

SAMS PHOTOFACT[®]

AUTO RADIO SERIES



AR-71
71
JANUARY 1970



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AUTOMATIC

Chevelle (67-68)
CPV-7154

CADILLAC

(69) 95CT411
(7311205)
(69 ½) 95CT412
(7311205)

LINCOLN

(68) F8TBC
(C8VY-18805B5)

LINCOLN (Cont.)

(69) 9FBL
(C9VA-19A241)
(69) 9FBLU
(C9VA-19A246)
(68-69) 9MABL
(C9VA-19A099)

OLDSMOBILE

(69) 93BPB1, 93BPB2
(7307303)
Toronado (69) 93EPB1
(7308203)

UNIVERSAL

Automatic GES-6394-PAK,
GES-6394-T,
GES-8111-1-PAK
RVB-6782 (Echomate II)
Gibbs CR-332A, CR-332B,
CR-332C, CR-335B,
CR-337B
Motorola TM8A, TM299M
Truetone MIC5056A-96
MID5056A-07 (DC-5056)

\$3.25
\$4.10 IN CANADA
Cat. No. AR-71



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AUTO RADIO SERIES

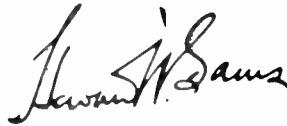


VOLUME

71



by the



ENGINEERING STAFF



HOWARD W. SAMS & CO., INC.

INDIANAPOLIS INDIANA

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AUTO RADIO SERIES
VOLUME 71

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REMOVAL INSTRUCTIONS

GENERAL REMOVAL INFORMATION

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

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

CHEVELLE - 1967-68

- Step 1. Remove ash tray and ash-tray housing.
- Step 2. Remove lower part of A.C. Duct.
- Step 3. Disconnect speaker connection and antenna lead.
- Step 4. Remove knobs, control bushing nuts, and screw from side brace.
- Step 5. Remove radio from under dash.

SPEAKER REMOVAL

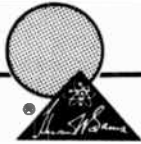
See Chevrolet Dealer as there are Critical Torques involved in Steering Column Replacement.

LINCOLN - 1968-69

- Step 1. Remove 8 screws from lower instrument panel cover and drop cover down.
- Step 2. Follow steps 1 thru 4 of General Removal Information.

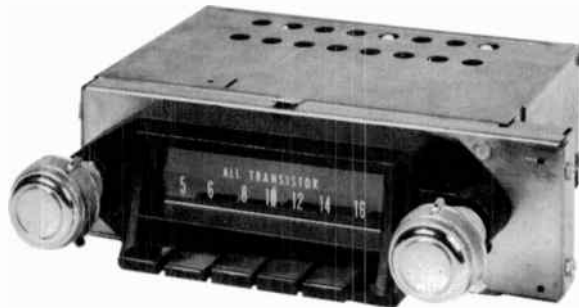
OLDSMOBILE - Oldsmobile - Toronado - 1969

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



PHOTOFACT®

For Supplier Address See PHOTOFACT Index



AUTOMATIC MODEL CPV-7154
(67-68 Chevelle)

ALIGNMENT INSTRUCTIONS

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

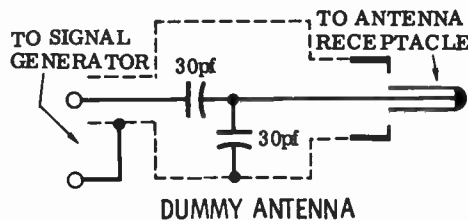
A1 thru A7...GENERAL CEMENT #9440
WALSCO #2501

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	"

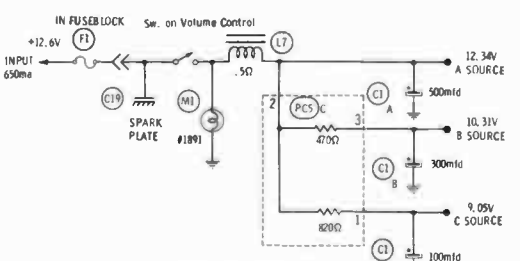
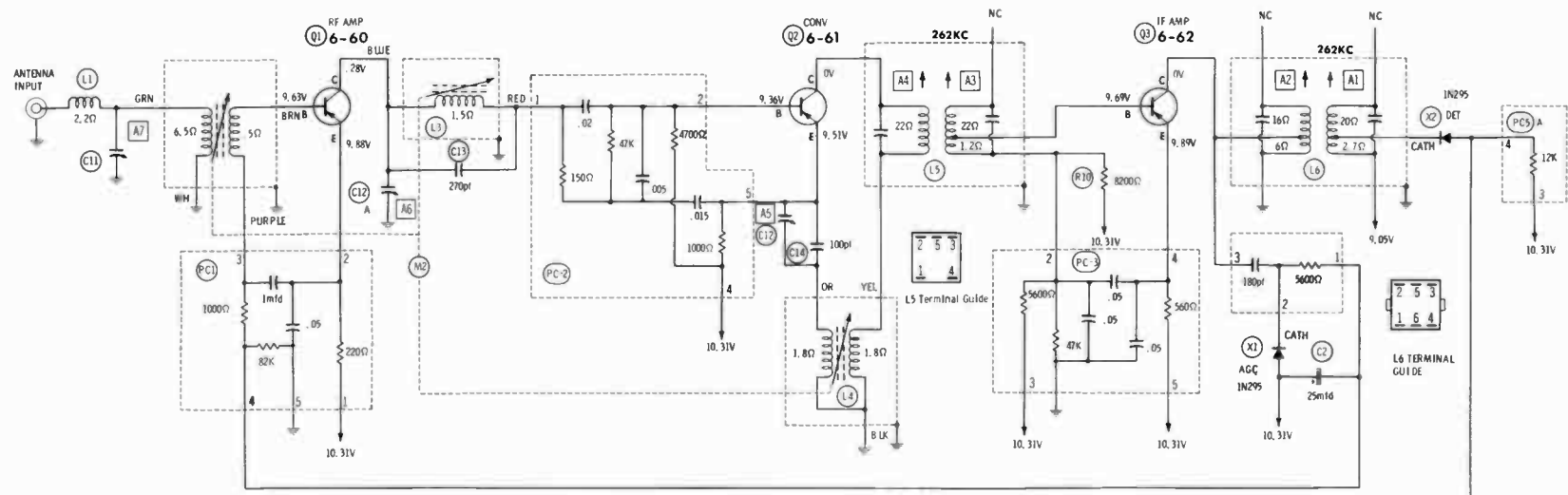
With radio installed in car and antenna extended to desired height, tune in a weak station near 1400KC and adjust A7 for maximum output. Antenna adjustment (A7) is located on right side in front of antenna input.



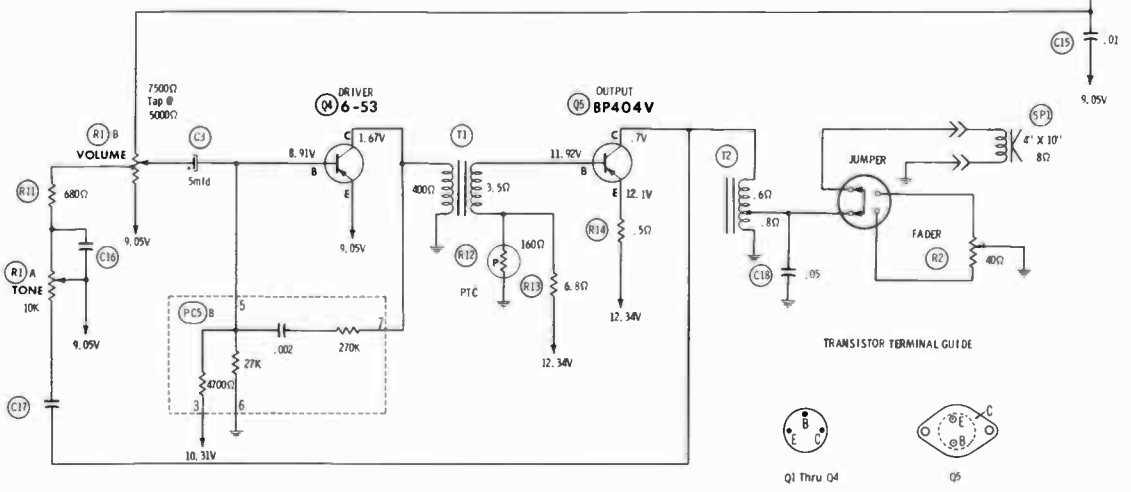
AUTOMATIC MODEL CPV-7154

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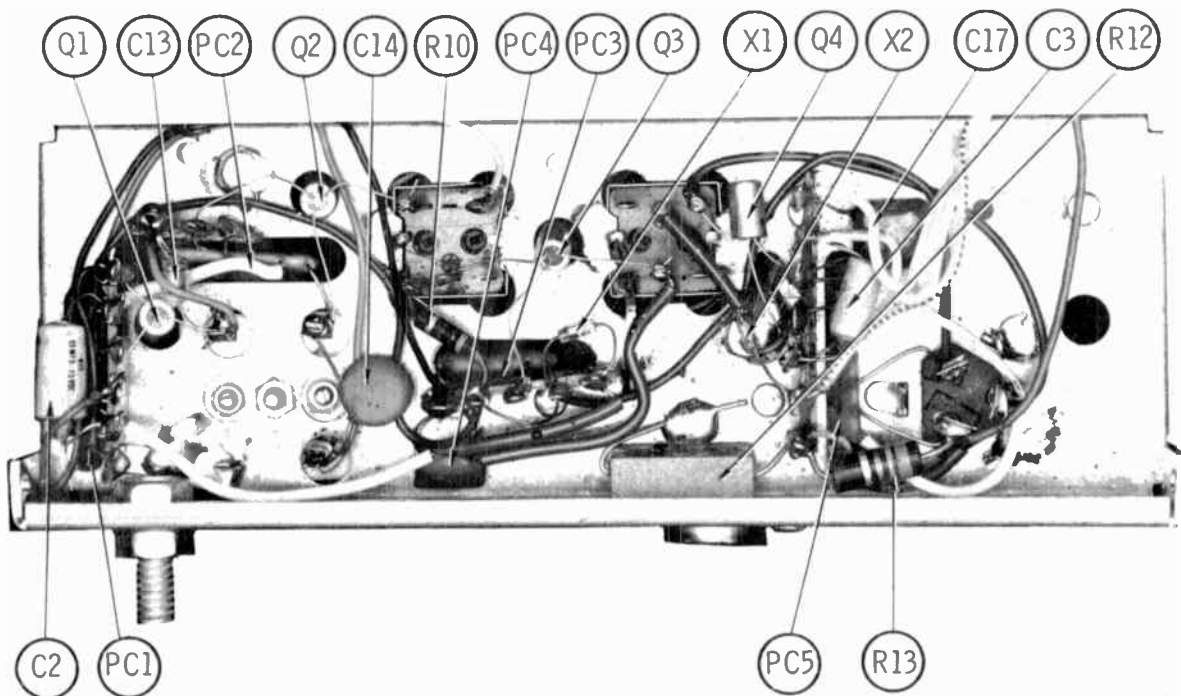
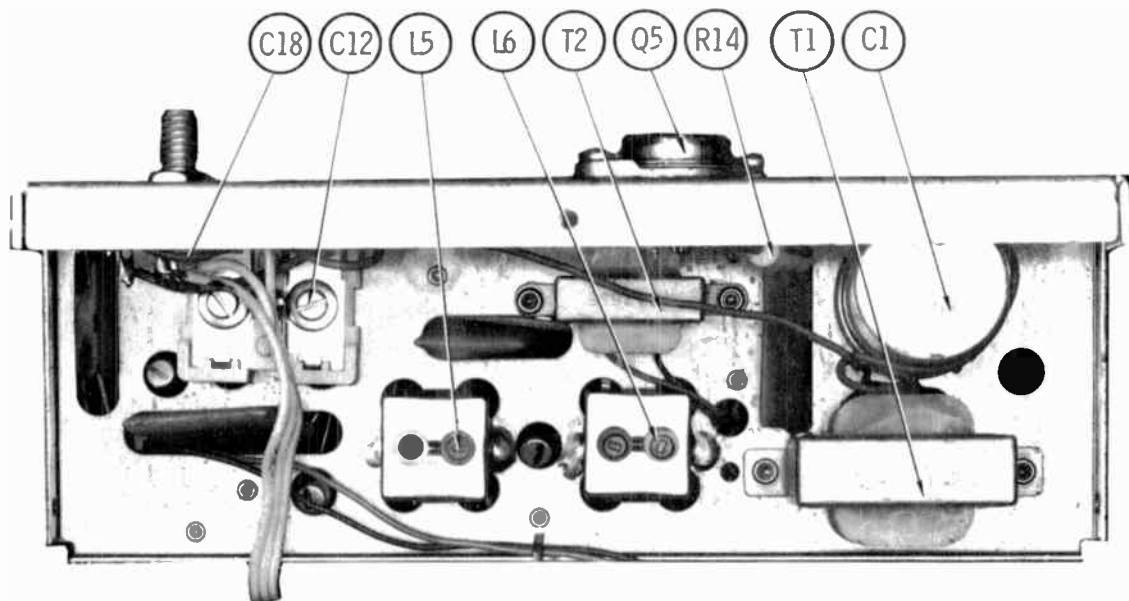
Resistors are 1/2W or less, 10% or 20% unless otherwise indicated. Supply voltage maintained at rated value for measurements. Voltage and resistance measured with VTVM or equivalent meter, no signal applied and controls adjusted for normal operation. Controls viewed from actuator end. Arrow indicates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



TRANSISTOR TERMINAL GUIDE

A PHOTOFACIT STANDARD NOTATION SCHEMATIC
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AUTOMATIC MODEL CPV-7154



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	6-60	RF Amp		GE-9	TR-17	HEP253	SK3008	ECG 126
Q2	6-61	Converter		GE-9	TR-17	HEP253	SK3008	ECG 126
Q3	6-62	IF Amp		GE-9	TR-17	HEP253	SK3008	ECG 126
Q4	6-53	Driver		GE-2	TR-05	HEP254	SK3004	ECG 102
Q5	8P404V	Output *		GE-3	TR-01	HEP232	SK3009	ECG 104

* 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	1N295	1N295	1N295	ECG 109		
X2	1N295	1N295	1N295	ECG 109		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		AUTOMATIC 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	20A2653	AFH3-00-94.5		CC0018A	XC3-48.1	FP300.83	TVL-3026.18
B	300 16V							
C	100 16V							
C2	25 15V	20-256	PTT117	EA15-25	AL25-16	MT1-10	MTA25D20	TL-1157.1
C3	5 15V	20-505	PTT112	EA15-5	WBR5-150	MT1-3	MTA5D50	TE-1152

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		#28-800-2L						
C12A		#28A1332						
B								
C13	270			CPR-270J	CD15F271K500	DM-15-271	SX327	MS-327
C14	100 N750		N750-DI 100	DTN-100	CX601UJ101K	CCTN-101	CN7310	10TCU-T10
C15	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C16	.22			UK224	HCZ3R0XR224P		MAG3022	HY-125
C17	.1		TTP-1	CK-104			TA010	TG-P10
C18	.05		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C19		#43-215						

Automatic 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	10K	80A2772A	F1-10K, R14-7500,		(1) QJ-1821A	P14L, 4178,
B	Volume/Switch	7500 Tap @ 5000		FFS201, RFS209, BB114, KR-4			RU752753, OX2000, IS2437, US41
R2	Fader	40, 2W	81A3916			(2) QJ-1820A	

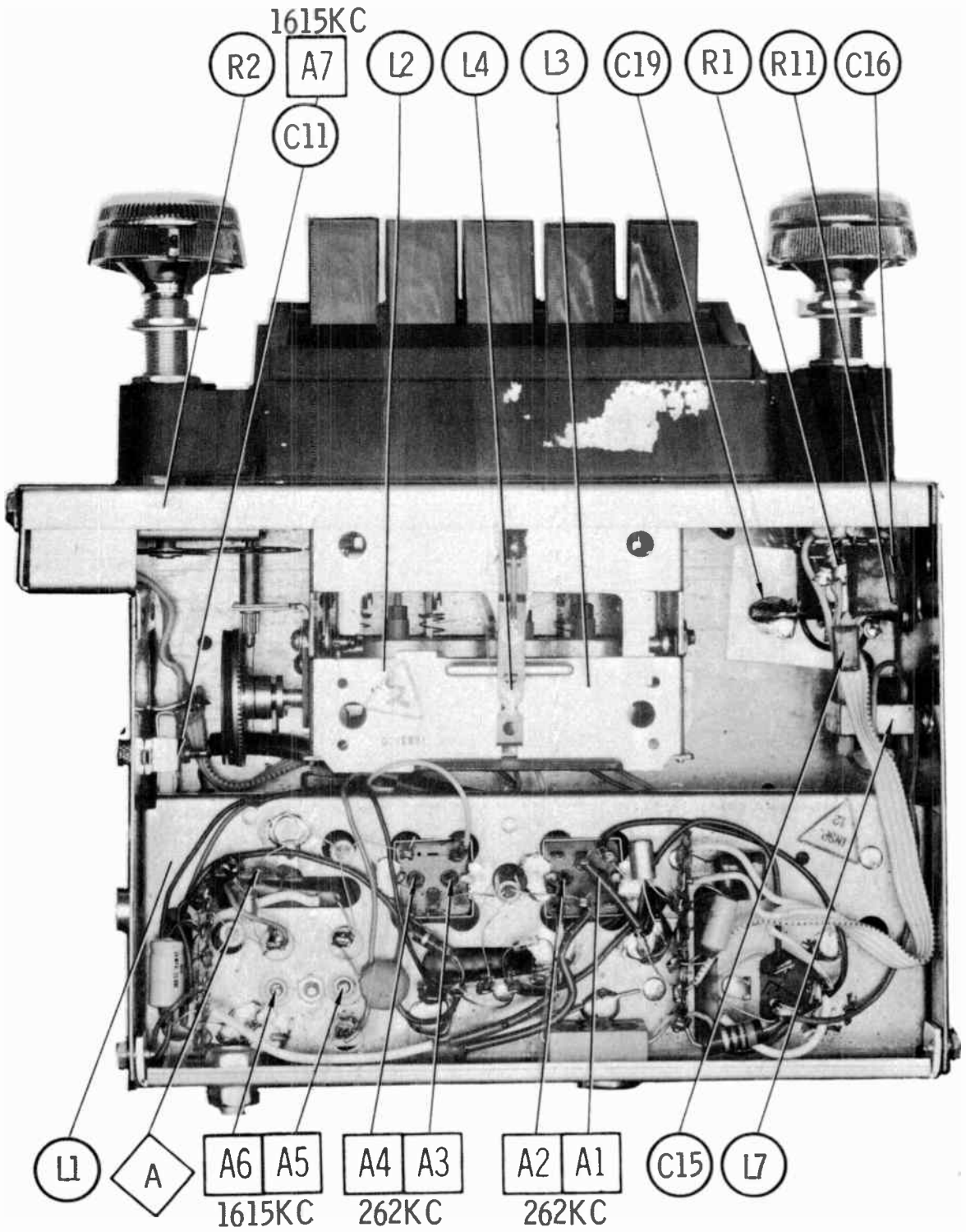
(1) "CONCENTRIKIT" Equivalent: K-8 Kit with Base elements & Shafts: B11-116, P13-200 (Panel), B21-115X, R26-215 (Rear), S9 (Bushing), 76-1 (Switch)

"SNAPTROL" Equivalent: BU8, CF9, CR48T, SF18, SR53, GC.

(2) "SNAPTROL" Equivalent: BU9 (3), WF18, SF16

(3) Alter Bushing to meet requirements.

(CONTINUED ON PAGE 10)



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.	MFGR. PART No.
R12	160 (PTC)			61-161-5S

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (6.2uh)	14-5.2	19-1004	4610	T859
L2	Antenna	(1)			
L3	RF	(1)			
L4	Osc.	(1)			TF606
L5	Input IF	14-3233A	16-6718	6570	
L6	Output IF	14-3234A	16-6718	6571	

(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	650ma	.5	10mh	75A3082	C-4095	TC-2	TR-155	TY17XT	

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		75A2635			TR-184		

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.	
T2	24 Tap @	8				TR-169		

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA			NOTES
		PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4" x 10" PM 8 ohms	73B4628		410A2Z8	

FUSE DEVICES

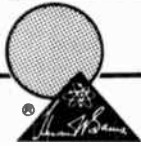
ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	AGC 3 Amp	108-303	In Fuse Block	AGC3		312003		

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1 M2	Dial Lamp Tuner	78B3800	#1891

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

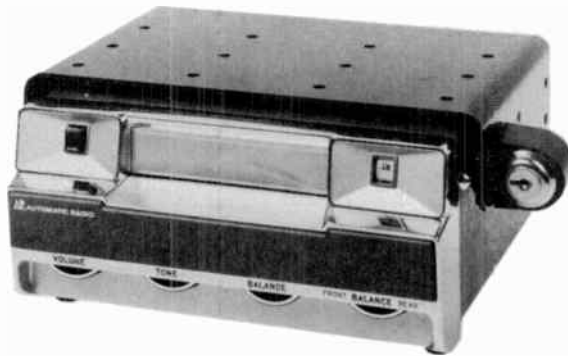
ITEM	PART No.	ITEM	PART No.
Knob, Tuning or Volume	48A5155	Knob, Tone or Dummy	48A5093



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index



AUTOMATIC MODELS GES-6394-PAK
GES-6394-T
GES-8111-1-PAK
(8-Track Stereo Player)

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 alcohol. Use alcohol to remove oil and grease from all driving surfaces.

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.

AUTOMATIC MODELS GES-6394-PAK/-T/8111-1-PAK

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

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TQ694

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.
Indicator Drum	Loosen setscrew in Clamp (5) and position Clamp (5) until the clamp pawl is 1/64 inch beyond anti-backlash spring when solenoid is energized.

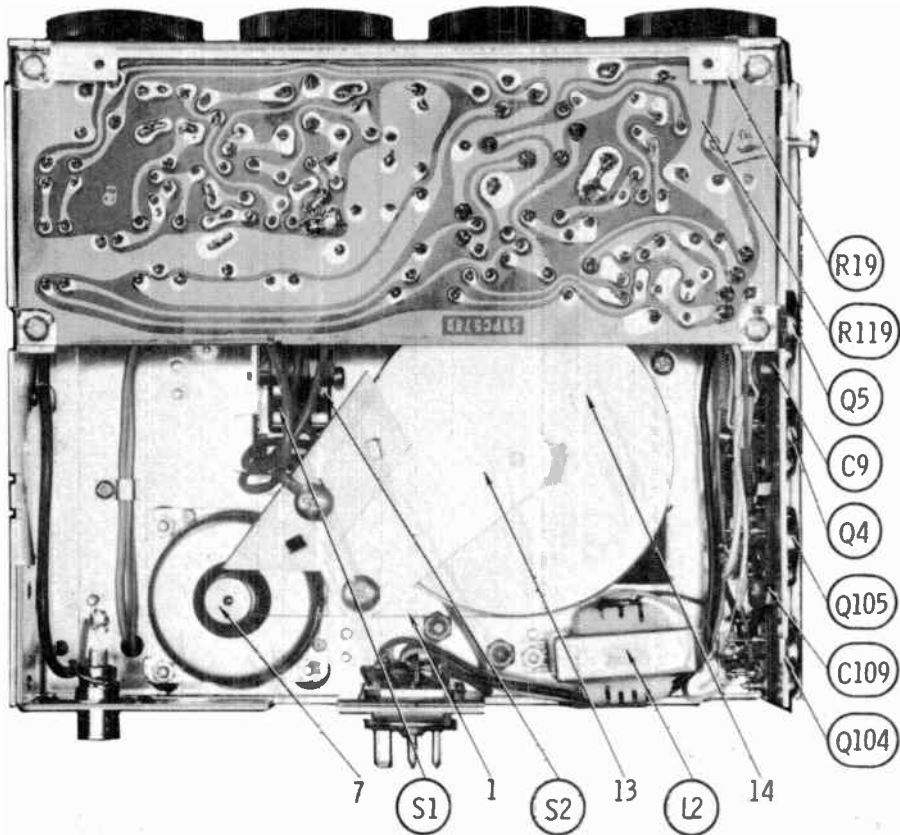
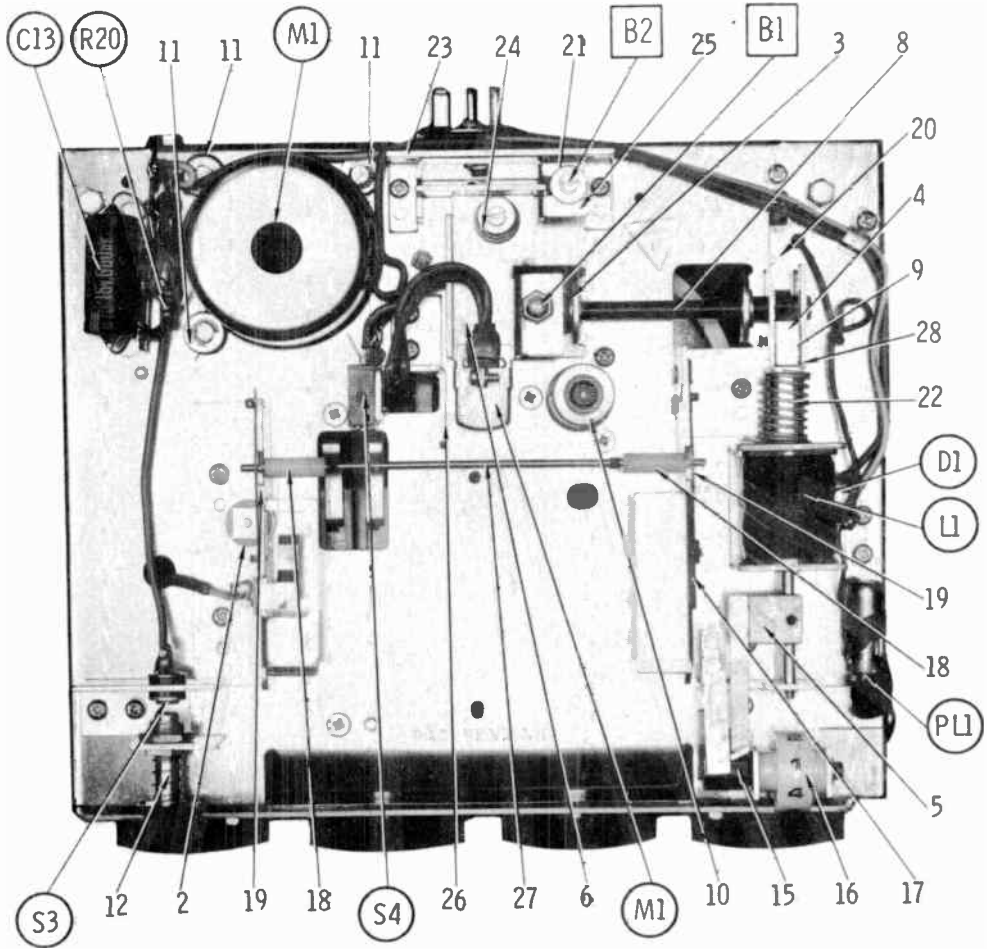
TROUBLE CHART

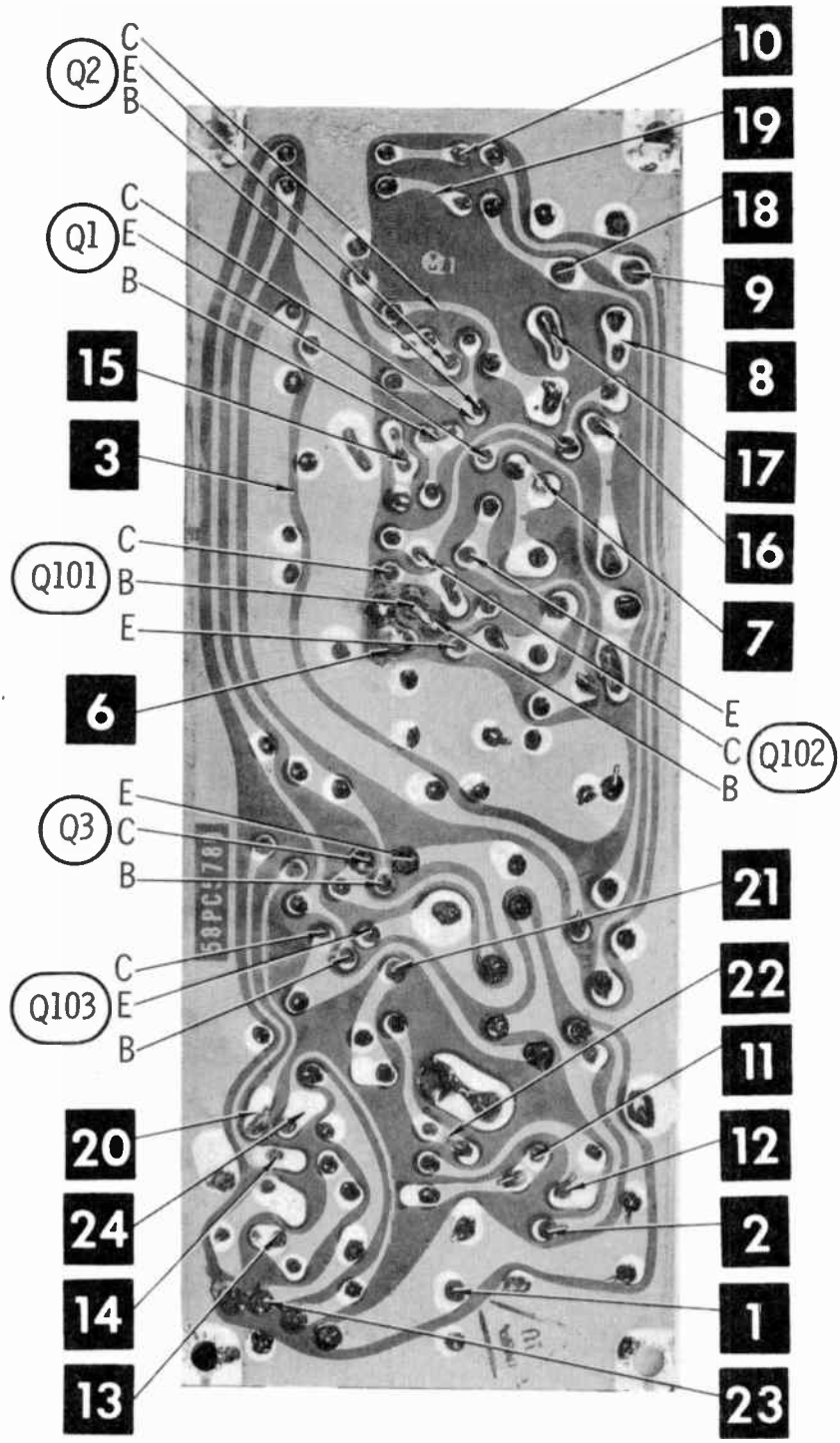
SYMPTOM	REMARKS
Capstan does not rotate.	Belt (1) dirty, worn, or broken. Assembly (10) binding. Motor defective or not supplied with power.
Track-shift mechanism inoperative.	Switch (S2) dirty Cam (3) binding or worn. Pawl (4) worn. Arm (6) binding. Solenoid (L1) defective or not supplied with power. 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

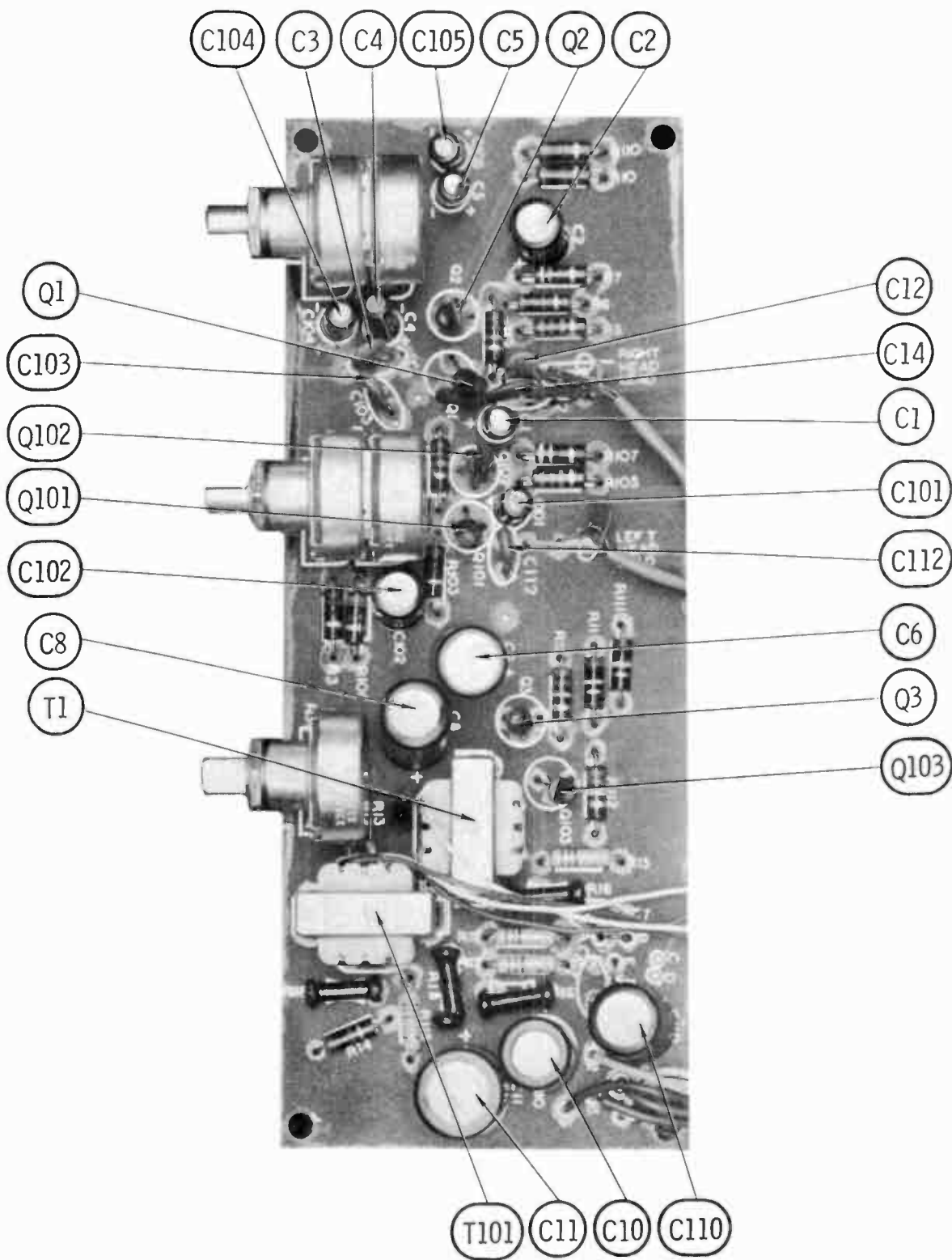
REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	55D5043	Drive Belt	15	135A11352	Indicator Ratchet
2	67A11381 (69A4894)	Guide Roller		(69A4961)	
3	69A11349 (54D4889)	Track Selector Cam	16	135A11353	Indicator Drum
4	69A11369 (54A4928)	Track Shift Pawl	17	135A11355	Cartridge Lock Assembly
5	69A11364 (135A5015)	Pawl Clamp	18	135A11359	Cartridge Holder Roller (2 Used)
6	52A11375 (52A4934)	Head Bracket Assembly	19	45A11360	Holder Shaft Spring (2 Used)
7	69A11341 (69A5412)	Motor Pulley	20	52A11361 (52A4962)	Cam Ratchet Stopper
8	135A11351 (69A4890)	Bearing and Cam Ratchet	21	45A11362 (45A5012)	Azimuth Set Spring
9	45A11368 (52A4965)	Pawl Spring	22	45A11367 (45A5544)	Solenoid Spring
10	135A11347 (51A4799)	Capstan Housing Assembly	23	52A11372 (52A4933)	Azimuth Mounting Bracket
11	67A11336	Rubber Cushion (3 Used)	24	45A11373 (45A5547)	Head Lift Spring
12	130A11337 (69A4993)	Manual Plunger Assembly	25	52A11374 (52A4936)	Azimuth Adjust Bracket
13	52A11345 (52A4551)	Flywheel Plate	26	135A11377 (52A4964)	Tape Guide
14	54A11346 (54A5045)	Flywheel	27	135A11378	Cartridge Holder Shaft
			28	135A11370 (69A5039)	Pawl Shaft

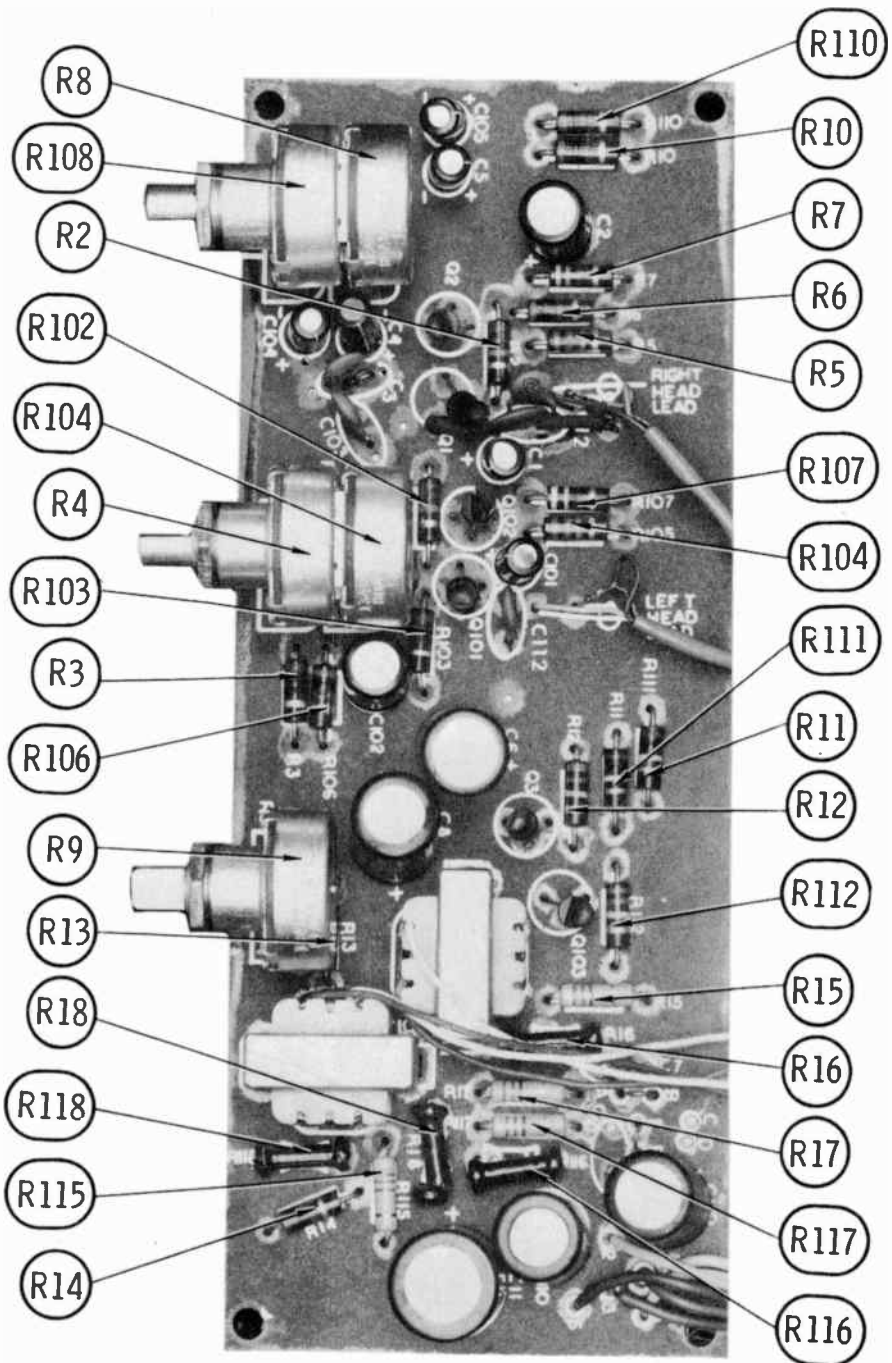
NOTE: Number in parentheses used in Model GES-6394-PAK.





A Howard W. Sams **CIRCUITRACE** Photo





PARTS LIST AND DESCRIPTION

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

Replacement parts shown may be superseded by the availability of newly introduced replacements.

Have your local distributor check Sams COUNTER FACTS[®] for the most up-to-date replacement.

TRANSISTORS

ITEM No.	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	SE-4010	Preamp		GE-20	TR-21	HEP55	SK3020	ECG 123
Q2	SE-4010	Preamp		GE-20	TR-21	HEP55	SK3020	ECG 123
Q3	SE-6002	Driver		GE-20	TR-21	HEP721	SK3020	ECG 123
Q4	2N4241	Output (1)		GE-13MP*	TR-01	HEP230	SK3013*	ECG 144MP*
Q5	2N4241	Output (1)			TR-01	HEP230		
Q101	SE-4010	Preamp		GE-20	TR-21	HEP55	SK3020	ECG 123
Q102	SE-4010	Preamp		GE-20	TR-21	HEP55	SK3020	ECG 123
Q103	SE-6002	Driver		GE-20	TR-21	HEP721	SK3020	ECG 123
Q104	2N4241	Output (1)		GE-13MP*	TR-01	HEP230	SK3013*	ECG 104MP*
Q105	2N4241	Output (1)			TR-01	HEP230		

(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.	
D1	1SD2	GE-504A	5A4-D	ECG 116		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		AUTOMATIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	10 15V	20P106-15	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C2	200 6V	20P207-6	BCD6200	EA6-250	PC200-16	MT1-23	MTV200CK10	TE-1104
C4	10 15V	20P106-15	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C5	10 15V	20P106-15	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C6	500 15V	20P507-15	BCD15500	EA15-500	PC500-16	Q11-30A	MTV500DN15	TL-1166
C8	500 15V	20P507-15	BCD15500	EA15-500	PC500-16	Q11-30A	MTV500DN15	TL-1166
C10	500 15V	20P507-15	BCD15500	EA15-500	PC500-16	Q11-30A	MTV500DN15	TL-1166
C11	1000 15V	20P108-15	PRS1230	EA15-1000	MBR1000-16	Q11-32	TC1501A	TL-1166.5
C13	500 15V		PRS1220	EA15-500	MBR500-35	Q11-30A	TC1505A	TL-1166
C101	10 15V	20P106-15	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C102	200 6V	20P207-6	BCD6200	EA6-250	PC200-16	MT1-23	MTV200CK10	TE-1104
C104	10 15V	20P106-15	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C105	10 15V	20P106-15	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C110	500 15V	20P507-15	BCD15500	EA15-500	PC500-16	Q11-30A	MTV500DN15	TL-1166

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENDO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.039	50		DD-403	MGP05	CCD-503	GP140	TGL-550
C9	.05	51	TTP-05	CK-503	CK-503	CCD-102	TA150	2SS-010
C12	.001	35	GPD X5F102K	DM-102	GP1000	CCTN-101	SM210	10TCU-T10
C14	100 N750		N750-DI 100	DTN-100	N100		CN7310	
C103	.039	50		DD-403			GP140	
C109	.05	51	TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-550
C112	.001	35	GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-010

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.	
R4 R104	Tone (Right) Tone (Left)	10K 10K	80A5860 (1)	F2-10K, R2-10K, BA006(3), CA005, SF012, CPL-2			QCB1(3)(4), B13-116, B13-116, TMS, QCM, QCN or [BU3(3), CF61, CR62, SS1, SS7A, DC1, QCN]*	P14A, SH3250, 3012, RU14A, CS3500
R8 R108	Tone Volume (Right) Volume (Left)	10K 10K 10K	80A4834 (2) 80A5859 (1)	F1-10K, R1-10K, BA006 (3), CA005, SF012, CPL-2			QCB1(3)(4), B11-116, B11-116, TMS, QCM, QCN or [BU3(3), CF9, CR5, SS1, SS7A, DC1, QCN]*	P14L, SH3250, 3012, RU14L, CS3500
R9	Volume Volume Balance	10K 10K 10K	80A4835 (2) 81A5862(1)	F1-10K, BA006(3) CA005, SF012, CPL-2			QCB1(3)(4), B11-116, TMS, QCN or [BU3(3), CF9, SS1, DC1, QCN]*	P14L, SH3250, 3012, SF1000
R19 R119	Balance Fader (Right) Fader (Left) Fader Fader	10K 100, 2N 100, 2N 100 100	81A4836 (2) 81A5861 (1) 81A5515 (2)					

* "SNAPTROL"

(1) Used in Model GES-8111-1-PAK

(2) Used in Models GES-6394-T & GES-6394-PAK

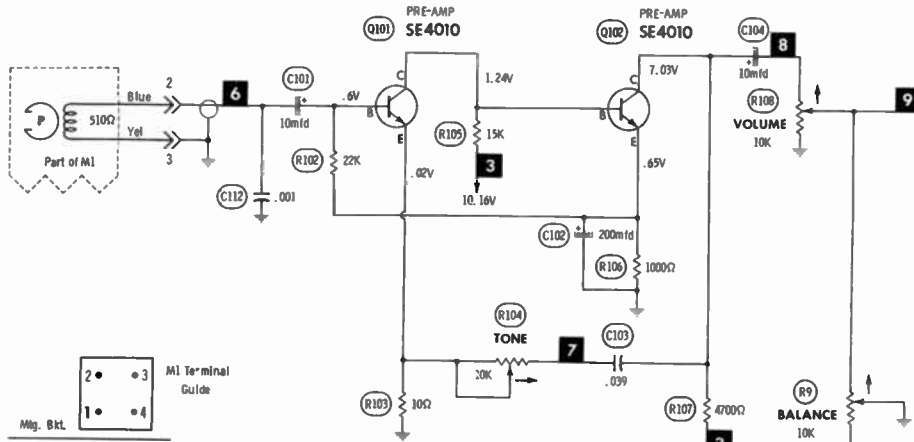
(3) Alter Bushing to meet requirements.

(4) Use QCB1 Bushing instead of "TM" in TMS Kit.

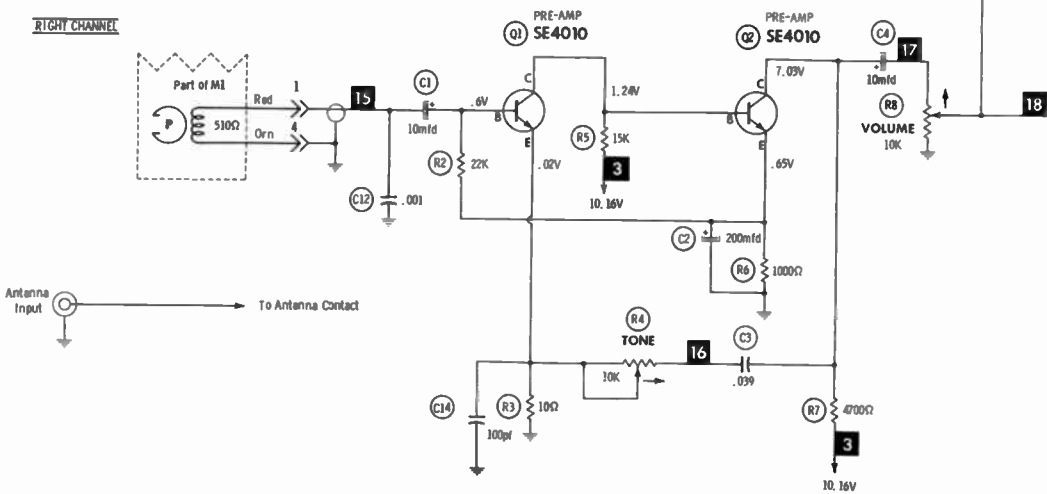
(CONTINUED ON PAGE 20)

NOTE: DEMAGNETIZE HEADS AFTER SERVICING

LEFT CHANNEL



RIGHT CHANNEL



Transistor Terminal Guides



Input and Speaker Plug Terminal Guide



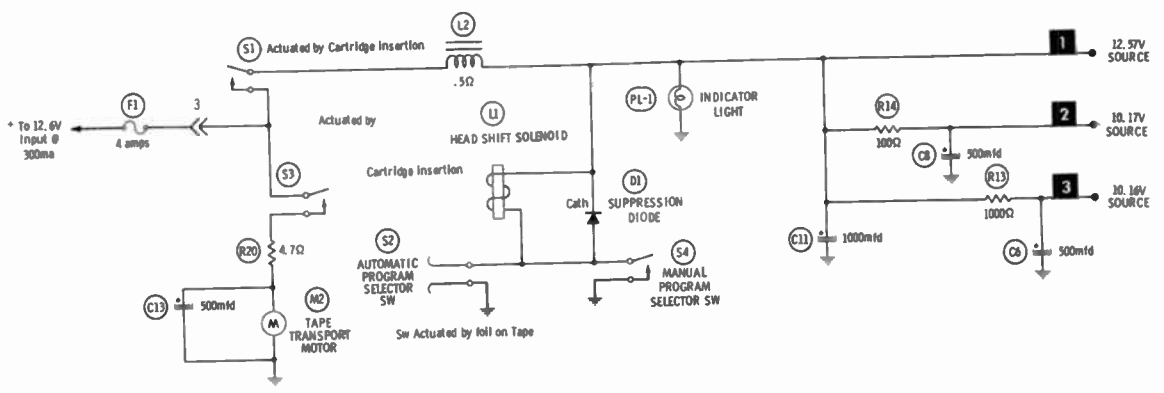
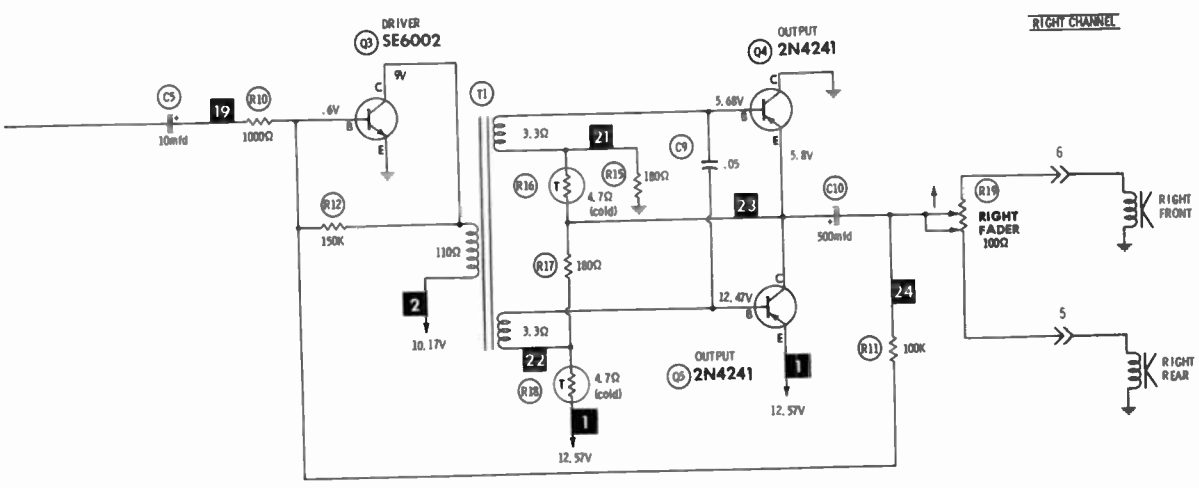
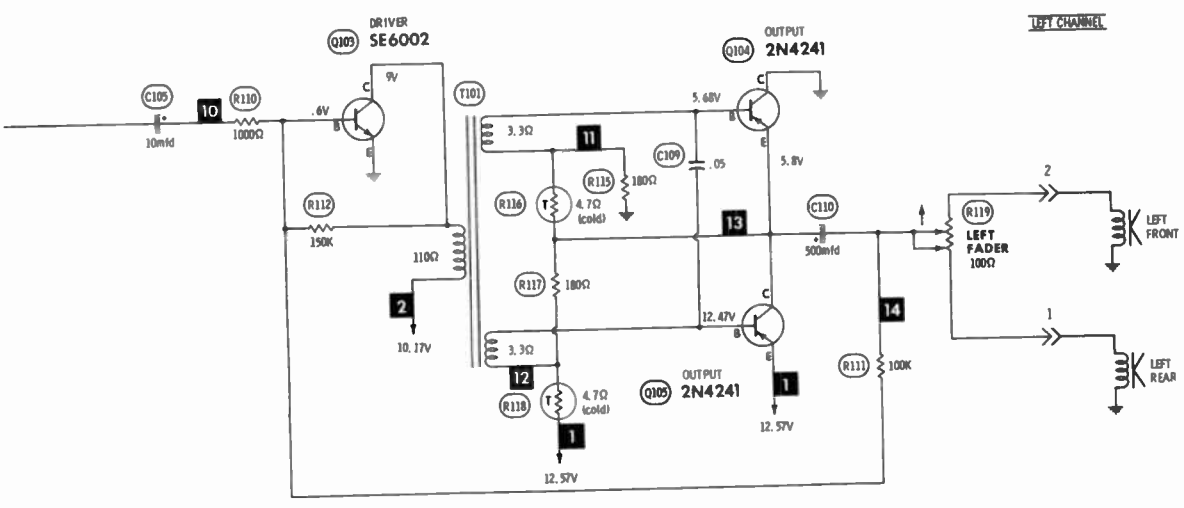
Q101 Thru Q103
Q1 Thru Q3



Q104, Q105, Q4, Q5

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.

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AUTOMATIC MODELS GES-6394-PAK/-T/8111-1-PAK

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.
R16	4.7 (Cold)			5-4.7
R18	4.7 (Cold)			5-4.7

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFR. PART No.
R116	4.7 (Cold)			5-4.7
R118	4.7 (Cold)			5-4.7

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.	
L2	300ma	.5	10mh	75A1269	C-4095	TC-2	TR-155	TY17XT	

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	3	1	1	75A4911					
T101	3	1	1	75A4911					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA			NOTES
		MFR. PART No.	QUAM PART No.		
SP1	PM	8 ohms	73B4176	5A05Z8	Alternate Speaker Part No. 73B5996
SP2	PM	8 ohms	73B4176	5A05Z8	
SP3	PM	8 ohms	73B4176	5A05Z8	
SP4	PM	8 ohms	73B4176	5A05Z8	

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA							
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.	
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	
F1	AGC 4 Amp	108-3D3		AGC4	HDJ	311004	15D145		

TAPE HEADS

ITEM No.	MEASURED			PART No.	NORTRONICS PART No.	DESCRIPTION
	INDUCTANCE	BIAS/ERASE VOLTS (RMS)	BIAS FREQ.			
H1	340mh			130A11376 130A982 (1)	5800	8-Track Stereo Play (1) Model GES-6394-PAK only.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
L1	Solenoid	130A11365	
M2	Solenoid	130A5704	
	Motor	130A11340	Used in Model GES-6394-PAK only
	Motor	130A5519	Used in Model GES-6394-PAK only
S1	Switch, Power	94A11344	
	Switch, Power	94A5520	Used in Model GES-6394-PAK only
S2	Switch, Automatic	135A11377	
	Program Selector		
S3	Switch, Motor	94A11344	
	Switch, Motor	94A5520	Used in Model GES-6394-PAK only
S4	Switch, Manual	130A11337	
	Program Selector		

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

ITEM	PART No.	ITEM	PART No.
Knob, Control Escutcheon	47A5884 54D6129	Manual Program Selector Button	47A4954

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.)



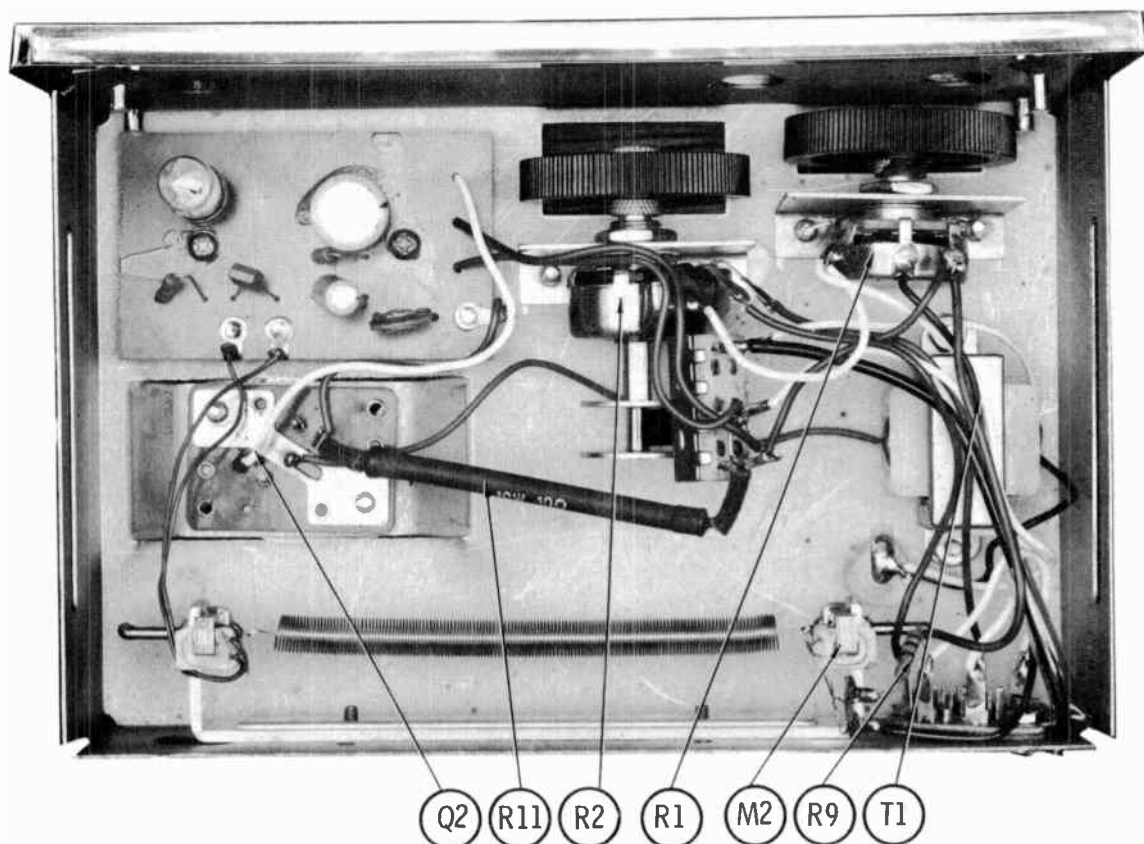
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For Supplier Address See PHOTOFACT Index



AUTOMATIC MODEL RVB-6782
(Echo-Mate II)



AUTOMATIC MODEL RVB-6782

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

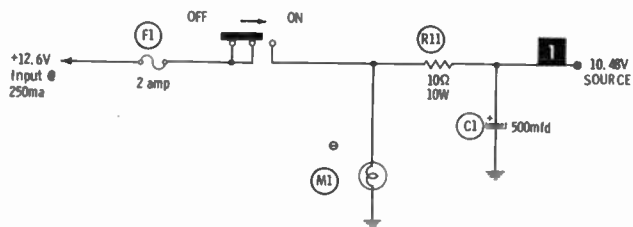
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TZ695



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 terminals may not be found on the unit.
 Transistor resistances vary widely. No resistance measurements taken.

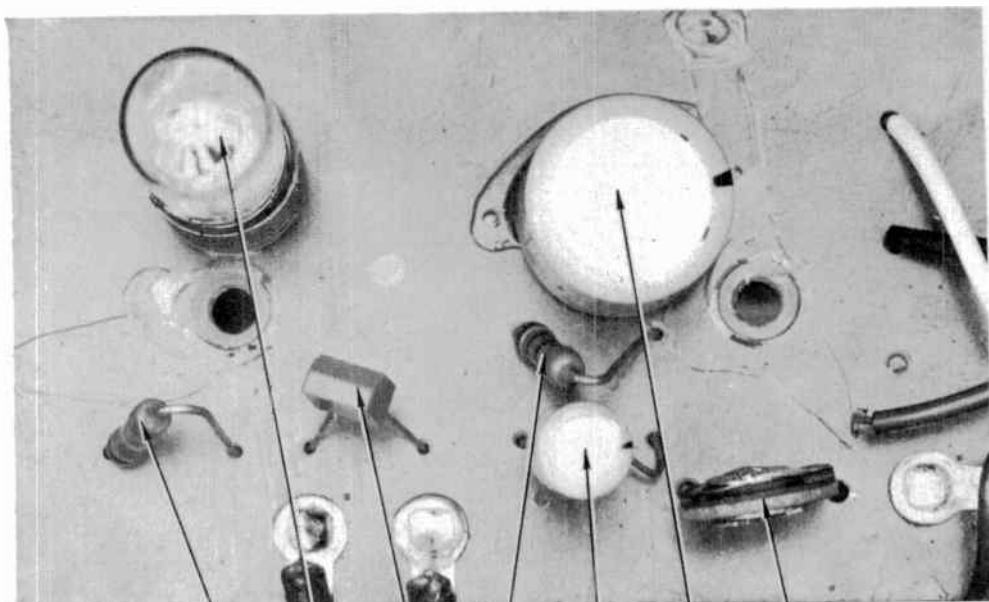
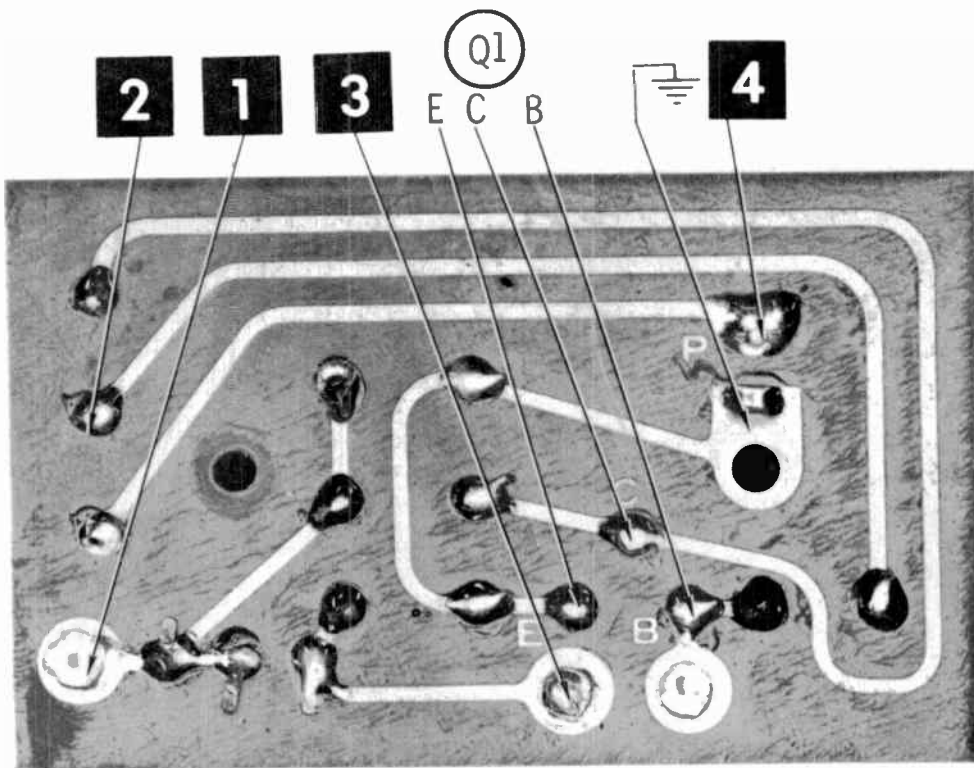


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AUTOMATIC MODEL RVB-6782



R8 M1 Q1 R10 C2 C1 R3

AUTOMATIC MODEL RVB-6782

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. B530 (Solid) Available in 12 Colors B524 (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	6-05	AF Amp Output *		GE-20	TR-21	HEP728	SK3020	ECG 123
Q2	8P404			GE-3	TR-01	HEP232	SK3009	ECG 104

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

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		AUTOMATIC 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	20-507	BCD15500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166
C2	10 10V	20-106	BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1128

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.	
R1	Fader/Switch	50, 2W	51-6102	T-1meg			X201R105B	MTC16L1
R2	Tone	50	80-6103					
R3	Bias	1meg	60-105-5					

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.
R11	10, 10W			61-100-105

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.

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	16 Tap @	8	75-6104					

SPEAKER

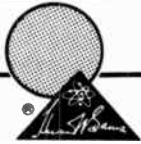
ITEM No.	TYPE	REPLACEMENT DATA			NOTES
		PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5" PM 8 ohms	7386088		5A05Z8	

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	2 Amp			AGC2	HDJ	312002	150145	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1 M2	Indicator Lamp Reverb	130-6101	

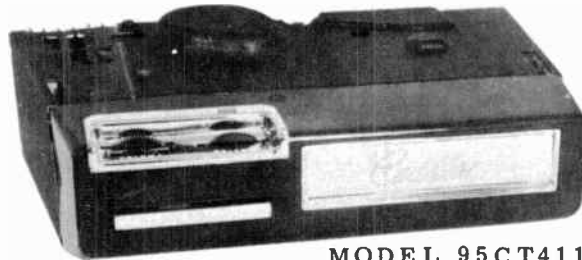


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NOTE: Manufacturer Part Numbers Shown Are UNITED DELCO



CADILLAC MODELS 95CT411
(7311205)
(69 Cadillac)
95CT412
(7311205)
(69 1/2 Cadillac)

MODEL 95CT411

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 alcohol. Use alcohol to remove oil and grease from all driving surfaces.

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.

CADILLAC MODELS 95CT411/412

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

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TQ607R

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. Pawl (4) worn. Arm (6) binding. Solenoid (M3) defective or not supplied with power. Cartridge defective. Lower cam bearing installed too deeply in casting. Assembly (14) binding or worn.
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.

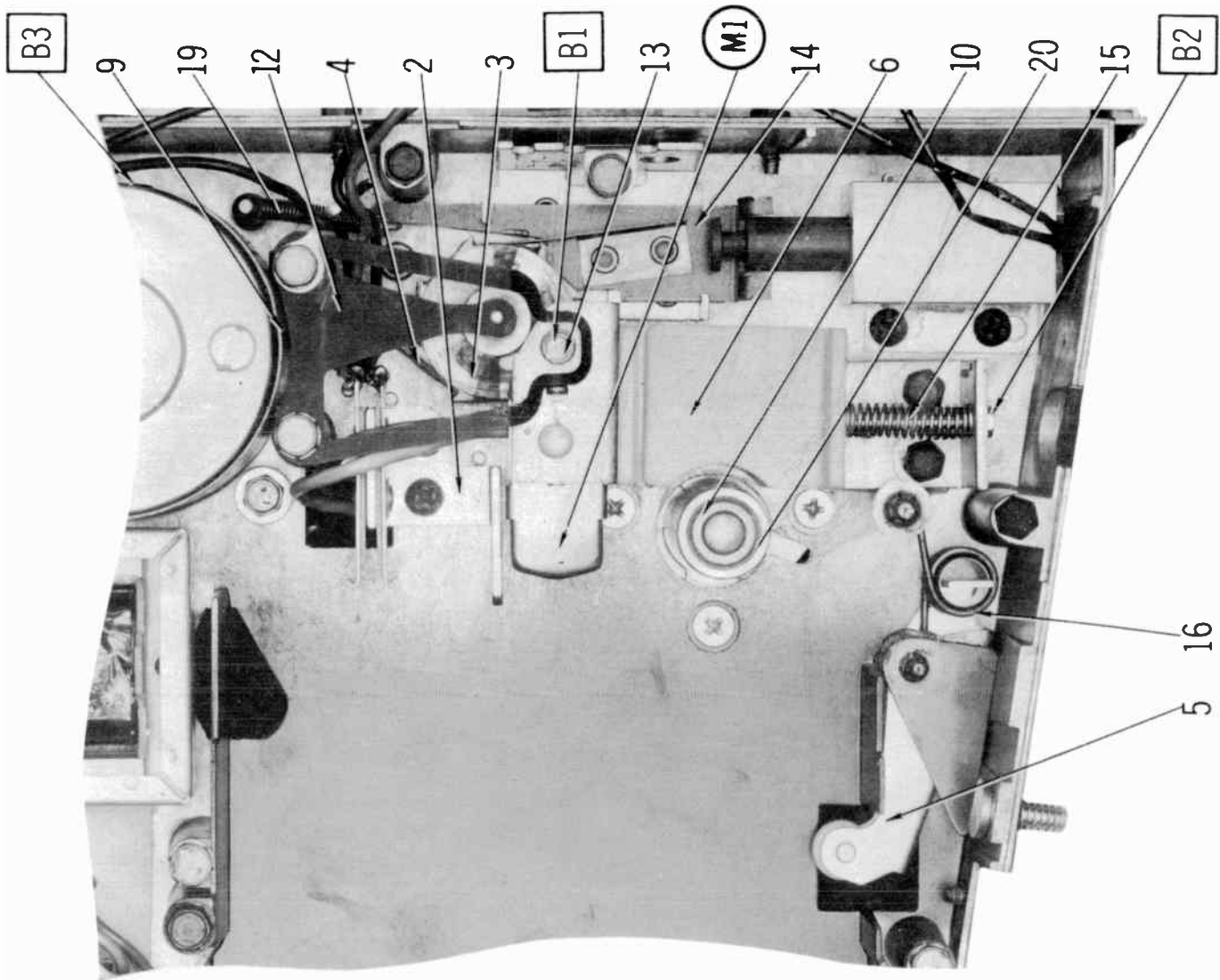
ADJUSTMENTS

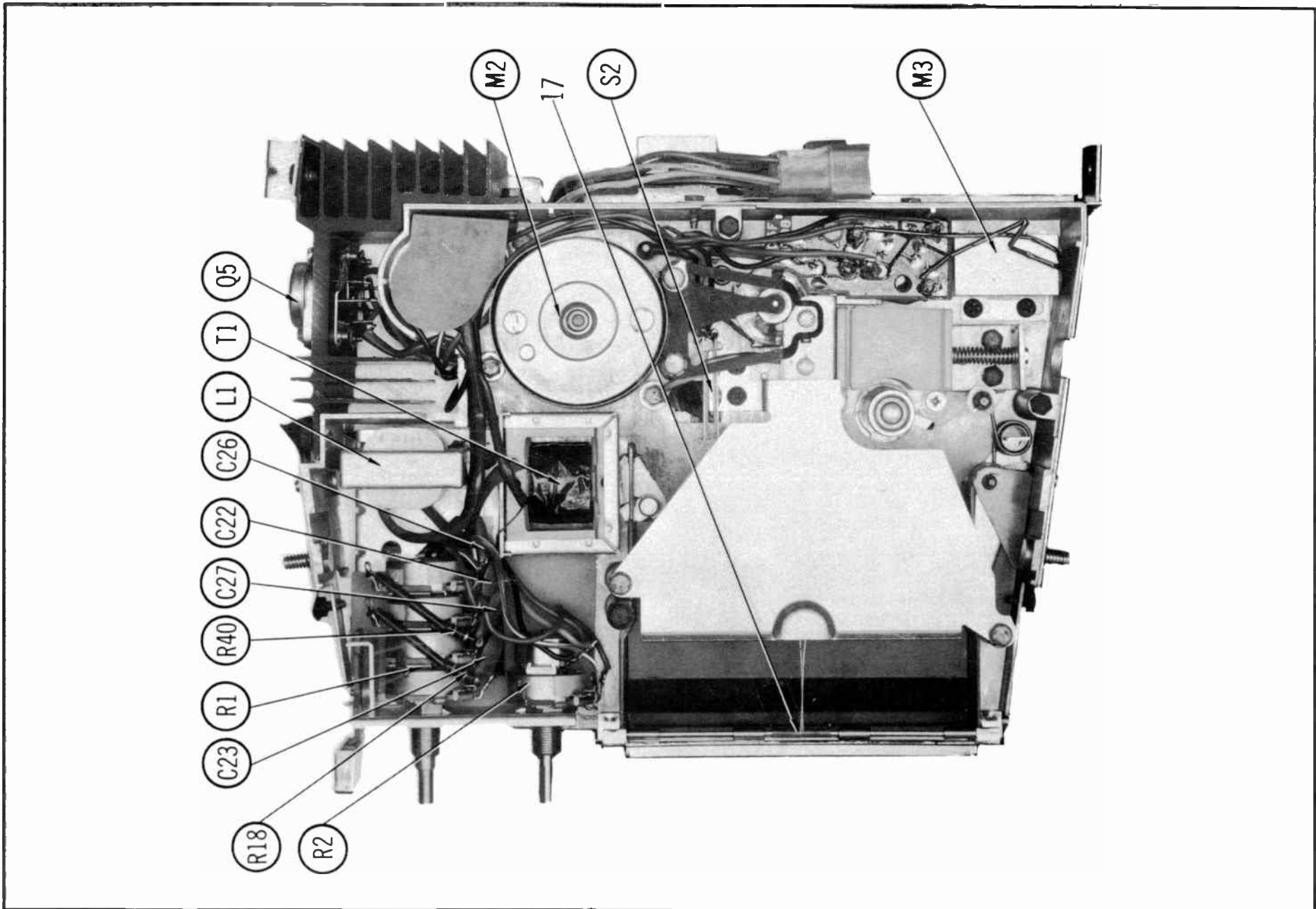
ADJUST	REMARKS
Head Height	Play a test cartridge, follow instructions with cartridge, and adjust B1 for proper response.
Head Azimuth	Connect an AC VTVM across right output. Play a test cartridge and adjust B2 for maximum.
Motor Speed	Play a test cartridge with a timed-interval track, follow instructions with cartridge, and adjust B3 for correct interval between tones. (Make only a slight adjustment before rechecking speed.)
Flywheel Play	Adjust B5 for a slight vertical play of flywheel.
Hum Reduction	Rotate motor for MINIMUM hum and position Shield (9) for MINIMUM hum.
Solenoid Position	Loosen the solenoid mounting screws and position the solenoid until the finger on Slide (14) clears the tooth on Cam (3) by 1/32 inch when the solenoid plunger is fully retracted.

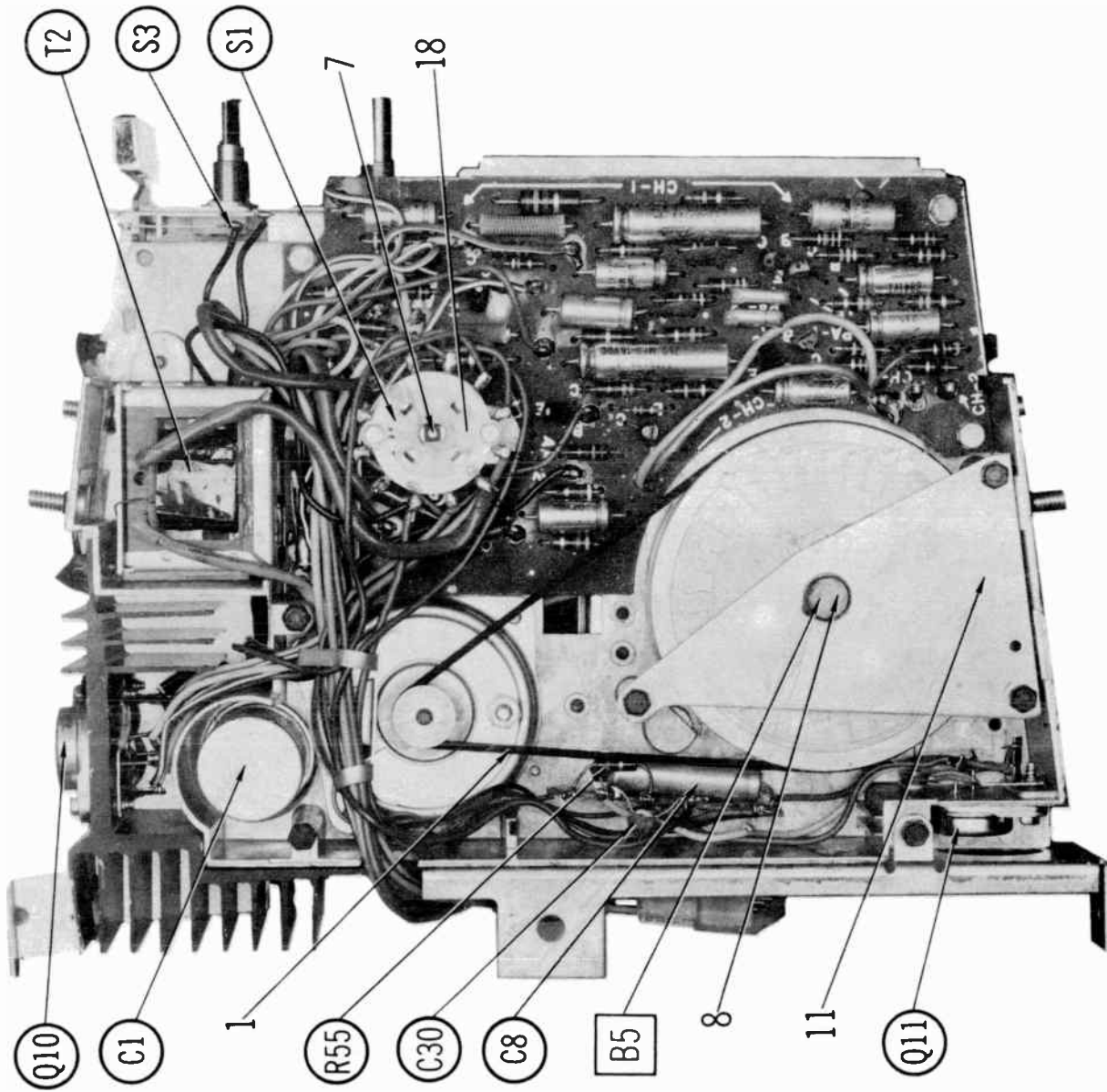
MECHANICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1*	7304589*	Belt* (2 used)	11	7304224	Thrust Bearing Plate
2	7305811	Tape Guide Assembly	12	7304249	Retainer Assembly
	(1)		13	7304578	Head Height Adjustment Screw
3	7310096	Cam Assembly	14	1222930	Slide Assembly
4	7304226	Pawl		(2)	
5	7305877	Cartridge Lock Arm Assembly	15	7304444	Azimuth Adjust Tension Spring
6	7305875	Head and Parallelogram Arm Assembly	16	7304222	Cartridge Arm Lock Spring
7	7305559	Switch Arm Assembly	17	7307337	Cartridge Door Spring
8	7304225	Nylon Capstan Thrust Bearing	18	7304234	Switch Return Spring
9	7306985	Motor Shield	19	7304235	Slide Return Spring
10	7304935	Capstan, Flywheel, and Bearing Assembly	20	7304796	Tape Stripper

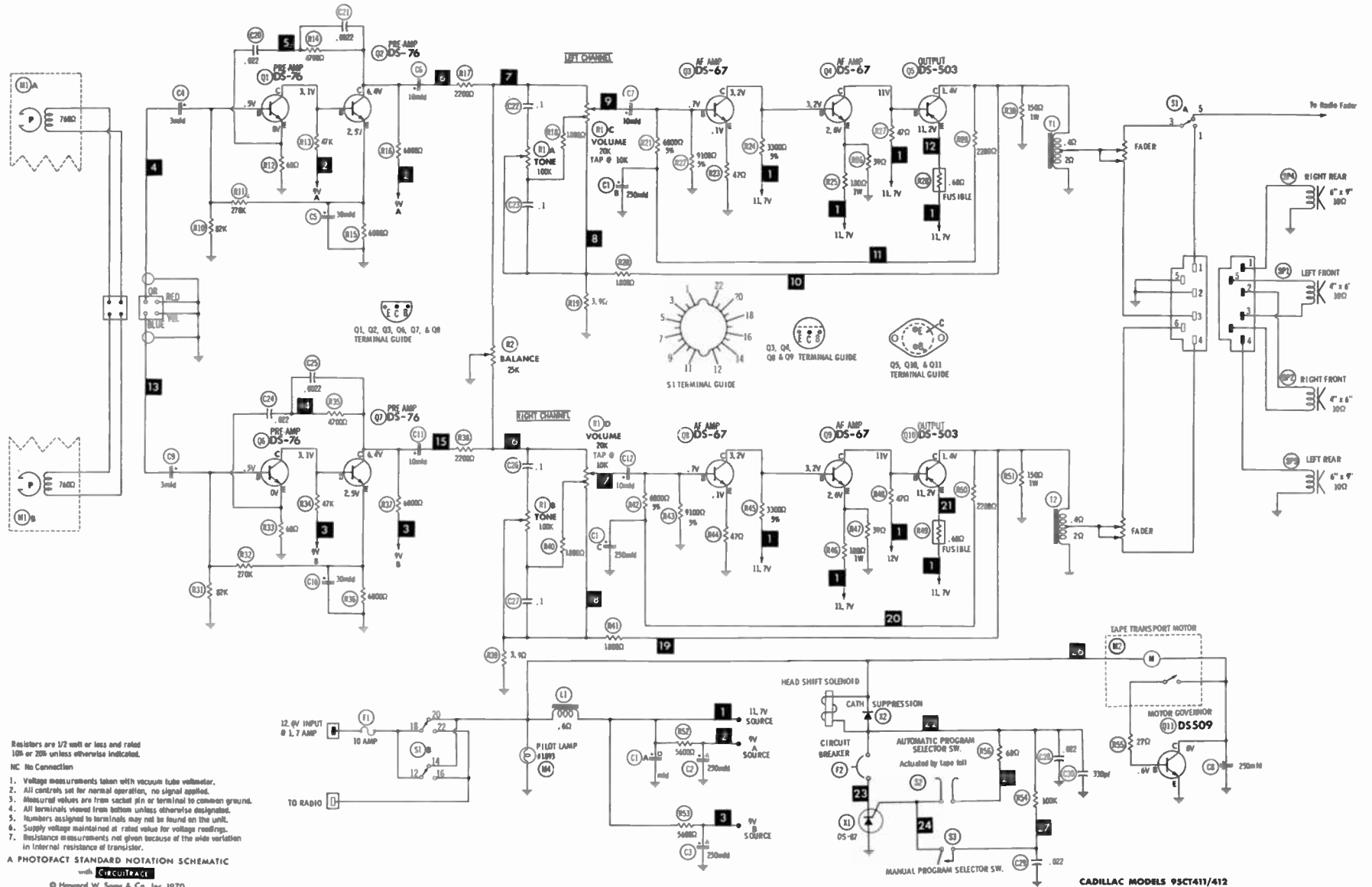
* Belt - WALSCO Part No. 1499-33 (Replace both belts). (2) Models ending in 412 use Part No. 7313405.
(1) Models ending in 412 use Part No. 7313401.







NOTE: DEMAGNETIZE HEADS AFTER SERVICING

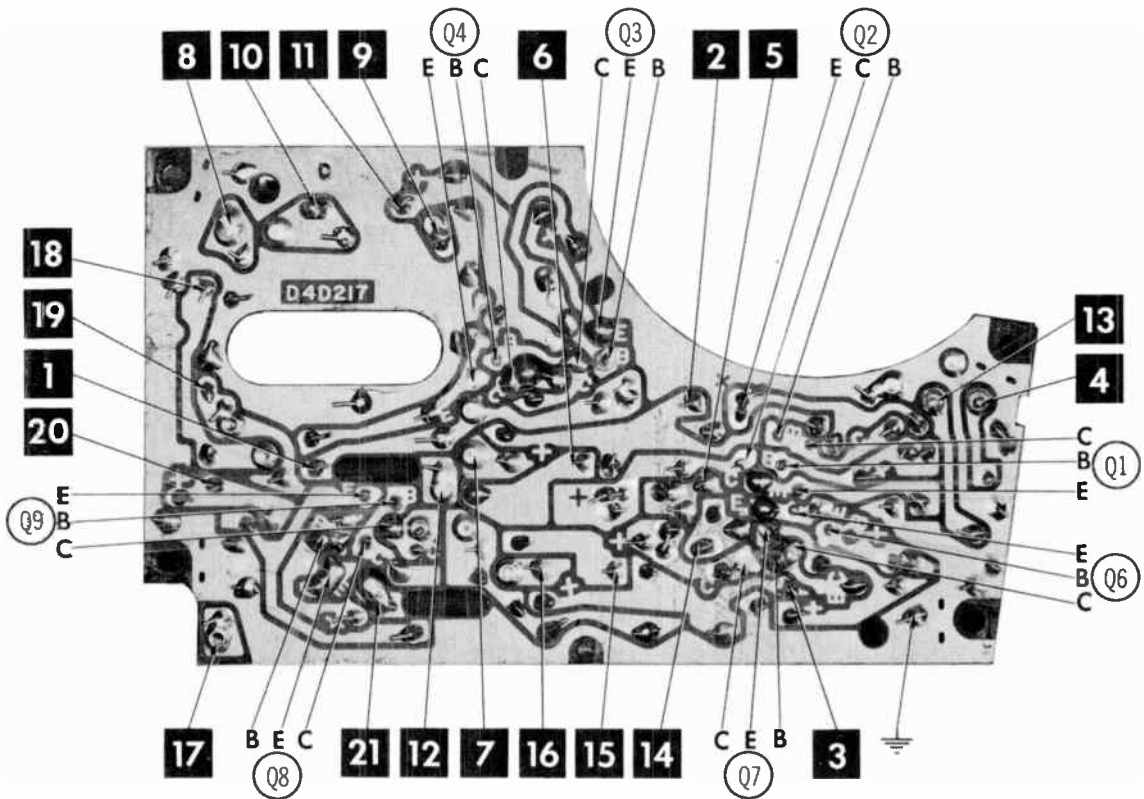
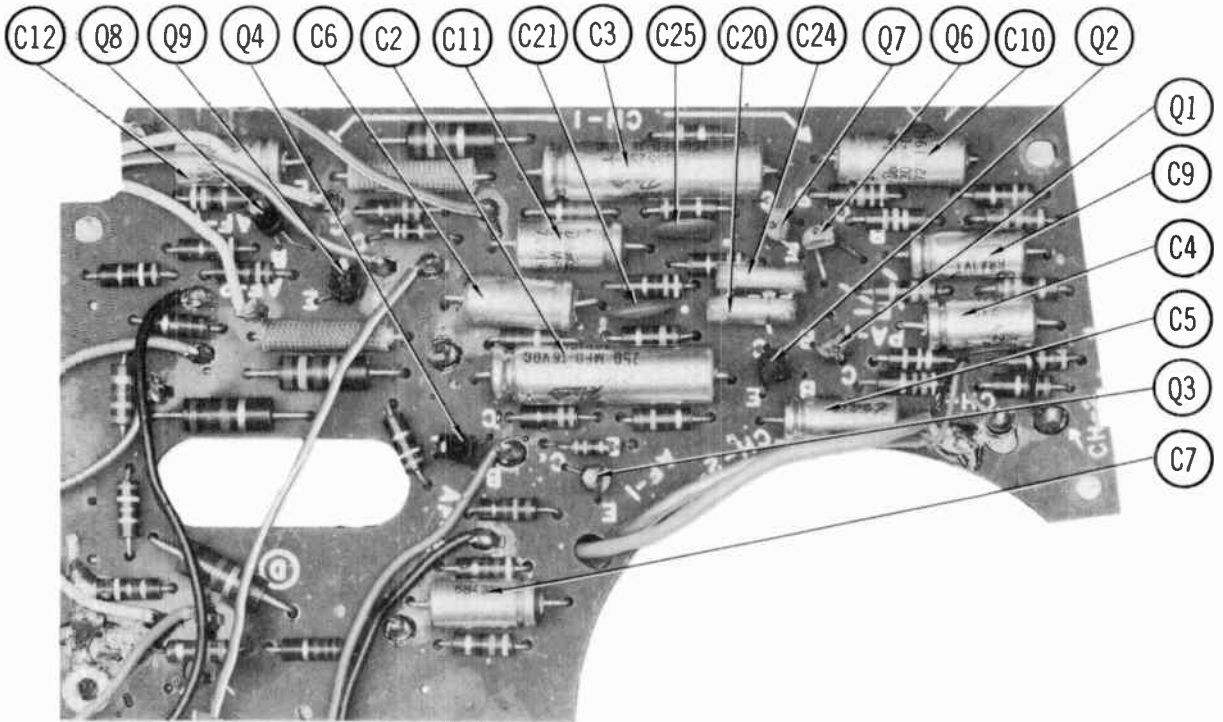


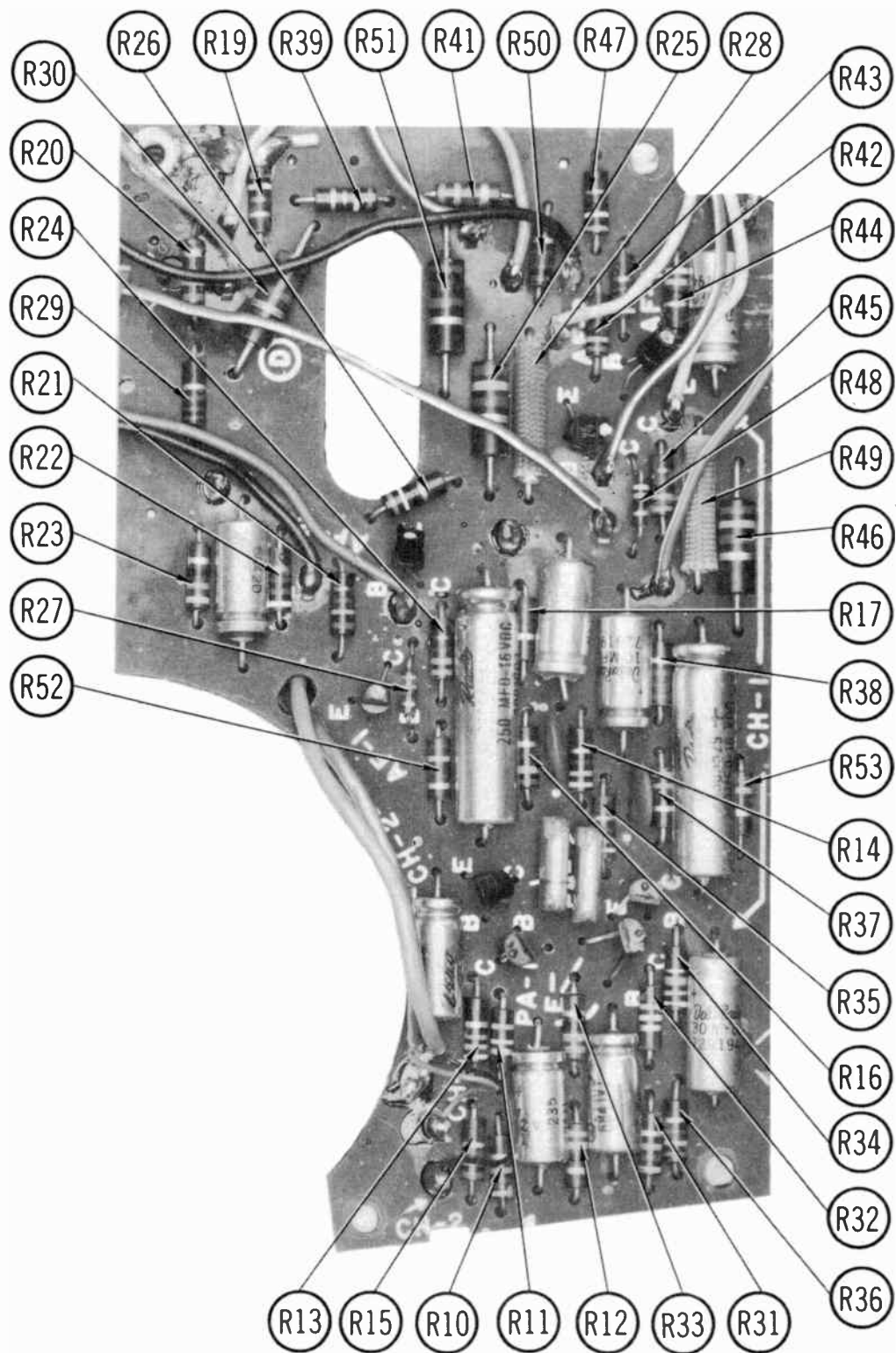
- Resistors are 1/2 watt or less and rated 10W or 20W unless otherwise indicated.
 NC No Connection
1. Voltage measurements taken with vacuum tube voltmeter.
 2. All controls set for normal operation, no signal applied.
 3. Resistance values are from socket pin or terminal to common ground.
 4. All terminals 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.

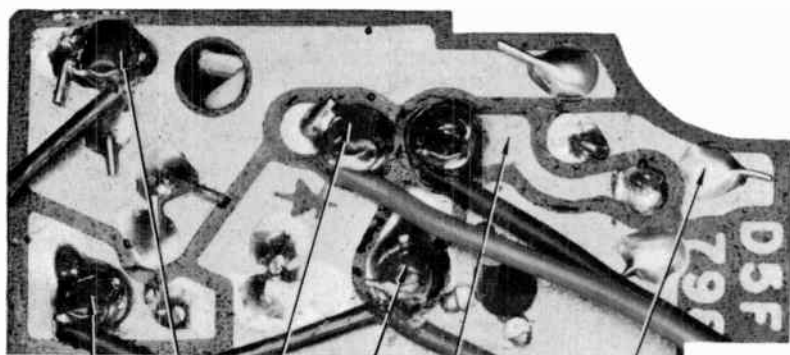
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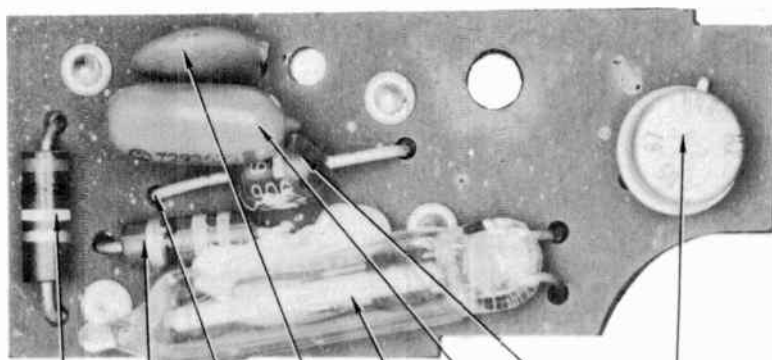
CADILLAC MODELS 95CT411/412







27 22 25 26 24 23



R54 R56 ⏏ C29 F2 C28 X2 X1

CADILLAC MODELS 95CT411/412

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	DS-76	Preamp		GE-10	TR-21	HEP53	SK3020	ECG 123
Q2	DS-76	Preamp		GE-10	TR-21	HEP53	SK3020	ECG 123
Q3	DS-67	AF Amp		GE-20	TR-21	HEP54	SK3020	ECG 123
Q4	DS-67	AF Amp		GE-20	TR-21	HEP54	SK3020	ECG 123
Q5	DS-503	Output *		GE-3	TR-01	HEP232	SK3009	ECG 104
Q6	DS-76	Preamp		GE-10	TR-21	HEP53	SK3020	ECG 123
Q7	DS-76	Preamp		GE-10	TR-21	HEP53	SK3020	ECG 123
Q8	DS-67	AF Amp		GE-20	TR-21	HEP54	SK3020	ECG 123
Q9	DS-67	AF Amp		GE-20	TR-21	HEP54	SK3020	ECG 123
Q10	DS-503	Output *		GE-3	TR-01	HEP232	SK3009	ECG 104
Q11	DS-509	Motor Reg.*		GE-14	TR-26	HEP704	SK3036	ECG 130

* 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	DS-87 (SCR)					
X2	DS-79					

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	1500 16V	7310473						TVL-3027.12
B	250 16V							
C	250 16V							
C2	250 16V	7307357	PRS1210	EA15-250	WBR300-35	QT1-30A	MTA250F15	TE-1165
C3	250 16V	7307357	PRS1210	EA15-250	WBR300-35	QT1-30A	MTA250F15	TE-1165
C4	3 12V	7291860	PTT127	EA15-2	AL3-150	MT1-3	MTA3D50	TE-1122
C5	30 6V	7296313	PTT27	EA6-25	AL30-6	MT1-13	MTA30D15	TE-1132.1
C6	10 12V	7292738	PTT114	EA15-10	AL10-25	MT1-5	MTA10D35	TL-1128
C7	10 12V	7292738	PTT114	EA15-10	AL10-25	MT1-5	MTA10D35	TL-1128
C8	250 16V	7307357	PRS1210	EA15-250	WBR300-35	QT1-30A	MTA250F15	TE-1165
C9	3 12V	7291860	PTT127	EA15-2	AL3-150	MT1-3	MTA3D50	TE-1122
C10	30 6V	7296313	PTT27	EA6-25	AL30-6	MT1-13	MTA30D15	TE-1132.1
C11	10 12V	7292738	PTT114	EA15-10	AL10-25	MT1-5	MTA10D35	TL-1128
C12	10 12V	7292738	PTT114	EA15-10	AL10-25	MT1-5	MTA10D35	TL-1128

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENDO PART No.	MALLORY PART No.	SPRAGUE PART No.
C20	.022 100V		V1612S22		DMF1S22	1DP-1-223	PVC1122	225P22391WD3
C21	.0022		GPD X5F222K	DD-222	JBX601YP222K	CCD-222	GP222	10TS-D22
C22	.1		TTP-1	CK-104	HOV101ZV104Z		TA010	TG-P10
C23	.1		TTP-1	CK-104	HOV101ZV104Z		TA010	TG-P10
C24	.022 100V		V1612S22		DMF1S22	1DP-1-223	PVC1122	225P22391WD3
C25	.0022		GPD X5F222K	DD-222	JBX601YP222K	CCD-222	GP222	10TS-D22
C26	.1		TTP-1	CK-104	HOV101ZV104Z		TA010	TG-P10
C27	.1		TTP-1	CK-104	HOV101ZV104Z		TA010	TG-P10
C28	.022 75V		V1612S22		DMF1S22	1DP-1-223	PVC1122	225P22391WD3
C29	.022		TTP-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20
C30	330		GPD X5F331K	DD-331	JBZ601YP331K	CCD-331	GP333	10TS-T33

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	RESIST-ANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone	100K	7304240				
B	Tone	100K					
C	Volume	20K Tap @ 11K					
D	Volume	20K Tap @ 11K					
R2A	Fader	100,2W	7309848				
B	Fader	100,2W					
R3	Balance	20K	7304970			U201R253B	NTC253L4

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.
R28	.68 ohm (Fusible)			7287480

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.
R49	.68 ohm (Fusible)			7287480

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	1.7A	.6	8mh	1221623	C-4095	TC-2	TR-154	TY17XT	

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	12 Tap	@ 10	7282057					
T2	12 Tap	@ 10	7282057					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA			NOTES
				MFGR. PART No.	QUAM PART No.		
SP1	3 1/2"	PM	10 ohms	1222943	3A05Z10	Front	
SP2	3 1/2"	PM	10 ohms	1222943	3A05Z10	Front	
SP3	6" x 9"	PM	10 ohms	7301803	69A1Z10	Rear	
SP4	6" x 9"	PM	10 ohms	7301803	69A1Z10	Rear	

CADILLAC MODELS 95CT411/412

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 F2	AGC 10A Circuit Breaker	7306041	7305588	AGC10	HHJ	311010	150145	

TAPE HEADS

ITEM No.	MEASURED			PART No.	NORTRONICS PART No.	DESCRIPTION
	INDUCTANCE	BIAS/ERASE VOLTS (RMS)	BIAS FREQ.			
M1	420mh			7298991	5800 *	8-Track Stereo Play * Use original mounting

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M2	Motor	7306712	* May be used in some versions.
M3	Solenoid	1222819 1222985 *	
M4	Lamp, Indicator	7296866	
S1	Switch, Power	7309849	
S2	Switch, Automatic Selector	7305811	
S3	Switch, Manual Selector	7305598 7313402	

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

ITEM	PART No.	ITEM	PART No.
Knob, Volume	7305851	Escutcheon	7310364
Knob, Tone	7304242	Door	1222923
Knob, Balance	7305528		

WIRING DATA

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



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index



GIBBS MODEL CR-332A
(8-Track Stereo Player)

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 alcohol. Use alcohol to remove oil and grease from all driving surfaces.

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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TQ690

GIBBS MODEL CR-332A

ADJUSTMENTS

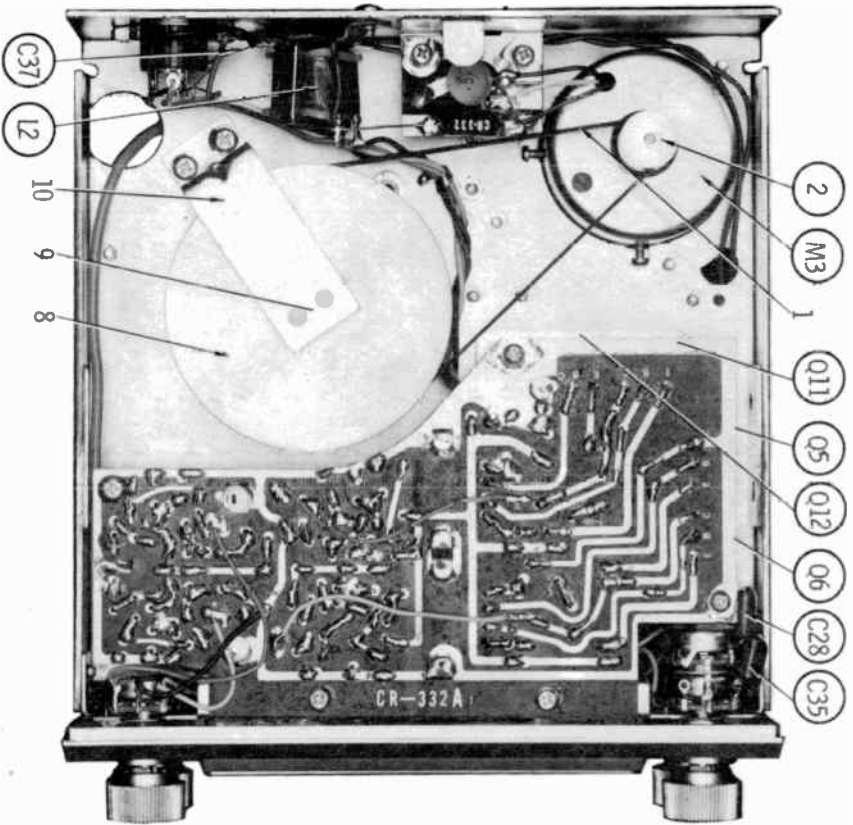
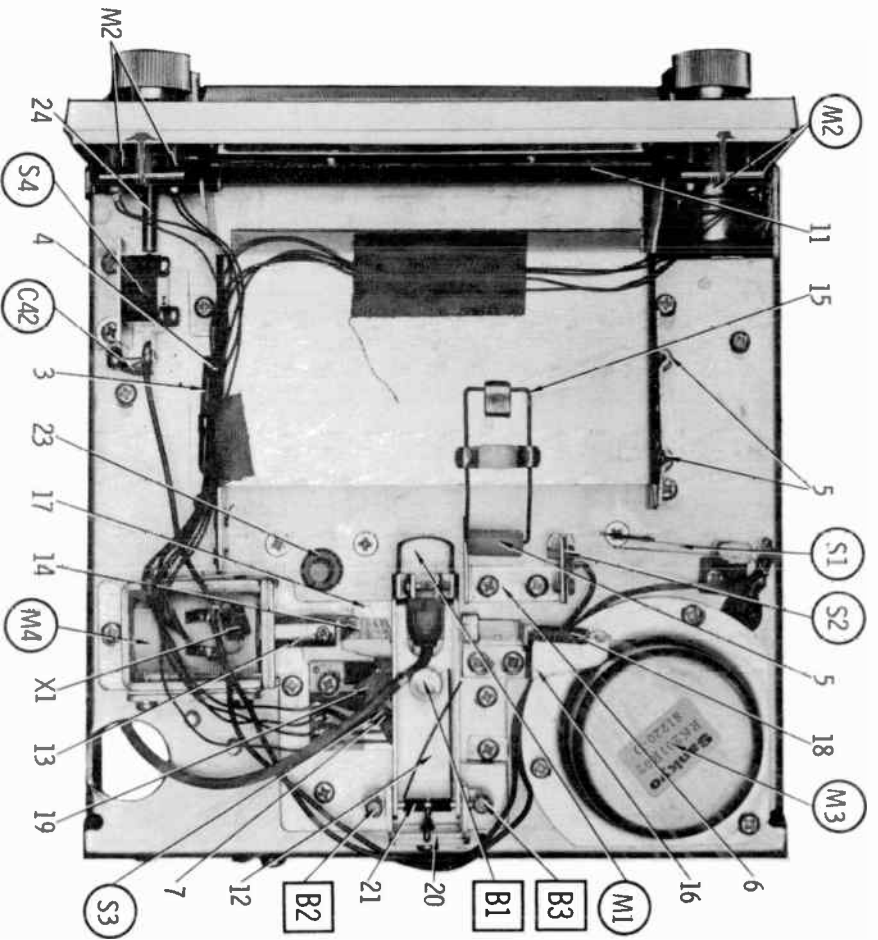
ADJUST	REMARKS
Head Height	Play a test cartridge, follow instructions with cartridge, and adjust B1 for proper response.
Head Azimuth	Connect an AC VTVM across right output. Play a test cartridge and adjust B2 and B3 equally in opposite directions for maximum output.
Output Level Balance	Set Balance control at center of rotation and apply a 1000-cycle tone across left and right sections of Head (M1). Adjust R4 and R5 for equal outputs.

TROUBLE CHART

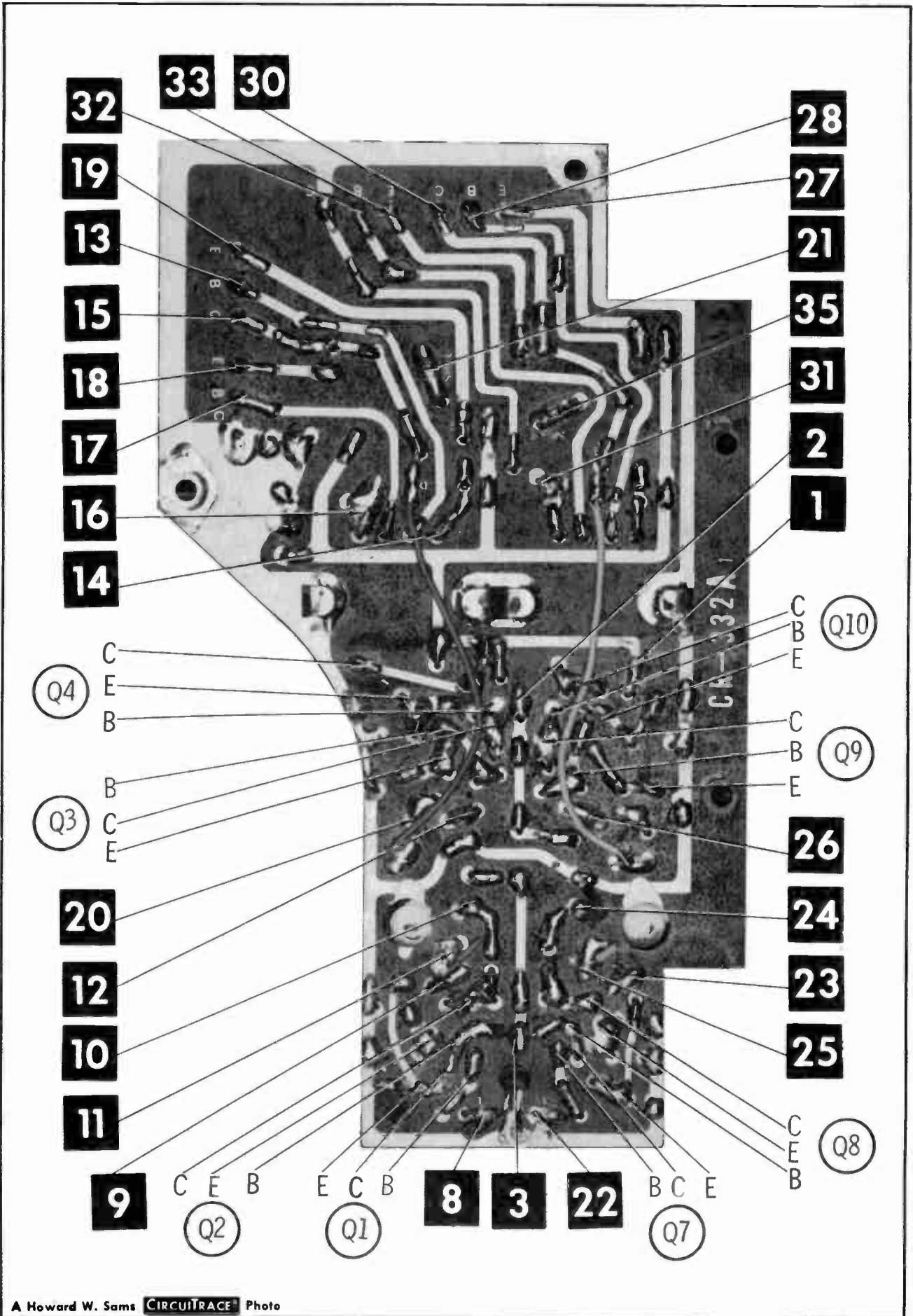
SYMPTOM	REMARKS
Capstan does not rotate.	Belt (1) dirty, worn, or broken. Housing (23) binding. Motor defective or not supplied with power.
Track-shift mechanism inoperative.	Switch (S2) dirty. Click (7) broken. Arm (14) binding. Spring (18) weak or missing. Solenoid (M4) defective or not supplied with 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

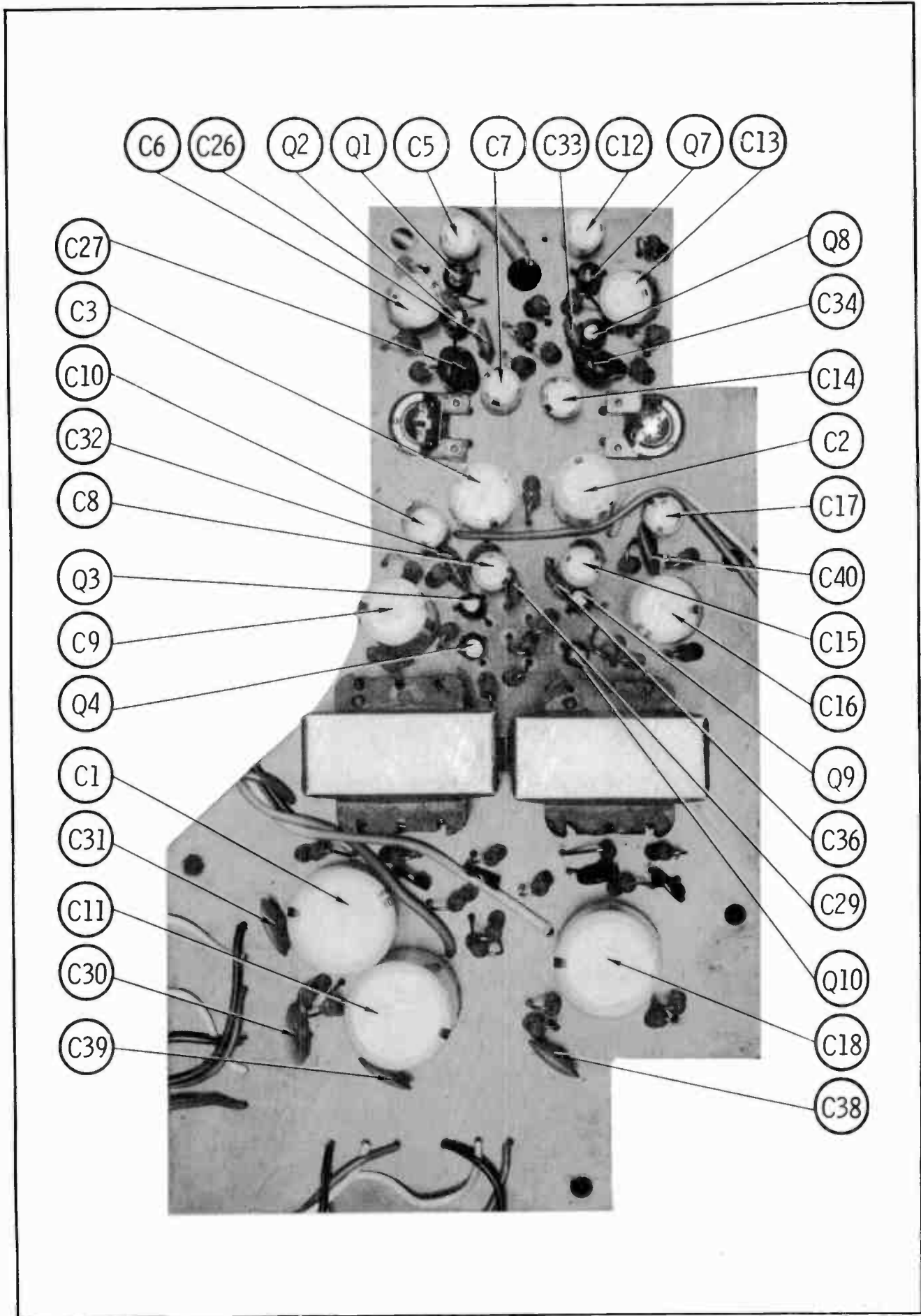
REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	M00350	Flywheel Belt	13	P00265	Plunger
2		Motor Pulley	14	S01424	Plunger Arm
3	S01425	Cartridge Lock Spring	15	W00567	Cartridge Retainer Spring
4	N00337	Cartridge Lock Roller	16	S01433	Ratchet Stop
5	N00334	Cartridge Guide Roller(3 used)	17	S01423	Plunger Arm Guide
6	S01420	Tape Guide	18	W00443	Plunger Arm Spring
7	S01265	Click	19	M00326	Cam Ratchet
8	S01390	Flywheel	20	S01441	Tape Head Support Bracket
9	M00347	Capstan Thrust Bearing	21	W00444	Tape Head Suppressor Spring
10	S01419	Flywheel Support Bracket	22	W00445	Tape Head Adjustment Spring
11	W00582	Door Spring	23	N00333	Flywheel Housing
12	S01442	Tape Head Arm	24	N00339	Channel Change Shaft



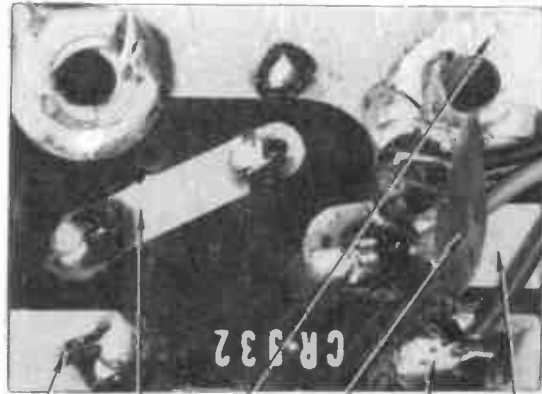
GIBBS MODEL CR-332A



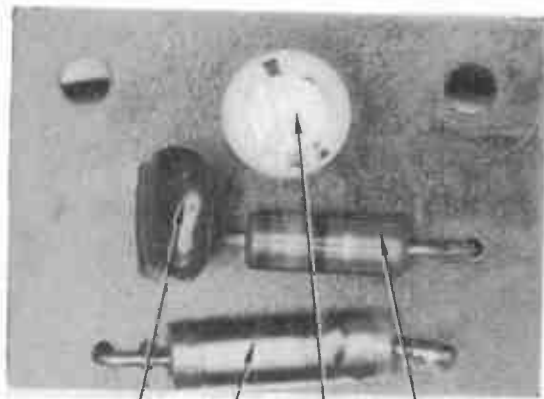
A Howard W. Sams **CIRCUITRACE** Photo



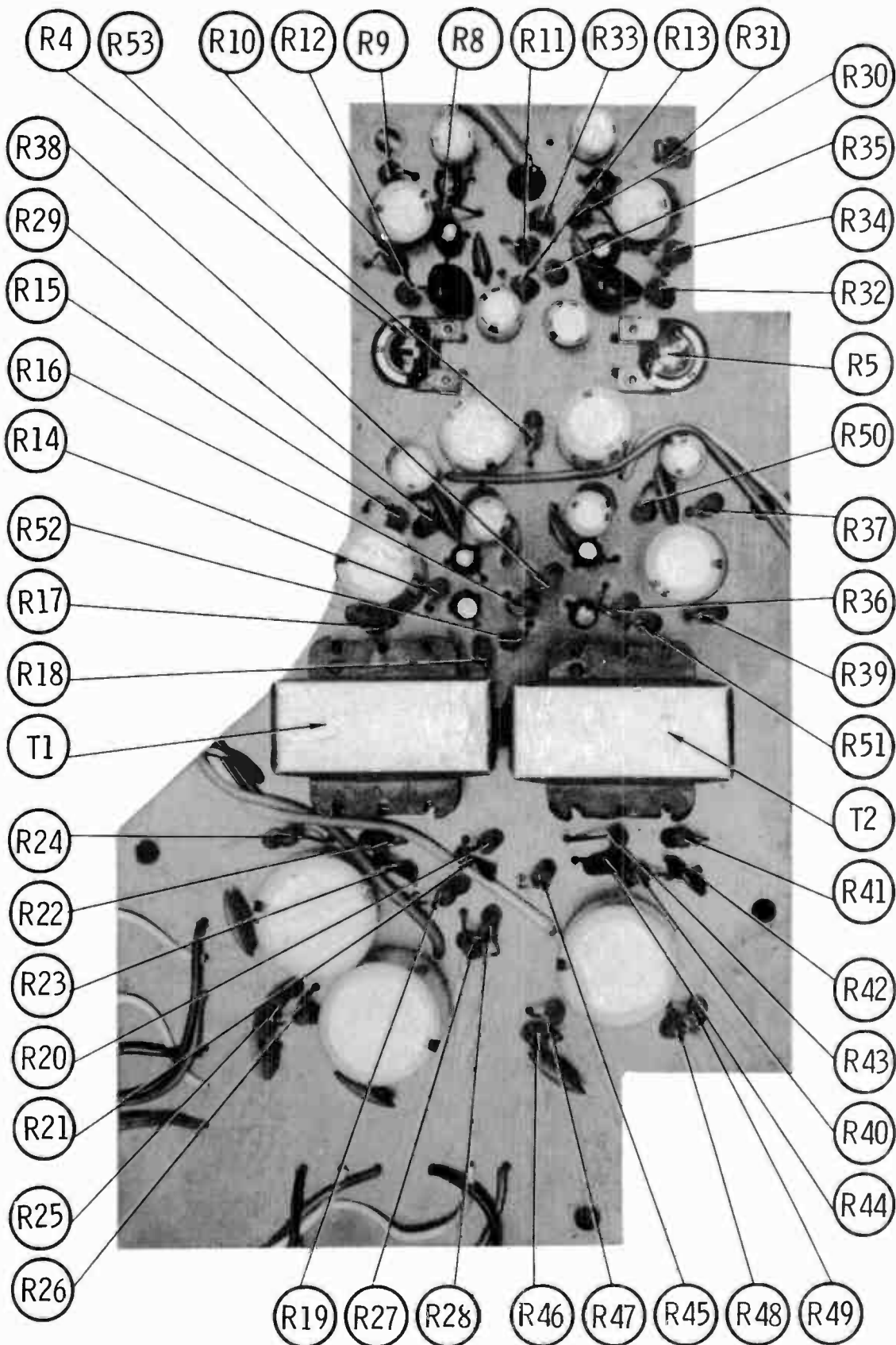
GIBBS MODEL CR-332A



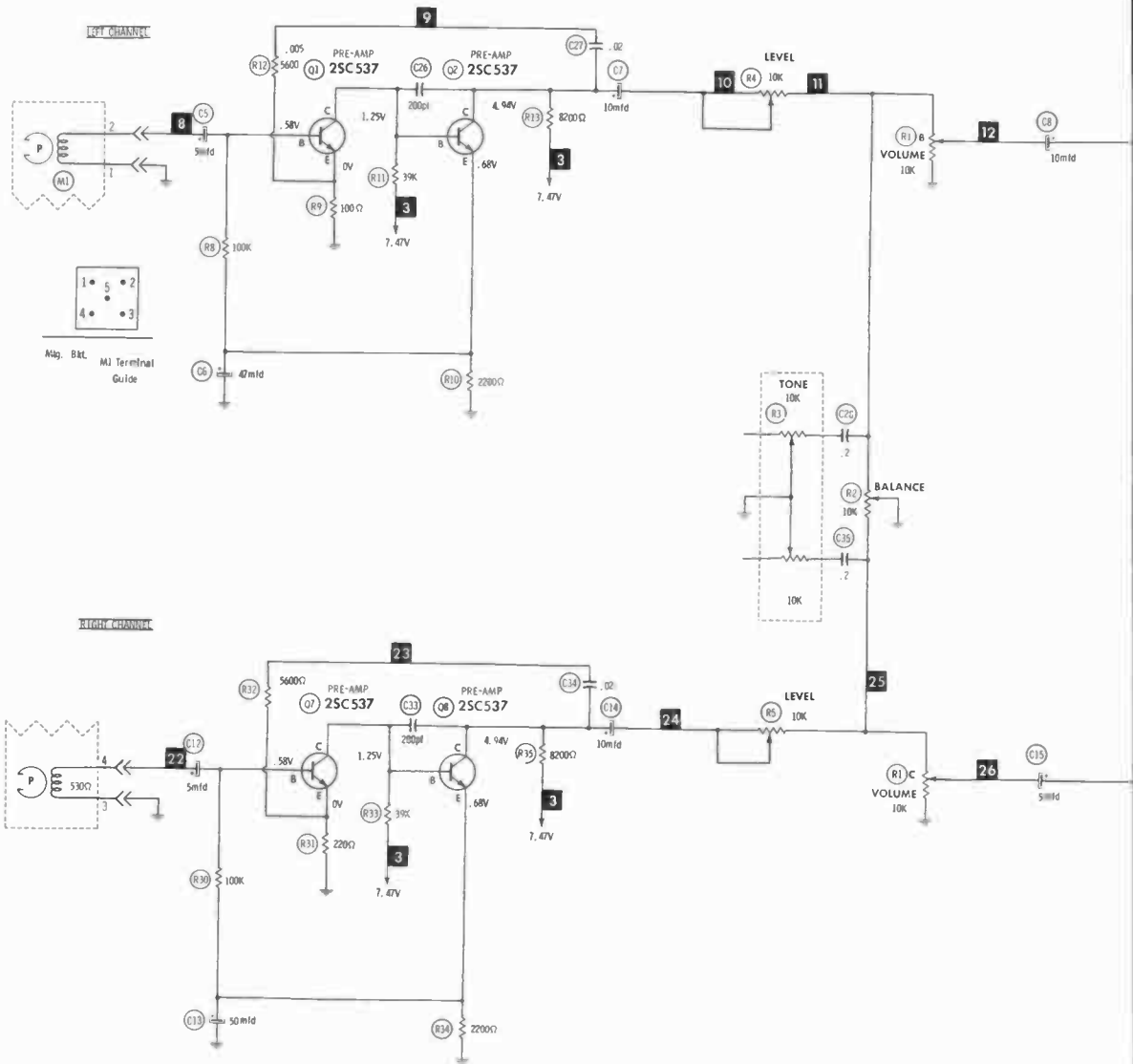
4 7  C41 5 6



C42 L1 C4 R54



NOTE: DEMAGNETIZE HEADS AFTER SERVICING



TRANSISTOR TERMINAL GUIDES



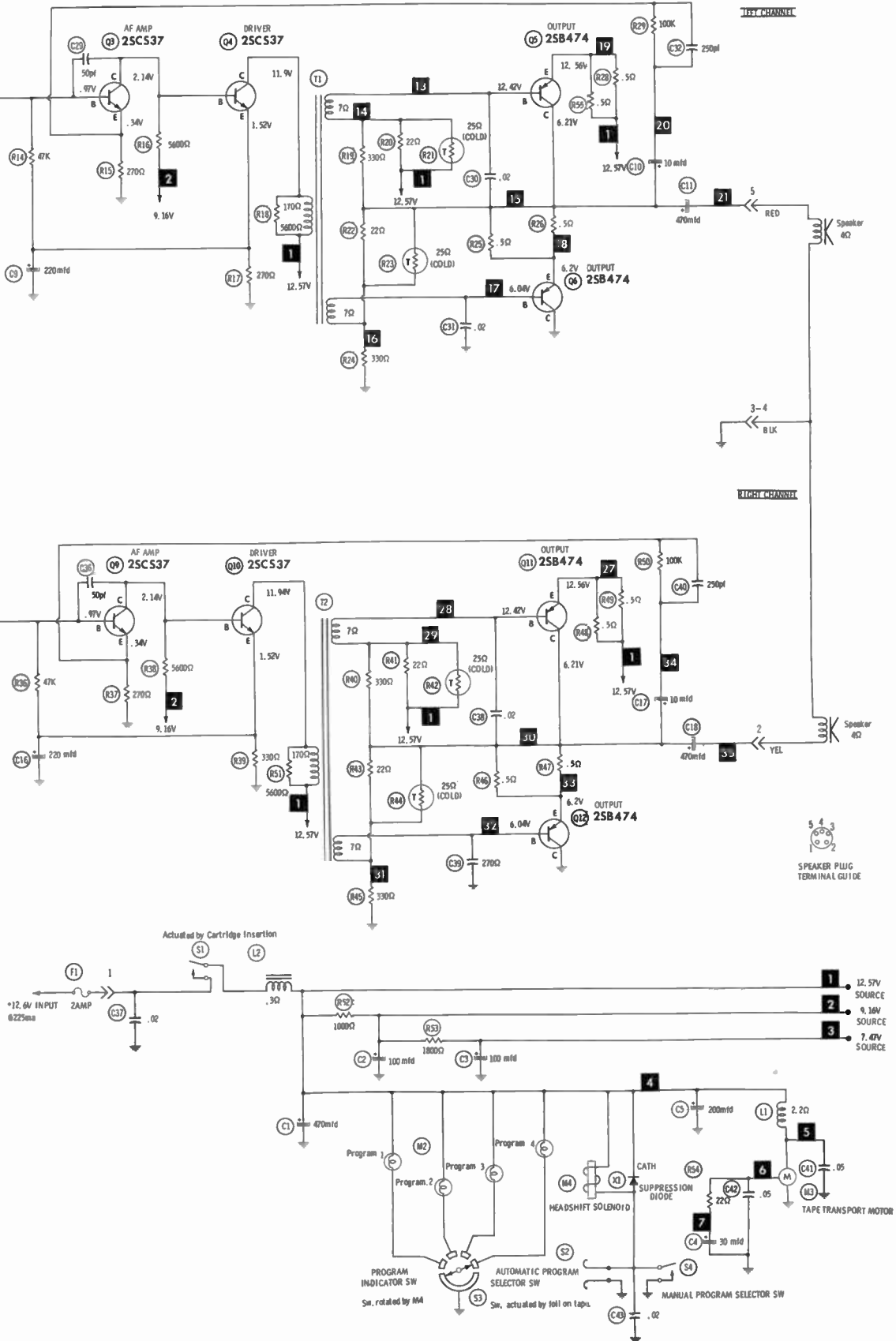
Q1 THRU Q4
Q7 THRU Q10



Q5, Q6, Q11 & Q12

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.
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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GIBBS MODEL CR-332A

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	25C537	Preamp		GE-17	TR-24	HEP723	SK3020	ECG 123
Q2	25C537	Preamp		GE-17	TR-24	HEP723	SK3020	ECG 123
Q3	25C537	AF Amp		GE-17	TR-24	HEP723	SK3020	ECG 123
Q4	25C537	Driver		GE-17	TR-24	HEP723	SK3020	ECG 123
Q5	25B474	Output (1)						ECG 131MP*
Q6	25C474	Output (1)						ECG 131MP*
Q7	25C537	Preamp		GE-17	TR-24	HEP723	SK3020	ECG 123
Q8	25C537	Preamp		GE-17	TR-24	HEP723	SK3020	ECG 123
Q9	25C537	AF Amp		GE-17	TR-24	HEP723	SK3020	ECG 123
Q10	25C537	Driver		GE-17	TR-24	HEP723	SK3020	ECG 123
Q11	25B474	Output (1)						ECG 123
Q12	25B474	Output (1)						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	DS-16E	GE-504A	8D4	ECG 116	SK3016	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
			GIBBS PART No.	AEROVOX PART No.	CENTRALLAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	500	15V		BCD15500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166
C2	100	15V		BCD15100	EP15-100	PC100-16	MT1-19	MTV100CF15	TE-1162
C3	100	15V		BCD15100	EP15-100	PC100-16	MT1-19	MTV100CF15	TE-1162
C4	30	15V		BCD15025	EP15-25	PC30-35	MT1-13.5	MTV30CB25	TE-1158
C5	5	6V		BCD25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084
C6	50	6V		BCD6050	EP6-50	PC50-16	MT1-15	MTV50CB15	TE-1133
C7	10	12V		BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C8	10	12V		BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C9	200	6V		BC06200	EA6-250	PC200-16	MT1-23	MTV200CK10	TE-1104
C10	10	12V		BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C11	500	15V		BCD15500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166
C12	5	6V		BCD25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084
C13	50	6V		BCD6050	EP6-50	PC50-16	MT1-15	MTV50CB15	TE-1133
C14	10	12V		BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C15	10	12V		BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C16	200	6V		BC06200	EA6-250	PC200-16	MT1-23	MTV200CK10	TE-1104
C17	10	12V		BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C18	500	15V		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.
C26	100		NPO-D1 100	DTZ-100	NP0100	CCT0-101	CN0310	10TCC-T10
C27	.02		TTP-02	CK-203	MGPO2	CCD-203	TA120	TG-S20
C28	.1		TTP-1	CK-104			TA010	TG-P10
C29	50		NPO-D1 50	DTZ-50	NP050	CCT0-510	CN0450	10TCC-Q50
C30	.02		TTP-02	CK-203	MGPO2	CCD-203	TA120	TG-S20
C31	.02		TTP-02	CK-203	MGPO2	CCD-203	TA120	TG-S20
C32	250		GPD X5F251K	DD-251		CCD-251	GP325	5GA-T25
C33	100		NPO-D1 100	DTZ-100	NP0100	CCT0-101	CN0310	10TCC-T10
C34	.02		TTP-02	CK-203	MGPO2	CCD-203	TA120	TG-S20
C35	.1		TTP-1	CK-104			TA010	TG-P10
C36	50		NPO-D1 50	DTZ-50	NP050	CCT0-510	CN0450	10TCC-Q50
C37	.02		TTP-02	CK-203	MGPO2	CCD-203	TA120	TG-S20
C38	.02		TTP-02	CK-203	MGPO2	CCD-203	TA120	TG-S20
C39	.02		TTP-02	CK-203	MGPO2	CCD-203	TA120	TG-S20
C40	250		GPD X5F251K	DD-251		CCD-251	GP325	5GA-T25
C41	.05		TTP-05	CK-503	MGPO5	CCD-503	TA150	TGL-S50
C42	.05		TTP-05	CK-503	MGPO5	CCD-503	TA150	TGL-S50
C43	.02		TTP-02	CK-203	MGPO2	CCD-203	TA120	TG-S20

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

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROS [™] AT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Volume	10K			NP-10K-S (1), NR-10K-S, UP-C-400,DC-2	QCB1 (1) (2), B11-116,B11-116, TM5,QCM or [BU2(1),CF9, CR5,SS1,SS7A, DC1]*	P14L, 3038 (1), RU14L,CS3500
B	Volume	10K					
R2	Balance	10K		F1-1DK(1),SSK104, BA006,CA005	A47-10K-S(1), KSS-3 or [NP-10K-S (1), UP-C-400]	QCB1 (1) (2), B11-116,TM5 or [BU2 (1),CF9, SS1,DC1]*	RU14L,SL39(1), SK1000 or [UA14L (1), SK1000] or U2D (1)
R3A	Tone	10K				QCB1 (1) (2), B13-116,B13-116, TM5,QCM or [BU2 (1),CF61, CR52,SS1,DC1]*	P14A, 3038(1), RU14A,CS3500
B	Tone	10K					
R4	Level	10K		T-10K (3)		X201R103B (3)	MTC14L1 (3)
R5	Level	10K		T-10K (3)		X201R103B (3)	MTC14L1 (3)

* "SNAPTROL"

- (1) Enlarge Mounting Hole. (2) Use QCB1 bushing instead of "TM" in TM5 Kit.
(3) 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.
R21	25 (Co1d)			
R23	25 (Co1d)			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.
R42	25 (Co1d)			
R44	25 (Co1d)			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (7.5uh)	L00129	19-1009	4611	T96D

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.	
L2	225ma	.3	5mh		C-4095	TC-2	TR-156	TY17XT	

GIBBS MODEL CR-332A

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	7	1	1						
T2	7	1	1						

SPEAKER

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

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	2 Amp			AGC2	HDJ	312002	150145	

TAPE HEADS

ITEM No.	MEASURED			PART No.	NORTRONICS PART No.	DESCRIPTION
	INDUCTANCE	BIAS/ERASE VOLTS (RMS)	BIAS FREQ.			
M1	310mh			P00296	5800 (1)	8-Track Stereo Play (1) Use original mounting

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M2	Program Indicator Lamp		4 Used
M3	Motor		
M4	Solenoid	P00265	
S1	Switch, On-Off		
S2	Switch, Automatic Program Selector	S01597	
S3	Switch, Program Indicator Selector	W00503	
S4	Switch, Contact Switch, Manual Program Selector	S01264	

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

ITEM	PART No.	ITEM	PART No.
Amp Printed Circuit Board	W00575	Knob, Control	M00340
Escutcheon	M00341	Tape Door	S01384
Indicator Lens	M00345		



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index



MODEL CR-332B

GIBBS MODELS CR-332B
CR-332C
CR-335B
CR-337B
(8-Track Stereo Player)

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 alcohol. Use alcohol to remove oil and grease from all driving surfaces.

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.

GIBBS MODELS CR-332B/C/335B/337B

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

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TROUBLE CHART

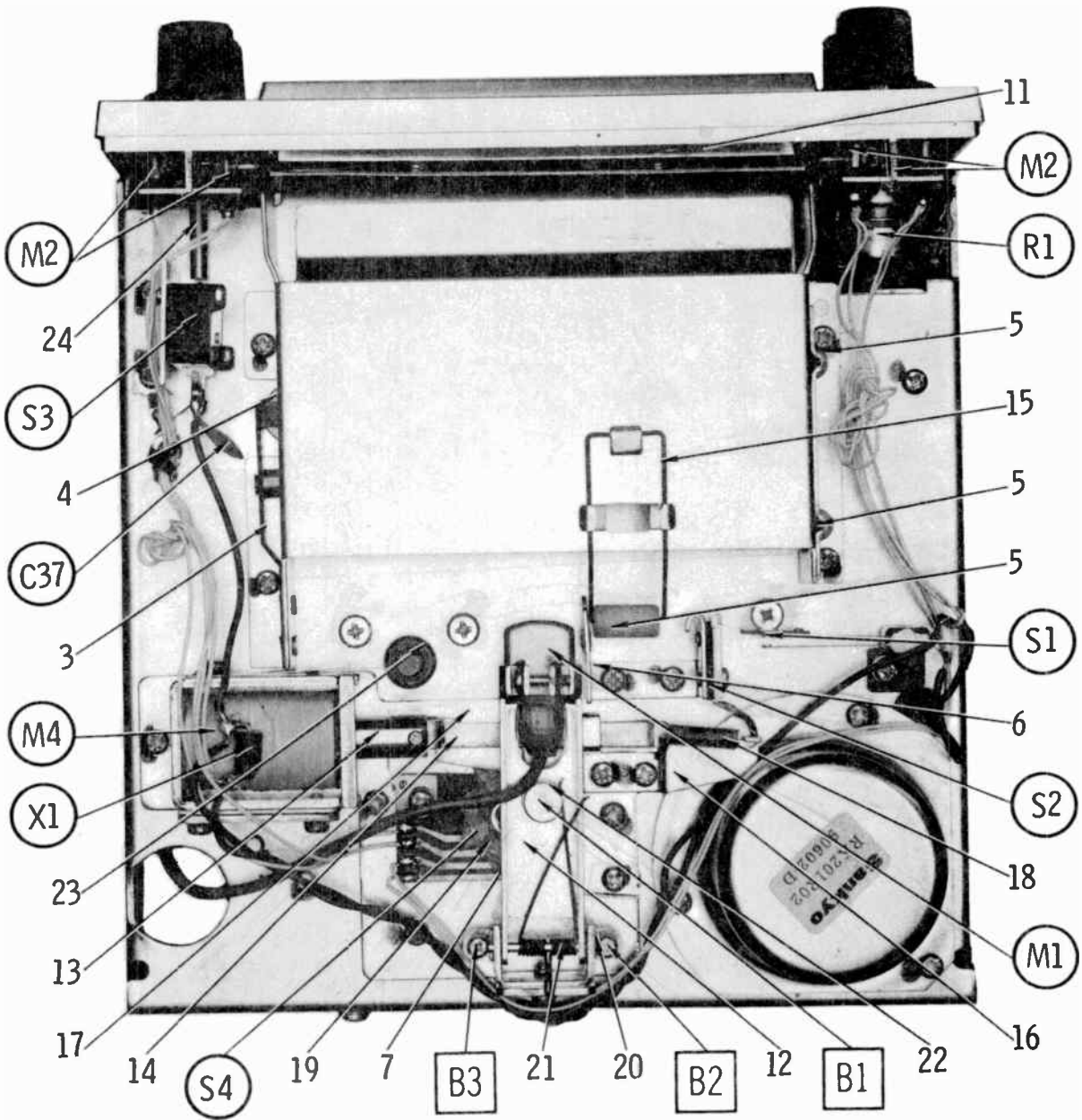
SYMPTOM	REMARKS
Capstan does not rotate.	Belt (1) dirty, worn, or broken. Housing (23) binding. Motor defective or not supplied with power.
Track-shift mechanism inoperative.	Switch (S2) dirty. Click (7) broken. Arm (14) binding. Spring (18) weak or missing. Solenoid (M4) defective or not supplied with 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.

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 and B3 equally in opposite directions for maximum output.
Output Level Balance	Set Balance control at center of rotation and apply a 1000-cycle tone across left and right sections of Head (M1). Adjust R4 and R5 for equal outputs.

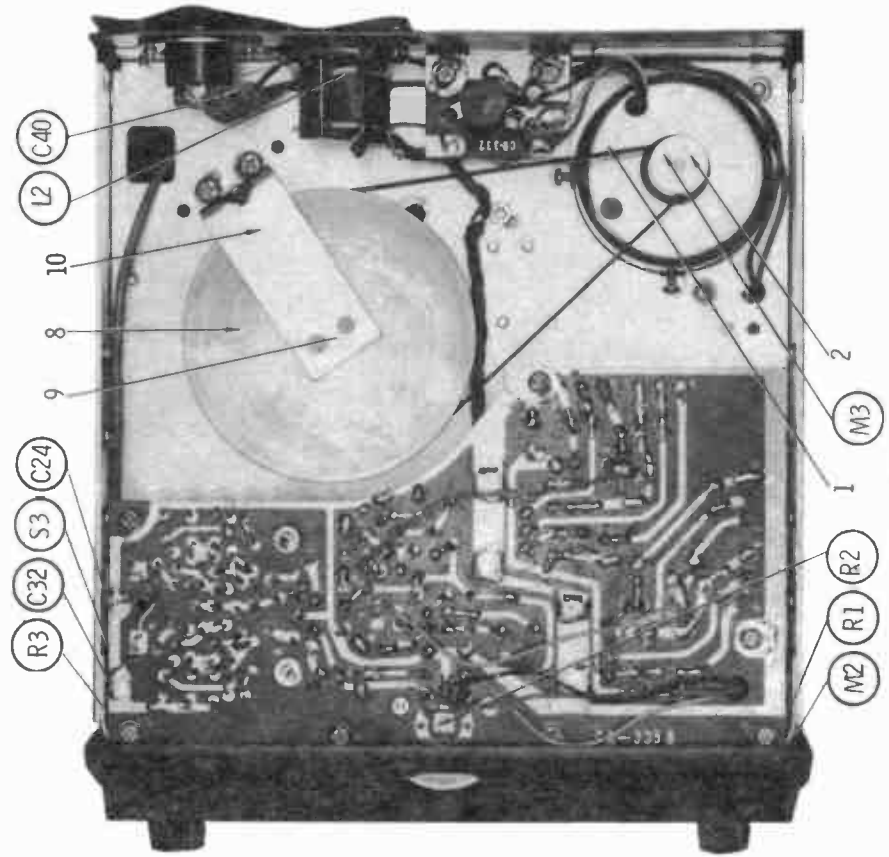
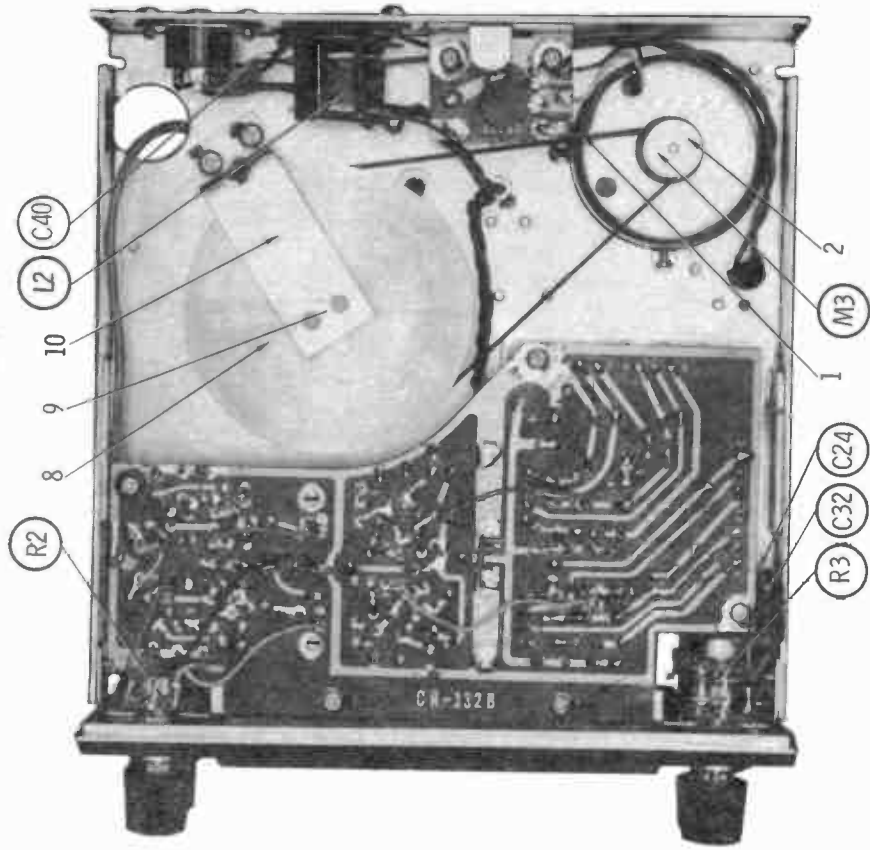
MECHANICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	M00350	Flywheel Belt	13	P00265	Plunger
2		Motor Pulley	14	S01424	Plunger Arm
3	S01425	Cartridge Lock Spring	15	W00567	Cartridge Retainer Spring
4	N00337	Cartridge Lock Roller	16	S01433	Ratchet Stop
5	N00334	Cartridge Guide Roller(3 used)	17	S01423	Plunger Arm Guide
6	S01420	Tape Guide	18	W00443	Plunger Arm Spring
7	S01265	Click	19	M00326	Cam Ratchet
8	S01390	Flywheel	20	S01441	Tape Head Support Bracket
9	M00347	Capstan Thrust Bearing	21	W00444	Tape Head Suppressor Spring
10	S01419	Flywheel Support Bracket	22	W00445	Tape Head Adjustment Spring
11	W00582	Door Spring	23	N00333	Flywheel Housing
12	S01442	Tape Head Arm	24	N00339	Channel Change Shaft

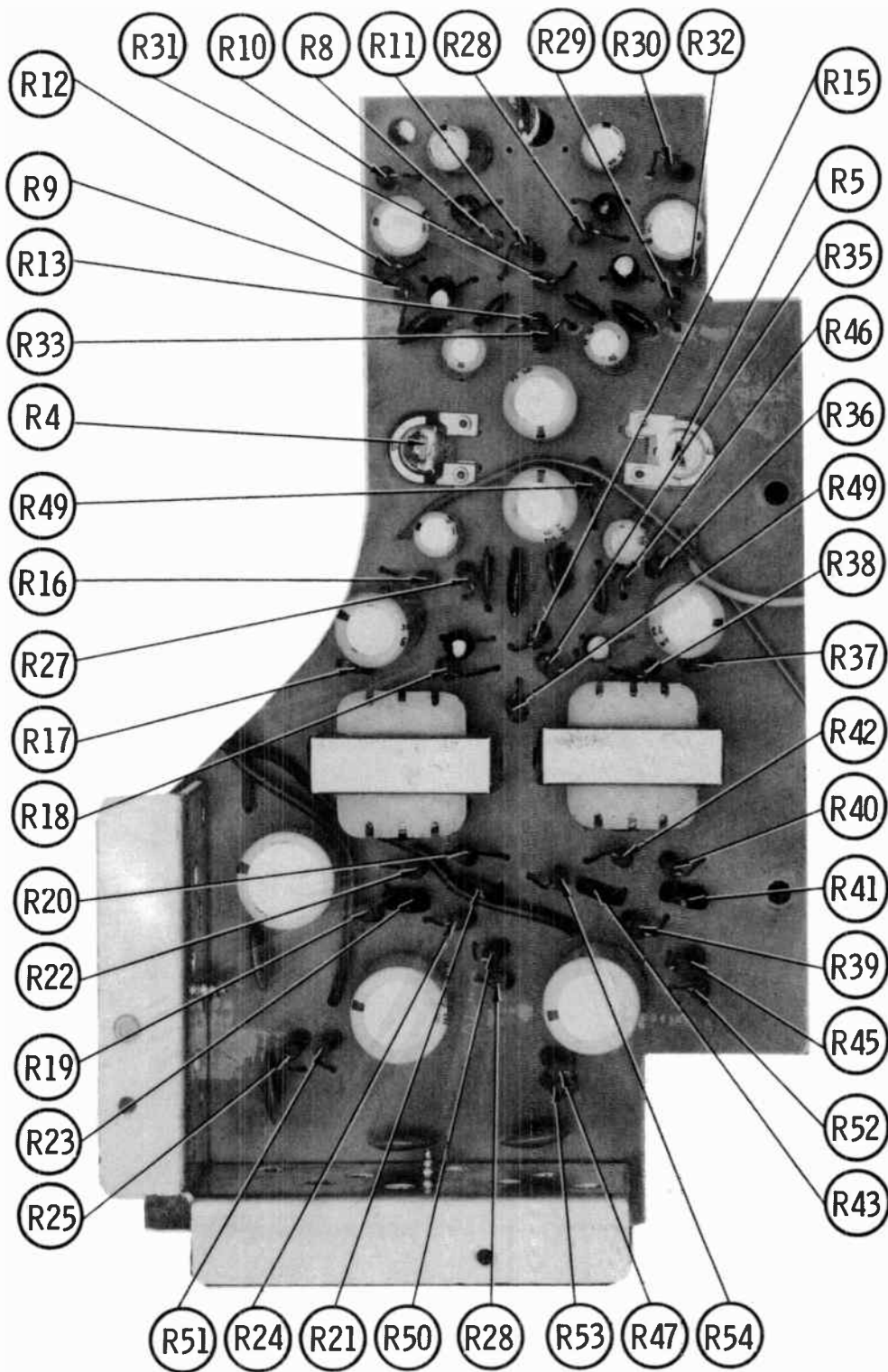


ALL MODELS

MODELS CR-332B/C, 337B

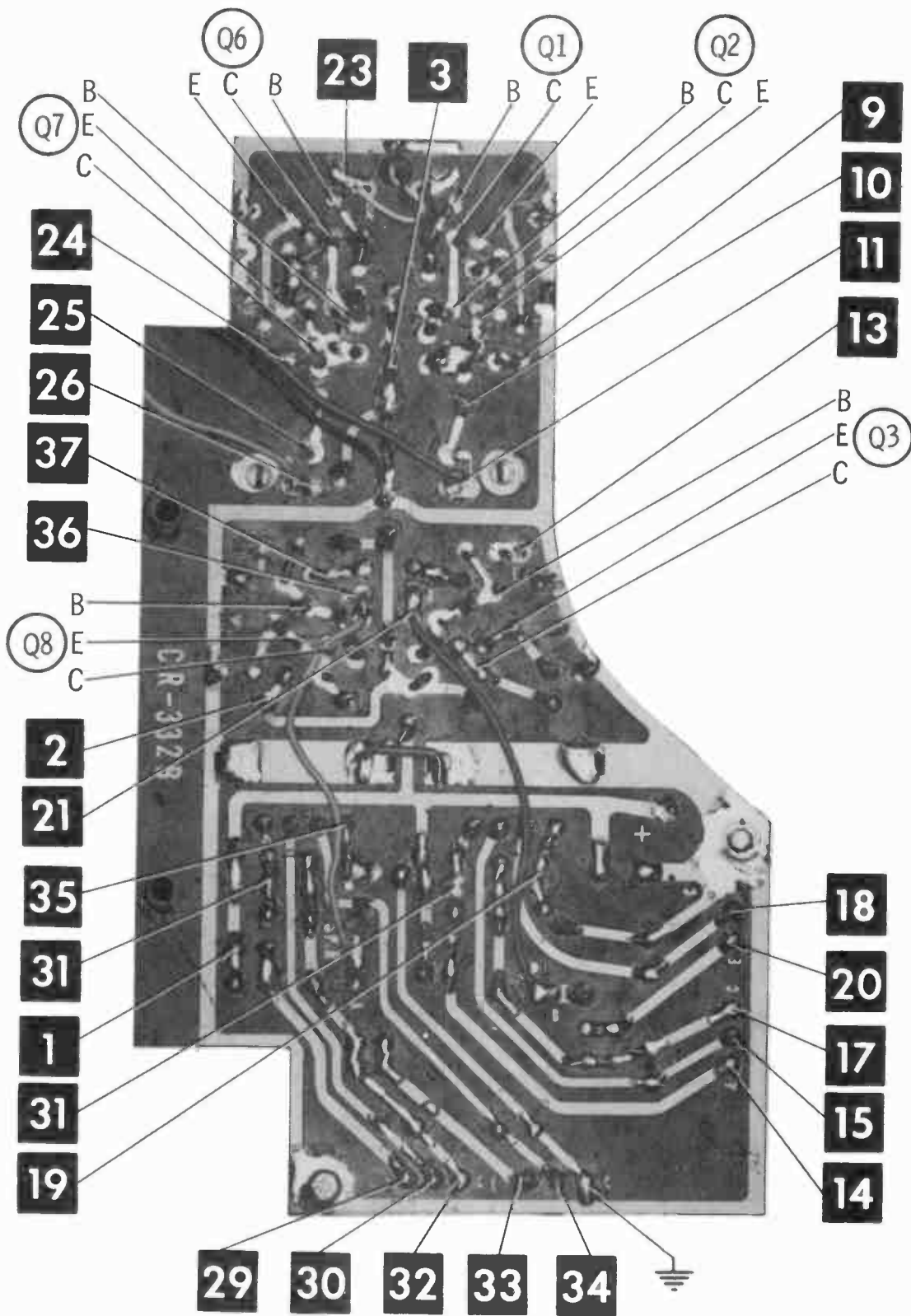


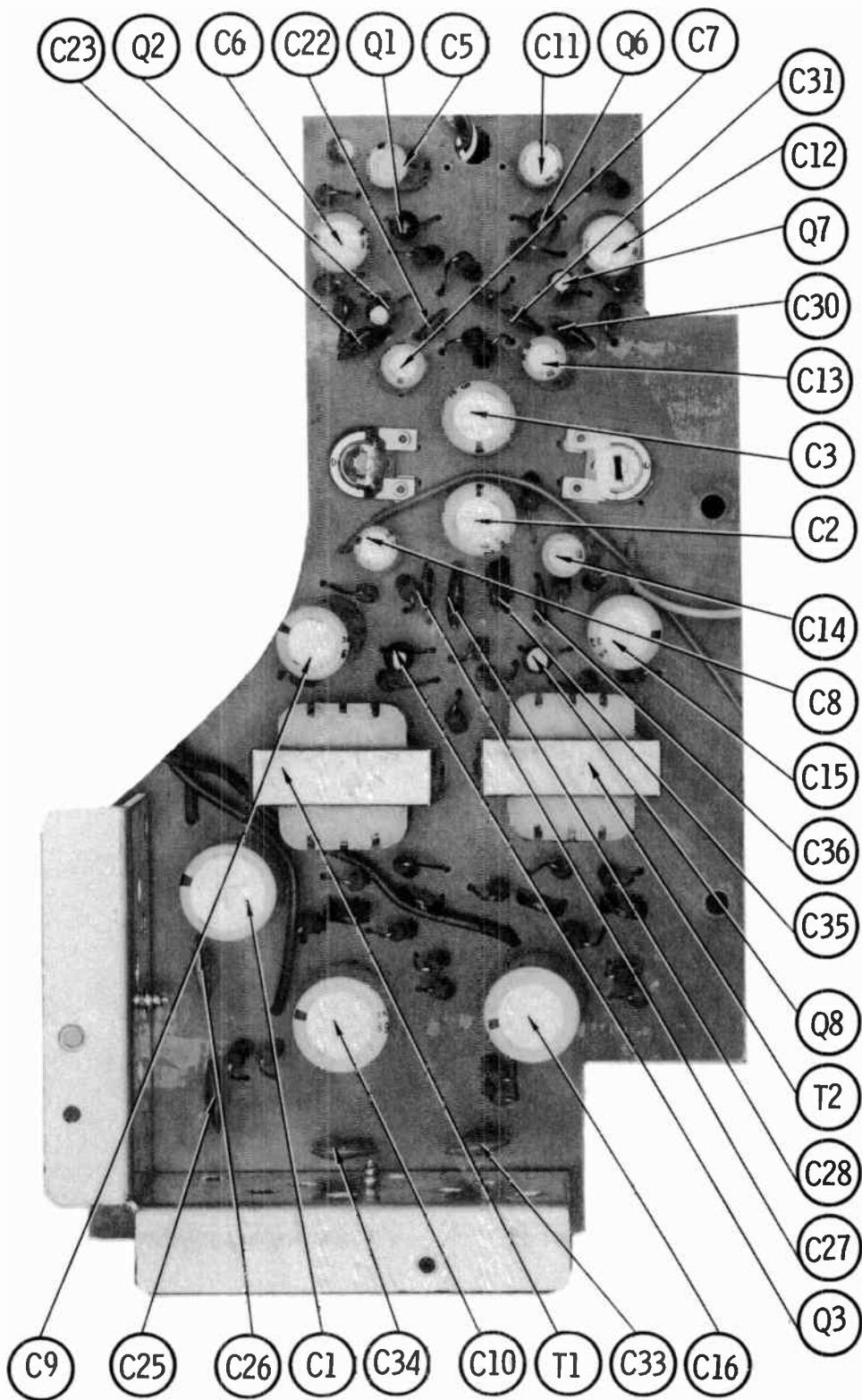
MODEL CR-335B



GIBBS MODELS CR-332B/C/335B/337B

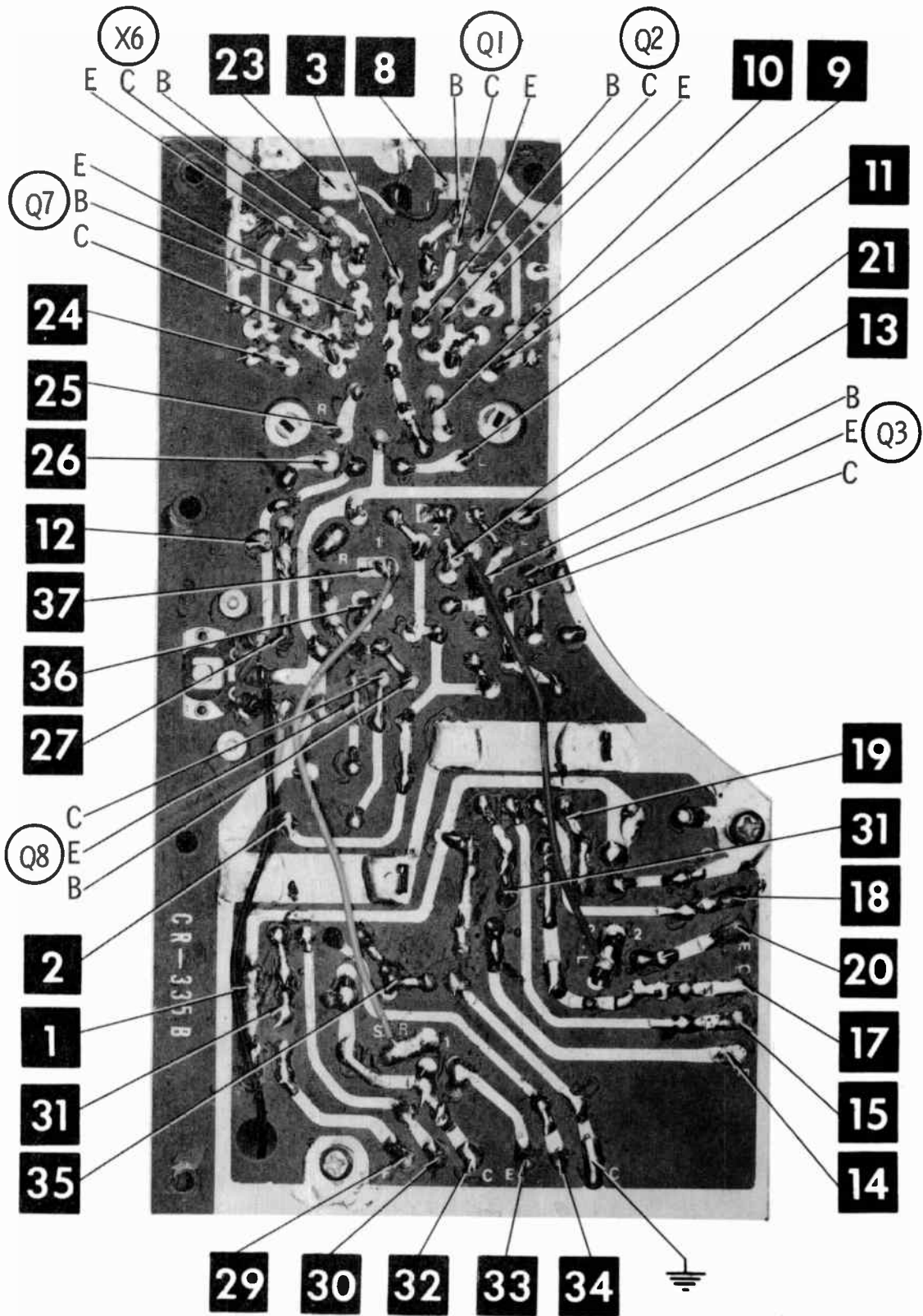
MODELS CR-332B/C, 337B

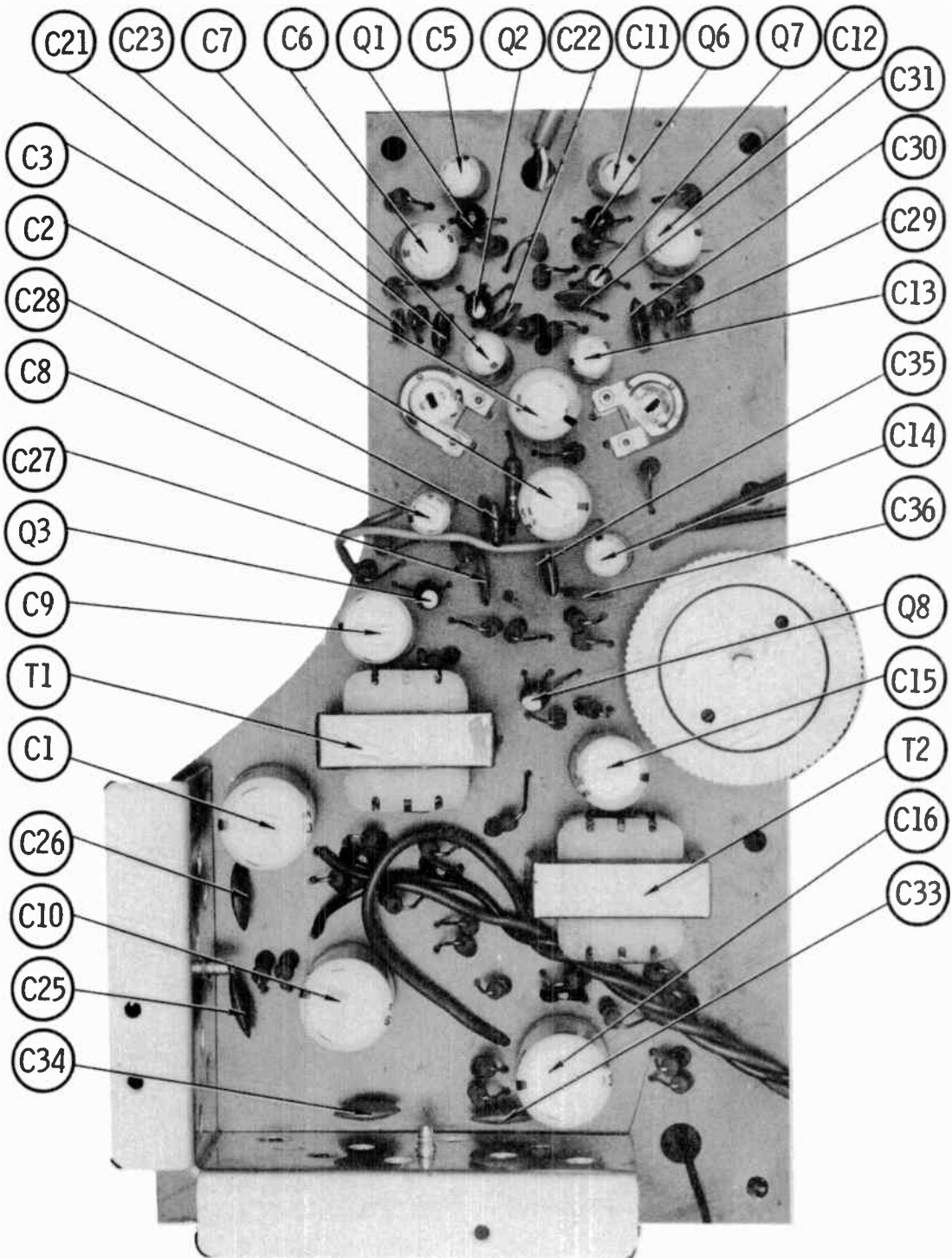




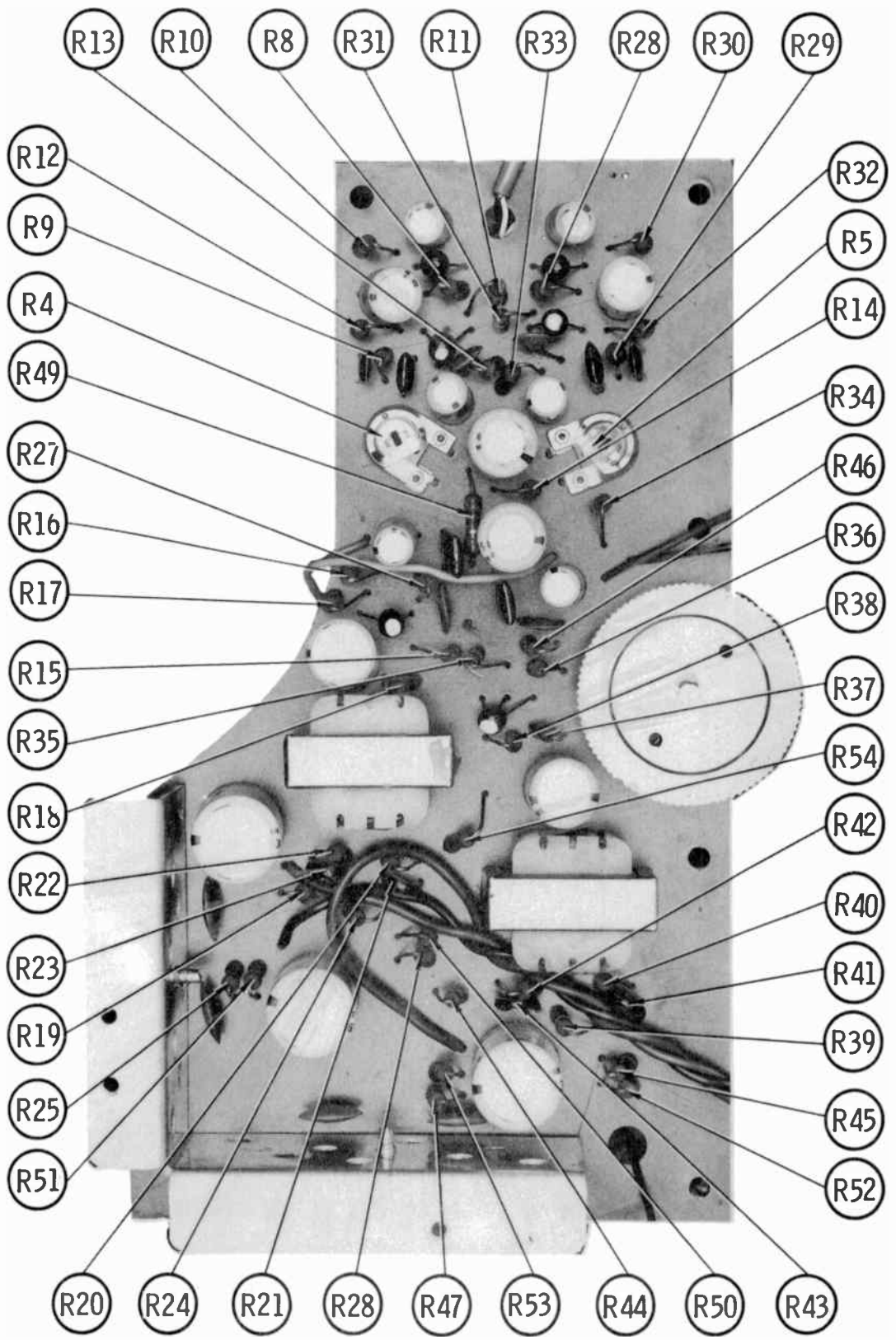
GIBBS MODELS CR-332B/C/335B/337B

MODELS CR-332B/C, 337B

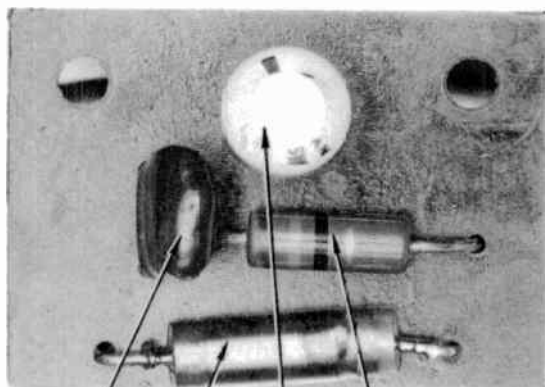




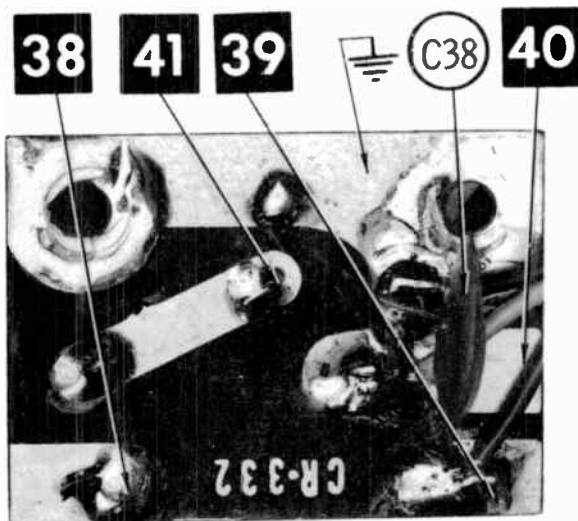
MODEL CR-335B



MODEL CR-335B



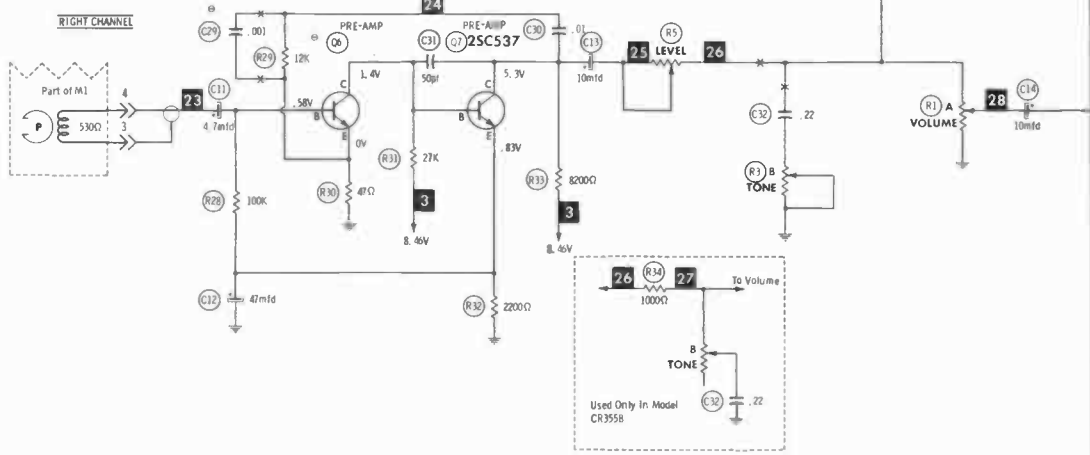
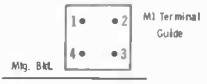
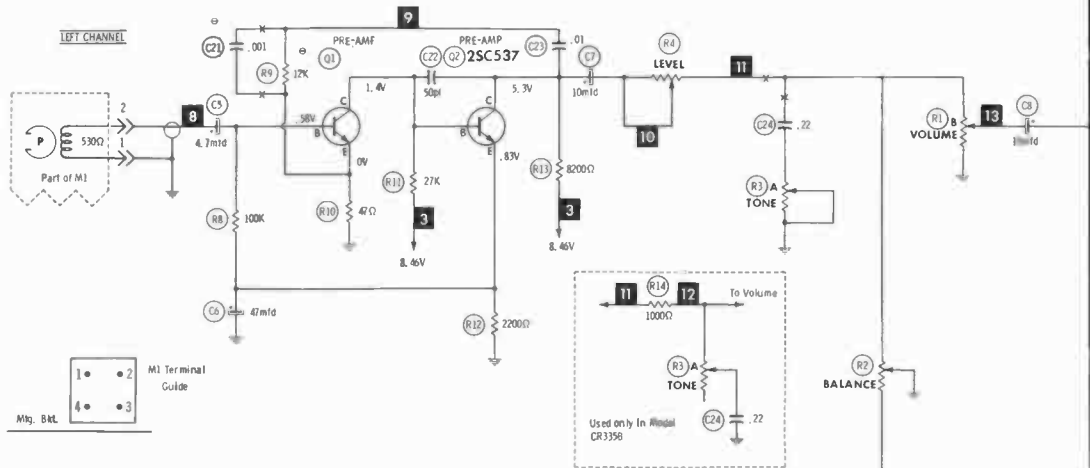
C39 L1 C4 R48



ALL MODELS

GIBBS MODELS CR-332B/C/335B/337B

NOTE: DEMAGNETIZE HEADS AFTER SERVICING



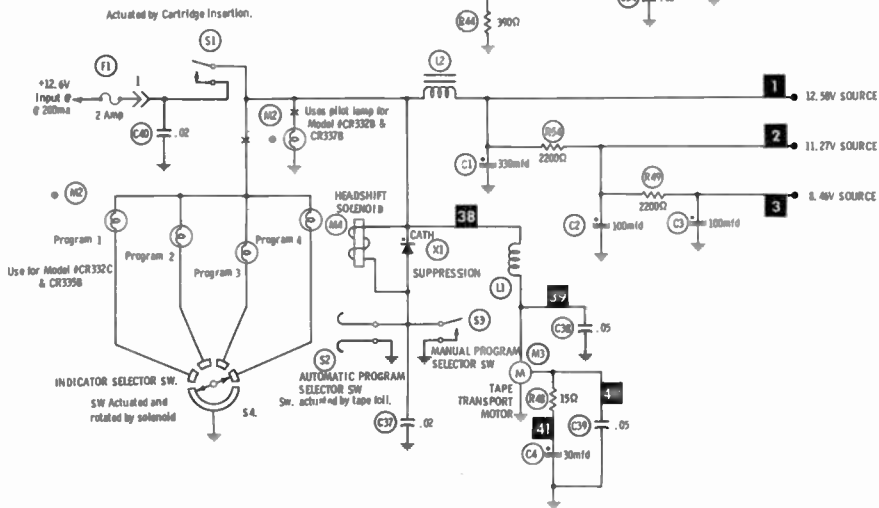
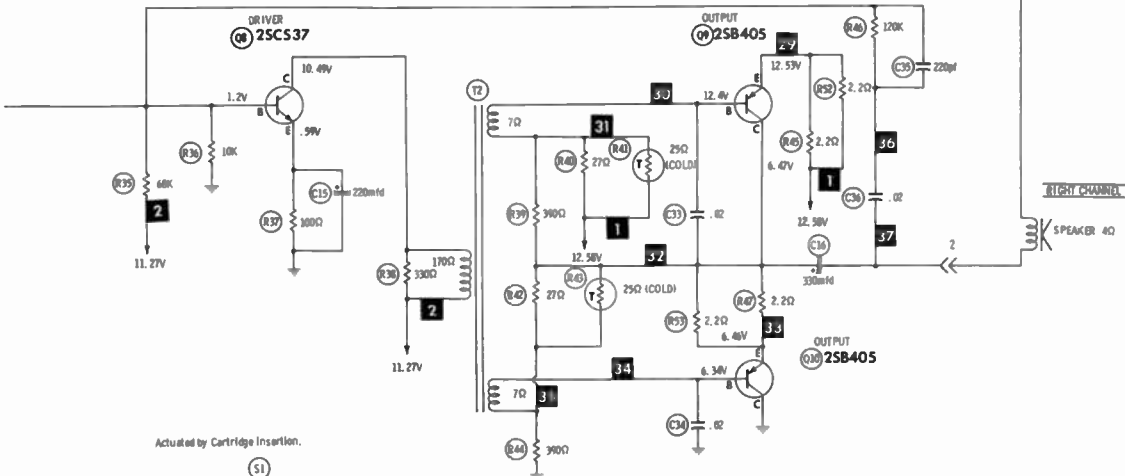
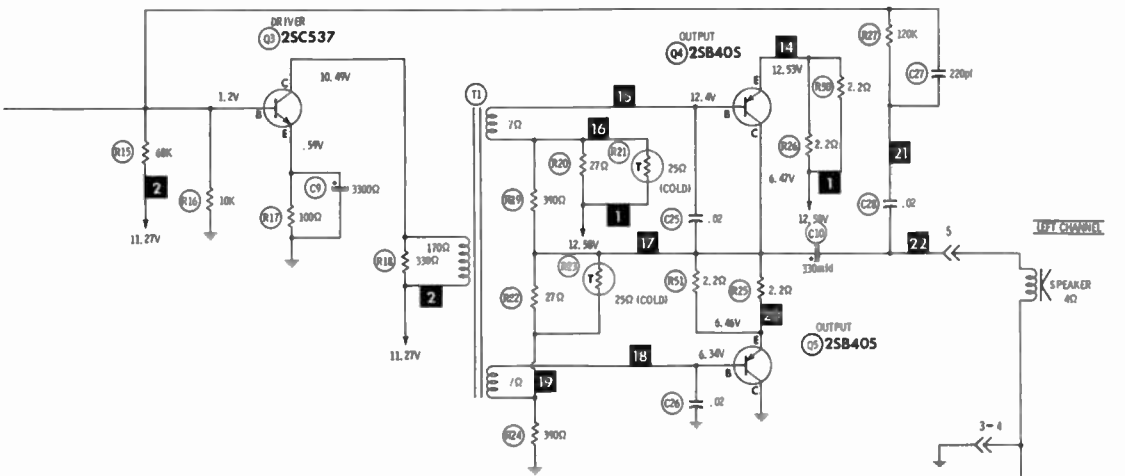
Transistor Terminal Guide



Speaker Socket Terminal Guide

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 VVM or equivalent meter,
no signal applied and controls adjusted for normal operation.
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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GIBBS MODELS CR-332B/C/335B/337B

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	25C537 (25C859)	Preamp	(1)	GE-17	TR-24	HEP723	SK3020	ECG 123
Q2	25C537	Preamp		GE-20	TR-24	HEP723	SK3020	ECG 123
Q3	25C537	Driver		GE-17	TR-24	HEP723	SK3020	ECG 123
Q4	25B405	Output		GE-17	TR-24	HEP723	SK3020	ECG 123
Q5	25B405	Output		GE-2	TR-14	HEP254	SK3004	ECG 102
Q6	25C537 (25C859)	Preamp		GE-2	TR-14	HEP254	SK3004	ECG 102
Q7	25C537	Preamp	(1)	GE-17	TR-24	HEP723	SK3020	ECG 123
Q8	25C537	Driver		GE-20	TR-24	HEP723	SK3020	ECG 123
Q9	25B405	Output		GE-17	TR-24	HEP723	SK3020	ECG 123
Q10	25B405	Output		GE-2	TR-14	HEP254	SK3004	ECG 102

(1) Used in Model CR-335B only.

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	DS-16E	GE-504A	8D4	ECG 116	SK3016	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		GIBBS PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	330 16V		BCD15300	EA15-250	PC500-16	QT1-30A	MTV400DJ15	TE-1166
C2	100 16V		BCD15100	EP15-100	PC100-16	MT1-19	MTV100CF15	TE-1162
C3	100 16V		BCD15100	EP15-100	PC100-16	MT1-19	MTV100CF15	TE-1162
C4	33 16V		BCD15025	EP15-25	PC30-35	MT1-13.5	MTV30CB25	TE-1158
C5	4.7 25V		BCD25005	EP30-5	PC5-100	MT1-3	MTV5CB50	TE-1202
C6	47 15V		BCD25050	EP30-50	PC50-25	MT1-16.5	MTV50CD25	TE-1209
C7	10 16V		BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C8	10 16V		BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C9	220 10V		BCD10190	EA15-250	PC200-16	MT1-23	MTV200CK10	TL-1137
C10	330 16V		BCD15300	EA15-250	PC500-16	QT1-30A	MTV400DJ15	TE-1166
C11	4.7 25V		BCD25005	EP30-5	PC5-100	MT1-3	MTV5CB50	TE-1202
C12	47 15V		BCD25050	EP30-50	PC50-25	MT1-16.5	MTV50CD25	TE-1209
C13	10 16V		BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C14	10 16V		BCD25010	EP15-10	PC10-50	MT1-5	MTV10CB50	TE-1155
C15	220 10V		BCD10190	EA15-250	PC200-16	MT1-23	MTV200CK10	TL-1137
C16	330 16V		BCD15300	EA15-250	PC500-16	QT1-30A	MTV400DJ15	TE-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.
C21	.001	(1)	GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C22	50		NPO-DI 50	DTZ-50	NPO50	CCTO-510	CN0450	10TCC-Q50
C23	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C24	.22			UK-204	HCZ3R0ZR224P		MAG3022	HY-125
C25	.02		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C26	.02		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C27	220		GPD X5F221K	DD-221	GP220	CCD-221	GP322	10TS-T22
C28	.02		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C29	.001	(1)	GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C30	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C31	50		NPO-DI 50	DTZ-50	NPO50	CCTO-510	CN0450	10TCC-Q50
C32	.22			UK-204	HCZ3R0XR224P		MAG3022	HY-125
C33	.02		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C34	.02		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C35	220		GPD X5F202K	DM-202	GP2000	CCD-202	GP220	2SS-D20
C36	.02		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C37	.02		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C38	.05		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C39	.05		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C40	.02		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20

(1) Used in Model CR-335B only

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				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Volume (Left)	10K	(1)		NP-10K-S (3), NR-10K-S, UP-C-400,DC-2	QCB1 (3) (4), B11-116,TM5, QCM or [BU2(3), CF9,CR5,SS1, SS7A, DC1]*	P14L, 3038 (3), R14L, CS3500
B	Volume (Right)	10K					
R2	Balance	10K	(1)	F1-10K (3), SSK104,BA006, CA005,CPL-2	A47-10K-S (3), KSS-3 or [NP-10K-S (3), UP-C-400]	QCB1 (3) (4), B11-116,TM5 or [BU2 (3),CF9, SS1, DC1]*	UA14L (3), SK1000 or [RU14L,SL39(3), SK1000] or U20 (3)
R3A	Balance	10K	(2)	B16-216 (5) (6) F1-10K (3), R1-10K,SSK104, CPL-2,BA006, CA005	NP-10K-S (3), NR-10K-S, UP-C-400,DC-2	QCB1 (3)(4), B11-116,B11-116, TM5,QCM or [BU2(3),CF9, CR5,SS1,SS7A, DC1]*	P14L, 3038 (3), RU14L,CS3500
B	Tone (Left)	10K	(1)				
B	Tone (Right)	10K					
A	Tone	10K	(2)			QCB1(3)(4), B13-116,B13-116, TM5,QCM or [BU2(3),CF61, CR52,SS1,SS7A, DC1]*	P14A,3038 (3), RU14A,CS3500
B	Tone	10K					
R4	Level (Left)	10K		T-10K (5)		X201R103B (5)	MTC14L1 (5)
R5	Level (Right)	10K		T-10K (5)		X201R103B (5)	MTC14L1 (5)

* "SNAPTROL" (1) Used in Models CR-332B,CR-332C,CR-337B (2) Used in Model CR-335B (3) Enlarge Mounting Hole.
(4) Use QCB1 Bushing instead of "TM" in TM5 Kit.
(5) For horizontal mount, bend the two outside terminals to fit "PC" board. Use jumper wire to connect center terminal to "PC" board.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.
R21	25 (Cold)			SDT-02
R22	25 (Cold)			SDT-02

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.
R41	25 (Cold)			SDT-02
R43	25 (Cold)			SDT-02

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (7.5uh)	L00129	19-1009	4611	T960

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.	
L2	200ma	.3	5mh	CH-5004	C-4095	TC-2	TR-156	TY17XT

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.	
T1	7	1	1	FR-67				
T2	7	1	1	FR-67				

GIBBS MODELS CR-332B/C/335B/337B

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.	
	4 ohms PH 4 ohms PM				

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	2 Amp			AGC2	HDJ	312002	150145	

TAPE HEADS

ITEM No.	MEASURED			PART No.	NORTRONICS PART No.	DESCRIPTION
	INDUCTANCE	BIAS/ERASE VOLTS (RMS)	BIAS FREQ.			
M1	420mh			P00296	5800 (1)	8-Track Stereo Play (1) Use original mounting

MISCELLANEOUS

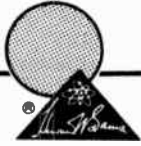
ITEM No.	PART NAME	PART No.	NOTES
M2	Program Indicator Lamp	P00265	4 Used (Models CR332C, CR335B) Models CR332B, CR337B
M3	Power Indicator Lamp		
M4	Motor		
S1	Solenoid		
S2	Switch, On-Off	S01597	
S3	Switch, Automatic Program Selector		
S4	Switch, Manual Program Selector	W00503	Used in Models CR332C, CR335B only
	Switch, Program Indicator Selector	S01264	
	Switch, Contact		

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

ITEM	PART No.	ITEM	PART No.
MODEL CR-332B		MODEL CR-337B	
Printed Circuit Board	W00620	Printed Circuit Board	W00620
Escutcheon	M00341	Escutcheon	M00371
Indicator Lens	M00345	Indicator Lens	M00374
Knob, Control	M00340	Knob, Control	M00372
Tape Door	S01384	Tape Door	S01612
MODEL CR335B			
Printed Circuit Board	W00683		
Escutcheon	M00388		
Indicator Lens	M00382		
Knob, Volume or Tone	M00081		
Knob, Balance	M00384		
Knob, Program Selector	M00385		
Tape, Door	S01589		

WIRING DATA

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

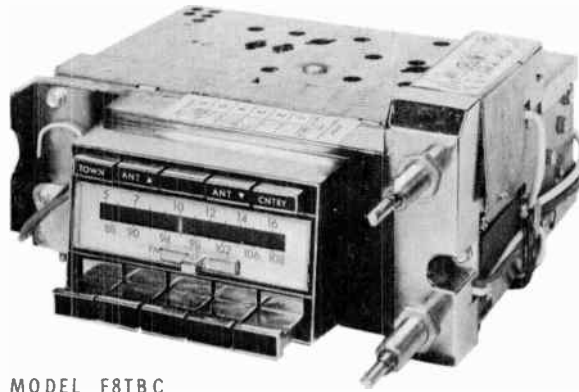


PHOTOFACT[®] with

CIRCUITRACE[®]

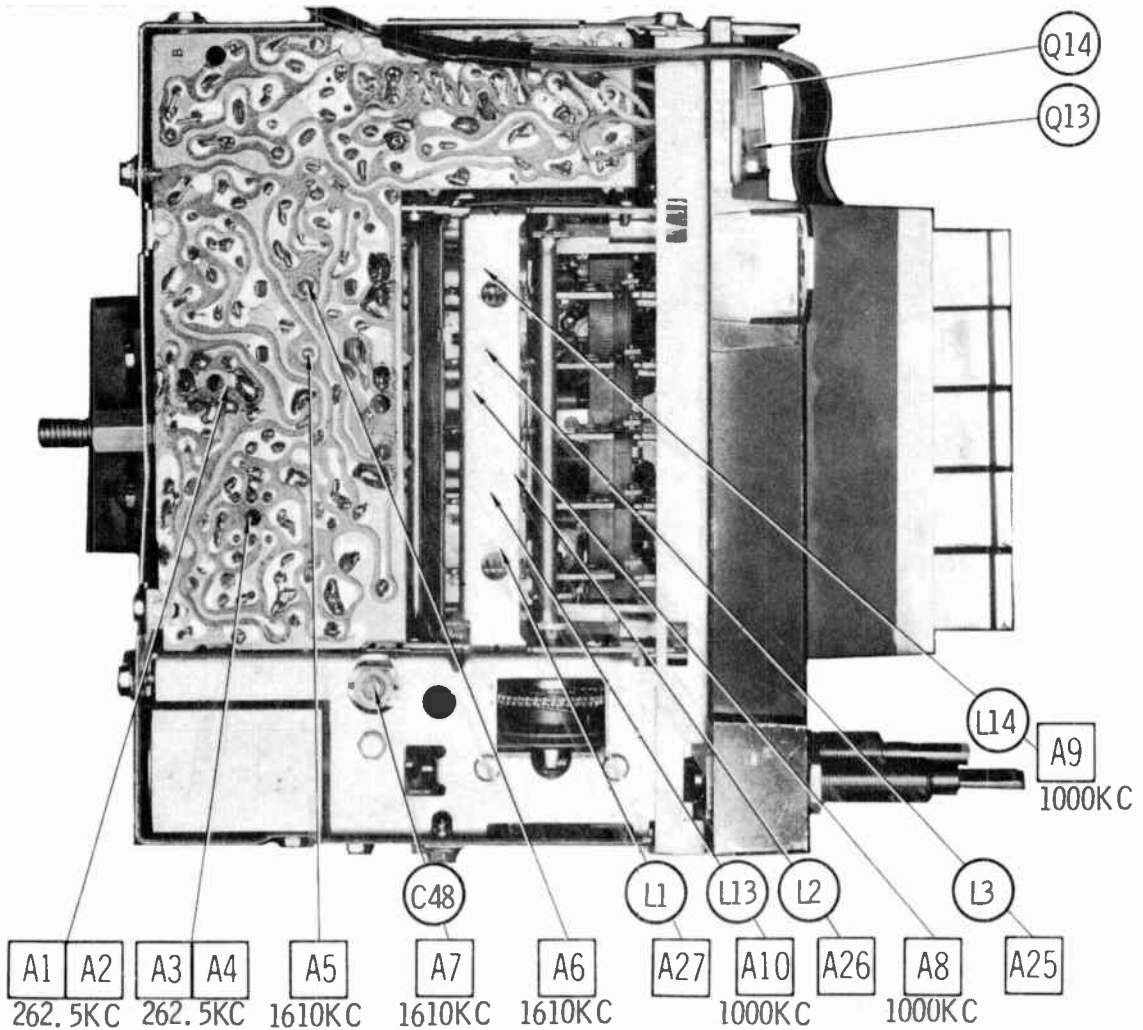
For Supplier Address See PHOTOFACT Index

NOTE: Manufacturer Part Numbers Shown Are BENDIX



MODEL F8TBC

Lincoln Models F8TBC
 (C8VY-18805B5)
 (68 - Lincoln)
 9FBL
 (C9VA-19A241)
 9FBLU
 (C9VA-19A246)
 (69 - Lincoln)

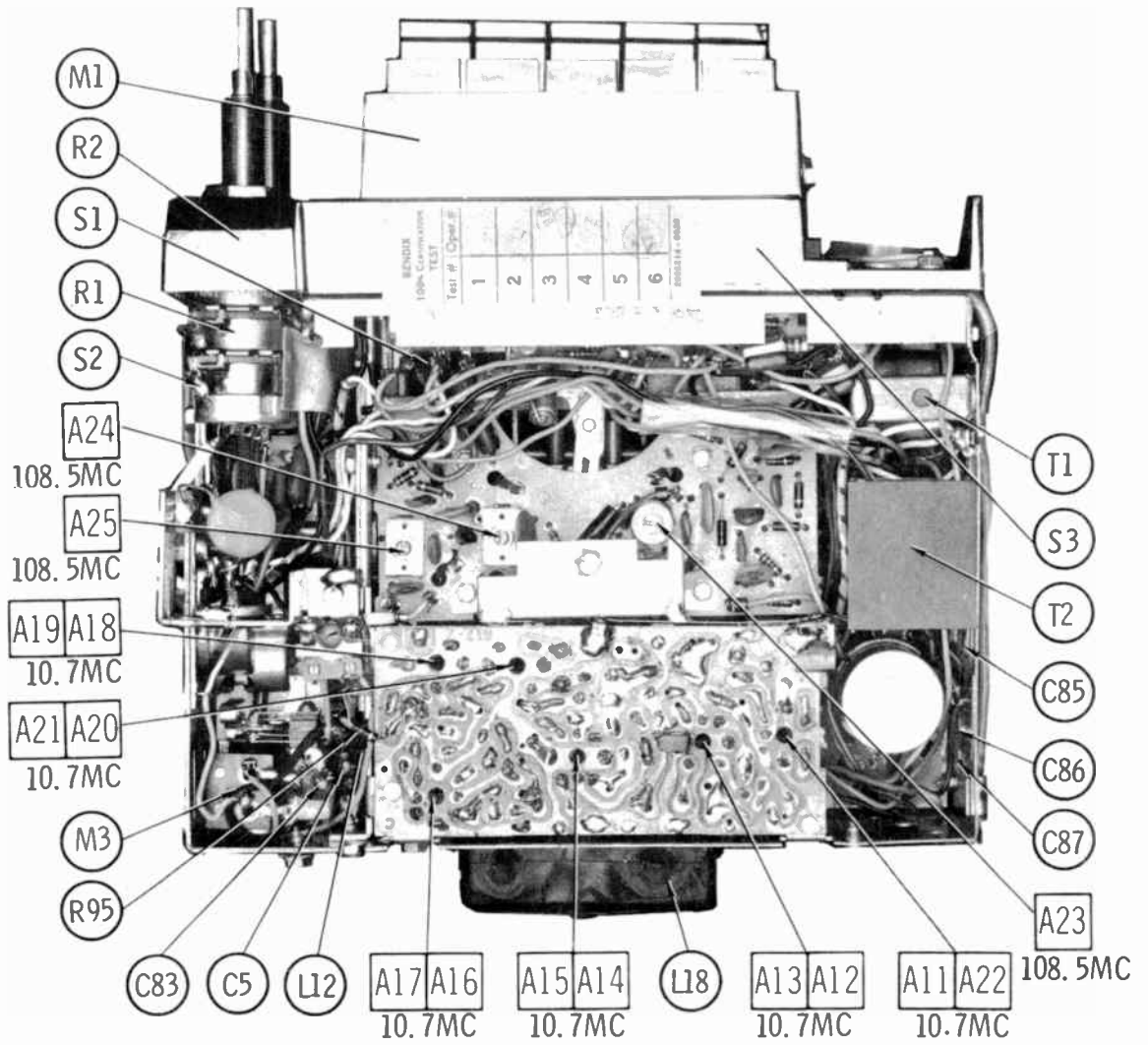


LINCOLN MODELS F8TBC, 9FBL/U

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

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TD649



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: 9300,9296,9297
A11 thru A22. WALSCO: 2510,2546,2547
A5,A6,A7,A23, GENERAL CEMENT: 8290,8868,9087
A24,A25. WALSCO: 2525,2528,2587

PUSH-BUTTON ADJUSTMENT

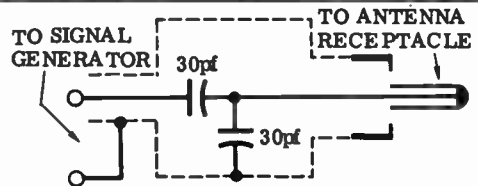
1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

	GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point \diamond A, low side to ground.	262.5KC 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.	1610KC	"	"	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.
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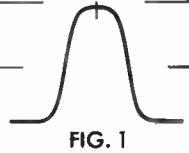
With radio installed in car and antenna extended to desired height, tune in a weak station near 1400KC and adjust A7 for maximum output. Antenna adjustment (A7) is located on right bottom corner.



DUMMY ANTENNA

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 A21	Adjust for maximum. 
5.	"	"	DC probe of VTVM to point \diamond D, common to ground.	A22	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

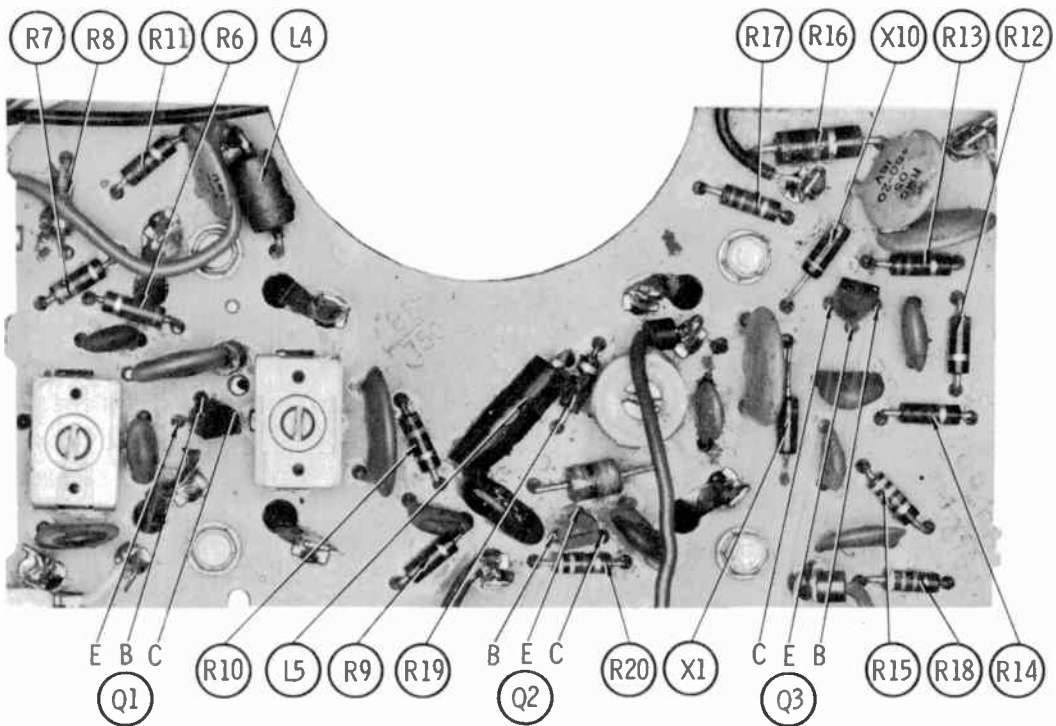
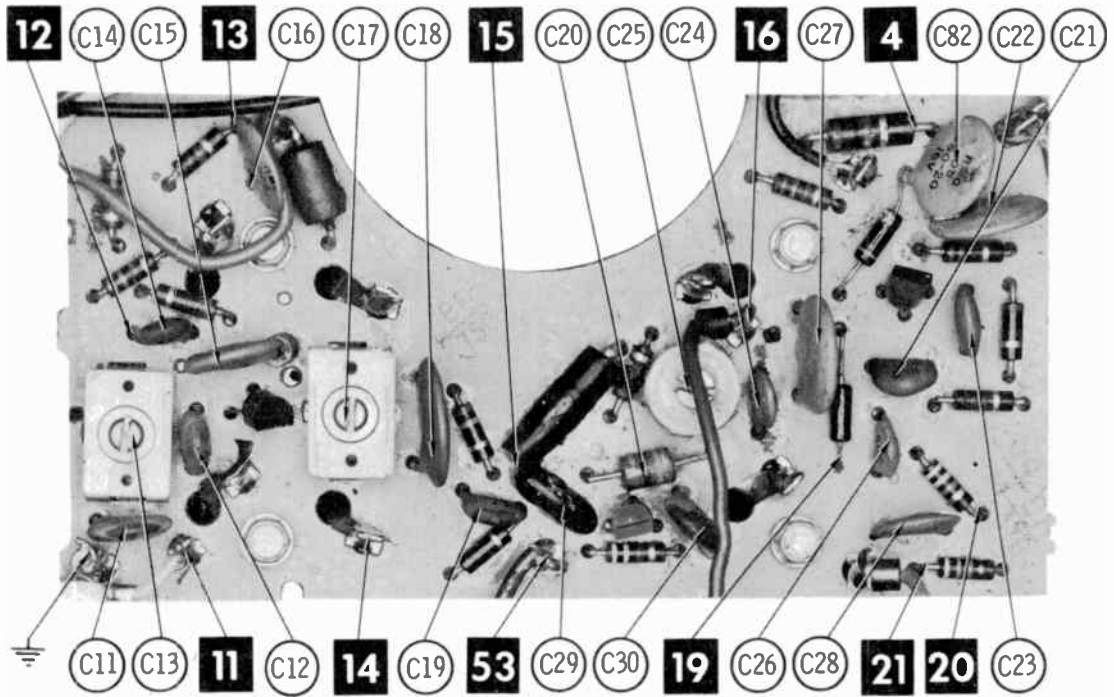
High side of generator thru .001mfd to point \diamond B, low side to ground. Use only enough marker signal for indication. Use 60 cycle frequency modulated signal with 450KC sweep. Use 60 cycle sawtooth voltage in scope for horizontal deflection.

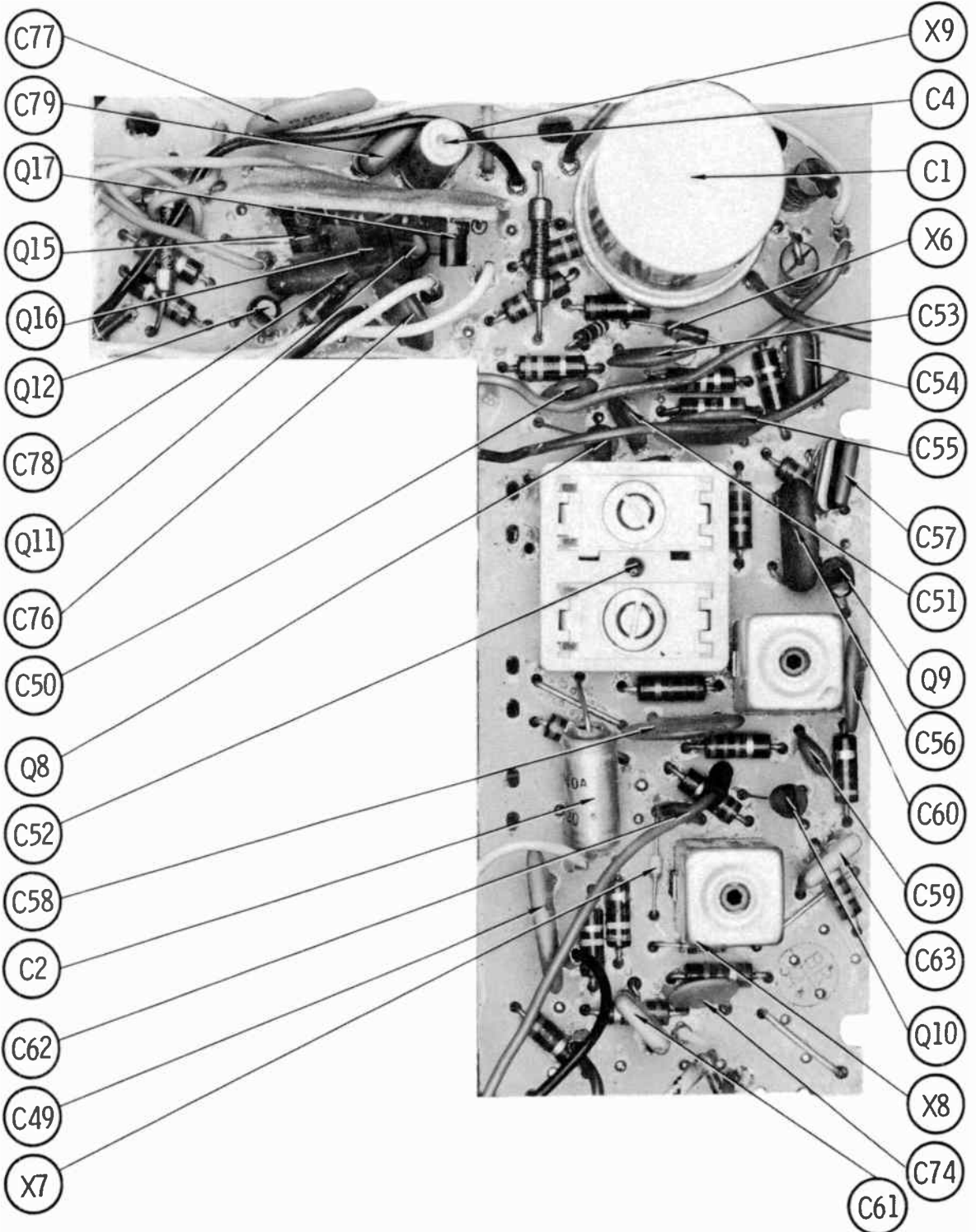
4.	10.7MC 450KC Sweep	Point of non-interference	Vert. amp of scope to point \diamond C, low side to ground.	A11 thru A21	Adjust for maximum gain and symmetry of response similar to Fig.1 with marker as shown.
5.	"	"	Vert. amp of scope to point \diamond D, low side to ground.	A22	Adjust A 22 (secondary) to place marker at center of "S" curve similar to Fig. 2. Readjust A 11 (primary) for maximum amplitude and straightness of line.

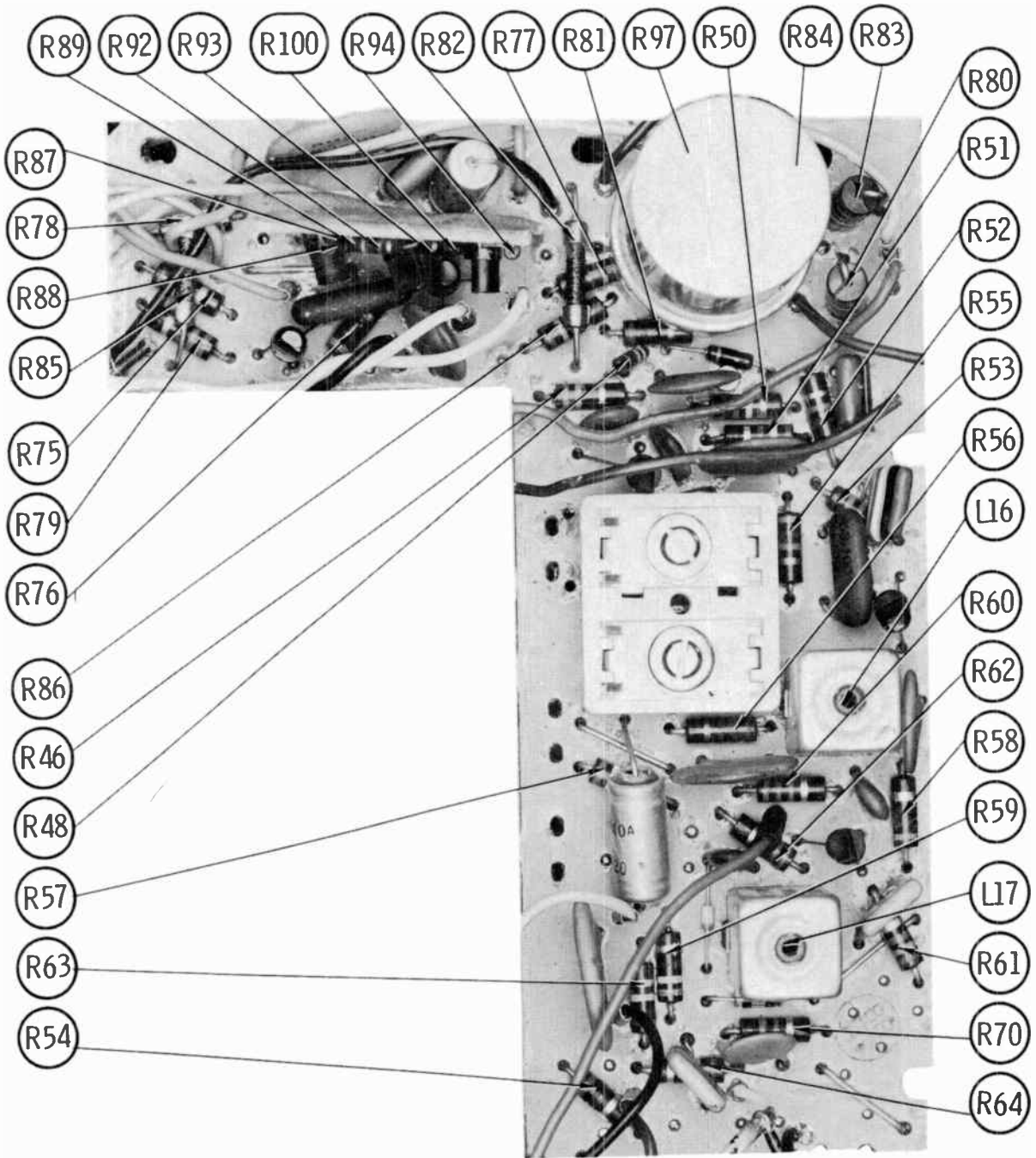
FM RF ALIGNMENT—SELECTOR IN FM POSITION

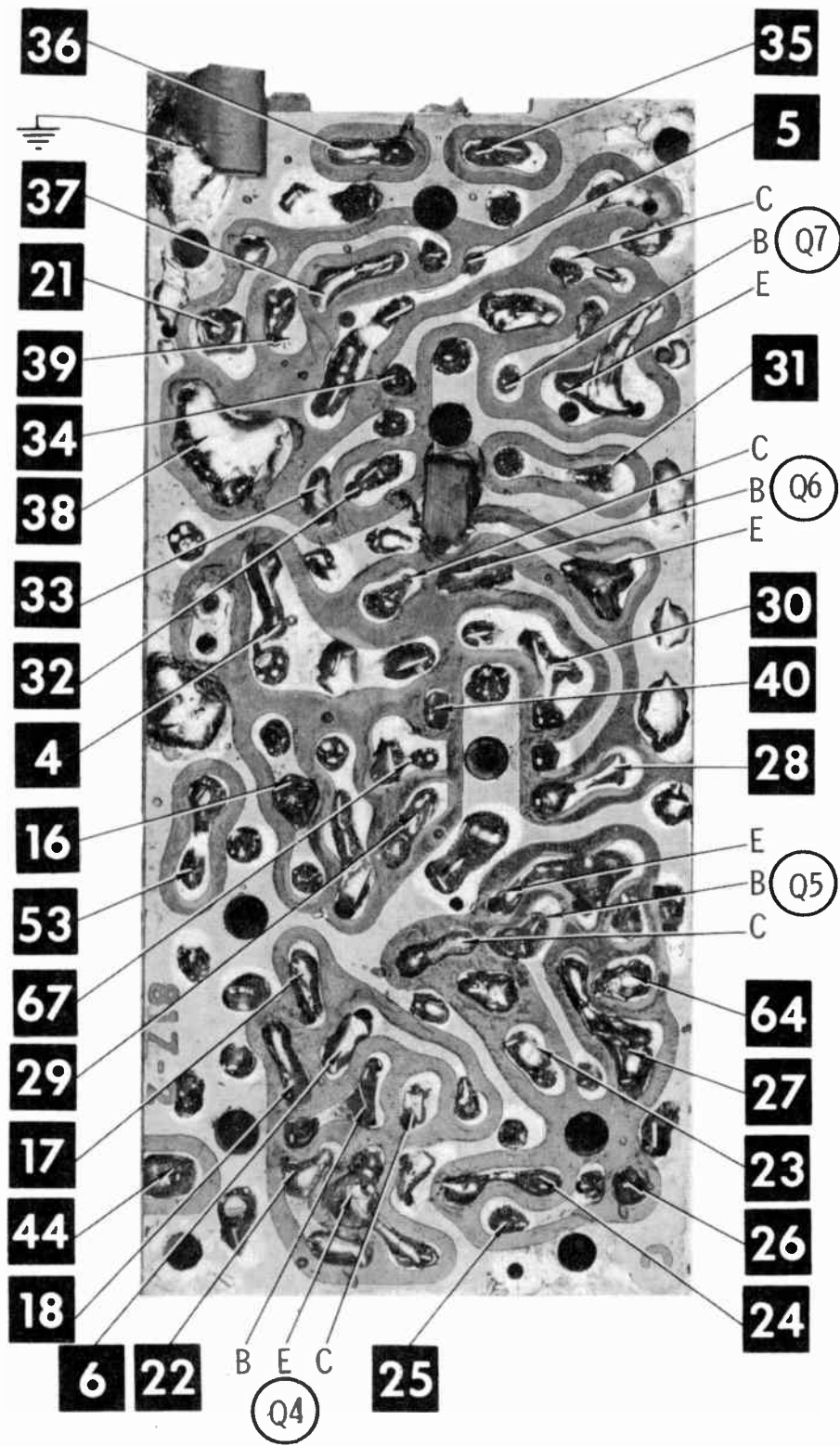
Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead.

	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
6.	108.5MC	Set at high end.	DC probe of VTVM to point \diamond C, common to ground.	A23,A24, A25	Adjust for maximum. 

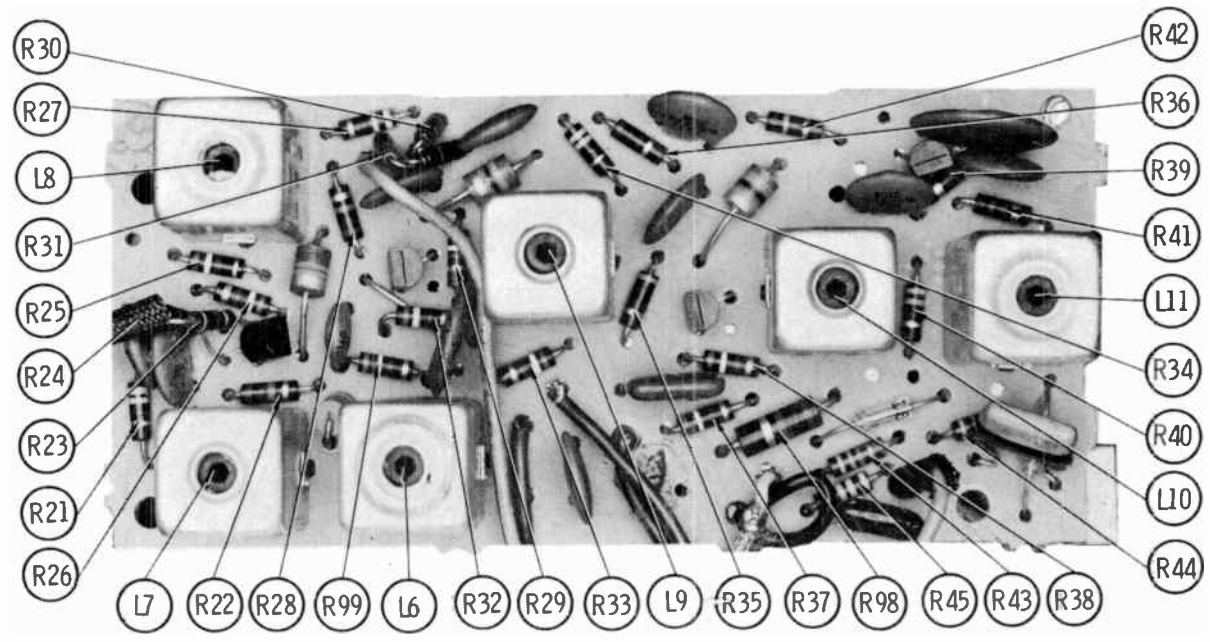
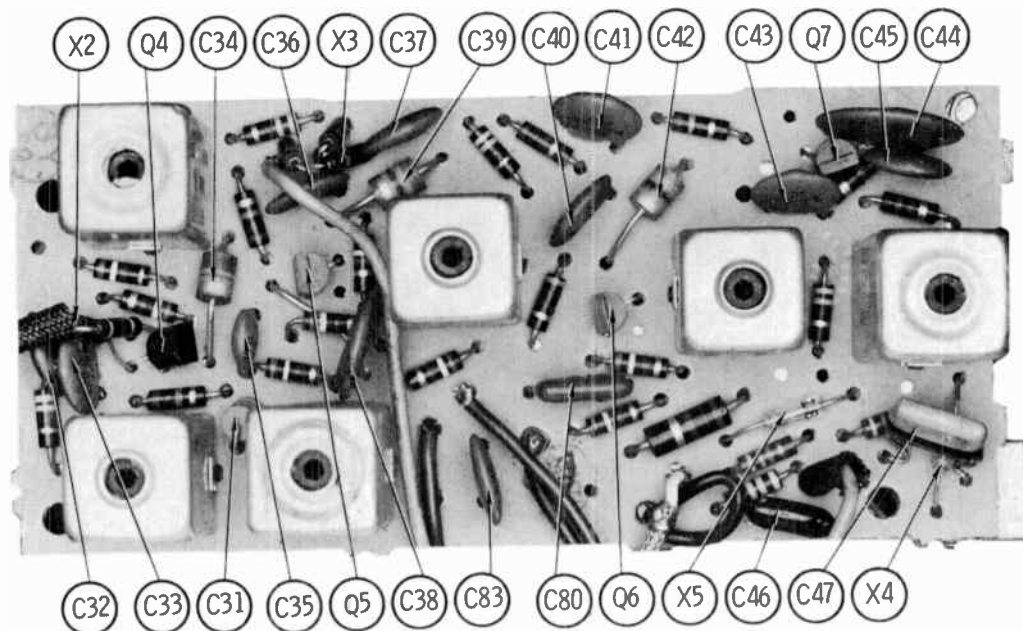


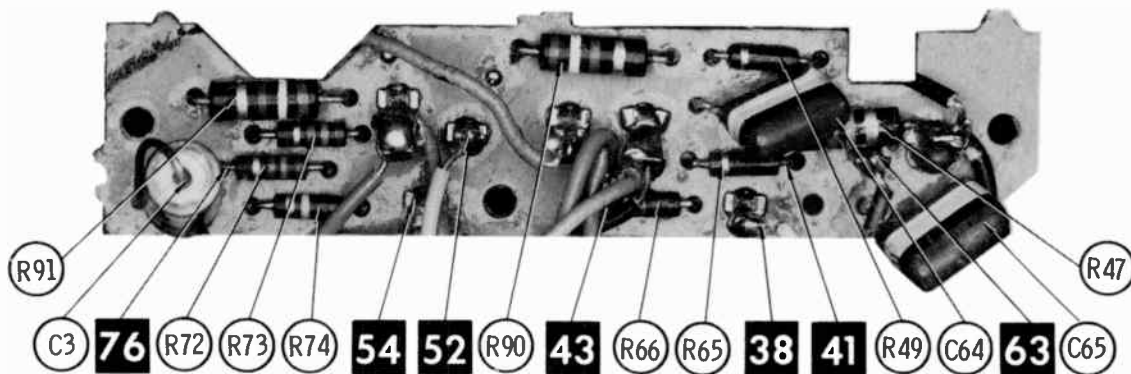
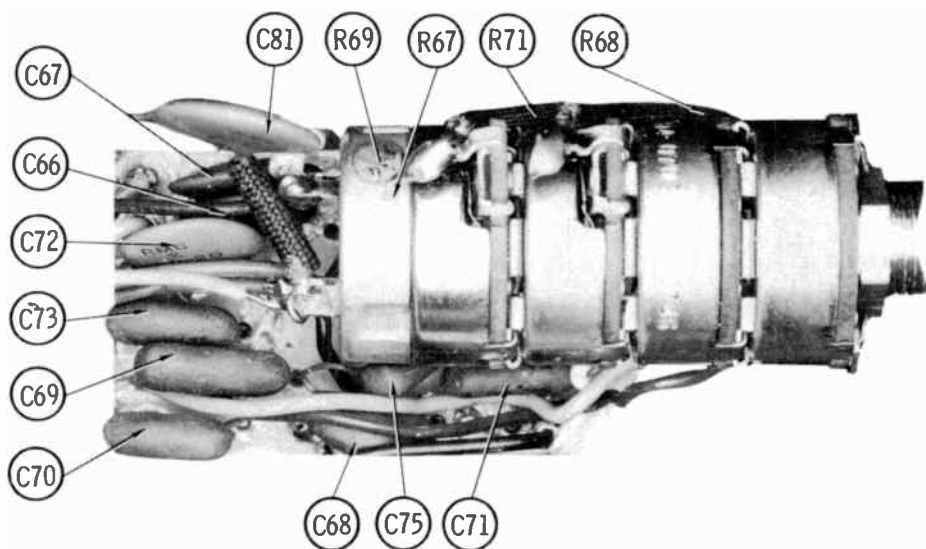
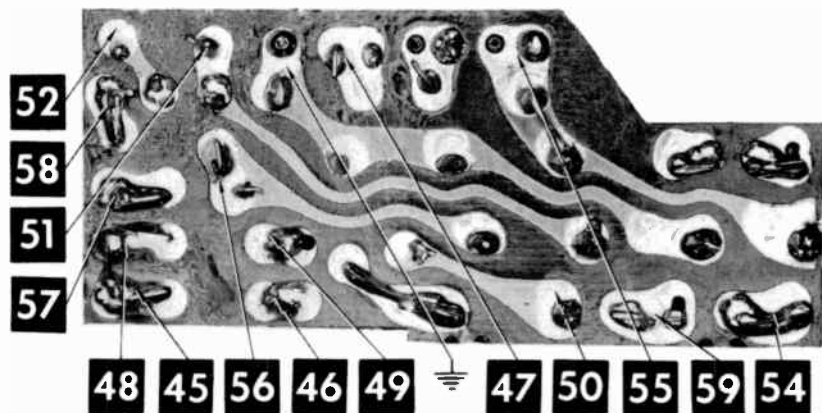






A Howard W. Sams **CIRCUITRACE** Photo





PARTS LIST AND DESCRIPTION

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

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

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
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		FM RF Amp	2092417-0714	GE-17	TR-22	HEP55	SK3018	ECG 108
Q2		FM Mixer	2092417-0715	GE-17	TR-22	HEP55	SK3018	ECG 108
Q3		FM Osc.	2092417-0716	GE-17	TR-22	HEP55	SK3018	ECG 108
Q4		1st FM IF Amp	2092418-0720	GE-20	TR-22	HEP55	SK3018	ECG 108
Q5		2nd FM IF Amp	2092418-0719	GE-20	TR-22	HEP55	SK3018	ECG 108
Q6		3rd FM IF Amp	2092418-0720	GE-20	TR-22	HEP55	SK3018	ECG 108
Q7		FM Limiter	2092418-0721	GE-20	TR-22	HEP55	SK3018	ECG 108
Q8		AM RF Amp	2093308-0704	GE-20	TR-21	HEP54	SK3018	ECG 108
Q9		AM Converter	2093308-0705	GE-20	TR-21	HEP54	SK3018	ECG 108
Q10		AM IF Amp	2093308-0706	GE-20	TR-21	HEP54	SK3018	ECG 108
Q11		AF Amp	2092609-0718	GE-20	TR-21	HEP54	SK3020	ECG 123
Q12		Driver	2092609-0713	GE-20	TR-21	HEP54	SK3020	ECG 123
Q13		Output (1)	4080187-0504					
Q14		Output (1)	4080187-0504					
Q15		Trigger	2092609-0705	GE-20	TR-21	HEP54	SK3020	ECG 123
Q16		Trigger Amp	2092609-0705	GE-20	TR-21	HEP54	SK3020	ECG 123
Q17		Relay Control	2092609-0713	GE-20	TR-21	HEP54	SK3020	ECG 123

(1) Models 9FBL & 9FBLU use Part No. 4080879-0002.

LINCOLN MODELS F8TBC, 9FBL/U

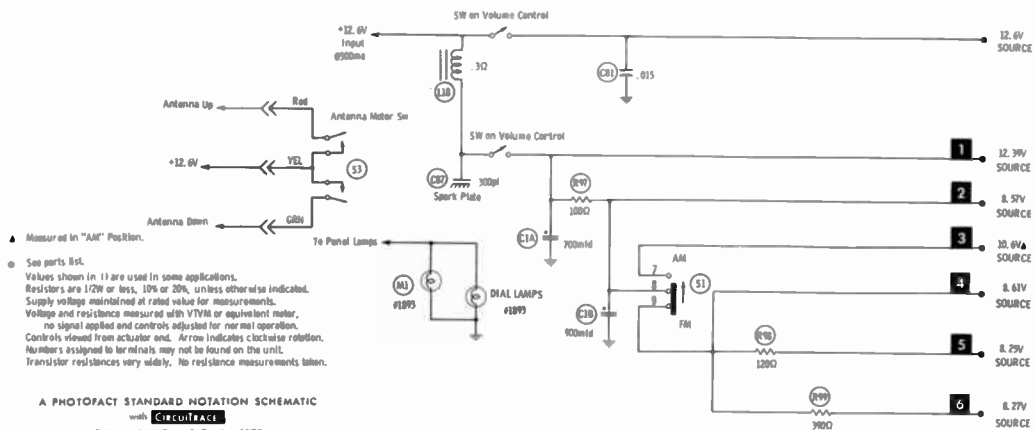
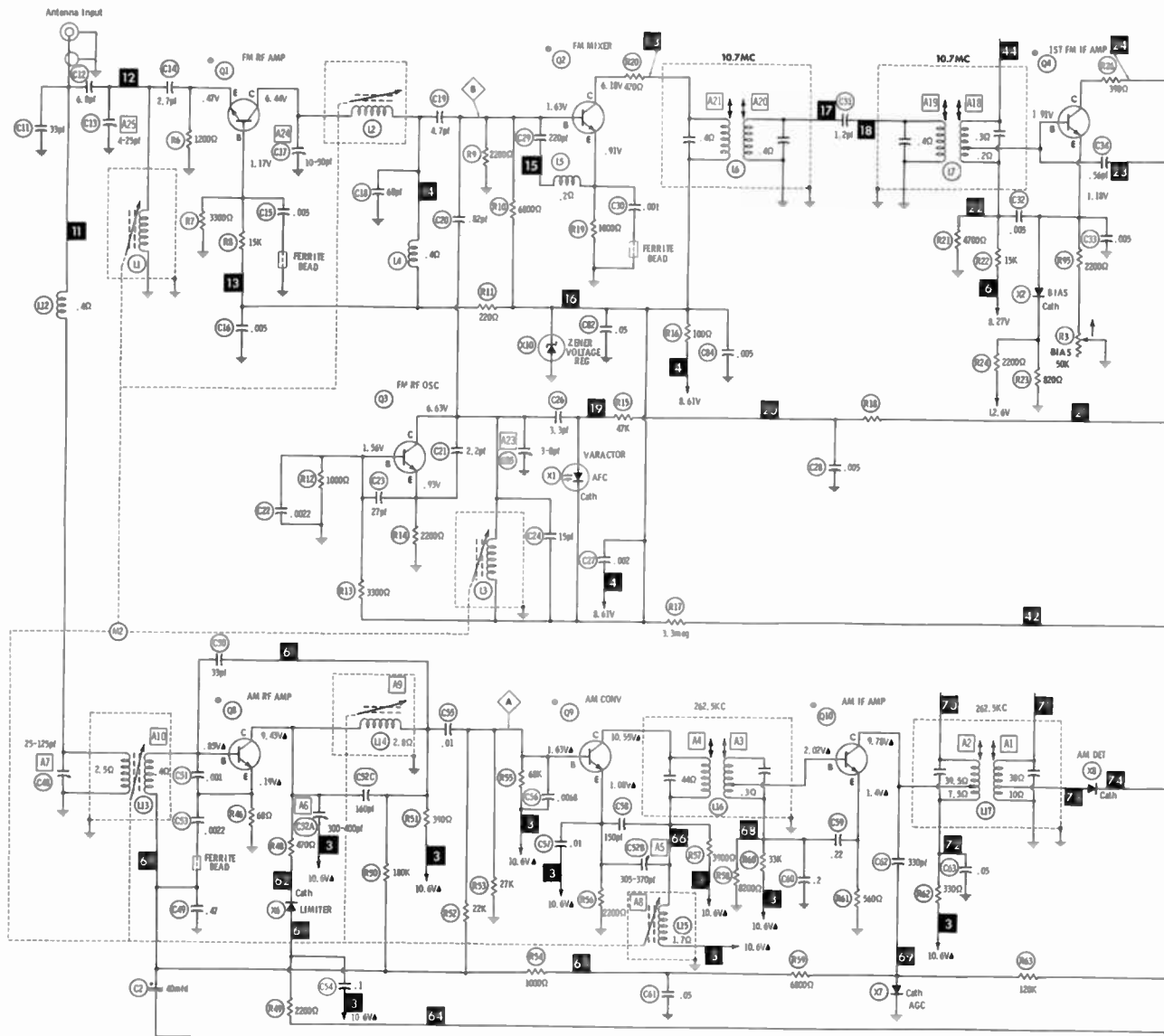
POWER RECTIFIERS & SIGNAL DIODES

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	2092055-0003					Varicap (1) Matched Pair Zener Zener
X2	2092055-0713	1N34AS	1N34A	ECG 109		
X3	2092055-0713	1N34AS	1N34A	ECG 109		
X4	2092055-0007	1N34AS	1N34A	ECG 110 (1)		
X5	2092055-0007	1N34AS	1N34A			
X6	2092055-0713	1N34AS	1N34A	ECG 110		
X7	2092055-0708	1N82A	1N82A	ECG 112		
X8	2092055-0001	1N82A	1N82A	ECG 112		
V9	2092055-0712	GE-X11	1ZM8.2			
X10	2092055-0710		1ZM7.5	ECG 138		

ELECTROLYTIC CAPACITORS

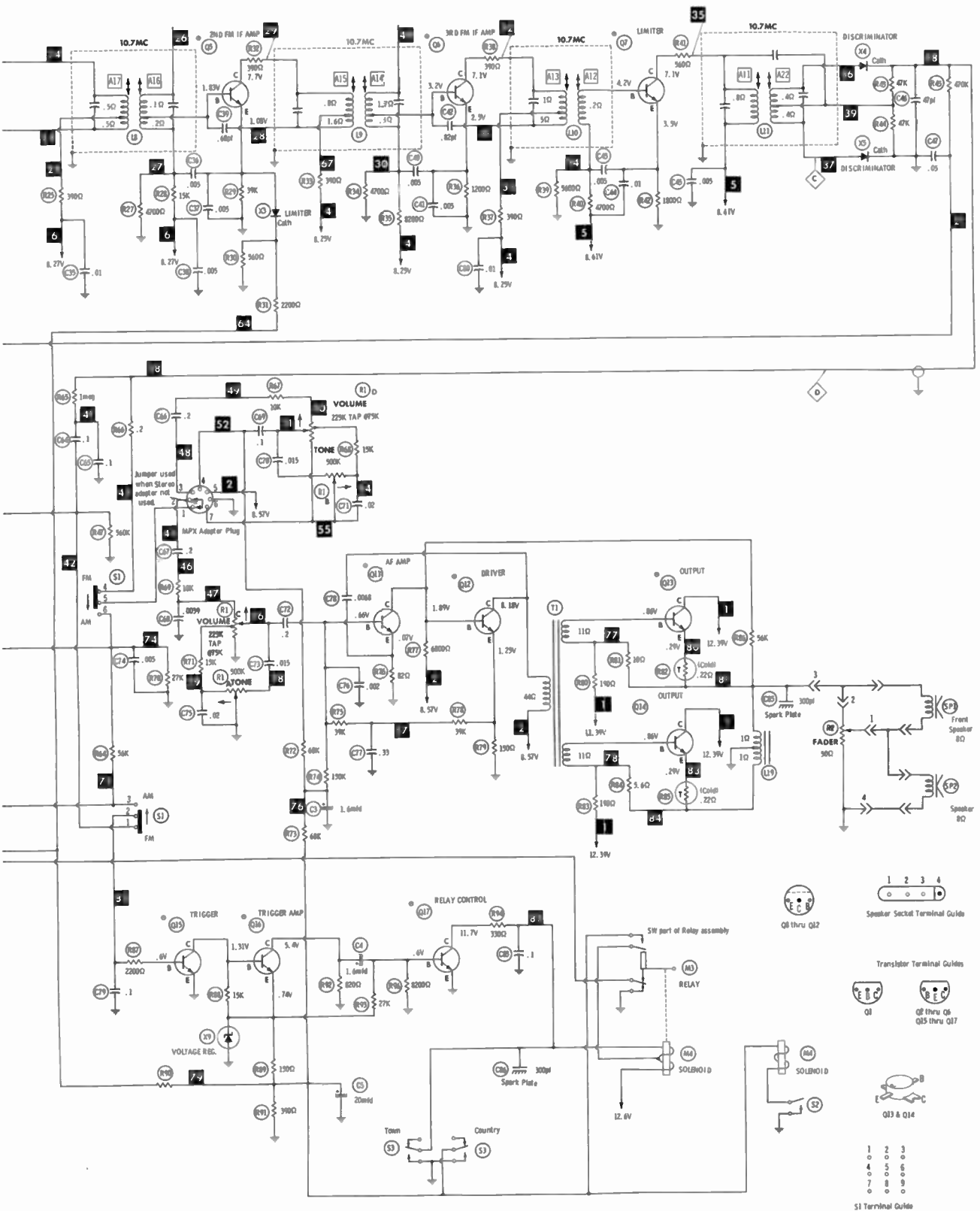
ITEM No.	RATING	REPLACEMENT DATA						
		BENDIX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	700 16V	2092983-0708			880040A			PCL-2185.1
8	900 16V							
C2	40 16V	2093667-0720	CRE615A	EA15-50	AL50-16	MT1-16	MTA50E15	TE-1160
C3	1.6 25V	2093667-0719	PTT88	EA50-2	AL2-50	MT1-1	MTA2D50	TE-1301
C4	1.6 25V	2093667-0719	PTT88	EA50-2	AL2-50	MT1-1	MTA2D50	TE-1301
C5	20 16V	2090480-0718	PTT117	EA15-25	AL25-16	MT1-10	MTA25D20	TL-1157.1

(CONTINUED ON PAGE 78)

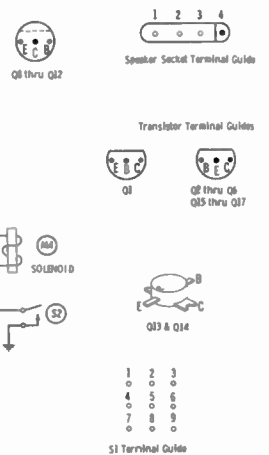


▲ Measure in "AM" Position.
 ● See parts list.
 Values shown in () are used in some applications.
 Resistors are 1/2W or less, 10% or 20%, unless otherwise indicated.
 Supply voltage maintained at rated value for measurements.
 Voltage and resistance measured with VTVM or equivalent meter,
 no signal 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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LINCOLN MODELS F8TBC, 9FBL/U



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	33 NPO	#2093115-0707	NPO-DI 33	DTZ-33	NPO33	CCT0-330	CN0433	10TCC-Q33
C12	6.8 NPO		NPO-DI 6.8	DTZ-6R8	NP06P8		CN0568	10TCC-V68
C13	4-25							
C14	2.7 NPO	#203115-0706	NPO-DI 3.0					10TCC-V30
C15	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-D50
C16	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-D50
C17	10-50	#2093231-2828	NPO-DI 68	DTZ-68	CX601CG680K	CCT0-680	CN0468	10TCC-Q68
C18	68 NPO		NPO-DI 4.7	DTZ-4R7	NP04P7		CN0547	10TCC-V47
C19	4.7 NPO							
C20	.82pf	#2094703-0701	NPO-DI 2.2	DTZ-2R2	NPO2P2		CN0522	10TCC-V22
C21	2.2 NPO		GPD X5F222K	DD-222	GP2200	CCD-222	GP222	10TS-D22
C22	.0022			TCZ-27	NP0-27	CCT0-270	CN0427	10TCC-Q27
C23	27 NPO	#2093231-2568	NPO-DI 3.3	DTZ-3R3	NPO3P3		CN0533	10TCC-V33
C24	15 N180		GPD X5F102K	DD-222	GP2200	CCD-222	GP222	10TS-D22
C25	3-8			CK-502	MGP005	CCD-502	TA250	TG-D50
C26	3.3 NPO	#2093231-2628	ADM-10-221	CPR-220J	CD10E221K500	DM-10-221J	SX322	MS-322
C27	.0022		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C28	.005			TCZ-1			CN0510	10TCC-V10
C29	220	#2093231-2828	GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C30	.001		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C31	1.2							
C32	.005	#2093231-2628	TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C33	.005		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C34	.56pf		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C35	.01	#2093231-2828	GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C36	.005		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C37	.005		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C38	.005	#2093114-0714	GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C39	.68pf		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C40	.005							
C41	.005	#219092-0039	GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C42	.82pf		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C43	.005							
C44	.01	#2093114-0714	TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C45	.005		TTP-005	CK-502	MGP005	CCD-502	TA250	TG-D50
C46	47		ADM-10-470	CPR-47J	CD10E470K500	DM-10-470J	SX447	MS-447
C47	.05 75V	#219092-0039	V1612S47		DPMS6S47	1DP-2-473	PVC1147	225P47391WD3
C48	25-125							
C49	.47							
C50	33 N750	#219092-0039	N750-DI 33	DTN-33	N-33	CCTN-330	MAG3047	HY-130
C51	.001		GPD X5F102K	DM-102	GP1000	CCD-102	CN7433	10TCU-Q33
C52A	300-400						SM210	2SS-D10
B	160	#2093114-0714						
C	305-370							
C53	.0022							
C54	.1 75V	#2093114-0714	GPD X5F222K	DD-222	GP2200	CCD-222	GP222	10TS-D22
C55	.01		DBE2P1	DD-222	DPMS2P1	1DP-2-104	PVC101	225P10491WD3
C56	.0068 25V		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C57	.01 75V	DBE6D68	CPR-6800J	DMF6D68	1DP-1-682	PVC6268	225P68291	
C58	150 N470	V1612S1	CPR-10000J	DPMS6S1	1DP-1-103	PVC211	225P10391WD3	
C59	.22	#2093114-0714						
C60	.2							
C61	.05 75V							
C62	330	V1612S47	UK20-204	HCZ3R0XR224P	1DP-2-473	MAG12022	HY-470	
C63	.05 75V	GPD X5F331K	UK20-204	HCZ3R0XR224P	1DP-2-473	MAG12022	HY-470	
C64	.1 75V	V1612S47	DD-331	DPMS6S47	1DP-2-331	PVC1147	225P47391WD3	
C65	.1 75V	DBE2P1		GP330	10TS-T33	GP333	10TS-T33	
C66	.2	DBE2P1		DPMS6S47	1DP-2-473	PVC1147	225P47391WD3	
C67	.2	DBE2P1		DPMS2P1	1DP-2-104	PVC101	225P10491WD3	
C68	.0039 25V	DBE6D39	UK20-204	HCZ3R0XR224P	1DP-2-104	PVC101	225P10491WD3	
C69	.1 25V	DBE2P1	UK20-204	HCZ3R0XR224P	1DP-2-104	PVC101	225P10491WD3	
C70	.015 25V	V1612S15	CPR-3900J	6D39	6DP-1-392	PVC6239	6PS-D39	
C71	.02 25V	V1614S2		DPMS2P1	1DP-2-104	PVC101	225P10491WD3	
C72	.2			DPMS6S15	1DP-1-153	PVC2115	225P15391WD3	
C73	.015 25V	V1612S15	DD-153	DPMS2S2	1DP-1-203	PVC212	2PS-S20	
C74	.005	TTP-005	UK20-204	HCZ3R0XR224P	1DP-1-153	MAG12022	HY-470	
C75	.02 25V	V1614S2	DD-153	DPMS6S15	1DP-1-153	PVC2115	225P15391WD3	
C76	.002	GPD X5F202K	CK-502	MGP005	CCD-502	TA250	TG-D50	
C77	.33		DM-202	DPMS2S2	1DP-1-203	PVC212	2PS-S20	
C78	.0068 75V	DBE6D68	CPR-6800J	DMF6D68	1DP-1-682	PVC6268	225P68291	
C79	.1 75V	DBE2P1		DPMS2P1	1DP-2-104	PVC101	225P10491WD3	
CE	.01 75V	V1612S1	CPR-10000J	DPMS6S1	1DP-1-103	PVC211	225P10391WD3	
C81	.015	TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10	
C82	.05	TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50	
C83	.01	TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10	
C84	.005	TTP-005	CK-502	MGP005	CCD-502	TA250	TG-D50	
C85	300	#2093050-0710						
C86	300							
C87	300							

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

Bendix Part Number.

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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

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

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone	500K	2094914-0703				
8	Tone	500K					
C	Volume	225K Tap @ 75K					
D	Volume/Switch	225K Tap @ 75K					
R2	Fader	50, 2W	2093807-0708				
			(1)				
	Fader	50, 2W	2093807-0709				
			(2)				
R3	Sensitivity	50K	4080594-0001			X201R5038	MTC54L1
			(3)				

(1) Used in Model F8TBC. (2) Used in Models 9FBL & 9FBLU. (3) May not be used in some versions.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFR. PART No.
R80	75 (PTC)			2090574-0705
	180 (PTC)			2093141-2181
				(1)
R82	.22 (PTC)			2090948-0007

(1) Used in Models 9FBL & 9FBLU.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFR. PART No.
R83	75 (PTC)			2090574-0705
	180 (PTC)			2093141-2181
				(1)
R85	.22 (PTC)			2090948-0007

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	FM Antenna	(1)			
L2	FM RF	(1)			
L3	FM Oscillator	(1)			
L4	RF Choke (2uh)	2092210-0007	19-1002	74F226AP	TAB12
L5	10.7MC Trap (1uh)	2092210-0005	19-1000	4602	T855
L6	FM Input IF	2057713-0701			
L7	FM Interstage IF	2057713-0702			
L8	FM Interstage IF	2057713-0706			
L9	FM Interstage IF	2057713-0704			
L10	FM Interstage IF	2057713-0705			
L11	Discriminator	2057714-0701			
L12	RF Choke	2092210-0007	19-1002	74F226AP	TAB12
L13	AM Antenna	(1)			
L14	AM RF	(1)			
L15	AM Osc	(1)			
L16	AM Input IF	2057715-0701			
L17	AM Output IF	2057715-0703			

(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.	
L18	500ma	.3	1.5mh	2057554-0506					Choke & Lamp Holder Assembly

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	5.5	1	1	2092192-0710					

LINCOLN MODELS F8TBC, 9FBL/U

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 (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.	
T2	40 Tap	@ 8	2094696-0705					

SPEAKER

ITEM No.	TYPE		REPLACEMENT DATA			NOTES	
			PART No.	JENSEN PART No.	QUAM PART No.		
SP1	4" x 10"	PM	8 ohms	4080179-0701		410A2Z8	Front Rear
SP2	4" x 10"	PM	8 ohms	4080142-0701		410A2Z8	

FUSE DEVICES

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

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Dial Lamps	2091877-0005	#1893 (2 used) Model F8TBC Models 9FBL & 9FBLU
M2	Tuner	2094851-0511	
		2094851-0525	
M3	Coil Assembly	2090131-0103	
M4	Relay	2057726-0701	
S1	Solenoid	2057695-0501	Model F8TBC
		2057695-0502	Models 9FBL & 9FBLU
S2	Switch, Selector	2092719-0707	Model F8TBC
		2092719-0708	Models 9FBL & 9FBLU
S3	Switch, Rewind	4080049-0001	Model F8TBC
	Switch, Rewind	4080049-0502	Models 9FBL & 9FBLU
	Switch, Town-Country/ Ant. Up-Down	2057744-0501	Model F8TBC
	Switch, Town-Country/ Ant. Up-Down	2057744-0502	Models 9FBL & 9FBLU

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

ITEM	PART No.	ITEM	PART No.
Escutcheon	2057430-0001	Push Button #2	2057855-0507
Dial Glass (Model F8TBC)	2057730-0003	Push Button #3	2057855-0508
Dial Glass (Models 9FBL/U)	4080936-0001	Push Button #4	2057855-0509
Dial Pointer (Model F8TBC)	2090129-0104	Push Button #5	2057855-0510
Dial Pointer (Models 9FBL/U)	2090129-0117	Knob, Tuning or Volume	4080137-0701
Push Button #1	2057855-0506	Knob, Tone or Fader	4080138-0701

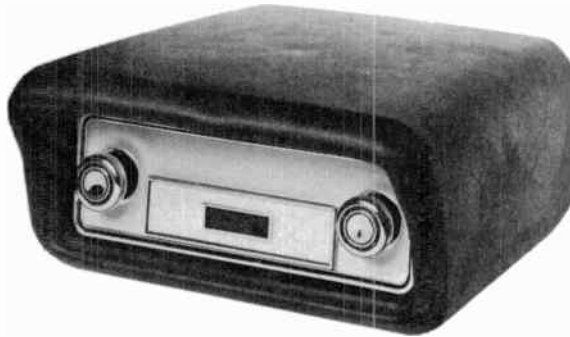


PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index

NOTE: Manufacturer Part Numbers Shown Are BENDIX



LINCOLN MODEL 9MABL
(C9VA-19A099)
(68-69 Lincoln)

LINCOLN MODEL 9MABL

ALIGNMENT INSTRUCTIONS

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

A1 thru A5.....GENERAL CEMENT #8606,8606L,8869
WALSCO #2543, 2544, 2588

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

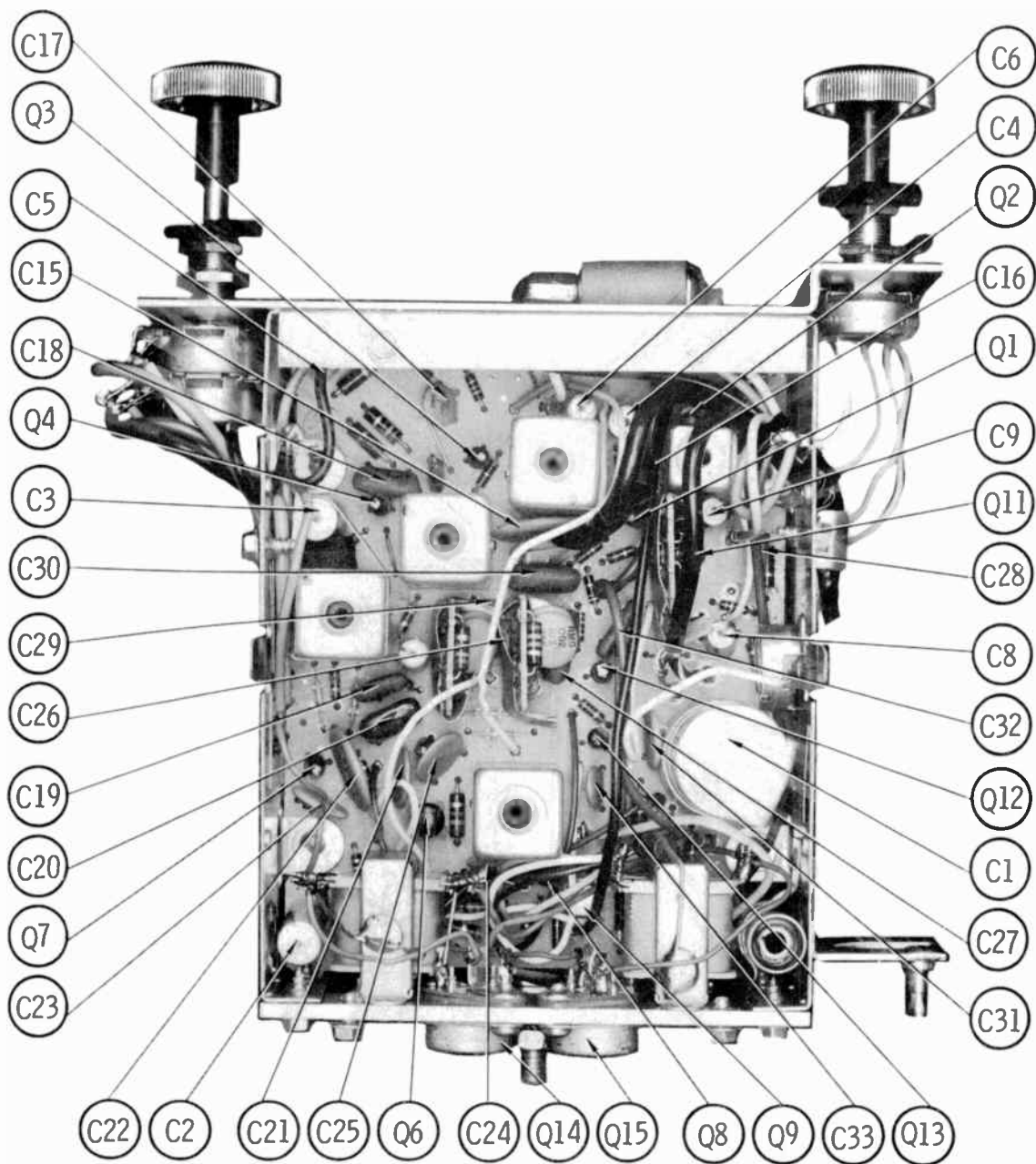
High side of generator thru 47K to point $\diamond A$, low side to ground.

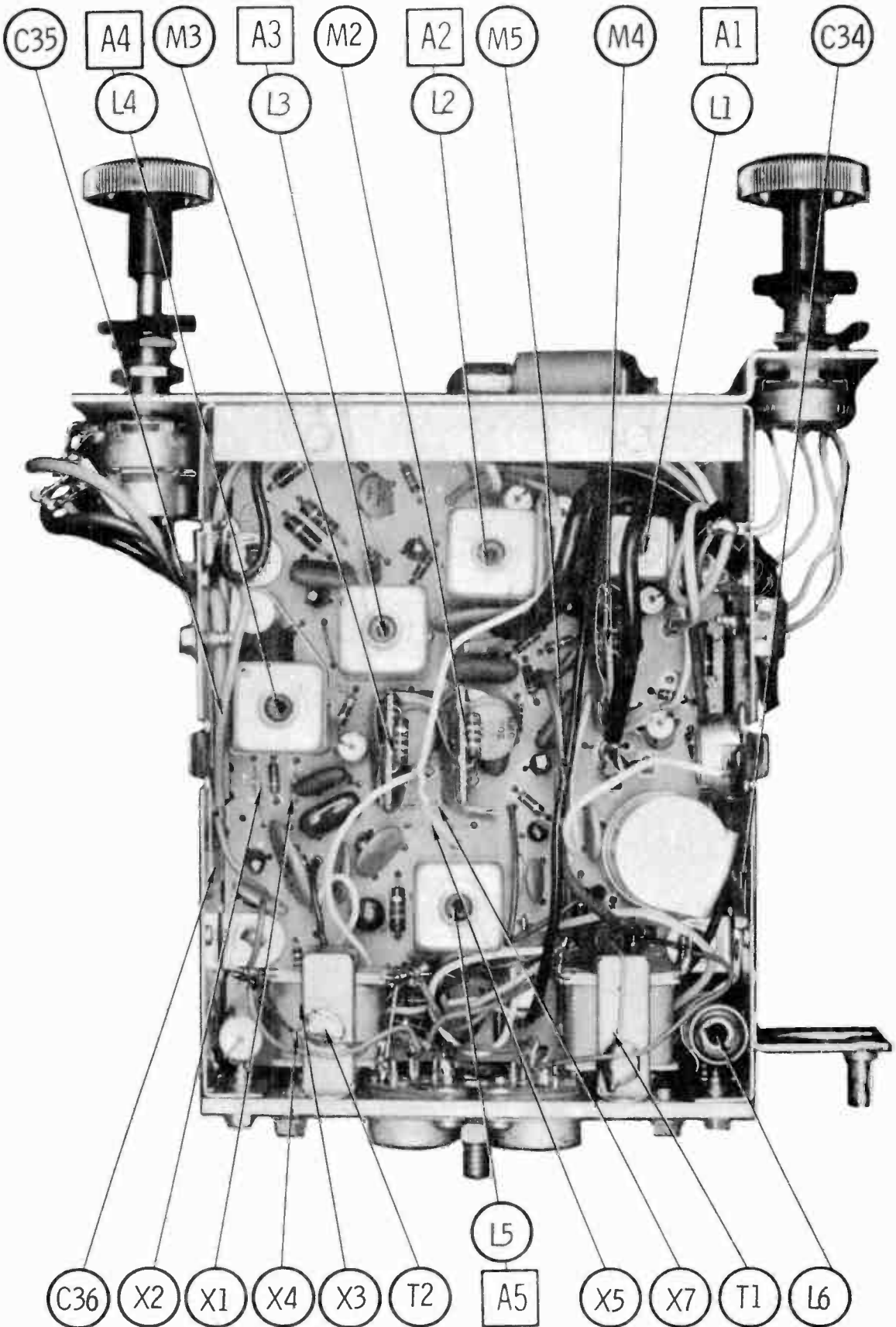
GENERATOR FREQUENCY	INDICATOR	ADJUST	REMARKS
1. 75KC	Vert. amp. of Scope thru a 1meg to point $\diamond B$; low side to ground.	A1	Adjust for MINIMUM.
2. 19KC	Vert. amp. thru 47K to point $\diamond B$; low side to ground.	A2,A3, A4,A5	Adjust for maximum 38KC response.
3. Modulated Left Channel	Vert.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

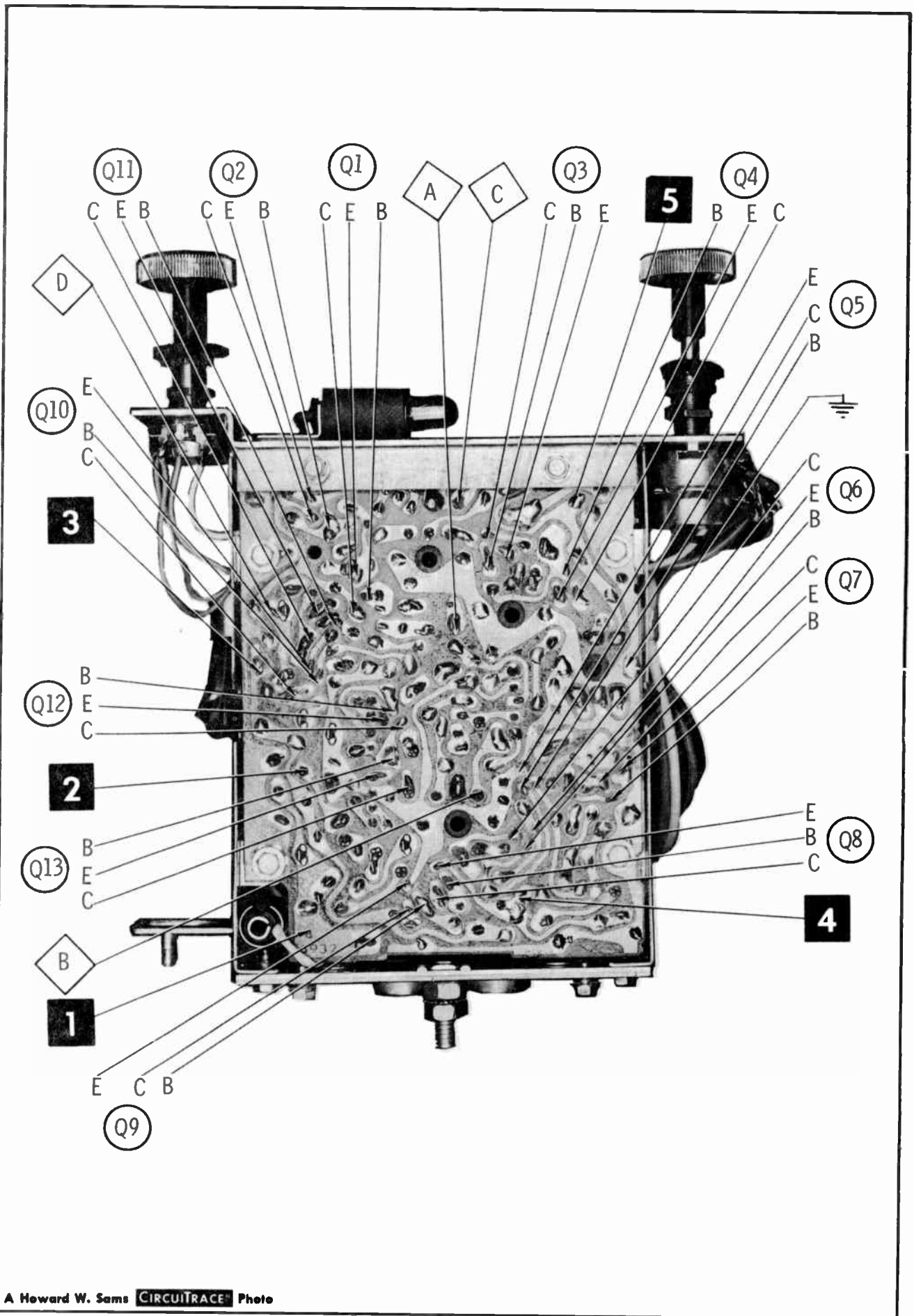
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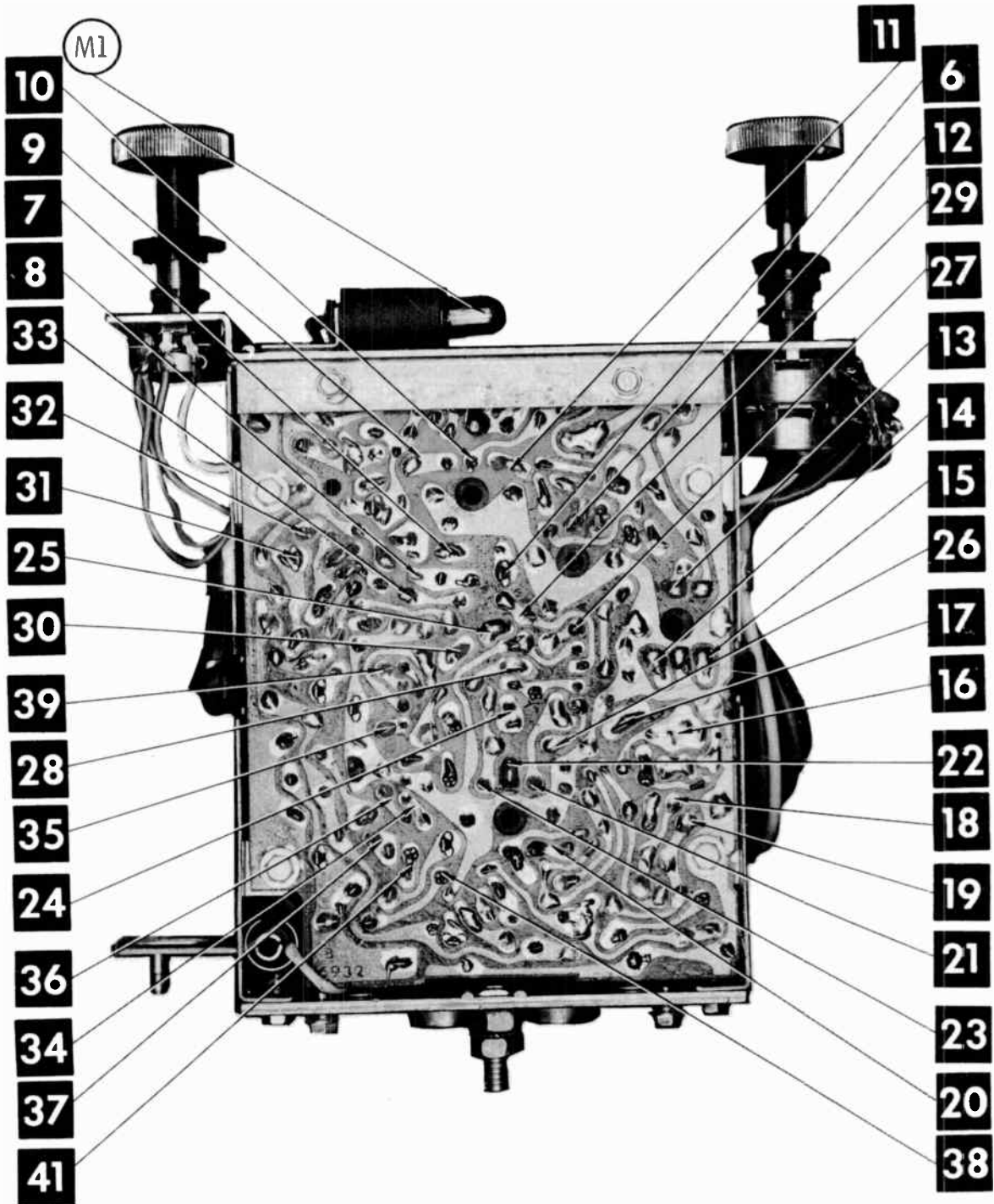
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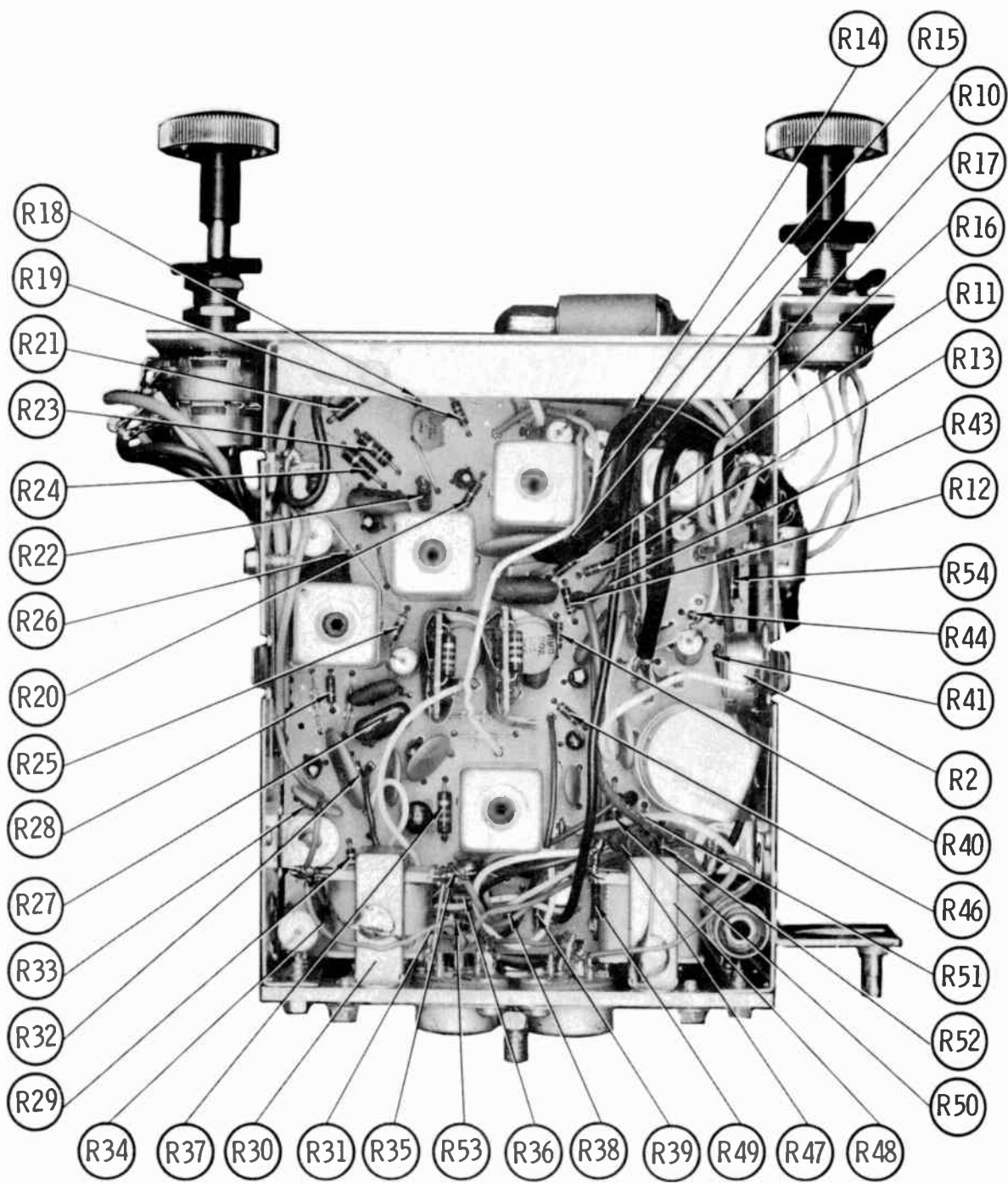






A Howard W. Sams **CIRCUITRACE** Photo





PARTS LIST AND DESCRIPTION

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

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

TRANSISTORS

ITEM No.	TYPE No.	FUNCTION	REPLACEMENT DATA					
			MFRG. PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q1		MPX Amp	2092609-0707	GE-10	TR-21	HEP54	SK3020	ECG 123
Q2		Bandpass Amp	2092609-0707	GE-10	TR-21	HEP54	SK3020	ECG 123
Q3		19KC Amp	2092609-0707	GE-10	TR-21	HEP54	SK3020	ECG 123
Q4		19KC Amp	2092609-0707	GE-10	TR-21	HEP54	SK3020	ECG 123
Q5		38KC Amp	2092609-0707	GE-10	TR-21	HEP54	SK3020	ECG 123
Q6		38KC Amp	2057013-0701	GE-21	TR-19	HEP51	SK3025	ECG 109
Q7		Squeelch	2092609-0707	GE-10	TR-21	HEP54	SK3020	ECG 123
Q8		Lamp Amp	2057013-0701	GE-21	TR-19	HEP51	SK3025	ECG 109
Q9		Lamp Switch	2092609-0720	GE-10	TR-21	HEP54	SK3020	ECG 123
Q10		Preamp	2092609-0707	GE-10	TR-21	HEP54	SK3020	ECG 123
Q11		Preamp	2092609-0707	GE-10	TR-21	HEP54	SK3020	ECG 123
Q12		AF Amp	2092609-0707	GE-10	TR-21	HEP54	SK3020	ECG 123
Q13		Driver	2092609-0713	GE-10	TR-21	HEP54	SK3020	ECG 123
Q14	2N1227A	Output (1)	2091859-0714	GE-13MP*	TR-01	HEP232	SK3013*	ECG 104MP*
Q15	2N1227A	Output (1)	2091859-0714	GE-13MP*	TR-01	HEP232	SK3013*	ECG 104MP*

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

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFRG. 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	2092055-0007	1N34A5	1N34A	ECG 109		
X2	2092055-0007	1N34A5	1N34A	ECG 109		
X3	2092055-0708	1N82A	1N82A	ECG 110		
X4	2092055-0708	1N82A	1N82A	ECG 112		
X5	2092055-0007	1N34A5	1N34A	ECG 109		
X6	2092055-0007	1N34A5	1N34A	ECG 109		
X7	2092055-0007	1N34A5	1N34A	ECG 109		
X8	2092055-0007	1N34A5	1N34A	ECG 109		
X9	2092055-0712	GE-X11	1ZM8.2	ECG 109		Zener

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		LINCOLN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500 16V	2092983-0709			CC0018A			PCL-3026.18
B	500 16V							
C	500 16V							
C2	200 16V	2093367-0717	CRE481A	EA15-250	PC200-16	MT1-23	MTA250F15	TE-1164
C3	200 16V	2093367-0717	CRE481A	EA15-250	PC200-16	MT1-23	MTA250F15	TE-1164
C4	100 3V	2093367-0715	PTT13	EA6-100	AL100-16	MT1-21	MTA100E10	TL-1059.5
C5	50 8V	2093367-0711	CRE467A	EA15-50	AL50-16	MT1-16	MTA50E15	TE-1133
C6	6 8V	2093367-0716	CRE605A	EA15-10	AL10-25	MT1-5	MTA6050	TE-1127.1
C7	6 8V	2093367-0716	CRE605A	EA15-10	AL10-25	MT1-5	MTA6050	TE-1127.1
C8	2 16V	2093367-0713	CRE751A	EA15-2	AL2-50	MT1-5	MTA2050	TE-1149
C9	2 16V	2093367-0713	CRE751A	EA15-2	AL2-50	MT1-5	MTA2050	TE-1149

CAPACITORS

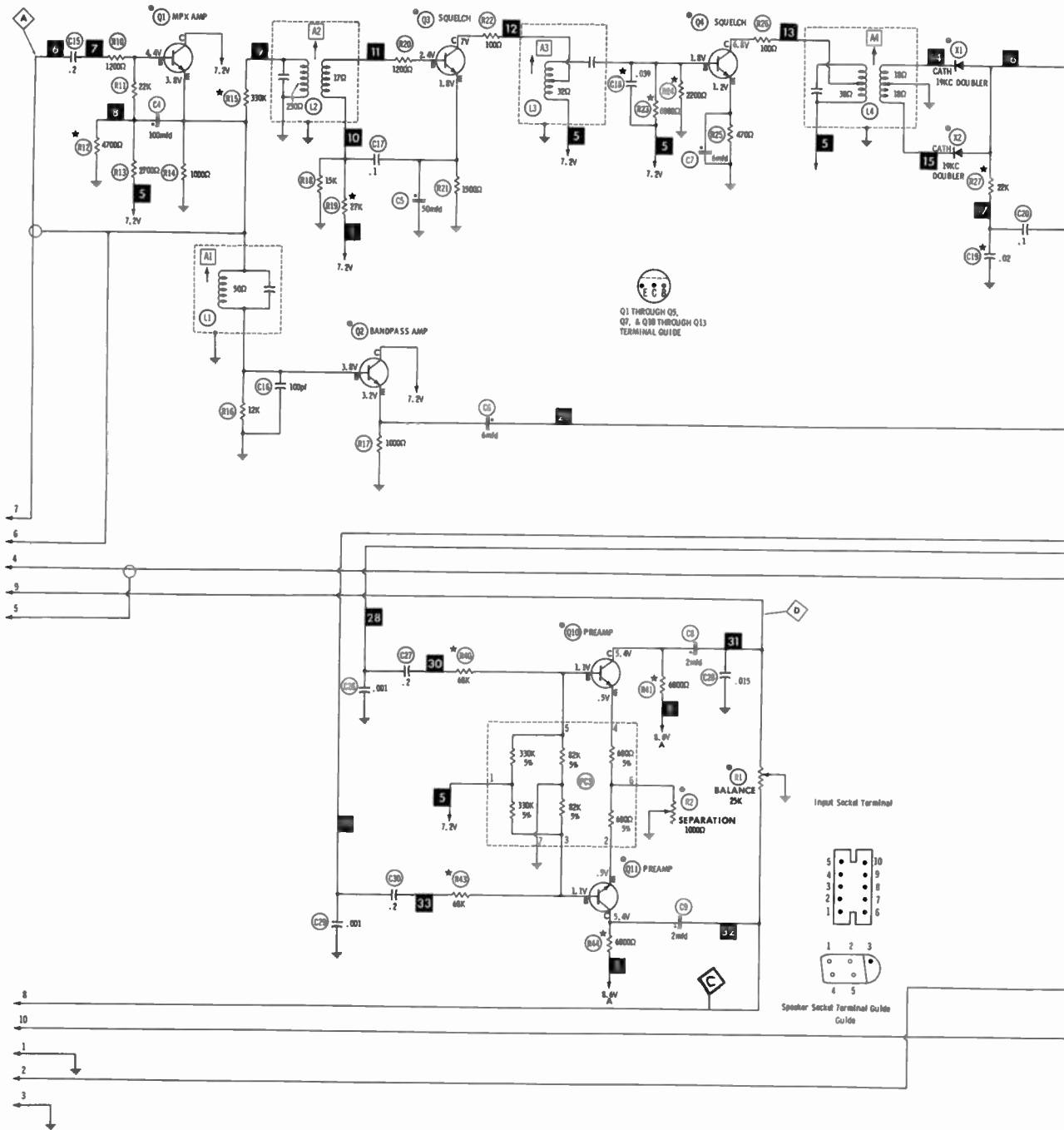
ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C15	.22			UK20-204	HCZ3R0XR224P			HAG12022	HY-470
C16	100 N1500			TCL-100		*		CN15-315	10TCW-T10
C17	.1			CK-104				TA010	TG-P10
C18	.039 25V		TTP-1		6S39		6DP-3-393	PVC6139	6PS-S39
C19	.02 25V		DBE6S39		DPMS2S2		1DP-1-203	PVC212	2PS-S20
C20	.1 100V		V1614S2		DPMS2P1		1DP-2-104	PVC101	225P10491WD3
C21	.2		DBE2P1		HCZ3R0XR224P			MAG12022	HY-470
C22	.47			UK20-204	HCZ3R0XR474P			MAG12047	HY-330
C23	1mf			UK-105	HGX3R0XR105P			MAG31	HY-135
C24	33 NPO		NPO-DI 33	UK20-204	NPO33		CCT0-330	CNO433	10TCC-Q33
C25	.2			DM-102	HCZ3R0XR224P			MAG12022	HY-470
C26	.001		GPD X5F102K		6P1000		CCD-102	SM210	25S-D10
C27	.2 25V		DBE6P22		DPMS4P22		4DP-5-224	PVC4022	4PS-P22
C28	.015 75V		V1612S15	DD-153	DPMS6S15		1DP-1-153	PVC2115	225P15391WD3
C29	.001		GPD X5F102K	DM-102	GP1000		CCD-102	SM210	25S-D10
C30	.2 25V		DBE6P22		DPMS4P22		4DP-5-224	PVC4022	4PS-P22
C31	1mf			UK-105	HGX3R0XR105P			MAG31	HY-135
C32	.0082 25V		DBE6D82	CPR-8200J	6D82		6DP-2-822	PVC6282	6PS-D82
C33	.0033		GPD X5R332K	DD-332	6P3300		CCD-332	JF233	25S-O33
C34	260	#2093050-0710							
C35	260	#2093050-0710							
C36	260	#2093050-0710							

Bendix Part Number.

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

(CONTINUED ON PAGE 90)

LINCOLN MODEL 9MAB1



★ Nominal value, may vary

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

● See parts list

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

A PHOTOFAC STANDARD NOTATION SCHEMATIC

with CIRCULIFAC

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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	RESIST- ANCE	REPLACEMENT DATA				
			MFRG. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Balance	25K	2094442-0706	F1-25K,SFS212, BA012,CA005		QCB4(1)(2), B11-120,TMB or [BU14(2),CF15, SS4,DC1]*	RU253L,SL41, SD1375,or [P253L,3034, SF3062]
R2A B	Fader Fader	50, 4W 50, 4W	2057448-0002				

* "SNAPTROL"

- (1) Use QCB4 Bushing instead of "TM" in TMB Kit.
(2) Alter Bushing to meet requirements.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFRG. PART No.			IRC PART No.	WORKMAN PART No.	MFRG. PART No.
R48	4.5, (NTC) (Cold)			220629-0016	R49	.22 (PTC) (Cold)			2090948-0007

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	67KC Trap	2056947-0701			
L2	19KC	2056947-0702			
L3	19KC	2056947-0703			
L4	19KC	2056947-0705			
L5	3BKC	2056947-0007			

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.	
L6	300ma	.4	470 uh	2094209-0703					

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		2092192-0012					

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MFRG. PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	25 Tap @	B	2094696-0703					

MISCELLANEOUS

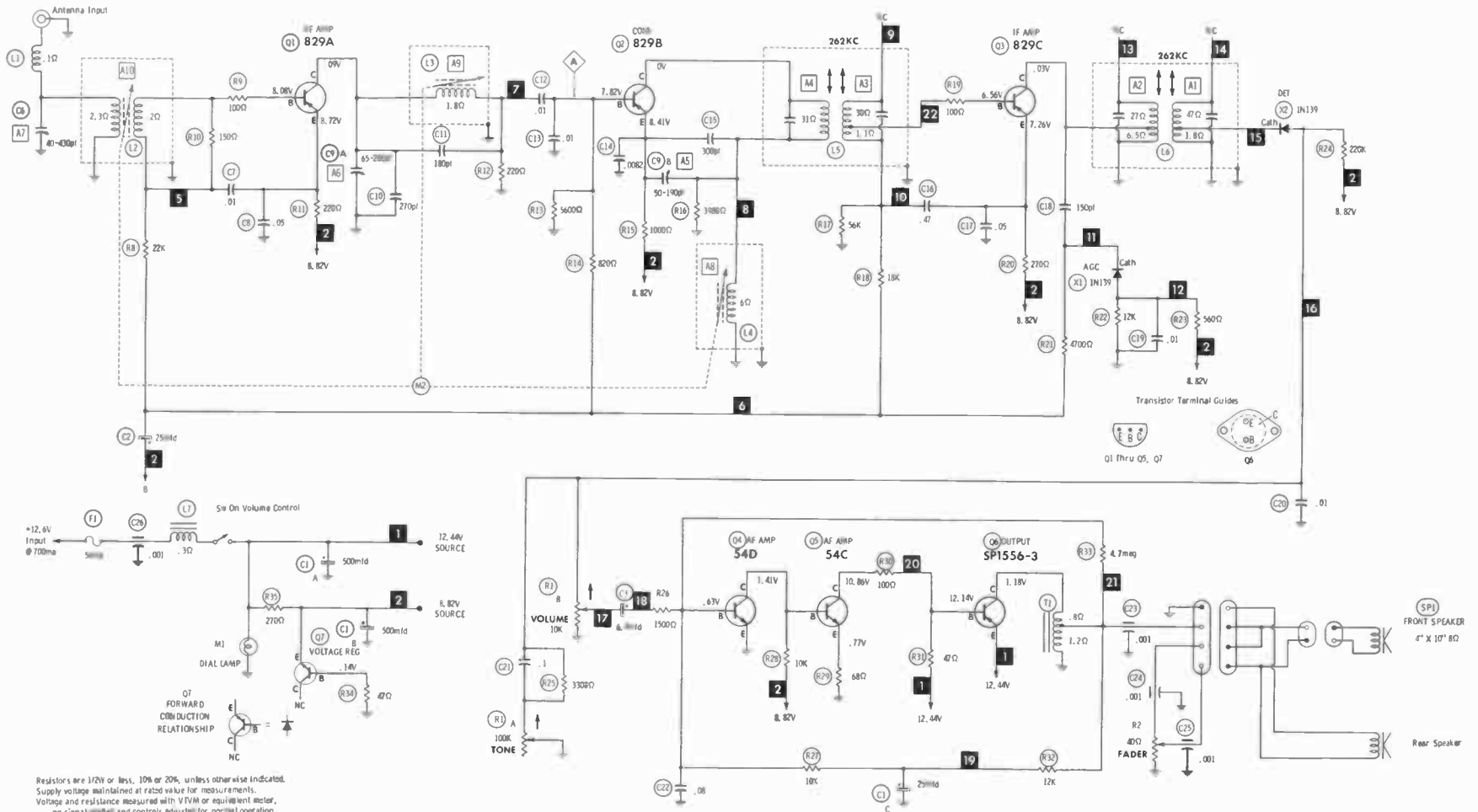
ITEM No.	PART NAME	PART No.	NOTES
M1	Stereo Indicator	2091877-0003	#1891
M2	Print Circuit (MPX)	2056859-0004	Less Components
M3	Print Circuit (MPX)	2056859-0003	Less Components
M4	Printed Circuit (Bias)	2056859-0005	Less Components
M5	Printed Circuit (Bias)	2056721-0701	W/Components

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

ITEM	PART No.	ITEM	PART No.
Knob Bezel	4080588-0701 4080175-0001	Indicator Lens	4080171-0001

WIRING DATA

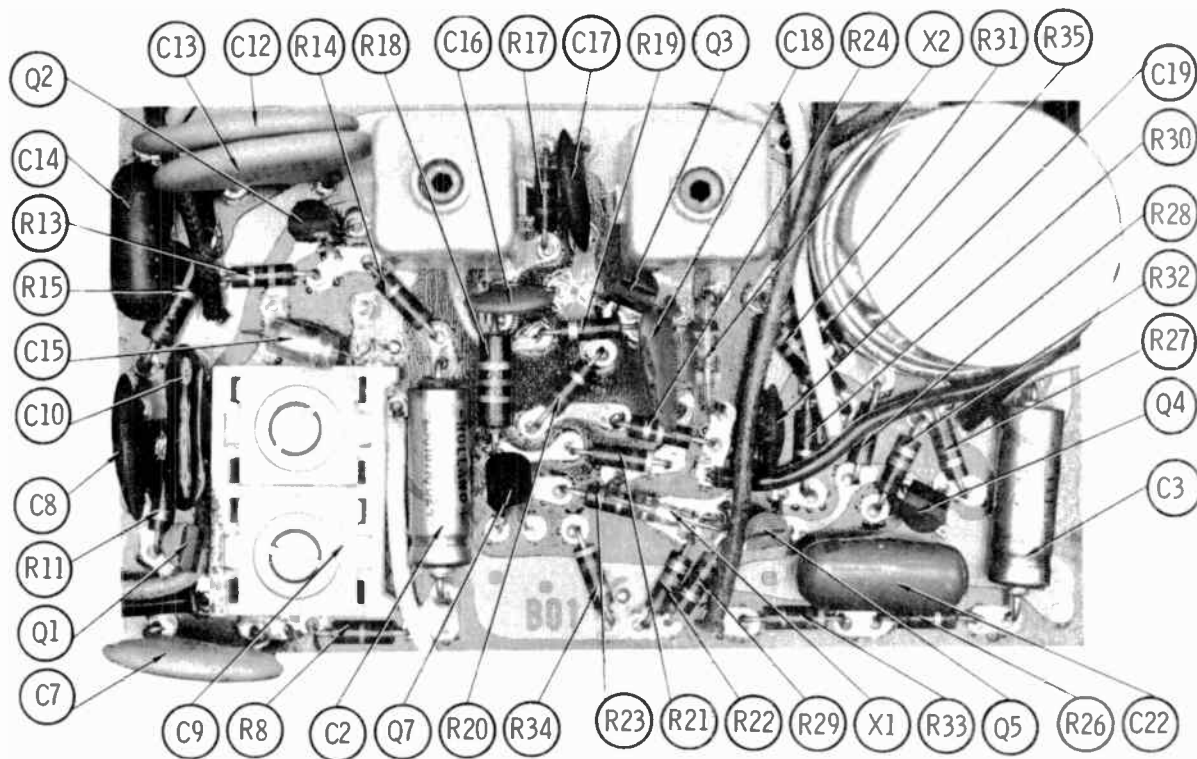
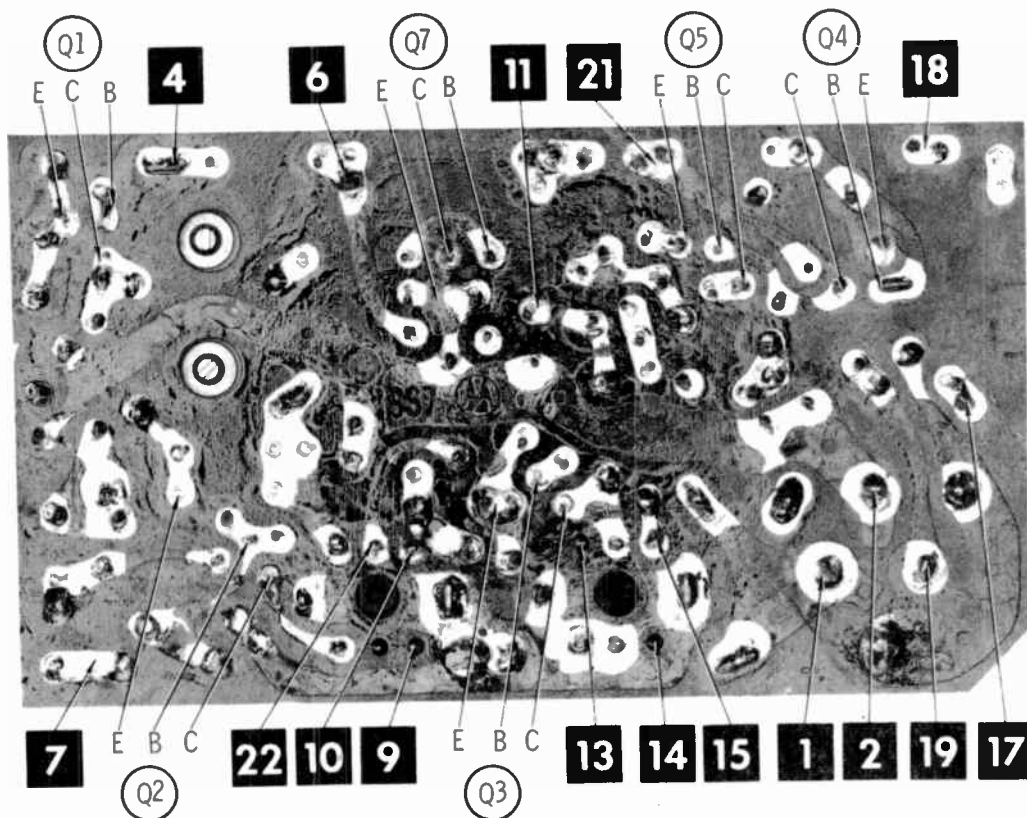
General-use Unshielded Hook-up Wire	Use BELOEN No. B530 (Solid) Available in 12 Colors B524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELOEN No. BBB5
Rear Seat Speaker Extension Cable	Use BELDEN No. B7B2 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or B670 (3/4 In.)



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 VFM or equivalent meter,
 no signal 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 **CIRCUITACE**
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MOTOROLA MODEL TMSA



MOTOROLA MODEL TM8A

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	829A	RF Amp	48S134831	GE-22	TR-19	HEP57		ECG 106
Q2	829B	Converter	48S134831	GE-22	TR-19	HEP57		ECG 106
Q3	829C	IF Amp	48S134831	GE-22	TR-19	HEP57		ECG 106
Q4	54D	AF Amp	48S134811	GE-20	TR-21	HEP726	SK3020	ECG 123
Q5	54C	AF Amp	48S134810	GE-20	TR-21	HEP725	SK3020	ECG 123
Q6	SP1556-3	Output *	48S134759	GE-3	TR-01	HEP624	SK3009	ECG 104
Q7	D1A	Voltage Reg	48S134912	GE-20	TR-21	HEP54	SK3020	ECG 123

* 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	1N139	1N34AS	1N34A			
X2	1N139	1N34AS	1N34A		ECG 109	

ELECTROLYTIC CAPACITORS

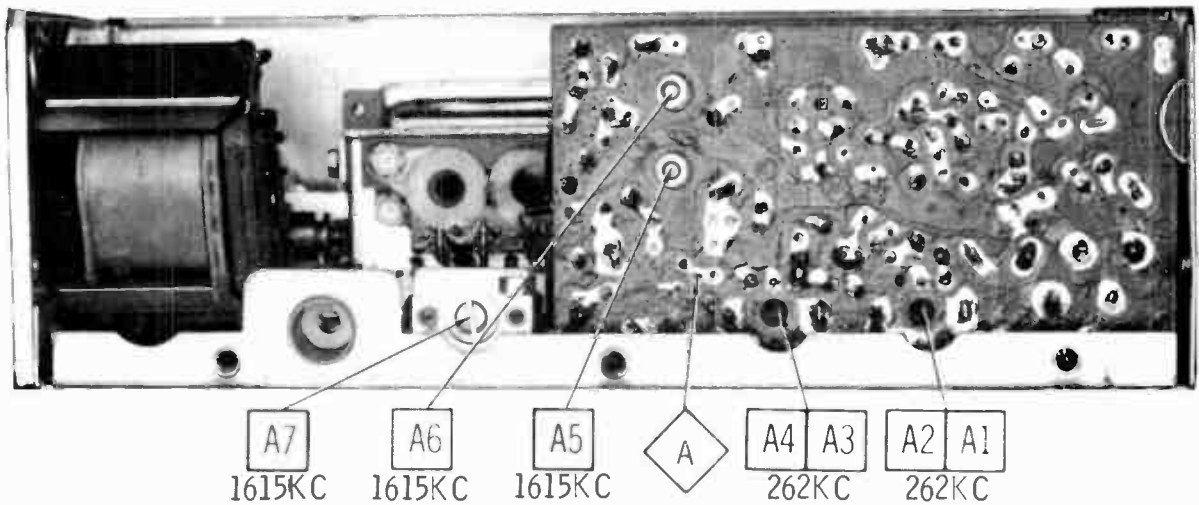
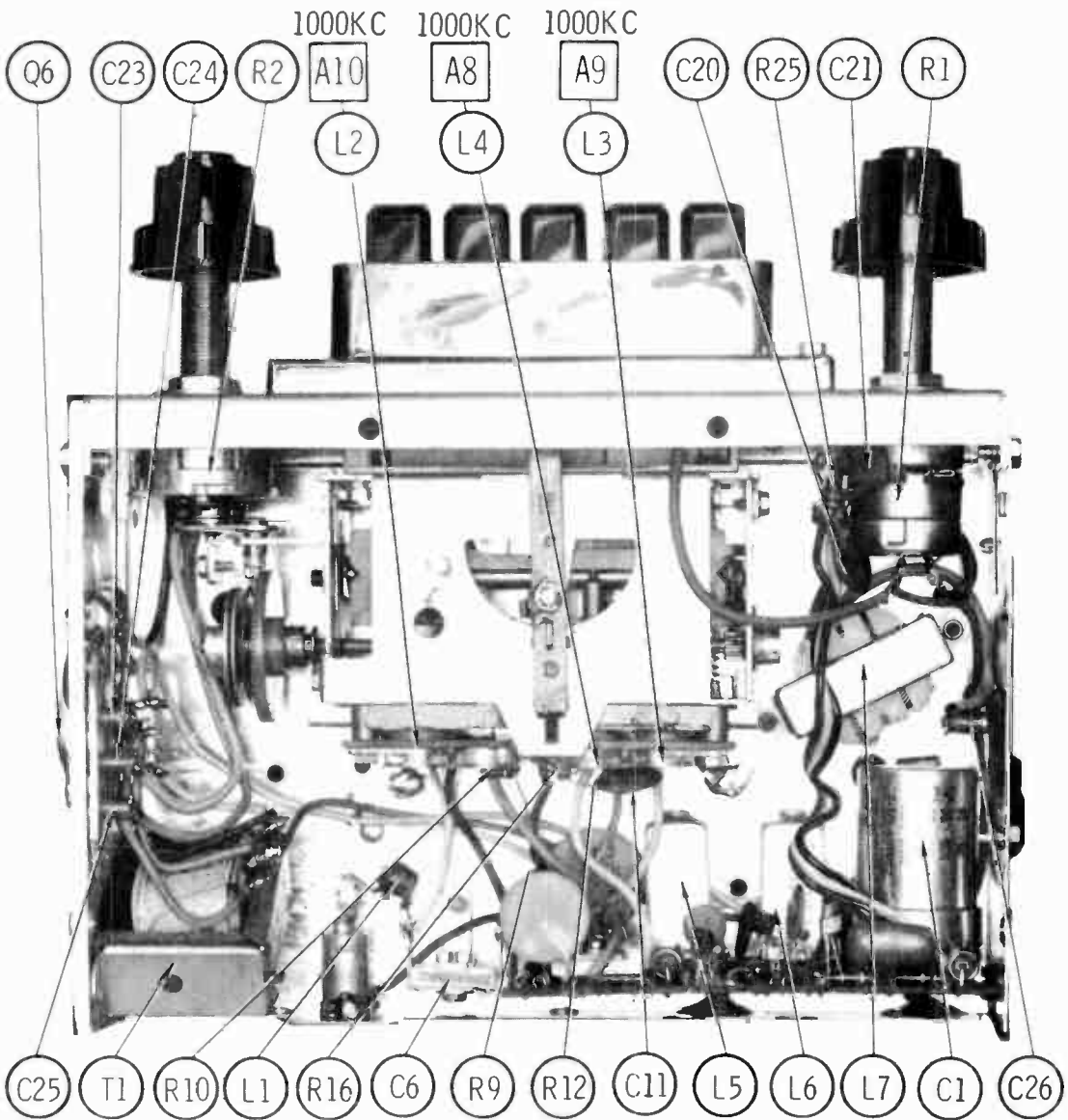
ITEM No.	RATING	REPLACEMENT DATA						
		MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500 16V	23S184A01	PWH3-00-95		CC0018A		PPF300.18	PCL-3026.17
B	500 16V							
C	25 16V							
C2	25 25V	23S187A02	PTT82	EA30-25	WBR25-50	MT1-11	MTA25E35	TE-1207
C3	6.4 40V	23S187A01	CRE755A	EA50-10	AL10-50	MT1-5	MTA6050	TE-1303.1

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	40-430	#20B64065BD2						
C7	.01		TTP-01	CK-103	MGP01	465	TA110	TG-510
C8	.05		TTP-05	CK-503	MGP05	CCD-103	TA150	TGL-S50
C9A	65-200	#20C64618A06				CCD-503		
B	50-190							
C10	270		ADM-15-271	CPR-270J	CD15FD271J03	DM-10-271	SX327	MS-327
C11	180 N750			TCN-180				10TCU-T18
C12	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-510
C13	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-510
C14	.0082 100V		DBE6D82	CPR-8200J	6082	6DP-2-822	PVC6282	225P82291WD3
C15	330			CPR-330J	CD15FD331J03	DM-10-331	SX333	MS-333
C16	.47			UK-474			MAG3047	HY-130
C17	.05		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C18	150 N750		N750-D1 150	DTN-150	N150	CCTN-150	CN7315	
C19	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-510
C20	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-510
C21	.1		TTP-1	CK-104	MGP01	CCD-103	TA010	TG-P10
C22	.08 50V		DBE6S82		DPMS6S82	6DP-4-823	PVC1182	6PS-S82
C23	.001	#21A560232						
C24	.001	#21A560232						
C25	.001	#21A560232						
C26	.001	#21A560232						

Motorola Part Number.

(CONTINUED ON PAGE 96)



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	RESIST-ANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A B	Tone Volume/Switch	100K 10K	18C64256B01	F2-100K,R2-10K, BB106,FS110, RFS200,KR-4		* QJ-2640	P15A,4138, RU14A,QX1625, IS2062,US41
R2	Fader	40, 2W	18B42217B01				

* "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements & Shafts: B13-128,P22-121 (Panel),B13-116,R1-130 (Rear), S51 (Bushing), 76-1 (Switch)

"SNAPTROL" Equivalent: BUB(1),CF52,CR52,SF13,SR48,GC.
(1) Alter Bushing to meet requirements.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (1.8uh)	24C64003B02	19-1001	74F186AP	T810
L2	Antenna	(1)			
L3	RF	(1)			
L4	Osc.	(1)			
L5	Input IF	24C64282B01		8009	
L6	Output IF	24C64282B02		8010	

(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	600ma	.3	1.9mh	25C64172A05	C-4095	TC-2	TR-157	TY16XT	

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	18, Tap	@ 8	25D64129A01					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		PART No.	QUAM PART No.	
SP1	4" x 10" PM 8 ohms	50D64089B02	410A2Z8	

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	Dial Lamp	65S538410	#1892
M2	Tuner Coil Assembly	1U43500A45 1V41700B61	ATS-649

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

ITEM	PART No.	ITEM	PART No.
Escutcheon	13C64661A01	Dial Glass	34B64271B01
Knob, Tuning or Volume	36B543382	Dial Pointer	52C40244827
Knob, Tone or Fader	36B543398	Push Button	38C41956B01

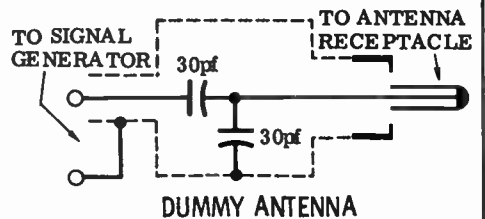


MOTOROLA MODEL TM299M

ALIGNMENT INSTRUCTIONS

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

- A1 thru A4.....GENERAL CEMENT #9296,9297,9300
WALSCO #2510, 2546, 2547
- A5,A6,A7.....GENERAL CEMENT #8290,8868,9087
WALSCO #2525, 2528, 2587

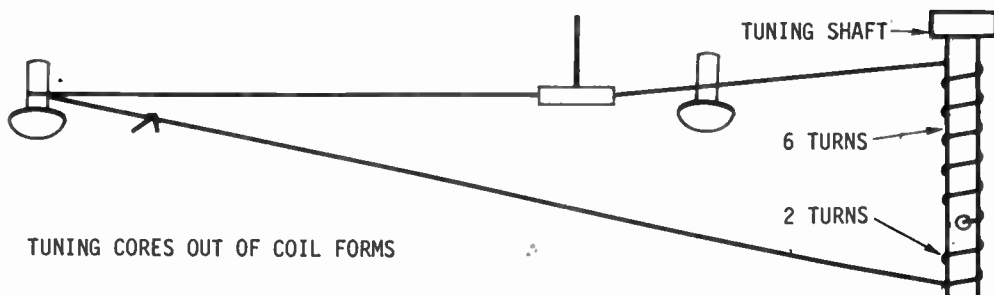


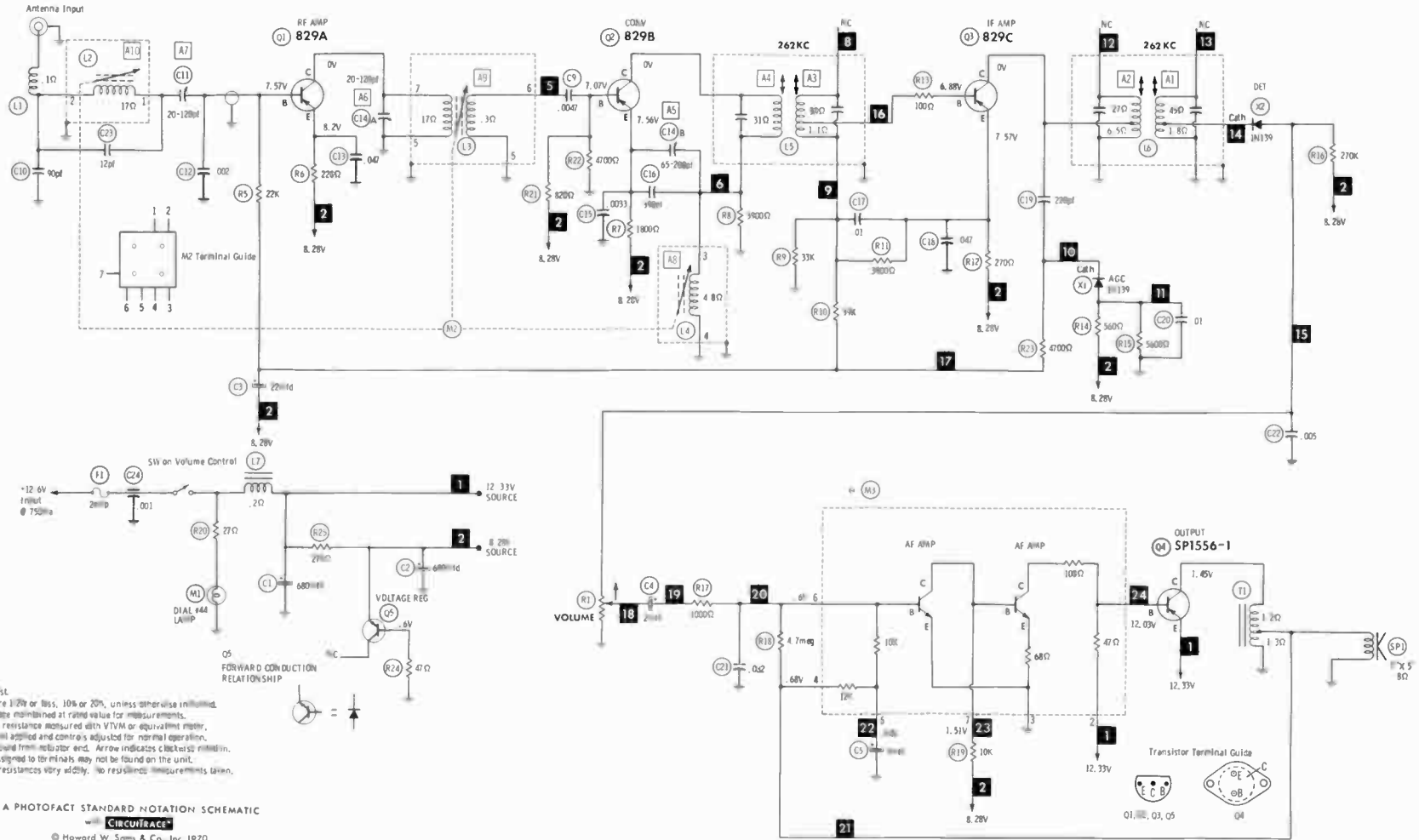
MOTOROLA MODEL TM299M

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.
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 to desired height, tune in a weak station near 1400KC and adjust A7 for maximum output. Antenna adjustment (A7) is located right side above Antenna Input.

DIAL CORD STRINGING-TOP VIEW

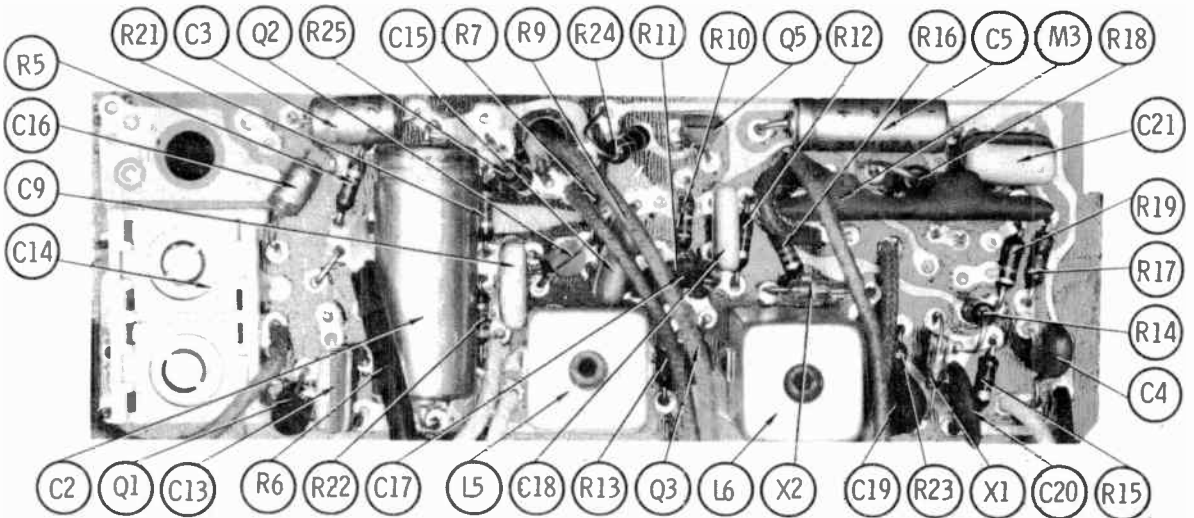
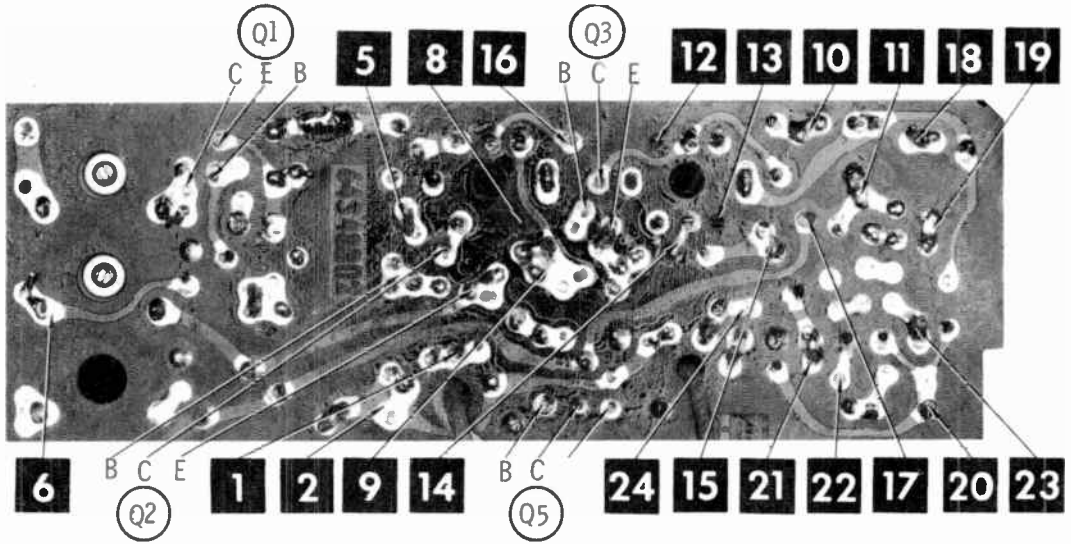




• See parts list.
 Resistors are 1%, 5% or 10%, unless otherwise indicated.
 Supply voltages maintained at rated value for measurements.
 Voltage and resistance measured with VTVM or equivalent meter.
 No signal applied and controls adjusted for normal operation.
 Controls moved from rest position. Arrow 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
 by **Circuitrace**
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MOTOROLA MODEL TM299M



MOTOROLA MODEL TM299M

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	829A	RF Amp	48S134831	GE-22	TR-19	HEP57		ECG 106
Q2	829B	Converter	48S134831	GE-22	TR-19	HEP57		ECG 106
Q3	829C	IF Amp	48S134831	GE-22	TR-19	HEP57		ECG 106
Q4	SP1556-1	Output *	48S134758	GE-3	TR-01	HEP623	SK3009	ECG 104
Q5	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.

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	1N139	1N34AS	1N34A	ECG 109		
X2	1N139	1N34AS	1N34A	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	680 16V	23S187A17	PRS1230	EA15-1000	WBR1000-16	QT1-32	TC1501A	TL-1166.5
C2	680 16V	23S187A17	PRS1230	EA15-1000	WBR1000-16	QT1-32	TC1501A	TL-1166.5
C3	22 25V	23S187A20	PTT82	EA30-25	WBR25-50	MT1-11	MTA25E35	TE-1207
C4	2 10V	23S10229A03	BCD50002	EP15-2	PC2-100	MT1-1	MTV2CB50	TE-1121
C5	33 40V	23S187A15	BCD15035	EP15-25	PC30-35	MT1-13.5	MTV30CB25	TE-1158

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENDO PART No.	MALLORY PART No.	SPRAGUE PART No.
C9	.0047 75V	#21A591682 #20B64065801	DBE6D5	CPR-5000J	DPMS6D5	1DP-1-502	PVC625	6PS-D50
C10	90							
C11	20-120	#20C64618A07	V1612S47	CPR-2200J	CD19F222J500 DPMS6S47	406 DM-19-222J 1DP-2-473	SX222 PVC1147	424ME2201J501 225P47391WD3
C12	.002							
C13	.047 75V							
C14A	20-120							
B	65-200							
C15	.0033 75V		DBE6D33	CPR-3300J	6D33	6DP-1-332	PVC6233	225P33291WD3
C16	390			CPR-3300J	CD15FD391J03	DM-10-391	SX339	MS-339
C17	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C18	.047 75V		V1612S47		DPMS6S47	1DP-2-473	PVC1147	225P47391WD3
C19	220		GPD X5F221K	DD-221	GP220	CCD-221	GP322	10TS-T22
C20	.01		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C21	.082 75V		DBE6S82		6S82	6DP-4-823		225P82391WD3
C22	.005		TTP-005	CK-502	HGP005	CCD-502	TA250	TG-D50
C23	12 NP0			TCZ-12	NP012	CCT0-120	CN0412	10TCC-Q12
C24	.001	#21A560232						

Motorola Part Number.

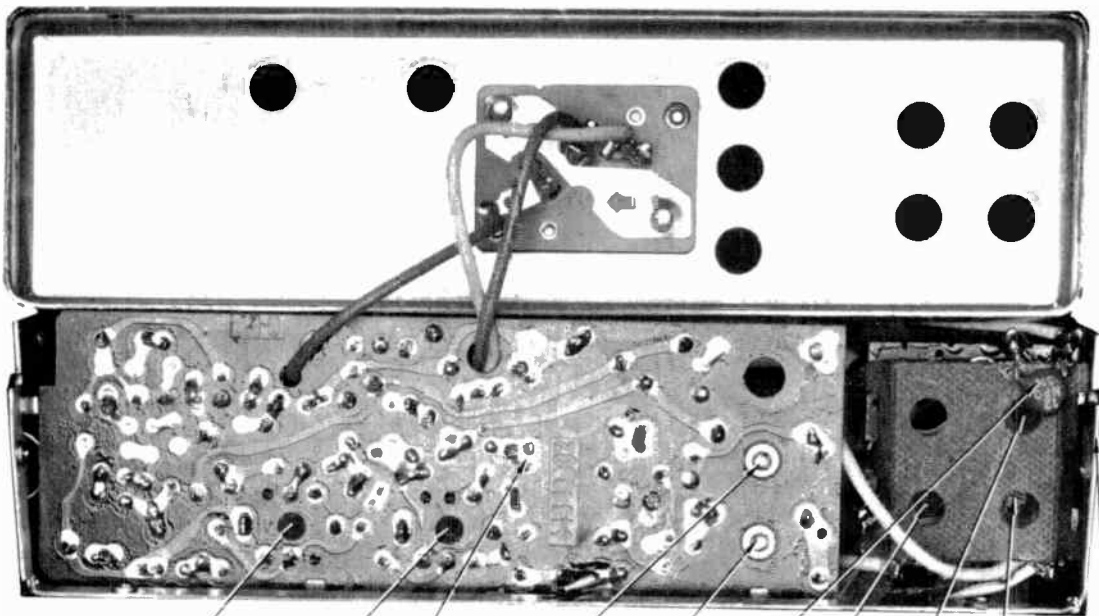
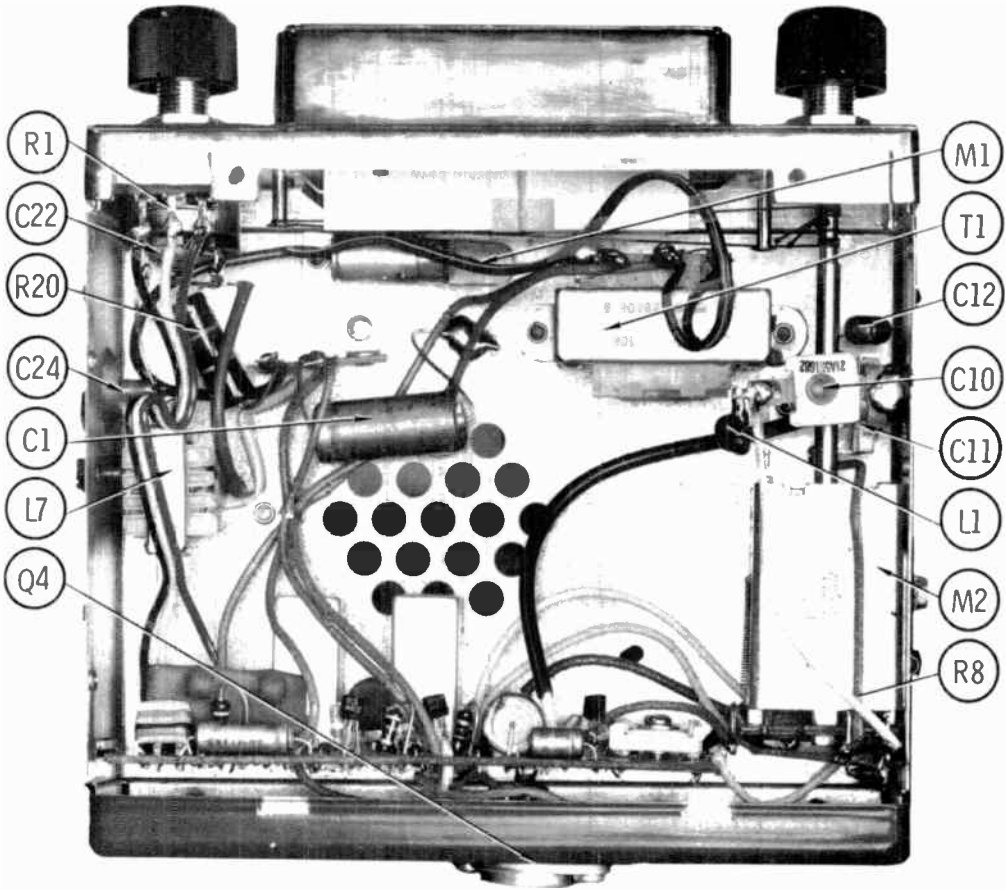
CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume/Switch	10K	18C64337B01	F2-10K(1), SFS212,KR-4	NP-50K-2(1), SE-F-400,NWE-12	B13-116,TM8, R5(2),76-1	UA54A(1), SD3500,US41

(1) Use original spring mounting clips.

(2) Cut off tab ears (R5) and use original spring mounting clips.

(CONTINUED ON PAGE 102)



- | | | | | | | | | | | | |
|-------|-------|-------|-------|---|--------|--------|--------|--------|--------|--------|--------|
| A1 | A2 | A3 | A4 | A | A5 | A6 | C23 | A9 | A10 | A8 | A7 |
| 262KC | 262KC | 262KC | 262KC | | 1615KC | 1615KC | 1000KC | 1000KC | 1000KC | 1000KC | 1615KC |

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (1.8uh)	24C64003B02	19-1001	74F186AP	T810
L2	Antenna	(1)			
L3	RF	(1)			
L4	Osc.	(1)			
L5	Input IF	25C64282B01		8009	
L6	Output IF	25C64282B02		8010	

(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	750ma	.2	2.5mh	25C64172A12	C-4124	TC-1	TR-153	TY16XT	

TRANSFORMER (Audio Output)

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

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA			NOTES
		PART No.	JENSEN PART No.	QUAM PART No.	
SP1	3" x 5" PM 8 ohms	50C64313B01			

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	Dial Lamp	65S10867	#44 MT705
M2	Tuner	77D40632A16	
M3	Coil Assembly	1V43000B45	
	Audio Network	51S10353A01	

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

ITEM	PART No.	ITEM	PART No.
Escutcheon Knob, Tuning or Volume	13C64323B03 36B64341B01	Dial Pointer Dial Glass	5264320B01 34B64331B01

WIRING DATA

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

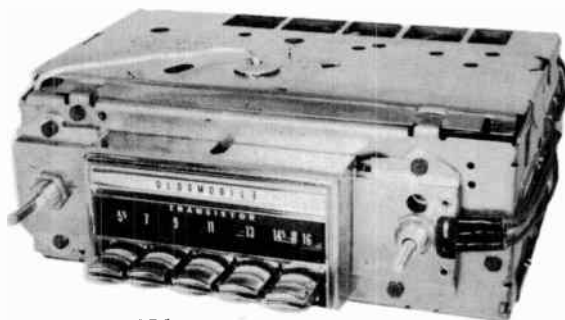


PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index

NOTE: Manufacturer Part Numbers Shown Are UNITED DELCO



MODEL 93BPB1

OLDSMOBILE MODELS 93BPB1/2
(7307303)
(69 Oldsmobile)
93EPB1
(7308203)
(69 Toronado)

OLDSMOBILE MODELS 93BPB1/2, 93EPB1

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.

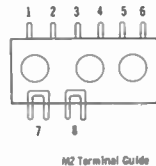
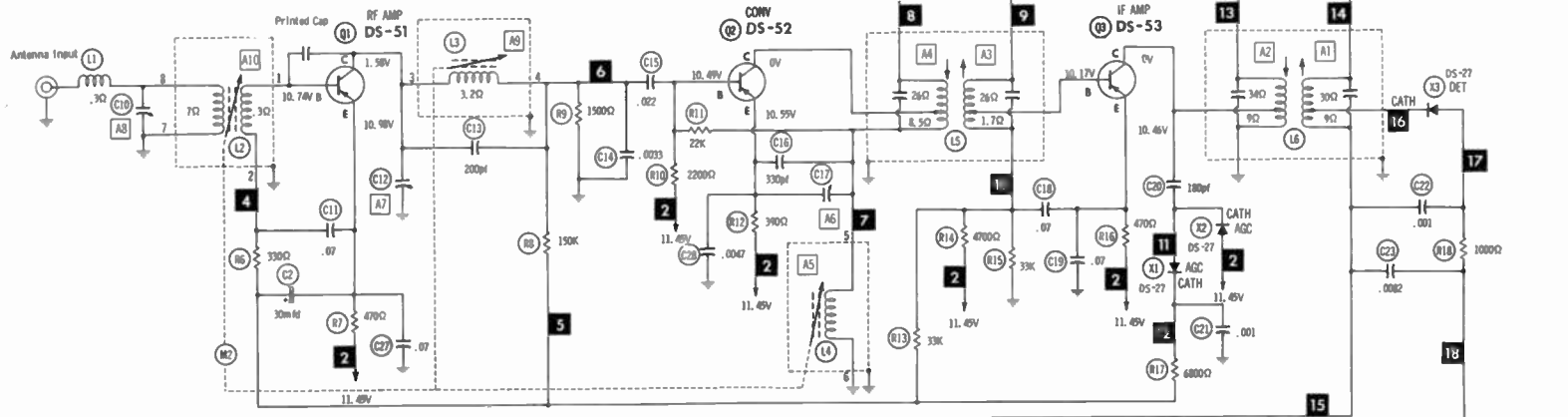
	GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point Δ , low side to ground.	262KC 400 cycle modulation	High freq. end stop.	Output meter across voice coil.	A1,A2, A3,A4	Adjust for maximum.
Check setting of oscillator coil core (A5). Rear 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

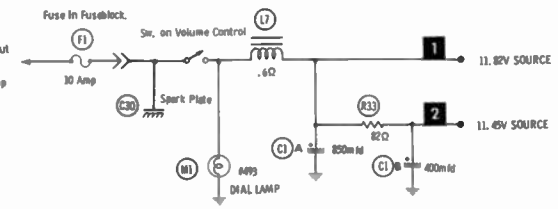
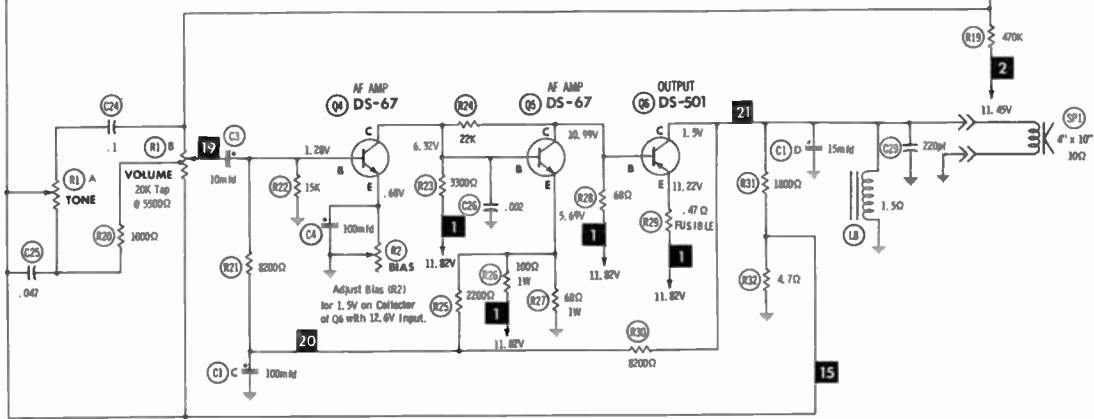


Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.

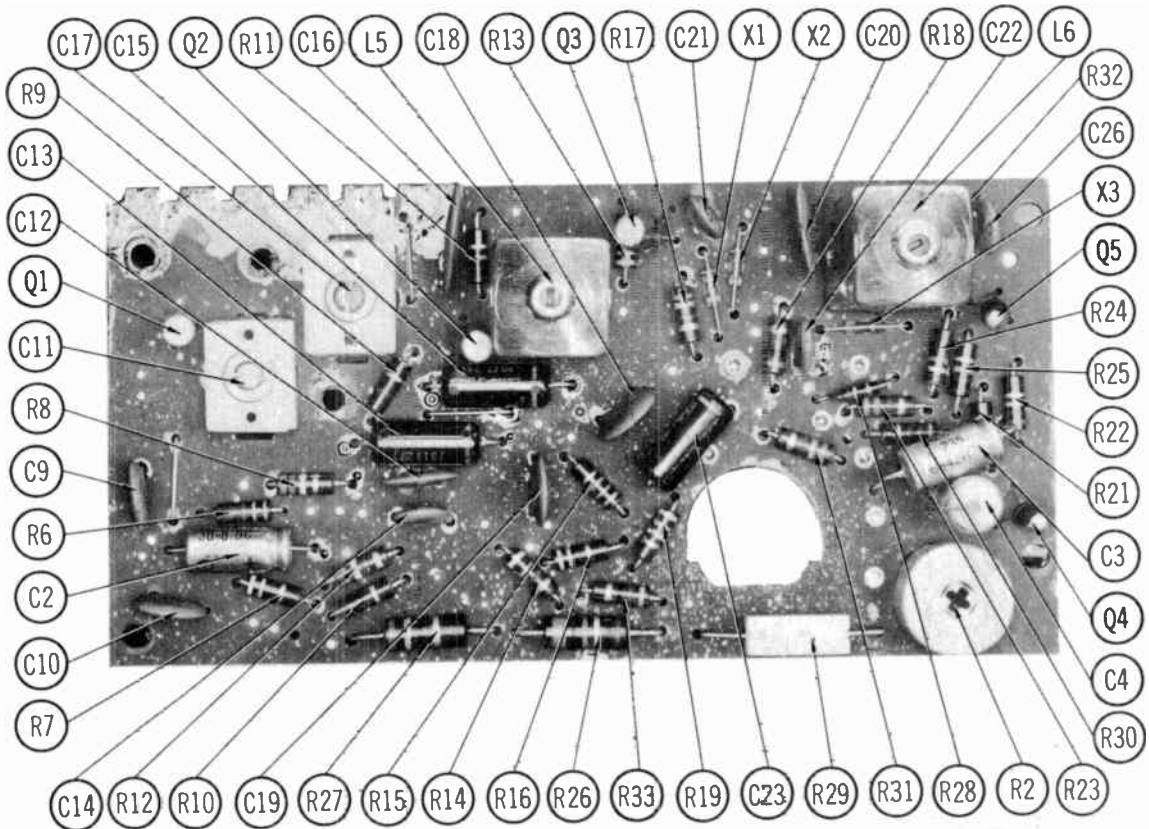
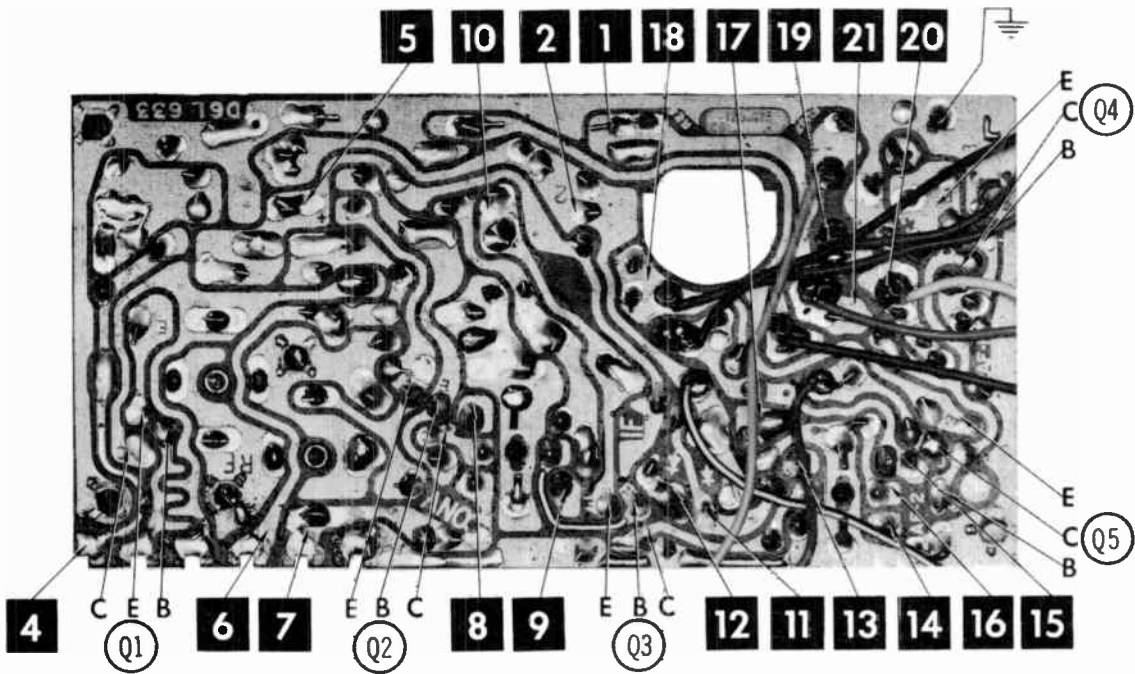
Transistor Terminal Guide



- 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.



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with CIRCUITRACE
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OLDSMOBILE MODELS 93BPB1/2, 93EPB1

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					
			MFR. PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q1	DS-51	RF Amp		GR-9A	TR-06	HEP2	SK3006	ECG 126
Q2	DS-52	Converter		GR-9A	TR-06	HEP2	SK3006	ECG 126
Q3	DS-53	IF Amp		GR-9A	TR-06	HEP2	SK3006	ECG 126
Q4	DS-67	AF Amp		GE-10	TR-21	HEP54	SK3020	ECG 123
Q5	DS-67	AF Amp		GE-10	TR-21	HEP54	SK3020	ECG 123
Q6	DS-501	Output *		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.	MFR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES			REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.		
X1	DS-27	1N34AS	1N34A	ECG 109		
X2	DS-27	1N34AS	1N34A	ECG 109		
X3	DS-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		DD0009A		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	MTA10D35	TL-1128
C4	100 4V	7291B10	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-DI 200	DTN-200	N220	CCTN-201	CN7201	10TCU-T20
C13	.0033 75V		DBE6D33	CPR-3300J	6D33	60P-1-332	PVC6233	6PS-D33
C14	.022		TTP-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20
C15	.0047 75V		DBE6D5	CPR-5000J	WMF1D5	10P-1-502	PVC625	6PS-D50
C16	330 N180					*	*	
C17	.07	#7282165						
C18	.07							
C19	.07							
C20	180 N80							
C21	.001		GPD X5F102K	DM-102	JBS601YP102K	* CCD-102	SM210	10TCN-T18
C22	.001		GPD X5F102K	DM-102	JBS601YP102K	CCD-102	SM210	2SS-D10
C23	.0082 75V		DBE6D82	CPR-8200J	6D82	60P-2-822	PVC6282	2SS-D10
C24	.1		TTP-1	CK-104	H0V101ZV104Z		TA010	6PS-D82
C25	.047 75V		Y1612S47		DMF1S47	IDP-2-473	PVC1147	TG-P10
C26	.002		GPD X5F202K	DM-202	JBX601YP202K	CCD-202	GP220	225P47391WD3
C27	220		GPD X5F221K	DD-221	JBZ601YP221K	CCD-221	GP322	2SS-D20
C28		#7271564						10TS-T22

* 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				
			MFR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone	100K	7303158 (1)	F1-100K,R14-25K, FFS015,RFS109, BB012,SB004, KR-4		* QJ-2527A	P15L, 4058, SH4250, RU253T53, OX937A, IS1500, US41
B	Volume/Switch	20K Tap @ 5000					
A	Tone	100K	7303711 (2)	F1-100K,R14-25K, FFS102,RFS112, BB014,SB004, KR-4		** QJ-2528A	P15L, 4100, SH4375, RU253T53, OX1062, IS1687, US41
B	Volume/Switch	20K Tap @ 5000					
R2	Bias	600 2W	7286601	V-600	U39-600	110-600	MR600P

* "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements & Shafts: B11-128,P21-029 (Panel),B19-119X,R9-115 (Rear), S46 (Bushing), N4 (Nut), 76-1 (Switch)

"SNAPTROL" Equivalent: BUB (3), CF13, CR50T, SF5, SR7, N4, GC.

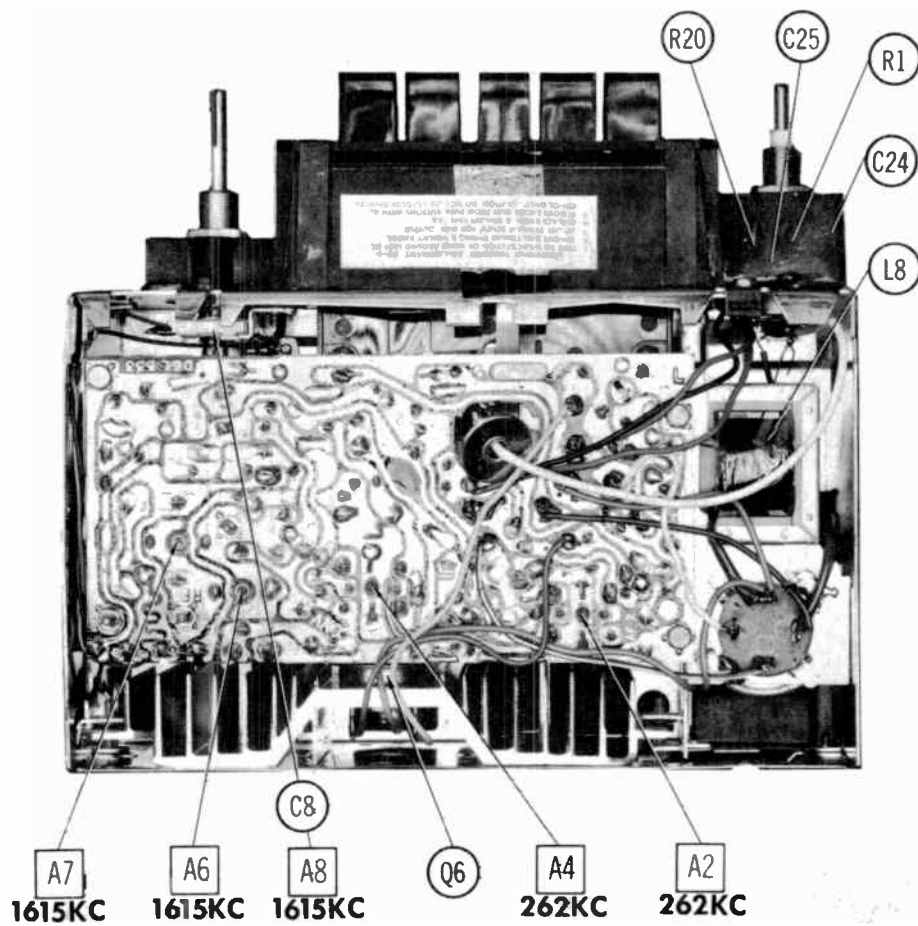
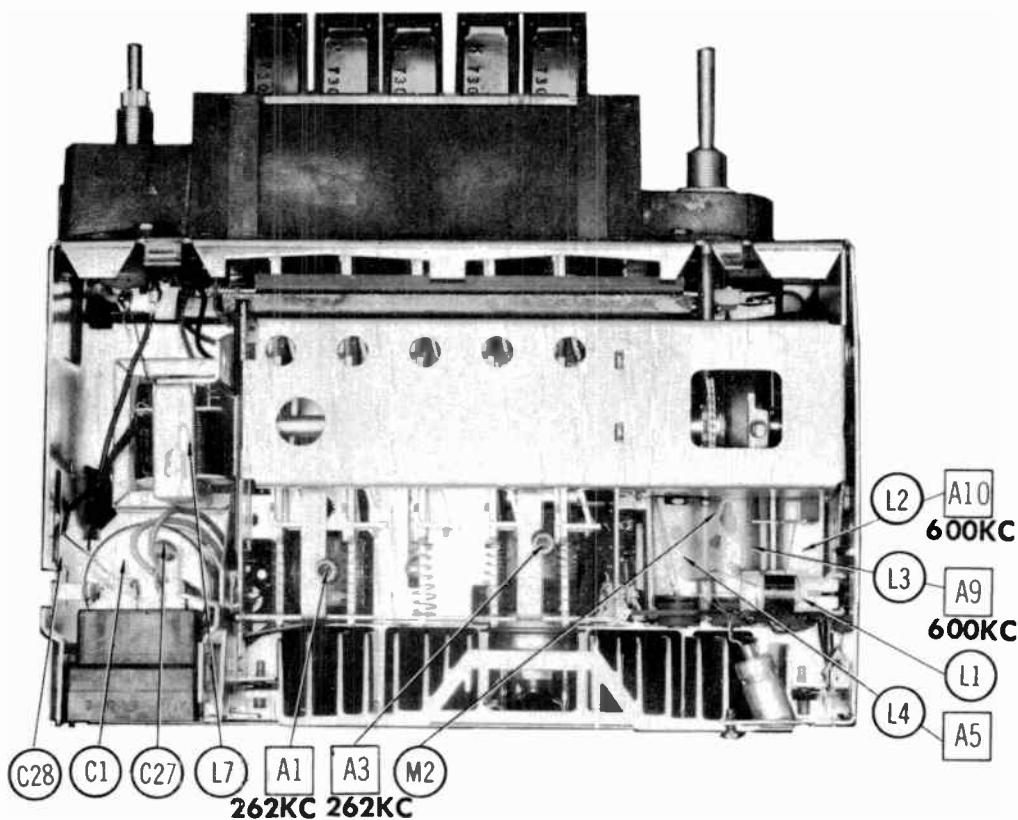
** "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B11-128,P22-103 (Panel),B19-119X,R26-121 (Rear), S6 (1) (Bushing), N4 (Nut), 76-1 (Switch)

"SNAPTROL" Equivalent: BUB (3), CF13, CR50T, SF7, SR8, N4, GC

(1) Used in Model 93BPB1 & 93BPB2.

(2) Used in Model 93EPB1.

(3) Alter Bushing to meet requirements.



PARTS LIST AND DESCRIPTION (CONTINUED)

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

Replacement parts shown may be superseded by the availability of newly introduced replacements.

Have your local distributor check Sams COUNTER FACTS[®] for the most up-to-date replacement.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.
R29	.47 (Fusible)			7281890

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.

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
		MFGR. PART No.	QUAM PART No.		
SP1	4" x 10" PM 10 ohms 4" x 10" PM 10 ohms	7311413 7289969	410A2Z10		Oldsmobile Toronado

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				

MISCELLANEOUS

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

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

ITEM	PART No.	ITEM	PART No.
Escutcheon, Models 938PB1/2	7304547	Push Button, Models 938PB1/2	7310321
Escutcheon, Model 93EPB1	7303873	Push Button, Model 93EPB1	7304492
Dial Glass, Models 938PB1/2	7299139	Knob, Volume or Tuning	402071
Dial Glass, Model 93EPB1	7202730	Knob, Tone	402072
Dial Pointer, Models 938PB1/2	7299148	Knob, Dummy	402074
Dial Pointer, Model 93EPB1	7292860		

WIRING DATA

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



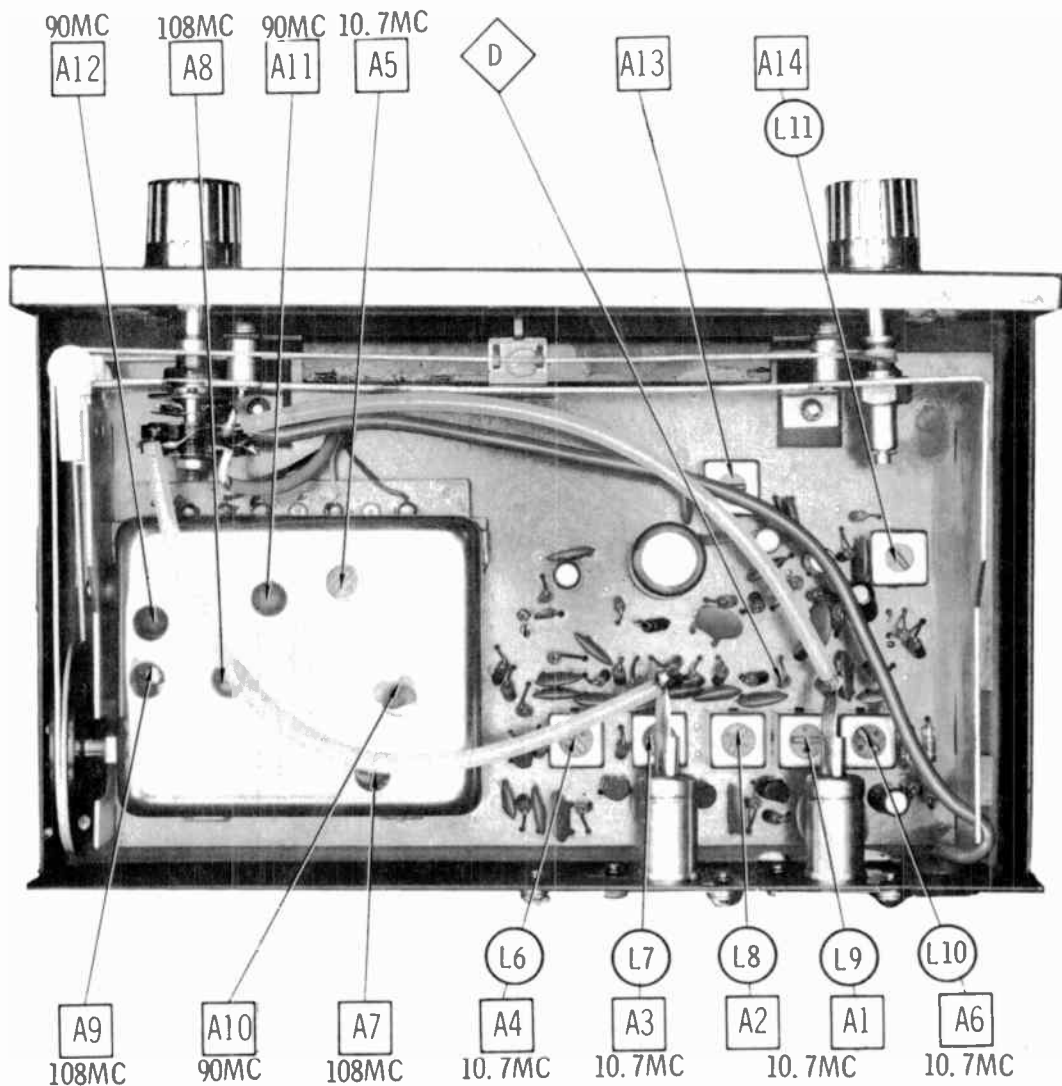
PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index



TRUETONE MODELS MIC5056A-96
MID5056A-07
(DC5056)



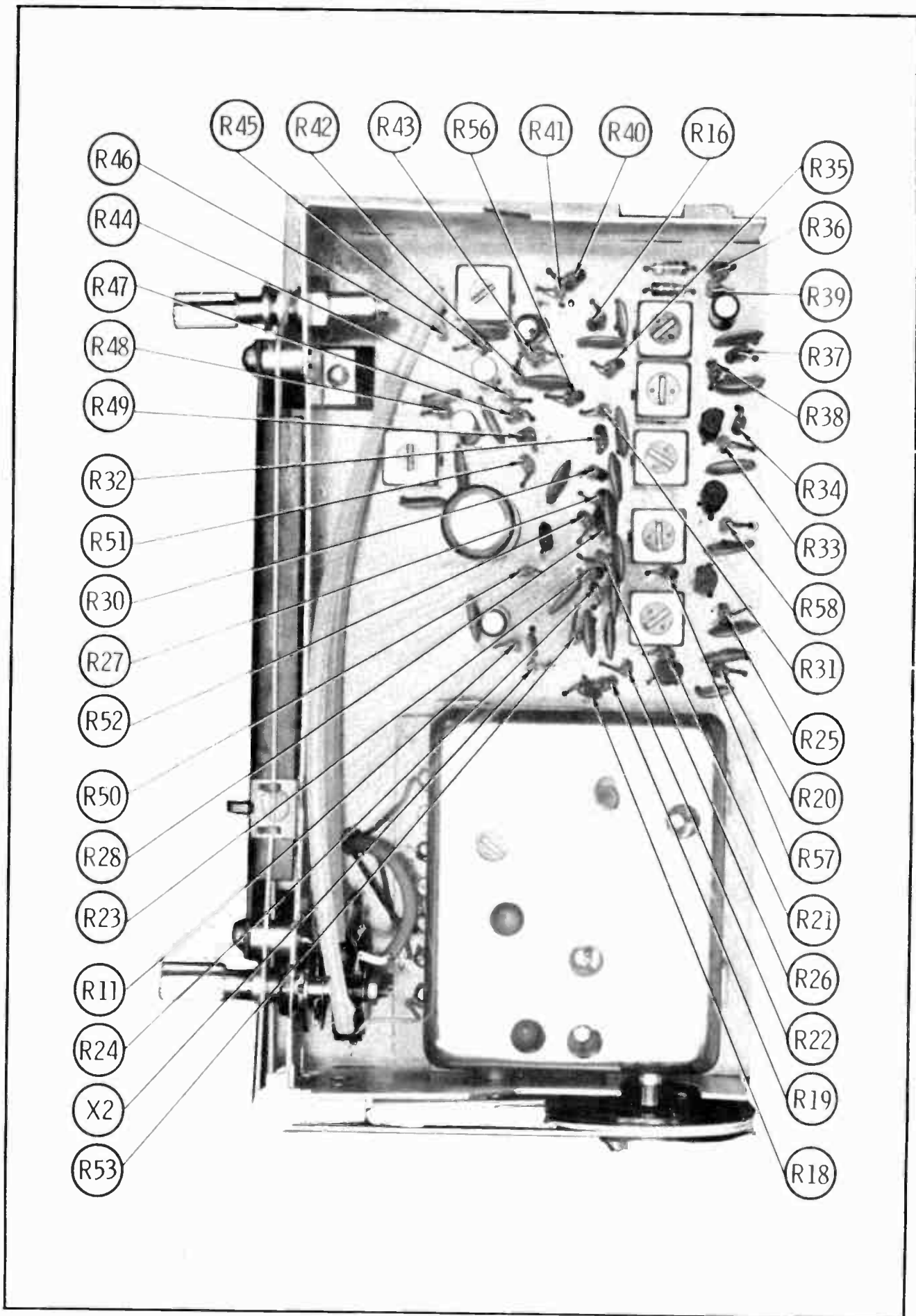
TRUETONE MODELS MIC5056A-96, MID5056A-07

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

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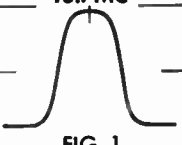


ALIGNMENT INSTRUCTIONS

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

A1 thru A6, A13, A14.....GENERAL CEMENT #9087.....WALSCO #2528
A7, A8, A9.....GENERAL CEMENT #8605.....WALSCO #2505
A10, A11, A12.....GENERAL CEMENT #8606L, 9440.....WALSCO #2501, 2544

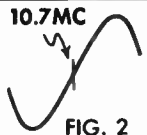
FM IF ALIGNMENT USING AM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001mfd to point $\diamond B$, low side to ground.					10.7MC
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 A5	Adjust for maximum.	
2. "	"	DC probe of VTVM to point $\diamond D$, common to ground.	A6	Adjust for zero reading. A positive or negative reading will be obtained on either side of the correct setting.	

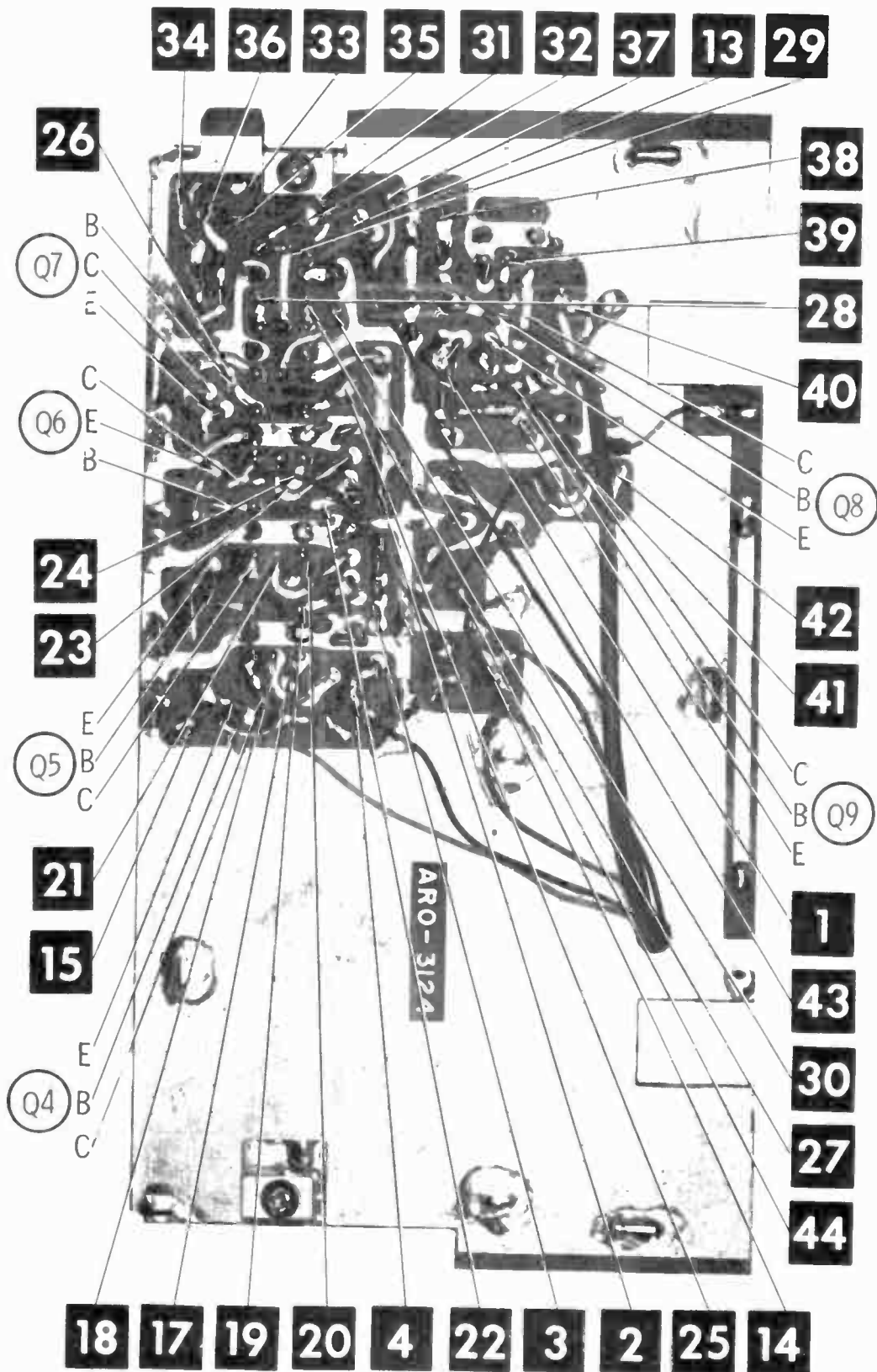
FM IF ALIGNMENT USING FM SIGNAL GENERATOR—SELECTOR IN FM POSITION

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
1. 10.7MC 450KC Sweep	Point of non-interference	Vert. amp of scope to point $\diamond C$, low side to ground.	A1 thru A5	Disconnect stabilizing capacitor C 3 . Adjust for maximum gain and symmetry of response similar to Fig. 1 with marker as shown. Reconnect C 3 .
2. "	"	Vert. amp of scope to point $\diamond D$, low side to ground.	A6	Adjust A 6 (secondary) to place marker at center of "S" curve similar to Fig. 2. Readjust A1 (primary) for maximum amplitude and straightness of line.

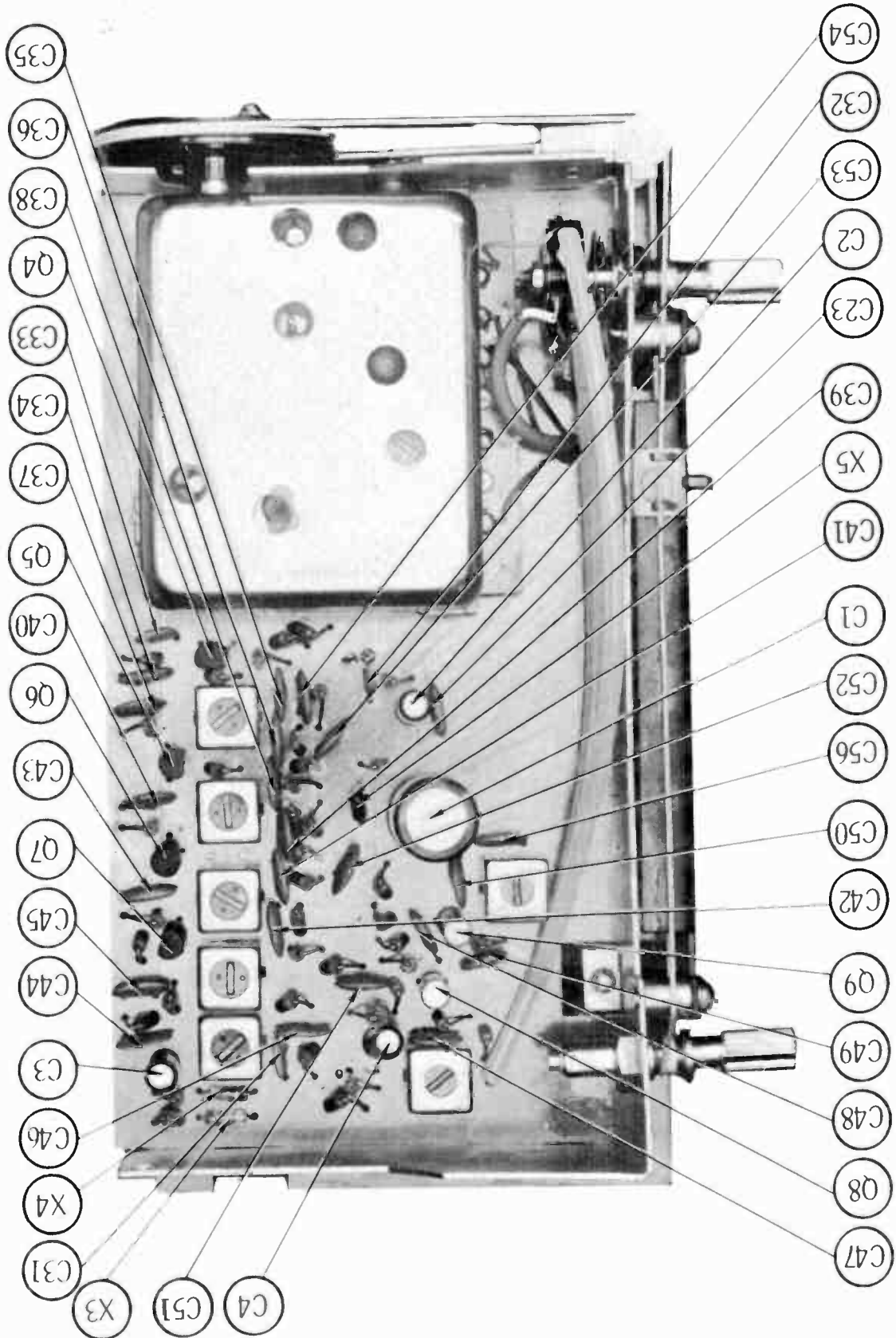
FM RF ALIGNMENT—SELECTOR IN FM POSITION

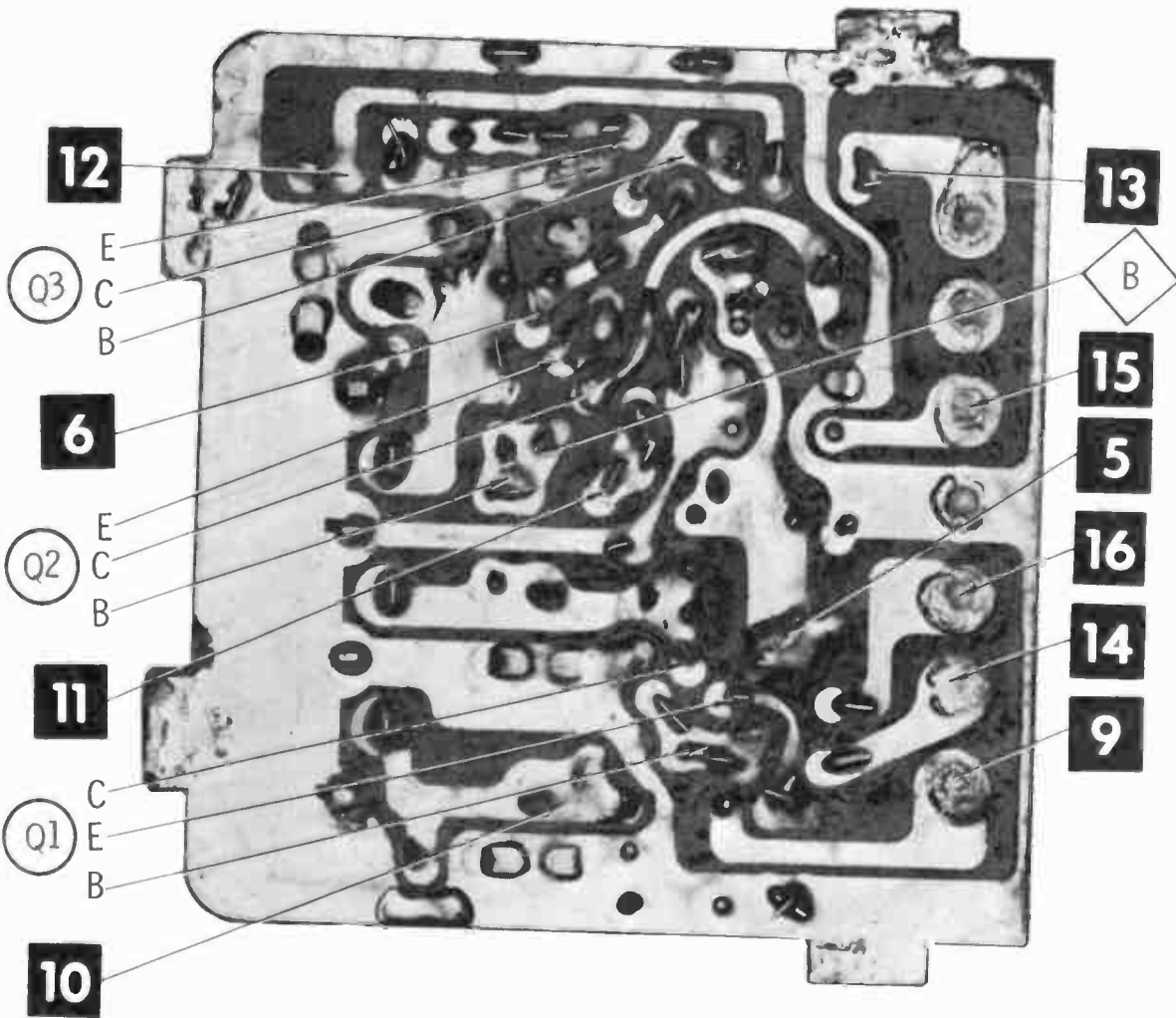
Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead.					
GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS	
3. 108MC	High freq. end	DC probe of VTVM to point $\diamond C$, common to ground.	A7, A8, A9	Adjust for maximum.	
4. 90MC Unmodulated	Tune to signal.	"	A10, A11, A12	Rock tuning and adjust for maximum. Repeat steps 6 and 7 until no further improvement can be made.	

5. With converter installed in automobile and AM radio tuned to 850KC \pm 30KC, adjust A13 & A14 for maximum output.

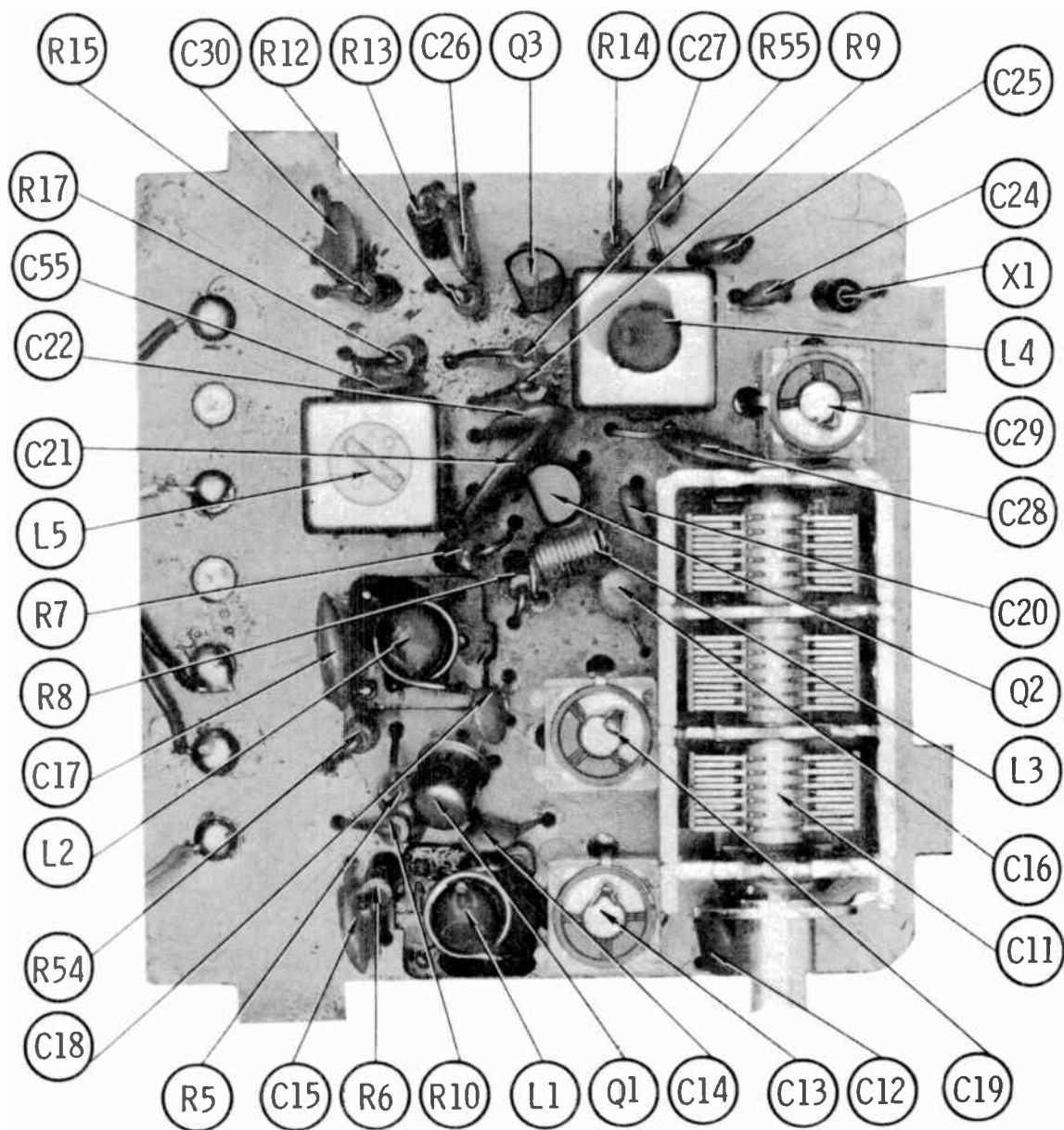


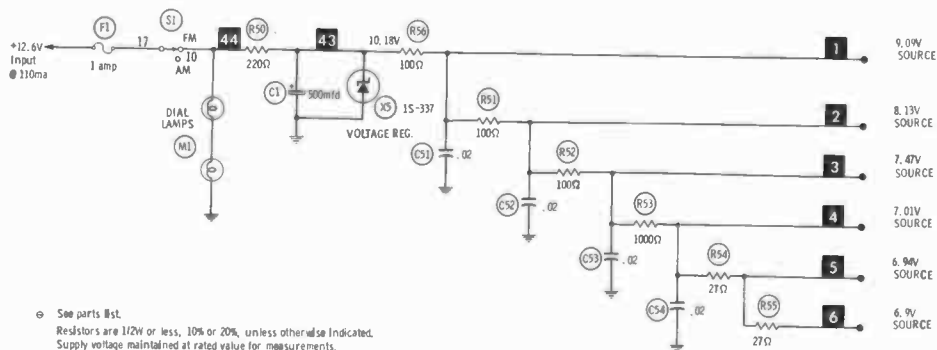
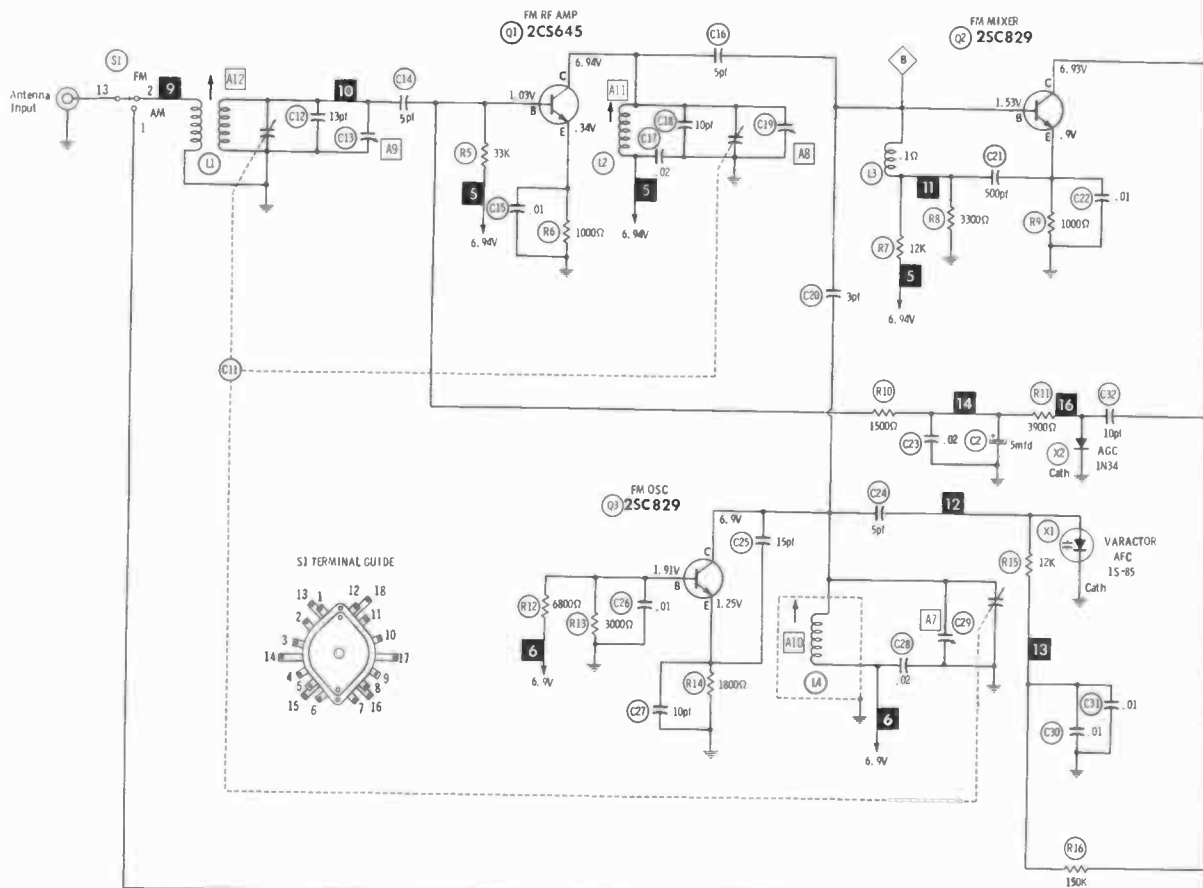
A Howard W. Sams **CIRCUITRACE** Photo





A Howard W. Sams CIRCUITRACE® Photo





e See parts Bst.
 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	2SC645	RF Amp		GE-17	TR-22	HEP56	SK3018	ECG 108
Q2	2SC829	Mixer		GE-17	TR-22	HEP50	SK3018	ECG 108
Q3	2SC829	Oscillator		GE-17	TR-22	HEP50	SK3018	ECG 108
Q4	2SC829	1st IF Amp		GE-17	TR-22	HEP50	SK3018	ECG 108
Q5	2SC829	2nd IF Amp		GE-17	TR-22	HEP50	SK3018	ECG 108
Q6	2SC829	3rd IF Amp		GE-17	TR-22	HEP50	SK3018	ECG 108
Q7	2SC829	4th IF Amp		GE-17	TR-22	HEP50	SK3018	ECG 108
Q8	2SA102	AM Mixer		GE-9	TR-11	HEP638	SK3020	ECG 126
Q9	2SA102	AM Oscillator		GE-9	TR-11	HEP638	SK3020	ECG 126

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	1S-85					Varactor
X2	0A-90	1N34AS	1N34A	ECG 109		Matched Pair Zener
X3	20A-90	1N34AS	1N34A	ECG 110		
X4	20A-90	1N34AS	1N34A	ECG 142		
X5	1S-337	GE-2D12	Z-1014			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
			TRUETONE PART No.	AEROVOX PART No.	CENTRALLAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	500	16V	77-331507	BCD15500	EA15-500	PC500-16	QT1-30A	MTV500DN15	TL-1166
C2	5	6V	77-335505	BCD25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084
C3	10	6V	77-335106	8CD25010	EP6-10	PC10-50	MT1-5	MTV10CB50	TE-1087
C4	5	6V	77-335505	8CD25005	EP6-5	PC5-100	MT1-3	MTV5CB50	TL-1084

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALLAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C11		#65-12D001							
C12	13	#65-123001	NPO-DI 15	DTZ-15	NP015	CCT0-150	CN0415	10TCC-Q15	
C13									
C14	5	#65-123001	NPO-DI 5.0	CK-103	MP05	CCD-103	TA110	10TCC-V50	
C15	.01		TTP-01		MP01				TG-S10
C16	5		NPO-DI 5.0	CK-203	MP05	CCD-203	TA120	10TCC-V50	
C17	.02		TTP-02	DTZ-10	MP02	CCD-100	CN0410	TA120	TG-S20
C18	10		NPO-DI 10		NP010			10TCC-Q10	
C19		#65-123001	NPO-DI 3.0						
C20	3		GPD X5F501K	DM-501	GP500	CCD-501	GP350	10TCC-V30	
C21	500		TTP-01	CK-103	MP01	CCD-103	TA110	10TS-T50	
C22	.01		TTP-02	CK-203	MP02	CCD-203	TA120	TG-S10	
C23	.02		NPO-DI 5.0		NP05				TG-S20
C24	5		NPO-DI 15	DTZ-15	NP015	CCT0-150	CN0415	10TCC-V50	
C25	15		TTP-01	CK-103	MP01	CCD-103	TA110	10TCC-Q15	
C26	.01		NPO-DI 10	DTZ-10	NP010	CCTD-100	CN0410	TA120	TG-S10
C27	10		TTP-02	CK-203	MP02	CCD-203	CN0410	TA120	10TCC-Q10
C28	.02								TG-S20
C29		#65-123001	TTP-01	CK-103	MP01	CCD-103	TA110	TG-S10	
C30	.01		TTP-01	CK-103	MP01	CCD-103	TA110	TG-S10	
C31	.01		NPO-DI 10	DTZ-10	NP010	CCT0-100	CN0410	10TCC-Q10	
C32	10		TTP-01	CK-103	MP01	CCD-103	TA110	TG-S10	
C33	.01		TTP-02	CK-203	MP02	CCD-203	TA120	TG-S10	
C34	.02		TTP-02	CK-203	MP02	CCD-203	TA120	TG-S20	
C35	.02		TTP-02	CK-203	MP02	CCD-203	TA120	TG-S20	
C36	.02		TTP-02	CK-203	MP02	CCD-203	TA120	TG-S20	
C37	.02		TTP-02	CK-203	MP02	CCD-203	TA120	TG-S20	
C38	.02		TTP-02	CK-203	MP02	CCD-203	TA120	TG-S20	
C39	.02		TTP-02	CK-203	MP02	CCD-203	TA120	TG-S20	
C40	.02		TTP-02	CK-203	MP02	CCD-203	TA120	TG-S20	
C41	.02		TTP-02	CK-203	MP02	CCD-203	TA120	TG-S20	
C42	.02		TTP-02	CK-203	MP02	CCD-203	TA120	TG-S20	
C43	.02		TTP-02	CK-203	MP02	CCD-203	TA120	TG-S20	
C44	300		GPD X5F301K	DM-301	GP300	CCD-301	GP330	TA120	TG-S20
C45	300		GPD X5F301K	DM-301	GP300	CCD-301	GP330	GP330	10TS-T30

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Port 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.
C46	300		GPD X5F301K	DM-301	GP300	CCD-301	GP330	10TS-T30
C47	100		NPO-DI 100	DTZ-100	NP0100	CCTO-101	CN0310	10TCC-T10
C48	.001		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C49	.001		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C50	.02		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C51	.02		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C52	.02		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C53	.02		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C54	.02		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C55	60			TCN-62		CCTN-620		
C56	100		NPO-DI 100	DTZ-100	NP0100	CCTO-101	CN0310	10TCC-T10

Truetone Part Number.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	Antenna	65-176001			
L2	RF	65-176002			
L3	10.7MC Trap	65-178001			
L4	Oscillator	65-170001			
L5	Input IF	65-090001			
L6	Interstage IF	65-090002			
L7	Interstage IF	65-090002			
L8	Interstage IF	65-090002			
L9	Ratio Detector (Pri)	65-090003			
L10	Ratio Detector (Sec)	65-090004			
L11	AM Mixer	65-170002			
L12	AM Osc.	65-170002			

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	65-204001	65-159005	AGC1	HDJ	312001	150145	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Dial Lamp	65-201002	2 Used
S1	Switch, Selector	65-180001	

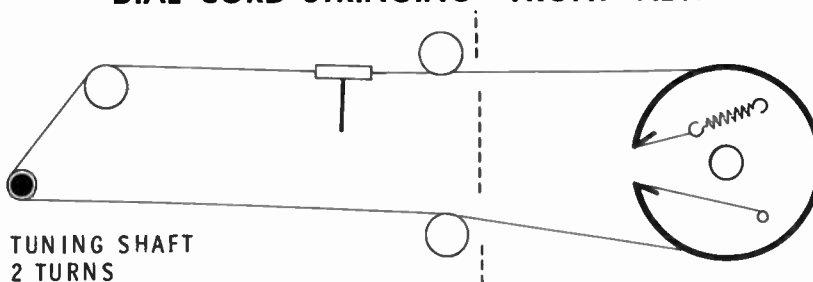
CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Dial Glass	65-020006	Dial Drum	65-150001
Knob, Tuning	65-113001	Dial Pointer	65-150002
Knob, Selector	65-115001		

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



TRUE-TONE MODELS MIC5056A-96, MID5056A-07

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61-6787 52 Ford	5	50281	7	22BAX R22BAX 62		ACP-3044 63 Comet	23	CTP-5071 65 Comet	29
61-6788 52-53 Ford	5	5033 Ch.528.50330/		Rambler American	18	ACP-4559 64 Comet	27	CTP-7211A 67 Mercury	
61-6789 51-52 Chev.	5	50331	7	8990377 6MR 56		ATC-60 59-60 Chev.	15	Comet	62
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61-6793 53 Chev.	5	5066	26	8990378 6MA 56 Hudson		BAP-20 60 Buick	14	CTR-68 55-56 Chev.	13
61-6794 53 Plym.	5	5098 Ch.833.50980	9	& Nash	6	BAP-4530 64 Buick	28	CTR-77A 57 Chev.	9
61-6795 53 Merc.	5	5099 Ch.833.50990	9	8990378 7MA 57		BAR-8209 68 Barracuda,		CU-39	12
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		833.624630	30	OEFA28 61-62 F-85	27	CMP-7217 67 Cougar	60	DTX-67A 57-58 Dodge	12
R-1 65 Plym.	34	833.625510 65 Chev.	30	PH430 62 Plym.	27	CMR-7151 67 Camaro	60	DTX-68 57-58 Dodge	12
R-2 65 Fury	34	833.627420	28	PCT432 61-62 Tempest	27	CMR-8252 67-68 Camaro	60	DUP-42	20
R-3 65 Valiant	34	833.628000	30	TR720N	29	CP-478-C 58 Chev.	12	DUP-451	27
R-4 65 Coronet	34	834.50480	32	TR1279-6V	11	CP-489-F 59 Chev.	14	DUP-4651	27
R-5 65 Dart	34	835.62460	29	TR1279-12V	11	CP-500 59-60 Chev.	14	DUP-6202	57
R-6 65 Polara	34	856.62450	27	TT-727 Tractor Radio	29	CP-511AT 61 Chev.	16	DX-410 60 Dart,DeSoto,	
R-7A 65 Newport	34	856.62470	52	VT434 62 Valiant	27	CP-522AT	19	Dodge	14
R-7B 65 Chrysler 300	34	AMERICAN MOTORS		401	27	CP-522AT 62 Chev L.P.	24	DX-619 59 Dodge	13
R-7C 65 New Yorker	34	(See Hudson,Nash &		606	27	CP-3002 63 Chev.	23	DX-3013 63 Dodge	22
R-9 65 Chev.	34	Rambler)		612	19	CP-4050 64 Chev.	28	DX-5121 65 Coronet	30
R-10 65 Chevelle	34	88MG (8992290)		707	12	CP-4050N 64 Chev.	37	DX-5121N 65 Coronet	35
R-11 65 Chevy II	34	68 Javelin	65	1279-6V	22	CP-5004 65 Chev.	29	DX-7111 66-67 Dodge	
R-16 65 Corvair	34	AF6TMR page 120 66		1279-12V	11	CP-5004N 65 Chev.	37	Coronet	62
R-18 65 Pontiac	34	Ambassador,Classic,	28	2279-12V	11	CP-6052 66 Chev.	39	DX-8212 68 Coronet	60
R-19 65 Olds	34	Marlin	28	401	27	CP-8254T 68 Chev.	60	DXA-50 60 Dart,DeSoto,	
R-20 65 Tempest	34	AF7SMR 67 Ambassador,		606	19	CPA-3047 63 Corvair	23	Dodge	14
R-21 65 Olds F-85	34	Marlin,Rebel	44	612	19	CPA-4533 64 Corvair	28	DXA-3053 63 Dodge	22
R-22 65 Buick	34	F8SMG (8992252)		707	12	CPV-4048 64 Chevelle.	28	EM-29	21
R-23 65 Galaxie	34	68 Javelin	68	1279-6V	22	CPV-5007 65 Chevelle.	29	EP-108 58 Edsel	12
R-24 65 Fairlane	34	F8SMR 68 Ambassador,		1279-12V	11	CPV-7154-67-68		F-100 Rev. 49-50	
R-25 65 Mustang	34	Rebel	63	AUDIO/STEREO		Chevelle	71	Ford	6
R-26 65 Falcon	34	P7MA 67 Ambassador,		A-12	53	CPV-8256-68 Chevelle	60	F-128/C 58 Ford	12
R-28 65 Comet	34	Marlin,Rebel	47	A-30	52	CR-3006 63 Corvair	23	F-139 59 Ford	11
R-29 65 Merc.	34	P8MA 68 Ambassador,				CR-4034 64 Corvair	28	F-151 Rev. 51 Ford	6
R-32 65 Buick Spl.	34	Rebel	62			CRA-3046 63 Corvair	23	F-152 52 Ford	6

AUTOMATIC (CONT.)	VOL.	AUTOMATIC (CONT.)	VOL.	AUTOMATIC (CONT.)	VOL.	AUTOMATIC (CONT.)	VOL.	BENDIX (CONT.)	VOL.
F-241 54 Ford	6	MP-69	6	PP-8202 68 Belvedere,	60	TPP-87A 57 Plym.	13	2BCT R2BCT 62	
F-322A	19	MP-126	6	Satellite	60	TPP-88 57-58 Plym.	13	Corvaire	19
F-3016 63 Ford	23	MT-47C 57 Merc.	12	PPM-7366 67 Plymouth	61	TR-88C 57-58 Plym.	13	3BCH 63 Chev.	21
F-4055 64 Ford	27	MT-419 E.P. 59 Merc.	11	PS-4153	27	TR-12 Tractor	4	3BCH2 63 Chevy II	21
F-5058N 65 Galaxie	36	MT-419 L.P. 59-60	14	PS-4653	27	TR-13B	25	3BCT 63 Corvaire	21
F-6105P 65/66		Merc.	14	PT-3025 63 Plym.	26	TR-48AT	25	4TBCC 64 Chevy II	32
Galaxie	40	MT-530 59-60 Merc.	14	PUT-3108	23	TR-0048	25	4TBCC 64 Corvaire	32
FA-219 59 Ford	11	MT-3023 63 Merc.	23	PUT-3108A	28	TR-7281 Tractor	59	4TBCH 64 Chev.	32
FA-3056 63 Ford	23	MT-4061 64 Merc.	27	R-54,B	11	TR-7390 Tractor	59	4TBCL 64 Chevelle	32
FA-4555 64 Ford	27	MT-5073 65 Merc.	29	R-61	20	TUN-5	15	4TBCT 64 Chev. Truck	32
FA-6605P 65/66		MTR-602AT 62 Meteor	24	RAP-89 59 Rambler	13	TU-6217	58	5BCC 65 Corvaire	31
Galaxie	40	MU-34	6	RAP-100 60 Rambler	13	UAF-6224	64	5BCH 65 Chev.	31
FAL-4554	27	MUS-4067 64 Mustang	27	RAP-3070 63 Rambler	26	UE-4155A	28	5BCL 65 Chevelle	31
FAN-3058 63 Fairlane	23	MUS-5059 65 Mustang	29	RAV-5403A/AB	57	UE-4171A	28	5TBCT 65 Chev. Truck	32
FAN-4551 64 Falcon	27	MUS-5059N 65 Mustang	36	RG-59	14	UE-4655A	28	6BCC 66 Corvaire	38
FAP-70 60 Ford	14	MUS-7209 67 Mustang	60	RG-59C	14	UE-4671A	28	6BCH 66 Chev.	38
FAP-4556 64 Ford	27	N-638 58-59 Rambler		RMR-7280	63	UFM-3089	22	6BCL 66 Chevelle	38
FAP-6606P 65/66		American	13	RP-470 60 Rambler	13	UFM-6305	59	6BCT 66 Chev.Truck	38
Galaxie	40	N-639 58-59 Rambler		RP-481AT 60-61		UFP-3098	22	6BCT 66 Chevy II	38
FAR-762AT 62		American	13	Rambler	16	UN-40	12	7BCC 67 Corvaire	45
Fairlane	24	N-3028 63 Rambler		RP-519 59 Rambler	13	UP-6222	60	7BCL 67 Chevelle	45
FAR-3018 63 Fairlane	23	American	23	RP-3030 63 Rambler	26	VP-12	12	7BCT 67 Chev. Truck	45
FAR-4054 64 Fairlane	27	NA-749 58-59 Rambler		RP-3097 63 Rambler	23	VPA-280 60 Valiant	15	7BCT 67 Chevy II	45
FAR-7205 67 Fairlane	60	American	13	RP-5151 65 Rambler	29	VSC-6767 67 VW	70	7BCH 67 Chev.	45
FFM-3091A 63 Ford	22	NA-3068 63 Rambler		RP-8332M 67 Ambassador,		VT-5108 65 Valiant	30	7BCHX 67 Camaro	45
FFM-6251 65-66		American	23	Marlin, Rebel	55	VTP-440 60 Valiant	15	7FBCHX 67 Chev.	47
Galaxie	66	NAP-3069 63 Rambler		RT-7B	13	VTP-3038 63 Valiant	22	7FBCCX 67 Camaro	47
FM-61	14	American	23	RT-7D	11	VTP-5107 65 Valiant	30	8BDT 68 Dodge Truck	60
FM-731	6	NAY-3052 63 Chrysler	23	RUV-5406	58	VTP-8208 68 Valiant	60	22B See MoPar 805	17
FM-3083	22	ND-8224 68 Chrysler		RVB-6782 (Echomate II)	71	W-76 Thru 57 VW	12	23BC See MoPar 327	17
FM-3083A	27	300	60	S-91 58-59 Simca		W-84 58-63 VW	23	23BD, 23BP, 23BPX	
FM-5099	32	NP-3029 63 Rambler		Aronde	11	W-89 58-59 VW	12	See MoPar 322	17
FM-5099B	65	American	23	S-500 50-51		W-3040 58-63 VW	23	24BC See MoPar 410	18
FN-4051 64 Falcon	27	NP-5153 65 Rambler		Studebaker	6	W-3040A 64 VW	28	24BI See MoPar 409	18
FNP-430 60 Falcon	14	American	23	S-551 Rev. 50-51		W-5204 See Page 41			
FNP-452AT 62 Falcon	23	NT-8222 68 Chrysler		Studebaker	6	W-5204 See Page 41		BLAUPUNKT	
FNP-3015 63 Falcon	23	Newport	60	SA-529 58-59 Simca		WFM-5387 58-67 VW	54	Bremen Above Serial	
FNP-3015A 63 Falcon	23	NU-63-AT	23	Aronde	11	WP-4 58-59 VW	12	#G14001	9
FNP-4052 64 Falcon	27	NU-3107	23	SAB-3071 63 Special	23	WP-7 Thru 57 VW	12	Derby 94770 Serial	
FNP-5051N 65 Falcon	36	NU-3107A	28	SB-3032 63 Special	23	WP-7G Karmann-Ghia	12	#V710001, Etc.	32
FNP-7203 67 Falcon	60	NVW-6238 65-67 VW 1600	54	SBP-3033 63 Special	23	WP-19 58-59 VW	12	Exportsuper 33070	
FOP-4528 64 F-85	28	NY-400 60 Chrysler	14	SBP-4027 64 Buick		WP-21 58-63 VW	23	From Serial #U170001	33
FP-238 58 Ford	12	NY-598A 58 Chrysler	10	Spl.	28	WP-167	15	Exportsuper 33080 From	
FP-238C 58 Ford	12	NY-3012 63 Chrysler	23	SBP-7168A 66-67 Buick		WP-3039 58-65 VW	23	Serial #U50001	33
FP-260 60 Ford	14	NY-3100 63 Chrysler		SP-1 58-59 Simca		WP-3093A 64 VW	23	Exportsuper 34150	
FP-271AT 60-61 Ford	16	New Yorker	26	Aronde	11	WP-5203 See Page 41		Serial #V450001	26
FP-276TR 59 Ford	11	NY-5101N 65 Chrysler	35	SPA-209 58-59 Simca		65 VW	28	Exportsuper 34750 From	
FP-3017 63 Ford	23	NY-8220 68 Chrysler		Aronde	11	WP-6237 (58-67 VW		Serial #V765001	34
FP-4056 64 Ford	27	New Yorker	60	SPA-3072 63 Special	23	1300	57	Exportsuper 36350	
FP-5057N 65 Galaxie	36	OAE-10 60 Olds	14	SPA-4527 64 Buick		WPC-8 Thru 57 VW	12	Vienna Series X From	
FP-6106P 65/66		OAE-4531 64 Olds	28	Spl.	28	YAM-3050 63 Chevy II	23	Serial #X870001	42
Galaxie	40	OE-160 60 Olds	14	TA-3073 63 F-85,		YAM-4525 64 Chevy II	28	Exportsuper 91220	
FP-7207 67 Galaxie	60	OE-171AT 61 Olds	16	Tempest	23	YP-3049 63 Chevy II	23	Above Serial	
FPA-220 60 Falcon	14	OE-3024 63 Olds	23	TAC-3051 63 Chev.		YP-4532 64 Chevy II	28	#E160001	18
FPA-3055 63 Falcon	23	OE-4031 64 Olds	28	Truck	22			Frankfurt	8
FPA-3057 63 Ford	23	OE-5031 65 Olds	29	TAC-4541 64 Chev.				Frankfurt US From	
FPA-4552 64 Falcon	27	OE-7162 67 Oldsmobile	60	Truck	28			Serial #V510001	27
FPF-4557 64 Falcon	27	P-69	6	TAC-5514N 65 Chev.				Frankfurt 3798 Above	
FPO-4028 64 F-85	28	P-651 Rev. 51 Plym.	20	Truck	37			Serial #Q553083	14
FPO-5033 65 F-85	29	P-4152	27	TAP-3074 63 F-85,				Frankfurt 9798 Above	
FT-227 57 Ford	12	P-4652	27	Tempest	23			Serial #890001	15
FTM-7218 64-67		P-5040 65 Pontiac	29	TAP-4526 64 Tempest	28			Frankfurt US 36650	
Econoline, Bronco	9	PA-74R	30	TAX-4542 64 Chev.				Series X	43
FP-37A 57 Ford	64	PA-85	23	Truck	28			Hamburg	8
FUP-3080 63 Falcon		PA-3065 63 Plym.	26	TAX-5513N 65 Chev.				Koln	8
Futura	23	PA-3285	23	Truck	37			Koln 3898 Above Serial	
FUP-4057 64 Falcon	27	PAC-90 60 Pontiac	14	TC-3035 63 F-85,				#Q310001	16
GES-6394-PAK/-T	71	PAC-3067 63 Pontiac	23	Tempest	23			KV810	17
GES-8111-1-PAK	71	PAC-4529 64 Pontiac	28	TCM-3011 63 Chev.				Manhattan 35150	
H-4 58 Hillman	12	PAF-4340	29	Truck	22			Series W	43
H-9 58 Hillman	12	PAP-69 59 Plym.	15	TCM-4041 64 Chev.				Manhattan 34150	
H-400 49-50-51		PAP-80 60 Plym.	15	Truck	28			Serial #V450001	26
Hudson	6	PAP-3066 63 Plym.	22	TCM-5014 65 Chev.				Manhattan 90220	17
HP-10 58 Hillman	12	PC-350 60 Olds	14	Truck	29			New Yorker 34750 From	
HP-15 58 Hillman	12	PC-361AT 61 Pontiac	16	TCM-5014N 65 Chev.				Serial #V765001	34
K-700 51 Henry J	6	PC-3027 63 Pontiac	23	Truck	37			New Yorker-Series X	
L-390 59-60		PC-4029 64 Pontiac	28	TCX-4042 64 Chev.				From Serial	
Studebaker Lark	14	PC-5041 65 Pontiac	29	Truck	28			#X1485001	46
L-559 E.P. 59		PC-7165 67 Pontiac	62	TCX-5013 65 Chev.				Vienna	26
Studebaker Lark	11	PFM-3092A 63 Pontiac	22	Truck	29			Wolfsburg 9160 Above	
L-559 L.P. 59-60		PFM-3094 63 Plym.	22	TCX-5013N 65 Chev.				Serial #G450001	9
Studebaker Lark	14	PFM-6257 66 Pontiac	66	Truck	37			3598	13
LA-449 59 Studebaker		PFX-5109 65 Fury	30	TCX-8274 67-68 Chev.	60			9280	13
Lark	11	PFX-5109N 65 Fury	35	TDM-1257 64-69				BORG-WARNER	
LAP-29 59 Studebaker		PFX-7105 67 Plymouth	62	Dodge Truck	64			P6MW	53
Lark	11	Fury	62	TMA-1550	69			3800 (P7MW)	61
LAP-40 59-60 Studebaker		PFX-8206 68 Plymouth	62	TPC-31 61 Buick Spl.,				4000 - Mark II (P7MW)	62
Lark	14	Fury	62	Olds, F-85, Pontiac				4000 - Mark II (P7MW2)	63
LP-929 59 Studebaker		PM-236 53 Plym.	5	Tempest	16			(LP)	63
Lark	11	PP-330 60 Plym.	15	TPC-31AT 63 F-85,				BRITISH MOTORS CORP.	
MAP-99 E.P. 59 Merc.	11	PP-341AT 61 Plym.	16	Tempest	23			65MB 66 Austin Healey	
MAP-99 L.P. 60 Merc.	14	PP-819 59 Plym.	15	TPC-42AT 63 F-85,				3000, Mark III, Sprite,	
MAP-3063 63 Merc.	23	PP-3026 63 Plym.	22	Tempest	23			MGB, MG Midget and	
MAP-4561 64 Merc.	27	PP-5105 65 Belvedere	30	TPC-3036 63 F-85,				MG-1100	53
MB-72	30	PP-5105N 65		Tempest	23				
MEL-6740	69	Belvedere	35	TPC-4026 64 Tempest	28				
MM-430 53 Merc.	4	PP-7103 66-67		TPC-7170 66-67 Pontiac	62				
MNE-6725	68	Belvedere, Satellite	60	Tempest	62				

MERCURY	VOL.	MIDLAND (CONT.)	VOL.	MOPAR (CONT.)	VOL.	MOPAR (CONT.)	VOL.	MOTOROLA (CONT.)	VOL.
(Also See Philco-Ford)									
D8MF 68 Comet	53	65-400	57	324 Export SP1/2 62		624 57 Dodge D-66/-67/		BKA9X 59 Buick	10
E5TBM 65 Merc.	28	65-404	59	Plym.	17	-70/-71/-72	8	BKA60X 60 Buick	15
E6TMM 66 Merc.	35	65-408	63	327 SC1/2/3 62		700 58 Dodge Truck	8	BKA61 61 Buick	15
EF5TBM 65 Merc.	34			Chrysler	17	700 Rev. 60 Dodge		BKA62 62 Buick	20
EF6TBM 66 Merc.	38	MOBILPAGE		330 63 Plym.	21	Truck	14	BKA63 63 Buick	22
F3TBM 63	21			331 63 Dodge	21	701 59 Simca	12	BKA64 64 Buick	24
F4TBE 64 Comet	24	6SMTR/MW	48	332 63 Dodge 880	21	703 R12BDT 61 Dodge		CA61X 61 Buick Spl.,	
F4TBM 64 Merc.	24			333 63 Chrysler	21	Truck	16	Olds, F-85, Pontiac	
F5TBE 65 Comet	34	MONITORADIO		334 4TBQ 64 Dodge880	24	706 64 Dodge Truck	26	Tempest	16
F5TBM 65 Merc.	34			335 64 Plym.	25	706 5TBDT Similar to		CA62 62 Buick Spl.,	
F6TBE 66 Comet	38	M-40	12	336 64 Dodge	25	page 64 65 Dodge Truck	26	F-85, Tempest	20
F6TBM 66 Merc.	38	M-160	12	337 63 Valiant	22	706 7BDT 67 Dodge		CA63 61-63 Buick Spl.,	
F7TBE 67 Comet	47	MC-40	12	339 63 Dodge Dart	22	Truck	44	F-85, Tempest	22
F7TBM 67 Merc.	47	MC-160	12	343 R3BC 63 Chrysler		819 53 Plymouth	4	CE65A 65 Chevelle	32
F8TBM 68 Merc.	56	MC-40	12	TC1/2/3	19	820 53 Dodge	4	CE65M 65 Chevelle	32
F8TBO 68 Comet	56	MC-160	12	344 63 Dodge	22	821 Desoto S-16/-18	4	CE66A 66 Chevelle	38
F8TBZ 68 Cougar	56	MONTGOMERY WARD		345 63 Plym.	22	824 53 Chrysler	4	CE66M 66 Chevelle	39
F9BZ 69 Cougar	64	(See Riverside)		347 R23BDQ 62 Dodge		828 54 Dodge D-50/-51/		CE67A 67 Chevelle	44
M7TB 67 Comet, Cougar,		MOPAR		880, SD3	19	-52/-53	4	CE68A 68 Chevelle	56
Merc.	47			348 4TBC 64 Chrysler	24	829 Desoto S-19/-20	4	CE69A 69 Chevelle	69
M-5841 58	9	RV4C	24	350 R3BD 63 Dodge880	19	830 54 Chrysler C-62/		CEA64 64 Chevelle	24
T6SMM 66 Merc.	35	RV4CL	24	351 64 Chrysler	25	-63/-64	4	CEM64 64 Chevelle	25
T7SMH/A 67 Comet	45	RV5C 65	30	352 64 Imperial	25	831 See Model 830	4	CK65M 65 Chev.Truck	32
T7SMH/F 67 Cougar,		RV5CC 65	30	353 64 Dodge 880	25	832 55 Plymouth	5	CK66M 65/66 Chev.Truck	39
Merc.	45	RV5CL 65	30	354 64 Dodge	24	833 55 Dodge D-55/-56		CK67A 67 Chev.GMC	
T7SMH/N 67 Comet	45	101 PP1/2 60 Plym.	13	360 5FBP 65 Plym.	30	834 55 Desoto S-21/		Truck	52
T7SMM 67 Merc.	45	102 PDI/2/3/4 60	13	361 5FBPD 65 Plym.	30	-22	5	CO67A 67 Camaro	44
T7SMM 67 Cougar	45	Dodge	13	362 6FBD 66 Plymouth		835 55 Chrysler	5	CO68A 68 Camaro	56
T8MM 68 Merc.	54	104 60 Valiant	13	Deluxe	36	836 55 Plym. P-25/-27	5	CO69A 69 Camaro	69
T8MZW 68 Cougar	54	106 60 Dodge	14	363 5FBD 65 Dodge	30	840 56 Plymouth	6	CR65A 65 Corvair	32
04BM-1 60	13	107 12B 61 Dodge	10	363 65 Dodge 880	28	841 56 Plym. P-28/-29	6	CR65M 65 Corvair	32
04BM-2 60	13	Dart	15	363S 66 Polara, Custom		842, 842HR 56 Dodge		CR66A 66 Corvair	38
2TBM R2TBM 62	20	109 RP1/2 61 Plym.	15	880, Monaco BD2	35	D-62/-63	6	CR66M 66 Corvair	39
2TMY 62 Meteor	18	110 Export Version of	13	364 5FBD 65 Dodge	30	843 56 Desoto S-23/-24	6	CR67A 67 Corvair	44
3SMY757 53 See Lincoln		Model 101	13	364 6FBD 66 Dodge		844/HR 56 Chrysler	6	CRA60X 60 Corvair	15
Model 3SH756	4	111 RP1/2 61 Plym.	15	Deluxe	36	845 57 Dodge D-66/-67/		CRA62 60-62 Corvair	20
3TBM 63	21	112 60 Desoto	14	365 65 Chrysler	28	-70/-71/-72	8	CRA63 61-63 Corvair	22
3TME 63 Comet	23	113 RV1 61 Valiant	15	365S 66 Chrysler BCL/		846 57 Desoto S-25/-26/		CRA64 60-64 Corvair	25
3TMY 63 Meteor	23	114 RN1 61 Lancer	15	2/3	35	-27	8	CRM60X 60 Corvair	14
4SM767 54 See Lincoln		202 62 Lancer S11	18	366 5FBC 65 Chrysler	30	847 57 Chrysler	8	CRM62 60-62 Corvair	19
Model 4SH764	4	203 62 Valiant SV1	18	366 6FBC 66 Chrysler	36	848 57 Plymouth	8	CRM63 61-63 Corvair	22
4TBM 64 Merc.	23	204 62 Plym. SP1/2	18	367 5FBI 65 Imperial	30	849 57 Plym. P-30/-31	8	CRM64 60-64 Corvair	25
4TME 64 Comet	23	205 62 Dart SD1/2	17	369 6FBP, 6FBVE 66		851 84BC 58 Chrysler	8	CT2A6 51-52 Chev.	5
5BM 55 See Lincoln		206 4TBLL 64 Dart	24	Plymouth Standard	36	852 58 Dodge LD-1/-2/		CT4FM 64 Chev.	26
Model 5BH	5	214 3BVD 63 Valiant	19	369 7FBP 67 Plym.	48	-3	8	CT4FMC 64 Chev.	34
5TBM 65 Merc.	28	TV1	19	370 7FBD 67 Dodge	48	854 58 Plym. LP-1/-2	9	CT52M6 51-52 Chev.	5
5TPE 65 Comet	28	215 3BLE 63 Dart TLL	19	372 5FBEV See Page 86		855 59 591 59 Plym	11	CT65A 65 Chevrolet	32
6BM 56	6	216 63 Plym.	22	65 Plymouth	30	856 59 Dodge MD1/2/3	10	CT65M 65 Chevrolet	32
6BMS 56	6	217 63 Dodge	22	373 5FBL See Page 86		857 59 Desoto MS1/2/3	10	CT66A 66 Chevrolet	38
6TMM 66 Merc.	35	218 4TBVE 64 Valiant	24	65 Dart	30	858 94BC 59 Chrysler	10	CT66M 66 Chevrolet	39
6TPG 66 Merc.	37	219 64 Dodge VD1/2	23	374 7FBPD 67 Plym.	48	860 59 Plym. MPI/2	12	CT67A 67 Chevrolet	44
7TBM	42	220 64 Plym. VP1/2	23	375 7FBC 67 Chrysler	48	861 59 Chrysler Export	12	CT68A 68 Chevrolet	56
7TPG 67 Comet/Cougar	41	221 4TBLH 64 Dart	24	376 7BC 67 Chrysler	42	900 55 Dodge D-55/-56	5	CT69A 69 Chevrolet	69
8TBM 68	55	222 5BVE 65 Valiant	28	377 7BDD 67 Dodge		901 55 Desoto S-21/-22	5	CTA53 53 Chevrolet	4
9BM 69	68	223 65 Dodge Dart	28	Deluxe	42	902 55 Chrysler	5	CTA54 54 Chevrolet	6
9FBO 69 Montego	64	224 5BP 65 Plym.Std	28	378 7FBD 67 Dodge	48	903 55 Chrysler	5	CTA55 55 Chevrolet	6
9FBZ 69 Cougar	64	225 5BPD 65 Plym.	28	379 6FBL 66 Dart	36	910/HR 56 Dodge D-62/		CTA6T 55-56 Chevrolet	6
22BM 62	18	226 65 Dodge Coronet	28	381 67 Charger	43	-63	6	CTA6X 55-56 Chevrolet	7
		228 6BVE 66 Valiant	37	385 7FBVA 67 Barracuda,		911 65 Desoto S-23/-24	6	CTA7X 57 Chevrolet	7
		229 6BL 66 Dart	37	Dart, Valiant	48	912/HR 56 Chrysler	7	CTA8X 58 Chevrolet	9
		230 6BP 66 Plym.	37	402 04BC 60 Chrysler	13	916/HR 56 Plym. P-28/		CTA9X 59 Chevrolet	10
		231 7BD 67 Plym.	42	403 04BI 60 Imperial	13	-29	7	CTA61 61 Chevrolet	15
		232 6P Dodge Fury	37	404 14BI 61 Imperial	15	917HR 57 Plymouth	8	CTA62 62 Chevrolet	18
		232 66 Coronet BW1/2	35	407 14BC 61 Chrysler	15	918 57 Dodge D-66/-67/		CTA63 63 Chevrolet	22
		233 66 Charger BW2/3	35	409 24BI 62 Imperial	18	-70/-71/-72	7	CTA64 64 Chevrolet	24
		234 6BVS 66 Valiant	37	SY1	18	919/HR 57 Desoto S-25/		CTM3 53 Chevrolet	5
		235S 66 Polara, Custom		410 24BC 62 Chrysler		-26/-27	8	CTM4/A 54 Chevrolet	6
		880, Monaco BD2	35	SC1/2/3	18	920HR 57 Chrysler	8	CTM6 55-56 Chevrolet	6
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2884103 (254) 69 Fury	67	7305572 68 Firebird	50			FJB-16583A 63Tempest	23	837.62220	38
3420558 (1PF2903)		7305582 68 Firebird	49	RIVERSIDE		FJB-16584A 63Rambler	26	849.63160	56
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