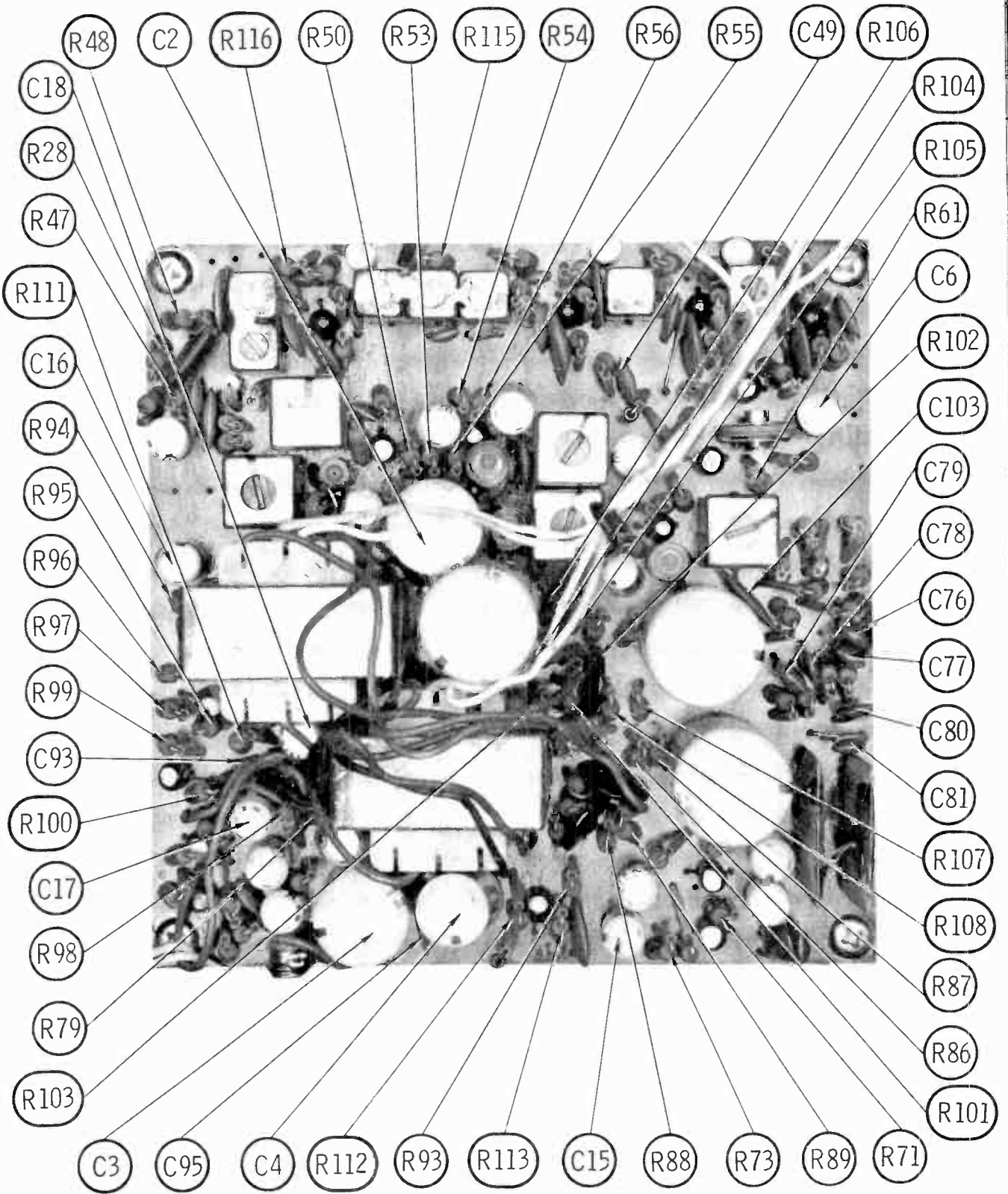
A Howard W. Sams **CIRCUITRACE** Photo

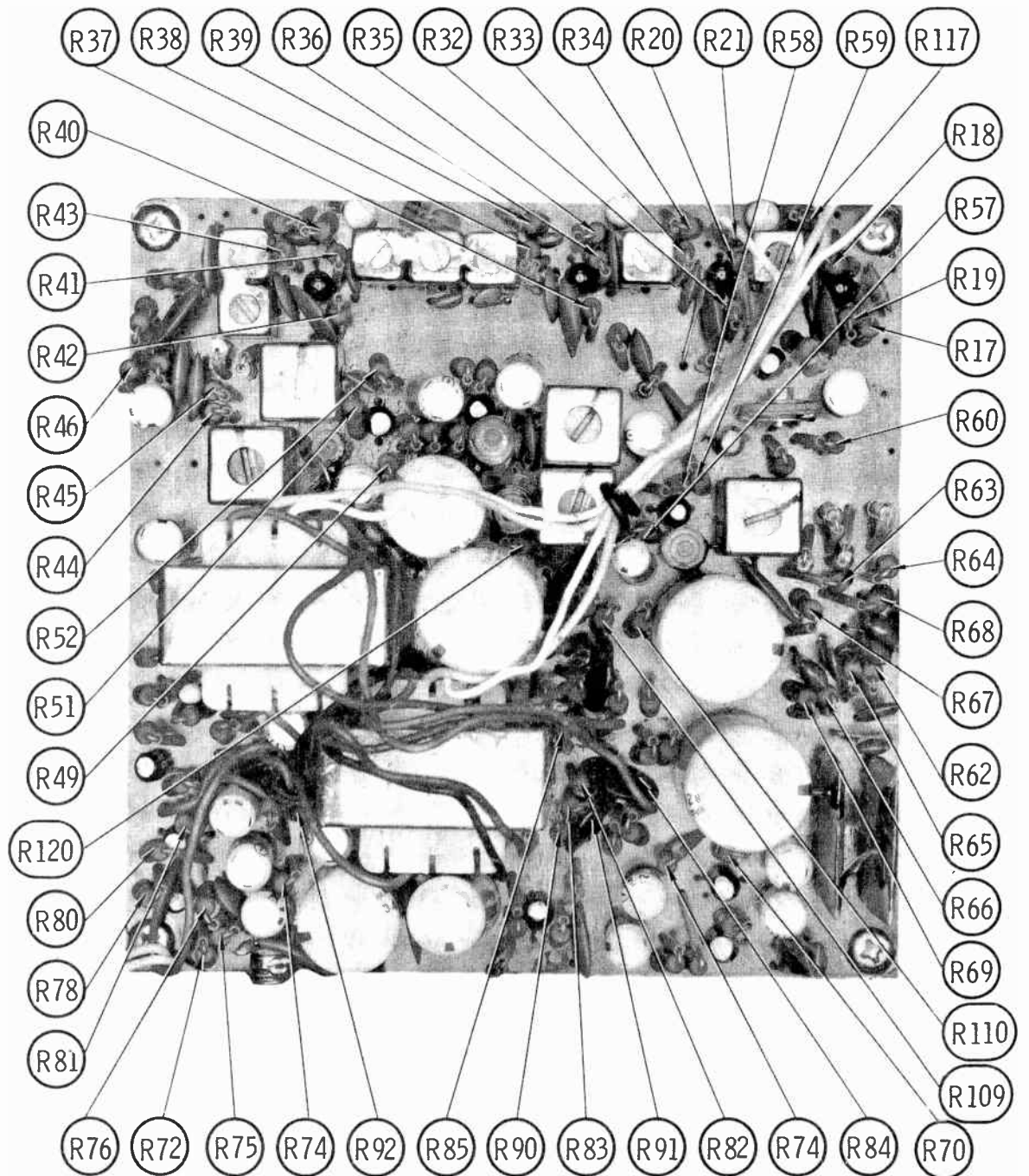
RANGER MODEL RR-35-MPX





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 FACTS¹ for the most up-to-date replacement.

TRANSISTORS

ITEM No.	TYPE No.	FUNCTION	REPLACEMENT DATA					
			MFGR. PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q1	2SC674	RF Amp	175043-062	GE-17	TR-22	HEP718	SK3018	ECG 108
Q2	2SC772	Mixer	175043-063	GE-20	TR-21	HEP718	SK3018	ECG 108
Q3	2SC772	Oscillator	175043-063	GE-20	TR-21	HEP718	SK3018	ECG 108
Q4	2SC537	AGC Amp	175043-064	GE-20	TR-21	HEP722	SK3020	ECG 123
Q5	2SC772	1st IF Amp	175043-063	GE-20	TR-21	HEP718	SK3018	ECG 108
Q6	2SC772	2nd IF Amp	175043-063	GE-20	TR-21	HEP718	SK3018	ECG 108
Q7	2SC772	3rd IF Amp	175043-063	GE-20	TR-21	HEP718	SK3018	ECG 108
Q8	2SC772	4th IF Amp	175043-063	GE-20	TR-21	HEP718	SK3018	ECG 108
Q9	2SC537	MPX Input Amp	175043-064	GE-20	TR-21	HEP723	SK3020	ECG 123
Q10	2SC537	19KC Amp	175043-064	GE-20	TR-21	HEP723	SK3020	ECG 123
Q11	2SC537	19KC Doubler	175043-064	GE-20	TR-21	HEP723	SK3020	ECG 123
Q12	2SC537	Pre-Amp	175043-064	GE-20	TR-21	HEP723	SK3020	ECG 123
Q13	2SC537	Pre-Amp	175043-064	GE-20	TR-21	HEP723	SK3020	ECG 123
Q14	2SC537	Lamp Switch	175043-064	GE-20	TR-21	HEP723	SK3020	ECG 123
Q15	2SC537	AF Amp	175043-064	GE-20	TR-21	HEP723	SK3020	ECG 123
Q16	2SC537	Driver	175043-064	GE-20	TR-21	HEP723	SK3020	ECG 123
Q17	2SB474	Output (1)	175043-065					ECG 131MP*
Q18	2SB474	Output (1)	175043-065					ECG 131MP*
Q19	2SC537	AF Amp	175043-064	GE-20	TR-21	HEP723	SK3020	ECG 123
Q20	2SC537	Driver	175043-063	GE-20	TR-21	HEP723	SK3020	ECG 123
Q21	2SB474	Output (1)	175043-064					ECG 131MP*
Q22	2SB474	Output (1)	175043-064					ECG 131MP*
Q23	2SC537	Voltage Regulator	175043-063	GE-20	TR-21	HEP723	SK3020	ECG 123

(1) When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.
* Matched Pair.

RANGER MODEL RR-35-MPX

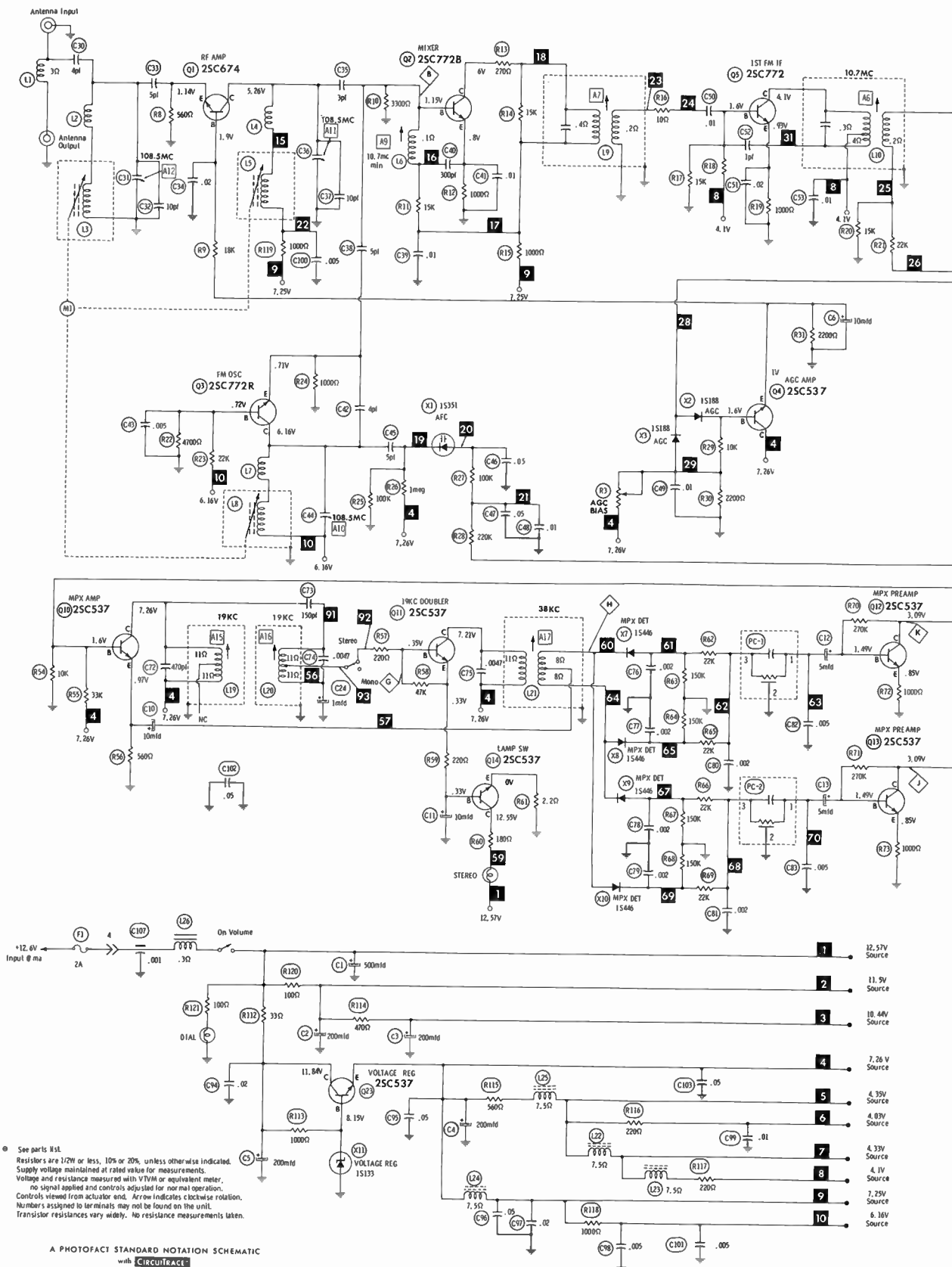
POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES			REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.		
X1	1S351					Variactor.
X2	1S188	1N34AS	1N34A	ECG 109		
X3	1S188	1N34AS	1N34A	ECG 109		
X4	1S188	1N34AS	1N34A	ECG 109		
X5	1S188	1N34AS	1N34A	ECG 109		
X6	1S188	1N34AS	1N34A	ECG 109		
X7	1S446	1N34AS	1N34A	ECG 109		
X8	1S446	1N34AS	1N34A	ECG 109		
X9	1S446	1N34AS	1N34A	ECG 109		
X10	1S446	1N34AS	1N34A	ECG 109		
X11	1S333	GE-X11	1ZM8.2		Zener (8V)	

ELECTROLYTIC CAPACITORS

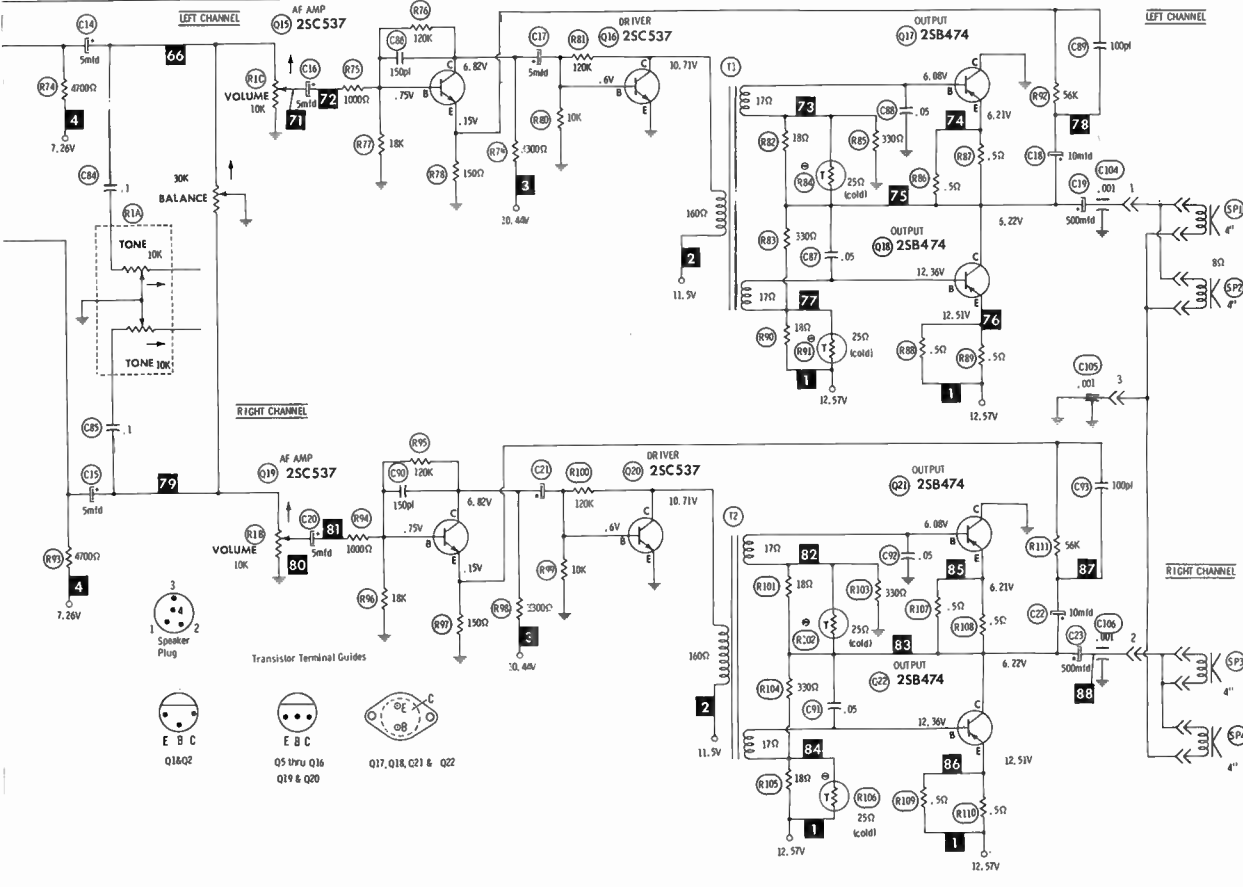
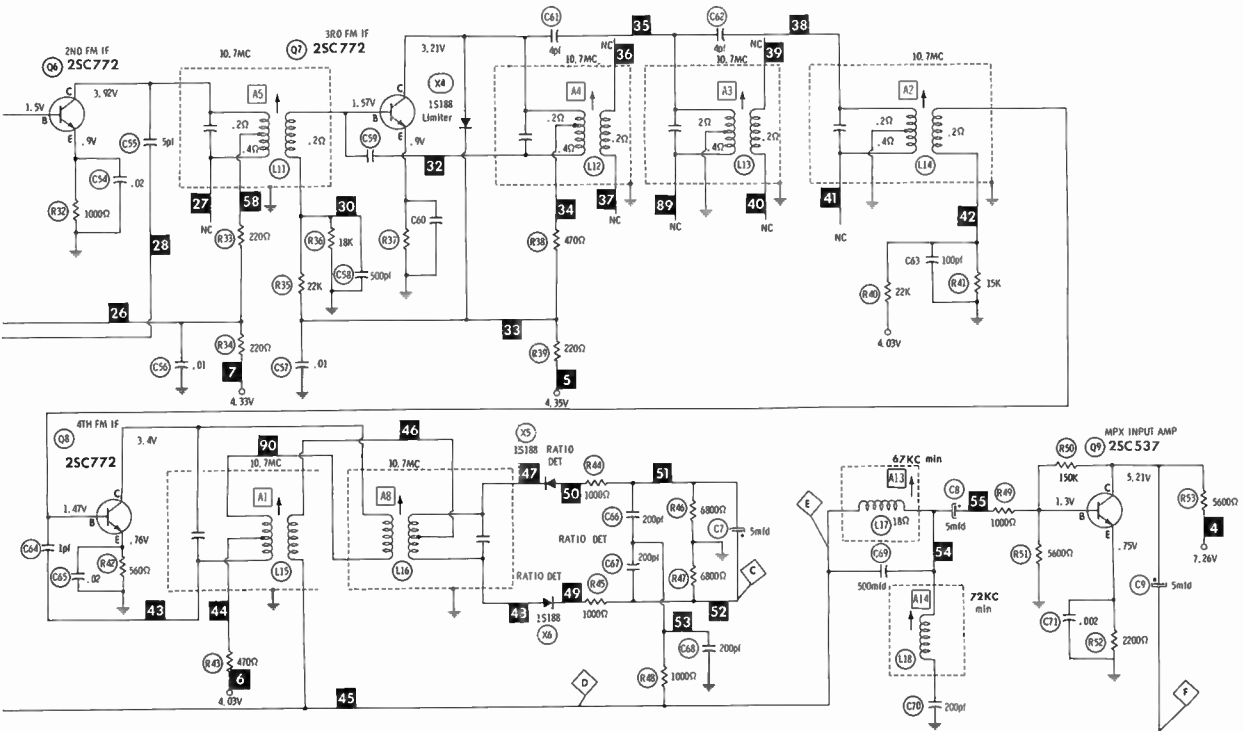
ITEM No.	RATING	REPLACEMENT DATA						
		PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	500 15V	175040-421	BCD15500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166
C2	200 15V	175040-419	BCD20200	EA15-250	PC200-16	MT1-23	MTV200CK15	TE-1164
C3	200 15V	175040-419	BCD20200	EA15-250	PC200-16	MT1-23	MTV200CK15	TE-1164
C4	200 10V	175040-414	BCO10190	EA15-250	PC200-16	MT1-23	MTV20DCK10	TL-1137
C5	200 15V	175040-419	BCD20200	EA15-250	PC200-16	MT1-23	MTV200CK15	TE-1164
C6	10 6V	175040-405	BCD25010	EP6-10	PC10-50	MT1-5	MTV10CB50	TE-1087
C7	5 6V	175040-404	BCD25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084
C8	5 6V	175040-404	BCD25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084
C9	5 6V	175040-404	BCD25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084
C10	10 6V	175040-405	BCD25010	EP6-10	PC10-50	MT1-5	MTV10CB50	TE-1087
C11	10 6V	175040-404	BCD25010	EP6-10	PC10-50	MT1-5	MTV10CB50	TE-1087
C12	5 6V	175040-404	BCD25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084
C13	5 6V	175040-404	BCD25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084
C14	5 6V	175040-404	BCD25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084
C15	5 6V	175040-404	BCD25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084
C16	5 6V	175040-404	BCD25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084
C17	5 6V	175040-404	BCO25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084
C18	10 15V	175040-417	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155

(CONTINUED ON PAGE 108)



• See parts list.
 Resistors are 1/2W or less, 10% or 20%, unless otherwise indicated.
 Supply voltage maintained at rated value for measurements.
 Voltage and resistance measured with VTVM or equivalent meter,
 no signal applied and controls adjusted for normal operation.
 Controls viewed from actuator end. Arrow indicates clockwise rotation.
 Numbers assigned to test points may not be found on the unit.
 Transistor resistances vary widely. No resistance measurements taken.

A PHOTOFAC STANDARD NOTATION SCHEMATIC
 with **CIRCUITRACE**
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RANGER MODEL RR-35-MPX

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.

ELECTROLYTIC CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA						
			PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C19	500	15V	175040-421	BCD15500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166
C20	5	6V	175040-404	BCD25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084
C21	5	6V	175040-404	BCD25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084
C22	10	15V	175040-417	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C23	500	15V	175040-421	BCD15500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166
C24	1	6V	175040-428	BCD50001		PC1-100	MT1-1	MTV1CB50	TE-1080

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.
C30	4	#175040-806(1)			NPO3P9			10TCC-V39
C31	10		NPO-DI 10	DTZ-10	NP010	CCT0-100	CN0410	10TCC-Q10
C32	10		NPO-DI 5.0		NP05			10TCC-V50
C33	5	#175040-806(1)	TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C34	.02		NPO-DI 3.0					10TCC-V30
C35	3		NPO-DI 10	DTZ-10	NP010	CCT0-100	CN0410	10TCC-Q10
C36	10	#175040-806(1)	NPO-DI 5.0		NP05			10TCC-V50
C37	10		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C38	5		NPO-DI 5.0	DM-301	GP300	CCD-301	GP330	10TS-T30
C39	.01	#175040-806(1)	GPD X5F301K	CK-103	MGP01	CCD-103	TA110	TG-S10
C40	300		TTP-01		NP03P9			10TCC-V39
C41	.01		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-D50
C42	4	#175040-806(1)			NP05			10TCC-V50
C43	.005		NPO-DI 5.0	CK-503	MGP05	CCD-503	TA150	TGL-S50
C44	10		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C45	5	#175040-806(1)	TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C46	.05		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C47	.05		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C48	.01	#175040-806(1)	TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C49	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C50	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C51	.02	#175040-806(1)	TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C52	1		NPO-DI 1.0	TCZ-1				10TCC-V10
C53	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C54	.02	#175040-806(1)	TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C55	5		NPO-DI 5.0		NP05			10TCC-V50
C56	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C57	.01	#175040-806(1)	TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C58	500		GPD X5F501K	DM-501	GP500	CCD-501	GP350	10TS-T50
C59	2		NPO-DI 2.2	DTZ-2R2	NP02P2		CN0522	10TCC-V22
C60	.02	#175040-806(1)	TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C61	4				NP03P9			10TCC-V39
C62	4				NP03P9			10TCC-V39
C63	100	#175040-806(1)	NPO-DI 100	DTZ-100	NP0100	CCT0-101	CN0310	10TCC-T10
C64	1		NPO-DI 1.0	TCZ-1			CN0510	10TCC-V10
C65	.02		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C66	200	#175040-806(1)	GPD X5F201K	DM-201	GP200	CCD-201	GP320	10TS-T20
C67	200		GPD X5F201K	DM-201	GP200	CCD-201	GP320	10TS-T20
C68	200		GPD X5F201K	DM-201	GP200	CCD-201	GP320	10TS-T20
C69	500	#175040-806(1)	GPD X5F201K	DM-201	GP200	CCD-201	GP320	10TS-T20
C70	200			DM-201	GP200	CCD-201	GP320	10TS-T20
C71	.002			DM-202	GP2000	CCD-202	GP220	2SS-D20
C72	.0047	#175040-806(1)	GPD X5F202K	DM-202	GP2000	CCD-202	GP220	2SS-D20
C73	150		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-D50
C74	.0047		GPD X5F151K	DD-151	GP150	CCD-151	GP315	10TS-T15
C75	.0047	#175040-806(1)		CK-502	MGP005	CCD-502	TA250	TG-D50
C76	.002			CK-502	MGP005	CCD-502	TA250	TG-D50
C77	.002		GPD X5F202K	DM-202	GP2000	CCD-202	GP220	2SS-D20
C78	.002	#175040-806(1)	GPD X5F202K	DM-202	GP2000	CCD-202	GP220	2SS-D20
C79	.002		GPD X5F202K	DM-202	GP2000	CCD-202	GP220	2SS-D20
C80	.002		GPD X5F202K	DM-202	GP2000	CCD-202	GP220	2SS-D20
C81	.002	#175040-806(1)	GPD X5F202K	DM-202	GP2000	CCD-202	GP220	2SS-D20
C82	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-D50
C83	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-D50
C84	.1	#175040-806(1)	TTP-1	CK-104			TA010	TG-P10
C85	.1		TTP-1	CK-104			TA010	TG-P10
C86	150		GPD X5F151K	DD-151	GP150	CCD-151	GP315	10TS-T15
C87	.05	#175040-806(1)	TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C88	.05		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C89	100		NPO-DI 100	DTZ-100	NP0100	CCT0-101	CN0310	10TCC-T10
C90	150	#175040-806(1)	GPD X5F151K	DD-151	GP150	CCD-151	GP315	10TS-T15
C91	.05		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C92	.05		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C93	100	#175040-806(1)	NPO-DI 100	DTZ-100	NP0100	CCT0-101	CN0310	10TCC-T10
C94	.02		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C95	.05		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C96	.05	#175040-806(1)	TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C97	.002		GPD X5F202K	DM-202	GP2000	CCD-202	GP220	2SS-D20
C98	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-D50
C99	.01	#175040-806(1)	TTP-01	CK-103	MGP01	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 (cont)

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.
C100	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-D50
C101	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-D50
C102	.05		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C103	.05		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C104	.001		EF-6-1000	FT-1000		CCF-102		BH-340
C105	.001		EF-6-1000	FT-1000		CCF-102		BH-340
C106	.001		EF-6-1000	FT-1000		CCF-102		BH-340
C107	.001		EF-6-1000	FT-1000		CCF-102		BH-340

(1) Nominal Value.

Ranger Part Number.

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone	10K Tap @ 4000	175044-019				
B	Volume	10K					
C	Volume/Switch	10K					
R2	Balance	30K	175044-020				
R3	Bias	10K	175038-541	T-10K		X201R103B	MTC14L1

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFR. PART No.
R84	25 ohm (Cold)			175039-506
R91	25 ohm (Cold)			175039-506

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFR. PART No.
R102	25 ohm (Cold)			175039-506
R106	25 ohm (Cold)			175039-506

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (5.6uh)	175042-063	19-1008	4609	T959
L2	Antenna	175042-064			
L3	Antenna Tuning	(1)			
L4	RF	175042-064			
L5	RF Tuning	(1)			
L6	10.7MC Trap	175042-065			
L7	Oscillator	175042-064			
L8	Oscillator Tuning	(1)			
L9	Input IF	175042-067			
L10	Interstage IF	175042-068			
L11	Interstage IF	175042-068			
L12	Interstage IF	175042-068			
L13	Interstage IF	175042-068			
L14	Interstage IF	175042-068			
L15	Ratio Detector (Pri.)	175042-069			
L16	Ratio Detector (Sec.)	175042-070			
L17	67KC Trap	175042-071			
L18	72KC Trap	175042-072			
L19	19KC	175042-073			
L20	19KC	175042-073			
L21	38KC	175042-074			
L22	RF Choke (470uh)				
L23	RF Choke (470uh)				
L24	RF Choke (470uh)				
L25	RF Choke (470uh)				

(1) Part of M1.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L26	165MA	.3 ohm	1.5MH	175042-066	C-4095	TC-1	TK-153	TY16XT	

RANGER MODEL RR-35-MPX

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
	PRI.	SEC. 1	SEC. 2	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD Part No.	
T1	4	1	1	175042-075					
T2	4	1	1	175042-075					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA			NOTES
				PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	8 ohm	PM	155009-209		5A1Z8	
SP2	5"	8 ohm	PM	155009-209		5A1Z8	
SP3	5"	8 ohm	PM	155009-209		5A1Z8	
SP4	5"	8 ohm	PM	155009-209		5A1Z8	

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	2Amp	175050-011	175049-007	AGC2	HDJ	312002	150145	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Tuner Assembly	175050-243	
PC1	38KC Notch Filter	175054-001	
PC2	38KC Notch Filter	175054-001	
S1	Switch, Stereo-Mono	175037-287	
	Lamp, Dial	175050-232	
	Lamp, Stereo Indicator	175050-231	

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

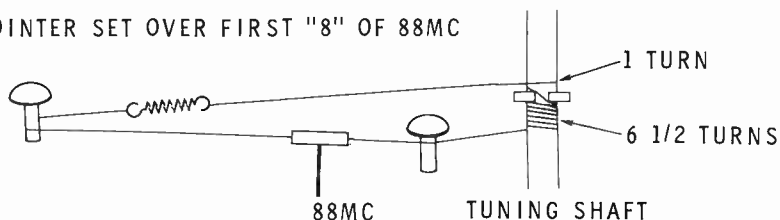
ITEM	PART No.	ITEM	PART No.
Bezel	175050-235	Knob, Tone or Balance Dial Pointer	175050-100 175050-100
Dial Glass	175050-236		
Knob, Volume or Tuning	175050-237		

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.)

DIAL CORD STRINGING—TOP VIEW

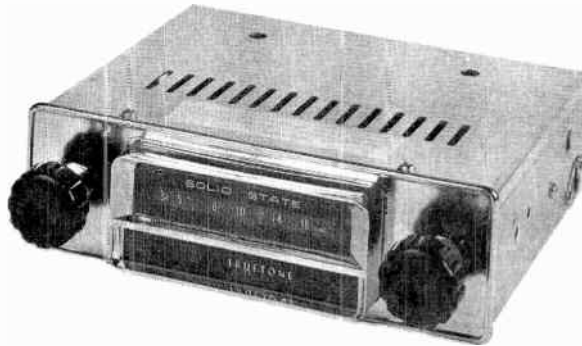
POINTER SET OVER FIRST "8" OF 88MC



FRONT



For Supplier Address See PHOTOFACT Index



TRUETONE MODEL MIC4050A-07
(DC4050)

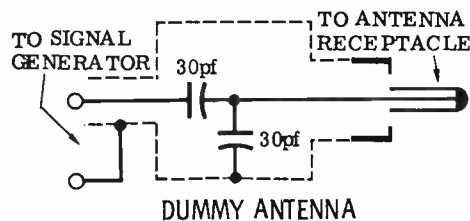
ALIGNMENT INSTRUCTIONS

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

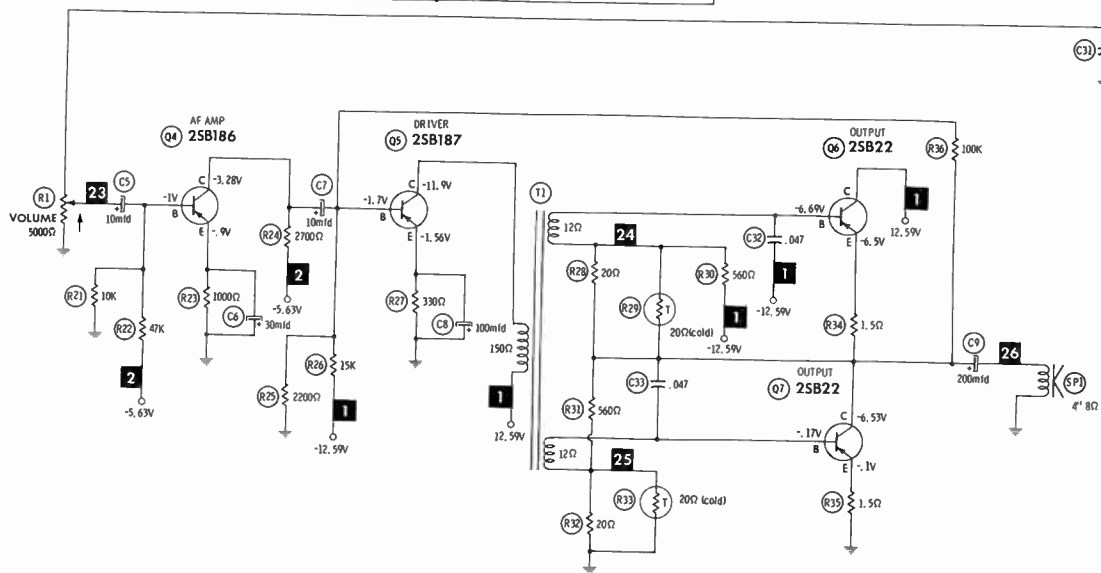
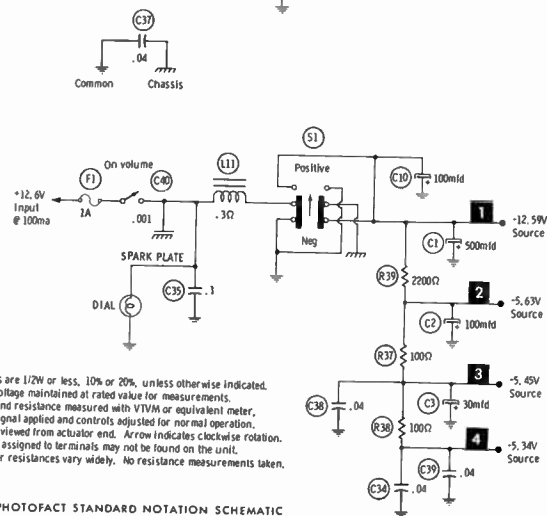
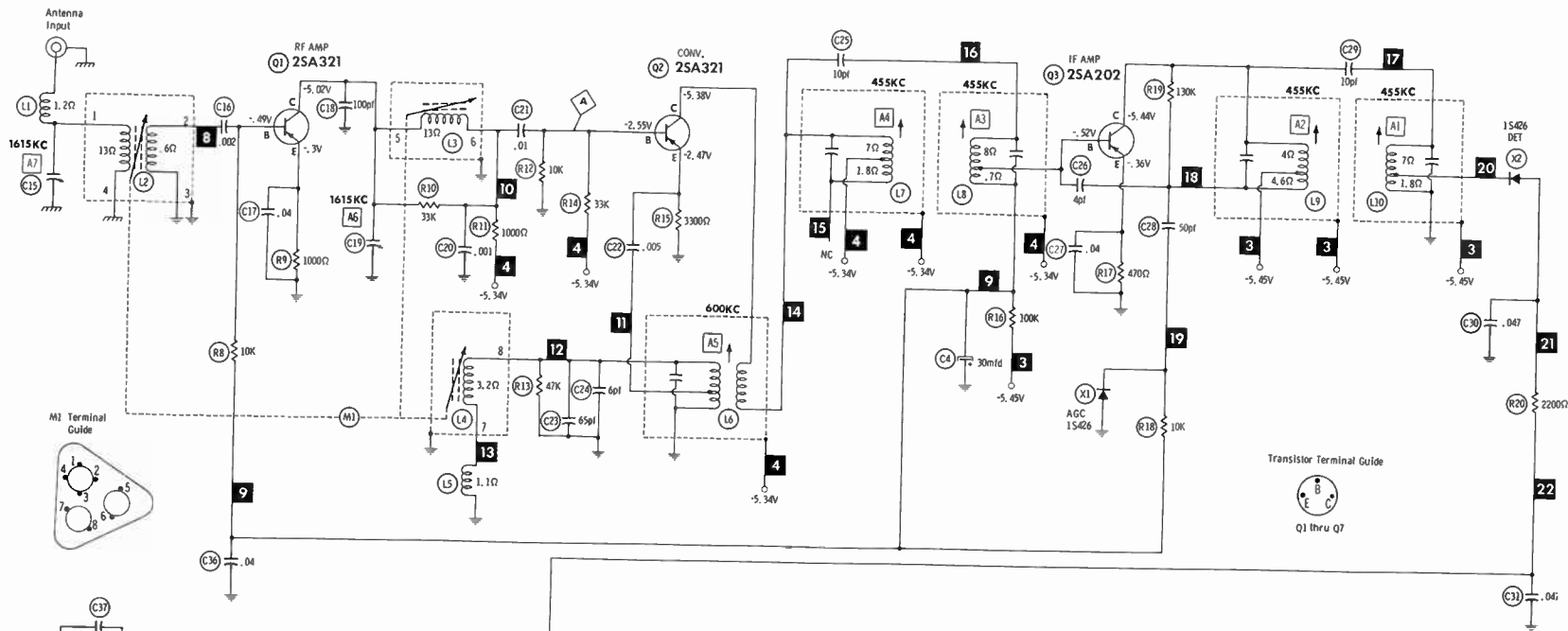
A1 thru A7.....GENERAL CEMENT #9440
WALSCO #2501

	GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point \diamond A, low side to ground.	455KC 400 cycle modulation	High freq. end stop.	Output meter across voice coil.	A1,A2, A3,A4	Adjust for maximum.
2.	Thru dummy antenna to antenna input.	600KC	Tune to Signal	"	A5	"
3.	Thru dummy antenna to antenna input.	1615KC	High freq. end stop.	Output meter across voice coil	A6,A7	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 on bottom right-hand corner.

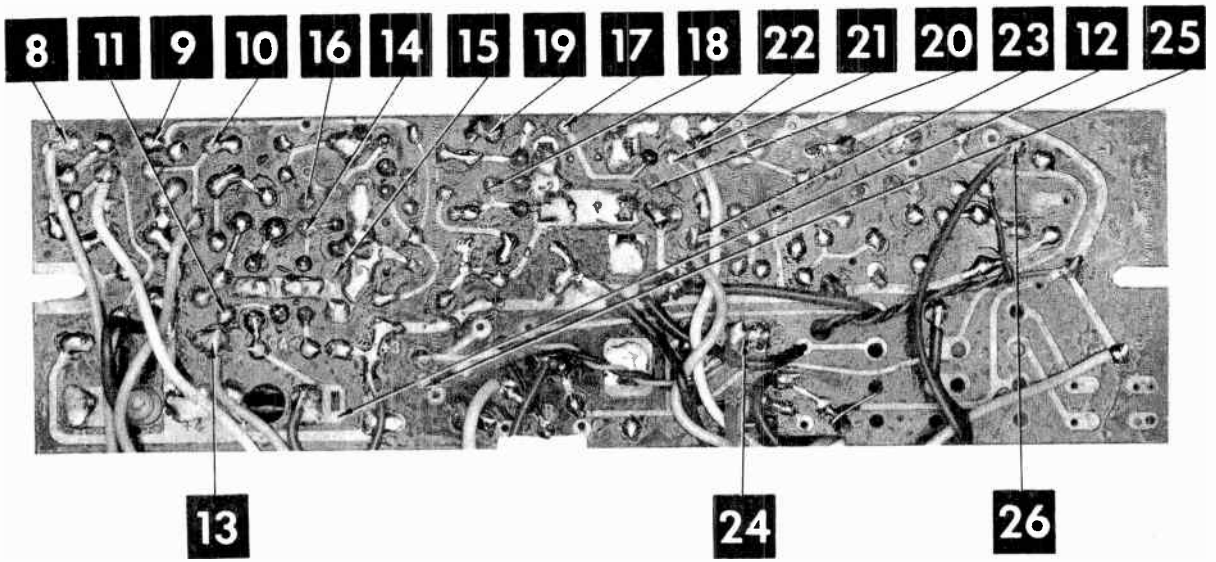
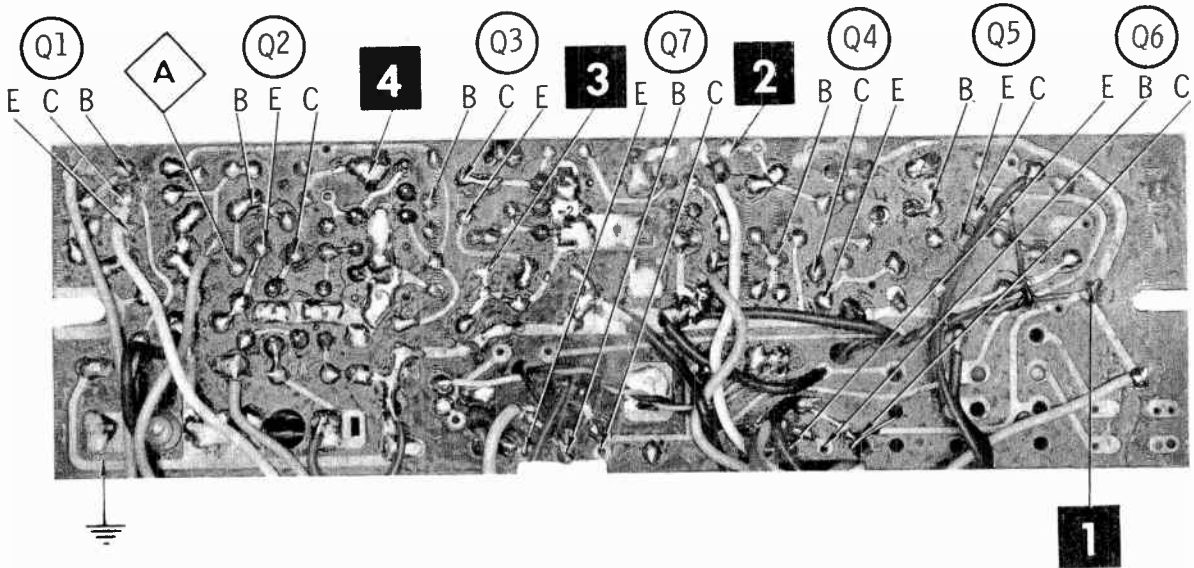


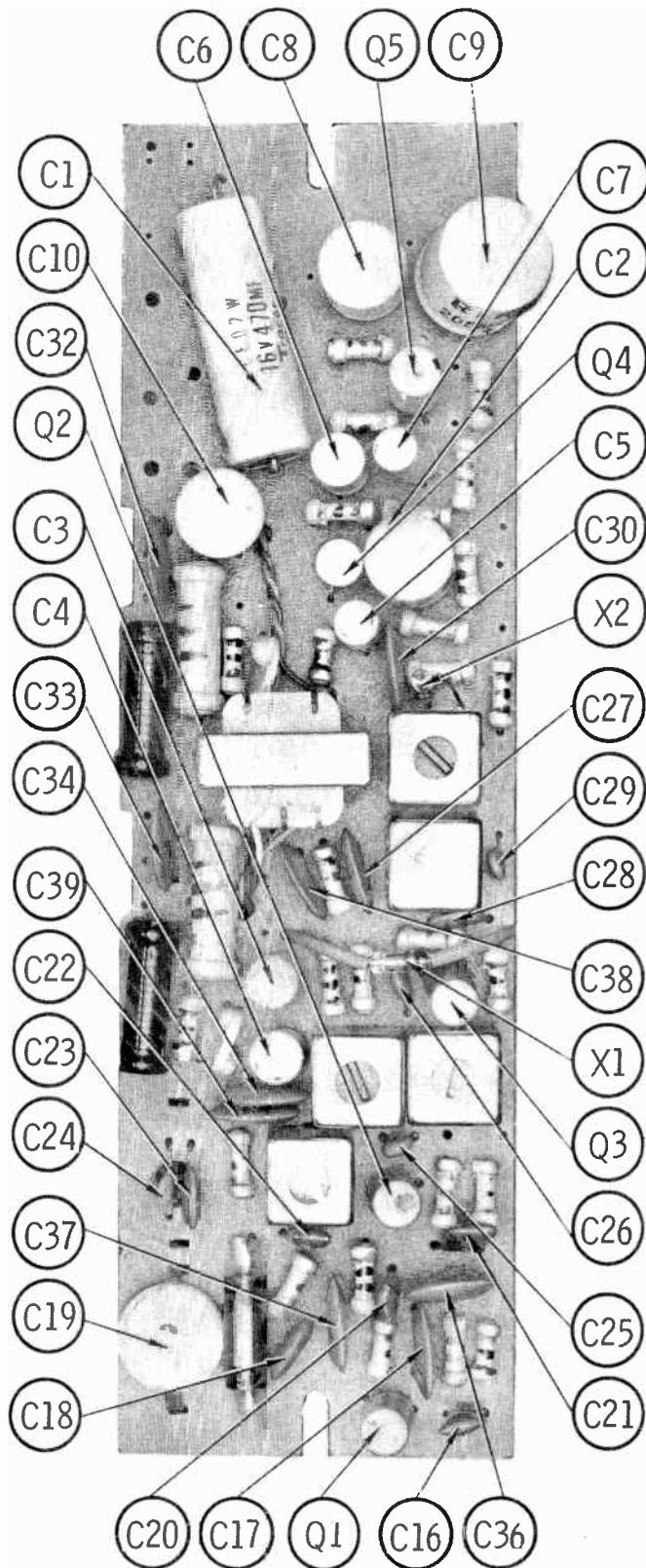
TRUETONE MODEL MIC4050A-07

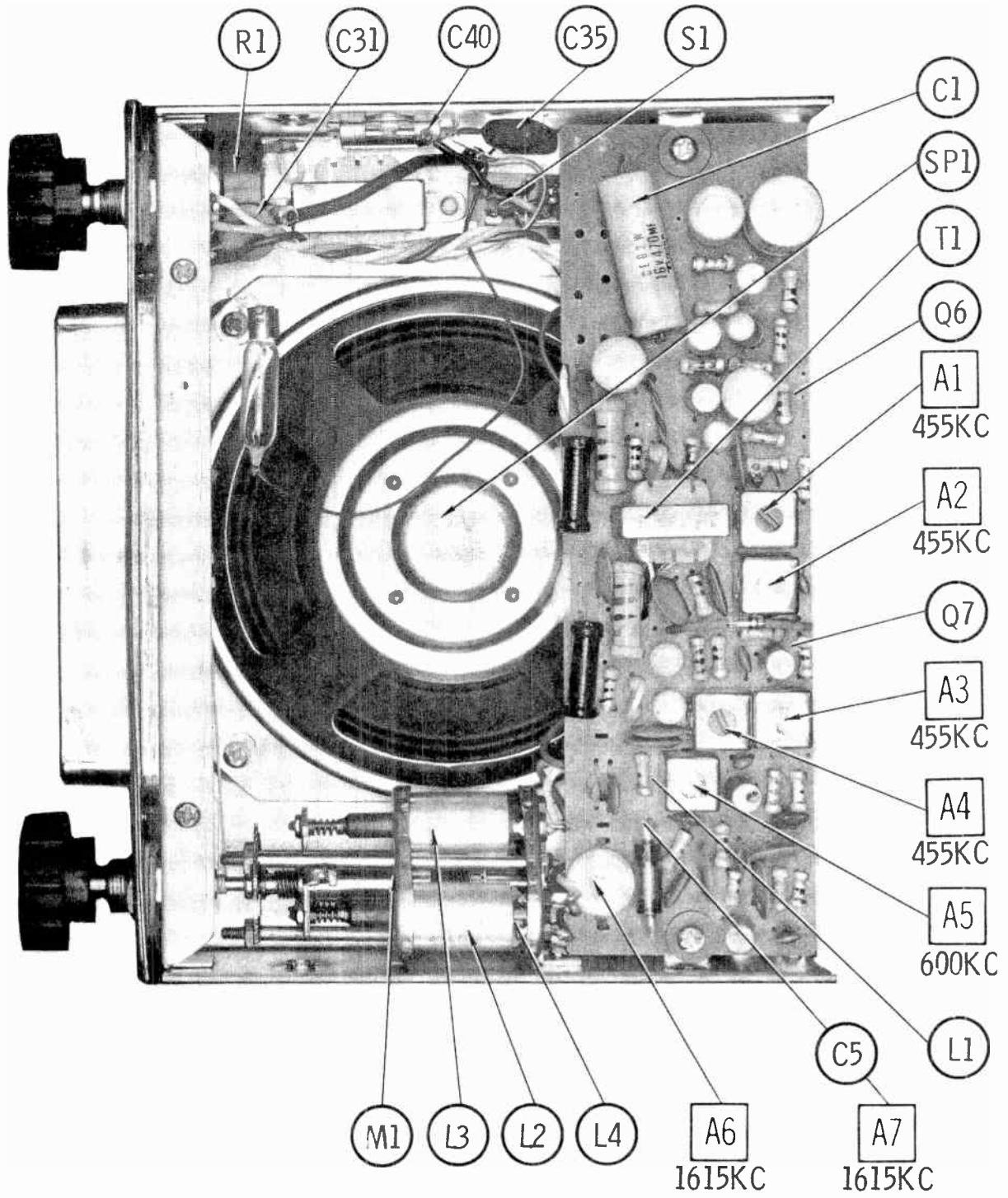


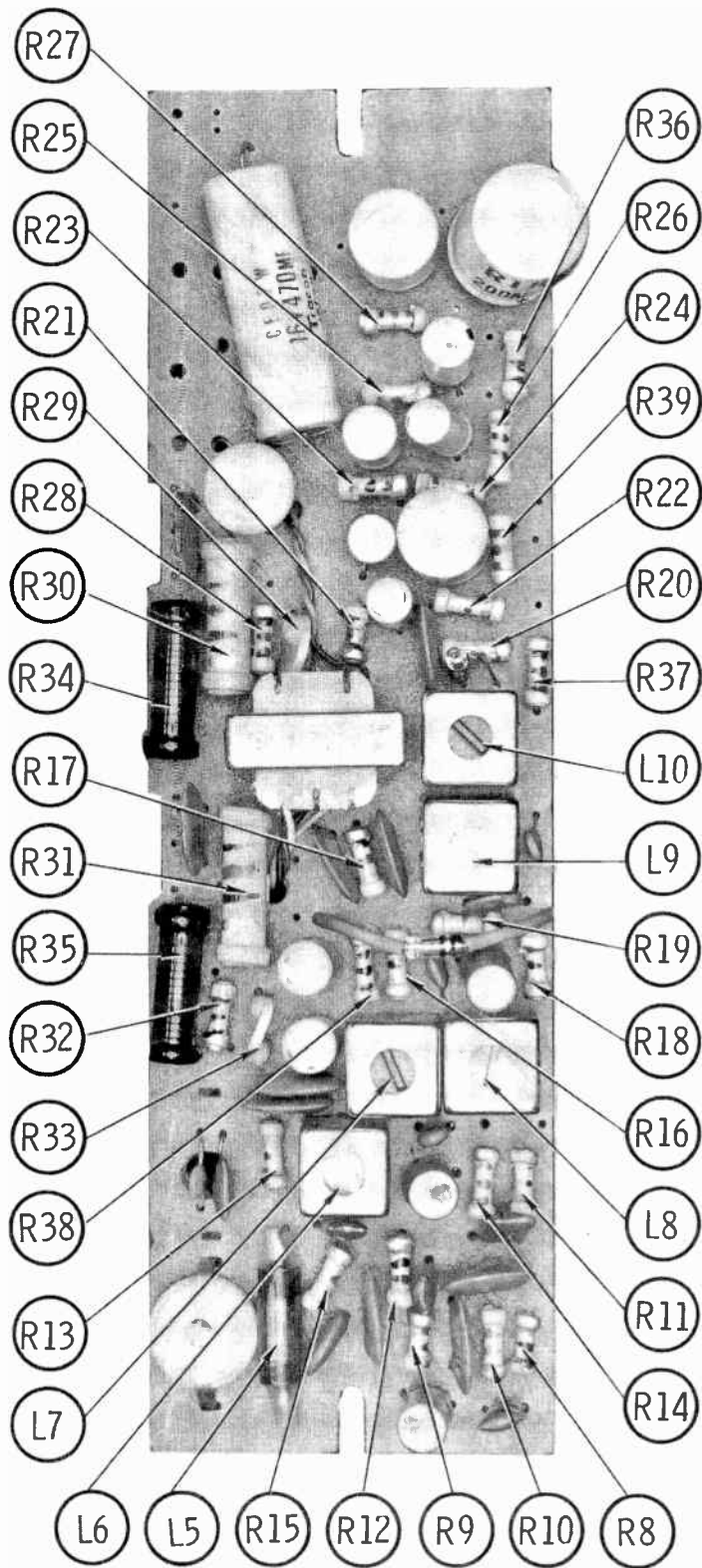
Resistors are 1/2W or less, 10% or 20%, unless otherwise indicated. Supply voltage maintained at rated value for measurements. Voltage and resistance measured with VTVM or equivalent meter, no signal applied and controls adjusted for normal operation. Controls viewed from actuator end. Arrow indicates clockwise rotation. Numbers assigned to terminals may not be found on the unit. Transistor resistances vary widely. No resistance measurements taken.

A PHOTOFAC STANDARD NOTATION SCHEMATIC with **CIRCUITRACE**
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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.	TYPE No.	FUNCTION	REPLACEMENT DATA					
			MFGR. PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q1	2SA321	RF Amp Converter IF Amp AF Amp Driver Output Output		GE-9	TR-12	HEP639	SK3006	ECG 126
Q2	2SA321			GE-9	TR-12	HEP639	SK3006	ECG 126
Q3	2SA202			GE-9	TR-12	HEP253	SK3008	ECG 100
Q4	2SB186			GE-2	TR-14	HEP633	SK3004	ECG 102
Q5	2SB187			GE-2	TR-14	HEP632	SK3004	ECG 102
Q6	2SB22			GE-2	TR-14	HEP632	SK3004	ECG 102
Q7	2SB22			GE-2	TR-14	HEP632	SK3004	ECG 102

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES			REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.	RCA PART No.	
X1	1S426	1N34AS	1N34A	ECG 109		
X2	1S426	1N34AS	1N34A	ECG 109		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		TRUESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	500 15V	77-331507	PRS1220	EA15-500	WBR500-35	QT1-30A	TC1505A	TL-1166
C2	100 10V	77-336107	BCD10100	EP15-100	PC100-16	MT1-19	MTV100CD10	TE-1135
C3	30 10V	77-336306	BCD15C25	EP15-25	PC30-35	MT1-13.5	MTV30CB25	TE-1132.1
C4	30 10V	77-336306	BCD15025	EP15-25	PC30-35	MT1-13.5	MTV30CB25	TE-1132.1
C5	10 6V	77-335106	BCD25D10	EP6-10	PC10-50	MT1-5	MTV10CB50	TE-1087
C6	30 10V	77-336306	BCD15025	EP15-25	PC30-35	MT1-13.5	MTV30CB25	TE-1132.1
C7	10 6V	77-335106	BCD25C1C	EP6-10	PC10-50	MT1-5	MTV10CB50	TE-1087
C8	100 10V	77-336107	BCD10100	EP15-100	PC100-16	MT1-19	MTV100CD10	TE-1135
C9	200 15V	77-331207	BCD20200	EA15-250	PC200-16	MT1-23	MTV200CK15	TE-1164
C10	100 10V	77-336107	BCD10100	EP15-100	PC100-16	MT1-19	MTV100CD10	TE-1135

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	100	#65-123004	GPD X5F202K	DM-202	GP2000	CCD-202	GP220	2SS-D20		
C16	.002			NPO-DI 100	DD-403	NPO100	CCTO-101	GP140	10TCC-T10	
C17	.04				DTZ-100			CNO310		
C18	100		#65-123005	GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10	
C19	70				TTP-01	CK-103	MGPO1	CCD-103	TA110	TG-S10
C20	.001				TTP-005	CK-502	MGPO05	CCD-502	TA250	TG-D50
C21	.01				NPO-DI 68	DTN-68	NPO 68	CCTO-680	CNO468	10TCC-Q68
C22	.005									10TCC-V56
C23	65				NPO-DI 10	DTZ-10	NPO10	CCTO-100	CNO410	10TCC-Q10
C24	6				NPO-DI 3.3	DTZ-3R3	NPO3P3		CNO533	10TCC-V33
C25	10					DD-403			GP140	
C26	4				NPO-DI 50	DTZ-50	NPO50	CCTO-510	CNO450	10TCC-Q50
C27	.04				NPO-DI 10	DTZ-10	NPO10	CCTO-100	CNO410	10TCC-Q10
C28	50					DD-403			GP140	
C29	10					DD-403			GP140	
C30	.04				DD-403			GP140		
C31	.04				DD-403			GP140		
C32	.04				DD-403			GP140		
C33	.04			DD-403			GP140			
C34	.04			DD-403			GP140			
C35	.1 50V		TTP-1	CK-104			TA010	TG-P10		
C36	.04			DD-403			GP140			
C37	.04			DD-403			GP140			
C38	.04			DD-403			GP140			
C39	.04			DD-403			GP140			
C40	500	#65-177006		DD-403			GP140			

Truetone Part Number.

TRUESTONE MODEL MICA050A-07

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 listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA					
			MFR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	Volume/Switch	5000	65-160004	F2-5000,CA005, BA008,SSK106, KR-4			QCB2 (1), B13-114,TM5, 76-1 or [BU3, CF60,SS1,GC]*	RU53A,SL41(2), SK3500,US41

* "SNAPTROL"

- (1) Use QCB2 Bushing instead of "TM" in TM5 Kit.
(2) Alter Bushing to meet requirements.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFR. PART No.
R29	20 (Cold)			65-086002

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFR. PART No.
R33	20 (Cold)			65-086002

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (6.2uh)	65-176007	19-1004	4610	T859
L2	Antenna	(1)			
L3	RF	(1)			
L4	Osc Tuning	(1)			
L5	Image Trap (5.6uh)	65-178006	19-1008	4609	T959
L6	Osc	65-170004			
L7	Input IF (Pri)	65-090020			
L8	Input IF (Sec)	65-090021			
L9	Output IF (Pri)	65-090022			
L10	Output IF (Sec)	65-090023			

(1) Part of M1

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFR. PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L11	100ma	.2	1.5mh	65-178007					

TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD Part No.	
T1	4	1	1	65-096007					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		PART No.	QUAM PART No.	
SP1	4" PM 8 ohms	65-060003	4A1Z8	

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.

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 Amp	65-204004	65-159010	AGC 1	HDJ	312001	150145	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1 S1	Tuner Switch, Polarity Lamp, Dial	65-078003 65-183005 65-201006	

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

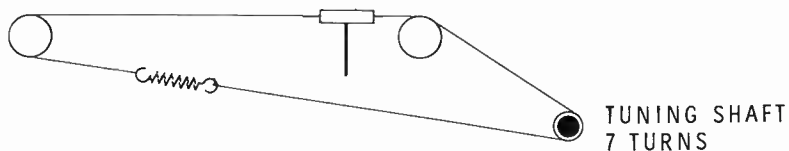
ITEM	PART No.	ITEM	PART No.
Trim Plate	65-020019	Dial Glass	65-150031
Knob, Control	65-110007	Dial Pointer	65-150028
Escutcheon	65-020018		

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.)

DIAL CORD STRINGING—FRONT VIEW

TUNING CORES FULLY OUT OF COIL FORMS



TRUETONE MODEL MIC4050A-07

INDEX

This index lists all radios appearing in "Auto Radio Manuals" and "PHOTOFACT Auto Radio Series"

KEY		(EP) Early Productions		(LP) Late Productions		(REV) Revised			
AIRCASLE	VOL.	ALLIED	VOL.	AMERICAN MOTORS (CONT.)	VOL.	AUDIO/STEREO (CONT.)	VOL.	AUTOMATIC (CONT.)	VOL.
610.A67	4	1984191	60	P8MA 68 Ambassador,		A-30	52	CRA-4534 64 Corvair	28
610.FE-153 52-53		1984192	62	Rebel	62	A-40	57	CRP-442A/AT 63	
Ford	4			RV4R 64 Rambler	24	A-45	64	Corvair	23
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61-6788 52-53 Ford	5	50331	7	American	18	AC-4558 64 Comet	27	CTP-3004 63 Comet	23
61-6789 51-52 Chev.	5	5050	30	22BAM R22BAM 62	18	ACP-3044 63 Comet	23	CTP-4059 64 Comet	27
61-6792 53 Dodge	4	5066	26	Rambler American	18	ACP-4559 64 Comet	27	CTP-5071 65 Comet	29
61-6793 53 Chev.	5	5098 Ch.833.50980	9	22BAX R22BAX 62	18	ATC-60 59-60 Chev.	15	CTP-7211A 67 Mercury	62
61-6794 53 Plym.	5	5099 Ch.833.50990	9	Rambler American	18	BAP-9 59 Buick	13	Comet	62
61-6795 53 Merc.	5	6225 Ch.528.55040/		8990377 6MR 56		BAP-20 60 Buick	14	CTR-6A 55-56 Chev.	12
61-12601 Tractor	5	55041	11	Rambler	6	BAP-4530 64 Buick	28	CTR-6B 55-56 Chev.	13
AIWA		6231 Ch.528.62310	9	8 Nash	6	BAR-8209 68 Barracuda,		CTR-77A 57 Chev.	9
		6232 Ch.528.62320	9	8990378 76MA 57		Plymouth	60	CU-39	12
TP-718	48	6240 Ch.528.62400	5	Hudson & Nash	6	BP-340 60 Buick	14	CY-3010 63 Chevy II	23
		6256 Ch.528.55040/		8990455 7MR 57		BP-668 57-58 Buick	12	CY-4025 64 Chevy II	28
ALL AMERICAN		55041	11	Rambler	6	BP-679 59 Buick	13	CY-5006 65 Chevy II	29
CEP-764T 64		6263 Ch.528.6263	5	8990494 84MA 58		BP-3081 63 Buick	23	CYP-3009 63 Chevy II	23
Chevelle	31	6263-2 Ch.528.6263-2	5	Hudson,Nash &		BP-4030 64 Buick	28	CYP-4032 64 Chevy II	28
CHP-164T 64 Chev.	31	6264 Ch.528.6264	5	Rambler	8	BP-7160 66-67 Buick	62	CYP-5005 65 Chevy II	29
CHP-165T 65 Chev.	33	6264-1 Ch.528.6264-1	5	8990543 83MR 58		C-12	11	CYP-7158 66-67 Chevy	60
CHP-564T 64		6266 Ch.528.6266	5	Rambler	8	C-300	2	II	60
Chevy II	31	6268 Ch.62680/81	7	8990576 94MA 59		C-300 Rev. 40-50		D-2 59 Renault	
CTP-264T 64 Comet	31	6269 Ch.62690/91	7	Rambler	9	Chevy	6	Dauphine	12
CYP-465T 64 Chrysler	33	6284 Ch.528.6284	4	8990582 93MA 59		C-349 59 Chev.	11	D-8 59 Renault	
DAP-864T 64 Dart	31	6286-4 Ch.528.6286-4	4	Rambler	10	C-382AT	19	Dauphine	12
DAP-865T 64 Dart	33	6287-4 Ch.528.6287-4	4	8990706 04MA 60		C-382AT 62 Chev L.P.	24	DAD-6508 66 Dart	39
DOP-864T 64 Dodge	31	6295-6 Ch.528.6295-6	4	Rambler	11	C-338-C 58 Chev.	12	DAP-39 59 Dodge	13
DOP-865T 65 Dodge	33	6330 Ch.528.63300	5	8990811 03AR 60		C-3001 63 Chev.	23	DD-5125 65 Dart	30
FAP-264T 64 Falcon	31	750.62380/81/90/91,		Rambler	12	C-4049 64 Chev.	28	DD-5125N 65 Dart 270.	35
FLP-264T 64 Fairlane	31	833.5049	30	8990831 13MAM 60		C-4049N 64 Chev.	28	DD-6008 66 Dart	39
FOP-264T 64 Ford	31	833.50180B	31	Rambler	14	C-5003 65 Chev.	29	DDF-378 67 Dodge	61
FOP-265T 65 Ford	33	833.50181	27	8990832 13MA 60		C-5003N 65 Chev.	37	DE-3000 60 DeSoto	14
MEP-264T 63-64 Merc	31	833.50202	27	Rambler	14	C-6051 66 Chev.	39	DE-3077 63 Dart	22
MEP-265T 65 Merc	33	833.50490	30	8990833 14MR 61		CA-109 59 Chev.	11	DE-3078 63 Dart	22
PLP-464T 64 Plym.	31	833.50930	28	Rambler	15	CA-3041 63 Chev.	23	DEP-4154	27
PLP-465T 65 Plym.	33	833.50931 64 VW	28	8990981 2TMR 62		CA-4549 64 Chev.	28	DEP-4654	27
PLPF-465T 65 FURY	33	833.62741	32	Rambler	29	CA-4549N 64 Chev.	37	DEP-6204	57
RAAP-1065T 65		833.62743	32	ANGLIA		CA-5503N 65 Chev.	37	DET-28 57-58 DeSoto	9
Rambler American	33	833.62800	30	6BEF 66	39	CAE-3064 63 Olds	23	DFM-3095	26
RAP-364T 64 Rambler	26	833.63070	28	A.R.C.		CAP-49 59 Chev.	14	DHP-7133 67 Dodge Dart	62
RAP-365T 65 Rambler	33	833.500510 65 Chev.	32	2500	33	CAP-60 59-60 Chev.	14	DM-132 53 Dodge	5
SM-130RPE	26	833.501220	30	ARVIN		CAP-3042 63 Chev.	23	DMF-7372 67 Dodge	61
UP-220RPT	26	833.501230 65 Dart	30	60Y53-19 Ch.1.45701	67	CAP-4550 64 Chev.	28	DP-6 57-59 Renault	
VAP-464T 64 Valiant	31	833.501920 65 Comet	30	ATR KARADIO		CAP-4550N 64 Chev.	37	Dauphine	12
VAP-465T 65 Valiant	33	833.503050 65 Fury	30	BKS410 61-62 Buick		CAP-5504N 65 Chev.	37	DP-11 57-59 Renault	
VWP-19T 58-64 VW	26	833.503060 65		Special	27	CAP-6552 66 Chev.	39	Dauphine	12
VWP-19T 65 Prod VW	34	Belvedere	30	CT412 61-62 Chev.	27	CAV-4548 64 Chevelle	28	DP-3082 64 Dodge 880.	26
		833.623690	30	CR414 60-62 Corvair	27	CAF-119 English Ford		DP-4107 64 Dodge 880.	26
		833.624211 64 VW	28	COT416 60-62 Comet	27	Consuls	15	DP-5127N 65 Dodge 880.	
		833.624630	30	DED418 62 Dart	27	CET-6750	58	Polara,Monaco	35
		833.625510 65 Chev.	30	FAL420 60-62 Falcon	27	CET-6745	59	DP-8214 67-68 Polara,	
		833.627420	28	F0422 60-62 Ford	27	CFM-3090	22	Monaco	60
		833.628000	30	FR424 62 Lancer	27	CFM-3095	22	DRX-7117 66-67 Dodge	
		834.50480	32	LY426 62 Merc.	27	CFM-6255 66 Chev.	66	Charger	62
		835.62460	29	OE428 61-62 F-85	27	CM-333 53 Chev.	4	DTX-67A 57-58 Dodge	12
		856.62450	27	PH430 62 Plym.	27	CP-7217 67 Cougar	60	DTX-68 57-58 Dodge	12
		856.62470	52	PCT432 61-62 Tempest	27	CMR-7151 67 Camaro	60	DUP-42	20
				TR1720N	29	CMR-8252 67-68 Camaro	60	DUP-451	20
		AMERICAN MOTORS		TR1279-6V	11	CP-478-C 58 Chev.	12	DUP-4651	27
		(See Hudson,Nash & Rambler)		TR1279-12V	11	CP-489-F 59 Chev.	14	DUP-6202	57
		ABMG (8992290)		TT-727 Tractor Radio	29	CP-500 59-60 Chev.	14	DX-410 60 Dart,DeSoto,	
		68 Javelin	65	VT434 62 Valiant	27	CP-511AT 61 Chev.	16	Dodge	14
		AF6TMR page 120 66		401	27	CP-522AT	19	DX-619 59 Dodge	13
		Ambassador,Classic,		606	19	CP-522AT 62 Chev L.P.	24	DX-3013 63 Dodge	22
		Marlin	28	612	19	CP-3002 63 Chev.	23	DX-5121 65 Coronet	30
		AF7SMR 67 Ambassador,		707	22	CP-4050 64 Chev.	28	DX-5121N 65 Coronet	35
		Marlin,Rebel	44	1279-6V	11	CP-4050N 64 Chev.	37	DX-7111 66-67 Dodge	
		F8SMG (8992252)		1279-12V	11	CP-5004 65 Chev.	29	Coronet	62
		68 Javelin	68	1279-6V	11	CP-5004N 65 Chev.	37	DX-8212 68 Coronet	60
		F8SMR 68 Ambassador,		1279-12V	11	CP-6052 66 Chev.	39	DXA-50 60 Dart,DeSoto,	
		Rebel	63	AUDIO/STEREO		CP-8254T 68 Chev.	60	Dodge	14
		P7MA 67 Ambassador,		A-12	53	CPA-3047 63 Corvair	23	DXA-3053 63 Dodge	22
		Marlin,Rebel	47			CPA-4533 64 Corvair	28	EM-29	21
						CPV-4048 64 Chevelle	28	EP-108 58 Edsel	12
						CPV-5007 65 Chevelle	29	F-100 Rev. 49-50	
						CPV-7154 67-68		Ford	6
						Chevelle	71	F-128/C 58 Ford	12
						CPV-8256 68 Chevelle	60	F-139 59 Ford	11
						CR-3006 63 Corvair	23	F-151 Rev. 51 Ford	6
						CR-4034 64 Corvair	28	F-152 52 Ford	6
						CRA-3046 63 Corvair	23	F-241 54 Ford	6

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F-322A	19	MP-126	6	PPM-7366 67 Plymouth	61	TPP-87A 57 Plym.	13	2BCT R2BCT 62	
F-3016 63 Ford	23	MT-47C 57 Merc.	12	PS-4153	27	TPP-88 57-58 Plym.	13	Corvaire	19
F-4055 64 Ford	27	MT-419 E.P. 59 Merc.	11	PS-4653	27	TRP-88C 57-58 Plym.	13	3BCH 63 Chev.	21
F-5058N 65 Galaxie	36	MT-419 L.P. 59-60		PT-3025 63 Plym.	26	TR-12 Tractor	4	3BCH2 63 Chevy II	21
F-6105P 65/66		Merc.	14	PUT-3108	23	TR-13B	25	3BCT 63 Corvaire	21
Galaxie	40	MT-530 59-60 Merc.	14	PUT-3108A	28	TR-48AT	25	4TBC2 64 Chevy II	32
FA-219 59 Ford	11	MT-3023 63 Merc.	23	R-54,B	11	TR-0048	25	4TBC4 64 Corvaire	32
FA-3056 63 Ford	23	MT-4061 64 Merc.	27	R-61	20	TR-7281 Tractor	59	4TBCB 64 Chev.	32
FA-4555 64 Ford	27	MT-5073 65 Merc.	29	RAP-89 59 Rambler	13	TR-7390 Tractor	59	4TBCL 64 Chevelle	32
FA-6605P 65/66		MTR-602AT 62 Meteor	24	RAP-100 60 Rambler	13	TUN-5	15	4TBC4 64 Chev. Truck	32
Galaxie	40	MU-34	6	RAP-3070 63 Rambler	26	TU-6217	58	5BCC 65 Corvaire	31
FAL-4554	27	MUS-4067 64 Mustang	27	RAV-5403A/AB	57	UAF-6224	64	5BCH 65 Chev.	31
FAN-3058 63 Fairlane	23	MUS-5059 65 Mustang	29	RG-59	14	UE-4155A	28	5BCL 65 Chevelle	31
FAN-4551 64 Falcon	27	MUS-5059N 65 Mustang	36	RG-59C	14	UE-4171A	28	5TBC6 65 Chev. Truck	32
FAP-70 60 Ford	14	MUS-7209 67 Mustang	60	RMR-7280	63	UE-4655A	28	6BCC 66 Corvaire	38
FAP-4556 64 Ford	27	N-638 58-59 Rambler		RP-470 60 Rambler	13	UE-4671A	28	6BCH 66 Chev.	38
FAP-6606P 65/66		American	13	RP-481AT 60-61		UFM-3089	22	6BCL 66 Chevelle	38
Galaxie	40	N-639 58-59 Rambler		Rambler	16	UFM-6305	59	6BCT 66 Chev.Truck	38
FAR-762AT 62		American	13	RP-519 59 Rambler	13	UPF-3098	22	6BCC 66 Chevy II	38
Fairlane	24	N-3028 63 Rambler		RP-3030 63 Rambler	26	UN-40	12	7BCC 67 Corvaire	45
FAR-3018 63 Fairlane	23	American	23	RP-3097 63 Rambler	23	UP-6222	60	7BCL 67 Chevelle	45
FAR-4054 64 Fairlane	27	NA-749 58-59 Rambler		RP-5151 65 Rambler	29	VP-12	12	7BCT 67 Chev. Truck	45
FAR-7205 67 Fairlane	60	American	13	RP-8332M 67 Ambassador,		VPA-280 60 Valiant	15	7BCT 67 Chevy II	45
FFM-3091A 63 Ford	22	NA-3068 63 Rambler		Marlin, Rebel	55	VPA-3076 63 Valiant	22	7BCH 67 Chev.	45
FFM-6251 65-66		American	23	RT-7B	13	VSC-6767 67 VW	70	7BCH 67 Camaro	45
Galaxie	66	NAP-3069 63 Rambler		RT-7D	11	VT-5108 65 Valiant	30	7BCHX 67 Chev.	47
FM-61	14	NAP-3069 63 Rambler	23	RUV-5406	58	VTP-440 60 Valiant	15	7BCCX 67 Camaro	47
FM-731	6	NAY-3052 63 Chrysler	23	RVB-6782 (Echomate II)	71	VTP-3038 63 Valiant	22	8BDT 68 Dodge Truck	60
FM-3083	22	ND-8224 68 Chrysler		S-91 58-59 Simca		VTP-5107 65 Valiant	30	22B See MoPar 805	17
FM-3083A	27	300	60	Aronde	11	VTP-8208 68 Valiant	60	23BC See MoPar 327	17
FM-5099	32	NP-3029 63 Rambler		S-500 50-51		W-76 Thru 57 VW	12	23BD, 23BP, 23BPX	
FM-5099B	65	American	23	Studebaker	6	W-84 58-59 VW	23	See MoPar 322	17
FN-4051 64 Falcon	27	NP-5153 65 Rambler		S-551 Rev. 50-51		W-89 58-59 VW	12	24BC See MoPar 410	18
FNP-430 60 Falcon	14	American	29	Studebaker	6	W-3040 58-63 VW	23	24BI See MoPar 409	18
FNP-452AT 62 Falcon	23	NT-8222 68 Chrysler		SA-529 58-59 Simca		W-3040A 64 VW	28		
FNP-3015 63 Falcon	23	Newport	60	Aronde	11	W-5204 See Page 41		BLAUPUNKT	
FNP-3015A 63 Falcon	23	NU-63-AT	23	SAB-3071 63 Special	23	65 VW	28	Bremen Above Serial	
FNP-4052 64 Falcon	27	NU-3107	23	SB-3032 63 Special	23	WFM-5387 58-67 VW	54	#G14001	9
FNP-5051N 65 Falcon	36	NU-3107A	28	SBP-3033 63 Special	23	WP-4 58-59 VW	12	Derby 94770 Serial	
FNP-7203 67 Falcon	60	NVW-6238 65-67 VW 1600	54	SBP-4027 64 Buick		WP-7 Thru 57 VW	12	#V710001, Etc.	32
FOP-4528 64 F-85	28	NY-400 60 Chrysler	14	Spl.	28	WP-7C Karmann-Ghia	12	Exportsuper 33070	
FP-238 58 Ford	12	NY-598A 58 Chrysler	10	SBP-7168A 66-67 Buick		WP-19 58-59 VW	12	From Serial #U170001	33
FP-238C 58 Ford	12	NY-3012 63 Chrysler	23	Special	62	WP-21 58-63 VW	23	Exportsuper 33080 From	
FP-260 60 Ford	14	NY-3100 63 Chrysler		SEA-6801	72	WP-167	15	Serial #U50001	33
FP-271AT 60-61 Ford	16	New Yorker	26	SP-1 58-59 Simca		WP-3039 58-63 VW	23	Exportsuper 34150	
FP-276TR 59 Ford	11	NY-5101N 65 Chrysler	35	Aronde	11	WP-3093A 64 VW	28	Serial #V450001	26
FP-3017 63 Ford	23	NY-8220 68 Chrysler		SPA-209 58-59 Simca		WP-5203 See Page 41		Exportsuper 34750 From	
FP-4056 64 Ford	27	NY-8220 68 Chrysler	60	Aronde	11	65 VW	28	Serial #V765001	34
FP-5057N 65 Galaxie	36	OAE-10 60 Olds.	14	SPA-3072 63 Special	23	1300	57	Exportsuper 36350	
FP-6106P 65/66		OAE-4531 64 Olds.	28	SPA-4527 64 Buick		WPC-8 Thru 57 VW	12	Vienna Series X From	
Galaxie	40	OE-160 60 Olds.	14	Spl.	28	YAM-3050 63 Chevy II	23	Serial #X870001	42
FP-7207 67 Galaxie	60	OE-171AT 61 Olds.	16	TA-3073 63 F-85,		YAM-4525 64 Chevy II	28	Exportsuper 91220	
FPA-220 60 Falcon	14	OE-3024 63 Olds.	23	Tempest	23	YP-3049 63 Chevy II	23	Above Serial	
FPA-3055 63 Falcon	23	OE-4031 64 Olds.	28	TAC-3051 63 Chev.		YP-4532 64 Chevy II	28	#E160001	18
FPA-3057 63 Ford	23	OE-5031 65 Olds.	29	Truck	22	AUTO-SONIC		Frankfurt	8
FPA-4552 64 Falcon	27	OE-7162 67 Oldsmobile	60	TAC-4541 64 Chev.		KS-830	59	Frankfurt US From	
FPF-4557 64 Falcon	27	P-69	20	Truck	28	ST-300	55	Serial #V510001	27
FPO-4028 64 F-85	28	P-651 Rev. 51 Plym.	6	TAC-5514N 65 Chev.		ST-308	53	Frankfurt 3798 Above	
FPO-5033 65 F-85	29	P-4152	27	Truck	37	ST-400	60	Serial #Q553083	14
FT-227 57 Ford	12	P-4652	27	TAP-3074 63 F-85,		ST-808	63	Frankfurt US 9798 Above	15
FTM-7218 64-67		P-5040 65 Pontiac	29	Tempest	23	603M/48	53	Series X	43
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FTP-37A 57 Ford	9	PA-85	23	TAX-4542 64 Chev.		OC-401	27	Koln	8
FUP-3080 63 Falcon		PA-3065 63 Plym.	26	Truck	28	RA-107	17	Koln 3898 Above Serial	
Futura	23	PA-3285	23	TAX-5513N 65 Chev.		RA-115	17	#Q310001	16
FUP-4057 64 Falcon	27	PAC-90 60 Pontiac	14	Truck	37	RA-164	27	KV810	17
GES-6394-PAK/-T	71	PAC-3067 63 Pontiac	23	TC-3035 63 F-85,		RA-441	27	Manhattan 35150	
GES-8111-1-PAK	71	PAC-4529 64 Pontiac	28	Tempest	23	RA-443	27	Series W	43
H-4 58 Hillman	12	PAF-4340	29	TCM-3011 63 Chev.		TR-222 Auto/Portable	16	Manhattan 34150	
H-9 58 Hillman	12	PAP-69 59 Plym.	15	Truck	22	TR-231 Transmobile 3	19	Serial #V450001	26
H-400 49-50-51		PAP-80 60 Plym.	15	TCM-4041 64 Chev.		Europa MU	8	Manhattan 90220	17
Hudson	6	PAP-3066 63 Plym.	22	Truck	28	Europa MUK	8	New Yorker 34750 From	
HP-10 58 Hillman	12	PC-350 60 Olds.	14	TCM-5014 65 Chev.		Mexico TG/MU	20	Serial #V765001	19
HP-15 58 Hillman	12	PC-361AT 61 Pontiac	16	Truck	29	Monte Carlo	17	New Yorker-Series X	
K-700 51 Henry J	6	PC-3027 63 Pontiac	23	TCM-5014N 65 Chev.		Monte Carlo M	18	From Serial	
L-390 59-60		PC-4029 64 Pontiac	28	Truck	37	BENDIX		#X1485001	46
Studebaker Lark	14	PC-5041 65 Pontiac	29	TCX-4042 64 Chev.		R2BG See Karmann Ghia		Vienna	26
L-559 E.P. 59		PC-7165 67 Pontiac	62	Truck	28	2 BG	18	Wolfsburg 9160 Above	
Studebaker Lark	11	PFM-3092A 63 Pontiac	22	TCX-5013 65 Chev.		R2BT See VW 2BT	18	Serial #G450001	9
L-559 L.P. 59-60		PFM-3094 63 Plym.	22	Truck	29	R2BV See VW 2BV	18	3598	13
Studebaker Lark	14	PFM-6257 66 Pontiac	66	TCX-5013N 65 Chev.		R12BP 61 Chev.	16	9280	13
LA-449 59 Studebaker		PFX-5109 65 Fury	30	Truck	37	R12BPC 61 Corvaire	16	BORG-WARNER	
Lark	11	PFX-5109N 65 Fury	35	TCX-8274 67-68 Chev.	60	R22BA See American	18	P6MW	53
LAP-29 59 Studebaker		PFX-7105 67 Plymouth		TDM-1257 64-69		Motors 22BAM	18	3800 (P7MWD)	61
Lark	11	Fury	62	Dodge Truck	64	R22BAX See American	18	4000 - Mark II (P7MW2)	62
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LP-929 59 Studebaker		PM-236 53 Plym.	5	Olds. F-85,Pontiac		Motors 22BAX	18	BRITISH MOTORS CORP.	
Lark	11	PP-330 60 Plym.	15	Tempest	16	X2BB Shipmate III	19	6SMB 66 Austin Healey	
MAP-99 E.P. 59 Merc.	11	PP-341AT 61 Plym.	16	TPC-31AT 63 F-85,		2BC R2BC 62 Chev.	19	3000, Mark III, Sprite,	
MAP-99 L.P. 60 Merc.	14	PP-819 59 Plym.	15	Tempest	23			MGB, MG Midget and	
MAP-3063 63 Merc.	23	PP-3026 63 Plym.	22	TPC-42AT 63 F-85,				MG-1100	53
MAP-4561 64 Merc.	27	PP-5105 65 Belvedere	30	Tempest	23				
MB-72	30	PP-5105N 65		TPC-3036 63 F-85,					
MEL-6740	69	Belvedere	35	Tempest	23				
MM-430 53 Merc.	4	PP-7103 66-67		TPC-4026 64 Tempest	28				
MNE-6725	68	Belvedere,Satellite	60	TPC-7170 66-67 Pontiac					
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		Satellite	60						

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75MB 67 Austin Healey	7302534 68 Buick & Riviera	985227 62 Truck	987893 59	35RA2-43-5101A	5
3000, Mark III, Sprite, MGB, MG Midget and MG-1100	7302544 68 Buick, Riviera	985264 62	988062 60 Corvaire	CORTINA	
BUICK	7303994 51	985315 62 Corvaire	988080 60 Truck	6BEF 66	39
94AFP1 (7306914)	7304884, A 68 Buick, Riviera, Special	985332 62	988275 60	7BEFX 67 Cortina	50
69 Special	CADILLAC	985383 62 Corvete	988276 60	CORVAIR (See Chevrolet)	
94APB1 67 Special	95CFM2 69	985396 63 Corvete	988336 61 Truck Series	CORVETTE (See Chevrolet)	
94BFM1/EFM1 69 Buick, Riviera	95CFM3 69	985431 63	95	CRAIG	
94BFM2/EFM269 Buick, Riviera	95CMP11 69	985432 63	988413 61	3104	54
94BPP1 (7306934)	95CT411 (731205) 69	985443 63 Corvaire	988414 61	3110/A	55
69 Buick	95CT412 (731205) 69 1/2	Truck	988460 61 Corvaire	DART (See Mopar or Dodge)	
94BPB1 69 Buick	95CNB1/2 (7307205) 69	985449 63 Corvaire	988468 61 Corvaire	DELRAY	
94BPB2 69 Buick	7264165, 7264185 54	985453 63 Chevy II	3711897 55 Corvete	SM-711	22
94BT411 69 Riviera, Special	7265825, 7265845 55	985455 63 Chevy II	3725156 56-57	SM-751	22
94BT412 69 1/2	7266505, 7266535 56	985471 63 Truck	Corvete	TRM-701	22
Riviera, Special	7268005 57	985672 64 Chev.	3748611 58 Corvete	UA-702	22
94EFP1 (7306964)	7268035 57 Ambulance	Truck	7296341 986731 66	UM-701	22
69 Riviera	7268085 58 Brougham	985831 64 Corvaire	Caprice	VWA-702	22
94EPB1 69 Riviera	7270405 58	985832 64 Corvaire	7296351 986644 FM	VWM-701	22
94EPB2 69 Riviera	7270555 58 Ambulance	985875 64 Chev.	Stereo	DESOTO (See MoPar)	
980051 60	7272505 59	985876 64	7297901 68 Camaro	DODGE (Also See Mopar)	
980052 60	7274905 60	985877 64 Chev.	7297950 67 Chev.	248 (8BDA) (9BDA)	
980132 61 Special	7274925 60, 75 Series	985815 64 Corvaire	Truck	68/69 Dart	57
980134 61	7276605 61	Truck	7299111 68 Corvaire	252 (8BCC) (9BCC)	
980135 61	7279615 62	985831 64 Corvaire	7299561 66 Caprice	68/69 Coronet	57
980296 62	7281225 62	985875 64 Chev.	7300471 67 Chev.	256 (8BDC) (9BCC)	
980297 62	7282315 63	985876 64	7300481 67 Chev., Chev., Corvaire	68/69 Charger	57
980316 62 Special	7283295 63	985877 64 Chev.	Chevelle, Corvaire	388 (8FBCO) 68 Coronet, Charger	58
980462 63	7286315 L.P. 63-64	985916 64 Chev. Van	7300491 67 Chev.	397 (8FBDA) 68 Dart	58
980463 63	7290255 65	985921 64 Corvete	7300941 67 Chev., Camaro, Chev., Corvaire	706A 68 Dodge Truck	60
980464 L.P. 63	7290545 65	985957 64 Chevy II	7301001 67 Camaro	8FBDD 68 Dodge	58
980464A L.P. 63	7293015 66 Cadillac	985958 64 Chevy II	7301001 68 Camaro	2864766 (394) 68	
980626 63	7293025 66 Cadillac	986096 65 Chev.	7301001 68 Camaro	Monaco, Polara	54
980635 63	7293905 990553 66	986099 65 Chev.	7302451 68 Chevy II	2864796 (392) 68	
980649 64 Buick Spl	7293915 990552 66	986101 65 Chev.	7302721 68 Corvete	Charger, Coronet	54
980655 63 Special	7298465 67 Cadillac	986113 65 Corvaire	7303121 68 Chevelle	2884064 (389) 68	
980657 64	7298475 67 Cadillac	986113 66 Corvaire	7303131 68 Chevelle	Charger	51
980659 64	7298485 67 Cadillac	986116 65 Corvaire	7303201 68 Corvete	2884067 (253) 68	
980869 65 Buick	7298485 68 Cadillac	986116 66 Corvaire	7303211 68 Corvete	Monaco, Polara	52
981320 53, Series 40	7303215 68 Cadillac	986118 65 Corvaire	7303231 68 Chev.	2884068 (395) 68	
981321 53, Series 50 & 70	CHANNEL MASTER	986168 66 Corvaire	7303241 68 Camaro	Monaco, Polara	51
981323 53, Series 50 & 70	6540	986201 65 Chevelle	7303311 68 Chev.	2884128 (255)	
981550 54, Series 40, 50 & 70	6541	986202 65 Chevelle	7304161 68 Camaro	69 Monaco, Polara	68
981551 54, Series 40, 50 & 70	6542	986203 65 Chevelle	7304611 68 Chev.	2884285 (327) 69	
981651 55 See Model	6543	986248 65 Chevy II	7304621 68 Chevelle	Monaco, Polara	63
981550	CHEVELLE (See Chevrolet)	986250 65 Chevy II	7305201 68 Camaro	3420559 (1DP2902)	69 Polara
981652 55	CHEVROLET	986252 65 Chevy II	7305211 68 Camaro	DUO-VOX	
981707 56	01BPB1/2 (7313091) 70, 70	986257 66 Chevelle	7305221 68 Camaro	AM-8	37
981708 56	81AT412 68 Chevelle, Chevy II	986528 66 Chevelle	7305301/A 68 Chevelle, Chevy II	AM10	33
981813 57	81AT422 68 Chevelle	986529 66 Chevelle	Chevy II	AMF-16B	28
981814 57	91AMP11 69 Chevelle	986544 66 Chev.	7305311 68 Chevelle	EDSEL	
981902 58	91APB1 69 Chevelle, Camaro, Chevy II, Acadian	986545 66 Chev.	7305441 67 Chev.	04BE COKF-18805, COKF-18806	12
981903 58	91BMP11 69 Camaro, Chevy II, Acadian	986546 66 Chev.	7305451 68 Chev.	855E 58	8
981968 59	91BFP1 69 Camaro, Chevy II, Acadian	986668 53	7306121 68 Chev.	875E 58	8
981969 59	91BFP1 69 Camaro, Chevy II, Acadian	986669 53	7306361 68 Chevelle	94BE B9KF-18805-D/18806-C 59	10
981970 59	91BMP11 69 Chev.	986769 66 Chev. Truck	7307121 68 Chev. Truck	ERIC	
7285424 65 Buick	91BMP21 69 Camaro, Chevy II, Acadian	986771 54 Truck	7307801 (Similar to page 51)	FM-100	18
7285444 65 Riviera	91BPP1 69 Camaro, Chevy II, Acadian	986771 66 Chev. Truck	7307811 (Similar to page 41)	F-85 (See Oldsmobile)	
7288794 65 Riviera	91BPP1 69 Camaro, Chevy II, Acadian	986823 67 Camaro	7307821 (Similar to page 41)	FALCON (See Ford)	
7289714 65 Special	91BPP1 69 Camaro, Chevy II, Acadian	986824 67 Camaro	7307831 (Similar to page 22)	FIRESTONE	
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7289754 65 Buick	91BPP1 69 Camaro, Chevy II, Acadian	986845 67 Chev.	7307851 (Similar to page 41)	3-D-6 Code 120-1-R61	21
7289774 65 Buick	91BPP1 69 Camaro, Chevy II, Acadian	986846 67 Chev.	7307861 (Similar to page 22)	3-D-6 Code 120-3-P69	21
7293604 981059 66 Buick Spl	91BPP1 69 Camaro, Chevy II, Acadian	986847/A 67 Chev.	382 68 Chrysler	3-D-6A	27
7293614 66 Buick	91BPP1 69 Camaro, Chevy II, Acadian	986852 67 Chevelle	723 68 Chrysler	3-D-7 Code 120-3-DUP-42	21
7293634 66 Buick	91BPP1 69 Camaro, Chevy II, Acadian	986853 67 Chevelle	724 68 Chrysler	3-D-8	23
7293644 66 Buick	91BPP1 69 Camaro, Chevy II, Acadian	986854 67 Chevelle	2820635 (376) 68	3-D-15	27
7293654 66 Buick	91BPP1 69 Camaro, Chevy II, Acadian	986863 67 Corvaire	2864924 (393) 68	4-B-69 Tractor	5
7293674 66 Buick	91BPP1 69 Camaro, Chevy II, Acadian	986864 67 Corvaire	2884286 (328)	4-B-71 53 Plym.	4
7293684 66 Buick	91BPP1 69 Camaro, Chevy II, Acadian	986865 67 Corvaire	69 Chrysler	4-B-72 53 Chev.	4
7293914 66 Special	91BPP1 69 Camaro, Chevy II, Acadian	986868 67 Chevy II	2884633 (B9MC)	4-B-74 54 Ford	5
7297944 66 Buick	91BPP1 69 Camaro, Chevy II, Acadian	986869 67 Chevy II	69 Coronet, Charger, Belvedere, Satellite	4-B-76 55 Ford	6
7298904 67 Special	91BPP1 69 Camaro, Chevy II, Acadian	987086 55	69 Corvete		
7298914 67 Special	91BPP1 69 Camaro, Chevy II, Acadian	987087 55	3420560 (1CH2901)		
7298924 67 Buick	91BPP1 69 Camaro, Chevy II, Acadian	987088 55	69 Chrysler		
7298934 67 Buick	91BPP1 69 Camaro, Chevy II, Acadian	987187 55 Truck			
7298944 67 Buick	91BPP1 69 Camaro, Chevy II, Acadian	987366 56 See Model			
7298954 67 Riviera	91BPP1 69 Camaro, Chevy II, Acadian	987088			
7298964 67 Riviera	91BPP1 69 Camaro, Chevy II, Acadian	987368 56			
7298974 67 Riviera	91BPP1 69 Camaro, Chevy II, Acadian	987573 57			
7302504 68 Special	91BPP1 69 Camaro, Chevy II, Acadian	987575 57			
7302514 68 Special	91BPP1 69 Camaro, Chevy II, Acadian	987575 57			
7302524 981314 68 Buick, Riviera	91BPP1 69 Camaro, Chevy II, Acadian	987577 57			
7302524-B 68 Buick	91BPP1 69 Camaro, Chevy II, Acadian	987577 57			
	91BPP1 69 Camaro, Chevy II, Acadian	987724 58			
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	91BPP1 69 Camaro, Chevy II, Acadian	987730 58			
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4-B-77 55 Chev.	5	STBU 65 Econoline	33	91TPB1 69 Truck	59	IL7TC/-12 57 "R"		F6TDC 66 Lincoln	40
4-B-78 55 Plym.	6	STMF 65 Galaxie	28	96TTC1 (7305516)		Line Truck	7	F8TBC (C8VY-18805B)68	71
FO-MO-CO (See Ford, Lincoln, Mercury)		STMZ 65 Mustang	28	69 Truck	69	P6MH 1000A,1500A,CO-4000,Fleetstar,Load-Star,Metro,R&V Line		F8TBC 68 Mark X	61
FORD (Also See Philco-Ford)		STMS,STMSF 65 T-Bird	28	2233398 12V Truck	9	Scout	47	F14TBC 64	25
D8MF 68 Falcon, Fairlane	53	STPD 65 Falcon	28	2233850 60 GMC	13	04M1 61 Scout & "C"		TOB5TBC 65	33
D9MF (C9AA-19A237-B)		STPO 65 Fairlane	28	2233944 61 GMC	16	Line Truck	16	T6SMC 66 Continental	36
69 Galaxie, LTD	65	STPZ 65 Mustang	28	2233984 62 GMC	18	04M1-RV 61 "R" & "V"		T7SMC 67 Lincoln	45
F3TBF 63 Galaxie	20	6BF 56	6	2234003 63 Truck	20	Line Truck	16	T7SMK/C 67 Lincoln	45
F3TBS 63 T-Bird	20	6BFT 56 Truck	6	2234040 64 Truck	24	3TMI	24	T8ML 68 Lincoln	52
F4TBF 64 Galaxie	24	6TBB 66 L.P.,67	36	2234086 64 Truck	24	SSM1 65 Truck	34	T8MX 68	54
F4TBS 64 T-Bird	24	Bronco	41	7291556 65 Truck	29	SSM1-RV 65 Truck	34	T9ML 69 Lincoln	64
F5TBF 65 Galaxie	32	6TBB 67 1/2 & 69	36	7291576 65 Truck	29	SSM1/T 65 Truck	34	T9MX 69 Mark III	
F6TBD 66 Fairlane	39	Bronco	59	7293806 66 GMC Truck	36	7BT Tractor	42	(C9LY-18805-B)	66
F6TBF 66 Galaxie	39	6TBF 66 Galaxie	34	7293806 67 Truck	44	7BTX Tractor	51	05BH 60	12
F6TBZ 66 Mustang	39	6TBT 66 Truck	36	7293816 66 Truck	36	86M1 58 "A" Line		35H756 53	4
F7TBF 67 Galaxie	46	6TBT 66 L.P.,67	36	7297526 66 Truck	36	Truck	8	45H764 54	4
F7TBS 67 T-Bird	46	6TBT 67 1/2 & 69	41	7297526 67 GM Truck	44	94M1 59 "R" & "V"		45H766 54	4
F7TBZ 67 Mustang	46	Truck L & H Series	59	7298501 67 GM Truck	44	Line Truck	11	4TMC F 64Continental	23
F8TBF 68 Galaxie	54	6TBU 66 Econoline	36	7305516 69 Truck	69	94MIM 59 "A" Line		5BH 55	5
F8TBO 68 Fairlane, Falcon	54	6TBU 66 L.P.,67	36	7305841 68 GM Truck	51	Truck	10	5TMC F 65 Continental	28
F8TBS 68 T-Bird	58	Econoline	41	7306686 68 GMC Truck	51	JACOBSEN		6BC 56	6
F8TBZ 68 Mustang	54	6TBW 66 L.P.,67 "W"	41	7306696 68 GMC Truck	51	7BT	45	6BH 56	6
F9BZ 69 Mustang	64	Series	41	GONSET		7BTX	52	6TDC 66 Lincoln	37
M7TB 67 Galaxie, Mustang	46	6TBW 67 1/2 & 69	59	3239	9	J&EP		8TBC 68	60
M7TBS 67 T-Bird	46	W Series	59	GRANCO		U7MK (978238) 68	65	8TPX 68 Mark III	59
RV2F	19	6TMF 66 Galaxie	36	ARC-60	15	3TBW 63 Jeep	22	9BL 69	60
RV4D 65 Ford	30	6TPD 66 Falcon	36	HEATH		6BKJ 66 Jeep	39	9FBL (C9VA-19A241)	69.71
RV4D-NS 65 Ford	30	6TPF 66 Galaxie	36	GR-41	22	5BW 65	44	9FBLU (C9VA-19A246)	69.71
RV4F 64 Ford	24	6TPP 66 Galaxie	36	GRW-41	22	7BKJ Similar to P.32.	45	9MABL (C9VA-19A099)	
RV6F 75 65/66 Ford	30	6TPO 66 Fairlane	36	HITACHI		7BKJX 67 Wagoneer,		68-69	71
TOB5TBS 65 T-Bird	32	7TPS 67 T-Bird	41	TM-816U	37	Jeepster	56	78BL 57	7
TOB6TBS 66 T-Bird	39	7TPZ 67 Mustang	41	KM1001	38	8BKJ 68	69	85BH 58	8
T6SMF 68 Galaxie	35	8TBT 68 Truck	56	HOFFMAN		12BW	16	85BHP Above Serial	
T6SMS 66 T-Bird	35	8TBTLM 68 Truck	56	769	28	815395	9	#5000 58	9
T6SMZ 66 Mustang	35	8TBTU 68 Econoline	56	769 Revised	31	JOHN DEERE		88BH 58	8
T7SMF 67 Galaxie	45	8TMC 68 Galaxie	52	HUDSON		5SMJD	53	95BH 59	9
T7SMH/A 67 Fairlane, Falcon	45	9FBO 69 Fairlane,	64	(Also See American Motors)		7BT Tractor	43	MACK	
T7SMH/F 67 Mustang	45	9FBZ 69 Mustang	64	236476 SH759 53	4	7BTX Tractor	49	U3MMT Truck	32
T7SMH/N 67 Fairlane, Falcon	45	12BD 61 Falcon	14	236486,238060 SH758	4	KARADIO		U5MMT 204SX28	47
T7SMS 67 T-Bird	45	12BF 61	14	4389027 HNSAC-8 55	6	M80B	4	MACK	
T7SMZ 67 Mustang	45	12BT 61 Truck	14	IMPERIAL (Also See Mopar)		5SMKW Truck	39	U3MMT Truck	32
T8MF 68 Galaxie	51	12BU 61 Econoline	14	724 68 Imperial	55	6SMKW Trucks	48	U5MMT 204SX28	47
T8MS 68	53	14BF 61 Ford	30	746 68 Imperial	55	KINEMATIX		MASTERWORK	
T8MZ 68 Mustang	51	14BM 61 Merc.	30	786 68 Imperial		Verba-Matix	27	N8200	72
T9MS (69 Thunderbird)	62	22BD 62 Falcon	18	Similar to page 75	47	Verba-Mite VX-700	42	MERCURY	
(C9SA-19A242-B)		22BO 62 Fairlane	18	2580 786 68 Imperial		LAFAYETTE		(Also See Philco-Ford)	
T9MZ 69 Mustang	66	24MF 62	17	(Similar to page 75)	47	SP-172 FM-100	14	D8MF 68 Comet	53
(C9ZA-19A242-B)		66MFP 56	6	2820275 (419) 67	43	99-8519	68	STBM 65 Merc.	28
(C9ZZ-18805-B)	66	69MFP 56	6	2864724 68	55	LANCER (See Mopar)		E6TBM 66 Merc.	35
04BF 60 E.V.	12	69MS 56	6	2864746 (382) 68	55	LARK (See Studebaker)		EF6TBM 66 Merc.	38
04BF L.P. 60 Ford	30	74BF 57	8	2864966 (391) 68	50	LEAR JET		F3TBM 63	21
04BT 60 Truck	12	74BT 57 Truck	9	2884 288 (403)		A-219 (Similar to page 77)	58	F4TBE 64 Comet	24
04MD 60 Falcon	12	74MF 57	8	69 Imperial	69	A-229 (Similar to page 73)	55	F4TBM 64 Merc.	24
04MF 60	12	75BF 57	7	INLAND		A-239 (Similar to page 38)	56	F5TBE 65 Comet	34
04MFM 60	12	75MF 57	7	AFM-602	41	A-250	72	F5TBM 65 Merc.	34
1TMC 61 Continental	15	76MF SR 57	8	AFM-603	52	A-269B	65	F6TBC 66 Comet	38
1TMS 61 T-Bird	15	78MF 57	7	PA-700	49	AS-830-H	54	F6TBM 66 Merc.	38
2TBO 62 Fairlane	19	78MF 57	7	V102	41	AS-831	58	F7TBC 67 Comet	47
2TMF 62	18	79MS 57 T-Bird	7	V302	41	ASFM-830-H	54	F7TBM 67 Merc.	47
2TMX 62	18	84BF 58	8	VWX101	41	ASFM-871	56	F8TBM 68 Merc.	56
3MF 53	4	84BT 58 Truck	9	VWV502	42	ASR-830-H	44	F8TBO 68 Comet	56
3MFT 53 Truck	4	84MF 58	8	VWX101	41	ASR-851	55	F9BZ 69 Cougar	64
3SF755 53	4	84MS 58 T-Bird	9	VWX101	41	LINCOLN		M7TB 67 Comet,Cougar, Merc.	47
3TBD 63 Falcon	19	86MF 58	8	VWX-103	48	D8ML 68 Lincoln	56	M-5841 58	9
3TBO 63 Fairlane	19	94BF 59	10	VWX502	42	F3TBC 63	21	T6SMN 66 Merc.	35
3TMF 63 Galaxie	23	94BT 59 Truck	11	X100	27	F4TBC 64	25	T7SMH/A 67 Comet	45
4BF 54 See Model M4B.	4	94MF 59	10	X101	27	Model 35H756		T7SMH/F 67 Cougar,	
4MF 54	4	94MFM 59	10	X101	27	T7SMI/N 67 Comet	45	Merc.	45
4SF765 54	5	94MS 59 T-Bird	11	X102	41	T7SMN 67 Merc.	45	T8ML 68 Lincoln	52
4TBD 64 Falcon	23	95MF 59	10	X-103	48	T8MX 68	54	T8MZ 68 Mustang	51
4TBO 64 Fairlane	23	GIBBS		X302	41	T8MZ 68	54	T9ML 69 Lincoln	64
4TBT 64 Truck	26	CR-332A/B/C	71	XFM-400	41	T9MX 69 Mark III		(C9LY-18805-B)	66
4TBU 64 Econoline	26	CR-335B/337B	71	INTERNATIONAL		05BH 60	12	35H756 53	4
4TBZ 64/65 Mustang	32	CR-627	70	ILSTCA/-12 55 "R"		35H756 53	4	45H764 54	4
4TMF 64 Galaxie	23	CR-630	70	Line Truck	6	45H766 54	4	4TMC F 64Continental	23
4TMS	23	440	27			4TMC F 65 Continental	28	5BH 55	5
4TMS F 64 T-Bird	23	441	27			5TMC F 65 Continental	28	6BH 56	6
5BF 55	5	442	27			6BC 56	6	6TDC 66 Lincoln	37
5MF 55	5	445	28			6BH 56	6	8TBC 68	60
5MFS,5MFS8 55 T-Bird.	5	446	28			8TPX 68 Mark III	59	9BL 69	60
5MF8 55	5	550	37			9FBL (C9VA-19A241)	69.71	9FBLU (C9VA-19A246)	69.71
5TBF 65 Galaxie	28	551	37			9MABL (C9VA-19A099)		68-69	71
5TBO 65 Fairlane	28	551-6	37			78BL 57	7	78BL 57	7
5TBT 65 Truck	33	552	37			85BH 58	8	85BHP Above Serial	
		553	37			#5000 58	9	#5000 58	9
						88BH 58	8	88BH 58	8
						95BH 59	9	95BH 59	9

MERCURY (CONT.)	VOL.	MOPAR (CONT.)	VOL.	MOPAR (CONT.)	VOL.	MOPAR (CONT.)	VOL.	MOTOROLA (CONT.)	VOL.
4TBM 64 Merc.	23	214 3BVD 63 Valiant		370 7FBD 67 Dodge	48	852 58 Dodge LD-1/-2/		CT4FM 64 Chev.	26
4TME 64 Comet	23	TV1	19	372 5FBVE See Page 86		-3	8	CT4FMC 64 Chev.	34
5BM 55 See Lincoln		215 3BLE 63 Dart TLL.	19	65 Plymouth	30	854 58 Plym. LP-1/-2	9	CT52M6 51-52 Chev.	5
Model SBH	5	216 63 Plym.	22	373 5FBL See Page 86		855 P-5901 59 Plym	11	CT65A 65 Chevrolet	32
5TBM 65 Merc.	28	217 63 Dodge	22	65 Dart	30	856 59 Dodge MD1/2/3	10	CT65M 65 Chevrolet	32
5TPE 65 Comet	28	218 4TBVE 64 Valiant.	24	374 7FBPD 67 Plym.	48	857 59 Desoto MS1/2/3	10	CT66A 66 Chevrolet	38
6BM 56	6	219 64 Dodge VD1/2	23	375 7FBC 67 Chrysler	48	858 94BC 59 Chrysler	10	CT66M 66 Chevrolet	39
6BMS 56	6	220 64 Plym. VP1/2	23	376 7BC 67 Chrysler	42	860 59 Plym. MP1/2	12	CT67A 67 Chevrolet	44
6TMM 66 Merc.	35	221 4TBLH 64 Dart	24	377 7BDD 67 Dodge		861 59 Chrysler Export	12	CT68A 68 Chevrolet	56
6TPG 66 Merc.	37	222 5BVE 65 Valiant	28	DeLuxe	42	900 55 Dodge D-55/-56	5	CT69A 69 Chevrolet	69
7TBM	42	223 65 Dodge Dart	28	378 7BDD 67 Dodge	48	901 55 Desoto S-21/-22	5	CTA3 53 Chevrolet	4
7TPG 67 Comet/Cougar	41	224 5BP 65 Plym.Std	28	379 6FBL 66 Dart	36	902 55 Chrysler	5	CTA4 54 Chevrolet	6
8TBM 68	55	225 5BPD 65 Plym.		381 67 Charger	43	903 55 Chrysler	5	CTA5 55 Chevrolet	6
9BM 69	68	Deluxe	28	385 7FBVA 67 Barracuda,		910/HR 56 Dodge D-62/		CTA6T 55-56 Chevrolet	6
9FBO 69 Montego	64	226 65 Dodge Coronet.	28	Dart, Valiant	48	-63	6	CTA6X 55-56 Chevrolet	7
9FBZ 69 Cougar	64	228 6BVE 66 Valiant	37	402 04BC 60 Chrysler	13	911 65 Desoto S-23/-24	6	CTA7X 57 Chevrolet	7
22BM 62	18	229 6BL 66 Dart	37	403 04BI 60 Imperial	13	912/HR 56 Chrysler	7	CTA8X 58 Chevrolet	9
		230 6BP 66 Plym.	37	404 14BI 61 Imperial	15	916/HR 56 Plym. P-28/		CTA9X 59 Chevrolet	10
		231 7BP 67 Plym.	42	407 14BC 61 Chrysler	15	-29	7	CTA61 61 Chevrolet	15
		231 6BPD 66 Fury	37	409 24BI 62 Imperial		917HR 57 Plymouth	8	CTA62 62 Chevrolet	18
		232 66 Coronet BW1/2.	35	SY1	18	918 57 Dodge D-66/-67/		CTA63 63 Chevrolet	22
		233 66 Charger BW29	35	410 24BC 62 Chrysler		-70/-71/-72	7	CTA64 64 Chevrolet	24
		234 6BVS 66 Valiant	37	SC1/2/3	18	919/HR 57 Desoto S-25/		CTM3 53 Chevrolet	5
		235S 66 Polara,Custom		411 34BCS 63		-26/-27	7	CTM4/A 54 Chevrolet	6
		880, Monaco BD2	35	Chrysler	20	920HR 57 Chrysler	8	CTM6 55-56 Chevrolet	6
		236 7BVE 67 Valiant	42	413 34BI 63 Imperial		921HR 57 Imperial	8	CTM7X 57 Chevrolet	7
		237 67 Dart	43	TY1	20	922 85BC 58 Chrysler	9	CTM8X 58 Chevrolet	9
		240 67 Fury	43	414 44BI 64 Imperial	24	923 58 Desoto L-51/		CTM9X 59 Chevrolet	10
		241 7BD 67 Dodge	42	415 44BCS 64		-52/-53	9	CTM57X 57 Chevrolet	9
		301 PP1/2 60 Plym.	14	Chrysler	24	924HR	9	CTM61X/A 61 Chevrolet	16
		302 PD1/2/3/4 60 Dodge	13	416 65 Chrysler	31	925 58 Plym. LP-1/-2	9	CTM62 61-62 Chevrolet	19
		303 03BC 60 Chrysler.	13	416B 66 Chrysler	39	927 59 Desoto MS-1/-2/		CTM63 63 Chevrolet	22
		304 03BS 60 Desoto	13	417 65 Imperial	31	-3	11	CTM64 64 Chevrolet	25
		305 03BD 60 Dodge	13	417B 66 Imperial	39	928 R95BC-S 59		CY65A 62-65 Chevy II	32
		306 13BD 61 Dodge	16	418 67 Imperial	47	Chrysler	10	CY65M 62-65 Chevy II	33
		309 RP1/2 61 Plym.	16	419 67 Imperial	43	929 C-5909 59 Imperial		CY66A 66 Chevy II	38
		310 Export Version of		420 66 Imperial	40	MY-1	11	CY67A 67 Chevy II	44
		Model 301	14	421 67 Chrysler	43			CY68A 68 Chevy II	56
		311 Export Versions		608 53 Plym. P24	4			CY69A 69 Chevy II	69
		of Model 309	16	609 53 Dodge Model				CYA62 62 Chevy II	20
		312 13BS 1961 Desoto.	16	D-44/-46/-47/-48	4			CYA63 61-63 Chevy II	22
		313 60 Valiant	14	610T 53 Dodge Truck,				CYA64 62-64 Chevy II	25
		314L Export Version of		Series B-3/-4	4			CYM62 62 Chevy II	19
		Model 114	16	611T 54 Dodge Truck,				CYM63 62-63 Chevy II	22
		314V Export Version of		Series C See Model				CYM64 62-64 Chevy II	25
		Model 113	16	610T	4			FM65M	35
		317 13BC 61 Chrysler.	15	612 54 Dodge D-40/-51/				FM67M	45
		322 SP1/2 62 Plym.	17	52/-53 See Model 609	4			FM68M	59
		323 SD1/2 62 Dart	17	613 55 Plym. P-26/-2	5			FM106M	40
		324 Export SP1/2 62		614 55 Dodge D-55/-56	5			FM108M	55
		Plym.	17	620 56 Plym. P-28/-29	7			FM200A	34
		327 SC1/2/3 62		621 56 Dodge D-62/-63	7			FM210A	72
		Chrysler	17	624 57 Dodge D-66/-67/				FM9-900	14
		330 63 Plym.	21	-70/-71/-72	8			FM990X	47
		331 63 Dodge	21	700 58 Dodge Truck	8			FM991X	60
		332 63 Dodge 880	21	700 Rev. 60 Dodge				FMA-100	26
		333 63 Chrysler	21	Truck	14			FMC62	19
		334 4TBQ 64 Dodge880.	24	701 59 Simca	12			GMT3A6 48-53 Chev/GMC	Truck
		335 64 Plym.	25	703 R12BDT 61 Dodge				GMT53A6 48-53 Chev/GMC	Truck
		336 64 Dodge	25	Truck	16			GV-701	11
		337 63 Valiant	22	706 64 Dodge Truck	26			GV-800	9
		339 63 Dodge Dart	22	706 5TBDT Similar to				HF3A6 51-53 Henry J	5
		343 R3BC 63 Chrysler		page 64 65 Dodge Truck	26			HN2A6 51-52 Hudson	5
		TC1/2/3	19	706 7BDT 67 Dodge				HN3A6 51-53 Hudson	5
		344 63 Dodge	22	Truck	44			except Hudson Jet	5
		345 63 Plym.	22	819 53 Plymouth	4			HN4A6 54 Hudson	5
		347 R23BDQ 62 Dodge		820 53 Dodge	4			HN4M6 54 Hudson	5
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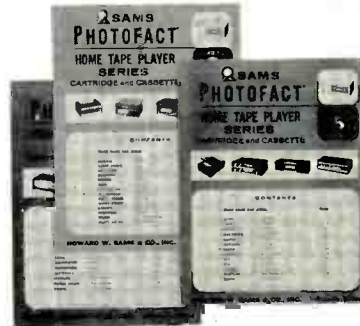
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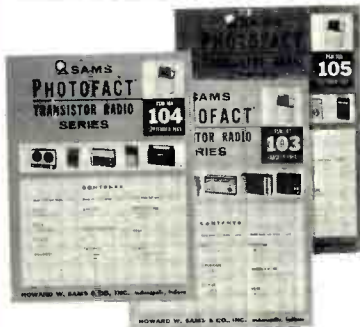
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