

**VOL.**

**9**

# **AUTO RADIO MANUAL**

**service data on 35  
models produced in 1958-59**



**AR-  
9**

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**VOLUME 9**

**service data on 35  
models produced in 1958-59**

by

The Howard W. Sams Engineering Staff

**FIRST EDITION**

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•Signifies coverage in this volume.



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For other custom equipment for use in Pontiac cars , see Motorola listing.			

For other custom equipment for use in Studebaker cars, see Automatic, Firestone, and Motorola listings.

**TRUETONE**

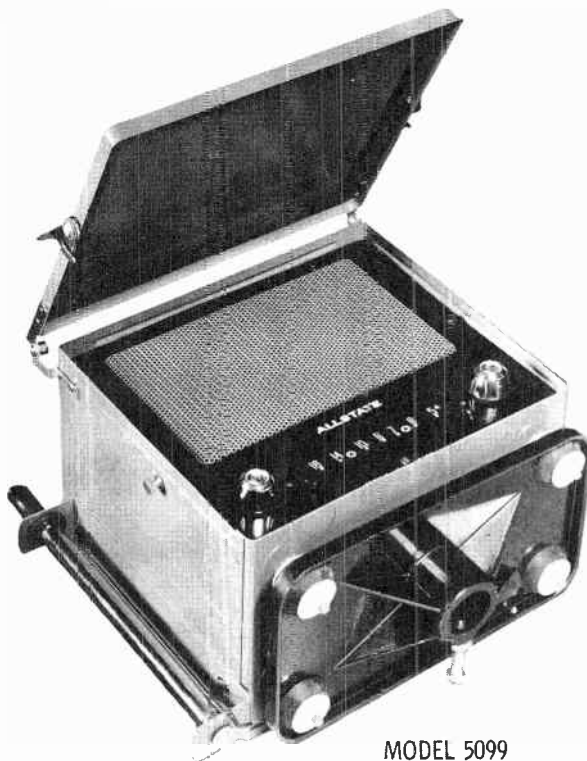
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• Signifies coverage in this volume.





MODEL 5099

TRADE NAME	Allstate Models 5098 (CH. 833.50980), 5099 (CH. 833.50990)		
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois		
TYPE SET	Battery Operated Tractor AM Receiver		
TUBES	Eight		
POWER SUPPLY	6 Volt Storage Battery (Model 5098)	RATING	5.8 Amp@6.3 Volts DC
	12 Volt Storage Battery (Model 5099)		3 Amp@12.6 Volts DC
TUNING RANGE—BROADCAST	538-1610KC		

ALLSTATE MODELS  
5098, 5099

## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.						
Suggested alignment tools: A1, A2, A3, A4..... GENERAL CEMENT #5097, 8727 WALSCO #2515						
A5, A6, A7..... GENERAL CEMENT #5000, 5003, 5004, 5008, 5009, 5066, 8195, 8277, 8290, 8607, 8821, 9105, 9106, 9291 WALSCO #2515, 2520, 2522, 2523, 2534, 2537, 2538						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1mfd	High side to Pin 7 (grid) of 12BE6 (V2). Low side to chassis.	455KC (400v Mod.)	High frequency end of dial.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2. .1mfd	High side to antenna receptacle. Low side to chassis.	1610KC	"	"	A5	"
3. 68mmfd	High side to antenna receptacle. Low side to chassis.	1400KC	Tune to 1400KC signal	"	A6, A7	"
4.	With radio installed in tractor and antenna fully extended, tune in weak station near 1400KC and adjust A7 for maximum output.					

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# PARTS LIST AND DESCRIPTIONS TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES	ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BA6	①	V5	Phase Inverter	12AV6	①
V2	Converter	12BE6	①	V6	Output	12AQ5	①②③
V3	IF Amplifier	12BA6	①	V7	Output	12AQ5	①②③
V4	Det. -AVC-AF Amp.	12AV6	①	V8	Rectifier	12X4	①

① 6 Volt equivalent type used in chassis 833, 50980.

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ALLSTATE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	20	350	20-865	AFH3-107	C0800	FP329.5	TMT-92	T-470	TVL-3635
C1B	20	350							
C1C	20	25							

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT.	ALLSTATE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.		
C2	100		25-101	1468-0001	DD-101	5W5T1	MC235	5GA-T1		
C3	5000		15-502J	BPD-005	DD-502	BYA10D5	B-250	5HK-D5		
C4										
C5	.047	200	30-473-2	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47		
C6A										
C7	.047	200	30-473-2	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47		
C8	5		15-5	NPO-D15	DTZ-4R7	CTA6V47C	CN0-547	5TCCB-V47	NPO	
C9	40		15-400	NPO-D139		CTA6Q39C	CN0-439	5TCC-Q39	NPO	
C10	220				MD-221	L10T22	JL-322	5TCC-T22		
C11	10000		30-103-6	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	10% ①	
C12	220				MD-221	L10T22	JL-322	5TCC-T22	10% ①②	
C13	4700			BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	10% ①②③	
C14	220				MD-221	L10T22	JL-322	5TCC-T22		
C15	.02	400	30-203-4	P488N-02	DD-203	CUB4S2	GEM-412	4TM-S2		
C16	.005	600	30-502-6	P688N-005	D6-502	CUB6D5	GEM-625	6TM-D5		
C17	.02	400	30-203-4	P488N-02	DD-203	CUB4S2	GEM-412	4TM-S2		
C18	.5	100	30-504-1	P288N-5		CUB2P5	GEM-205	2TM-P5		
C19	.5	100	30-504-1	P288N-5		CUB2P5	GEM-205	2TM-P5		
C20	.47	100		P288N-47		CUB2P47	GEM-2047	2TM-P47		
C21	.007	1600	30-702-16	VBC-24	DD16-702	CUB16D7	GEM-1627	MB-D7		
C22	.25	50		P288N-25		CUB2P25	GEM-2025	2TM-P25		
C23									④⑤	

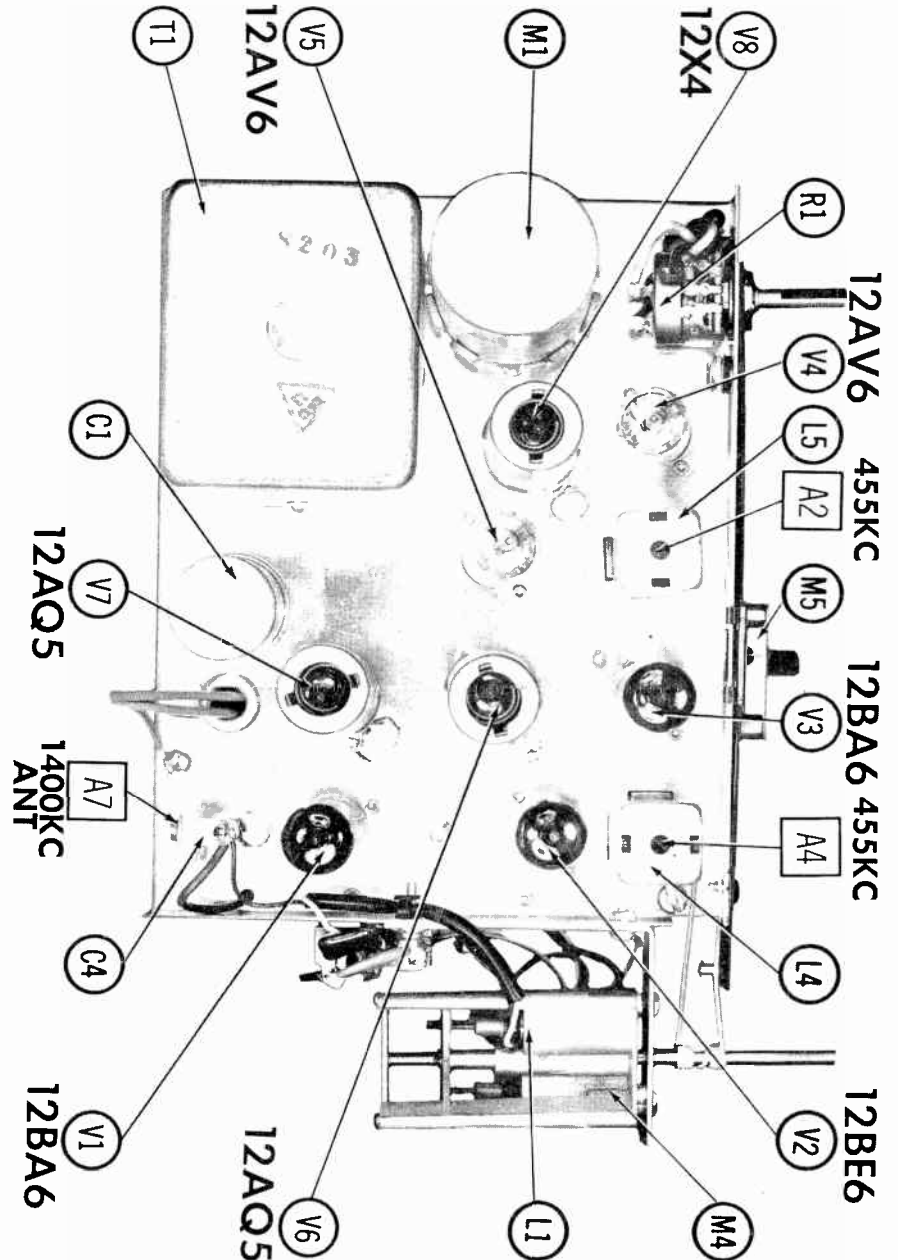
- ① Some versions may use 200mmf in this application (Part #15-201).
- ② Some versions may use 5000mmf in this application (Part #15-502).
- ③ May not be used on some versions.
- ④ Chassis 833, 50980 uses .008mfd 1600V in this application.
- ⑤ Not used on chassis 833, 50980.

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ALLSTATE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	450K	1/2		ABT-66	A47-500K-S	Q11-133	U50	Volume, Tap @ 100K ①
R1B	Shaft			AK-8	RS-3/16	NQ	DS-37	
R1C	Switch			KB-4 or KR-4	SWE-13	76-1	US-26	

- \* Use KR with CRL "Red Label" controls and KB with "Blue Label" controls.
- ① Tap not used. A 750K control may be used in some versions (Part #80A974).

# CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS

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

ITEM No.	RATING		ALLSTATE PART No.	NOTES	ITEM No.	RATING		ALLSTATE PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R2	470K		80-474	Note 1	R11	47K		60-473S	Note 4 Note 4
R3	470Ω	5%			R12	82K		60-823S	
R4	150K		80-154		R13	4700Ω		60-472S	
R5	6800Ω	2	80-682-2		R14	470K		60-474S	
R6	47K		60-473		R15	330K	1	60-331-1	
R7	820Ω			R16	470K		60-474		
R8	2, 2meg		60-225	R17	1000Ω	1	60-102-1		
R9	4, 7meg		60-475	R18	220Ω	1	60-221-1		
R10	220K			R19	220Ω	1	60-221-1		

- Note 1. Some versions may use 220Ω in this application (Part #60-221).  
 Note 2. Some versions may use 2700Ω in this application (Part #60-272).  
 Note 3. Some versions may use 240K in this application (Part #60-244).  
 Note 4. Chassis 833, 50980 uses 82Ω in this application (Part #60-820).

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ALLSTATE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Ant. Coil	†					10, 2 Microhenries 1.2 Microhenries
L2	RF Coil	†					
L3	Osc. Coil	†					
L4	Input IF	14-1855-6/ X	18-8758	BC-352	12-C1	RF-1	
L5	Output IF	14-1855-6/ X	18-8758	BC-353	12-C2	RF-2	
L6	F11, Choke	14-205	19-1005	BC-586	4612		
L7	"A" Lead Choke	14-203					

† Part of M4.

## TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	ALLSTATE PART No.	Haldorson PART No.	Merit PART No.	Rom PART No.	Stoncor PART No.	Thordorson PART No.	Triod PART No.
T1	12VDC @1.8A	420 VCT @.050A		76-555 ①					22R79	
	8VDC @2.4A	420 VCT @.050A		76-100 ②				P-6491	22R29 ③	

- ① Used in chassis 833, 50990.  
 ② Used in chassis 833, 50980.  
 ③ Drill new mounting holes.

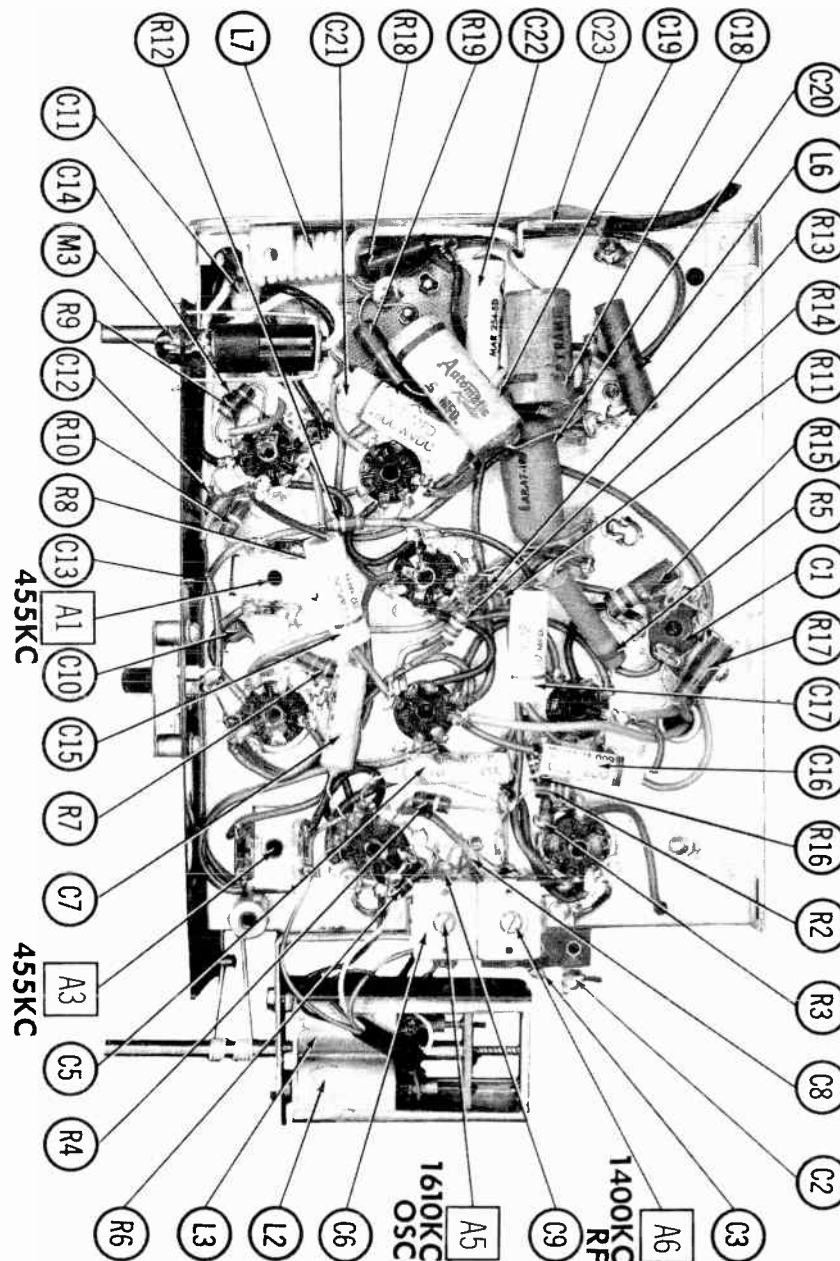
## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ALLSTATE PART No.	Haldorson PART No.	Merit PART No.	Rom PART No.	Stoncor PART No.	Thordorson PART No.	Triod PART No.	
T2	6200Ω CT	3-4Ω	Part of SP1	Z1002	A-2901	AU-800	A-3823	24S61	S-53X	

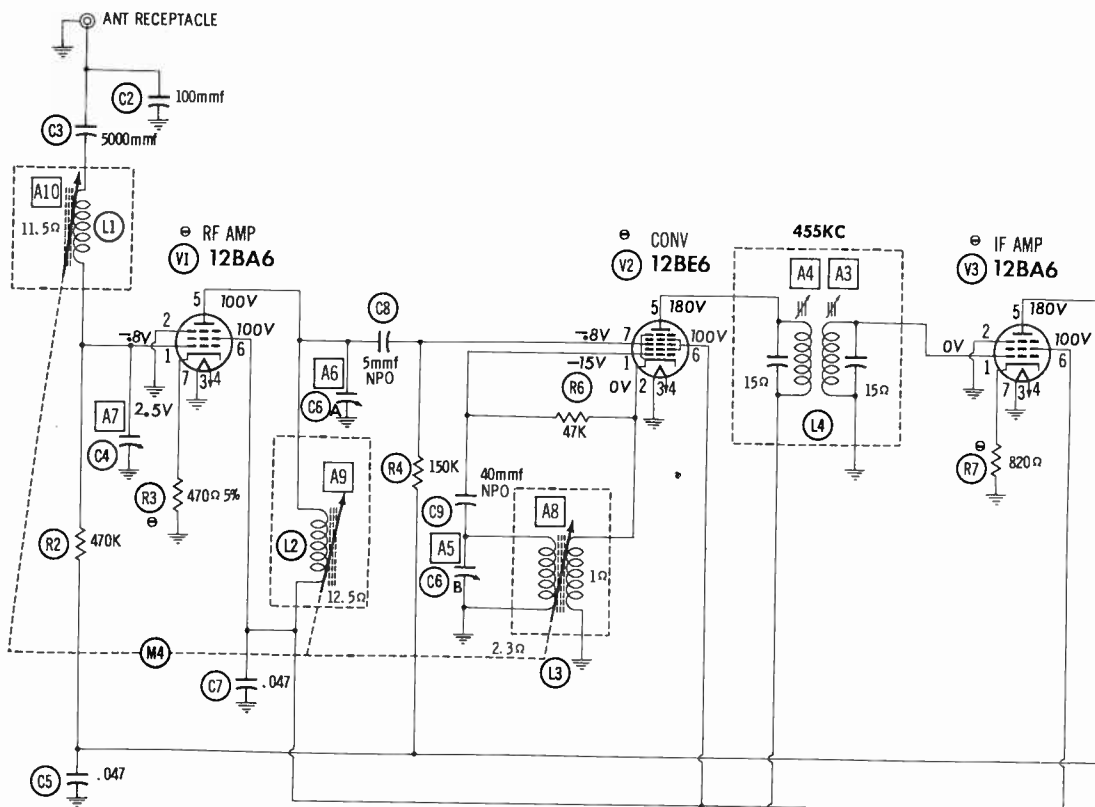
## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ALLSTATE PART No.	QUAM PART No.	
SP1	6"x8"	PM	3-4Ω	73TR12 ①	89A3	① Includes T2

## CHASSIS-BOTTOM VIEW







RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BA6	3meg	0Ω	0Ω	.9Ω	†7800Ω	†7800Ω	470Ω
V2	12BE6	47K	1Ω	0Ω	.9Ω	†1000Ω	†7800Ω	2.7meg
V3	12BA6	15Ω	0Ω	0Ω	.9Ω	†1000Ω	†7800Ω	820Ω
V4	12AV6	4.7meg	0Ω	0Ω	.9Ω	2.6meg	450K	†220K
V5	12AV6	47K	4700Ω	0Ω	.9Ω	0Ω	0Ω	†83K
V6	12AQ5	515K	330Ω	0Ω	.9Ω	†230Ω	†1000Ω	515K
V7	12AQ5	470K	330Ω	0Ω	.9Ω	†236Ω	†1000Ω	470K
V8	12X4	275Ω	0Ω	0Ω	.9Ω	NC	270Ω	†

† THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.

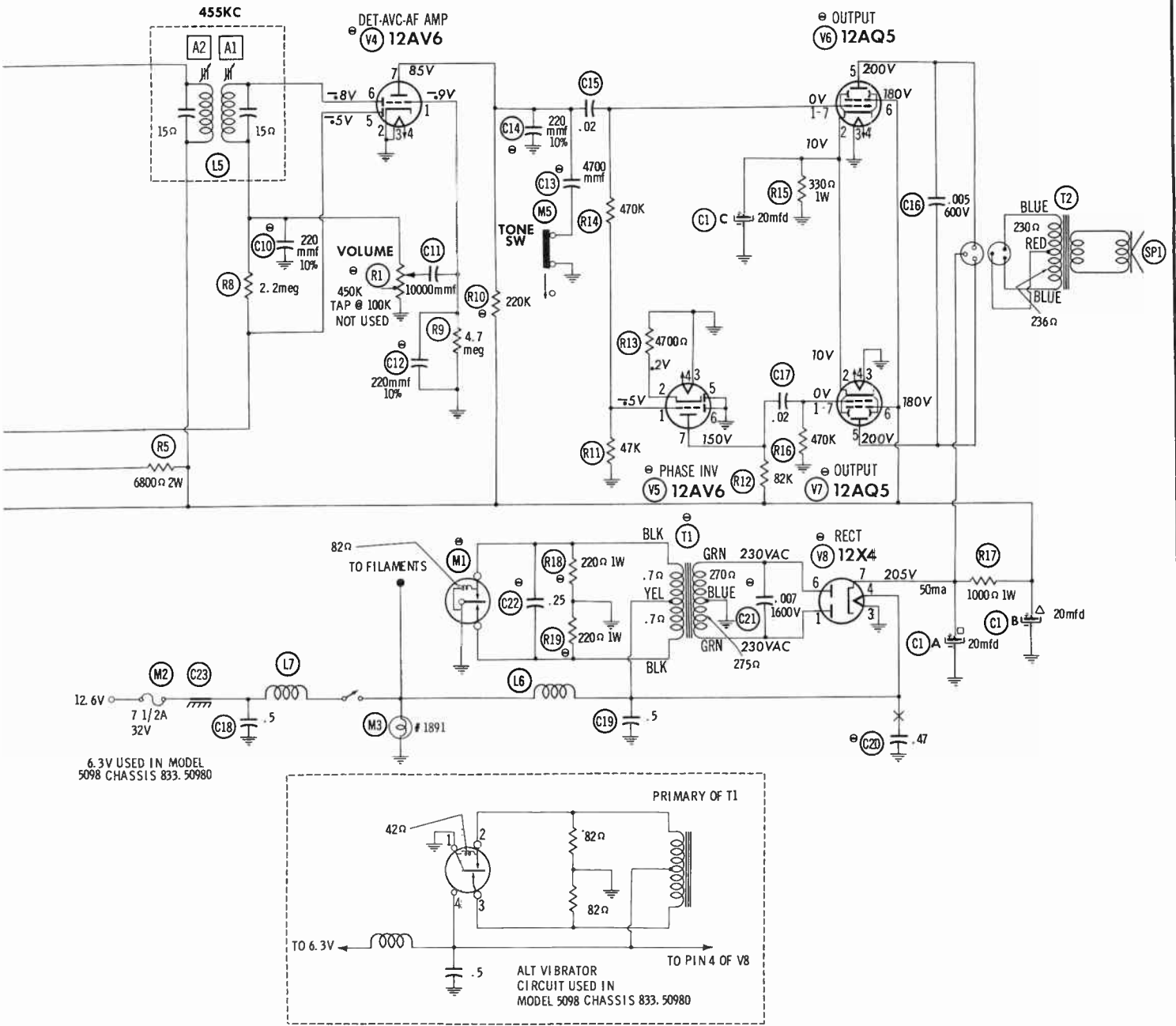
† MEASURED FROM PIN 7 OF V8.

NC NO CONNECTION.

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

- DC voltage measurements taken with vacuum tube voltmeter ; AC voltages measured at 1000 ohms per volt.
- Socket connections shown as bottom views.
- Measured values are from socket pin to common negative.
- Battery voltage maintained at 12.6 volts for voltage readings.
- Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
- Volume control at maximum, no signal applied for voltage measurements.



**ALLSTATE MODELS  
 5098, 5099**

## PARTS LIST AND DESCRIPTIONS (Continued)

### VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA				NOTES
				ALLSTATE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter Interrupter	12VDC 6VDC	115v 115v	113-55 ① 113-83 ②	6330 5715	G883 4501	6330 5715	① Used in Ch. 833. 50990. ② Used in Ch. 833. 50980.

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ALLSTATE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	7½A 32V	108-201		31107.5 (3AG 7½A 32V)	155020	AGC 7½	HDJ

### MISCELLANEOUS

ITEM No.	PART NAME	ALLSTATE PART No.	NOTES
M3	Lamp	1891	#1891 (Ch. 833. 50990)
M4	Lamp	T47	#47 (Ch. 833. 50980)
M5	Tuner	78-325	Permeability Type
	Switch	94SS-1	Tone, SPST, Slide Type
	Antenna	10TR12	Telescopic Whip Type

### CABINETS & CABINET PARTS

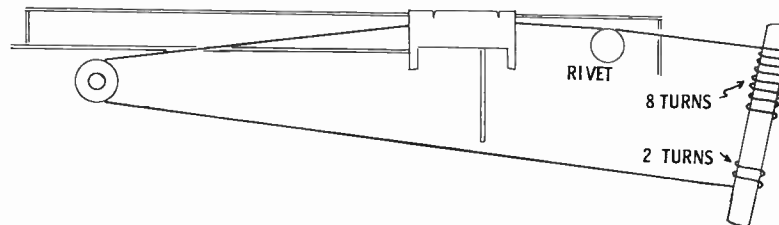
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	48A646	Off-On-Volume
Case	52-1202	Less Covers
Back Cover	52-1203	
Front Cover	52-1204B	
Dial Pointer	84-100	
Dial Scale	39TR12	

### WIRING DATA

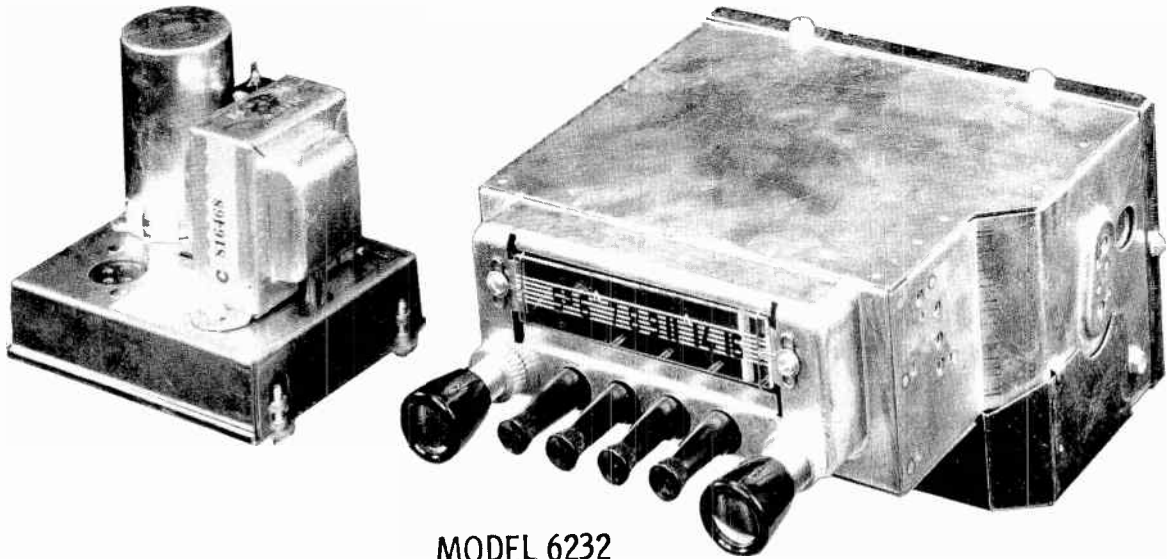
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors
	8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8861

## DIAL CORD STRINGING



TUNER CORES FULLY OUT OF COILS





MODEL 6232

TRADE NAME	Allstate Models 6231 (Ch. 528. 62310), 6232 (Ch. 528. 62320)	
MANUFACTURER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois	
TYPE SET	Battery Operated Universal Type AM Automobile Receiver	
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp. 12AQ5 Output, 12X4 Rectifier (6Volt Versions used in Model 6231)	
POWER SUPPLY	12 Volt Storage Battery (Model 6232)	RATING 2.2 Amp. @12 Volts DC
TUNING RANGE	BROADCAST 535-1605KC	

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1mfd	High side to pin 7 (grid) of 12BE6(V1). Low side to chassis.	455KC (400% Mod.)	High frequency end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2. Fig. 1.	Thru dummy to antenna receptacle.	1610KC	"	"	A5	Adjust for maximum output.
3. "	"	1400KC	Tune to 1400 KC signal.	"	A6	"

PUSHBUTTON ADJUSTMENT	
1. Tune manually to desired station.	3. Press pushbutton in firmly. Tighten pushbutton.
2. Loosen button by turning counterclockwise one or two turns.	4. Repeat for remaining pushbuttons.

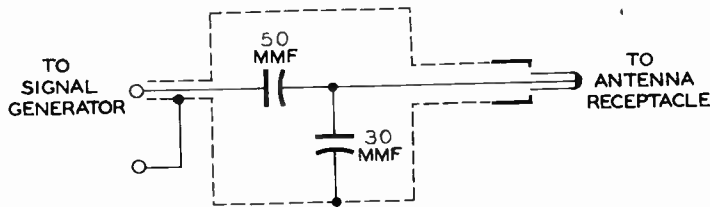


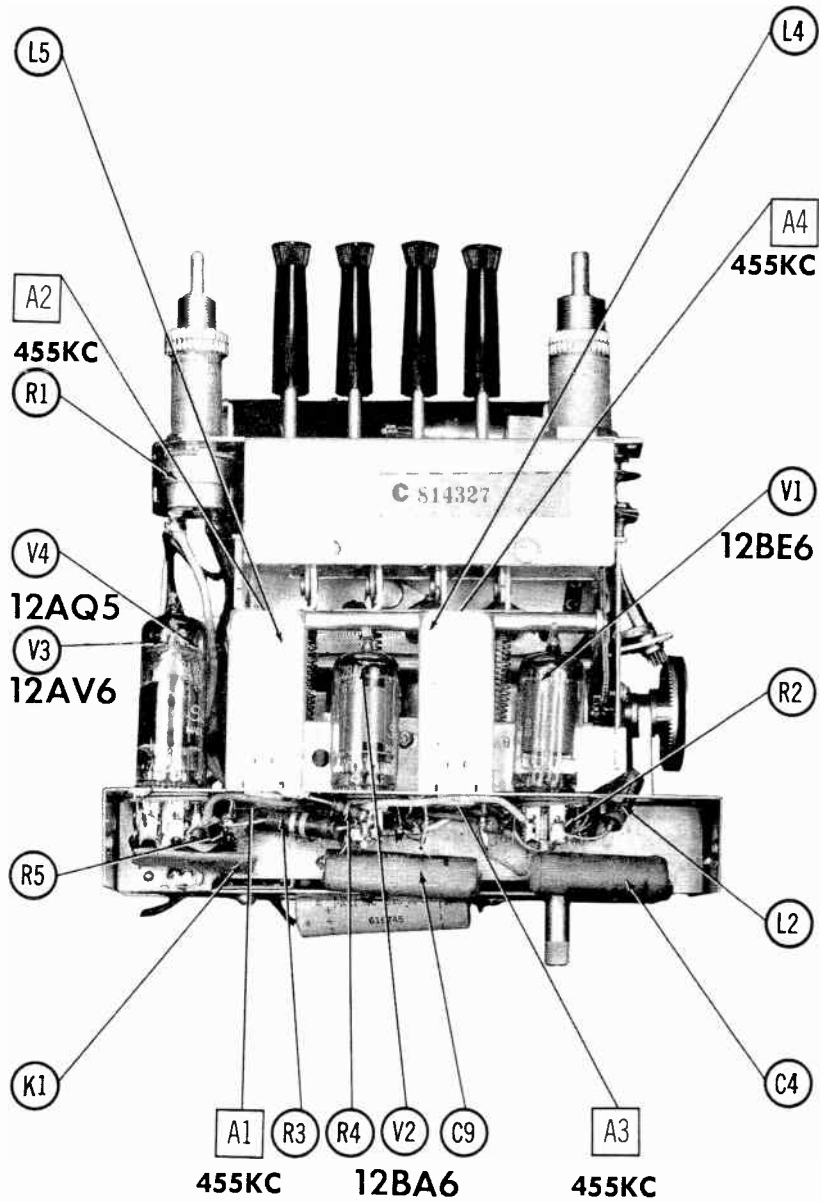
FIG. 1

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

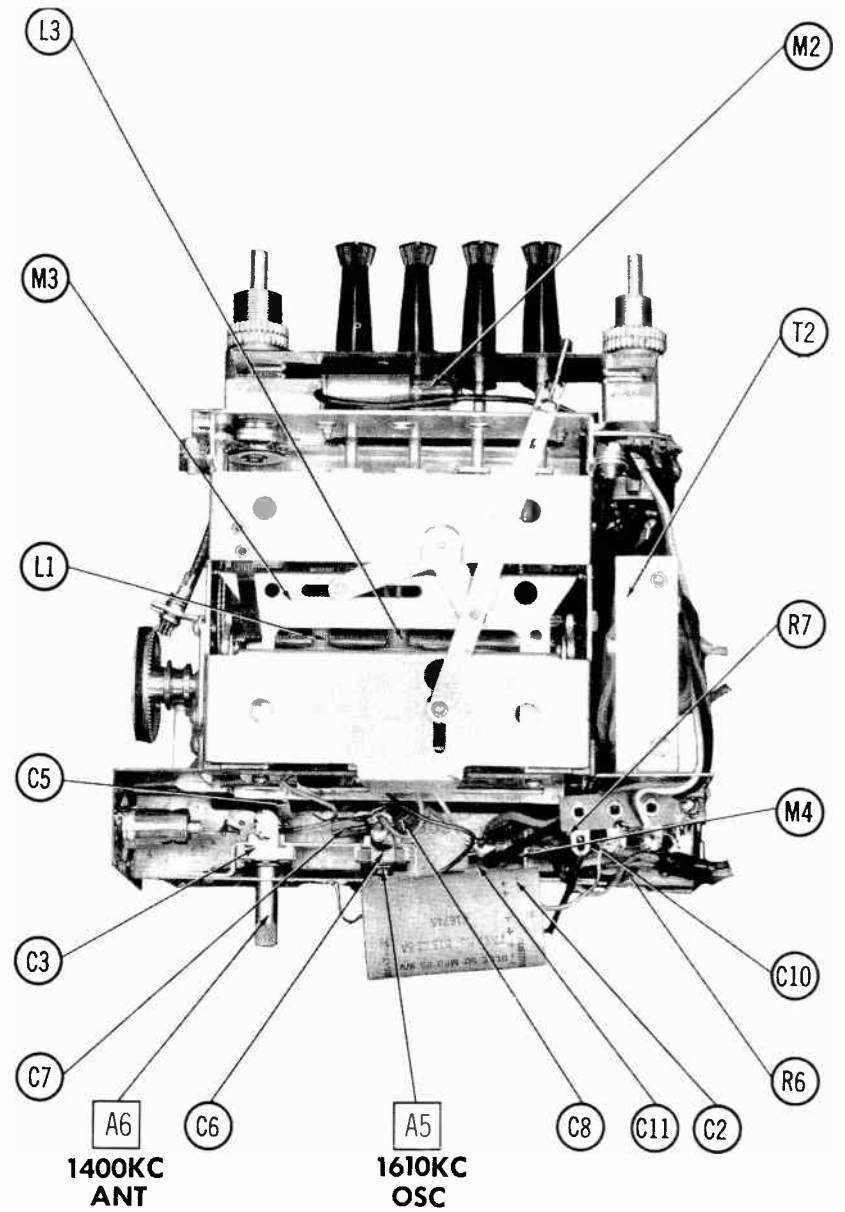
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H549

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ALLSTATE  
MODELS 6231, 6232



CHASSIS-TOP VIEW



CHASSIS-BOTTOM VIEW

## PARTS LIST AND DESCRIPTIONS

### TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amp.	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	12AQ5	
V5	Rectifier	12X4	

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ALLSTATE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	20	300	18-22-0	PRS450V1010	BR2035	TC65	TD-20-350	MT-4520	TVA-1608
C2A	30	250	18-68-5						R2673 *
B	50	25							

Ⓛ Some versions may use 25mfd  
\* Non-Catalog Item

### FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ALLSTATE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	15-160		T19-175-0						
C4	.05	200	T16-50343	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C5	47		T15-47016	BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C6	125-250		T19-198-0						
C7	150			1469-00015	D6-151	5R5T15		MS-315	10% Ⓛ
C8	150			1469-00015	D6-151	5R5T15		MS-315	10% Ⓜ
C9	.05	400	T16-50323	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C10	5000		T15-50217	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C11	10000		T15-10317	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C12	.5	100	T20-21-1	P288N-5		CUB2P5	GEM-205	2TM-P5	
C13	.0068	1600	T16-68278	P1688N-0068		CUB16D68	GEM-16268	MB-D68	
C14	.5	100	T20-21-1	P288N-5		CUB2P5	GEM-205	2TM-P5	
C15	10000		T15-10317	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	

Ⓛ Some versions may use 390mmf (Part #T17-39119), or 330mmf (Part#T17-33119) in this application.

Ⓜ Not used in some versions.

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ALLSTATE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
RIA	250K	1/2	T24-306-0	AB-50 †	A47-250K-S ‡			Volume
B	Shaft			AK-8	RS-3/16			
C	Switch			KB-4 or KR-4	SWE-13			

† Use AK-26 Adaptor bushing. \*Use KR on CRL "Red Label" controls and KB on "Blue Label" controls.

‡ Use XB-2 Adaptor bushing.

### RESISTORS

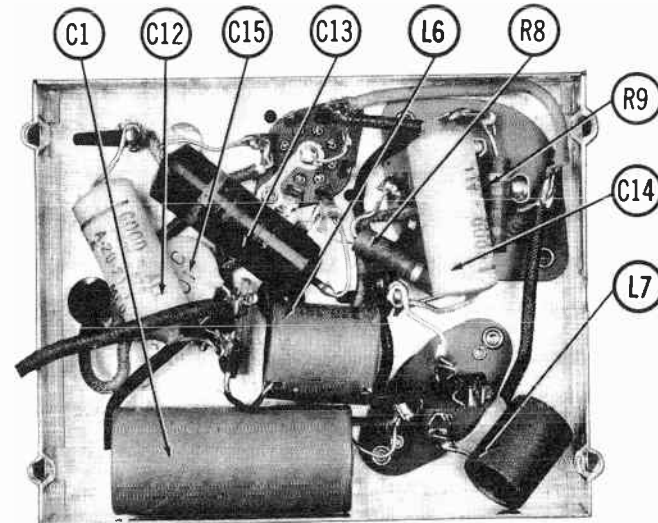
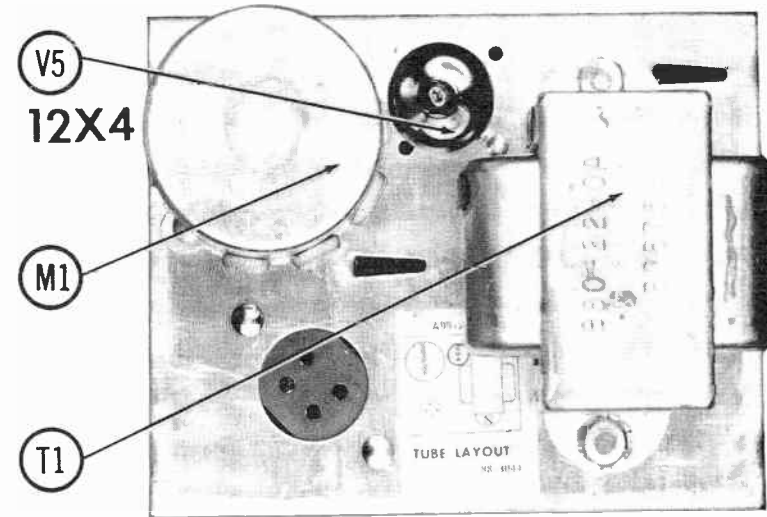
All wattages 1/2 watt, or less, unless otherwise listed.

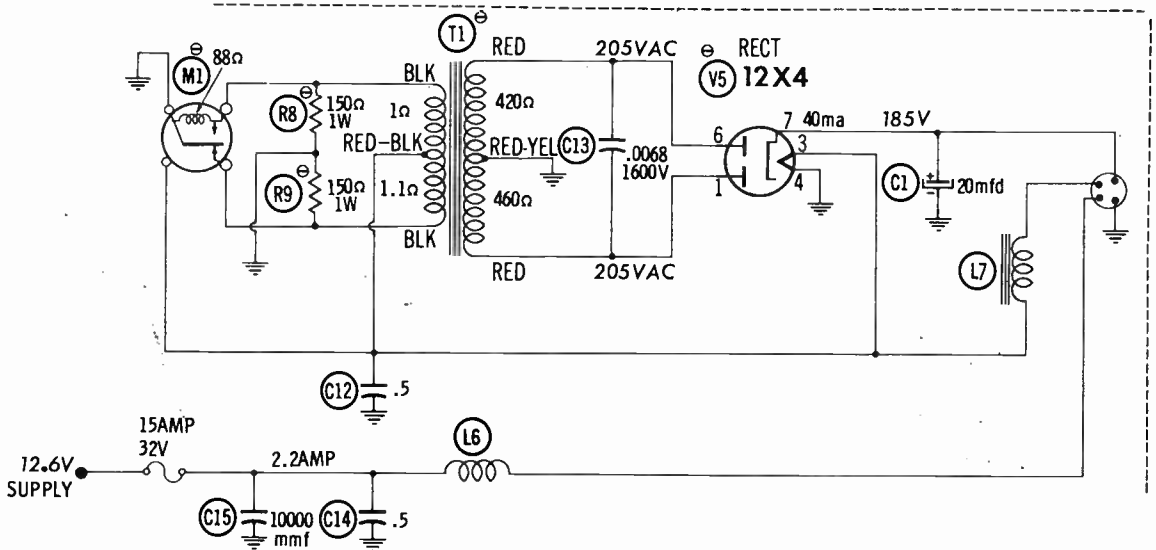
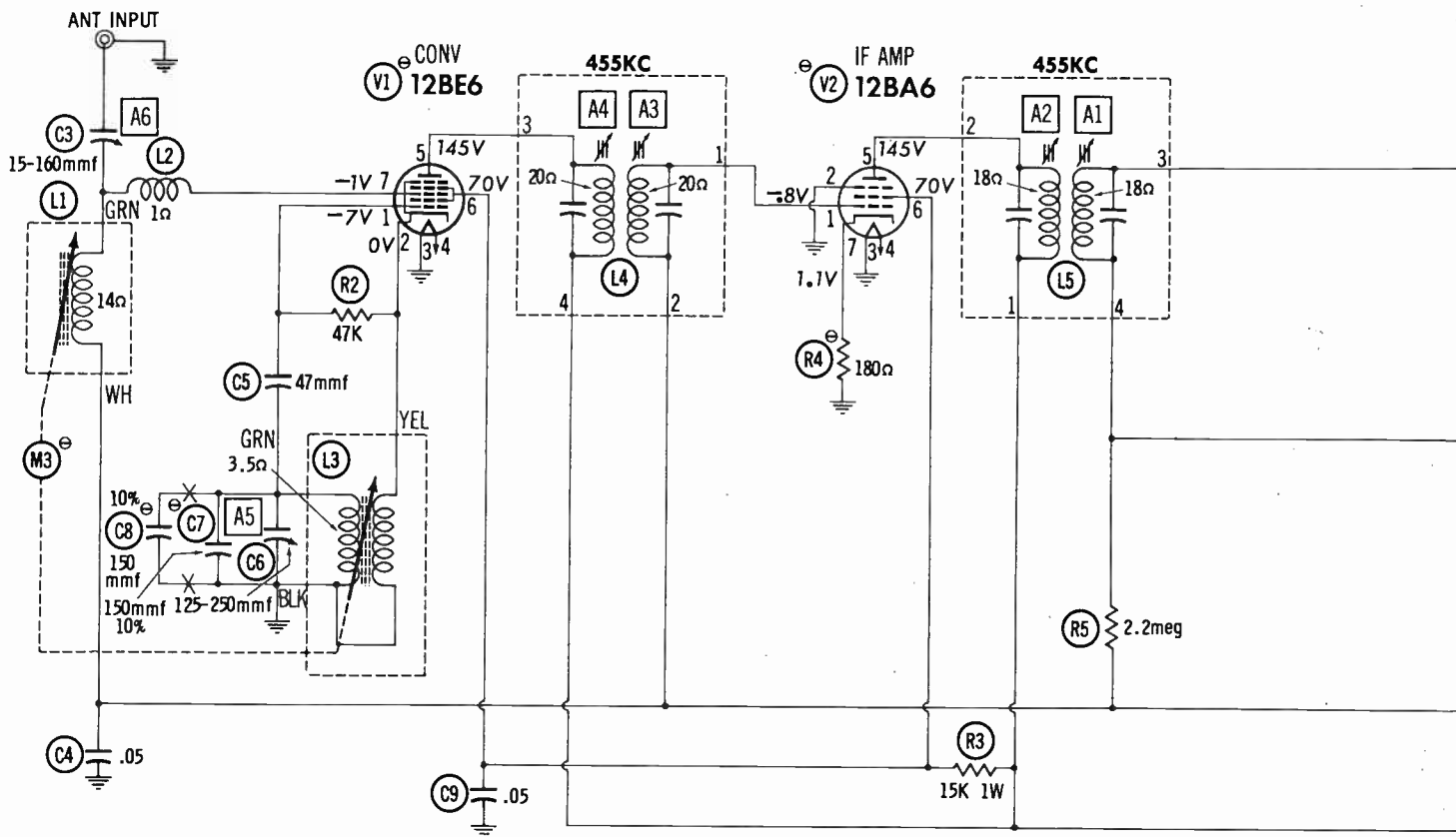
ITEM No.	RATING		ALLSTATE PART No.	NOTES	ITEM No.	RATING		ALLSTATE PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R2	47K		S60-47301	Note 1.	R6	180Ω		S60-18101	Note 2.
R3	15K	1	S60-15311						
R4	180Ω		S60-18101						
R5	2.2meg		S60-22301						
R7	3000Ω	1	S60-33211		R8	150Ω	1	S60-15111	
					R9	150Ω	1	S60-15111	

Note 1. Some versions use 120Ω in this application (Part#S60-12101)

Note 2. Model 6231 uses 100Ω in this application (Part # S60-10102)

## POWER CHASSIS





1. DC voltage measurements taken with vacuum tube voltmeter ; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket-pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of  $\pm 15\%$  in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM





## PARTS LIST AND DESCRIPTIONS (Continued) COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ALLSTATE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Ant. Coil	T10-13-1					Note 1. 12.5 microhenries Note 1.
L2	Ant. Choke						
L3	Osc. Coil						
L4	Input IF						
L5	Output IF						
L6	"A" Lead Choke						
L7	Hash Choke						
		T10-42-2	16-6758	BC-352	12-C9	RF-1	
		T10-43-2	16-6758	BC-353	12-C10	RF-2	
		T10-131-0					
		T10-130-1					

Note 1. Part of M4

### TRANSFORMER (VIBRATOR)

ITEM No.	RATING			REPLACEMENT DATA					NOTES		
	PRI.	SEC. 1	SEC. 2	ALLSTATE PART No.	Halldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.		Thordorson PART No.	Triod PART No.
T1	12.6VCT @ 1.2A	340VCT @ .040A		T80-22-0①	V3900						
	8.3VCT @ 1.9A	340VCT @ .040A		T80-21-0②		P-2969			22R55	V-21Z	

① Used in Model 6232

② Used in Model 6231

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ALLSTATE PART No.	Halldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.	Triod PART No.	
T2	6400Ω	3-4Ω	T80-57-1		A2998			24S49	S-6X	

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ALLSTATE PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	T33-353-4	4A07	

### COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ALLSTATE PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	220mmf, 5000mmf, 5000mmf, 250mmf, 6.8meg, 470K, 470K	T13-9-3	Aerovox PA-113-2 Centralab PC-151 Cornell-Dubilier 116TMI Sprague DT-4

## PARTS LIST AND DESCRIPTIONS (Continued) VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			NOTES	
				ALLSTATE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.		
M1	Interrupter	12.8V 6.3V	115V "	T34-110 T34-109	6301 5301	G859/G874 859	6301 5301	Used in Model 6232 Used in Model 6231

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				BUSS PART No.	
			ALLSTATE PART No.		LITTELFUSE PART No.		FUSE	HOLDER
			FUSE	HOLDER	FUSE	HOLDER		
M2		15A 32V						

### MISCELLANEOUS

ITEM No.	PART NAME	ALLSTATE PART No.	NOTES
M3	Lamp	T89-12	#1815, Model 6232
	Lamp	T89-7	Model 6231
M4	Tuner Ass'y.	T84-6052	Model 6232
	Tuner Ass'y.	T84-6052	Model 6231
M5	Spark Plate	T20-119-0	

### CABINETS & CABINET PARTS

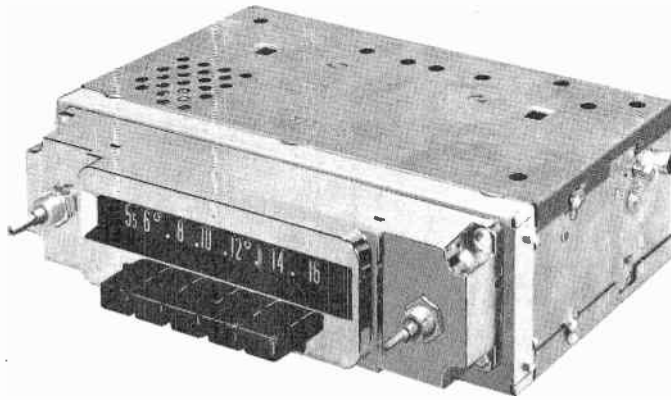
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART No.	DESCRIPTION
Knob	T52-1048-0	Tuning and Volume
Case	T21-242-1	Control Unit
Cover	T21-246-0	Rear
Cover	T21-243-0	Tube
Dial Pointer	T52-20-1	
Cap	T21-290-0	Pushbuttons, Four used
Dial Scale	T67-645-0	Inverted
Dial Scale	T67-646-0	Upright

### WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8524 (Stranded) Available in Ten Colors
Bonding Strap	Use BELDEN No. 8661





<b>TRADE NAME</b>	American Motors Model 8990576 (94MA) For 1959 Rambler Automobiles		
<b>MANUFACTURER</b>	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois		
<b>TYPE SET</b>	Battery Operated 4 Tube Custom Built AM Automobile Receiver With Transistorized Output		
<b>POWER SUPPLY</b>	12 Volt Storage Battery	<b>RATING</b>	1.15 Amp. @ 12.6 Volts DC
<b>TUNING RANGE—BROADCAST</b>	540 - 1610KC		

## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.						
Suggested Alignment Tools: A1, A2, A3, A4..... GENERAL CEMENT #8606, 8606L, 8282, 9295 WALSCO #2526, 2543, 2544, 2545						
A5, A6, A7..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290 WALSCO #2512, 2515, 2522, 2523, 2525, 2537						
A8, A9, A10..... See Fig. 2						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. Imfd	High side to antenna receptacle. Low side to chassis.	262.5KC (400% Mod.)	High frequency end of dial	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2. Fig. 1	Thru dummy to antenna receptacle.	1610KC	"	"	A5, A6, A7	"
Step 3 is unnecessary unless tuner has been repaired or tampered with. If necessary, back tuning cores 1" out of coils. Repeat step 2.						
3. Fig. 1	Thru dummy to antenna receptacle	1020KC	Pointer 49/64" from high end	Across voice coil	A8, A9, A10	Adjust for maximum output. Repeat steps 2 and 3 until no further improvement is obtained. Step 2 should be the last step. Cement cores.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

### PUSHBUTTON ADJUSTMENT

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

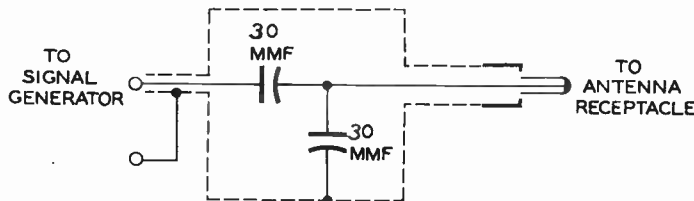


FIG. 1

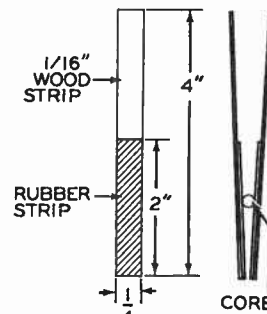


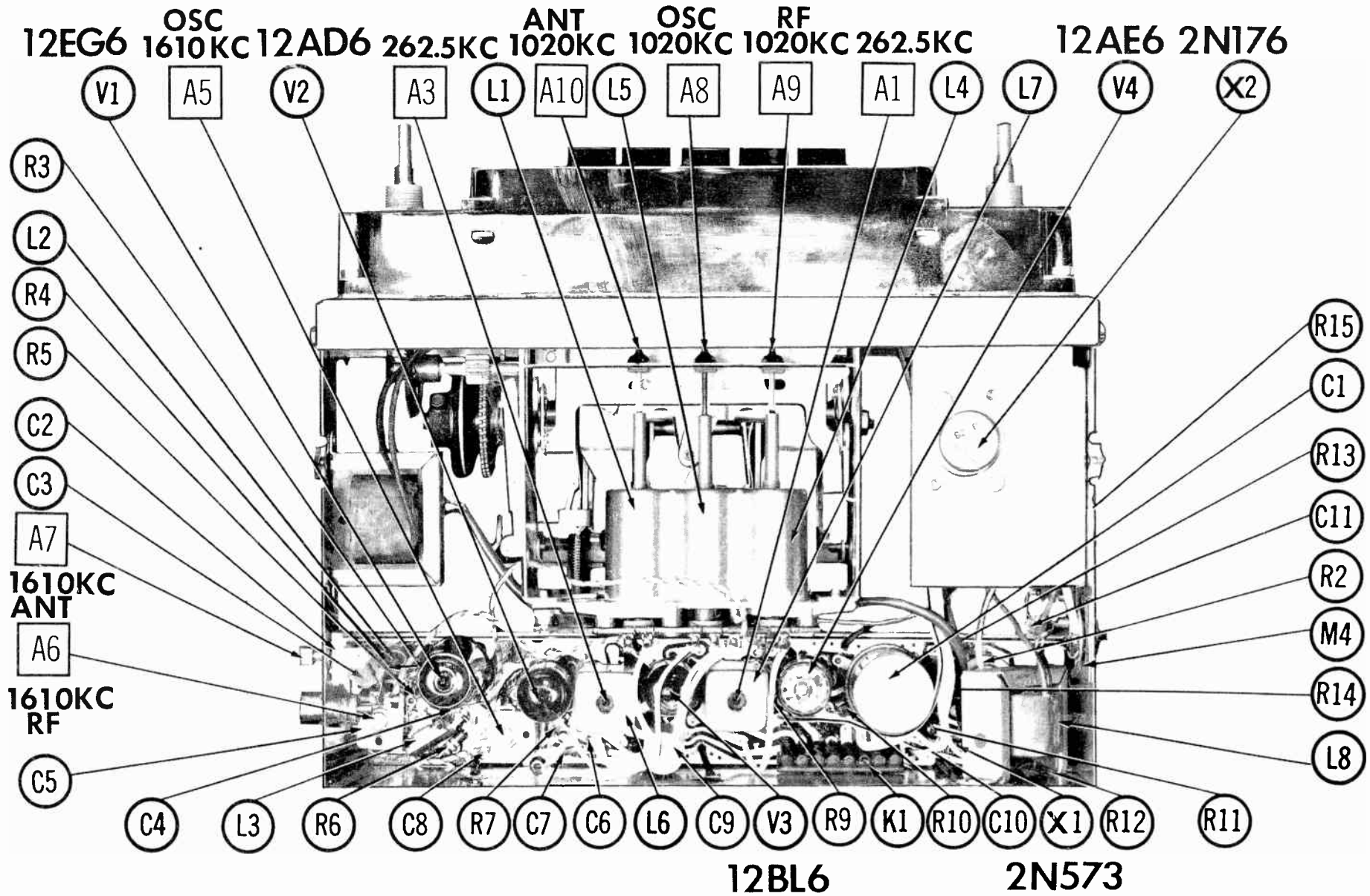
FIG. 2

**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of J41

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AMERICAN MOTORS MODEL  
8990576 (94MA)



CHASSIS TOP VIEW



## PARTS LIST AND DESCRIPTIONS TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES	ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12EG6		V3	IF Amplifier	12BL6	
V2	Converter	12AD6		V4	Det. - AVC - AF Amp.	12AE6A	

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N573	Driver			2N573		PNP Note 1
X2	2N176	Output	2N155	2N176		2N176	

Note 1. When replacing, apply DC-4 grease (Part #11M490487) or equivalent to in sulator.

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA					NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	
C1A	400	16	23B561100	AFH2-02-75		PWP201.13		PCLS-2173 *
B	200	16						

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

### FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA					NOTES						
	CAP.	VOLT	TOL	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.		SPRAGUE PART No.					
C2	25-180	200		20B534809	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1						
C3	.1			8K124891							NPO-SI 3.3	TCZ-3R3	CTA6V33C	CNO-533	5TCCB-V33
C4	3.3			21R115951											
C5	50-260			20K561324											
C6	47	100	N750	21K561564	N750-DI 47	DTN-47	C10Q47U	CN7-447	5TCU-Q47	5% *					
C7	100			21K561978	N750-DI 100	DTN-100		CN7-310	5TCU-T15						
C8	130-210			20B561323											
C9	.1	100		8K124831	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	①					
C10	2200			BPD-0022	DD-222	BYA10D22	B-222	5HK-D22							
C11	220			BPD-00022	DD-221	L10T22	B-322	5GA-T22							
C12	6800			21R125918	DD-682	BYA10D68	B-268	5HK-D68							

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

① Some versions may use 1000mmf in this application (Part #21K561565).

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES	
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.		MALLORY PART No.
R1A	4meg	1/2	18B561728	F1-82	RTV-877C	† QJ989	♦	Tone Volume, Tap ③ 500K
B	1meg		R2-60	Not Req.	Not Req.			
C	Switch	1(WW)	18K561139	KR-1				Bias
R2	15Ω							

† "Concentrik" equivalent; K-5 Kit, base elements and shafts: B13-141, P13-113 (Panel)  
(Not available as a factory assembled unit) B19-137X, R1-207 (Rear)  
76-1 (Switch)

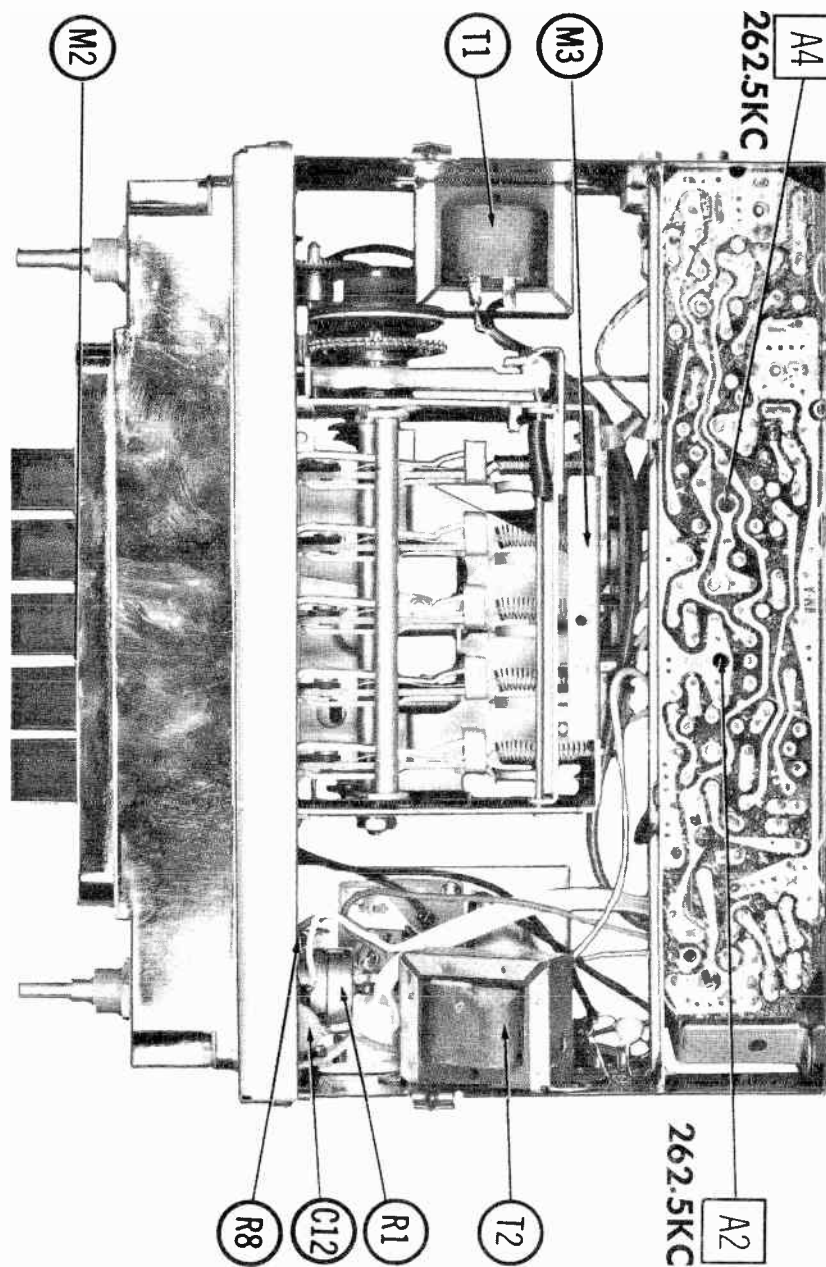
♦ "Sta-Loc" equivalent: FB46L, OS1812, RU16T354, IS2375, US41

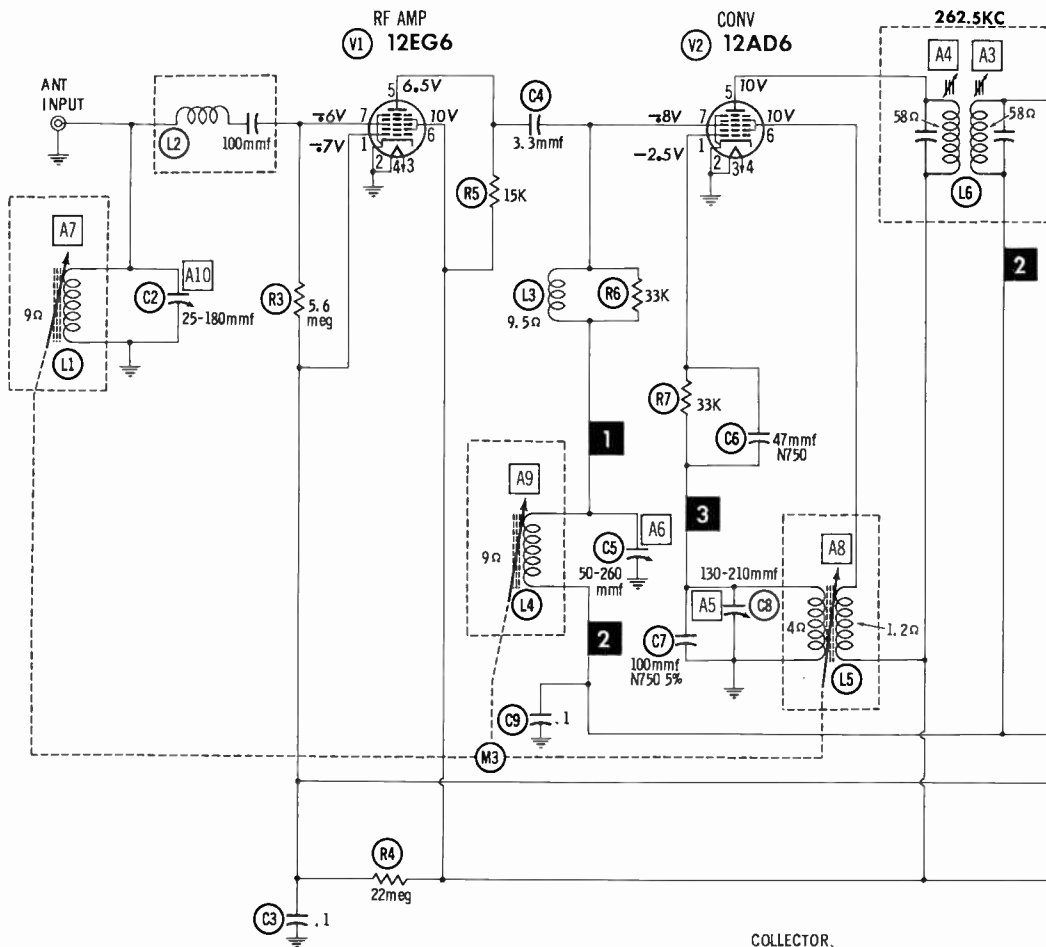
### RESISTORS

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

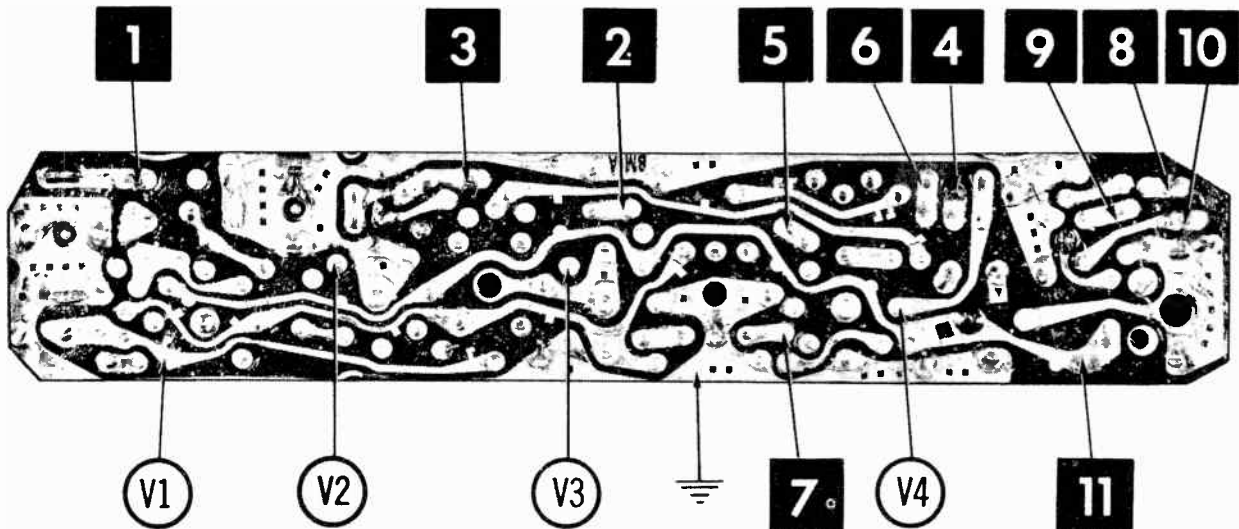
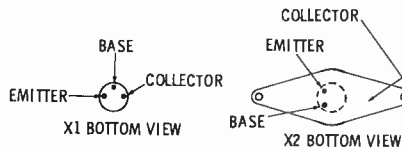
ITEM No.	RATING		MOTOROLA PART No.	NOTES	ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R3	5.6meg		6K124761		R7	33K		6K121704	
R4	22meg		6R488158		R8	68K		6K124507	
R5	15K		6R2119		R9	47K		6K121687	
R6	33K		6K121704		R10	4700Ω		6K121847	

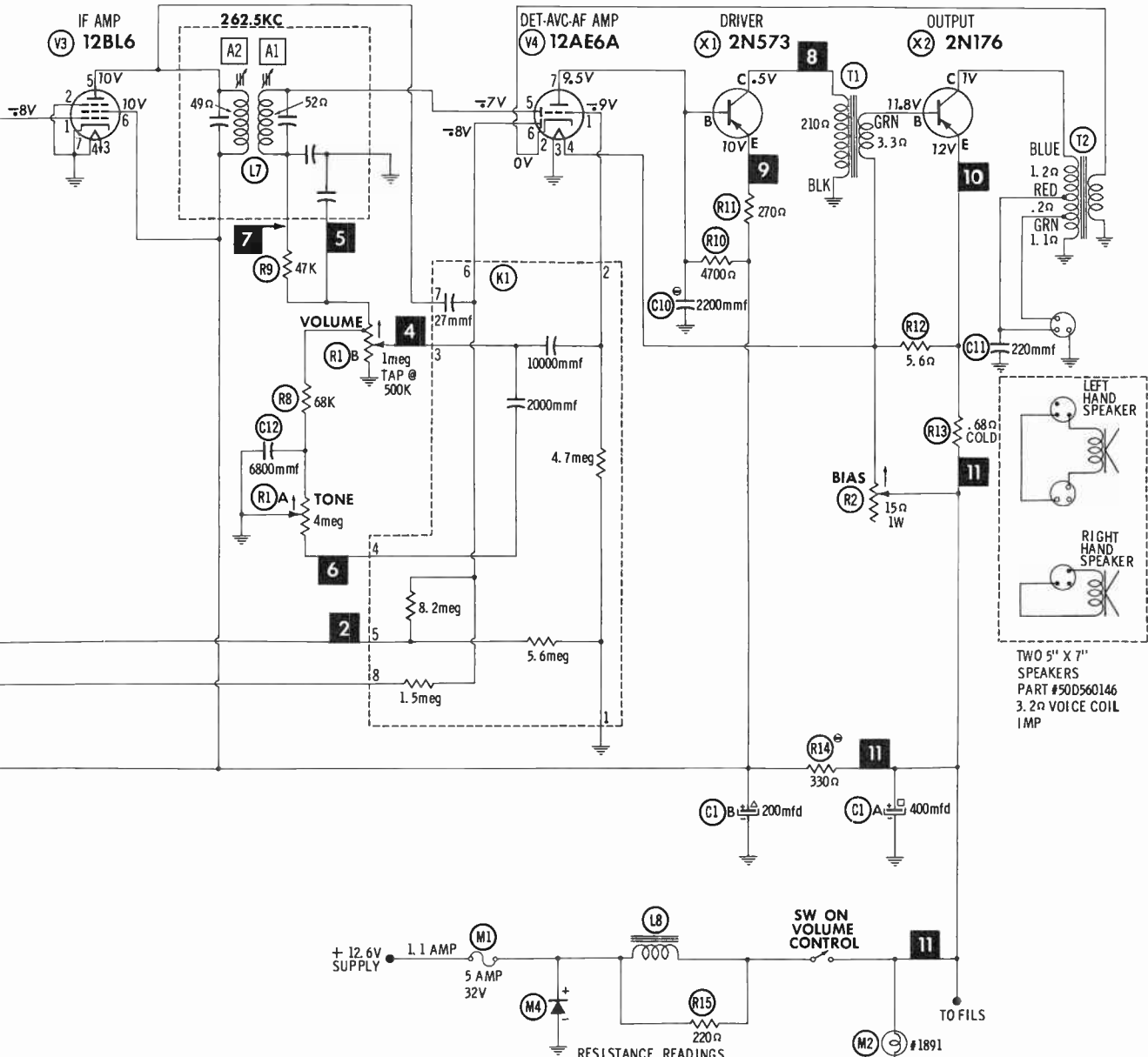
## CHASSIS-BOTTOM VIEW





A PHOTOFACIT STANDARD NOTATION SCHEMATIC  
with **CIRCUITRACE**<sup>®</sup>  
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ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12EG6	10meg	0Ω	1.9Ω	0Ω	†15K	†330Ω	16meg
V2	12AD6	33K	0Ω	0Ω	1.9Ω	†380Ω	†330Ω	5.6meg
V3	12BL6	5.6meg	0Ω	1.9Ω	0Ω	†370Ω	†330Ω	0Ω
V4	12AE6A	4.7meg	.1Ω	0Ω	1.9Ω	1meg	9meg	†5000Ω

TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE  
 † MEASURED FROM POSITIVE TERMINAL OF C1A.

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

**AMERICAN MOTORS MODEL 8990576 (94MA)**

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

## PARTS LIST AND DESCRIPTIONS (Continued)

### RESISTORS (cont)

ITEM No.	RATING		MOTOROLA PART No.	NOTES	ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R11	270Ω		6K121303		R14	330Ω		6K127099	Note 1
R12	5. 6Ω		17K739323		R15	220Ω		6K125471	
R13	. 68Ω Cold		17A561516						

Note 1. Some versions may use 220Ω in this application (Part #6K127099).

### COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	Det. Coupling	27mmf, 2000mmf, 10000mmf, 1. 5meg, 4. 7meg, 5. 6meg, 8. 2meg	51B561099	

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Ant. Tuning Coil	24C536308 ①					Includes 100mmf Cap.
L2	Ant. Coil	24K560921					
L3	RF Choke	24K561331 ①					
L4	RF Tuning Coil	24C536308 ①					
L5	Osc. Coil	24B536300					
L6	Input IF	24K561404	16-6756	BC-344	13-PH1		
L7	Output IF	24K561403	16-6757	BC-346	13-PH6		

① Part of M3. (Coil and mounting plate assembly Part #1V561742)

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 Hz)	MOTOROLA PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.	Triod PART No.
L8	1. 15A	. 3Ω	. 004 Hy.	25K561731						

### TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Holldorson PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	
T1	20	1	25K561730					

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
		MOTOROLA PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.	Triod PART No.	
T2	24Ω Tap @ 6-8Ω, 3-4Ω	25C561729							
	Turns Ratio								
	PRI. SEC.								
	. 65 : 1								

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	LAG	5A 32V	65R122345	9K562175	301005. (1AG 5A 32V)	155004	SFE4	HAF

### MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Lamp	65R533821	#1891
M3	Tuner	77E561692	AT-259, Complete
M4	Spark Plate	48K539953	Selenium (Use #43A539954 Bushing, #5K124848 Eyelet, #4A542137 Cup Washer for mounting)
	Printed Board	84K561587	Less Components (Includes Letter following Part #)

### CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	1V560741	Tuning, Volume -On-Off
Knob	36B560158	Tone, Dummy
Pushbutton	38B561652	
Cover	15C561658	Top
Cover	15K561661	Bottom
Pointer	1K560038	
Dial Scale	34B560043	

### WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Shielded Hook-up Wire	8524 (Stranded) Available in Ten Colors
Bonding Strap	Use BELDEN No. 8885
	8661





**AUTOMATIC MODELS  
CTR-77A, FTP-37A**

TRADE NAME	Automatic Models CTR-77A (For 1957 Chevrolet Automobiles), FTP-37A (For 1957 Ford Automobiles)		
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston 15, Mass.		
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output		
TUBES (Four)	Types 12AF6 RF Amplifier, 12AD6 Converter, 12AF6 IF Amplifier, 12J8 Det.-AVC-AF Amplifier		
POWER SUPPLY	12 Volt Storage Battery	RATING	1.3 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	538 - 1610KC		

## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	265KC (400% Mod.)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2. 68mmf	High side to antenna receptacle. Low side to chassis.	1610KC	1610KC	"	A5, A6, A7	"
3. "	"	600KC	600KC	"	A8, A9, A10	Adjust for maximum output. Repeat steps 2 and 3.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1500KC and adjust A7 for maximum output.					

### HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H695

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# PARTS LIST AND DESCRIPTIONS

## TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES	ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12AF6		V3	IF Amplifier	12AF6	
V2	Converter	12AD6		V4	Det. -AVC-AF Amp.	12J8	

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N176 *	Output	CBS-2N155	2N176		2N176	

\* Alternate type 2N257 or equivalent.

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.	NOTES
	CAP.	VOLT.								
C1A	500	15	20-315	AFH2-02-75	B0045	WP200.7				R2699 *
B	150	15								
C2	750	3	20-757	PRS6V1000	BR1000-6	TC310	TD-1000-6	MTH-06100		R2701 *

\* Non-Catalog Item.

### FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	AUTOMATIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	.047	200	30-473-2	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	NPO
C4			15-400						
C5	2-36		28-800						
C8	27		15-270	DF-000027	DD-270	L10Q27	UC-5427	5GA-Q27	
C7	40		15-400						NPO
C8	51		15-510N						N750 10%
C9	33-285		28-281						
C10	3-45		28-400						
C11	10000		15-103	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C12	27		15-270	DI-000027	DD-270	L10Q27	UC-5427	5GA-Q27	
C13	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C14	10000		15-103	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C15	10000		15-103	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C16	.47	100	30-474-1	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C17									

① Alternate Part #28-3 used in some versions.

② Some versions may use 1500mmf in this application.

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AUTOMATIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
RIA	2meg		80A856A ①					Tone
B	1meg						UE3840S	Volume, Tap @ 350K
C	Switch							
R2	500Ω	2(WW)	62-501		39-500		FL-600	Transistor Bias

① Part #80A818 used in Model FTP-37A.    ② "STA-LOC" Equivalent: FK28A, OS2312, RU16T354, IS2750, US-41

### RESISTORS

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

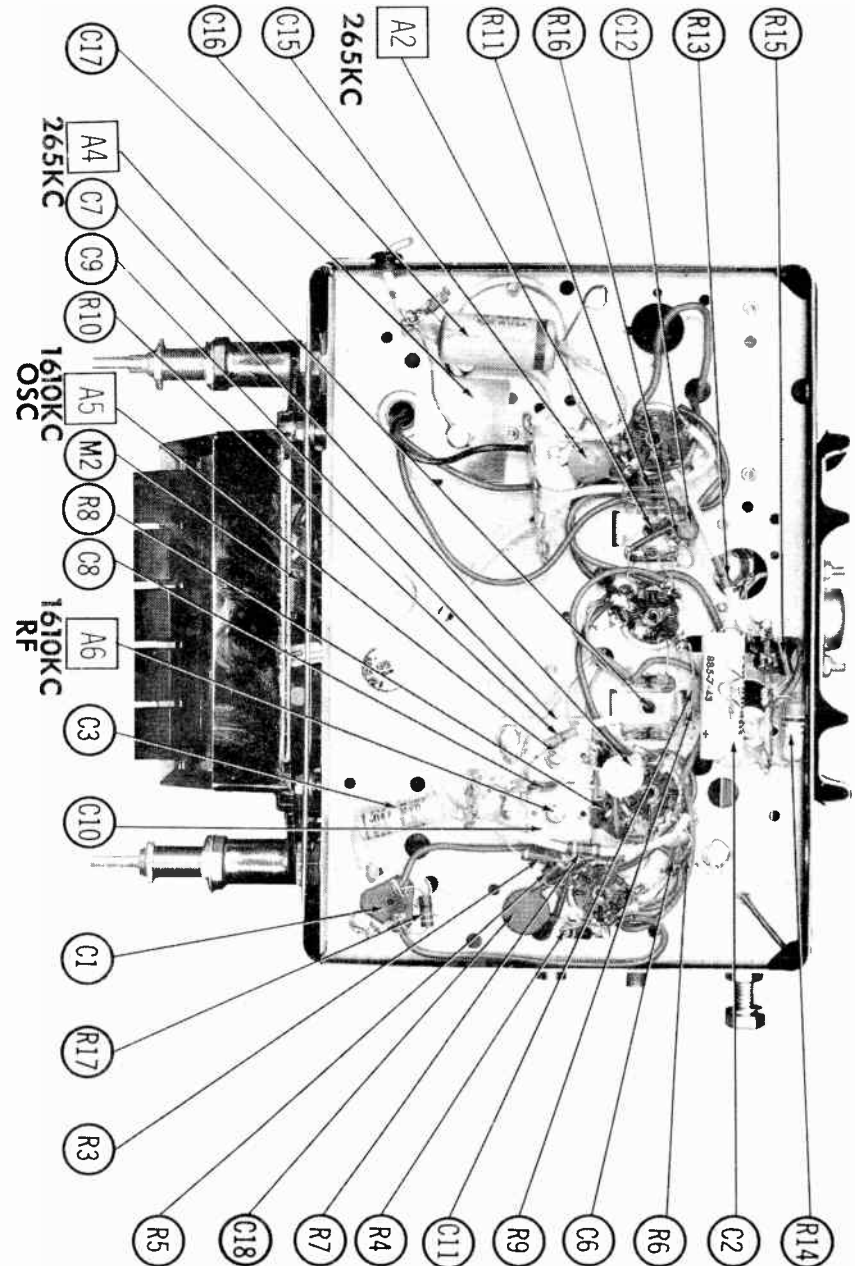
ITEM No.	RATING		AUTOMATIC PART No.	NOTES	ITEM No.	RATING		AUTOMATIC PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R3	1500Ω		60-152S	①	R11	1meg		60-105	③
R4	330Ω				R12	100K		60-104	
R5	150K		60-154S		R13	10meg		60-106	
R6	2.2meg		60-225S		R14	1Ω	1	60-1	
R7	4.7meg		60-475S		R15	22Ω		60-220	
R8	47K		60-473		R16	47K		60-473	①
R9	10meg		60-106		R17	68Ω		60-880S	
R10	10meg		60-106	②					

① Not used in some versions.

② Some versions may use 2.2meg (Part #60-225S) or 100K (Part #60-104) in this application.

③ Some versions may use 1.2meg in this application (Part #60-125).

## CHASSIS—BOTTOM VIEW



## PARTS LIST AND DESCRIPTIONS (Continued)

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		AUTOMATIC PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Antenna Coil	†					† Part of M3. † Part of M3. † Part of M3. 1.2 Microhearts
L2	RF Coil	†					
L3	Osc. Coil	†					
L4	Input IF	14-265	16-6752	BC-350	12-H6	RF-3	
L5	Output IF	14-267	16-6754	BC-354	12-H6		
L6	"A" Lead Choke						

### FILTER CHOKE

ITEM No.	RATINGS		INDUCTANCE (D.C. CURRENT 1000 CY.)	REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.		AUTOMATIC PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stoncor PART No.	Thordorson PART No.	Triod PART No.
L7	1.5A Ⓢ 12.6VAC	9Ω	.008 Hy.	75A601						

### TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Holldorson PART No.	Merit PART No.	Stoncor PART No.	Thordorson PART No.	Triod PART No.	
T1	15	: 1	75A602A Ⓢ						Ⓢ Alternate Part #75A604.

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stoncor PART No.	Thordorson PART No.	
T2	20Ω	3-4Ω	75A603						

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AUTOMATIC PART No.	QUAM PART No.	
SP1	6" x 9"	PM	3-4Ω	73-902	69A3	

### COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AUTOMATIC PART No.	REPLACEMENT DATA
K1	Antenna Isolation	100mmf, 1.2meg	Ⓢ	

Ⓢ Some versions may use a 100mmf (Part #25-101) and a 1.2meg (Part #60-125) in this application.

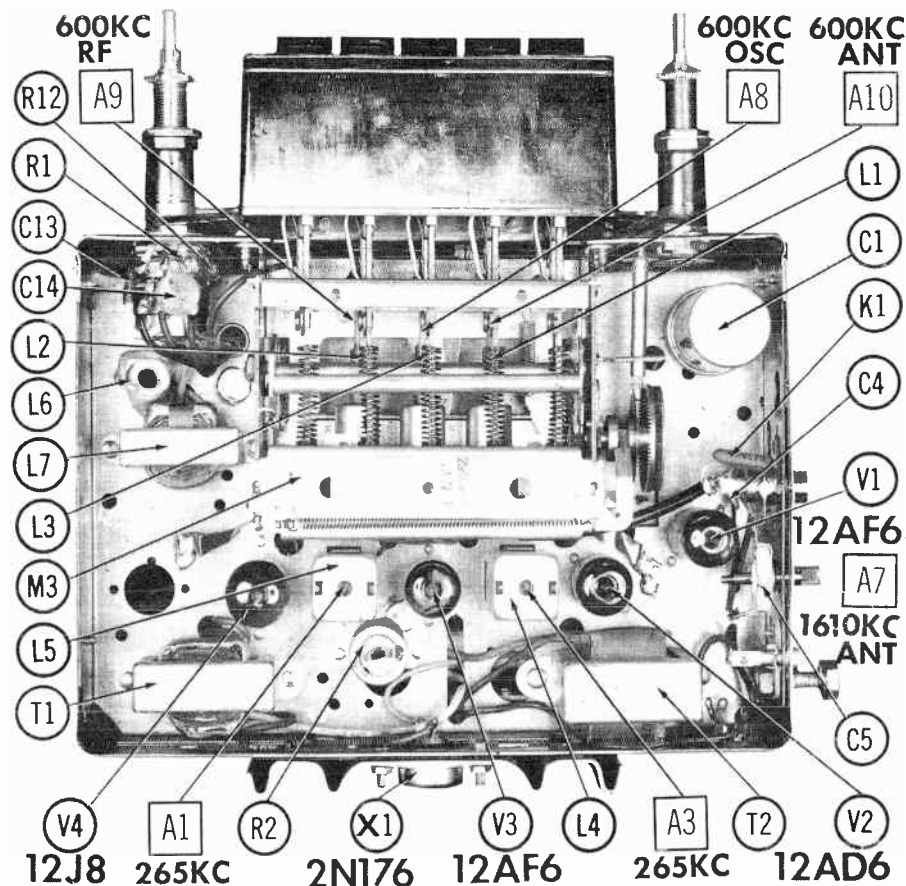
### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			AUTOMATIC PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
M1		7½A 32V	108-100						

### MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M2	Lamp	1891	#1891
M3	Tuner	78-77/T	(Specify Letter) Model CTR-77A
	Tuner	78-69/R	(Specify Letter) Model FTP-37A

## CHASSIS—TOP VIEW



### CABINETS & CABINET PARTS

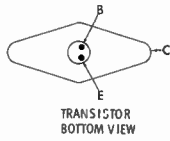
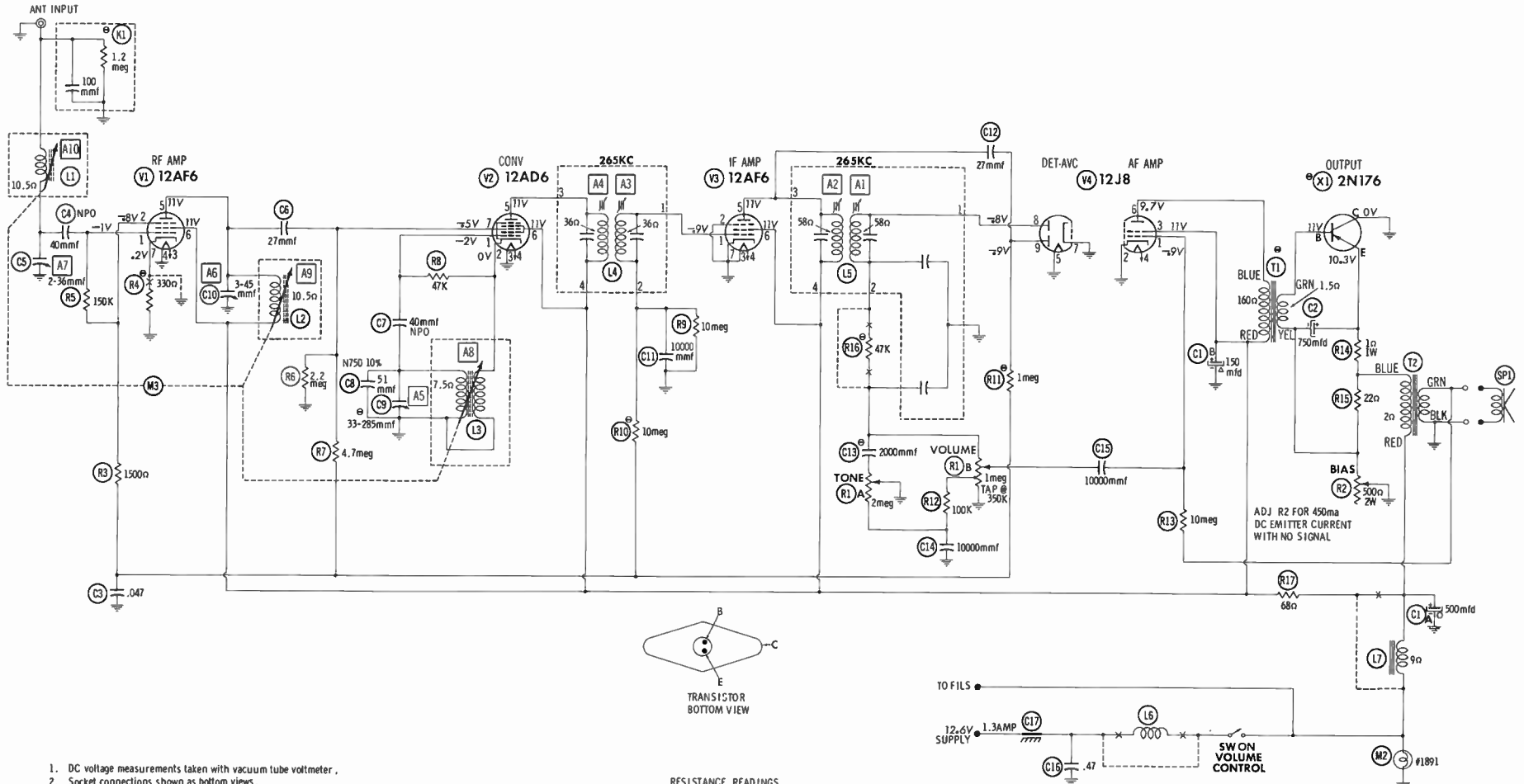
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	47-10	Tuning, On-Off-Volume, Model CTR-77A
Knob	47-148	Control, two used, Model FTP-37A
Knob	48A648	Tone, Model CTR-77A
Knob	48B393	Tone, Model FTP-37A
Knob	48A648-1	Dummy, Model CTR-77A
Knob	48B393-1	Dummy, Model FTP-37A
Cover	52B323	Case, Top
Cover	52B626	Case, Bottom
Pointer	84A517	
Scale	39-77	Dial

### WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors  
8524 (Stranded) Available in Ten Colors





1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AF6	5.5meg	5.4meg	1.5Ω	0Ω	† 78Ω	† 68Ω	330Ω		
V2	12AD6	47K	.7Ω	0Ω	1.5Ω	† 103Ω	† 68Ω	1.8meg		
V3	12AF6	7meg	0Ω	0Ω	1.5Ω	† 126Ω	† 86Ω	0Ω		
V4	12J8	10meg	0Ω	† 68Ω	1.5Ω	0Ω	† 228Ω	0Ω	1meg	6meg

TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE  
 † MEASURED FROM POSITIVE TERMINAL OF C1A

SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
 Howard W. Sams & Co., Inc. 1958





**TRADE NAME** Automatic Model DET-28 (For 1957 & 1958 DeSoto Automobiles)  
**MANUFACTURER** Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston 15, Mass.  
**TYPE SET** Battery Operated Custom Built AM Automobile Receiver with Transistorized Output  
**TUBES (Four)** Types 12CX6 (or) 12AF6 RF Amplifier, 12AD6 Converter, 12AF6 IF Amplifier, 12J8 Det.-AVC-AF Amp.

**POWER SUPPLY** 12 Volt Storage Battery  
**TUNING RANGE—BROADCAST** 538-1610KC

**RATING** 1.3 Amp. @ 12.6 Volts DC

**AUTOMATIC  
MODEL DET-28**

## ALIGNMENT INSTRUCTIONS

### ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1mf	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5 KC (400v Mod)	High end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2. "	"	1600KC	1600KC	"	A5	"
3. "	"	600KC	600KC	"	A6	Adjust for maximum output. Repeat steps 2 and 3.
4. 68mmf	High side to antenna input. Low side to chassis.	1400KC	Tune to 1400KC signal	"	A7, A8	Adjust for maximum output.
5. "	"	600KC	Tune to 600KC signal	"	A9, A10	"
6.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A8 for maximum output.					

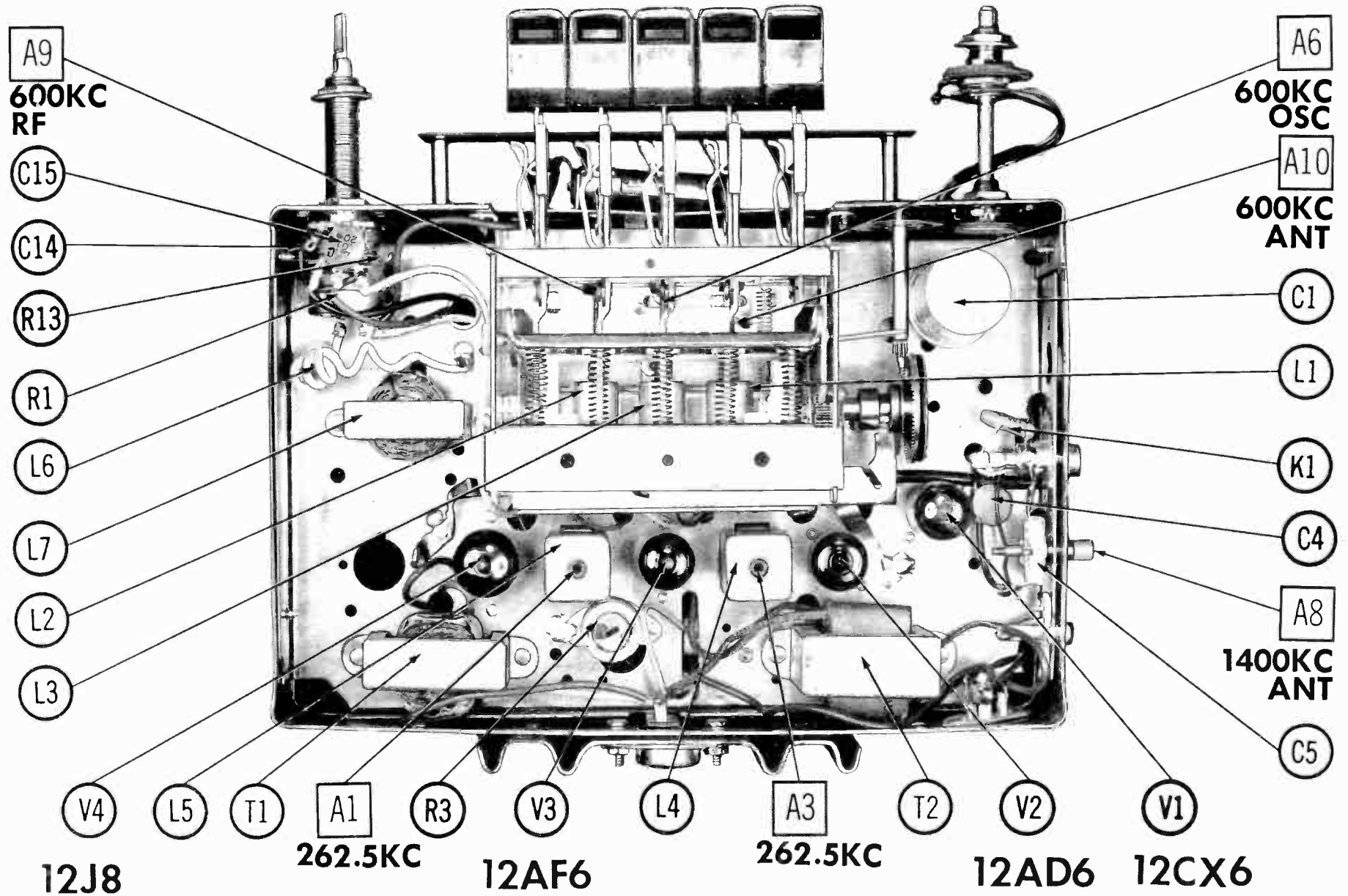
### PUSHBUTTON ADJUSTMENT

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

## HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

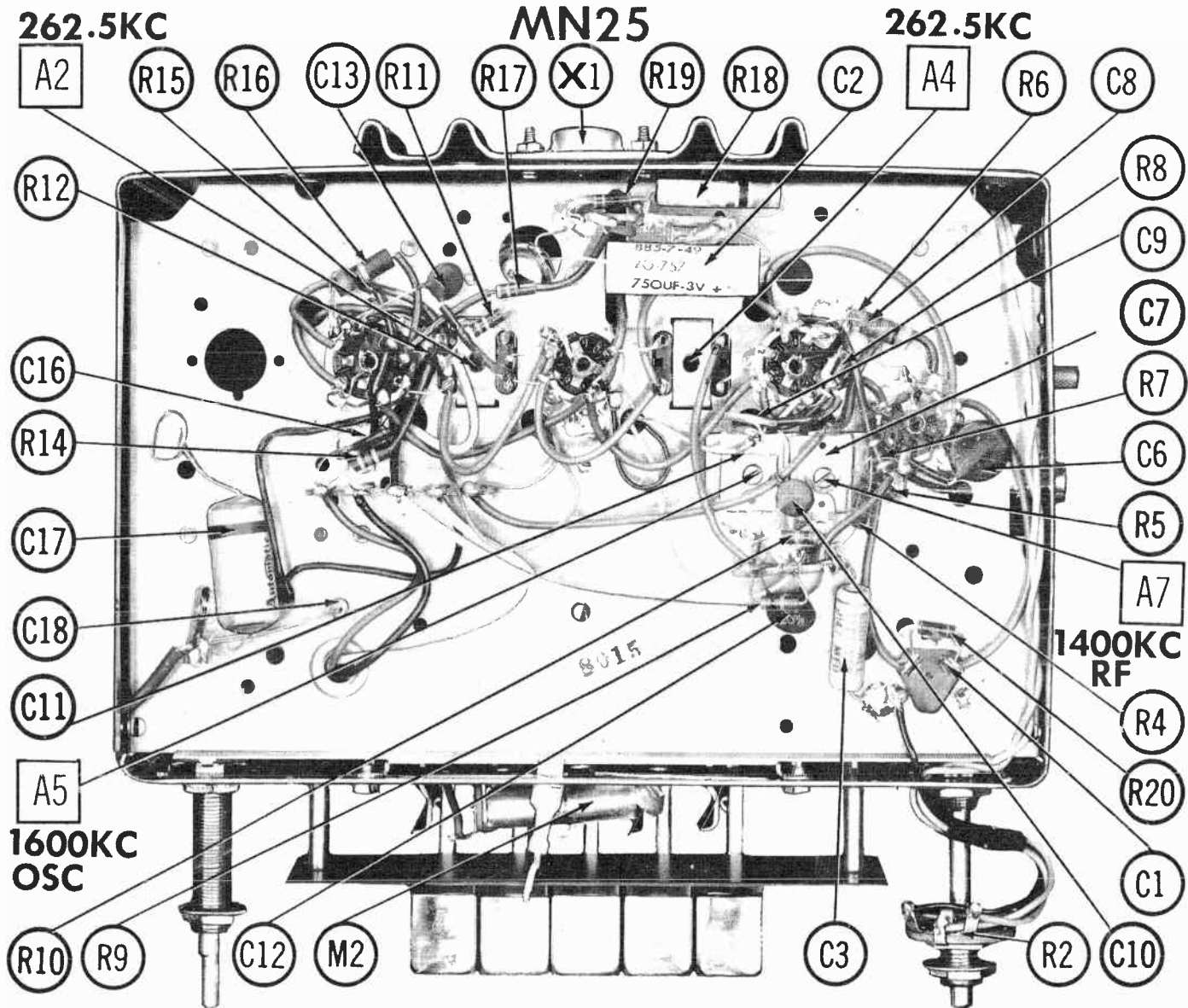
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CHASSIS - TOP VIEW





CHASSIS - BOTTOM VIEW

# PARTS LIST AND DESCRIPTIONS

## TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES	ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12CX6	①	V3	IF Amplifier	12AF6	
V2	Converter	12AD6		V4	Det. -AVC-AF Amp.	12J8	

① Alternate Type 12AF6.

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
XI	MN25	Output	CBS-2N155			2N242	PNP

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	500	15	20-315	AFH2-02-75	B0045	WP200.7			R2699 *
B	150	15							
C2	750	3	20-757						R2701 *

\* Not normally in distributors stock. Available thru distributor on order to manufacturer.

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					NOTES	
	CAP.	VOLT	AUTOMATIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.		SPRAGUE PART No.
C3	.047	200	30-473-2	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-847	NPO
C4	40		15-400						
C5	5-47		28-800						
C6	3000		15-302	BPD-003	DD-302	BYA10D3	UC-523	5GA-D3	①
C7	3-35		28-400						
C8	12			SI 12	D6-120	LT8Q12	UC-5412	5GA-Q12	
C9	40		15-400						NPO
C10	51		15-510N		TCN-51	C10Q51U			N750 10%
C11	31-230		28-3						②
C12	10000		15-103	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C13	27		15-270	DI-000027	DD-270	L10Q27	UC-5427	5GA-Q27	
C14	2000		15-202	BPD-002	DD-203	BYA10D2	DC522	5HK-D2	
C15	10000		15-103	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C16	10000		15-103	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C17	.47	100	30-474-1	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C18	800		CC-801						

① Not used in some versions.

② Alternate Part #28-281.

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES	
	RESISTANCE	WATTS	AUTOMATIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.		MALLORY PART No.
RIA	2meg		80A700A	FL-68 †				Tone
B	1meg			R2-60				Volume, Tap ③ 500K
C	Switch			KB-1 or KR-1*				
R2	25Ω	2(WW)	80A71					Speaker Fader
R3	500Ω	2(WW)	62-501		39-500		FL-600	Transistor Bias

† Use AK-26 adaptor bushing. Saw off to fit.

\* Use KR with CRL "red label" controls and KB with "blue label" controls.

## RESISTORS

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

ITEM No.	RATING		AUTOMATIC PART No.	NOTES	ITEM No.	RATING		AUTOMATIC PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R4	1500Ω		60-152S		R13	100K		60-104	
R5	150K		60-154S		R14	470K		60-474	Note 1
R6	2.2meg		60-225S		R15	10meg		60-106	Note 2
R7	4.7meg		60-475S		R16	10Ω		60-100	
R8	47K		60-473		R17	330Ω		60-331	
R9	10meg		60-106		R18	1Ω	2	60-1	
R10	10meg		60-106		R19	22Ω		60-220	
R11	47K		60-473		R20	68Ω		60-680S	
R12	1meg		60-105						

Note 1. Not used in some versions.

Note 2. Some versions use 6.8meg in this application.

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		AUTOMATIC PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil	①					
L2	RF Coil	①					
L3	Osc. Coil	①					
L4	Input IF	14-265	16-6752	BC-350	12-H1	RF-3	
L5	Output IF	14-267	16-6754	BC-354	12-H6		
L6	"A" Line Choke	②					1.2 Microhenries ②

① Part of Tuner Assembly.

② Not used in some versions.

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	AUTOMATIC PART No.	Holldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triod PART No.
L7	1.3A	9Ω	.008 Hy.	75A601						

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Holldorson PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triod PART No.	
T1	15	1	75A802A						

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Holldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	
T2	20Ω	3-4Ω	75A803C						

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AUTOMATIC PART No.	QUAM PART No.	
SP1	5" x 7"	PM	3-4Ω	73A854 ①	57A21	① Alternate Part #73B654



## PARTS LIST AND DESCRIPTIONS (Continued)

### COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AUTOMATIC PART No.	REPLACEMENT DATA
XI	Antenna Isolation	100mmf, 1.2meg		

### MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M2	Lamp	1891	#1891

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AUTOMATIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	7AG	7½A 32V	108-100		30707.5 (7AG 7½A 32V)	155009	SFE 7½	HDH

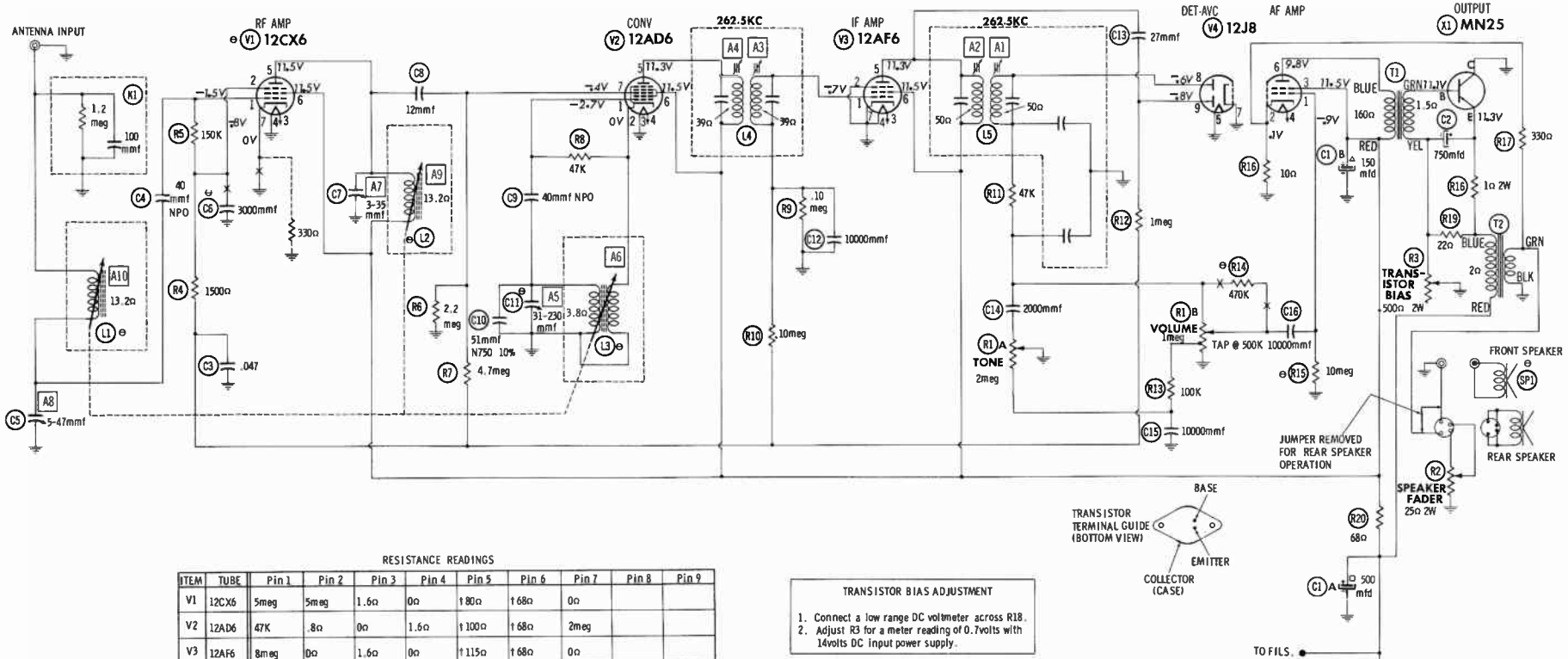
### CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	48A848	Tuning, On-Off-Volume
Knob	48A848	Tone, Speaker Balance
Cover	52-27	Case, Top
Cover	52B670	Case, Bottom

### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Shielded Hook-up Wire .....	8524 (Stranded) Available in Ten Colors
Bonding Strap .....	Use BELDEN No. 8685
	Use BELDEN No. 8861

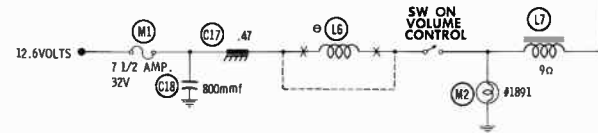
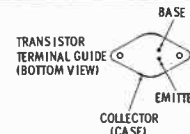


RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12CX6	5meg	5meg	1.6Ω	0Ω	† 80Ω	† 68Ω	0Ω		
V2	12AD6	47K	.8Ω	0Ω	1.6Ω	† 100Ω	† 68Ω	2meg		
V3	12AF6	8meg	0Ω	1.6Ω	0Ω	† 115Ω	† 68Ω	0Ω		
V4	12J8	10meg	10Ω	† 68Ω	1.6Ω	0Ω	† 230Ω	0Ω	500K	7meg

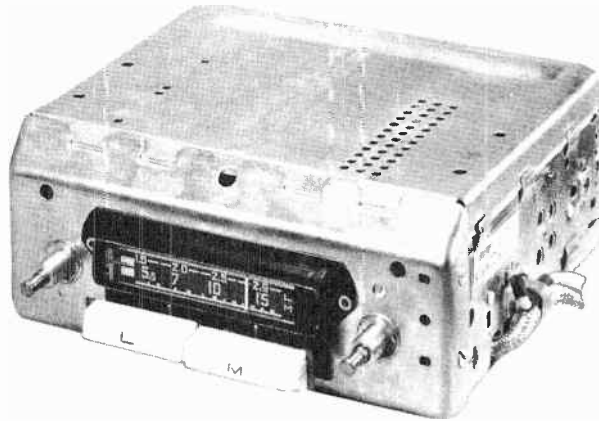
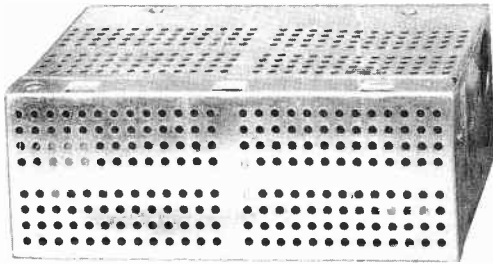
TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.  
 † MEASURED FROM POSITIVE TERMINAL OF CIA.

**TRANSISTOR BIAS ADJUSTMENT**  
 1. Connect a low range DC voltmeter across R18.  
 2. Adjust R3 for a meter reading of 0.7volts with 14volts DC input power supply.



SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION  
 DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

- DC voltage measurements taken with vacuum tube voltmeter.
- Socket connections shown as bottom views.
- Measured values are from socket pin to common negative.
- Battery voltage maintained at 12.6 volts for voltage readings.
- Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
- Volume control at maximum, no signal applied for voltage measurements.



TRADE NAME Blaupunkt Model BREMEN (Above Serial #G140001)  
 IMPORTER Robert Bosch Corp., 40-25 Crescent St., Long Island City 1, N. Y.  
 TYPE SET Battery Operated BC-LW Automobile Receiver  
 TUBES Four

POWER SUPPLY 6 Volt (Or) 12 Volt Storage Battery      RATING 4.8 Amp@6.3Volts DC (Or) 2.4Amp@12.6 Volts DC  
 TUNING RANGE—BROADCAST 520-1650KC      LONG WAVE 140KC-300KC

### ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

- A1, A2, A3, A4..... General Cement #5009, 8195, 8274, 8275, 8728, 8987  
Walsco #2531
- A5..... General Cement #9050L, 9150  
Walsco #2521
- A6, A7..... General Cement #8721, 8722  
Walsco #2519
- A9..... General Cement #5004, 5008, 5009  
Walsco #2520
- A10, A11..... General Cement #9050L, 9150  
Walsco #2521

BLAUPUNKT  
MODEL "Bremen"

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. Fig 1	Thru dummy antenna to Pin 2 of ECH81(VI)	460KC (400% Mod.)	M	High end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2. "	"	"	"	"	"	A5	Adjust for MINIMUM output.
3. "	"	1100KC	"	1100KC	"	A6, A7	Adjust for maximum output.
4. "	"	520KC	"	520KC	"	A8, A9	"
5. "	"	250KC	L	250KC	"	A10, A11	"

With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A9 for maximum output.

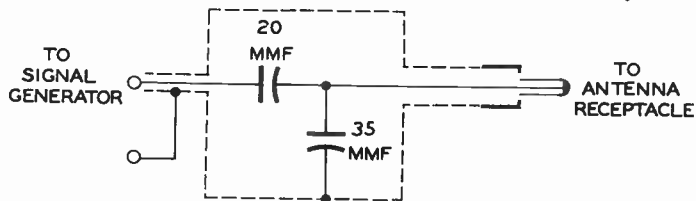
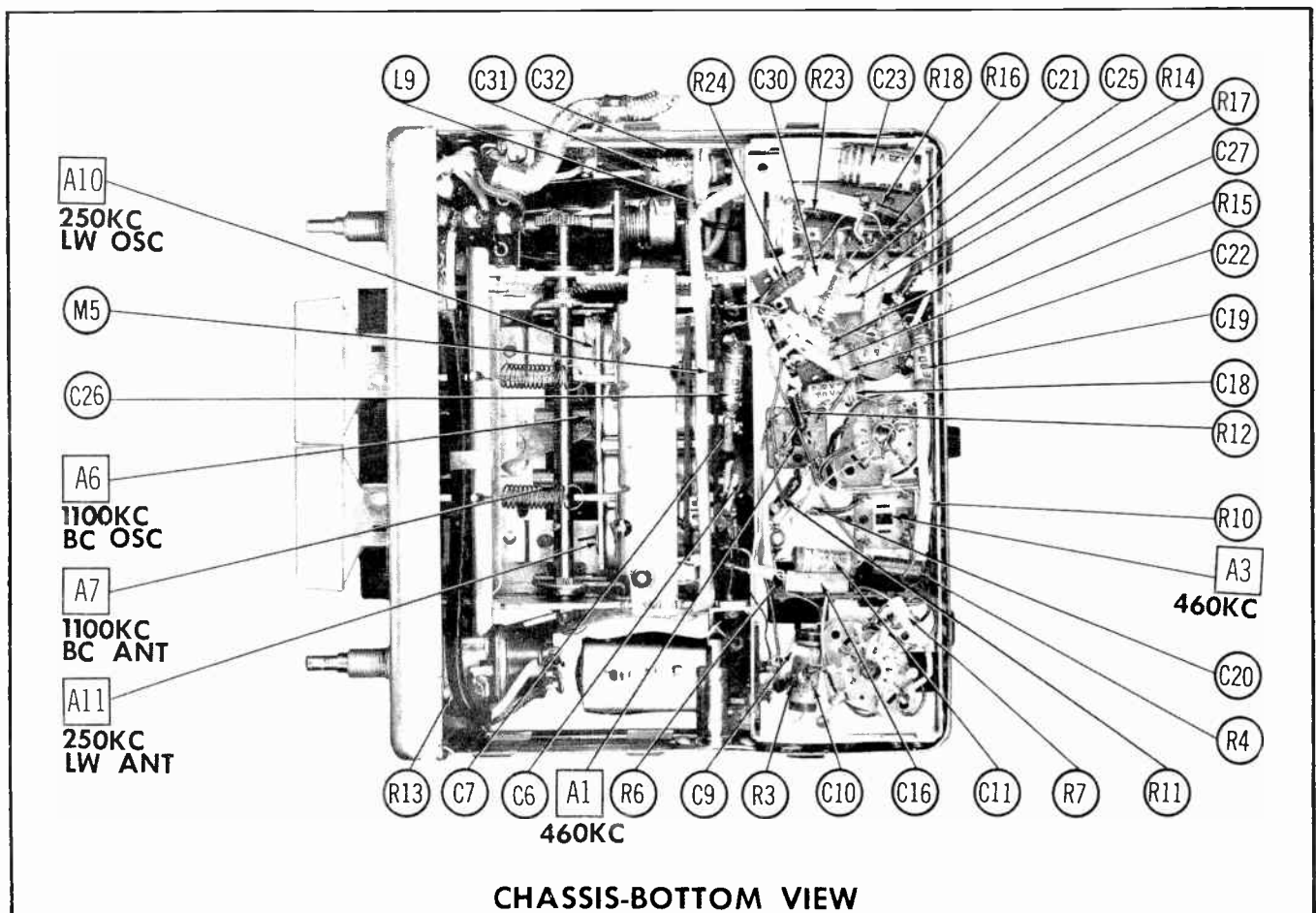
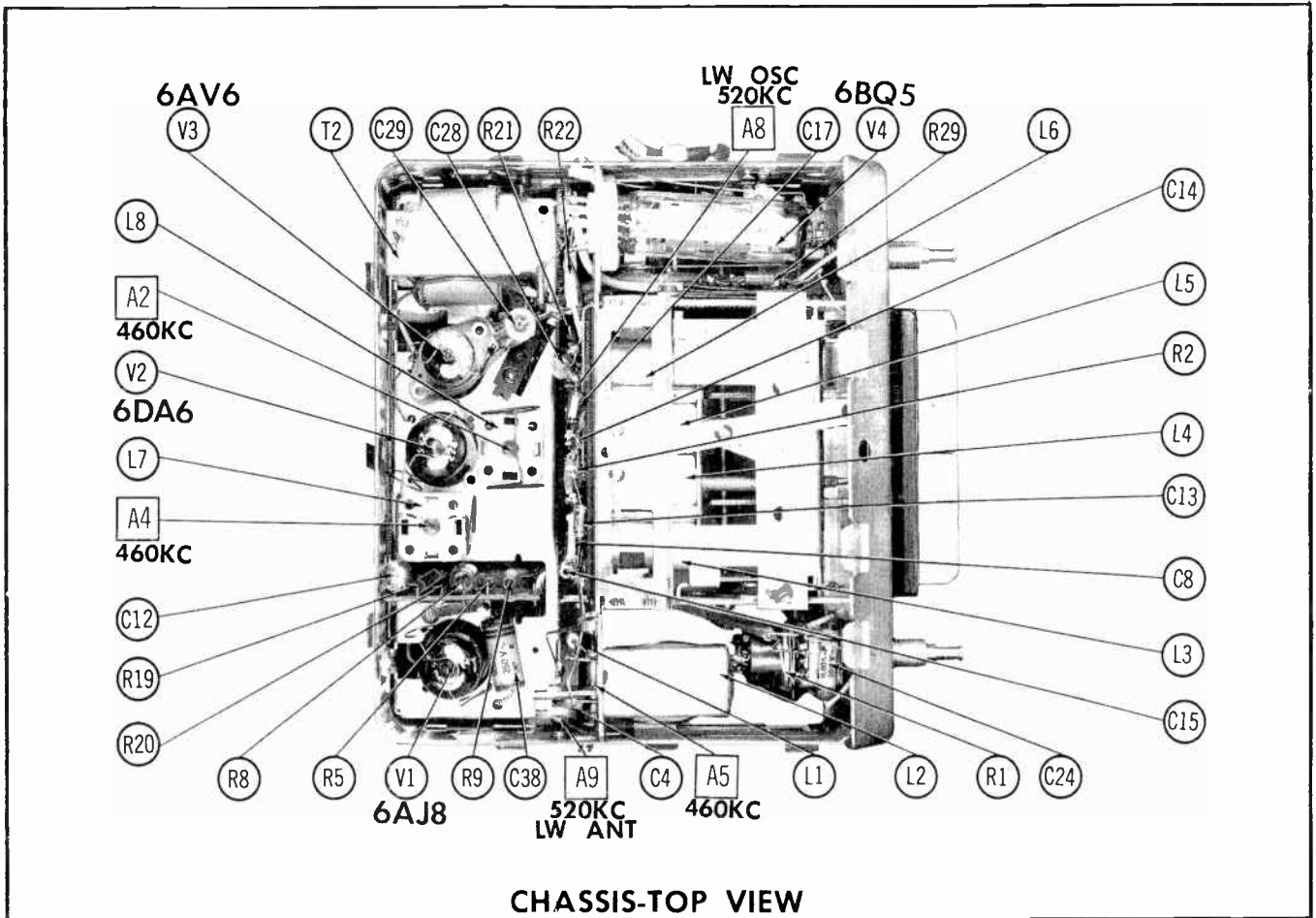


FIG. 1

**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H885

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# PARTS LIST AND DESCRIPTIONS

## TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Mixer-Osc.	6CH81/6AJ8	V3	Det. -AVC-AF Amp.	EBC91/6AV8
V2	IF Amplifier	EF89/6DA6	V4	Output	EL84/6BQ5

① Domestic type listed may not be directly interchangeable in some instances.

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BLAUPUNKT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	32	385	K0761/24x						R2600 *
B	32	385							
C2	50	18	K0742/9n	PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206
C3	50	18	K0742/9n	PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206
C4	50	15							

\* Not normally in distributors stock. Available thru distributor on order to manufacturer.

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	BLAUPUNKT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	10-80		TK6/15x						
C6	380		KO809/71n						2.5%
C7	80		KO842/71n						2%
C8	85		KO842/73n						2%
C9	50		KO845/51n						10%
C10	.05	250	KO788/86n	P488N-05	D6-500				
C11	.01	500	KO792/41n	P488N-01	DF-503	CUB4S5	GEM-415	4TM-S5	
C12	.05	500	KO792/48n	P668N-05	D6-103	CUB681	GEM-611	6TM-S1	
C13	480		KO809/72n		DF-503	CUB4S5	GEM-415	4TM-S5	
C14	35		KO101/7z						2.5%
C15	60		KO842/71n						2%
C16	30		KO843/50n						10%
C17	480		KO809/72n	NPO-SI30	TCZ-30	CTA6Q3C			2.5%
C18	.01	500	KO792/41n	P668N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C19	.005	500	KO792/87n	P668N-05	D6-502	CUB6D5	GEM-625	6TM-D5	
C20	100			SI-100	D6-101	LT8T1	UC-531	5GA-T1	
C21	.005	500	KO792/87n	P668N-005	D6-502	CUB6D5	GEM-625	6TM-D5	
C22	50		KO845/51n	NPO-SI 50	D6-500	CTA6Q51C	ZT-545	5TCC-Q5	
C23	.1	125	KO788/89n				GEM-201	2WF-P10	
C24	.025	250	KO788/85n	P488N-025	D6-502	CUB6D5	GEM-4125	4TM-S25	
C25	.005	500	KO792/87n	P488N-005	D6-502	CUB6D5	GEM-625	6TM-D5	
C26	.005	500	KO792/87n	P488N-005	D6-101	LT8T1	UC-531	5GA-T1	
C27	100			SI 100	D6-103	CUB6S1	GEM-611	6TM-S1	
C28	.01	500	KO792/41n	P488N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C29	.005	1000	KO778/68n	P1088N-005	DD18-502	CUB10D5	GEM-1025	10TM-D5	
C30	.05	500	KO792/48n	P668N-05	DF-503	CUB685	GEM-615	6TM-S5	
C31	.05	250	KO788/86n	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C32									
C33	.05	350	KO784/48n	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C34	.1	125	KO770/65n				GEM-201	2WF-P10	
C35	.1	125	KO788/69n				GEM-201	2WF-P10	
C36	.1	125	KO788/69n				GEM-201	2WF-P10	
C37	.025	1000	KO802/45n	P1088N-025					
C38	05	250	KO786/68n	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	

① Some versions may use 90mmf in this application (Part#KO845/57n).  
② Not used in some versions.

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES	
	RESISTANCE	WATTS	BLAUPUNKT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.		MALLORY PART No.
RIA	2meg	1/2	W12165/3x					Tone Volume, Tap @ 300K
B	1.3meg							
C	Switch							

## RESISTORS

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

ITEM No.	RATING		BLAUPUNKT PART No.	NOTES	ITEM No.	RATING		BLAUPUNKT PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R2	100K		W1782/70n		R16	10meg		W1782/97n	
R3	1meg		W1782/85n		R17	1meg		W1782/85n	
R4	5000Ω	1	W1802/50n		R18	500K		W1782/80n	
R5	30K		W1792/62n		R19	250K		W1782/77n	
R6	50K		W1782/65n		R20	50K		W1782/65n	
R7	1000Ω		W1782/40n		R21	500K		W1782/86n	
R8	30K	2	W1812/62n		R22	1000Ω		W1782/40n	
R9	5000Ω	1	W1802/50n		R23	30Ω		W1782/17n	
R10	100K		W1782/70n		R24	100Ω		W1792/25n	
R11	250K		W1782/77n		R25	100Ω		W1792/25n	
R12	100K		W1782/70n		R26	300Ω	2		Note 1
R13	20K		W1782/60n		R27	200Ω	1	W1802/29n	
R14	1meg		W1782/85n		R28	200Ω	1	W1802/29n	
R15	500K		W1782/80n		R29	160Ω		W1792/28n	

Note 1. Some versions may use 500Ω 2 W in this application (Part #W1804/28n).

## TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	BLAUPUNKT PART No.	Halldorson PART No.	Merit PART No.	Rom PART No.	Stoncor PART No.	Thordorson PART No.	Triod PART No.
T1	12V or 8V @ 1A	240V @ .055A		TF722/10z						

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	Turns Ratio		REPLACEMENT DATA						NOTES
	PRI.	SEC.	BLAUPUNKT PART No.	Halldorson PART No.	Merit PART No.	Rom PART No.	Stoncor PART No.	Thordorson PART No.	
T2	30	: 1	TF27/52z						

## COILS (RF-IF)

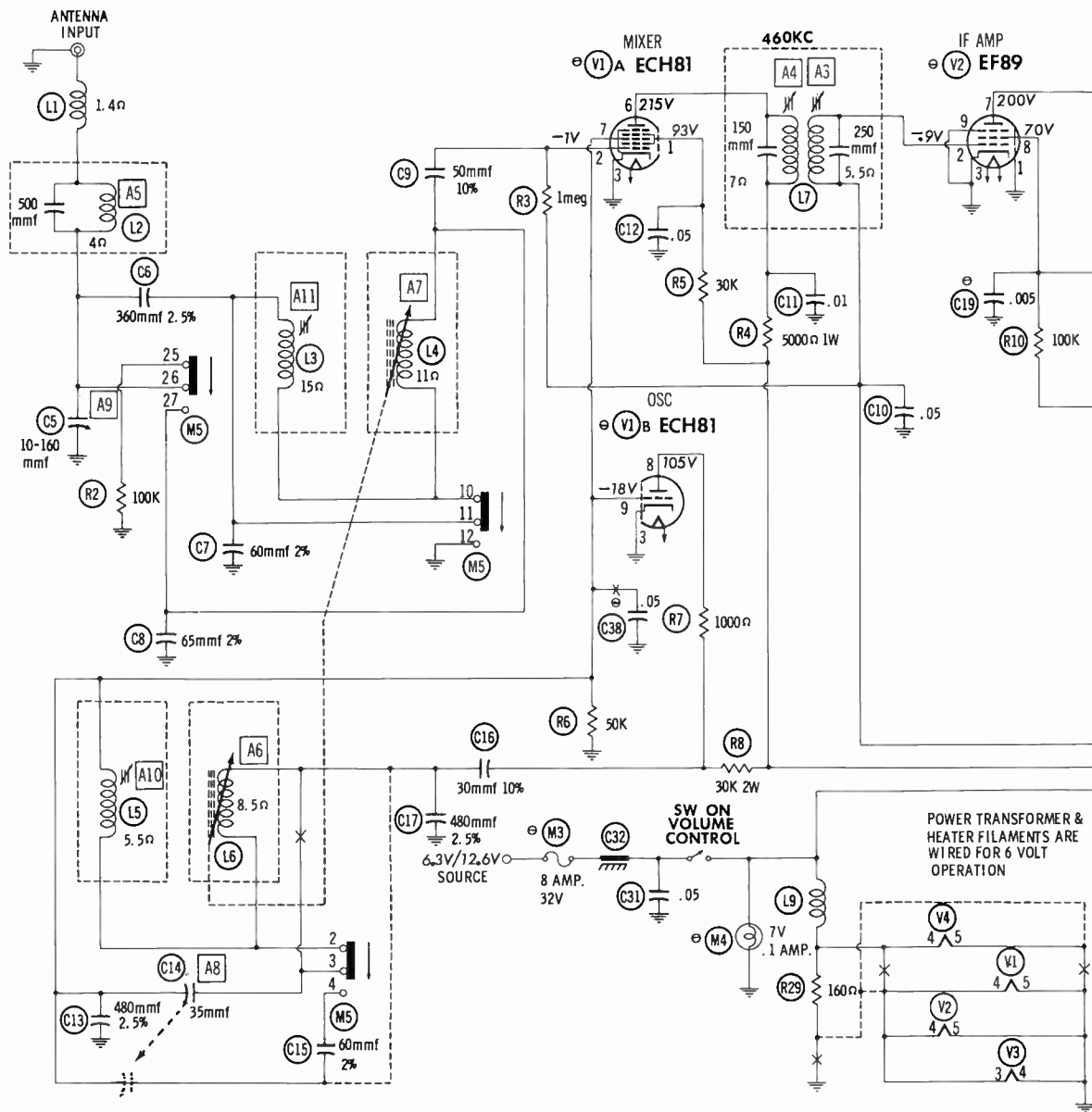
ITEM No.	USE	REPLACEMENT DATA					NOTES
		BLAUPUNKT PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Ant. Coil	WC2199/2z					
L2	IF Trap	ZF720/10z					
L3	LW Ant. Coil	WC2201/5z					
L4	BC Ant. Coil	WC2204/2z					
L5	LW Osc. Coil	WC2202/3z					
L6	BC Osc. Cpl	WC2205/2z					
L7	1st IF	ZF721/1z		16-8780			
L8	2nd IF	ZF721/2z		16-8780			
L9	Fil. Choke	WC2115/1z					
L10	"A" Lead Choke	ED706/1z					
L11	"A" Lead Choke	ED706/1z					4.7 Microhenries 12 Microhenries 12 Microhenries

## VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			NOTES
				BLAUPUNKT PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	
M1	Interrupter	8V 12V	115v 115v	SM702/1z SM702/2z			6 Volt Versions 12 Volt Versions

## SELENIUM RECTIFIER

ITEM No.	RATING		REPLACEMENT DATA			NOTES	
	CURRENT (Measured)	WATTS	BLAUPUNKT PART No.	FEDERAL PART No.	INTERNATIONAL PART No.		SARKES TARZIAN PART No.
M2	.054A		XZ737/2x			D-84 ①	① Silicon Type



RESISTANCE READINGS

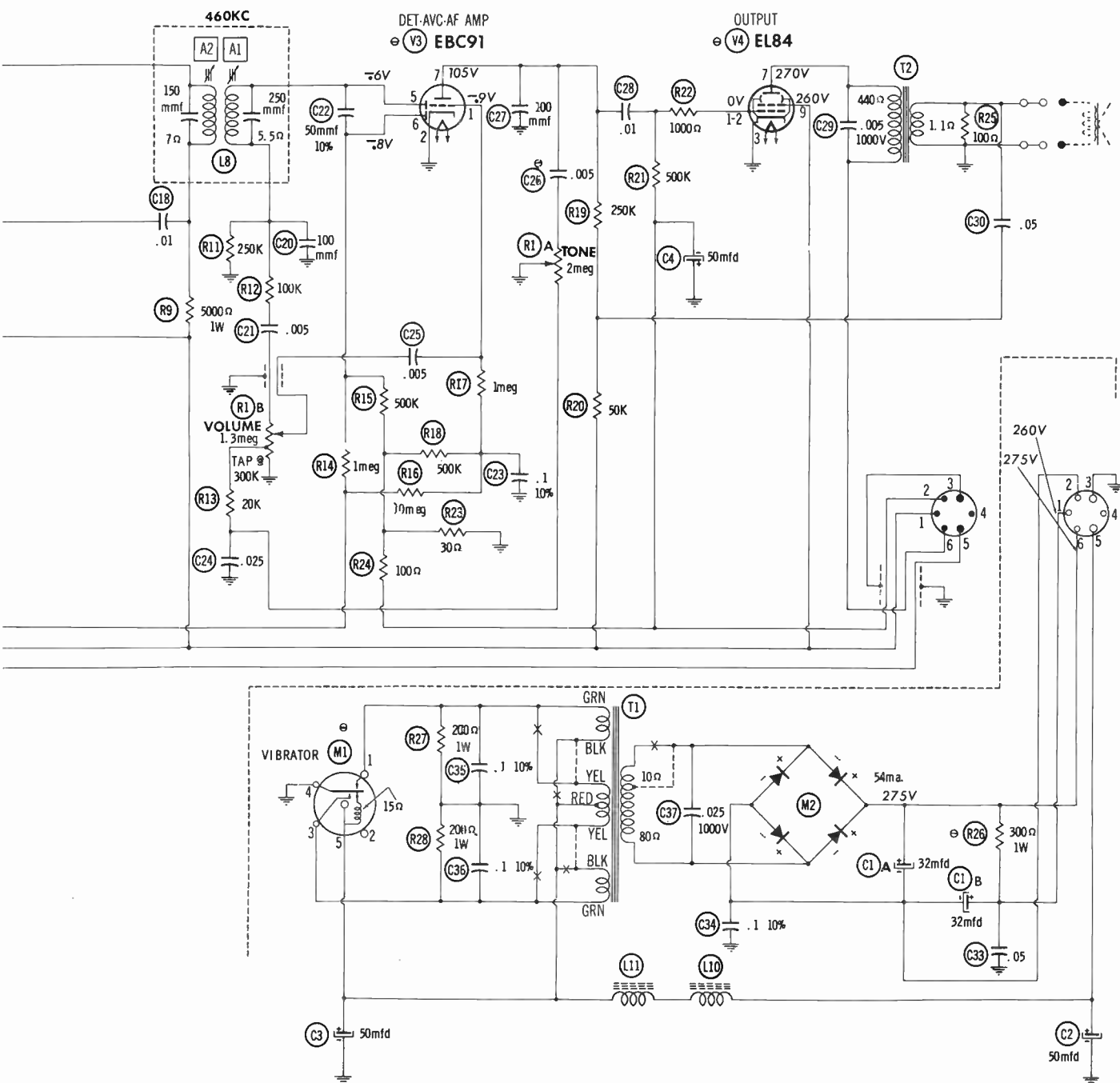
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECH81	† 30K	2.2meg	0Ω	.5Ω	0Ω	† 5300Ω	50K	† 31K	50K
V2	EF89	0Ω	1.2meg	0Ω	.5Ω	0Ω	0Ω	† 5300Ω	† 100K	0Ω
V3	EABC91	1.5meg	0Ω	.5Ω	0Ω	250K	500K	† 300K		
V4	EL84	500K	500K	0Ω	.5Ω	0Ω	NC	† 440Ω	NC	† 300Ω

† MEASURED FROM OUTPUT OF M1.  
NC NO CONNECTION

⊗ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
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1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of  $\pm 15\%$  in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

**BLAUPUNKT  
MODEL "Bremen"**

## PARTS LIST AND DESCRIPTIONS (Continued)

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BLAUPUNKT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3		8A 32V	SG704/1N	FA741/9N				

① 4 Amp Fuse #SG704/3N Used in 12 volt version.

### MISCELLANEOUS

ITEM No.	PART NAME	BLAUPUNKT PART No.	NOTES
M4	Lamp	GL701/ 1x	7V, 0.1A (8 Volt Versions)
	Lamp	GL701/ 2x	14V, 0.1A (12Volt Versions)
M5	Switch	NP2306/ 15z	Band, Complete With Coils
	Printed Board	NP2309/ 3z	
	Plug	SE718/ 1x	Connecting Cable
	Socket	FA717/ 1x	Connecting Cable
	Socket	FA716/ 1x	Vibrator

### CABINETS & CABINET PARTS

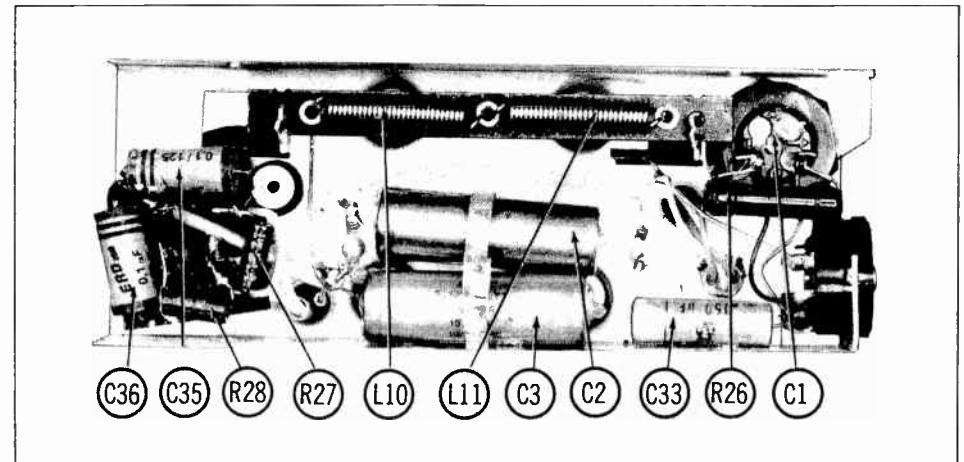
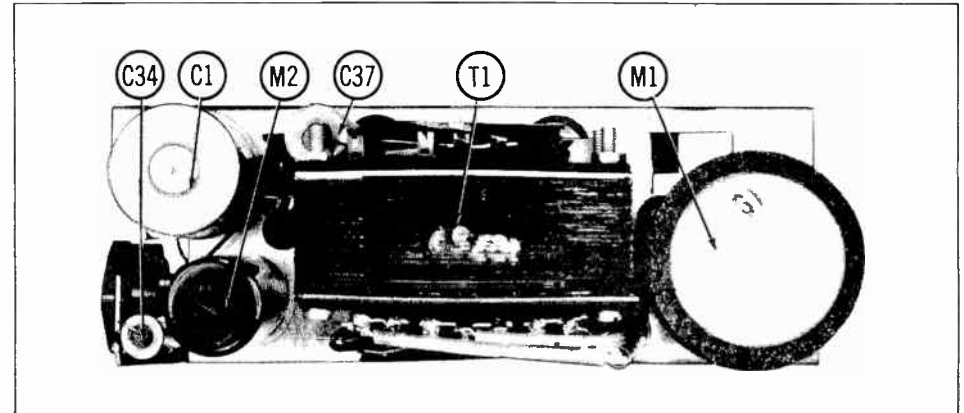
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Push Button	KF792/ 1 z	Long Wave, Ivory, Includes Rubber Gasket
Push Button	KF792/ 2 z	Medium Wave, Ivory, Includes Rubber Gasket
Push Button	KF792/ 3 z	Long Wave, Brown, Includes Rubber Gasket
Push Button	KF792/ 4 z	Medium Wave, Brown, Includes Rubber Gasket

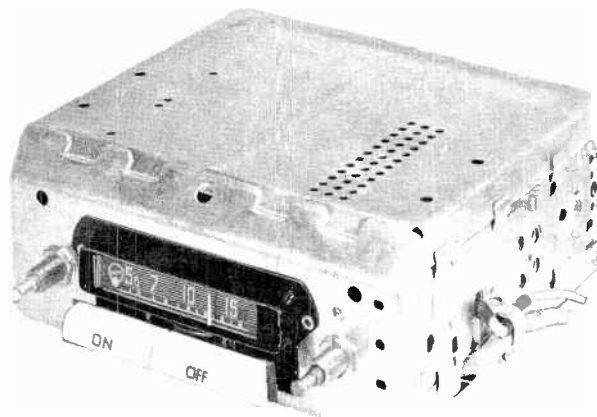
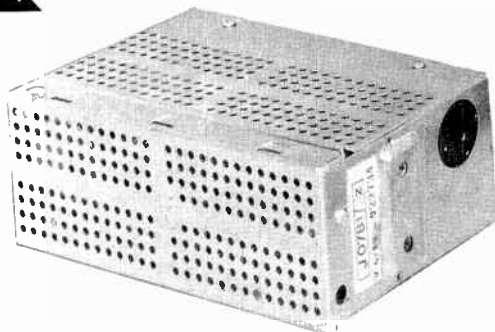
### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in Ten Colors
	8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8885
Bonding Strap .....	Use BELDEN No. 8861

## POWER CHASSIS







<b>TRADE NAME</b>	Blaupunkt Model Wolfsburg 9160 (Serial #G450001 and above)		
<b>IMPORTER</b>	Robert Bosch Corp., 40-25 Crescent Street, Long Island City 1, N. Y.		
<b>TYPE SET</b>	Battery Operated AM Automobile Receiver		
<b>TUBES</b>	Five		
<b>POWER SUPPLY</b>	6 Volt (or) 12 Volt Storage Battery	<b>RATING</b>	4.4 Amp. @ 6.3 Volts DC
<b>TUNING RANGE—BROADCAST</b>	510 - 1600KC		

## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.						
Suggested Alignment Tools: A1, A2, A3, A4, A5.....GENERAL CEMENT #8195, 8275, 8728, 8729, 8987, 8988, 8989 WALSCO #2531, 2532						
A6.....GENERAL CEMENT #5000, 5003, 5004, 5008, 5009, 5066, 8195, 8277, 8290, 8607, 8821, 9105, 9106, 9291						
WALSCO #2515, 2520, 2522, 2523, 2534, 2537, 2538						
A7, A8.....GENERAL CEMENT #5000, 5003, 8271, 8273, 8276, 8288, 8290, 8721, 8722						
WALSCO #2516, 2519, 2525, 2541						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. Fig. 1	Thru dummy to antenna receptacle	460KC (400% Mod.)	High frequency end of dial	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2. "	"	"	"	"	A5	Adjust for MINIMUM output.
3. "	"	1100KC	Tune to 1100KC signal	"	A6	Adjust for maximum output.
The following step is not necessary unless tuner has been tampered with or associated circuits have been repaired. If necessary, remove dial scale to expose tuning slugs (A7, A8).						
4. Fig. 1	Thru dummy to antenna receptacle	1100KC	Tune to 1100KC signal	Across voice coil	A7, A8	Adjust for maximum output. Repeat step 3.
5.	With radio installed in car and antenna fully extended, tune to a weak station near 1100KC and adjust A6 for maximum output.					

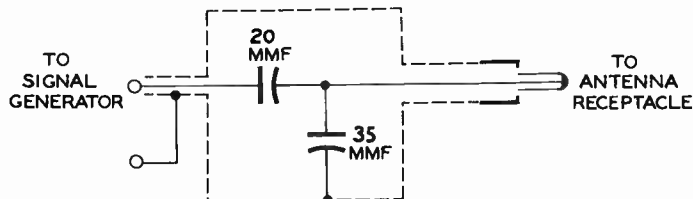


FIG. 1

### HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H899

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**BLAUPUNKT MODEL  
Wolfsburg 9160**

## PARTS LIST AND DESCRIPTIONS

### TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	EF89/6DA6 ①	V4	Det. - AVC - AF Amp.	EBC91/6AV6 ①
V2	Mixer-Osc.	ECH81/6AJ8 ①	V5	Output	EL84/6BQ5 ①
V3	IF Amplifier	EF89/6DA6 ①			

① Domestic type listed may not be directly interchangeable in some instances.

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						SPRAGUE PART No.
	CAP.	VOLT.	BLAUPUNKT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	32	385	KO761/24x						R2600 *
B	32	385							
C2	50	18	KO742/9n	PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206
C3	50	18	KO742/9n	PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206
C4	50	15	KO746/9n	PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206

\* Not normally in distributors stock. Available thru distributor on order to manufacturer.

### FIXED CAPACITORS

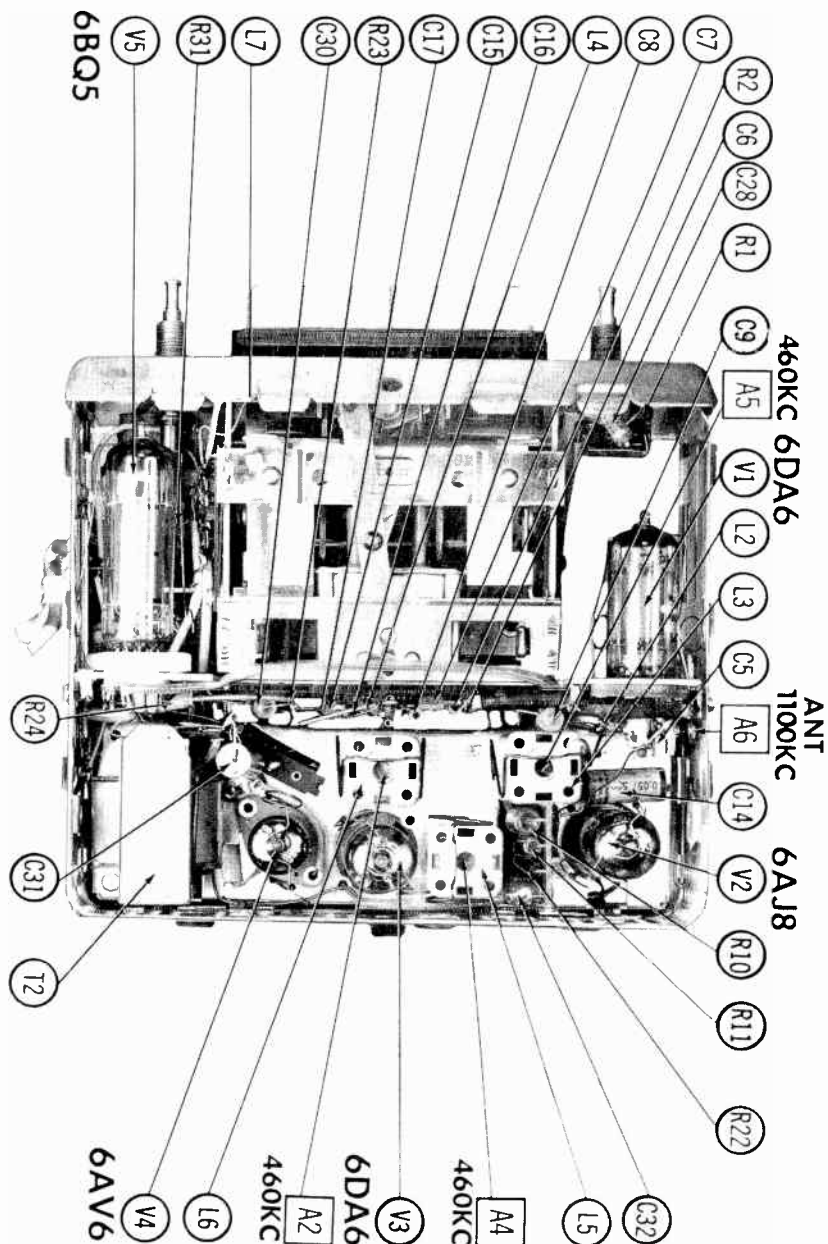
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					NOTES	
	CAP.	VOLT.	BLAUPUNKT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.		SPRAGUE PART No.
C5	10-60		TK6/15x						
C6	40		KO842/67n						2%
C7	500		KO847/55n	BPD-0005	DD-501	L10T5	UC-535	5GA-T5	2%
C8	65		KO842/73n						
C9	.01	500	KO792/41n	P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C10	.01	500	KO792/41n	P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C11	.05	125	KO786/66n	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C12	100		KO844/74n	NPO-SI 100	TCZ-100	CTA6T1C	ZT-531	5TCC-T1	5%
C13	50		KO845/51n	NPO-SI 50	TCZ-50	CTA6Q5C	ZT-545	5TCC-Q5	10%
C14	.05	500	KO792/48n	P688N-05	DF-503	CUB6S5	GEM-615	6TM-S5	
C15	480		KO1013/36z						2%
C16	35		KO101/7z						
C17	480		KO809/72n						2½%
C18	30		KO843/50n						10%
C19	.01	500	KO792/41n	P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C20	1		KO841/2n	NPO-SI 1.0	TCZ-1			5TCCB-V1	25%
C21	.005	500	KO792/67n	P688N-005	D6-502	CUB6D5	GEM-625	6TM-D5	
C22	.01	500	KO792/41n	P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C23	90		KO845/57n						
C24	.005	500	KO792/67n	P688N-005	D6-502	CUB6D5	GEM-625	6TM-D5	
C25	.005	500	KO792/67n	P688N-005	D6-502	CUB6D5	GEM-625	6TM-D5	
C26	.1	125	KO786/69n						10%
C27	50		KO845/51n	NPO-SI 50	D6-500	L10Q5	ZT-545	5TCC-Q5	10%
C28	.005	250	KO792/67n	P688N-005	D6-502	CUB6D5	GEM-625	6TM-D5	
C29	90		KO645/57n						
C30	.01	500	KO792/41n	P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C31	.005	1000	KO776/66n	P1088N-005		CUB10D5	GEM-1025	10TM-D5	
C32	.05	500	KO792/48n	P688N-05	DF-503	CUB6S5	GEM-615	6TM-S5	
C33	.05	500	KO784/48n	P688N-05	DF-503	CUB6S5	GEM-615	6TM-S5	
C34	.1	125	KO770/85n						10%
C35	.025	1000	KO802/45n	P1088N-025					
C36	.1	125	KO766/69n						10%
C37	.1	125	KO786/69n						10%
C38	.05	250		P468N-05	DF-503	CUB4S5		4TM-S5	

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BLAUPUNKT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
RIA	1meg		WI749/15x					Volume Tone
B	Switch	½						

## CHASSIS—TOP VIEW





# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS

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

ITEM No.	RATING		BLAUPUNKT PART No.	NOTES	ITEM No.	RATING		BLAUPUNKT PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R2	100K		W1782/70n		R17	5meg		W1782/94n	
R3	1meg		W1782/85n		R18	1meg		W1782/85n	
R4	100K		W1782/70n		R19	500K		W1782/80n	
R5	5000Ω		W1782/50n		R20	500K		W1782/80n	
R6	1meg		W1782/85n		R21	250K		W1782/77n	
R7	30K		W1782/62n		R22	50K		W1782/65n	
R8	50K		W1782/65n		R23	500K		W1782/80n	
R9	1000Ω		W1782/40n		R24	1000Ω		W1782/40n	
R10	30K	2	W1812/62n		R25	30Ω		W1782/17n	
R11	5000Ω	1	W1802/50n		R26	100Ω		W1792/25n	
R12	100K		W1782/70n		R27	80Ω		W1793/24n	
R13	5000Ω	1	W1802/50n		R28	500Ω	2	W1840/28n	
R14	100K		W1782/70n		R29	200Ω	1	W1802/29n	
R15	250K		W1782/77n		R30	200Ω	1	W1802/29n	
R16	1meg		W1782/85n		R31	40Ω	2	W1856/17n	

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BLAUPUNKT PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Antenna Coil	WC2199/2z					
L2	Antenna Coil	WC2204/2z					
L3A	IF Trap						
L4	RF Choke	ZF 723/1z					
L5	Osc. Coil	WC2205/2z					
L6	Input IF	ZF 721/1z					
L7	Output IF	ZF 721/2z					
L8	FIL Choke	WC2115/1z					
L8	"A" Lead Choke	ED706/1z					

## TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	BLAUPUNKT PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.	Triod PART No.
T1	8V @ 1A	240V @ .045A		TF722/10z						

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES	
	PRI.	SEC.	BLAUPUNKT PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.		Triod PART No.
T2	30	: 1	TF27/52z							

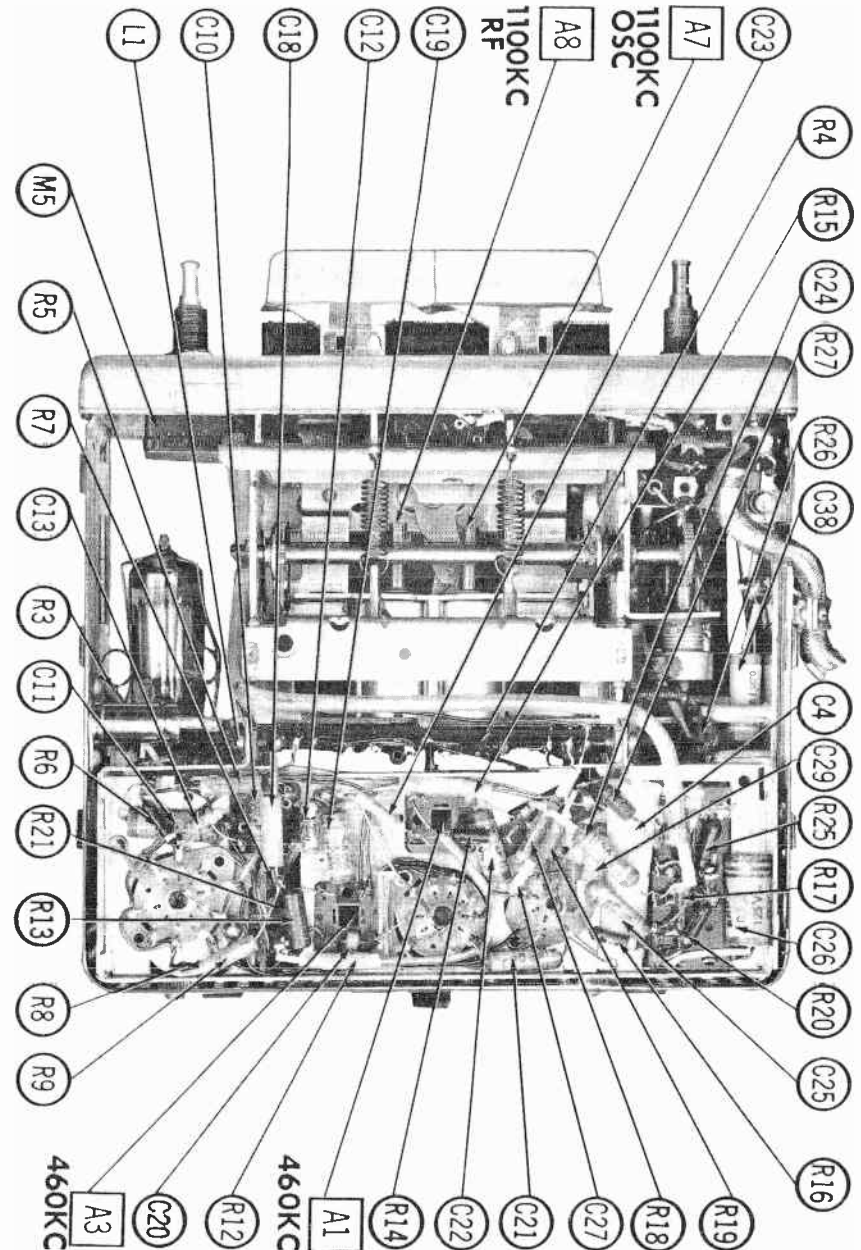
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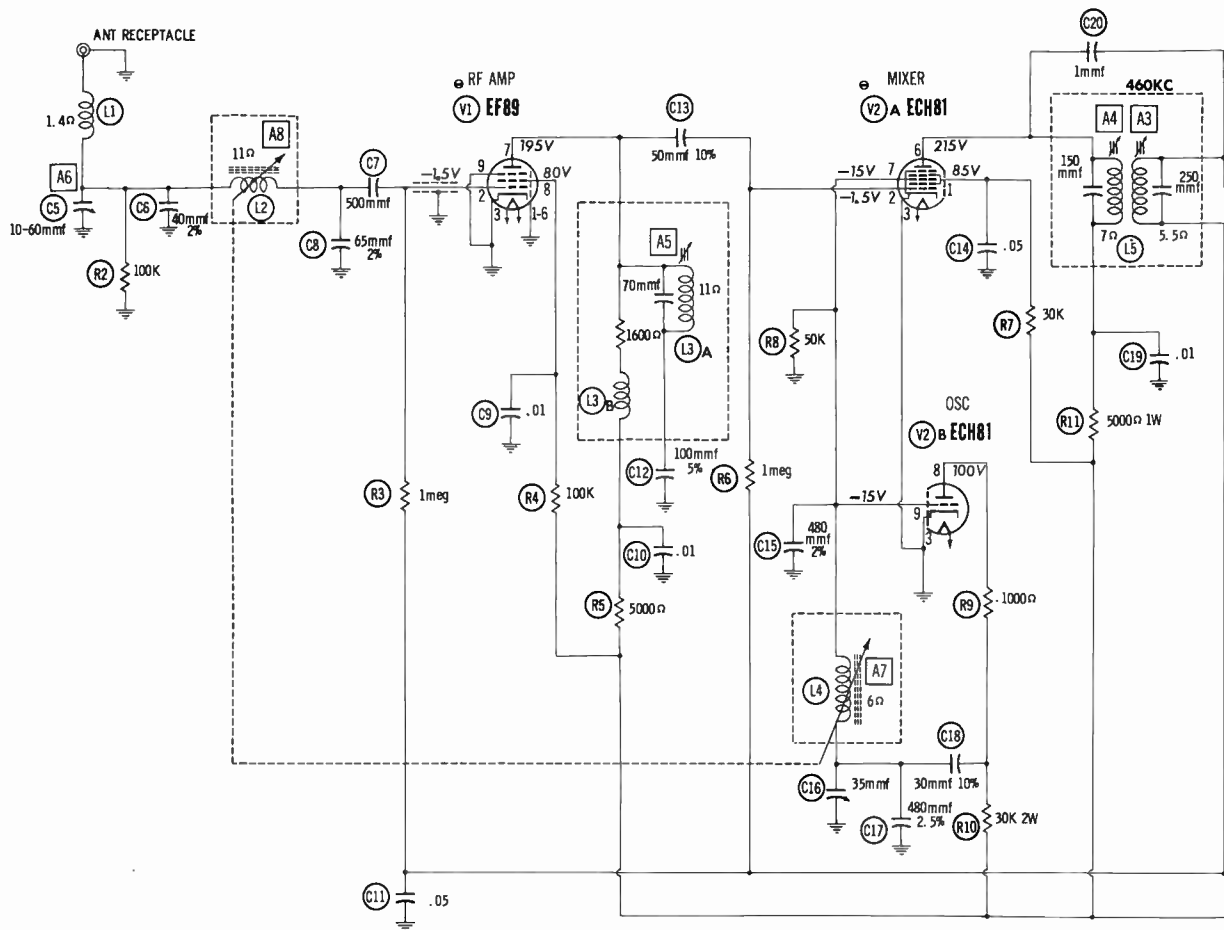
ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA				NOTES
				BLAUPUNKT PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter Interrupter	6V 12V	115% 115%	SM702/1z SM702/2z ①				① For 12 Volt versions

## SELENIUM RECTIFIER

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	CURRENT (Measured)		BLAUPUNKT PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M2	.045A		XZ737/2x		61-1345	D-84 ①②	① Silicon Type ② Connect series resistor, 10Ω min.

## CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	EF89	0Ω	2.3meg	0Ω	.5Ω	0Ω	0Ω	†17100Ω	†100K	0Ω
V2	ECH81	†30K	2.3meg	0Ω	.5Ω	0Ω	†5500Ω	50K	†31K	50K
V3	EF89	0Ω	1.3meg	0Ω	.5Ω	0Ω	0Ω	†5500Ω	†100K	0Ω
V4	EBC91	1.5meg	0Ω	.5Ω	0Ω	350K	500K	†300K		
V5	EL84	500K	500K	0Ω	.5Ω	0Ω	NC	†440Ω	NC	†500Ω

† MEASURED FROM OUTPUT OF M1  
 NC NO CONNECTION

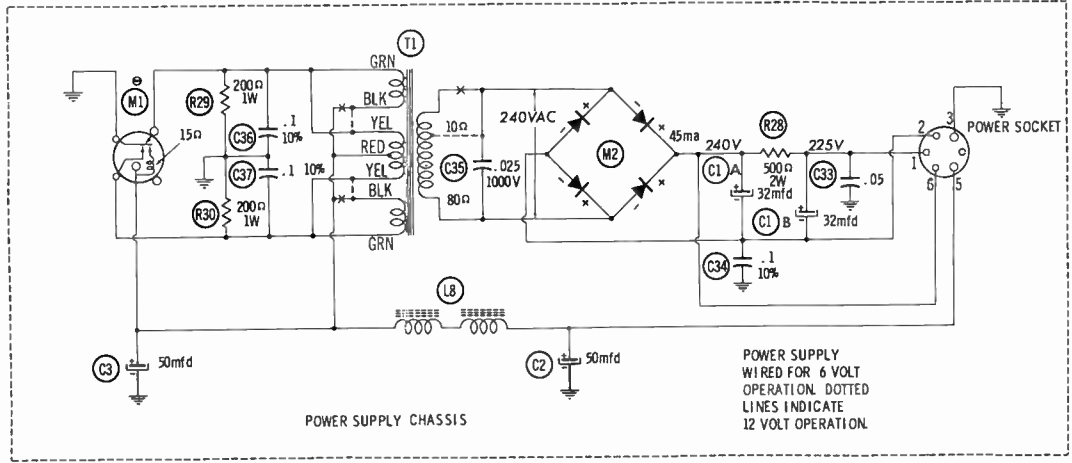
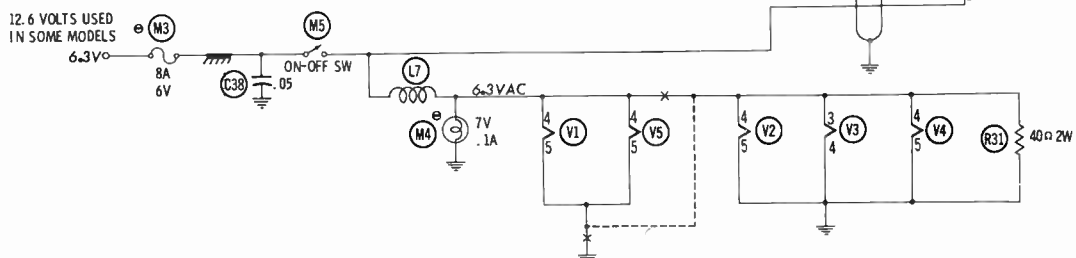
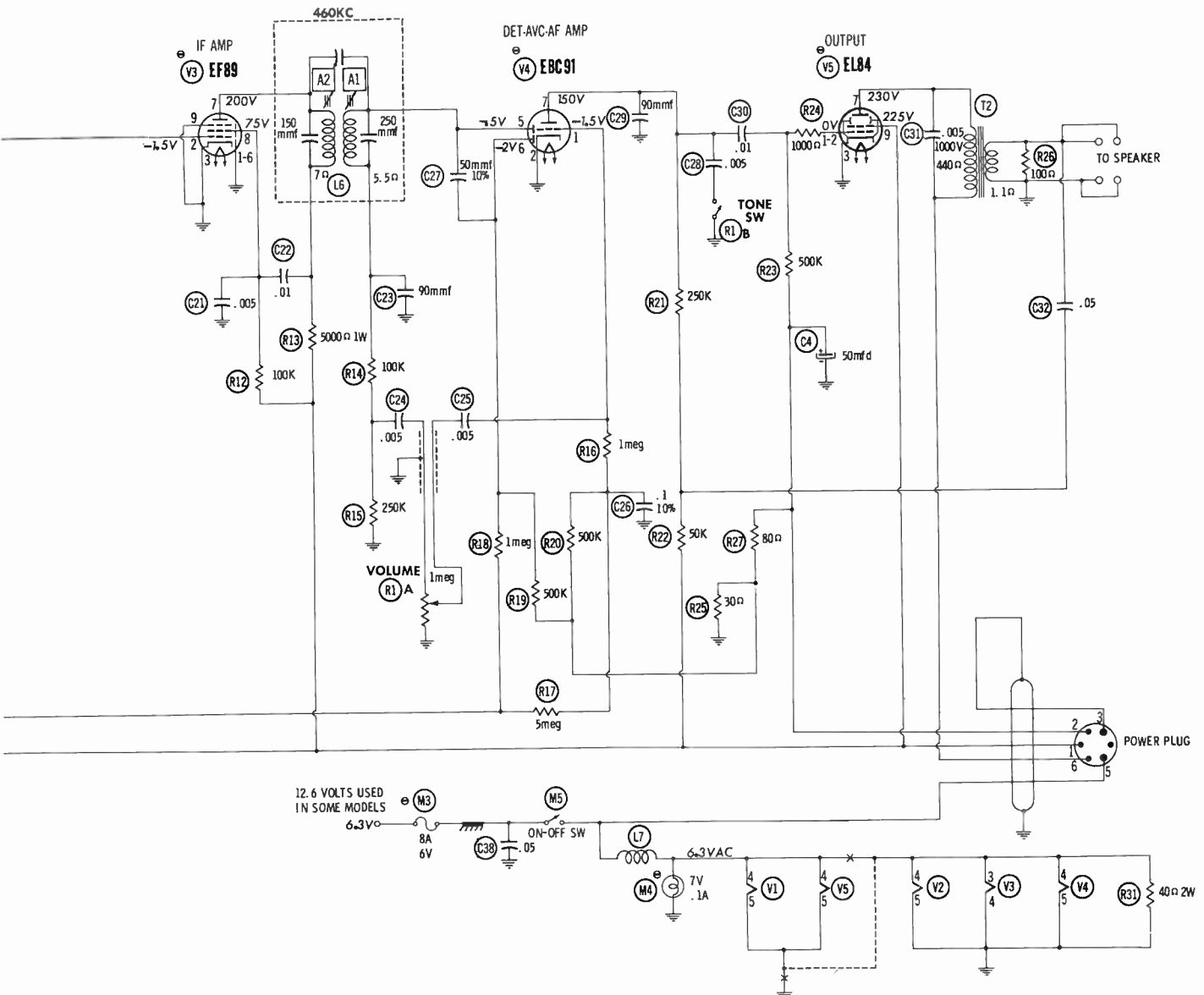
- DC voltage measurements taken with vacuum tube voltmeter  
 AC voltages measured at 1000 ohms per volt.
- Socket connections shown as bottom views.
- Measured values are from socket pin to common negative.
- Battery voltage maintained at 6.3 volts for voltage readings.
- Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
- Volume control at maximum, no signal applied for voltage measurements.

⊗ SEE PARTS LIST FOR ALTERNATE  
 VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM  
 NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACIT STANDARD NOTATION SCHEMATIC  
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**BLAUPUNKT MODEL  
Wolfsburg 9160**

## PARTS LIST AND DESCRIPTIONS (Continued)

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BLAUPUNKT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3		8A 6V	SG704/1N *	FA741/9n				

\* Part #SG704/3n used in 12 Volt versions.

### MISCELLANEOUS

ITEM No.	PART NAME	BLAUPUNKT PART No.	NOTES
M4	Lamp	GL701/1x	TV, 1.1A (6 Volt Versions)
	Lamp	GL701/2x	14V, 0.1A (12 Volt Versions)
M5	Switch	SH825/1x	Power On-Off
	Plug	SE718/1x	Connecting Cable
	Socket	FA717/1x	Connecting Cable
	Printed Board	PT4021/1z	

### CABINETS & CABINET PARTS

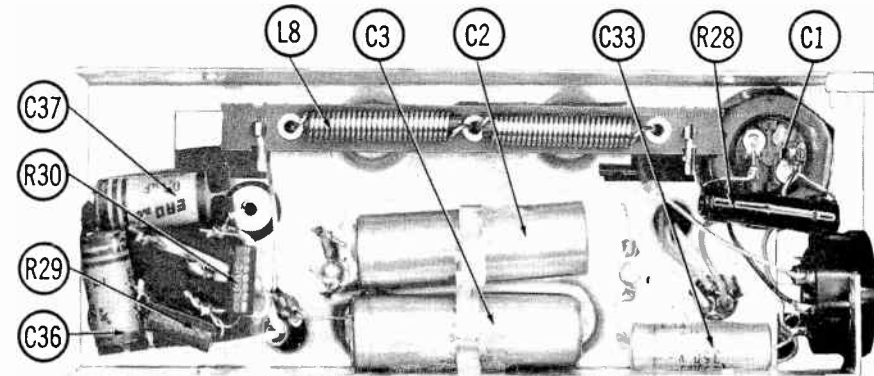
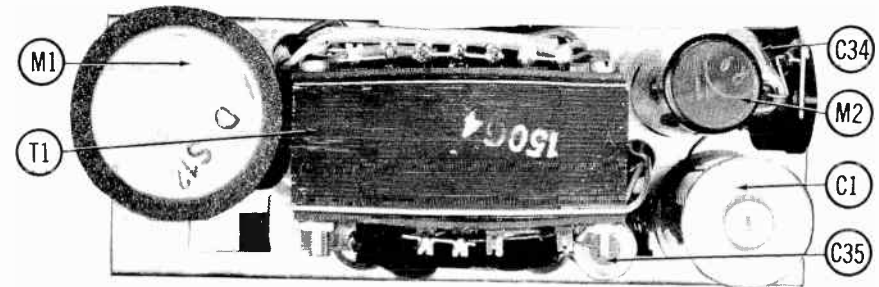
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

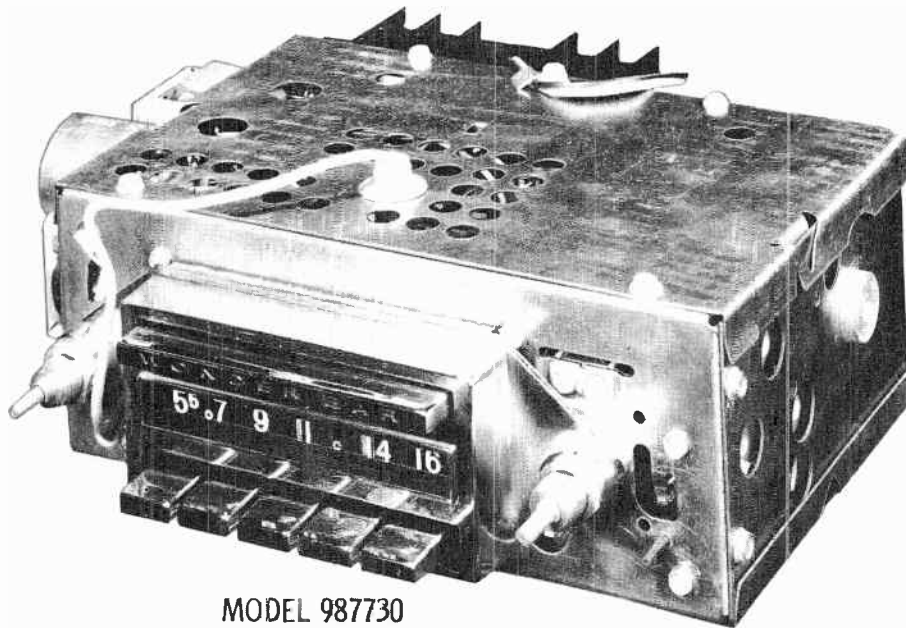
NAME	PART NO.	DESCRIPTION
Pushbutton	KF792/6z	On, Includes Rubber Gasket
Pushbutton	KF792/5z	Off, Includes Rubber Gasket
Pushbutton Set	EY756/16z	
Cabinet	MG830/1z	Power Supply
Cabinet Casing	MG840/3z	Radio, Includes Bushing Type Capacitor
Cover	MG831/2x	Power Supply
Front Plate	MG819/3z	Radio
Top Plate	MG820/3x	Radio
Bottom Plate	MG791/11x	Radio
Dial Pointer	SZ2186/3x	
Dial	SQ2180/9z	Includes Reflector

### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Shielded Hook-up Wire .....	8524 (Stranded) Available in Ten Colors
Bonding Strap .....	Use BELDEN No. 8885
	8661

## POWER CHASSIS





MODEL 987730

TRADE NAME	Chevrolet Model 987730; Corvette Model 3748611 (For 1958 Chevrolet or Corvette Automobiles)	
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana.	
TYPE SET	Battery Operated Custom Built AM Automobile Receiver with Transistorized Output	
TUBES (Five)	Types 12DZ6 RF Amplifier, 12AD6 Converter, 12EA6 IF Amplifier, 12DV8 Det.-AVC-AF Amp. 12AL8 Trigger	
POWER SUPPLY	12 Volt Storage Battery	RATING 2.3 Amp. @ 12.6 Volts DC (5Amp. when seeking)
TUNING RANGE—BROADCAST	540-1600KC	

CHEVROLET MODELS  
987730, 3748611

## ALIGNMENT INSTRUCTIONS

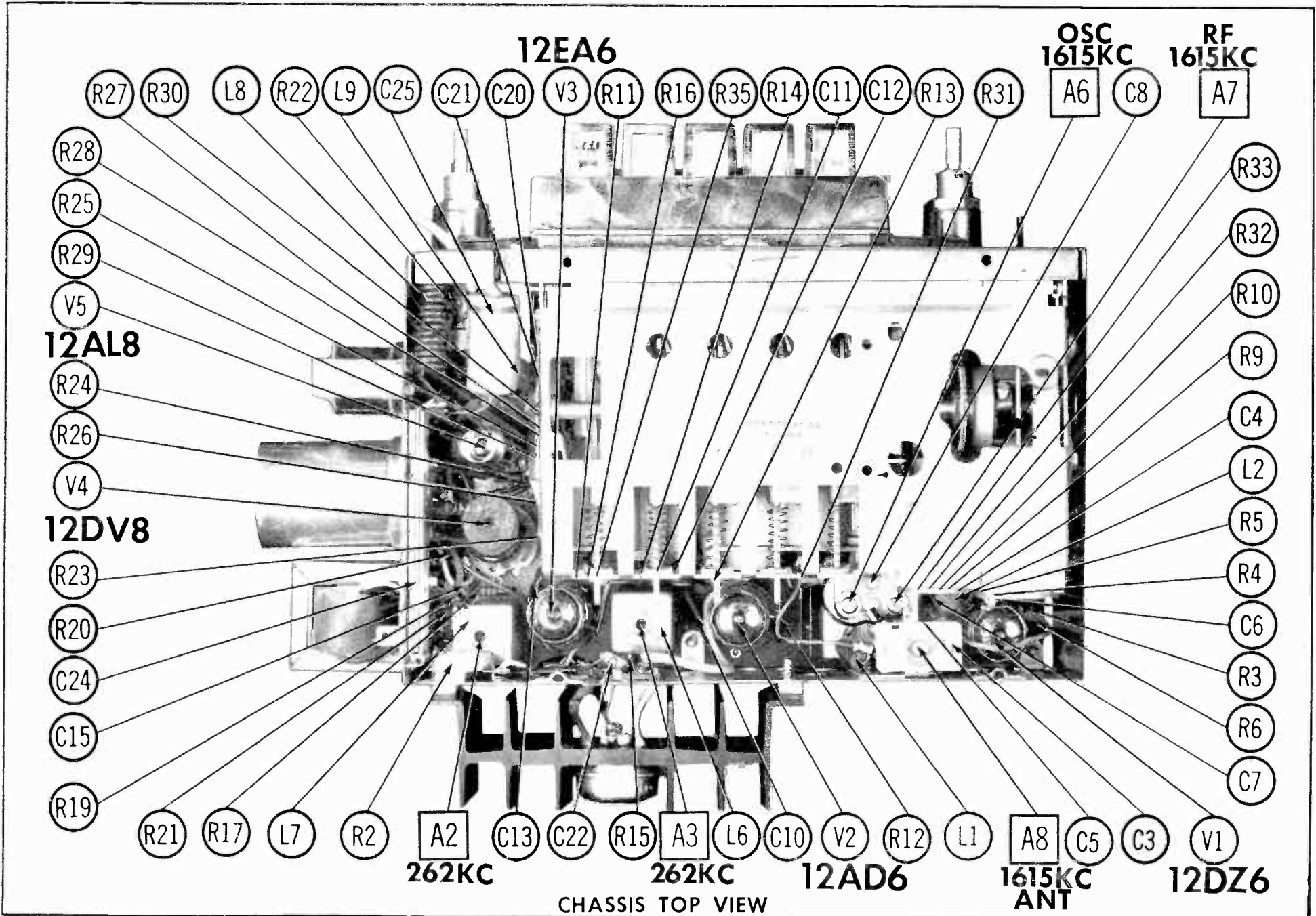
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. Set tone control to treble. Set sensitivity switch to maximum (position 1).						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262KC (400v Mod.)	High frequency end stop.	Across voice coil.	A1, A2, A3, A4.	Put a .070" feeler gauge in slot against high freq. stop. Tune manually until treadle bar arm is against gauge. Remove gauge. Adjust for maximum output.
Check setting of Osc. Coil core (A5). Rear of core should be 1 5/8" from mounting end of coil form.						
2. 68mmf.	High side to antenna connector. Low side to chassis.	1615KC	High frequency end stop.	Across voice coil.	A6, A7, A8	Put a .070" feeler gauge in slot against high freq. stop. Tune manually until treadle bar arm is against gauge. Remove gauge. Adjust for maximum output
3. "	"	600KC	Tune to 600KC signal.	"	A9, A10	Adjust for maximum output.
4. "	"	1400KC	Tune to 1400K signal.	"	A7, A8	"
With radio installed in car and antenna fully extended, tune in a weak station near 800KC and adjust A8 for maximum output.						
POINTER ADJUSTMENT						
With radio tuned to a 1100KC signal, adjust pointer adjustment so that pointer coincides with 1100KC mark on dial.						
PUSHBUTTON ADJUSTMENT						
1. Pull pushbutton to the left and out			3. Press button in firmly.			
2. Tune manually to desired station.			4. Repeat for remaining buttons.			

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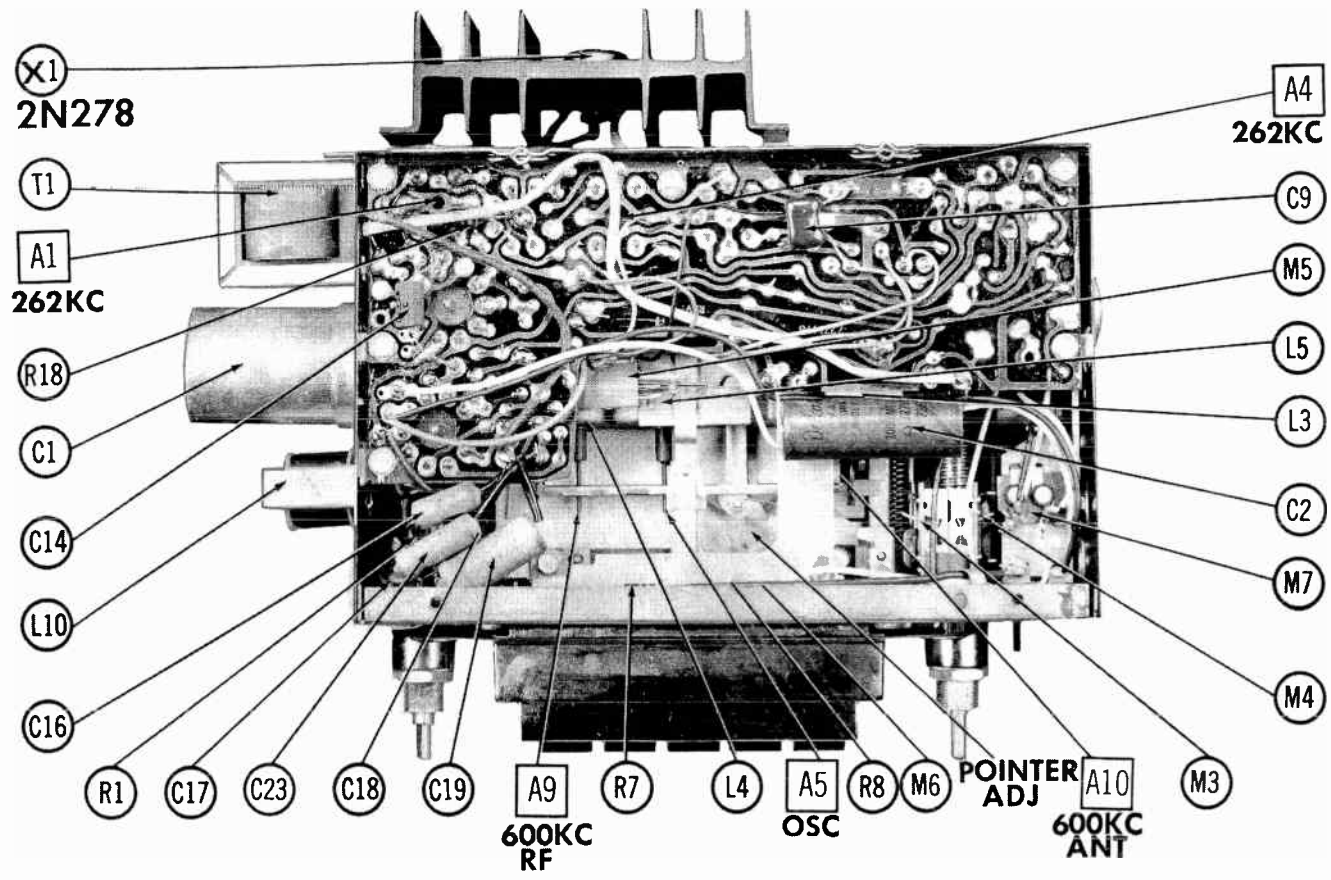
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CHASSIS BOTTOM VIEW

# PARTS LIST AND DESCRIPTIONS

## TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES	ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12DZ6		V3	IF Amplifier	12EA6	
V2	Converter	12AD6		V4	Det. -AVC-AF Amp.	12DV8	
				V5	Trigger	12AL8	

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N278	Output					

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	1000	16	7269719	AFH3-00-97		WP300			R2424 *
B	500	16							
C	20	16							
C2	1000	1	7271557	PRS6V1000	BBI1000-6	TC310	TD-1000-6	MTH-06100	TVA-1104

\* Non Catalog Item

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3A	7-73		7268558						
B	42								
C4	.022	200	6611	P288N-022	DD-203	CUB2S22	GEM-2122	2TM-S22	
C5	68		6369	BPD-000068	DD-480	L10Q68	UC-5468	5GA-Q68	
C6	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C7	39		6366	DI-000039	DD-390	L10Q39	UC-5439	5GA-Q39	
C8A			7268828						
B									
C									
D									
C9	200		7270129	1469-0002		5R5T2	MCE237	MS-32	5%
C10	2000		6352	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C11	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C12	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C13	100		1219498	1469-0001		5R5T1	MCE230	MS-31	5%
C14	100		1219498	1469-0001		5R5T1	MCE230	MS-31	5%
C15	47		6367	1468-000047	D6-470	1W5Q47	UC-5447	1FM-447	
C16	.0047	200	6631	P288N-0047	D6-472	CUB8D47	GEM-6247	6TM-D47	
C17	1000		6350	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C18	47		6367	BPD-000047	DD-470	L10Q47	UC-5447	5GA-447	
C19	22	200	6691	P288N-22		CUB2P22	GEM-2022	2TM-P22	
C20	1000		6350	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C21	.022	200	6611	P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C22A	220		6375	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
B	220			BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C23	.05	200	6612	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C24A			1220885						
B									
C25	.47	50	7269780	P288N-47		CUB2P47	GEM-2047	2TM-P47	

# PARTS LIST AND DESCRIPTIONS (Continued)

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	
RIA	2meg	1/2	1121125				
B	5meg	1/2					
C	Switch						
R2	100Ω	2	7289637		39-100		FL-150

Note 1. Tone Control is open at center of range.

## RESISTORS

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

ITEM No.	RATING		DELCO PART No.	NOTES	ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R3	2.2meg		1239		R20	1meg		1235	
R4	1.5meg		1237		R21	47K		1219	
R5	10K		1137		R22	270K		1228	
R6	150K		1225		R23	18Ω		1104	
R7	33K			Note 1.	R24	1meg		1235	
R8	1800Ω			Note 1.	R25	3.9meg 5%		7271627	
R9	1.5meg		1237		R26	4.7meg 5%		1221136	
R10	680K		1233		R27	2.2meg		1239	
R11	3.3meg 5%		1241		R28	330Ω			Note 3.
R12	33K		1217		R29	2200Ω			Note 4.
R13	680K		1233		R30	4.7meg		1243	
R14	1.5meg		1237		R31	.47Ω	(WW)	7270608	Fuse Type
R15	220Ω		1117		R32	10Ω		1101	
R16	1.5meg		1237		R33	100Ω			Note 5.
R17	33K 5%		1217		R34	150Ω	1	1152	
R18	33K		1217	Note 2.	R35	56Ω		1110	
R19	18K 5%		7271632						

Note 1. Part of M6

Note 2. Not used in some versions.

Note 3. Some versions may use 820Ω 5% in this application (Part # 7268231)

Note 4. Some versions may use 3900Ω 5% in this application (Part # 7268280)

Note 5. Some versions may use 120Ω 5W in this application (Part # 7271576)

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Ant. Coil	7255738	19-1004	BC-565	4610		6.5 microhenries
L2	Ant. Coil	1221138					
L3	RF Choke	7269684					1772 microhenries
L4	RF Coil	1221138					
L5	Osc. Coil	1221150					
L6	Input IF	1220990	16-8756	BC-317	13-PH1		
L7	Output IF	1221124					
L8	"A" Lead Choke	1217646					1.4 microhenry
L9	Hash Choke	1217846					1.4 microhenry; Note 1

Note 1 Not used in some versions.

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 C)	DELCO PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.
L10	.92A	.75Ω	.011HY	7271321						

## TRANSFORMER (INTERSTAGE)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES	
	PRI.	SEC.	DELCO PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.		Triad PART No.
T1	11	:1	1221159							

## PARTS LIST AND DESCRIPTIONS (Continued)

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES	
			DELCO PART No.	Holldarson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordarson PART No.		Triod PART No.
	PRI.	SEC.								
T2	8.5Ω	3-4Ω	7271448							

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
				DELCO PART No.	QUAM PART No.	
	SIZE	FIELD	V. C. IMP.			
SP1	6" x 9"	PM	3-4Ω	7270531①	69A3	① Used in Model 987730 ② Used in Model 3748611
	6" x 9"	PM	3-4Ω	7270428②		

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			DELCO PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
M1		7½A 32V	455107						

### MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M2	Lamp	7268030	#1891
M3	Switch	7268030	Power Solenoid
M4	Switch	7268030	Tredle Solenoid
M5	Switch	7269872	Station Selector
M6	Switch	7271431	Sensitivity
M7	Relay	7270545	Tuning Operating
M8	Speaker Ass'y.	Model 987765	Complete, for 6" x 9" Rear Seat Speaker Installation
	Speaker Ass'y.	Model 987766	Complete, for 6" Rear Seat Speaker Installation

## PARTS LIST AND DESCRIPTIONS (Continued)

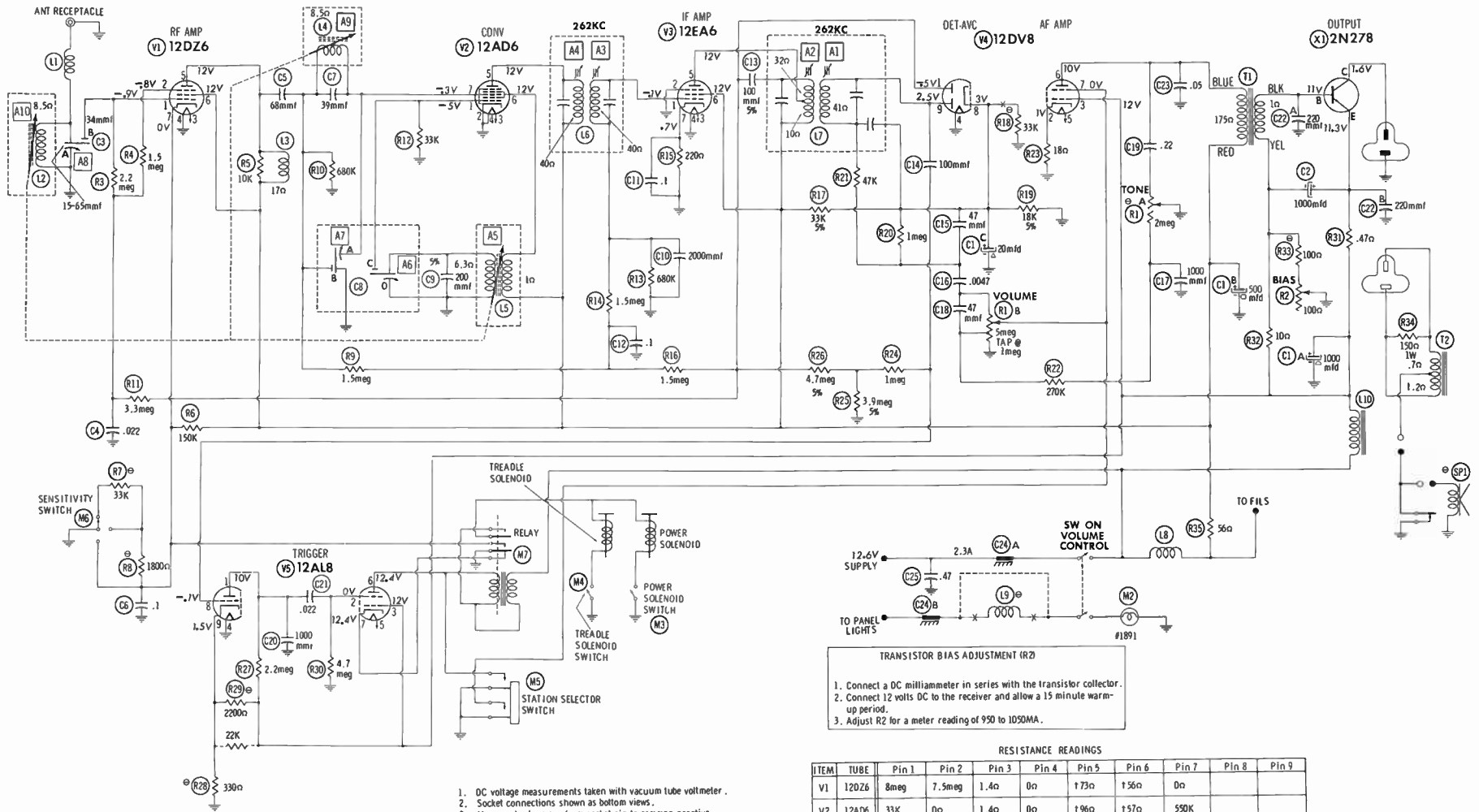
### CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	7270288	Wing, Model 987730
Knob	7270289	Dummy, Model 987730
Knob	1990894	Control, Model 987730
Knob	7268744	Wing, Model 3748611
Knob	1990864	Volume, Model 3748611
Knob	1990863	Manual Tuning, Model 3748611
Push Button	1221132	Five Used, Incl. Front Bearing Plate and Slides
Pointer Ass'y.	7270456	
Dial	7270397	

### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8885
Bonding Strap .....	Use BELDEN No. 8661



⊙ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION  
 DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

- DC voltage measurements taken with vacuum tube voltmeter.
- Socket connections shown as bottom views.
- Measured values are from socket pin to common negative.
- Battery voltage maintained at 12.6 volts for voltage readings.
- Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
- Volume control at maximum, no signal applied for voltage measurements.

**TRANSISTOR BIAS ADJUSTMENT (R2)**

- Connect a DC milliammeter in series with the transistor collector.
- Connect 12 volts DC to the receiver and allow a 15 minute warm-up period.
- Adjust R2 for a meter reading of 950 to 1050MA.

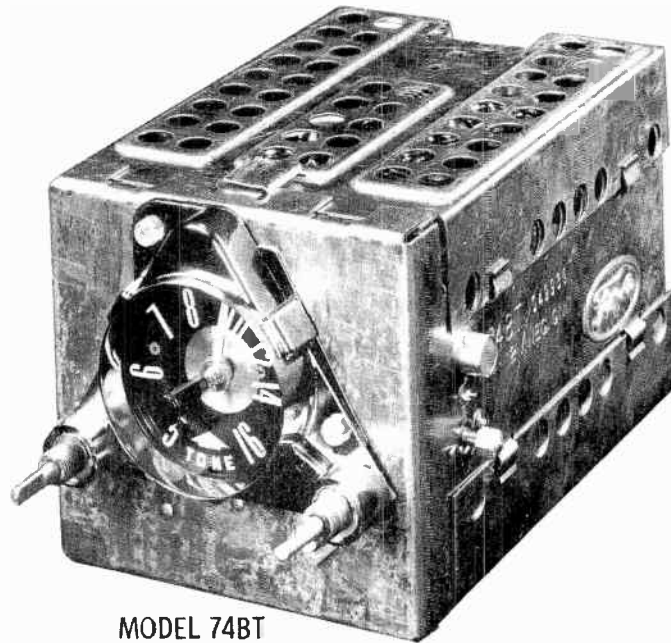
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	8meg	7.5meg	1.4Ω	0Ω	†73Ω	†56Ω	0Ω		
V2	12AD6	33K	0Ω	1.4Ω	0Ω	†96Ω	†57Ω	550K		
V3	12EA6	500K	0Ω	1.4Ω	0Ω	†67Ω	†56Ω	220Ω		
V4	12DV8	1.9meg	18Ω	†.6Ω	0Ω	1.4Ω	†230Ω	0Ω	7500Ω	1meg
V5	12AL8	†630K	4.7meg	†.5Ω	0Ω	1.4Ω	†170Ω	†1.1Ω	3meg	230Ω

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.  
 † MEASURED FROM JUNCTION OF LB AND L1D

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
 Howard W. Sams & Co., Inc. 1958





MODEL 74BT

TRADE NAME	Ford Models 74BT (FEM-18805-A) For 1957 Ford Trucks, 84BT (FEM-18805-B) For 1958 Ford Trucks		
MANUFACTURER	Bendix Radio Div. of Bendix Aviation Corp., Baltimore 4, Maryland		
TYPE SET	Battery Operated Custom Built AM Truck Receiver With Transistorized Output		
TUBES (Four)	Types 12CX6 RF Amplifier, 12AD6 Converter, 12CN5 IF Amplifier, 12J8 Det.-AVC-AF Amplifier		
POWER SUPPLY	12 Volt Storage Battery	RATING	1.6 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540 - 1600KC		

## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. Speaker should be connected.						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5KC (400v Mod)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2. Fig. 1	Thru dummy to antenna receptacle.	1605KC	"	"	A5, A6 A7	"
3. With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and adjust A7 for maximum output.						
Step 4 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, A10) out of coils but not out of coil forms. Repeat step 2.						
4. Fig. 1	Thru dummy to antenna receptacle.	1200KC	1200KC	Across voice coil	A8, A9, A10	Adjust for maximum output. Repeat steps 2 and 4.
POINTER ADJUSTMENT						
With radio tuned to the high frequency end stop, move pointer to coincide with "1" of 16 on dial scale.						

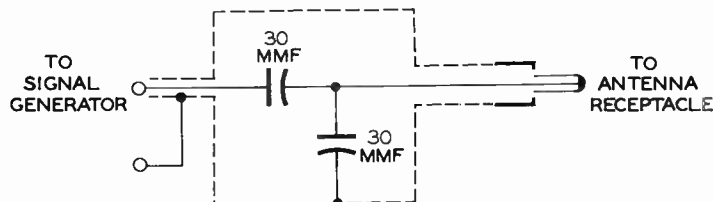


FIG. 1

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FORD MODELS 74BT (FEM-18805-A),  
84BT (FEM-18805-B)

# PARTS LIST AND DESCRIPTIONS

## TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES	ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12CX6		V3	IF Amplifier	12CN5	
V2	Converter	12AD6		V4	Del.-AVC-AF Amp.	12J8	

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N285A	Output	CBS-2N285A			2N351	

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲250	16	220353-4	AFH2-02-05		PWP200.3			R2564 *
B	■250	16							

\* Non-Catalog Item

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	BENDIX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	4-75		219083-1						
C3	150		220350-501						
C4	33			1469-00015	DD-151	22R5T15	MCB236	MS-315	10% N750 10% ①
C5	.1	100	220352-3	N750-DI 33	DTN-33	C10Q33U		5TCU-Q33	
C6	7.5		220212-9	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	10%
C7A	60-230								
B	370-445		219082-3						
C	80								
C8	51		220332-16						
C9	.1	100	2090059A-104M	P288N-1	DF-104	C10Q51U	GEM-201	2TM-P1	N750 10%
C10	68		220332-15	N750-DI 68	DTN-68	CUB2P1		5TCU-Q68	N750
C11	100		220332-14	NPO-DI 100	DD-101	C10Q68U	ZT-531	5TCC-TI	10%
C12	.008	1600	2090059A-822K			L10T1	GEM-1628		10%
C13	1200								10%
C14	10000		220332-3	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	10%
C15	400		220267-10						10%

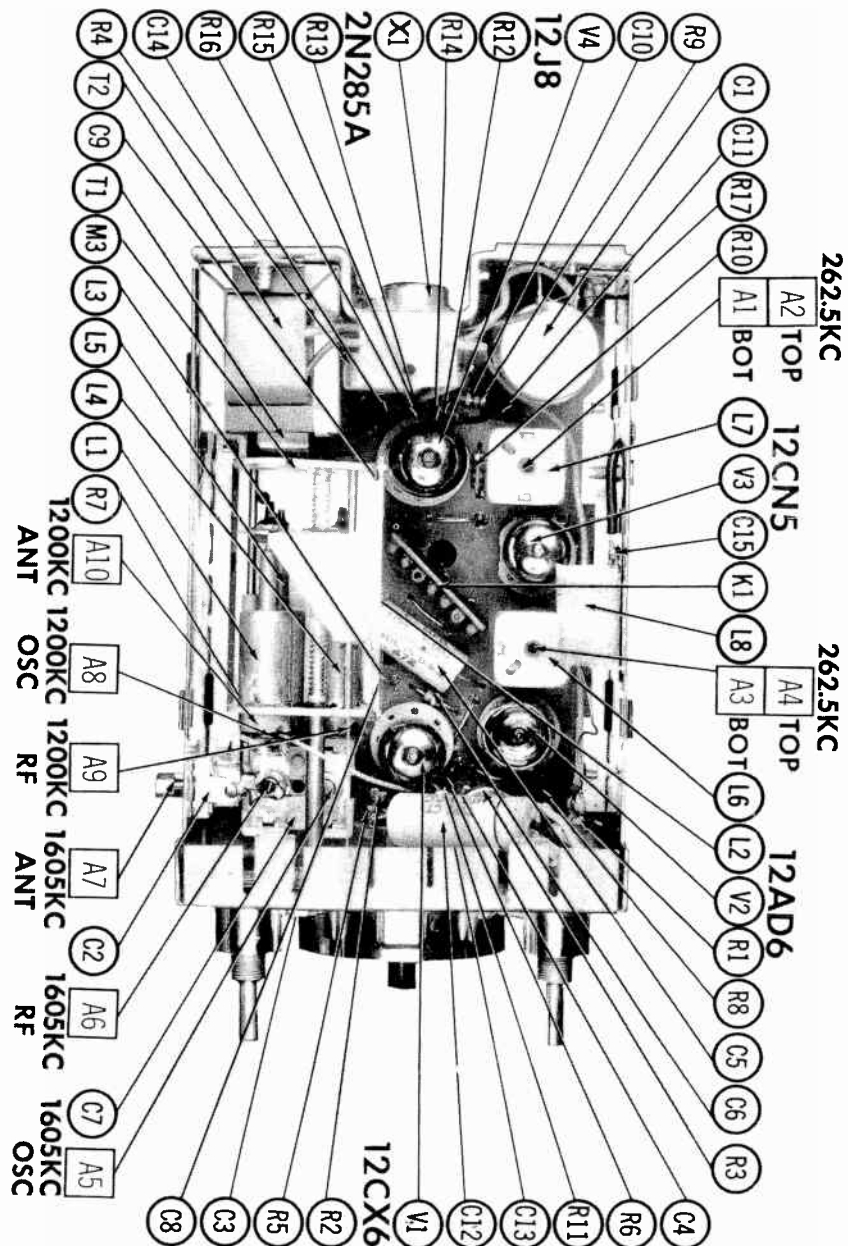
① Some versions may use 68mmf 10% in this application (Part #220332-15).

② Some versions may use .003mfd 10% paper in this application (Part #220098-50).

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
RIA	1meg	½	2090253-1					Volume, Tap ② 500K Power On-Off Tone Sensitivity Transistor Bias, 150Ω Stop
B	Switch	½						
R2	2 meg	½	2090257-1					
R3	1000Ω	2(W/W)	219682-2					
R4	600Ω	2(W/W)	219682-3					

# CHASSIS—TOP VIEW



## PARTS LIST AND DESCRIPTIONS (Continued)

### RESISTORS

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

ITEM No.	RATING		BENDIX PART No.	NOTES	ITEM No.	RATING		BENDIX PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R5	680K		220604B-684	Note 1	R12	15meg		220604B-156	6" Cupron Wire
R6	220K		220604B-224		R13	82Ω		220603B-820	
R7	10meg		220604B-106		R14	28Ω Cold		220629-4	
R8	33K		220604B-333		R15	1Ω		2090438-4	
R9	47K		220604B-473		R16	47Ω		220604B-470	
R10	2.2meg		220604B-225		R17	1.26Ω		2090438-3	
R11	47K		220603B-473						

Note 1. Some versions may use 3.3meg in this application (Part #220604B-335).

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BENDIX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Antenna Coil						Wound on 22K Wound on 18K  130 Microhenries
L2	RF Coil	216154-4	*				
L3	IF Trap Coil	2090088-2					
L4	Mixer Coil		*				
L5	Osc. Coil		*				
L6	Input IF	2090239-1					
L7	Output IF	2090237-1					
L8	"A" Lead Choke	216188-12					

\* Part of Tuner Assembly M3.

### TRANSFORMER (INTERSTAGE)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES	
	PR1.	SEC.	BENDIX PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stoncor PART No.	Thordorson PART No.		Triod PART No.
T1	3	:1	2090259-1							

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES	
	PR1.		BENDIX PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stoncor PART No.	Thordorson PART No.		Triod PART No.
T2	22Ω Tap	3-4Ω	2090260-1							

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BENDIX PART No.	QUAM PART No.	
SP1	5" X 7"	PM	3-4Ω	655061-2 (2090182-1)	57A21	

### COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BENDIX PART No.	REPLACEMENT DATA
K1	Audio Couplate and Mixer Grid	390mmf, 10000mmf, 100Ω, 2.2meg, 15meg, 22meg, 33meg	2090147-1	

## PARTS LIST AND DESCRIPTIONS (Continued)

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BENDIX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	LAG	5A 32V	AGA-5	221633-6	301005.	155004	AGA5	HAF

### MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M2	Lamp	1892	#1892
M3	Tuner Ass'y	2090227-1	
	Main Printed Board	2090346-1	Less Tubes and T1
	Small Printed Board	2090347-1	Less X1

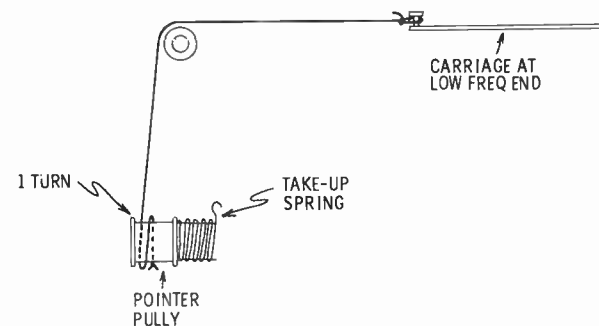
### CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

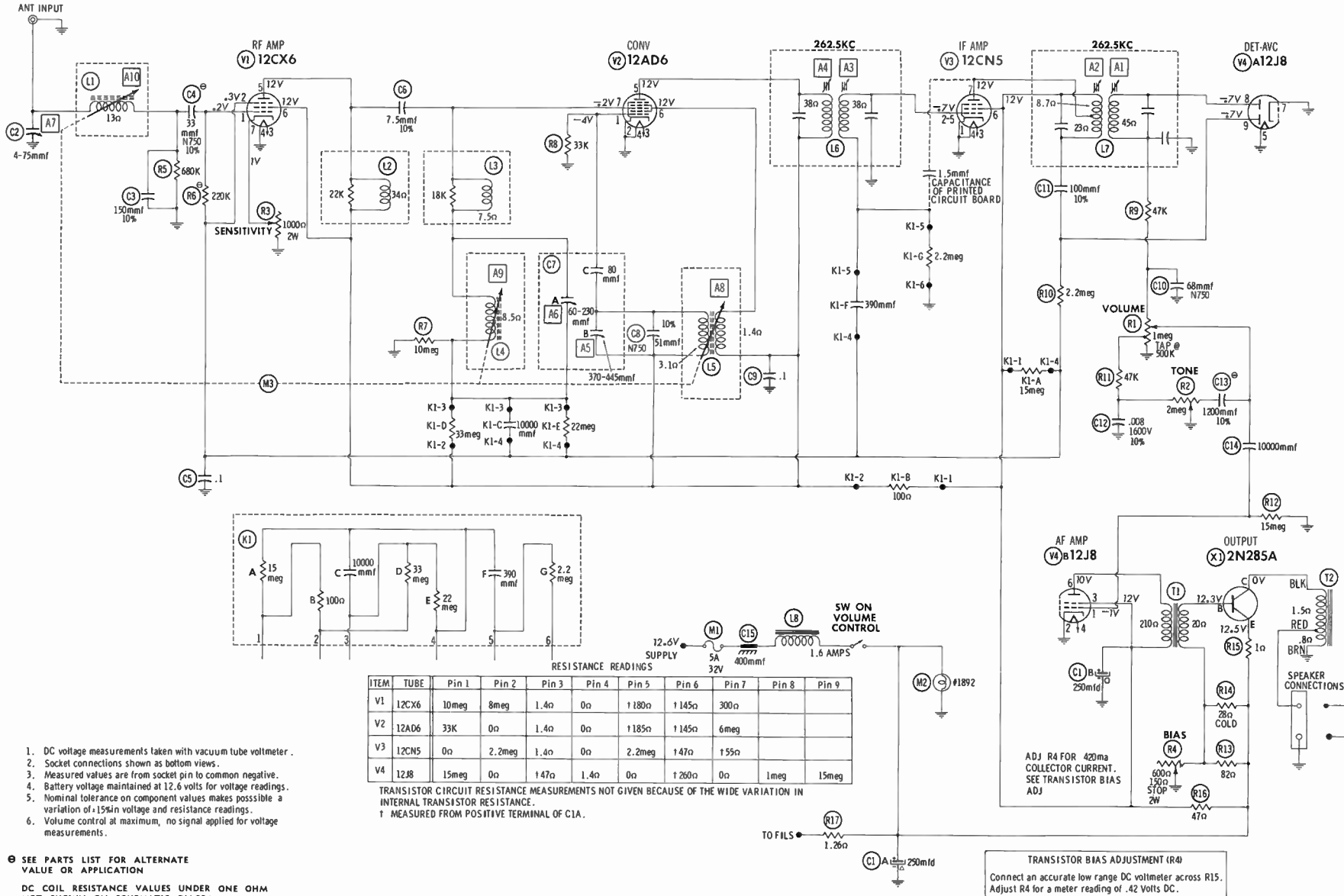
NAME	PART NO.	DESCRIPTION
Bezel	2090184-1	Dial
Knob	2090149-1	Bezel, Volume, On-Off
Knob	2090149-2	Bezel, Tuning
Knob	2090153-1	Control
Knob	2090148-1	Tone
Cover	2090158-1	Top or Bottom
Pointer	2090169-1	Calibration
Dial	2090170-1	Backplate
Subdial	2090155-1	

### WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors  
8524 (Stranded) Available in Ten Colors  
Shielded Hook-up Wire ..... Use BELDEN No. 8885  
Bonding Strap ..... Use BELDEN No. 8661



### DIAL CORD STRINGING



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of .15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊗ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION  
 DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

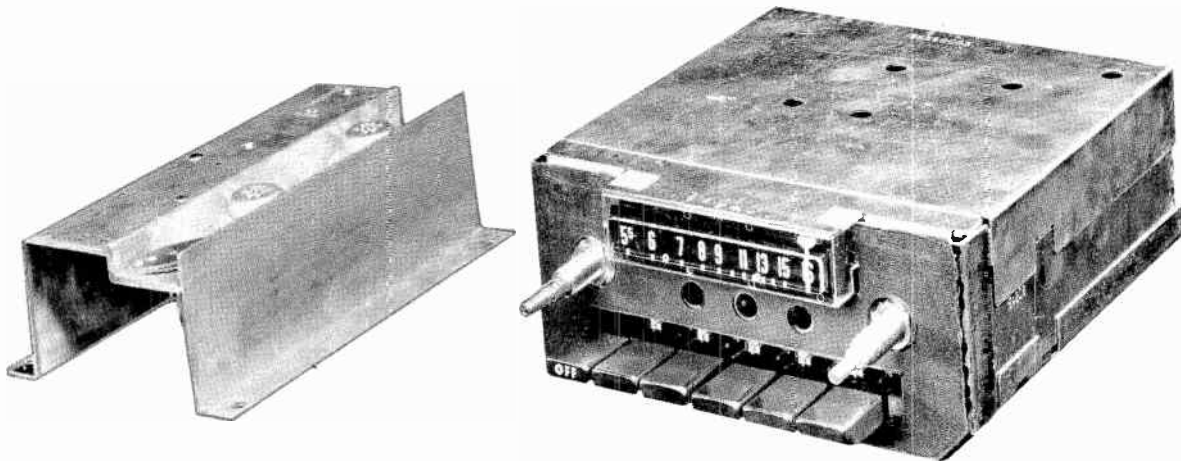
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12CX6	10meg	8meg	1.4n	0n	† 180n	† 145n	300n		
V2	12AD6	33K	0n	1.4n	0n	† 185n	† 145n	6meg		
V3	12CN5	0n	2.2meg	1.4n	0n	2.2meg	† 47n	† 55n		
V4	12J8	15meg	0n	† 47n	1.4n	0n	† 260n	0n	1meg	15meg

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.  
 † MEASURED FROM POSITIVE TERMINAL OF C1A.

TRANSISTOR BIAS ADJUSTMENT (R4)  
 Connect an accurate low range DC voltmeter across R15. Adjust R4 for a meter reading of .42 Volts DC.





TRADE NAME	Ford Model 84MS (FEV-18805-F) For 1958 Ford Thunderbird Automobiles		
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois		
TYPE SET	Battery Operated Custom Built AM Automobile Receiver with Transistorized Output		
TUBES (Four)	Types 12AF6 RF Amplifier, 12AD6 Converter, 12BL6 IF Amplifier, 12DL8 Det.-AVC-AF Amp.		
POWER SUPPLY	12 Volt Storage Battery	RATING	1.8 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	535KC to 1610KC		

## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Top and bottom covers should be in place. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .lmfd	High side to antenna receptacle. Low side to chassis.	262.5KC (400% Mod)	High Freq. End Stop	Across Voice Coil	A1, A2, A3, A4	Adjust for maximum output.
2. Fig. 1	Thru dummy to antenna receptacle.	1610KC	"	"	A5, A6, A7	"
Steps 3 and 4 are not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, A10) 1/4" out of coils. (Alignment tool Motorola #66A76278 may be used). Repeat step 2.						
3. Fig. 1	Thru dummy to antenna receptacle.	1180KC	1 9/64" from High Freq. End Stop	Across Voice Coil	A8, A9, A10	Adjust for maximum output.
4. "	"	1610KC	High Freq. End Stop	"	A5, A6, A7	Adjust for maximum output. Repeat steps 3 and 4. Cement cores.
5. "	"	600KC @ 5 microvolts	Tune for 600KC signal	"	R3	Adjust for 1.79 volts output.
6.	With radio installed in car and antenna fully extended, tune in a weak station near 1200KC and adjust A7 for maximum output.					

### PUSHBUTTON ADJUSTMENT

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

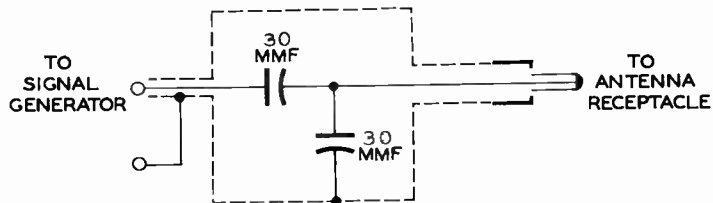


FIG. 1

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FORD  
MODEL 84MS (FEV-18805-F)

# PARTS LIST AND DESCRIPTIONS

## TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES
V1 V2	RF Amplifier Converter	12AF6 12AD6	

ITEM No.	USE	TYPE	NOTES
V3 V4	IF Amplifier Det. -AVC-AF Amp.	12BL8 12DL8	

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N178	Output	CBS-2N155	2N178		2N178	
X2	2N178	Output	CBS-2N155	2N178		2N178	

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A B C	100 500 100	16 16 16	23B580487	AFH3-00-90		WP300.51			R2884 *

Ⓛ In some versions C1B is 400mfd (C1 Part #23B542329).  
\* Non-catalog item.

### FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

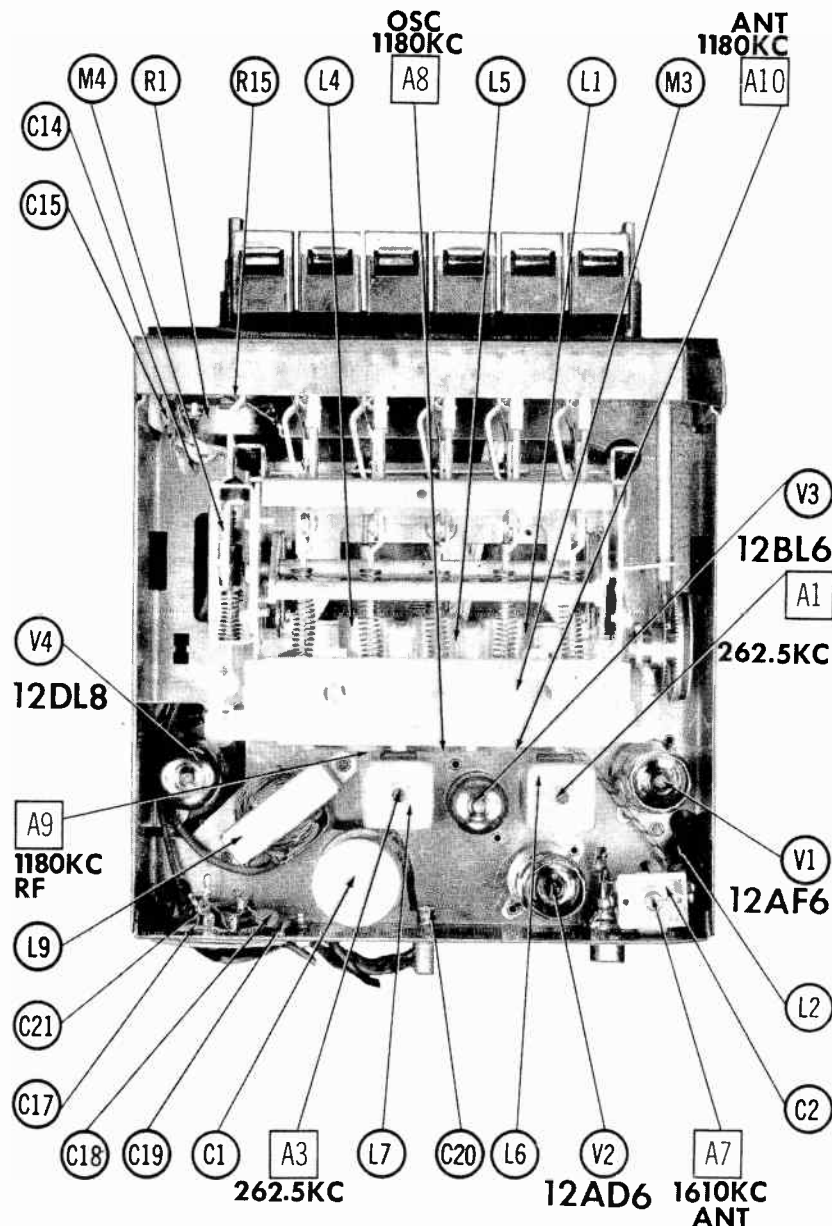
ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	20-180	200	20B580719						
C3	150		21R121228	N750-DI 150	DTN-150	C10T15U		5TCU-T15	N750 10%
C4	22		21R120539	N750-DI 22	DTN-22	C10Q22U		5TCU-Q22	N750 10%
C5	.1		8R121573	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C8	75-380		20K511138						
C7	47		21R114207	N750-DI 47	DTN-47	C10Q47U	NT-5447	5TCU-Q47	N750 10%
C8	47		21R114207	N750-DI 47	DTN-47	C10Q47U	NT-5447	5TCU-Q47	N750 10%
C9	47		21R125783						N750 5%
C10	400-520		20K580628						
C11	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C12	100		21R410038	N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750 10%
C13	100		21R410038	N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750 10%
C14	1000		21R410127	BPD-001	DD-102	BYA8D1	DC521	5HK-D1	
C15	1000		21R410127	BPD-001	DD-102	BYA8D1	DC521	5HK-D1	
C18	5000	21R115312	BPD-005	DD-502	BYA10D5	DC525	5HK-D5		
C17	220	21R410115	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22		
C18	220	21R410115	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22		
C19	220	21R410115	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22		
C20		21A580232							
C21		21A580232							

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A B	4meg	1(WW) 1(WW)	18B580007				UE3813	Tone Volume, Tap @ 500K
R2	400Ω		18B541877					Balance
R3	1000Ω		18K732740					Sensitivity

■ "STA-LOC" Equivalent: FF48L, OS1187, RU16T55, IS1887.

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS

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

ITEM No.	RATING		MOTOROLA PART No.	NOTES	ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R4	3.3meg		6K119407		R14	15meg		6R476065	
R5	1.5meg		6R6460		R15	56K		6K127541	
R6	8.2meg		6R5585		R16	10meg		6K119408	
R7	1500Ω		6R6038		R17	10Ω		6R118245	
R8	4700Ω		6K121847		R18	.33Ω		17K542316	
R9	1meg		6K124494		R19	7.5ΩCold		6K542314	
R10	3.3meg		6K121278		R20	.33Ω		17K542316	
R11	4.7meg		6K121277		R21	7.5ΩCold		6K542314	
R12	33K		6K121704		R22	10Ω		6R118245	
R13	47K		6K121687						

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Ant. Coil	24C535458					Note 1 Includes 15mmf Cap.
L2	RF Choke	24A538910					
L3	IF Trap Coil	24K560753		TV-193	6110		63 Microhenries
L4	RF Coil	24C535459					Note 1
L5	Osc. Coil	24C535456					Note 1
L6	Input IF	24K560419	16-6752	BC-350	12-H1	RF-3	
L7	Output IF	24B542371					
L8	RF Choke	24C539614	19-3180	TV-184	6180	VP-5	180 Microhenries

Note 1. Part of M3.

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 C)	MOTOROLA PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.	Triod PART No.
L9	1.8A	.3Ω	.004 Hy.	25K560710						

## TRANSFORMER (INTERSTAGE)

ITEM No.	Turns Ratio		REPLACEMENT DATA						NOTES	
	PRI.	SEC.1	MOTOROLA PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.		Triod PART No.
T1	5.5 :	1	25K542303							
	5.5 :	1								

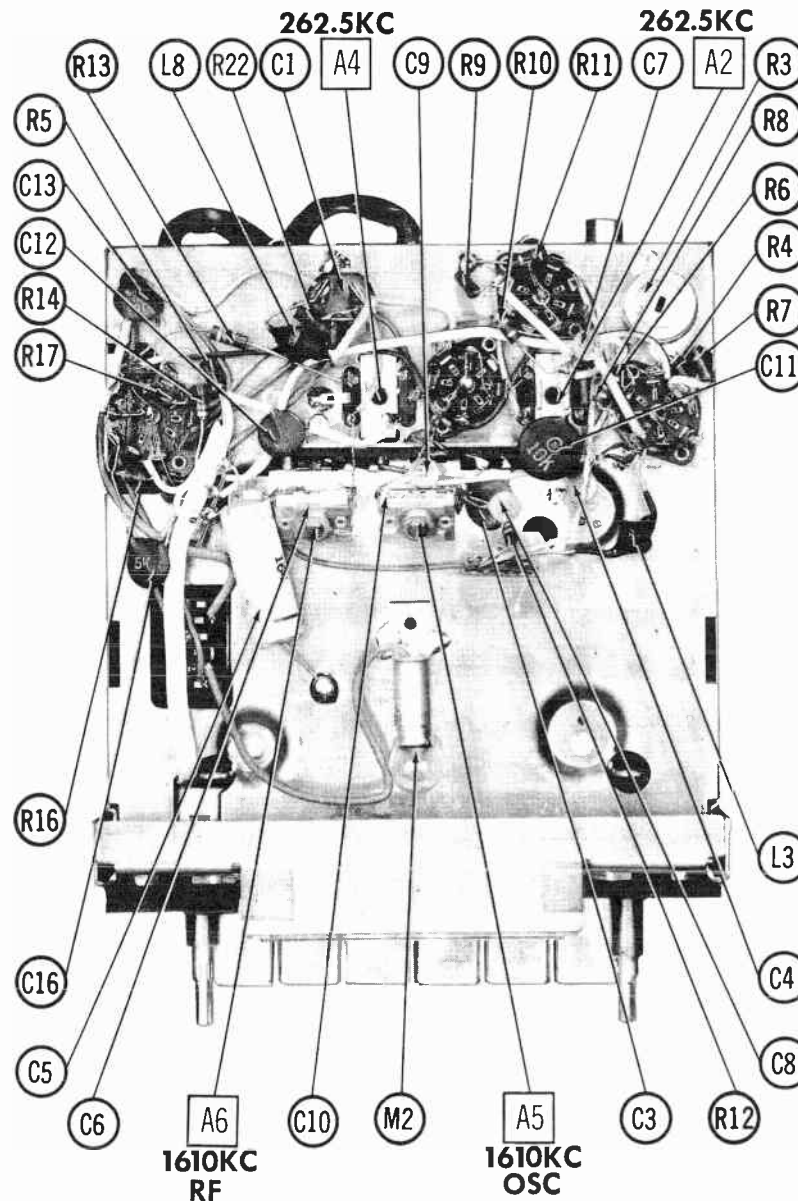
## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES	
	PRI.	SEC.	MOTOROLA PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.		Triod PART No.
T2	47Ω CT	3-4Ω	25K542313							

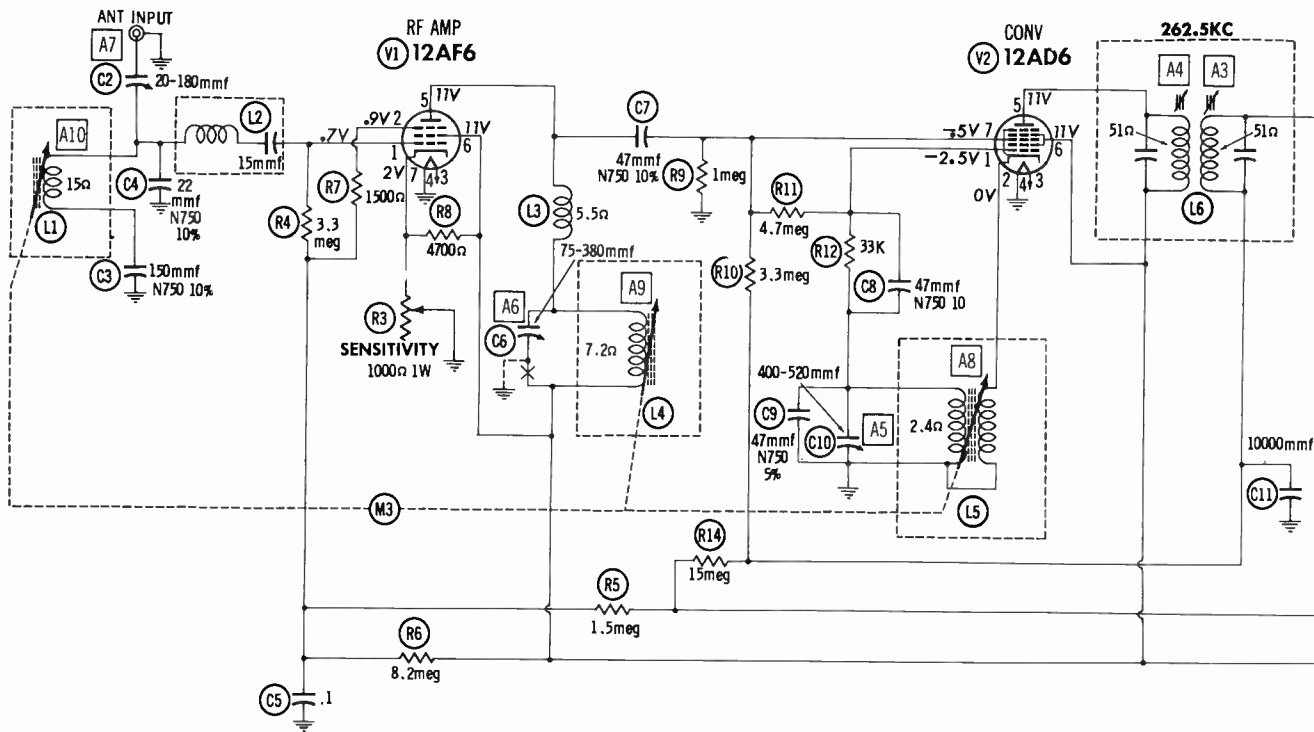
## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	6"x 9"	PM	3-4Ω	50D542405		

# CHASSIS—BOTTOM VIEW







RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AF6	9meg	9meg	1.2Ω	0Ω	†28Ω	†15Ω	550Ω		
V2	12AD6	33K	.6Ω	1.2Ω	0Ω	†66Ω	†15Ω	730K		
V3	12BL6	3.2meg	0Ω	1.2Ω	0Ω	†48Ω	†15Ω	0Ω		
V4	12DL8	5.3meg	10Ω	†15Ω	1.2Ω	0Ω	†120Ω	10meg	0Ω	1meg

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.  
 † MEASURED FROM POSITIVE TERMINAL OF C1A.

- DC voltage measurements taken with vacuum tube voltmeter.
- Socket connections shown as bottom views.
- Measured values are from socket pin to common negative.
- Battery voltage maintained at 12.6 volts for voltage readings.
- Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
- Volume control at maximum, no signal applied for voltage measurements.

BALANCE ADJUSTMENT (R2)

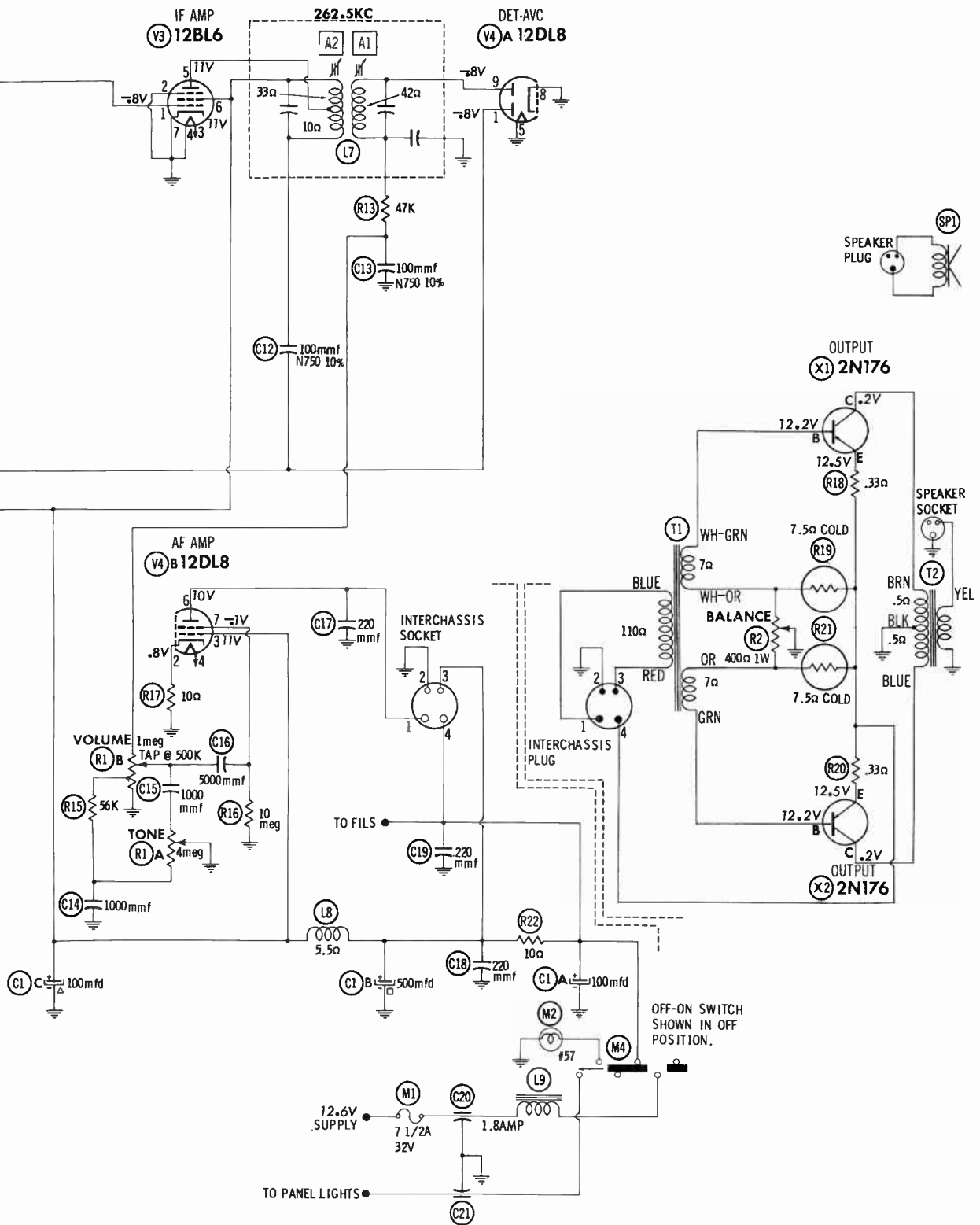
- After replacing a transistor, the bias should be checked.
- Set R2 to its mid-range.
  - Connect an accurate low range DC VTVM from the collector of X1 to the collector of X2.
  - Apply power to the receiver and allow a 15 minute warm-up period.
  - Adjust R2 for a zero meter reading.

SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACIT STANDARD NOTATION SCHEMATIC  
 © Howard W. Sams & Co., Inc. 1958





## PARTS LIST AND DESCRIPTIONS (Continued)

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1		7½A 32V	65R122346	9K581110				

### MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Lamp	65R535060	#57 (AT-229) Complete, Less Manual Tuning Shaft On-Off, Slide Type
M3	Tuner	77D560626	
M4	Switch	40A560051	

### CABINETS & CABINET PARTS

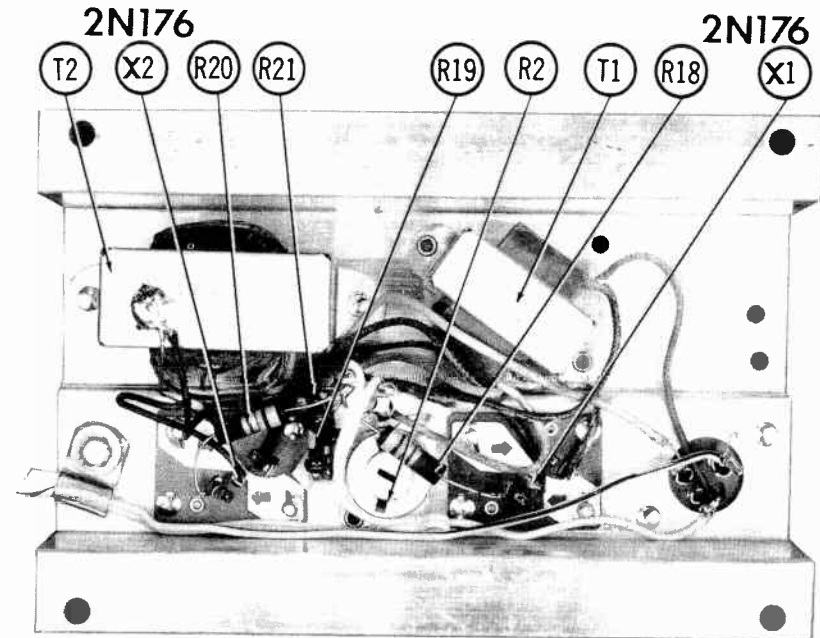
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

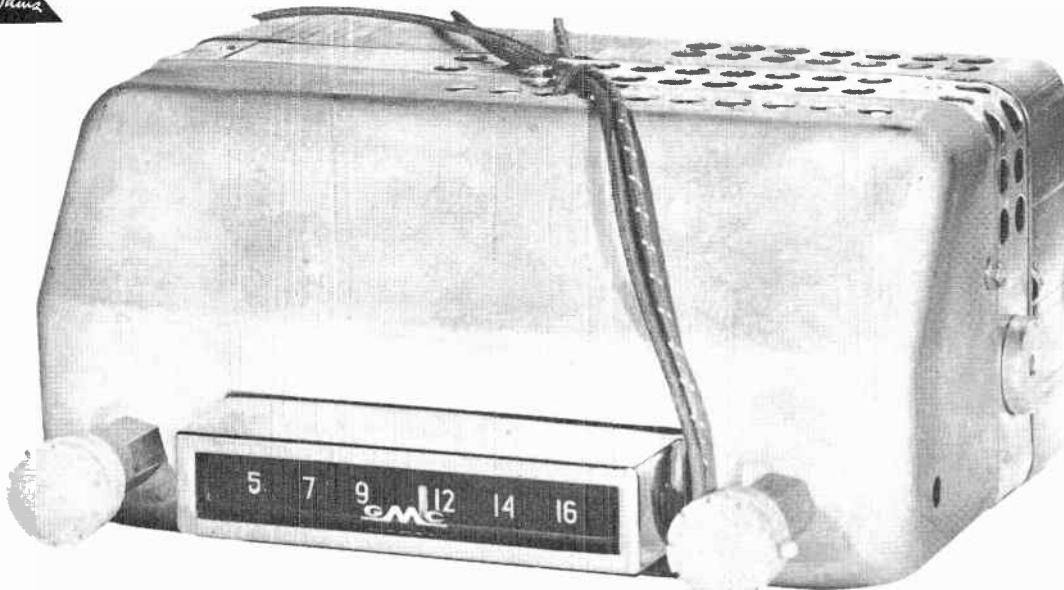
NAME	PART NO.	DESCRIPTION
Knob	36B539472	Volume & Tuning
Knob	36B560029	Disc, Tone & Dummy
Pushbutton	38B580075	Station Selector (5 used)
Pushbutton	38K580076	Off
Dial Scale	34B560031	

### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8885
Bonding Strap .....	Use BELDEN No. 8861

## POWER CHASSIS





TRADE NAME	GMC Model 2233398 ( For All GMC 12V Trucks )		
MANUFACTURER	Delco Radio, Div. of G. M. Corp., Kokomo, Indiana		
TYPE SET	Battery Operated Custom Built AM Automobile Receiver		
TUBES (Six)	Types 12BA6 RF Amplifier, 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 12V6GT Output, 0Z4 Rectifier		
POWER SUPPLY	12 Volt Storage Battery	RATING	2.4 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540-1600KC		

### ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1mfd	High side to Pin 7 (grid of 12BE6 (V2). Low side to chassis.	262KC (400v Mod.)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
Check setting of Osc. Coil Core (A5). Rear of core should be 1 25/32" from mounting end of coil form.						
2. 82mmf	High side to antenna receptacle. Low side to chassis.	1615KC	"	"	A6, A7, A8	Adjust for maximum output.
3. "	"	1000KC	Tune to 1000KC signal	"	A9, A10	"
4. "	"	1615KC	High frequency end stop	"	A7, A8	"
5.	With radio tuned to a 900KC signal, slide pointer on dial cord to coincide with 900KC mark on dial.					
With radio installed in car and antenna fully extended, tune in a weak station between 600KC and 1000KC. Adjust A8 for maximum output.						

### DIAL CORD



8 TURNS ON TUNING SHAFT

### HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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GMC MODEL  
2233398

# PARTS LIST AND DESCRIPTIONS

## TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BA6	
V2	Converter	12BE6	
V3	IF Amplifier	12BA6	

ITEM No.	USE	TYPE	NOTES
V4	Det. -AVC-AF Amp.	12AV6	
V5	Output	12V6GT	
V6	Rectifier	0Z4	

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	20	400	7282905	AFH2-51	B0400	FP234	TMD-50	D-215	TVL-2755
C1B	20	400							

### FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2A	7-102		7282799						
C2B	33								
C3	.05	400	8512	P488N-05	DF-503	CUB485	GEM-415	4TM-85	Note 1
C4	.05	400	8512	P488N-05	DF-503	CUB485	GEM-415	4TM-85	
C5A	10		G-100						
C5B	39		G-390						
C6A			7242454						
C6B									
C6C									
C6D									
C7	180		7257424						N150
C8	2000		8528	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C9	.01	800	8533	P888N-01	D6-103	CUB6S1	GEM-611	8TM-S1	Note 2
C10	.01	800	8533	P888N-01	D6-103	CUB6S1	GEM-611	8TM-S1	
C11	2000		8528	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	Note 3
C12	.008	800	H-802	P1088N-008	DD16-802	CUB10D6	GEM-1028	10TM-D6	
C13	.008	1800	8588	P1888N-008	DD18-802	CUB16D8	GEM-1828	M13-D8	
C14	.1	200	6890	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C15			1217848						

Note 1. Some versions may use 15mmf in this application (Part #6361).  
 Note 2. Some versions may use .05mfd in this application (Part #6512).  
 Note 3. Some versions may use 1000mmf in this application (Part #6527).

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg		7284211					Tone Volume
R1B	300K Switch						QJ-898A	

• "Concentrik" Equivalent: K-8 Kit, Base Elements & Shafts: B-13-129, P14-204 Panel B-13-132, R1-234 Rear 78-2 Switch

### RESISTORS

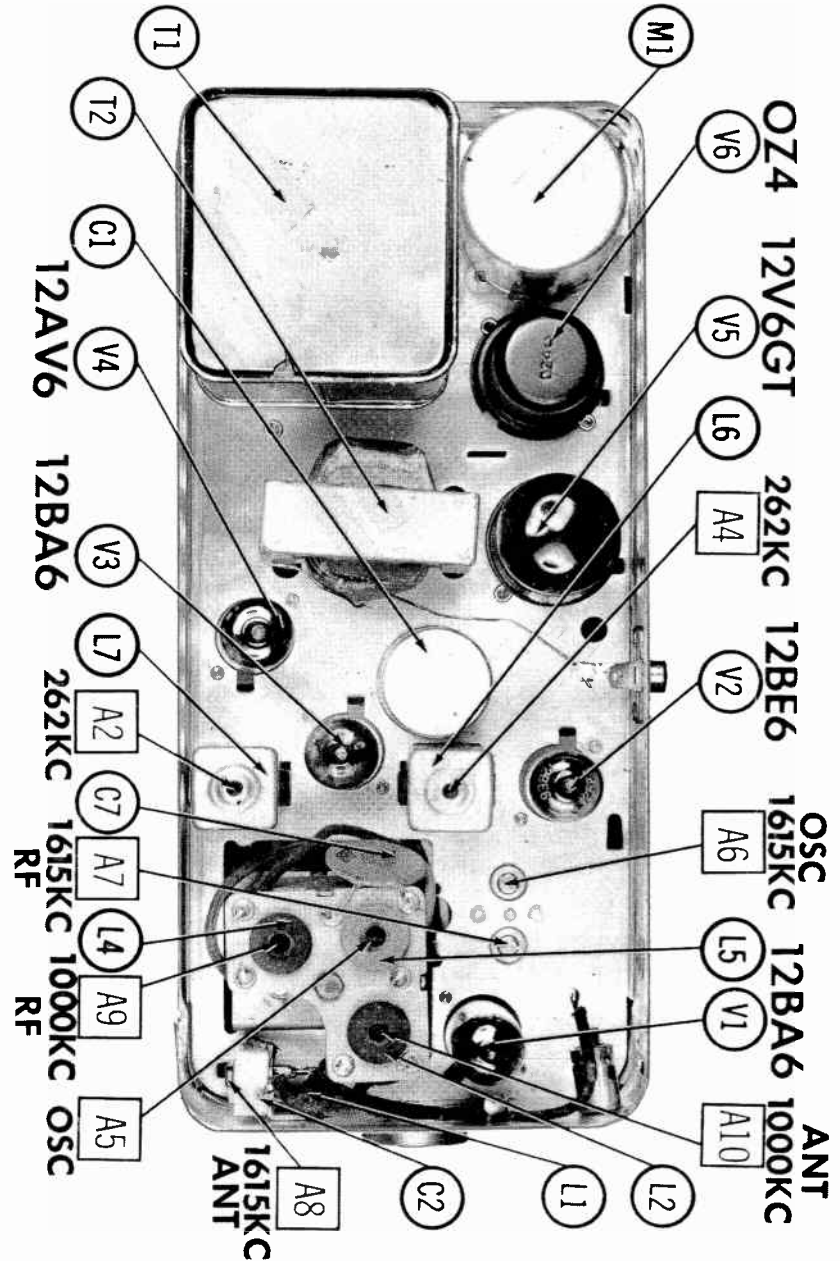
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R2	2.2meg		A-225	
R3	15K	1	B-153	
R4	15K		C-153	
R5	100Ω	2	A-101	
R6	330K		A-334	
R7	22K		A-223	
R8	150Ω		A-151	
R9	1meg		A-105	

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R10	47K		A-473	
R11	8.8meg		1244	
R12	220K		A-224	
R13	220K		A-224	
R14	330Ω	1(WW)	1156	Note 1
R15	15K	1	B-153	
R16	1800	2(WW)		Note 2

Note 1. Some versions may use 390Ω 1W in this application (Part #B-391).  
 Note 2. Manufacturer recommends replacing with 2700Ω 2W (Part #C-272) and 5600Ω 1W (Part #B-582) connected in parallel.

## CHASSIS—TOP VIEW





# PARTS LIST AND DESCRIPTIONS (Continued)

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Ant. Coil	7255738	19-1004	BC-565	4610		8.5 microhenries
L2	Ant. Coil	7258914					25 microhenries
L3	RF Choke	7240251					
L4	RF Coil	7258914					1.4 microhenries
L5	Osc. Coil	7258911					
L6	Input IF	1218725	16-8752	BC-350	12-H1	RF-3	
L7	Output IF	1218726	16-8754	BC-354	12-H6		
L8	Flt. Choke	1217846					

## TRANSFORMER (VIBRATOR)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	DELCO PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stoncor PART No.	Thordorson PART No.	Triod PART No.
T1	12.6VCT @1.8A	800VCT @.054A		12208064						

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES	
	PRI.	SEC.	DELCO PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stoncor PART No.	Thordorson PART No.		Triod PART No.
T2	8000Ω	3-4Ω	6062	Z1002①	A-3019①		A-3823①	28849①	S-5Z①	① Use original channel frame.

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	6" x 9"	PM	3-4Ω	77284951	6A15	

## VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA			NOTES
				DELCO PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	
M1	Interrupter	12.6 VDC	115%	8550	8330	G-874	6330

## FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			DELCO PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
M2		7½A. 32V	7283227	1220177					

## MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M3	Lamp		#57
M4	Spark Plate	1221226	

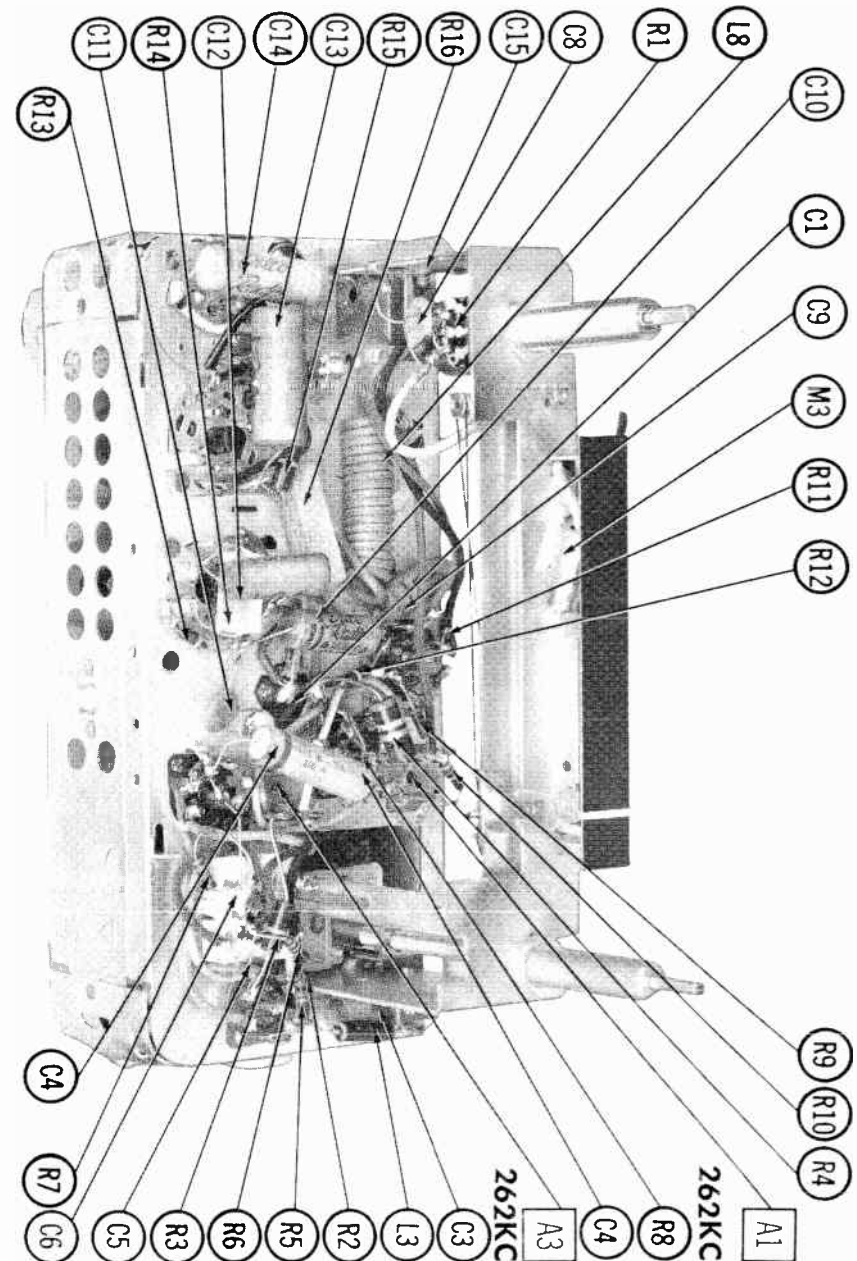
## CABINETS & CABINET PARTS

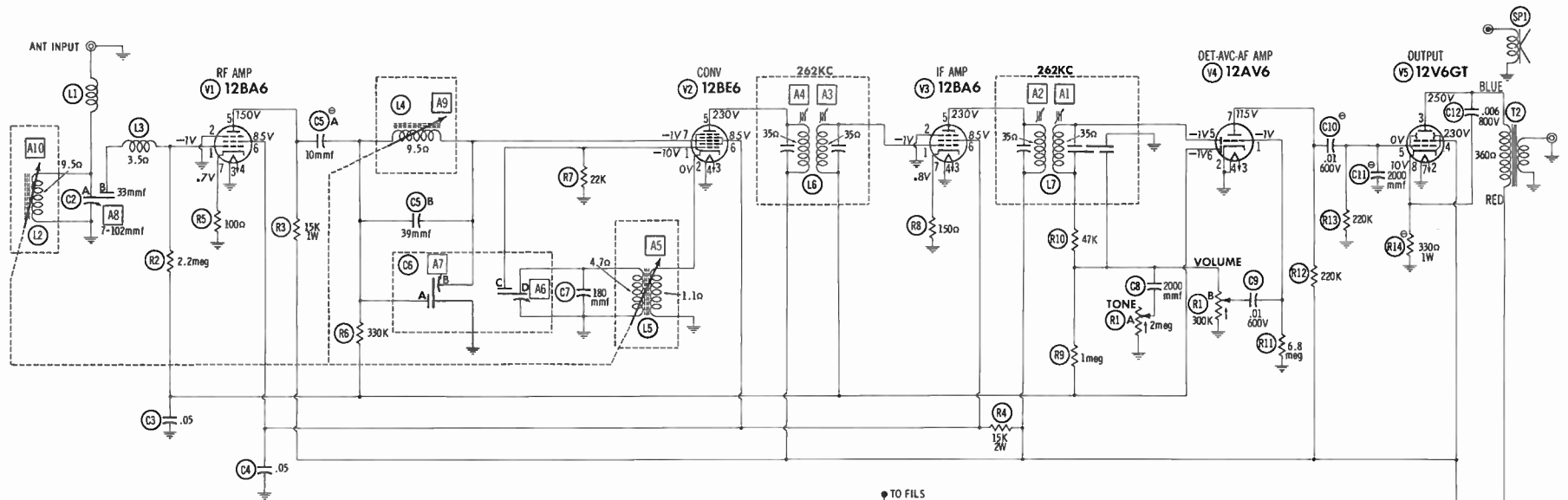
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

## WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 6530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 6665
Bonding Strap	Use BELDEN No. 6661

## CHASSIS—BOTTOM VIEW

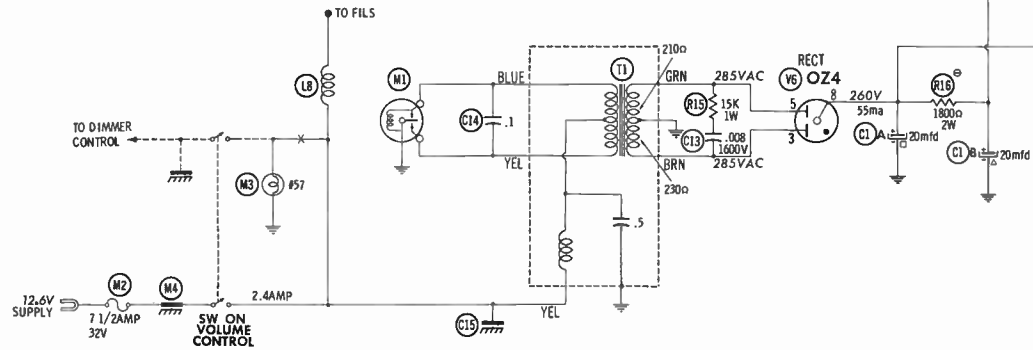




RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	12BA6	3.7meg	0 $\Omega$	0 $\Omega$	1.5 $\Omega$	117K	117K	100 $\Omega$	
V2	12BE6	22K	1.1 $\Omega$	1.5 $\Omega$	0 $\Omega$	11800 $\Omega$	117K	1.6meg	
V3	12BA6	1.3meg	0 $\Omega$	1.5 $\Omega$	0 $\Omega$	11800 $\Omega$	117K	150 $\Omega$	
V4	12AV6	6.8meg	0 $\Omega$	1.5 $\Omega$	0 $\Omega$	300K	1.3meg	220K	
V5	12V6GT	NC	1.5 $\Omega$	1360 $\Omega$	11800 $\Omega$	220K	NC	0 $\Omega$	330 $\Omega$
V6	0Z4	0 $\Omega$	NC	230 $\Omega$	NC	210 $\Omega$	NC	TP	1

1 THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.  
 † MEASURED FROM PIN 8 OF V6.  
 NC NO CONNECTION  
 TP TIE POINT



- DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
- Socket connections shown as bottom views.
- Measured values are from socket pin to common negative.
- Battery voltage maintained at 12.6 volts for voltage readings.
- Nominal tolerance on component values makes possible a variation of  $\pm 15\%$  in voltage and resistance readings.
- Volume control at maximum, no signal applied for voltage measurements.

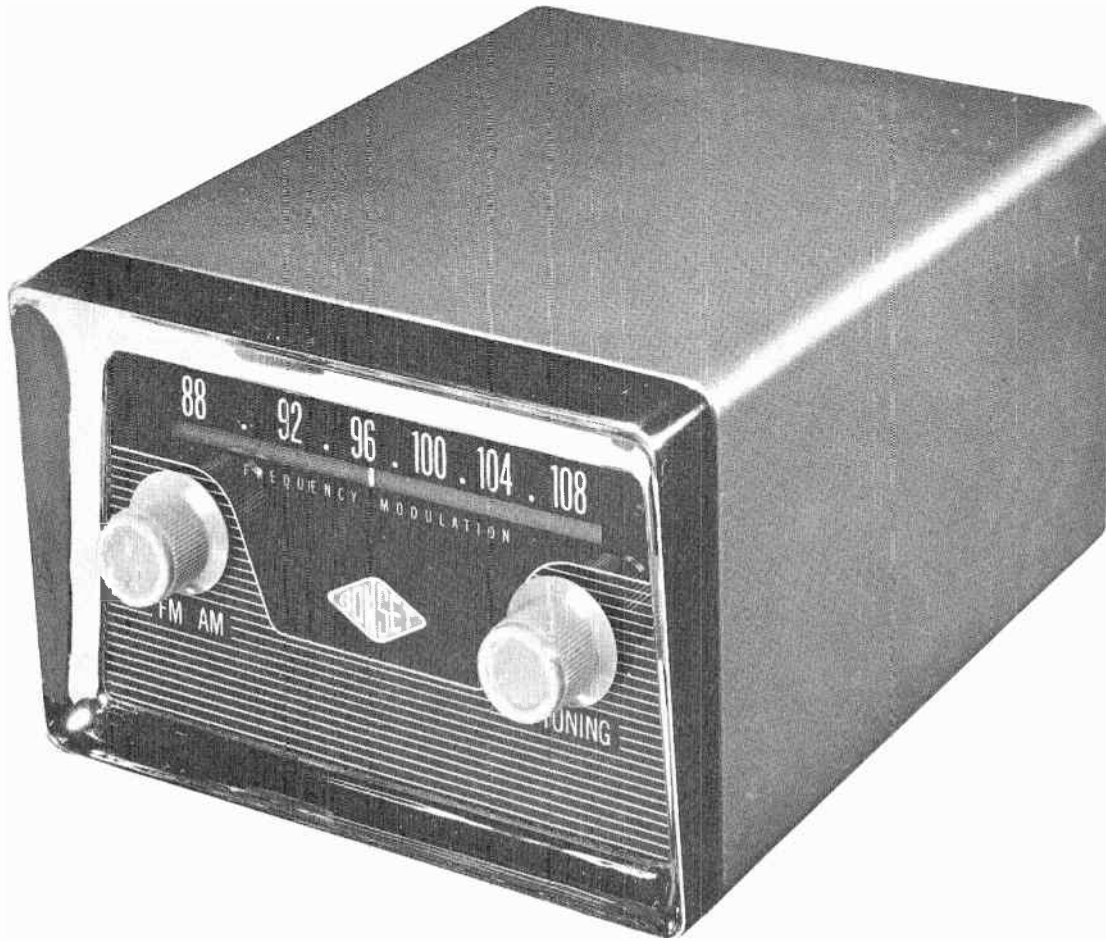
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
 ©Howard W. Sams & Co., Inc. 1959

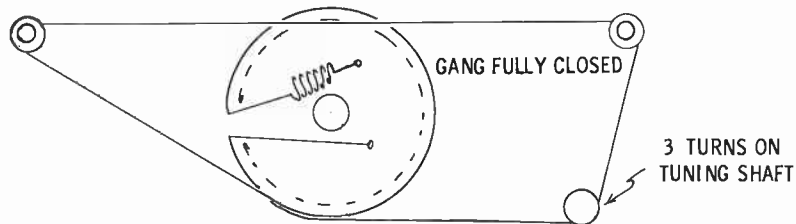
GMC MODEL  
 2233398



GONSET  
MODEL 3239

TRADE NAME	Gonset Model 3239		
MANUFACTURER	Gonset Division of L. A. Young Spring & Wire Corp., 801 S. Main St., Burbank, California		
TYPE SET	Battery Operated Universal Type Automobile FM Converter		
TUBES	Seven		
POWER SUPPLY	12 Volt Storage Battery	RATING	1.4MA@12.6Volts DC
TUNING RANGE - FREQ. MOD.	88-108MC		

### DIAL CORD STRINGING

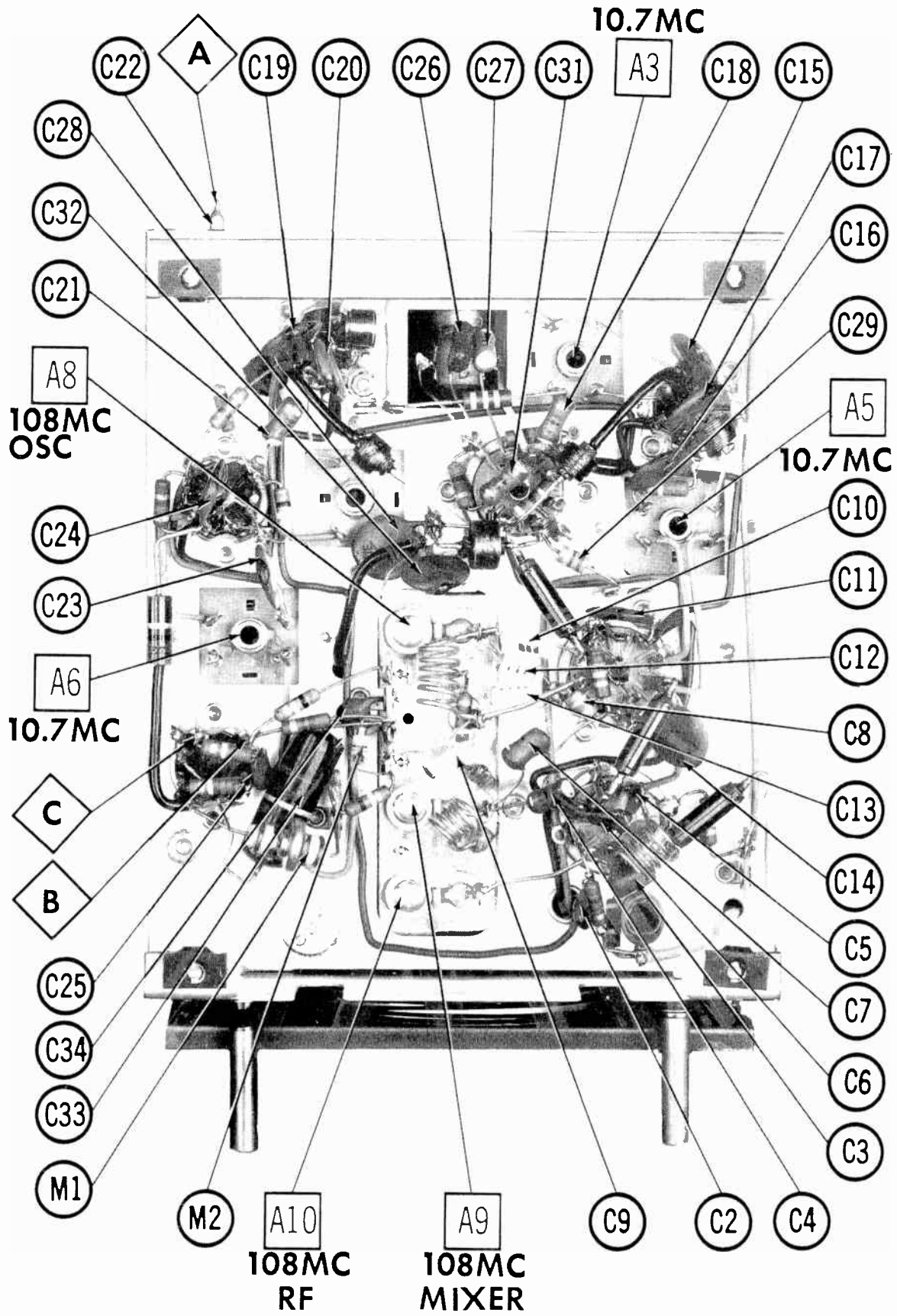


### HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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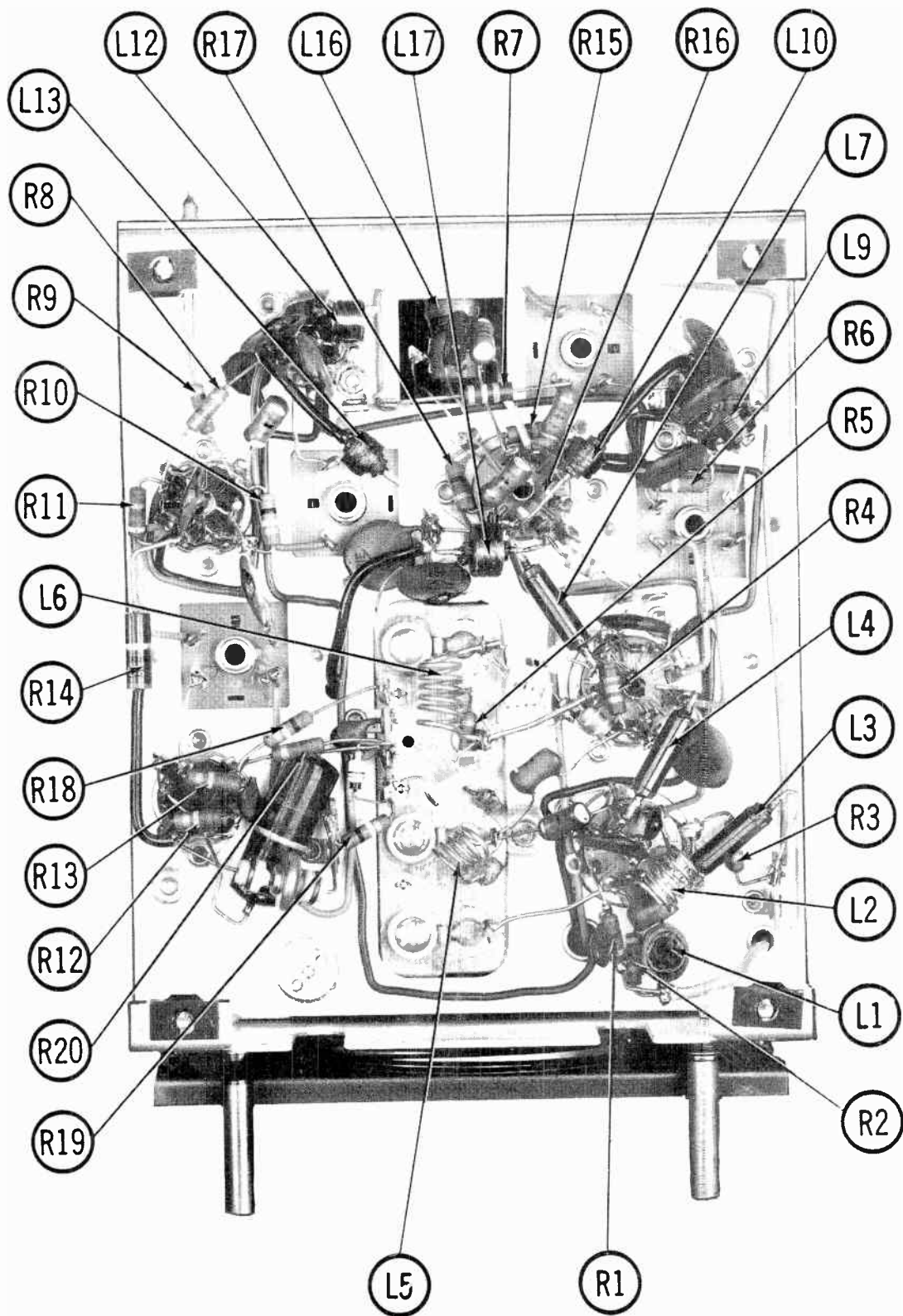
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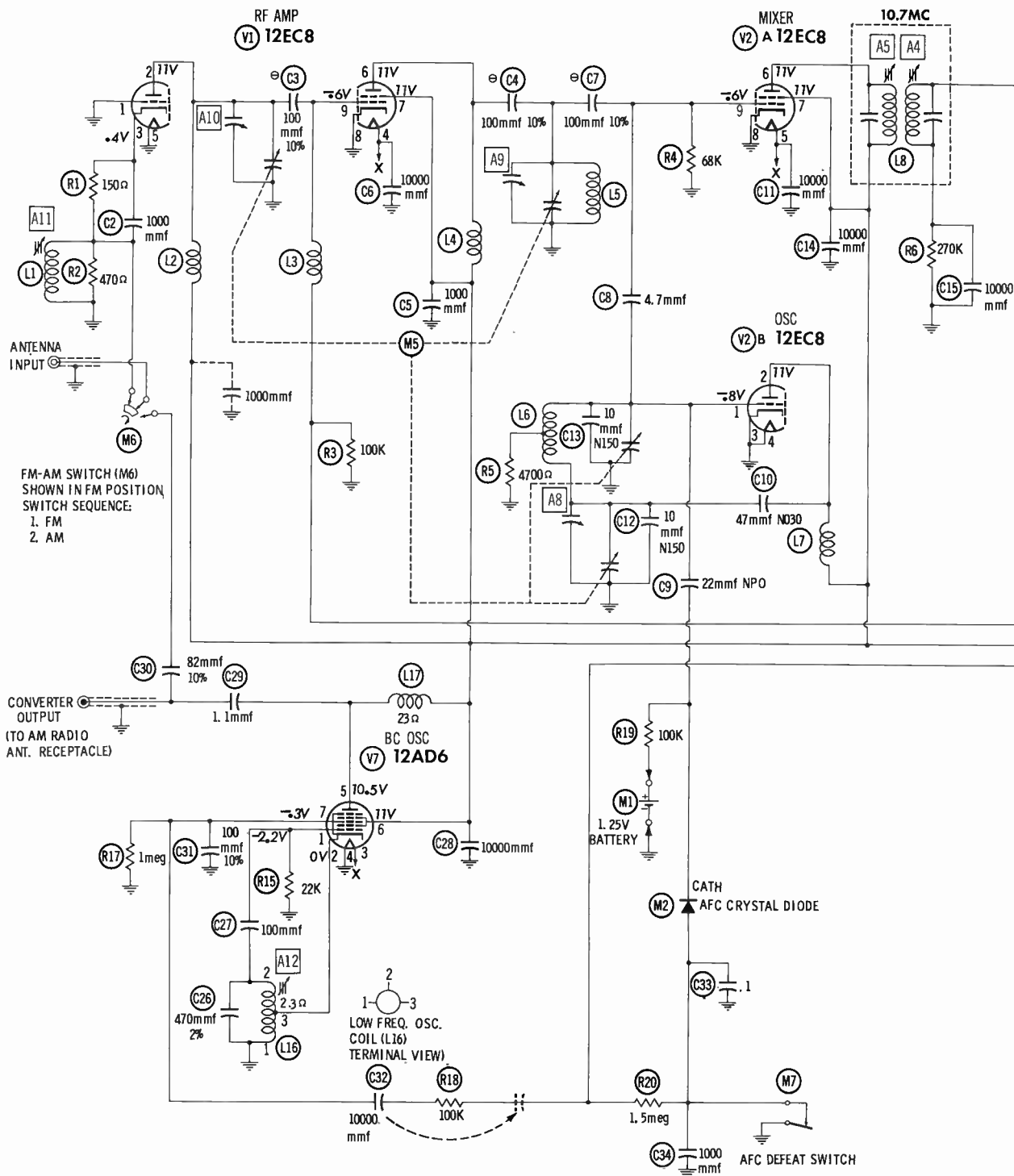


CHASSIS BOTTOM VIEW - CAPACITOR, MISC. & ALIGN IDENTIFICATION





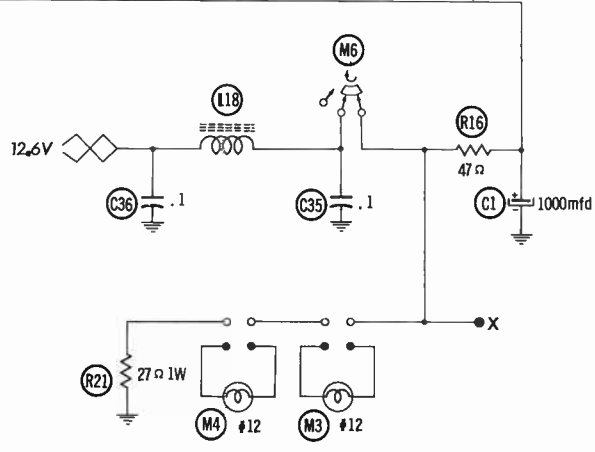
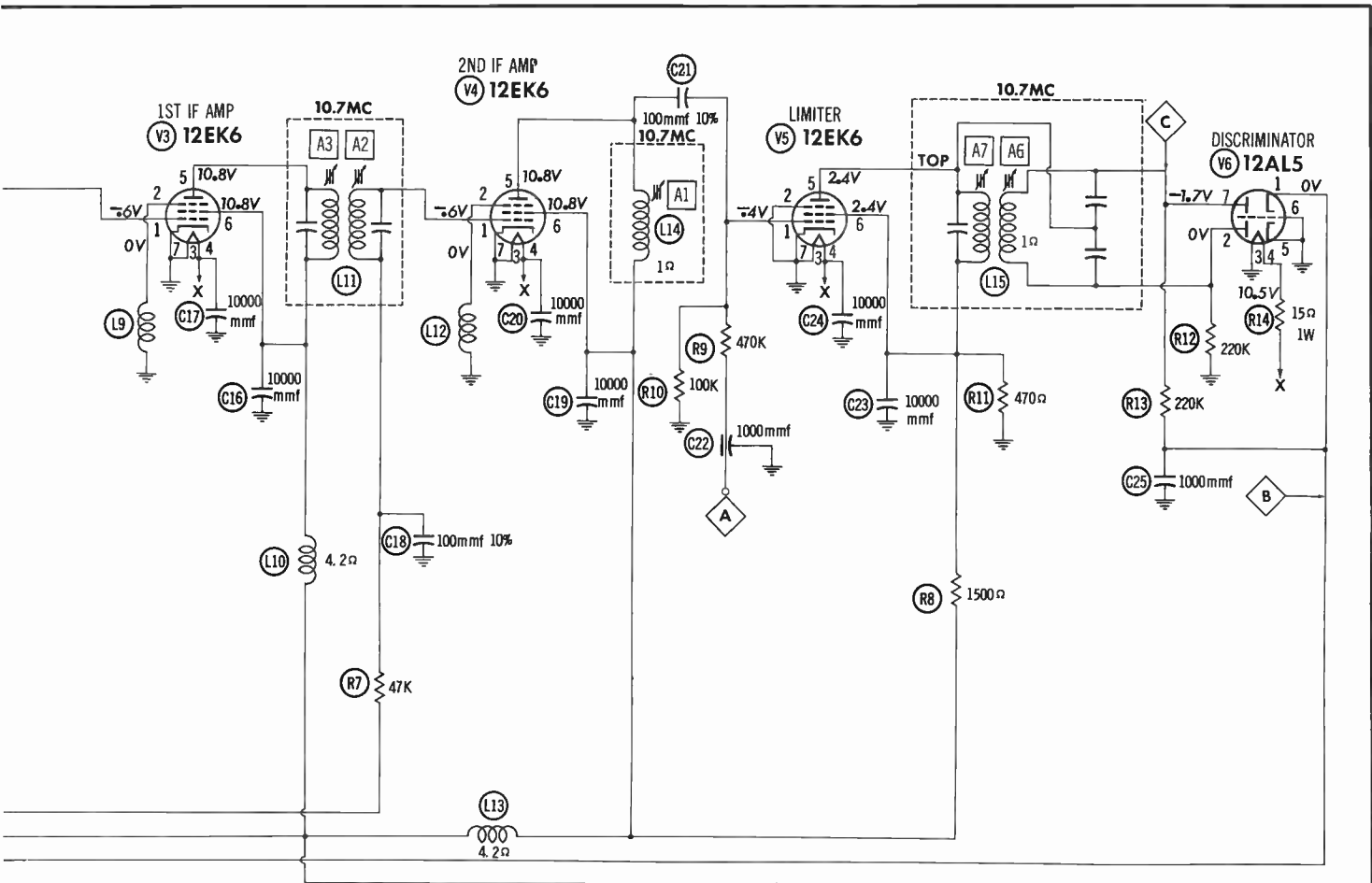
**CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION**



⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



RESISTANCE READINGS

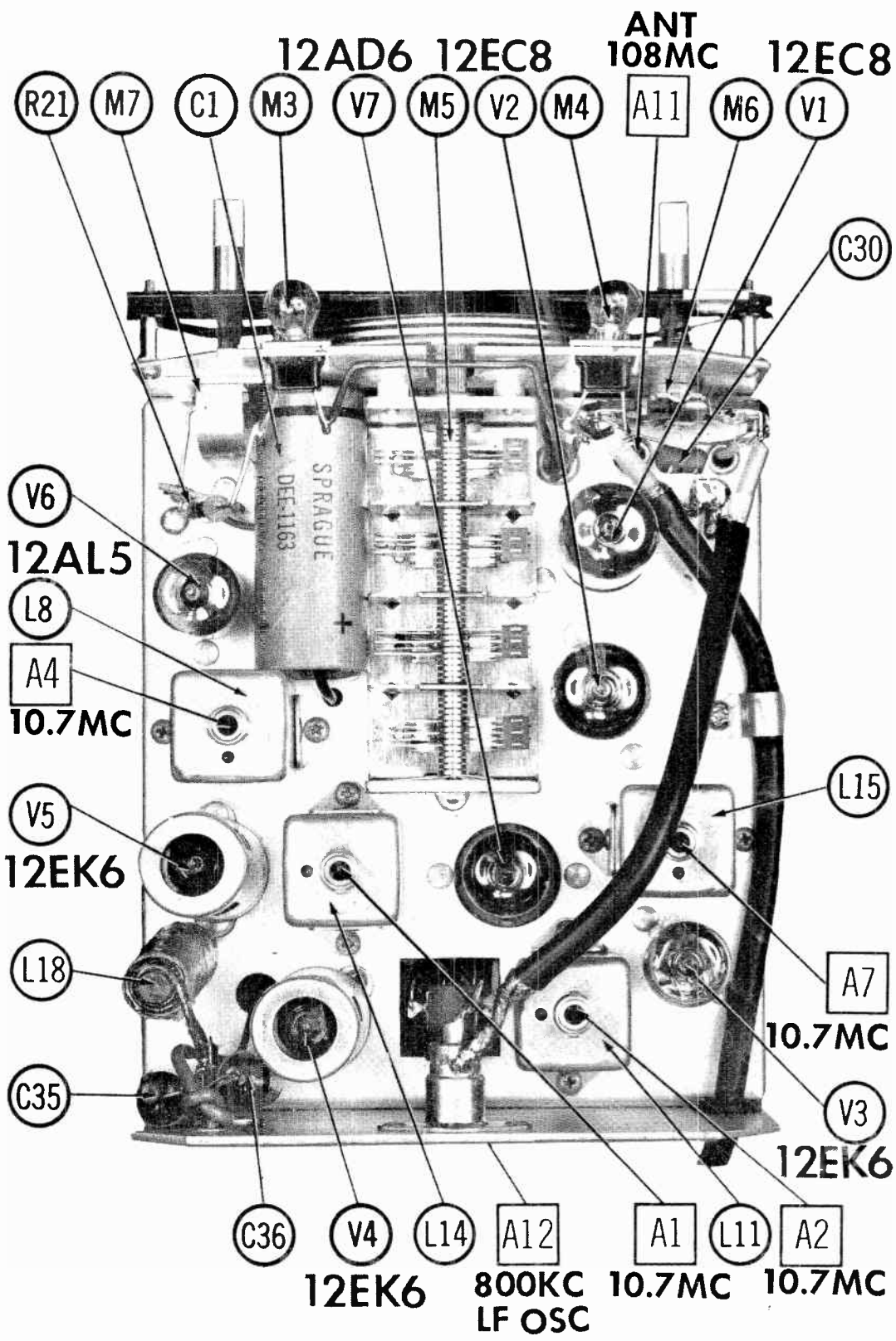
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12EC8	0Ω	†47Ω	150Ω	1.1Ω	0Ω	†47Ω	†47Ω	0Ω	100K
V2	12EC8	4700Ω	†47Ω	0Ω	0Ω	1.1Ω	†47Ω	†47Ω	0Ω	68K
V3	12EK6	270K	.1Ω	0Ω	1.1Ω	†51Ω	†51Ω	0Ω		
V4	12EK6	147K	.1Ω	0Ω	1.1Ω	†51Ω	†51Ω	0Ω		
V5	12EK6	100K	0Ω	0Ω	1.1Ω	†350Ω	†350Ω	0Ω		
V6	12AL5	400K	220K	0Ω	7Ω	0Ω	0Ω	220K		
V7	12AD6	22K	.5Ω	1.1Ω	0Ω	†70Ω	†47Ω	1meg		

† MEASURED FROM JUNCTION OF R14 AND R16

**GONSET  
MODEL 3239**







CHASSIS TOP VIEW

# PARTS LIST AND DESCRIPTIONS

## TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12EC8	
V2	Mixer-Oscillator	12EC8	
V3	1st IF Amplifier	12EK6	
V4	2nd IF Amplifier	12EK6	

ITEM No.	USE	TYPE	NOTES
V5	Limiter	12EK6	
V6	Discriminator	12AL5	
V7	BC Oscillator	12AD6	

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA					NOTES	
	CAP.	VOLT.	GONSET PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.		SPRAGUE PART No.
C1	1000	15		PRS15V1000	BRI0001	TC1501	TD-1000-15	TVA-1183	

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA					NOTES	
	CAP.	VOLT.	TOL.	GONSET PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.		SPRAGUE PART No.
C2	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C3	100		10%		SI 100	D6-101	LI0T1	CNO-310	5GA-T1	①
C4	100		10%		SI 100	D6-101	LI0T1	CNO-310	5GA-T1	①
C5	1000				BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C6	100000				BPD-01	DD-103	BYA10S1	B-110	5GA-S1	
C7	100		10%		SI 100	D6-101	LI0T1	CNO-310	5GA-T1	①
C8	4.7				NPO-SI 4.7	TCZ-4R7	C10V47C	CNO-547	5TCCB-V47	
C9	22		NPO		SI 22	D6-220	LT8Q22	UC-5422	5GA-Q22	
C10	47		N030		SI 47	D6-470	LT8Q47	UC-5447	5GA-Q47	
C11	100000				BPD-001	DD-103	BYA10S1	B-110	5GA-S1	
C12	10		N150		SI 10	D6-100	LT8Q1	UC-541	5GA-Q1	
C13	10		N150		SI 10	D6-100	LT8Q1	UC-541	5GA-Q1	
C14	100000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C15	100000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C16	100000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C17	100000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C18	100		10%		SI 100	D6-101	LI0T1	CNO-310	5GA-T1	
C19	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C20	100000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C21	100		10%		SI 100	D6-101	LI0T1	CNO-310	5GA-T1	
C22	1000				EF-001	MFT-1000			503C-D1	
C23	100000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C24	100000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C25	1000				BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C26	470		2%							
C27	100				SI 100	D6-101	LI0T1	CNO-310	5GA-T1	
C28	100000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C29	1.1				NPO-SI 1.5	TCZ-1R5	C10V15C	CNO-510	5TCCB-V1	
C30	82		10%		SI 82	D6-820	LI0Q82	CNO-482	5GA-Q82	
C31	100		10%		SI 100	D6-101	LI0T1	CNO-515	5GA-T1	
C32	100000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C33	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C34	1000				BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C35	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C36	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	

① Some versions may use 30mmf in this application.

## RESISTORS

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

ITEM No.	RATING		GONSET PART No.	NOTES	ITEM No.	RATING		GONSET PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R1	150Ω				R5	4700Ω			
R2	470Ω				R6	270K			
R3	100K				R7	47K			
R4	68K				R8	1500Ω			

## RESISTORS (cont)

ITEM No.	RATING		GONSET PART No.	NOTES	ITEM No.	RATING		GONSET PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R9	470K				R16	47Ω			
R10	100K				R17	1meg			
R11	470Ω				R18	100K			
R12	220K				R19	100K			
R13	220K				R20	1.5meg			
R14	15Ω	1			R21	27Ω	1		
R15	22K								

## COILS (RF-IF)

ITEM No.	USE	GONSET PART No.	REPLACEMENT DATA				NOTES
			Meissner PART No.	Merit PART No.	Miller PART No.	Rem PART No.	
L1	Ant. Coil						
L2	RF Coil						
L3	RF Choke		19-1004	BC-565	4609		5.6 Microhenries
L4	RF Choke		19-1004	BC-565	4609		5.6 Microhenries
L5	Mixer Coil						
L6	Osc. Coil						
L7	RF Choke		19-1004	BC-565	4609		5.6 Microhenries
L8	1st IF Trans.	014-022	18-3487*	FM-254*	1463*		*Use Adaptor Mount Plate
L9	RF Choke		19-1001	BC-562	4604		1.4 Microhenries
L10	RF Choke		19-3100	TV-194	4632		100 Microhenries
L11	2nd IF Trans.	014-022					
L12	RF Choke		19-1001	BC-562	4604		1.4 Microhenries
L13	RF Choke		19-3100	TV-194	4632		100 Microhenries
L14	3rd IF Trans.	014-023					
L15	Discriminator	014-024					
L16	Low Freq. Osc. Coil						
L17	RF Choke		19-4950	BC-513	4652		1 Millihenry
L18	Hash Choke						65 Microhenries

## BATTERIES

ITEM No.	VOLTAGE	GONSET PART No.	REPLACEMENT DATA				NOTES		
			BURGESS		EVEREADY			MALLORY	
			"A"	"B"	"A"	"B"		"A"	"C"
M1	1.25V						BC-3 ①	① Bias Cell (Snap In)	

## CRYSTAL DIODES

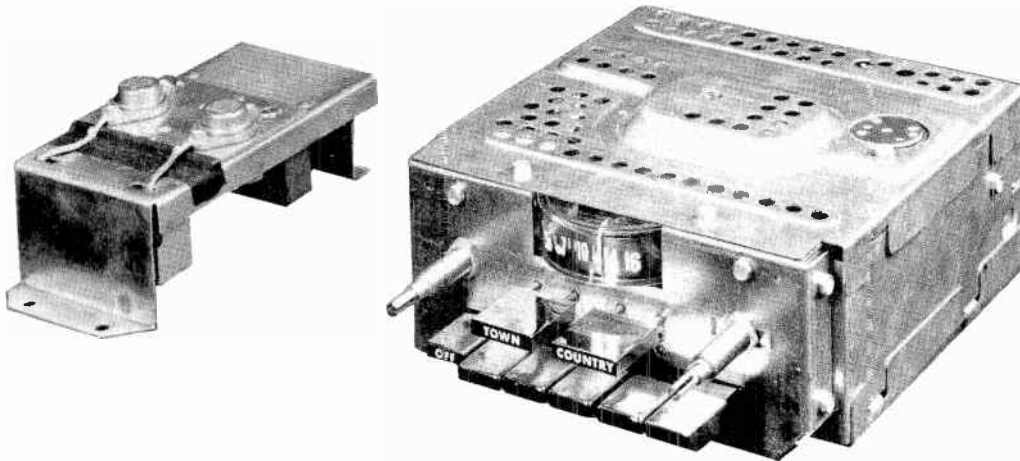
ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		GONSET PART No.	CBS PART No.	SYLVANIA PART No.	
M2	*				AFC Diode (Pigtail) (*Pacific, #V-20)

## MISCELLANEOUS

ITEM No.	PART NAME	GONSET PART No.	NOTES
M3	Lamp		#12
M4	Lamp		#12
M5	Tuning Cap.		FM, 4 Section
M6	Switch		FM-A11 (Rotary, Wafer Type)
M7	Switch		AFC Defeat (Push, Spring Return Type)

## WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661



TRADE NAME	Lincoln Model 85BH (FFC-18805-C, FFC-18805-D) for 1958 Lincoln Automobiles		
MANUFACTURER	Bendix Radio, Div. of Bendix Aviation Corp., Baltimore 4, Maryland		
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output		
TUBES (Five)	Types 12CX6 RF Amplifier, 12AD6 Converter, 12CN5 1F Amplifier, 12J8 Det. -AVC-Driver, 12U7 AF Amp. -Trigger		
POWER SUPPLY	12 Volt Storage Battery	RATING	1.2 Amp. @ 12.6 Volts DC (1.8 Amp. when Seeking)
TUNING RANGE—BROADCAST	540-1600KC		

## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at minimum. Output of signal generator should be no higher than necessary to obtain an indication. Use an insulated alignment screwdriver for adjusting. Set tone control fully clockwise.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1. .1mfd	High side to Pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5KC (400v Mod.)	High End Stop.	DC Probe to high side of R1B. Common to Pin 7 of V4.	A1, A2, A3, A4	Adjust for maximum deflection.
2. Fig. 1	Thru dummy to antenna receptacle.	1605KC	"	"	A5, A6, A7	Repeat Steps 1 and 2.
3. With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and adjust A7 for maximum output.						
Step 4 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, A10) out of coils but not out of coil forms. Repeat Step 2.						
4. Fig. 1	Thru dummy to antenna receptacle.	1000KC	Carriage 1/2" from High End Stop.	"	A8, A9, A10	Adjust for maximum deflection. Repeat Steps 2 and 4.
5. Fig. 1	Thru dummy to antenna receptacle.	1000KC @ 3 microvolts (400v Mod.)	Tune to 1000KC signal.	Output meter Across voice coil	R4	Adjust for 1.75 volts (approximately 1 watt).
6. "	"	1000KC @ 250 microvolts	"	"	R3	Turn R3 fully counterclockwise. Press "Town" button. Turn R3 slowly until tuner stops seeking.

Adjust generator for 125 microvolts. Press "Town" button. Tuner should NOT stop seeking. If necessary repeat Steps 5 and 6.

### PUSHBUTTON ADJUSTMENT

1. Tune manually to desired station.
2. Pull out button, then press in firmly.
3. Repeat for remaining buttons.

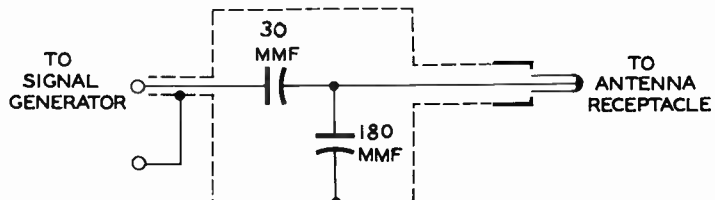


FIG. 1

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H619

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LINCOLN MODEL  
85BH (FFC-18805-C, FFC-18805-D)



# PARTS LIST AND DESCRIPTIONS

## TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES	ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12CX6		V4	Det. -AVC -Driver	12J8	
V2	Converter	12AD6		V5	AF Amp. -Trigger	12U7	
V3	IF Amplifier	12CN5					

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N399	Output	CBS-2N399	2N301		2N350	
X2	2N399	Output	CBS-2N399	2N301		2N350	

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	250	16	220108-7	AFH3-00-80		PWP200, 3			R2669*
B	250	16				TT25K50			
C	60	16							

\* Non-Catalog Item

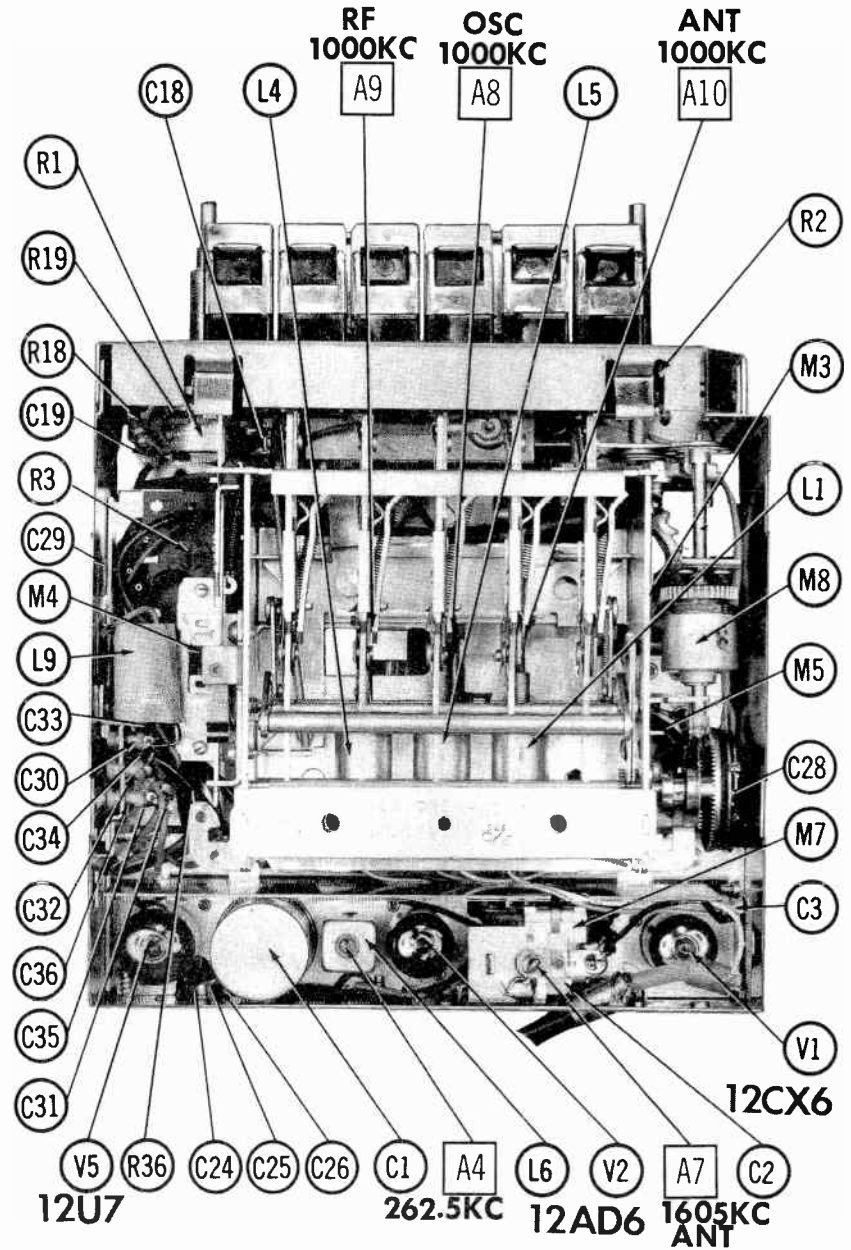
### FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					NOTES
	CAP.	VOLT	BENDIX PART No.	AEROVOX PART No.	CENTRALLAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	
C2	140-680		219083-2					
C3	220		2090058Q-221M	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22
C4	.1		220212-14					10%
C5	50000		220095-45	BPD-05	DF-503			5HK-S5
C6	70-470		2090572-1					
C7	100		2090058Q-101M					
C8	60000		220095-45	BPD-05	DF-503			5HK-S5
C9	100		2090058Q-101M					N3300
C10	220-380		2090572-2					N3300
C11	120		2090058J-121K					N750
C12	390	300	220346-509	1469-00039	MD-391	5RST39		MS-339
C13	1.2		220212-13					10% 10% 5%
C14	.5	100		P288N-5		CUB2P5	GEM-205	2TM-P5
C15	100		2090058Q-101M					N3300
C16	100		2090058Q-101M					N3300
C17	2200		2090058R-222K					10% 10% 10%
C18	1800							Note 1
C19	1000		220095-43					10% 10%
C20	470			BPD-00047	DD-471	L10T47	UC-5347	5GA-T47
C21	5000		220095-44	BPD-005	DD-502	BYA10D5	DC525	5HK-D5
C22	1000		2090546-1	BPD-001	DD-102	BYA6D1	DC521	5HK-D1
C23	50000		220095-45	BPD-05	DF-503			5HK-S5
C24	1000		2090546-1	EF-001	MFT-1000			503C-D1
C25	1000		2090546-1	EF-001	MFT-1000			503C-D1
C26	1000		2090546-1	EF-001	MFT-1000			503C-D1
C27	1000		2090546-1	EF-001	MFT-1000			503C-D1
C28	10000		220095-41	BPD-01	DD-103	BYA10S1	DC511	503C-D1
C29	140		220287-11					5HK-S1
C30	1000		2090546-1	EF-001	MFT-1000			503C-D1
C31	1000		2090546-1	EF-001	MFT-1000			503C-D1
C32	1000		2090546-1	EF-001	MFT-1000			503C-D1
C33	1000		2090546-1	EF-001	MFT-1000			503C-D1
C34	1000		2090546-1	EF-001	MFT-1000			503C-D1
C35	1000		2090546-1	EF-001	MFT-1000			503C-D1
C36	1000		2090546-1	EF-001	MFT-1000			503C-D1

Note 1. Some versions may use .25mfd in this application (Part #220352-12).  
 Note 2. Some versions may use 2200mmf in this application (Part #2090058R-222K).  
 Note 3. Some versions may use 330mmf in this application (Part #2090058S-331M).  
 Note 4. Not used in some versions.

# CHASSIS—TOP VIEW





# PARTS LIST AND DESCRIPTIONS (Continued)

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	Switch		2090276-1					Tone Volume, Tap @ 650K Speaker Fader Town Sensitivity, with 50K Stop Sensitivity Motor Speed Translator Bias, with 100K Stop
B	2meg	$\frac{1}{2}$						
R2	11.5Ω	2(WW)	219679-3					
R3	1meg	2(WW)	2090560-1					
R4	1000Ω	2(WW)	219555-15		39-1000		FL-1.5K	
R5	25Ω	2(WW)	219555-12					
R6	300Ω	2(WW)	219555-17					

## RESISTORS

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

ITEM No.	RATING		BENDIX PART No.	NOTES	ITEM No.	RATING		BENDIX PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R7	100K		220551B-104M		R22	47K		229551B-473K	
R8	22meg		220551B-226M		R23	220Ω		220551B-221M	Note 3
R9	33meg		220551B-336M		R24	4700Ω		220551B-472K	
R10	150Ω		220551B-151M		R25	33meg		220551B-336M	Note 4
R11	33K		220551B-333M		R26	10meg		220551B-106M	
R12	680K		220551B-684M		R27	150K		220551B-154M	
R13	100K		220551B-104M	Note 1	R28	2200Ω		220551B-222M	
R14	10Ω		220551B-100K			R29	120Ω	1	
R15	2.2meg		220551B-225M		R30	10meg		220551B-106M	
R16	2.2meg		220551B-225M		R31	220Ω		220551B-221M	
R17	18Ω 5%		220551B-180J		R32	4.5Ω Cold		220629-1	
R18	220K		220551B-224K		R33	4.5Ω Cold		220629-1	
R19	82K		220551B-823K	Note 2	R34	220Ω		220551B-221M	
R20	3.9meg		220551B-395K			R35	22Ω		220551B-220M
R21	470K		229551B-474M		R36	1Ω		2090438-7	10' Cupron Wire

Note 1. Some versions may use 150K in this application (Part #220551B-154M).  
 Note 2. Some versions may use 47K in this application (Part #220551B-473K).  
 Note 3. Some versions may use 3900Ω in this application (Part #220551B-392K).  
 Note 4. Not used in some versions.

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BENDIX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Ant. Coil	2090532-1	19-4400A	TV-202A	6136A		421 microhenries; wound on 820mmf.
L2	Cathode Choke						
L3	IF Trap	2090088-3					50 microhenries; wound on 18K.
L4	RF Coil	2090492-1	19-1003	BC-564	4608		3.9 microhenries; IRC Part #CL-1
L5	Osc. Coil						
L6	Input IF	2090493-1					
L7	Output IF	2090671-1					
L8	RF Choke	216188-14					
L9	"A" Lead Choke						

\* Part of M3 (or tuner coil assembly Part #2090679-1).  
 ▲ Parallel with an 820mmf cap.

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BENDIX PART No.	Hallderson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	
T1	5	:1	2090265-2					

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES	
	PRI.	SEC.	BENDIX PART No.	Hallderson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.		Thordarson PART No.
T2	8Ω CT	3-4Ω	2090266-2						

\* Element open at center of range—2meg each side.

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BENDIX PART No.	QUAM PART No.	
SP1	6" x 9"	PM	3-4Ω	2090296-1 ①	69A2	① (Front) Alternate Part No. 282634-7 ② (Rear) Alternate Part No. 282634-8
SP2	6" x 9"	PM	3-4Ω	2090539-1 ②	69A2	

## FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA			
			BENDIX PART No.	LITTELFUSE PART No.	BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER
M1	SFE	9A. 32V.	SFE-9	221634-7		

## MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M2	Lamp	53	#1892
M3	Tuner	2090453-1	
M4	Switch	2090555-1	Power On-Off
M5	Switch	2090673-1	Motor Reversing, Includes Mounting Plate Ass'y.
	Switch	2090403-3	Foot
	Switch	2090678-1	Seek Sensitivity, Includes Escutcheon
M6	Switch Ass'y.	2090677-1	Seek, Includes Tuner Mounting Bracket, Pointer Pivot, Lamp Holder
	Switch Ass'y.	2090678-1	Includes Mounting Board
M7	Relay Ass'y.	2090507-1	Magnetic
M8	Clutch Ass'y.	2090046-3	Tuner Drive
M9	Motor	2090533-1	

## CABINETS & CABINET PARTS

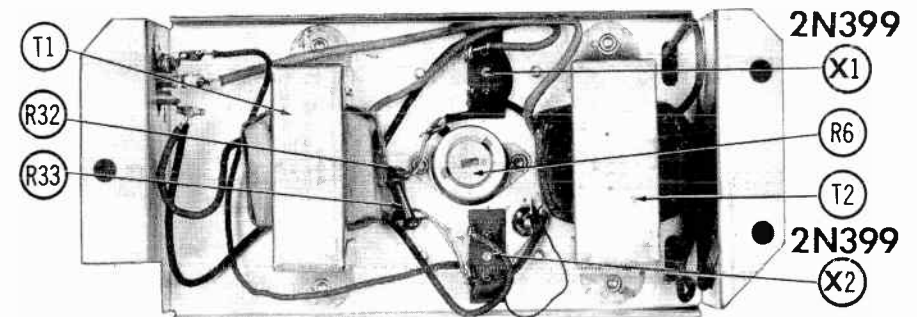
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

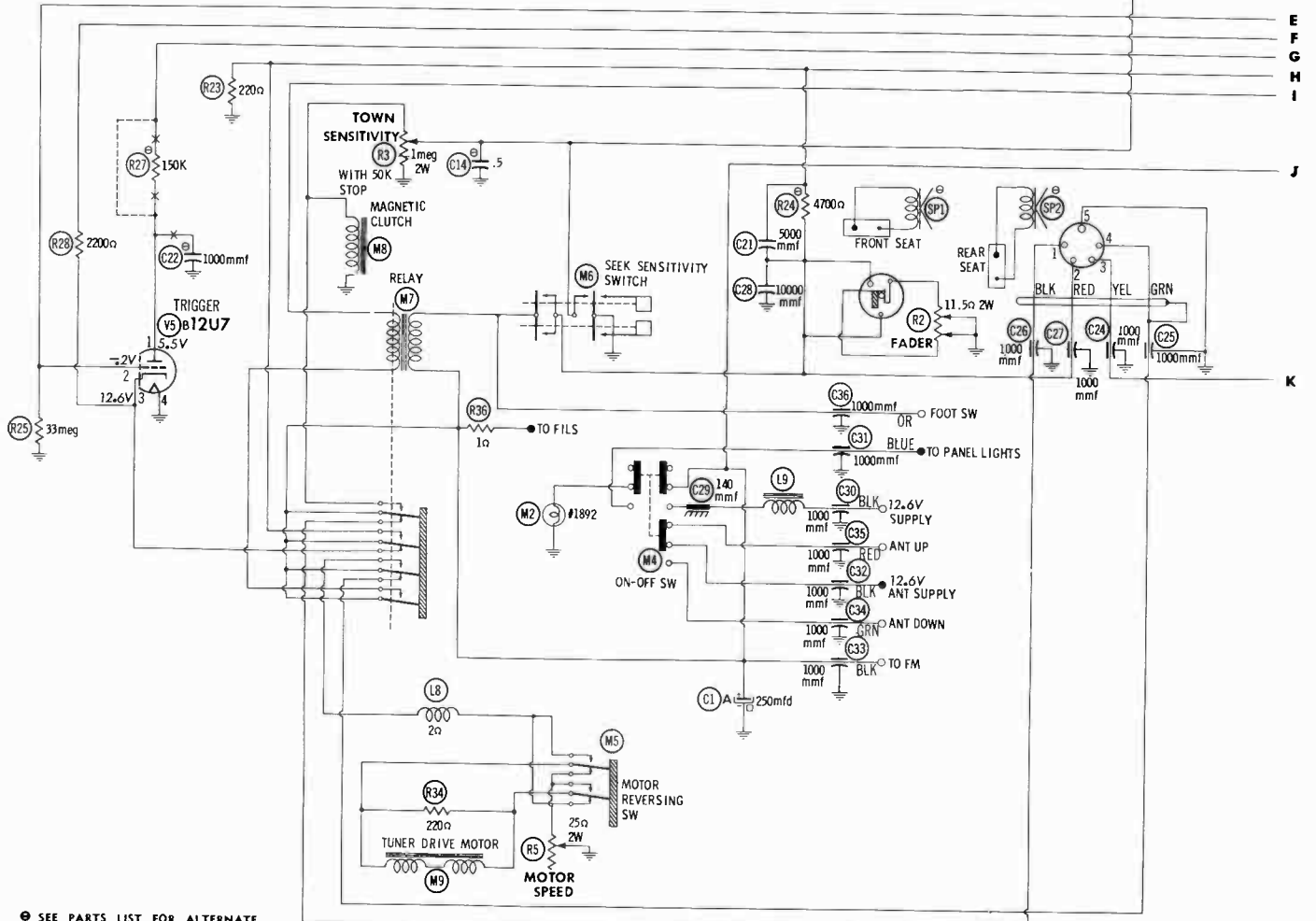
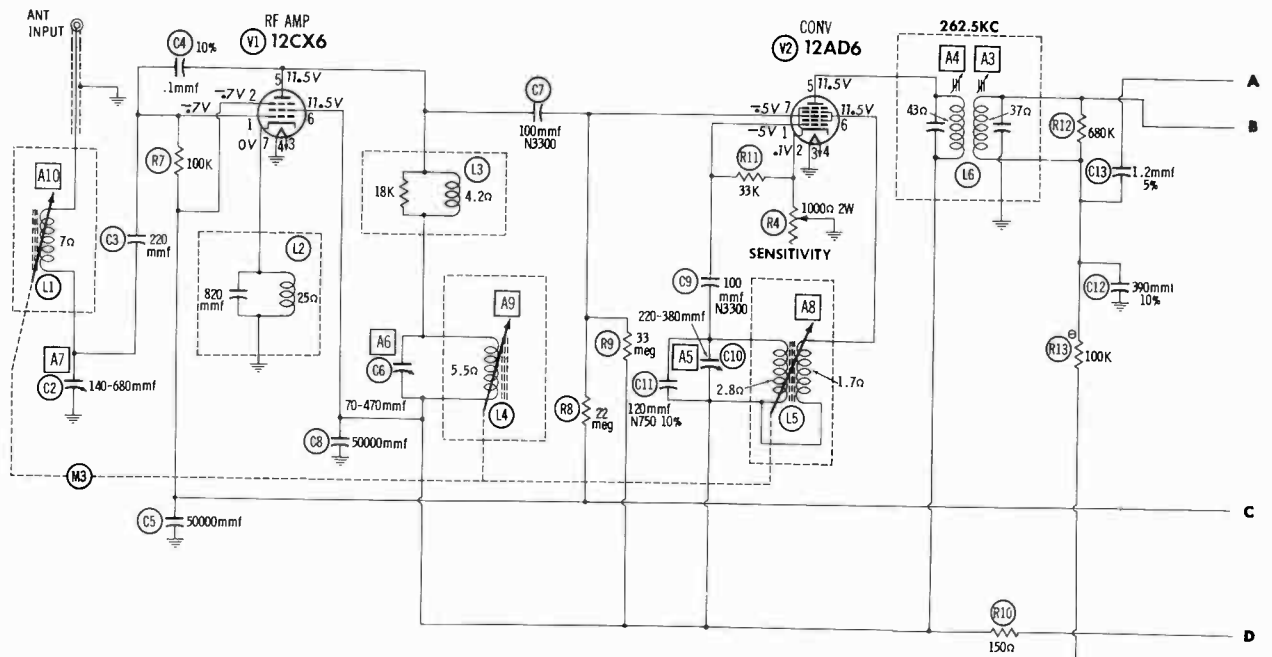
NAME	PART NO.	DESCRIPTION
Knob Ass'y.	2090282-1	Tone, Fader
Dial	2090278-1	Top
Cover Ass'y.	2090672-1	Bottom
Cover	2090488-1	Less Cap, 6 Used
Pushbutton	2090279-1	Station, 5 Used
Pushbutton Cap	2090280-1	Off
Pushbutton Cap	2090280-2	Includes Arm and Connecting Stud Assembly
Pointer	2090674-1	Calibrated
Dial	2090330-1	

## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors  
 8524 (Stranded) Available in Ten Colors  
 Shielded Hook-up Wire ..... Use BELDEN No. 8885  
 Bonding Strap ..... Use BELDEN No. 8661

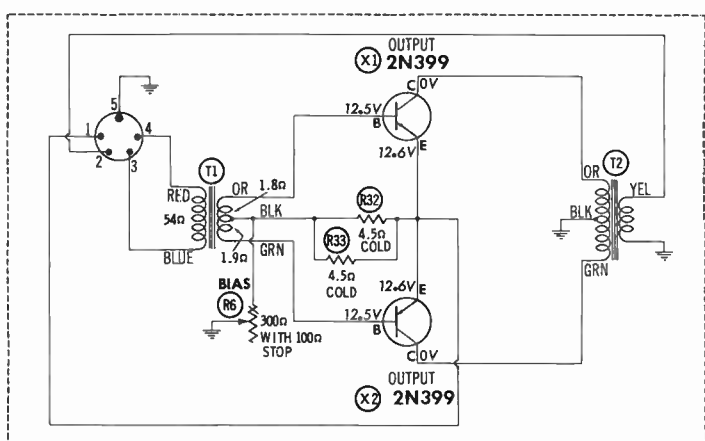
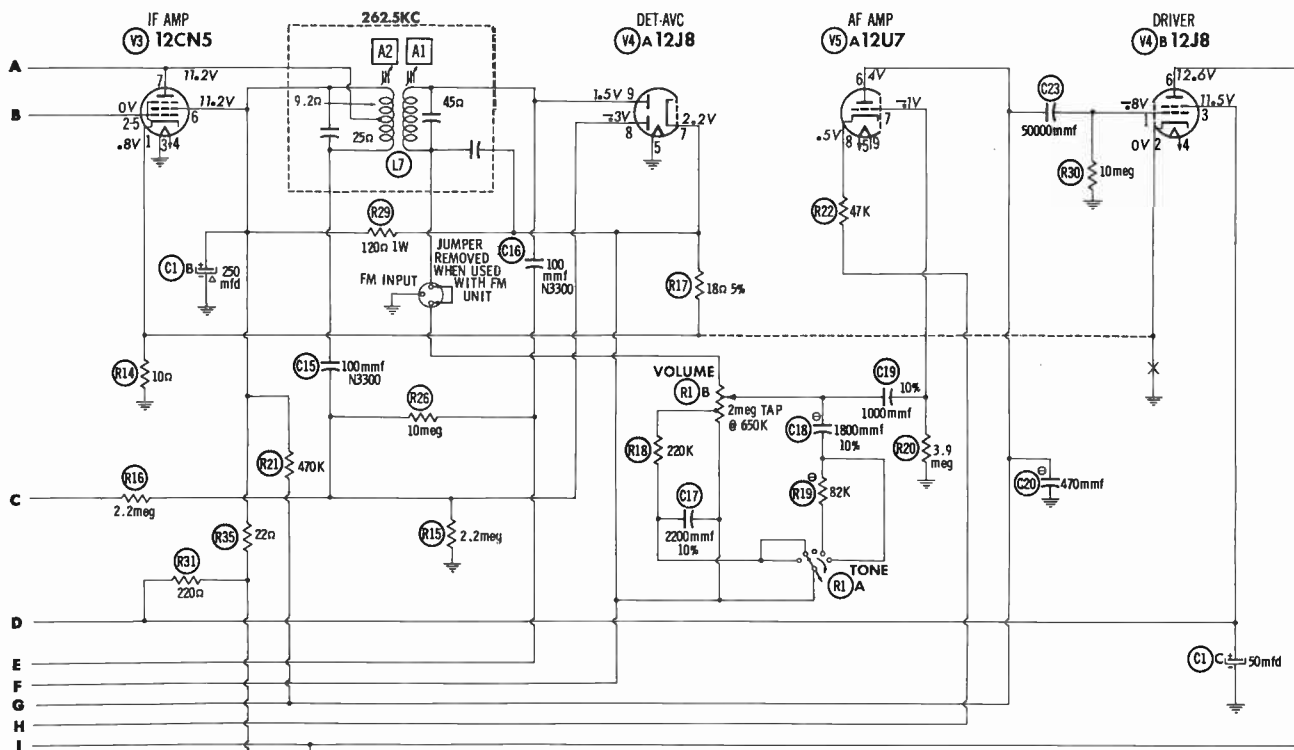
## POWER CHASSIS





● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION  
 DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
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**TRANSISTOR BIAS ADJUSTMENT (R6)**

1. Connect a low internal resistance (.2 ohm max.) DC milliammeter in series with center tap (black lead) of the output transformer (T2).
2. With an input power supply of 14.4 volts DC connected to the receiver, and no input signal, adjust R6 for a meter reading of 100 ma.

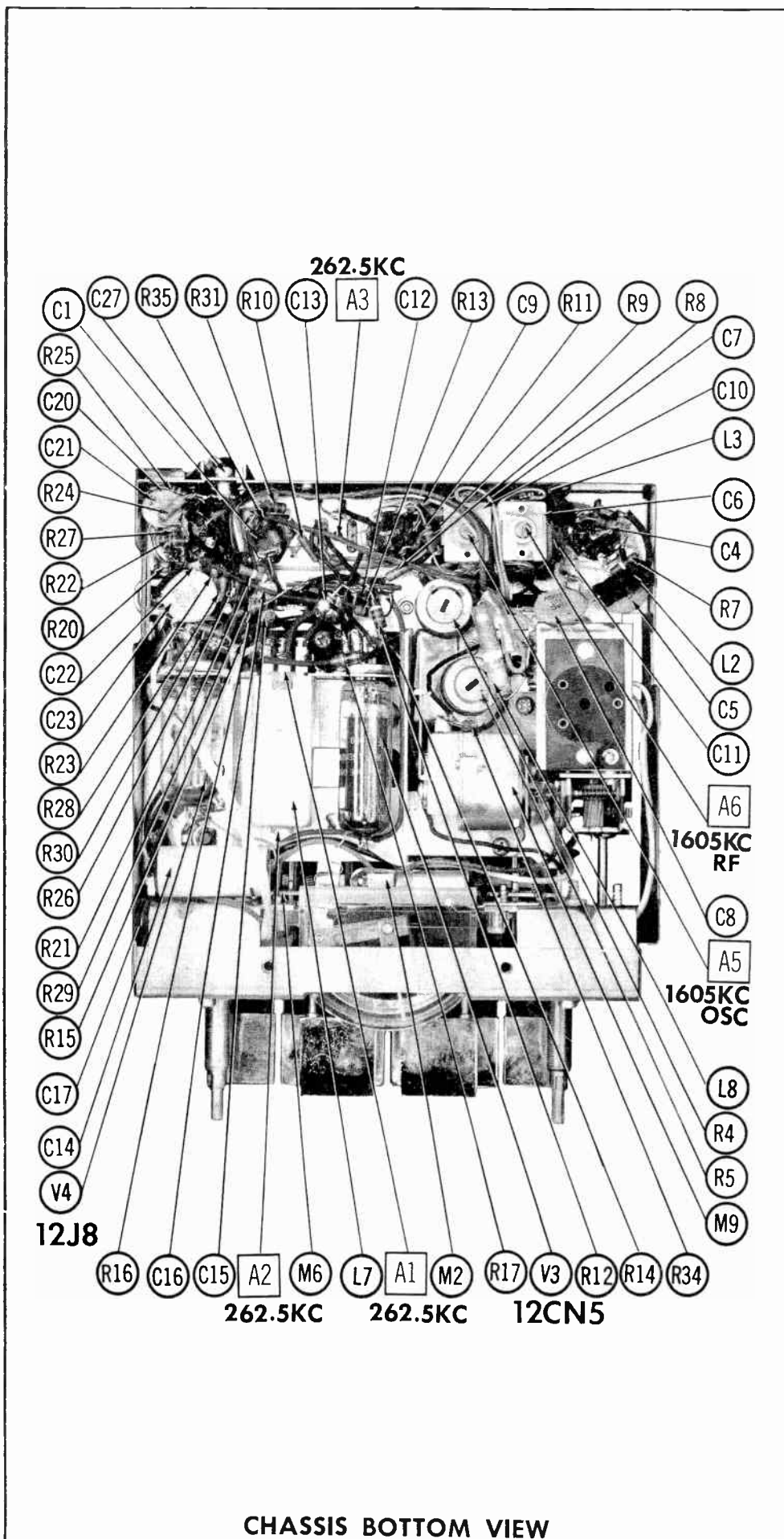
TONE SW (R1A)  
SHOWN IN "NORMAL"  
POSITION  
SW SEQUENCE:  
1 - NORMAL  
2 - HI-FI  
3 - LO NOISE  
4 - BASS

1. DC voltage measurements taken with vacuum tube volt meter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

**RESISTANCE READINGS**

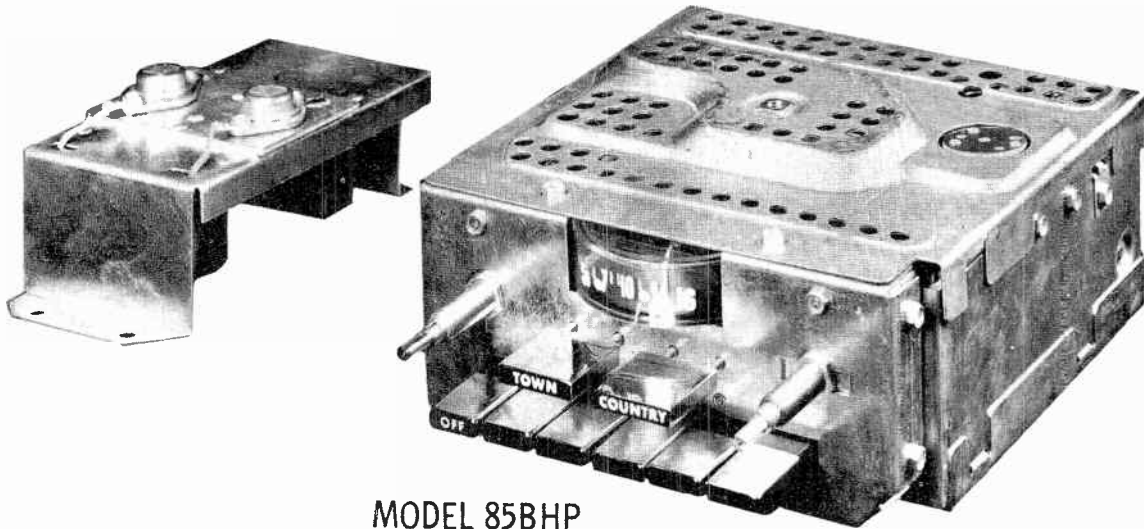
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12CX6	3.8meg	3.7meg	1.1ohm	0ohm	†380ohm	†370ohm	25ohm		
V2	12AD6	33K	25ohm	0ohm	1.1ohm	†410ohm	†370ohm	15meg		
V3	12CN5	10ohm	100K	0ohm	1.1ohm	100K	†22ohm	†31ohm		
V4	12J8	10meg	0ohm	†220ohm	1.1ohm	0ohm	†50ohm	28ohm	1.7meg	2meg
V5	12U7	†520K	10meg	†0ohm	0ohm	1.1ohm	†470K	3.9meg	47K	NC

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.  
† MEASURED FROM JUNCTION OF R31 and R36.  
NC NO CONNECTION





with CIRCUITRACE\*  
TRADE MARK



MODEL 85BHP

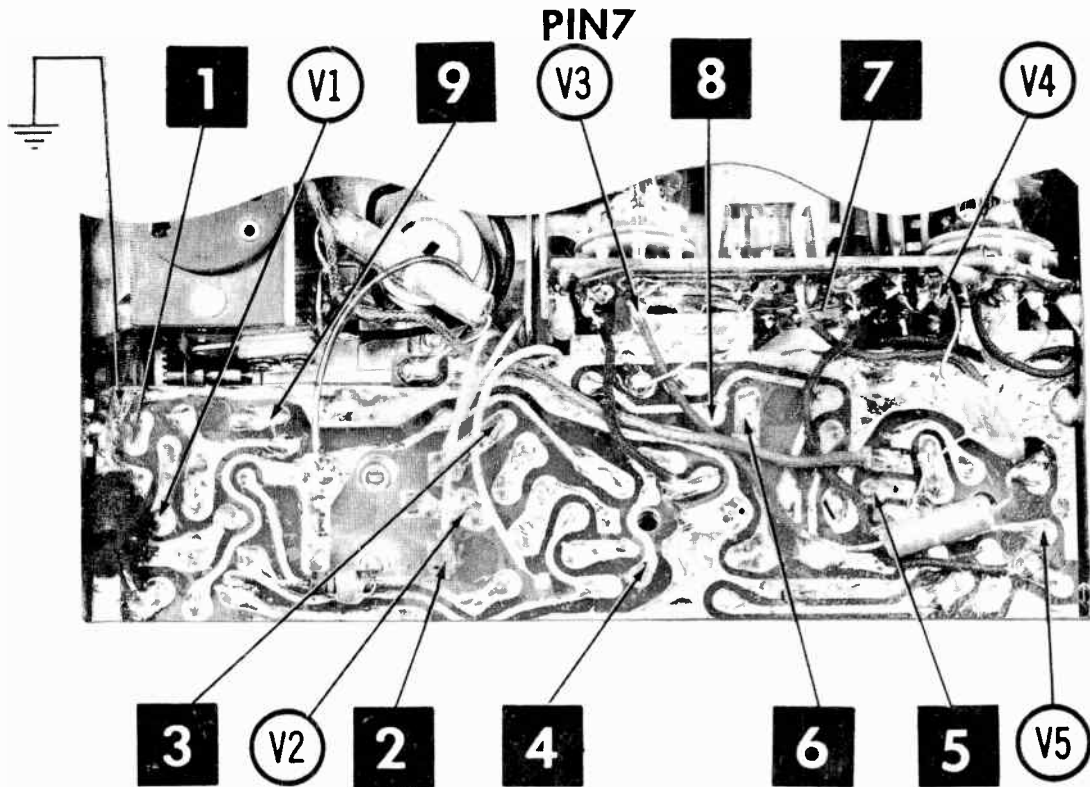
LINCOLN MODELS 85BHP (FFC-18805-C, -D)  
95BH (B9FL-15801-A, -B, FFC-19061-B)

TRADE NAME	Lincoln Models 85BHP (FFC-18805-C, -D; Above Serial #50000) For 1958 Lincoln Automobiles, 95BH (B9FL-15801-A, -B; FFC-19061-B) For 1959 Lincoln Automobiles	
MANUFACTURER	Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Maryland	
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output	
TUBES (Five)	Types 12CX6 RF Amplifier, 12AD6 Converter, 12CN5 IF Amplifier, 12J8 Det. -AVC-AF Amp., 12U7 AF Amp. -Trigger	
POWER SUPPLY	12 Volt Storage Battery	RATING 1.2 Amp. @ 12.6 Volts DC
TUNING RANGE - BROADCAST	540-1600KC	

**HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana**

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H742

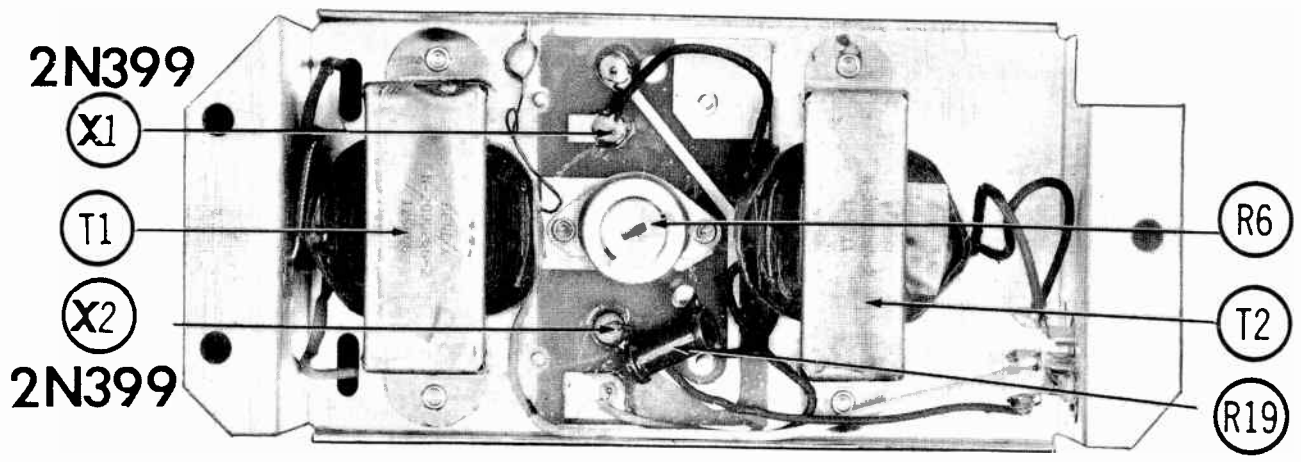
the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana Printed in U.S. of America



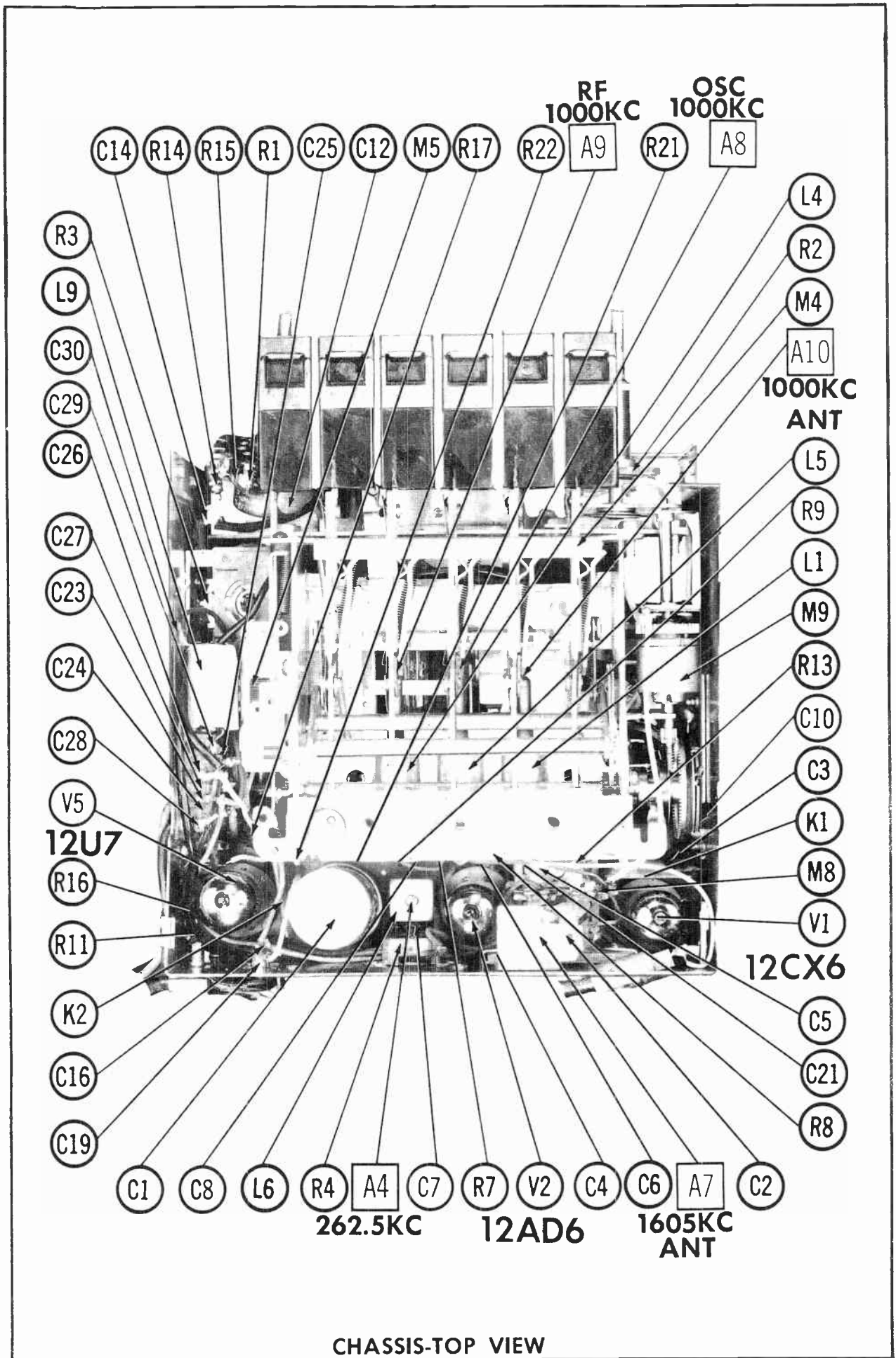
A Howard W. Sams **CIRCUITRACE\*** Photo  
 \*TRADE MARK

**PRINTED BOARD**

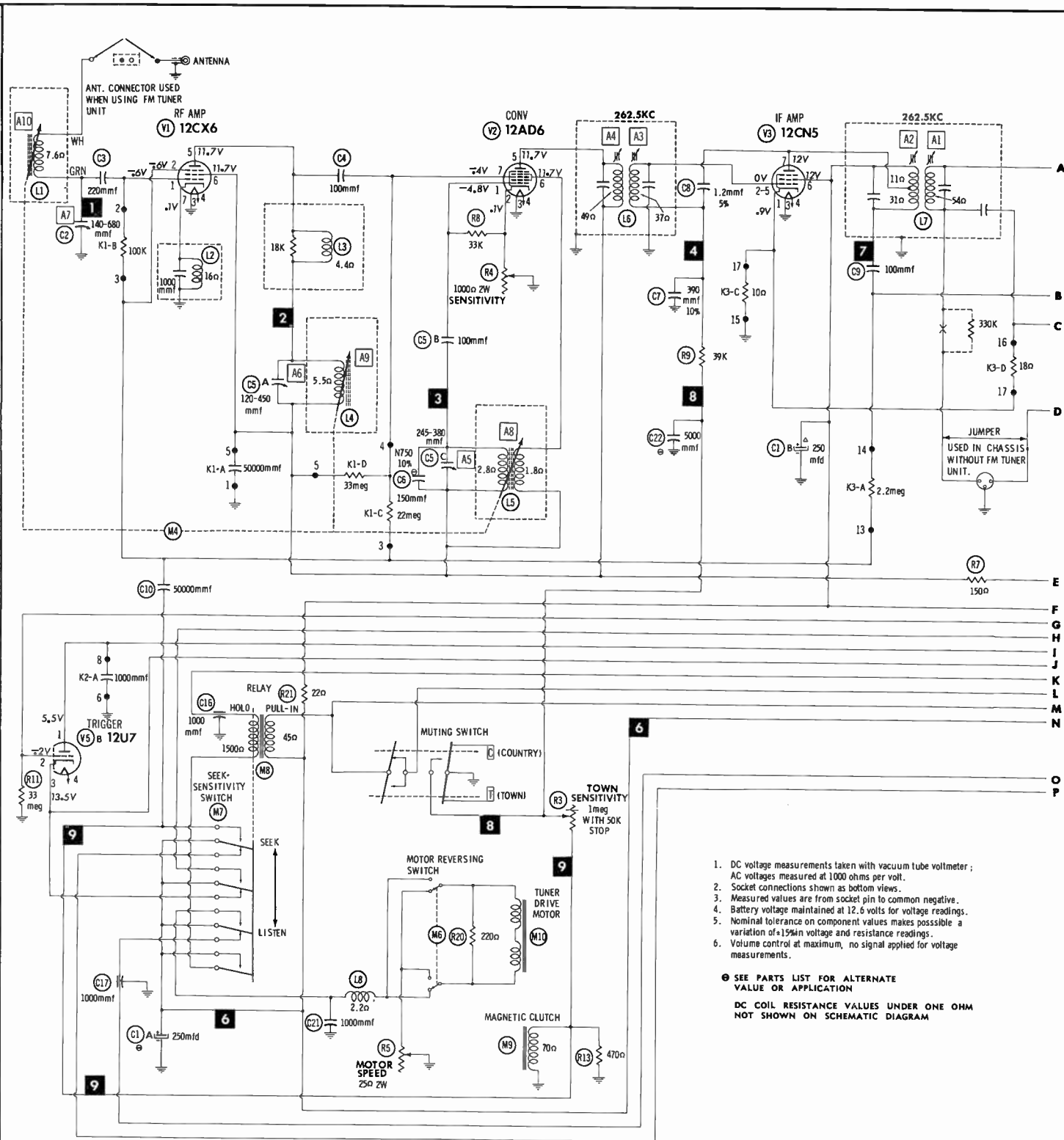
ARROWS INDICATING TUBE LOCATIONS ARE  
 POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



**OUTPUT CHASSIS**







1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
  2. Socket connections shown as bottom views.
  3. Measured values are from socket pin to common negative.
  4. Battery voltage maintained at 12.6 volts for voltage readings.
  5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
  6. Volume control at maximum, no signal applied for voltage measurements.
- ⊗ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
- DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

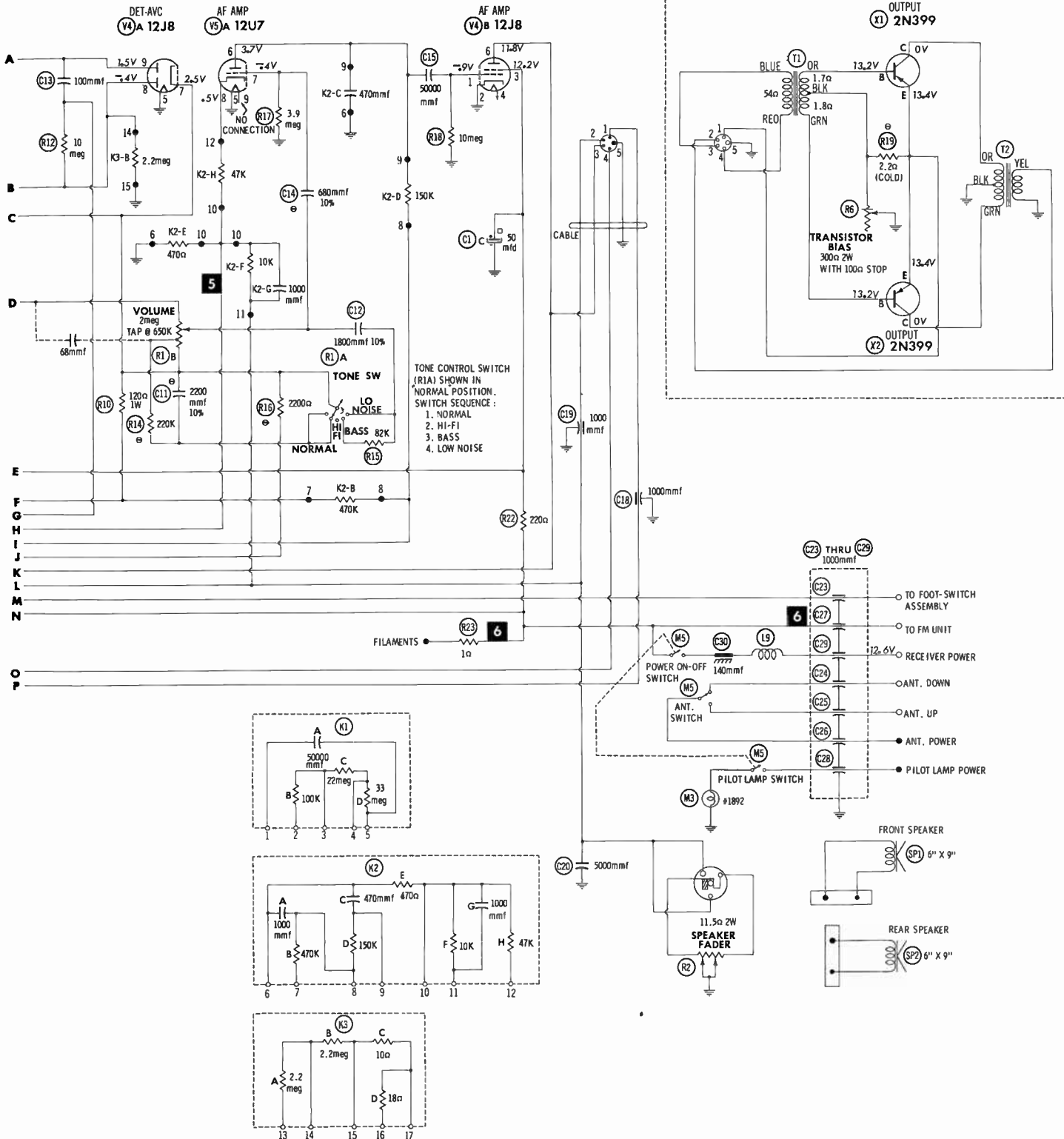
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12CX6	4.5meg	4.4meg	0Ω	1.1Ω	†380Ω	†370Ω	16Ω		
V2	12AD6	33K	55Ω	0Ω	1.1Ω	†420Ω	†370Ω	20meg		
V3	12CN5	10Ω	630K	0Ω	1.1Ω	630K	†22Ω	†33Ω		
V4	12J8	10meg	0Ω	†220Ω	1.1Ω	0Ω	†55Ω	24Ω	2meg	1.7meg
V5	12U7	†470K	8meg	1.7Ω	1.1Ω	0Ω	†620K	3.9meg	47K	NC

TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.  
 † MEASURED FROM JUNCTION OF R21 & C1A.  
 NC NO CONNECTION.

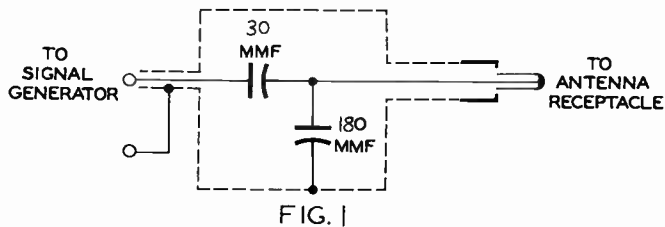
A PHOTOFAC STANDARD NOTATION SCHEMATIC  
 with CIRCUITRACE<sup>®</sup>  
 ©Howard W. Sams & Co., Inc. 1958





# ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1. .lmfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	282.5KC (400 $\nu$ Mod)	High Freq. end stop	DC probe to high side of R1B. Common to pin 7 of V4.	A1, A2, A3, A4	Adjust for maximum deflection.
2. Fig. 1	Thru dummy to antenna receptacle.	1805KC	"	"	A5, A6, A7	Adjust for maximum deflection. Repeat steps 1 and 2.
3. With radio installed in car and antenna fully extended, tune in a weak station near 1600KC, and adjust A7 for maximum output. Step 4 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, A10) out of coils but not out of coil forms. Repeat step 2.						
4. Fig. 1	Thru dummy to antenna receptacle.	1000KC (400 $\nu$ Mod)	Carriage $\frac{1}{2}$ " from high end stop	"	A8, A9, A10	Adjust for maximum deflection. Repeat steps 2 and 4.
5. "	"	1000KC @ 3 microvolts (400 $\nu$ Mod)	Tune to 1000KC signal	(Output Meter) Across voice coil	R4	Adjust for 1.75 volts (approx. 1 watt).
6. "	"	1000KC @ 250 microvolts	"	"	R3	Turn R3 fully counterclockwise. Press "Town" button. Turn R3 slowly until tuner stops seeking.
Adjust generator for 125 microvolts. Press "Town" button. Tuner should NOT stop seeking. If necessary repeat steps 5 and 6.						



## PUSHBUTTON ADJUSTMENT

1. Tune manually to desired station.
2. Pull pushbutton out; then push in firmly.
3. Repeat for remaining pushbuttons.

## TRANSISTOR BIAS ADJUSTMENT

1. Disconnect output transformer center tap from chassis.
2. Connect a DC milliammeter, not more than .2 $\Omega$  max. internal resistance) between center tap of output transformer (T2) and chassis.
3. Set DC input to 14.4DC.
4. Turn radio on and with no signal input, adjust R6 for a reading of .100 ampere.

## PARTS LIST AND DESCRIPTIONS

### TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES	ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12CX6		V4	Det. -AVC-AF Amp.	12J6	
V2	Converter	12AD6		V5	AF Amp. -Trigger	12U7	
V3	IF Amplifier	12CN5					

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N399	Output	CBS-2N236A			2N242	PNP
X2	2N399	Output	CBS-2N236A			2N242	PNP

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT.	BENDEX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.	
CLA	250	16	220353-5 ①	AFH3-00-60						R2669 *
B	250	16								
C	50	16								

① Some versions may use 500-250-50mfd in this application (Part #220353-6).

② Not normally in distributors stock. Available thru distributor on order to manufacturer.

### FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	BENDEX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	140-660		219063-2						
C3	220		220332-41	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C4	100		220332-14	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C5A	120-450								
B	100		219092-4						
C	245-380								
C6	150		220332-45	N750-DI 150	DTN-150	C10T15U		5TCU-T15	N750 10% ①
C7	390		220346-510	1469-00039	MD-391	5R5T39		MS-339	10% 5%
C8	1.2		220212-13						
C9	100		220332-39	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C10	50000		220332-40	BPD-05	DF-503			5HK-85	
C11	2200		2090056U-222K						10% ②
C12	1600		2090056U-162K						10%
C13	100		220332-39	BPD-0001	DD-101	L10T1		5GA-T1	
C14	660		2090056U-661K						10% ③
C15	50000		220095-45	BPD-05	DF-503			5HK-85	
C16	1000		2090546-2	EF-001	MFT-1000			503C-D1	
C17	1000		2090546-2	EF-001	MFT-1000			503C-D1	
C18	1000		2090546-2	EF-001	MFT-1000			503C-D1	
C19	1000		2090546-2	EF-001	MFT-1000			503C-D1	
C20	5000		2090056T-502M	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C21	1000		2090056T-102P	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C22	5000		2090056T-502M	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	④
C23	1000		2090546-2	EF-001	MFT-1000			503C-D1	
C24	1000		2090546-2	EF-001	MFT-1000			503C-D1	
C25	1000		2090546-2	EF-001	MFT-1000			503C-D1	
C26	1000		2090546-2	EF-001	MFT-1000			503C-D1	
C27	1000		2090546-2	EF-001	MFT-1000			503C-D1	
C28	1000		2090546-2	EF-001	MFT-1000			503C-D1	
C29	1000		2090546-2	EF-001	MFT-1000			503C-D1	
C30	140		220267-11					503C-D1	

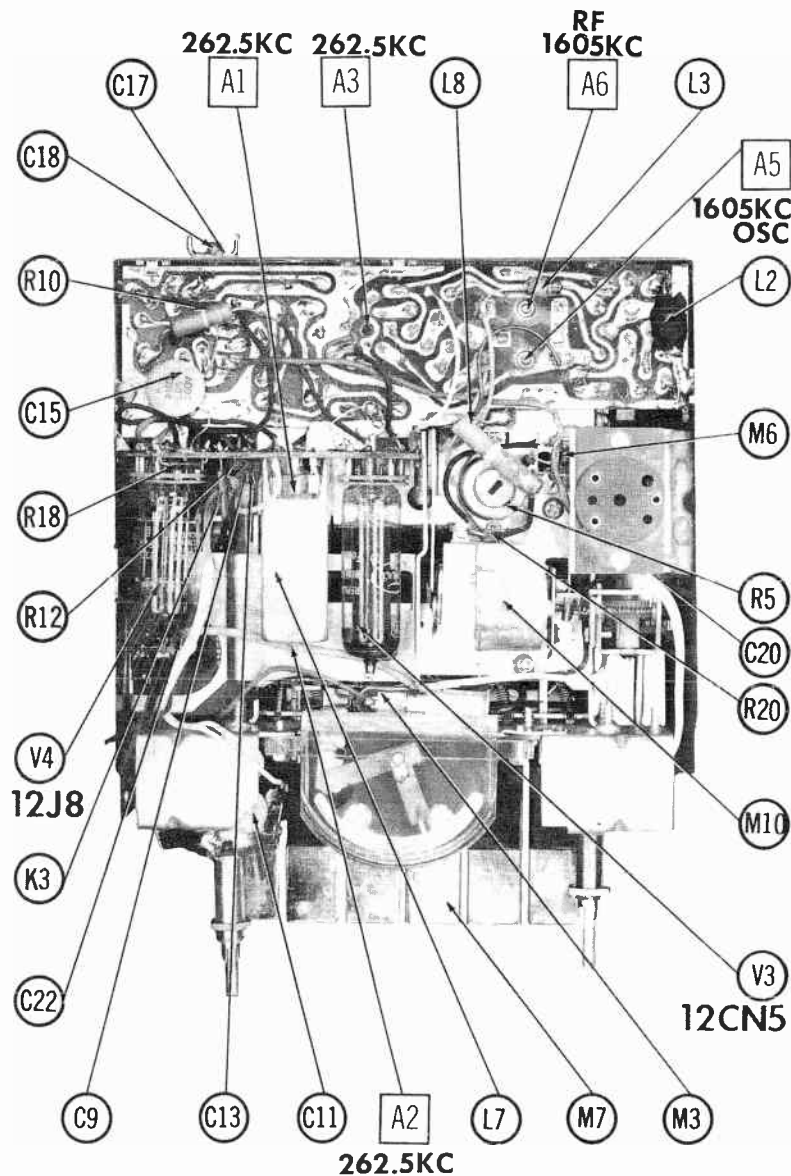
① Model 95BH uses 69mmf N750 10% in this application (Part #220332-62).

② Model 95BH uses 2700mmf 10% in this application (Part #2090056U-272K).

③ Model 95BH uses 1000mmf 10% in this application (Part #2090056U-102K).

④ Some versions may use 1000mmf in this application (Part #2090056T-102P).

## CHASSIS—BOTTOM VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	
R1A	Switch		2090276-1				Tone Volume, Tap @ 650K Speaker Fader Tone Sensitivity, with 50K stop
R2	2meg	1/2	219879-3				
R3	1meg	2(WW)	2090560-2				
R4	1000Ω	2(WW)	219555-15		39-1000		Sensitivity Motor Speed Transistor Bias, with 100Ω stop
R5	25Ω	2(WW)	219555-12			FL-1.5K	
R6	300Ω	2(WW)	219555-17				

## RESISTORS

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

ITEM No.	RATING		BENDIX PART No.	NOTES	ITEM No.	RATING		BENDIX PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R7	150Ω		220604B-151		R16	2200Ω		220604B-222	
R8	33K		220604B-333		R17	3.9meg		220603B-395	
R9	39K		220603B-393		R18	10meg		220604B-106	
R10	120Ω	1	220551C-121K		R19	2.2Ω Cold		220629-7	Note 2
R11	33meg		220604B-336		R20	220Ω		220604B-221	
R12	10meg		220604B-106		R21	22Ω		220604B-221	
R13	470Ω		220604B-471		R22	220Ω		220604B-221	
R14	220K		220603B-224	Note 1	R23	1Ω		209043B-7	10" Cupron Wire
R15	82K		220603B-823						

Note 1. Model 95BH uses 180K in this application (Part #220603B-184).  
Note 2. Some versions may use two 4.5Ω resistor (Cold) in series.

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BENDIX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Ant. Coil	2090532-2					Part of M4 Wound on 1000mmf 50 Microhenries, wound on 18K
L2	Cathode Choke		2090088-3				
L3	RF Choke						
L4	RF Coil	2090492-2					Part of M4 Part of M4
L5	Osc. Coil						
L6	Input IF		2090237-5				
L7	Output IF		2090671-1	19-1003	BC-564	4608	
L8	RF Choke						
L9	"A" Lead Choke	218188-14				3.9 Microhenries, IRC Part #CL-1	

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	BENDIX PART No.	Holldorson PART No.	Merit PART No.	Stoncor PART No.	Thordorson PART No.	Triod PART No.	
T1	5 : 1		2090265-2						

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	BENDIX PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stoncor PART No.	Thordorson PART No.	
T2	30Ω CT	3-4Ω	2090266-2						

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BENDIX PART No.	QUAM PART No.	
SP1	6" x 9"	PM	3-4Ω	282634-7	69A2	Front Seat
SP2	6" x 9"	PM	3-4Ω	282634-8	69A2	Rear Seat

## COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BENDIX PART No.	REPLACEMENT DATA
K1	RF Amp. Circuit	50000mmf, 100K, 22meg, 33meg	2090797-1	
K2	Audio Circuit	470mmf, 1000mmf, 1000mmf, 470Ω, 10K, 47K, 150K, 470K	2090798-1	
K3	AGC Circuit	10Ω, 18Ω, 2.2meg, 2.2meg	2090799-1	

## FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BENDIX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	9A 32V	SFE-9	221634-9				
M2	3AG			2090506-1				

## MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M3	Lamp	1892	#1892
M4	Tuner	2090453-2	Assembly, Includes L1, L4, L5, M5
M5	Switch	2090555-1	Power On-Off, 4PST, Slide Type (Part of M4)
M6	Foot Switch	2090403-3	
M6	Switch	2090673-1	Motor Reversing, Part of motor mounting plate assembly (Part #2090673-1)
M7	Switch	2090678-1	Seek-Sensitivity, Includes escutcheon
M7	Switch Assembly	2090677-1	Seek, Includes tuner mounting bracket, pointer pivot, lamp holder
M8	Relay Assembly	2090507-1	Includes mounting board assembly
M9	Clutch Assembly	2090046-3	Magnetic
M10	Motor	2090533-1	Tuner Drive
M10	Printed Board	2090790-1	Audio Chassis
M10	Printed Board	2090884-1	Small
M10	Printed Board	2090883-1	Large

## CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART No.	DESCRIPTION
Knob Assembly	2090282-1	
Disc	2090278-1	Tone, Fader Control
Pushbutton	2090279-1	Less Cap, 6 Used
Pushbutton Cap	2090280-1	Station, 5 Used
Pushbutton Cap.	2090280-2	Off
Cover Assembly	2090763-2	Top
Cover Assembly	2090764-1	Bottom
Pointer	2090674-1	Includes arm and connecting stud assembly
Dial	2090330-1	Calibrated

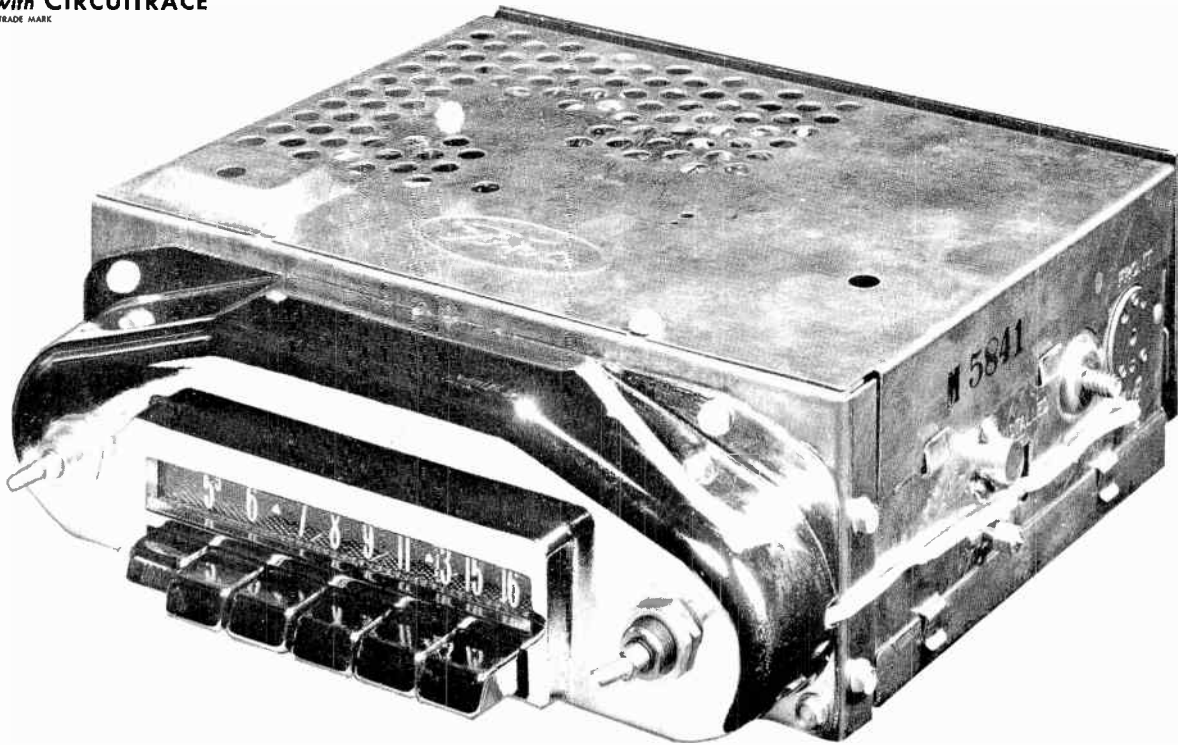
## WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Shielded Hook-up Wire	8524 (Stranded) Available in Ten Colors
Bonding Strap	Use BELDEN No. 8885
	Use BELDEN No. 8661





with CIRCUITRACE\*  
\*TRADE MARK



TRADE NAME	Mercury Model M-5841 (For 1958 Mercury Automobiles)	
MANUFACTURER	Philco Corp., Tioga and "C" Streets, Philadelphia, Pa.	
TYPE SET	Battery Operated Custom Built AM Automobile Receiver with Transistorized Output	
TUBES (Five)	Types 12BL6 RF Amplifier, 12AD6 Converter, 12BL6 IF Amplifier, 12AE6 Det. -AVC-1st AF Amp., 12K5 2nd AF Amplifier	
POWER SUPPLY	12 volt Storage Battery	RATING 1.2 Amp. @ 12.6 volts DC
TUNING RANGE—BROADCAST	540-1600KC	

MERCURY  
MODEL M-5841

## ALIGNMENT INSTRUCTIONS

### ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screw-driver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .05mfd	High side to Pin 7 (grid) of 12AD6 (V2) Low side to chassis.	262.5KC (400% Mod.)	1605KC	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2. Fig. 1	Thru dummy to antenna receptacle.	1605KC	1605KC		A5, A6, A7	Adjust for maximum output.
3. With radio installed in car and antenna fully extended, tune in a weak station near 1200KC and adjust A7 for maximum output.						

#### PUSHBUTTON ADJUSTMENT

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

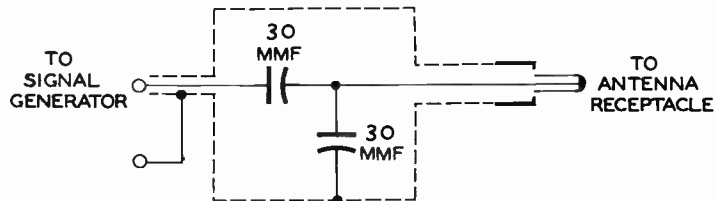
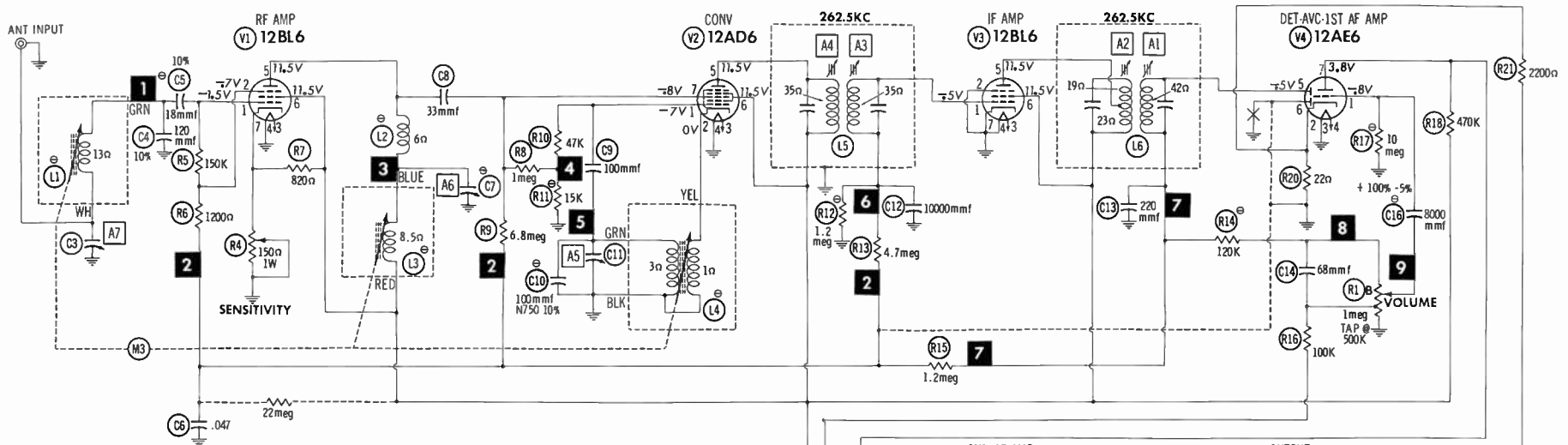


FIG. 1

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The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H542

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RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BL6	3.5meg	3.4meg	1.3Ω	0Ω	†14.5Ω	†0Ω	55Ω
V2	12AD6	60K	1Ω	1.3Ω	0Ω	†35Ω	†0Ω	1meg
V3	12BL6	1.1meg	0Ω	1.3Ω	0Ω	†23Ω	†0Ω	0Ω
V4	12AE6	10meg	22Ω	0Ω	1.3Ω	1.1meg	0Ω	†470K
V5	12K5	12Ω	2.2meg	0Ω	1.3Ω	†100Ω	†100Ω	†195Ω

TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE  
 † MEASURED FROM JUNCTION OF R 19 AND R 20.

⊕ TONE SW (R1A) SHOWN IN "LO NOISE" POSITION  
 SW SEQUENCE :  
 1 - LO NOISE  
 2 - BASS  
 3 - HI-FI  
 4 - NORMAL

- DC voltage measurements taken with vacuum tube voltmeter.
- Socket connections shown as bottom views.
- Measured values are from socket pin to common negative.
- Battery voltage maintained at 12.6 volts for voltage readings.
- Nominal tolerance on component values makes possible a variation of 15% in voltage and resistance readings.
- Volume control at maximum, no signal applied for voltage measurements.

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

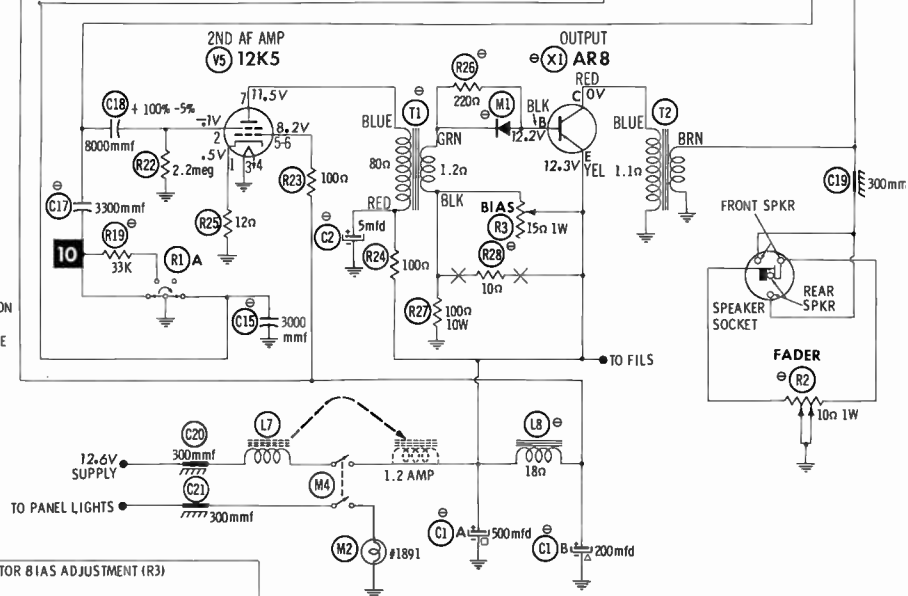
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFAC STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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TRANSISTOR BIAS ADJUSTMENT (R3)

- Connect a 20,000Ω per volt DC voltmeter from transistor collector to ground.
- Set volume (R1B) for minimum.
- Connect a 14.4 volt DC supply to the receiver and allow a 15 minute warm-up period.
- Adjust R3 for a 1 volt meter reading.



# PARTS LIST AND DESCRIPTIONS

## TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES	ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6		V4	Det. -AVC-1st AF Amp.	12AE6	
V2	Converter	12AD6		V5	2nd AF Amplifier	12K5	
V3	IF Amplifier	12BL6					

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	AR8	Output	CBS-2N236A			AR8	Note 1

Note 1. Late production uses type AR8A. When used, R26 and M1 are omitted.

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						SPRAGUE PART No.	NOTES
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.		
C1A	500	18	61-0086-9 ①	AFH2-02-75	B0045	WP200-7				R2480*
C2	200	18								
C2	5	25	30-2417-58 ①	SRE25V5	BBR5-50	TC30	TD-5-25	MT-0504		TVA-1203

\* Non-Catalog Item ① Production Run 61 combines C1A, C1B and C2 in one unit (Part #61-0086-10).

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					NOTES	
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.		SPRAGUE PART No.
C3			31-6533-1	NPO-DL120	DD-121	L10T12		5TCC-T12	10%
C4	120		30-1251-23		DD-180	L10Q18			10% ①
C5	18		30-1263-2		DF-503	CUB2S47	GEM-4147	2TM-S47	②
C6	.047	200	30-4650-45	P288N-047					
C7			31-6532-3						
C8	33		30-1263-8	BPD-000033	DD-330	L10Q33	UC-5433	5GA-Q33	
C9	100		30-1263-9	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C10	100		30-1263-28	N750-DH100	DTN-100	C10TIU	NT-531	5TCU-T1	N750 10% ③
C11			31-6532-4						
C12	10000		30-1262	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C13	220		30-1262-23	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C14	68		62-068009011	S168	D8-680	LT6Q68	UC-5468	5GA-Q68	
C15	3000		30-1238-16		DD-302	BYA10D3	UC-523	5GA-D3	③
C16	8000		30-1262-1	BPD-0033	DD-332	BYA10D33	UC-5233	5HK-D33	+100, -5% ④
C17	3300		30-1262-1						+100, -5% ⑤
C18	8000		30-1254-3						
C19	300		30-1254-1						
C20	300		30-1254-1						
C21	300		30-1254-1						

① Some versions may use 5mmf (Part #30-1224-132). Run 60 and later may use 10mmf (Part #30-1263-34).

② Starting with Run 62 Part #31-6532-5 is used.

③ Run 64 and later use 5000mmf (Part #30-1238-20).

④ Run 55 and later use 3000mmf (Part #30-1262-5).

⑤ Some versions use 3000mmf (Part #30-1262-5). Run 55 and later use 4700mmf (Part #30-1263-3).

⑥ Part #30-1263-14 used in some versions.

## CONTROLS

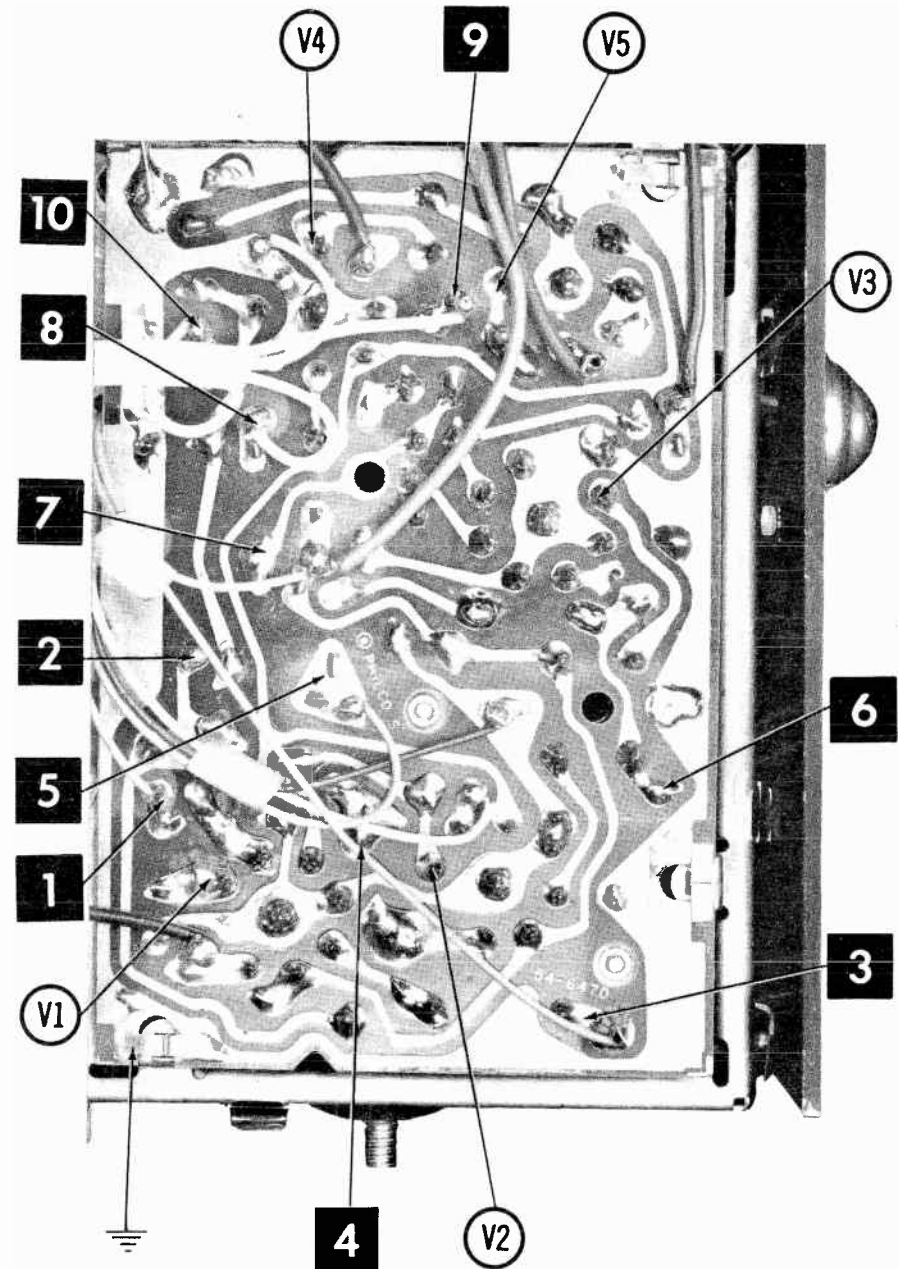
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES	
	RESISTANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.		MALLORY PART No.
R1A	Switch		33-5570-2					Tone Volume, Tap @ 500K Speaker Fader Transistor Bias Sensitivity
R2	1meg	1/2	33-5576-6 ①					
R3	10Ω	1 (WW)	33-5591-2					
R4	150Ω	1 (WW)	33-5591-4				FL-150	

① Part #33-5576-7 may be used in some versions.

## PRINTED BOARD

A Howard W. Sams CIRCUITRACE\* Photo  
\*TRADE MARK

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED





## PARTS LIST AND DESCRIPTIONS (Continued)

### RESISTORS

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

ITEM No.	RATING		PHILCO PART No.	NOTES	ITEM No.	RATING		PHILCO PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R5	150K		66-4158340		R17	10meg		66-6108340	Note 3
R6	1200Ω		66-2128340		R18	470K		66-4478340	
R7	820Ω		66-1828340		R19	33K		66-338340	Note 4
R8	1meg		66-5108340		R20	22Ω		66-0228340	
R9	6.8meg		66-5688340		R21	2200Ω		66-2228340	
R10	47K		66-3478340		R22	2.2meg		66-5228340	
R11	15K		66-3158340	Note 1	R23	100Ω		66-1108340	
R12	1.2meg		66-5128340	Note 2	R24	100Ω		66-1108340	
R13	4.7meg		66-5478340		R25	12Ω		66-0128340	
R14	120K		66-4128340	Note 7	R26	220Ω		66-1228340	Note 5
R15	1.2meg		66-5128340		R27	100Ω	10	33-1367-2	Temp. Comp.
R16	100K		66-4108340		R28	10Ω		66-0108340	Note 6

- Note 1. Some versions may use 10K in this application (Part #66-3108340).
- Note 2. Runs 56 thru 59 use 10meg (Part #66-6108340). Runs 60 and later use 4.7meg (Part #66-5478340).
- Note 3. Runs 61 and later use 6.8meg in this application (Part #66-5688340).
- Note 4. Runs 54 and later use 15K in this application (Part #66-3158340).
- Note 5. Not used when X1 is AR8A.
- Note 6. Not used in early versions. Runs 57 and later use 18Ω (Part #66-0188340).
- Note 7. Runs 61 and later use 470K in this application (Part #66-4478340).

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		PHILCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Ant. Coil	32-4730-16					① ② ③ ④ ⑤ ⑥ ⑦
	Ant. Coil	32-4730-22					
L2	RF Choke	32-4480-24	19-3160	TV-19C	8120		
L3	RF Coil	32-4730-17					
	RF Coil	32-4730-24					
L4	Osc. Coil	32-4730-18					
	Osc. Coil	32-4730-23					
L5	Input IF	32-4876-4	16-8756	BC-317	13-PH1		
L6	Output IF	32-4877-4		BC-318			
L7	"A" Lead Choke	32-4720-3					

- ① Part of tuner assembly Part #76-10369-2.
- ② Part of tuner assembly Part #76-10369-1.
- ③ Starting with Run 52, Part #32-4480-25 is used.

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 $\sim$ )	PHILCO PART No.	Hollidorsen PART No.	Merit PART No.	Ram PART No.	Stoncor PART No.	Thordorsen PART No.	Triad PART No.
L8	1.2A @ 12VDC	18Ω	.47HY	32-8788①						

- ① Run 59 and later use Part #32-8788-1.

### TRANSFORMER (INTERSTAGE)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES	
	PRI.	SEC.	PHILCO PART No.	Hollidorsen PART No.	Merit PART No.	Ram PART No.	Stoncor PART No.	Thordorsen PART No.		Triad PART No.
T1	8	:1	32-8821							Note 1

Note 1. Run 58 and later use Part #32-8821-1.

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES	
	PRI.	SEC.	PHILCO PART No.	Hollidorsen PART No.	Merit PART No.	Ram PART No.	Stoncor PART No.	Thordorsen PART No.		Triad PART No.
T2	2	:1	32-8832-1							

### CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		PHILCO PART No.	CBS PART No.	SYLVANIA PART No.	
M1	PD1	34-8045 ①			Peak Clipper (Pigtail)

- ① Removed in run 83.

### MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M2	Lamp	34-2031-12	#1891
M3	Tuner Ass'y.	76-10369-2	Complete, less L1, L3, L4, and M5. Replacement order #76-10369-1.
M4	Switch	42-2072-2	Power, Tuner #76-10369-2
	Switch	42-2072-1	Power, Tuner #76-10369-1
	Printed Board	54-6470	

### CABINETS & CABINET PARTS

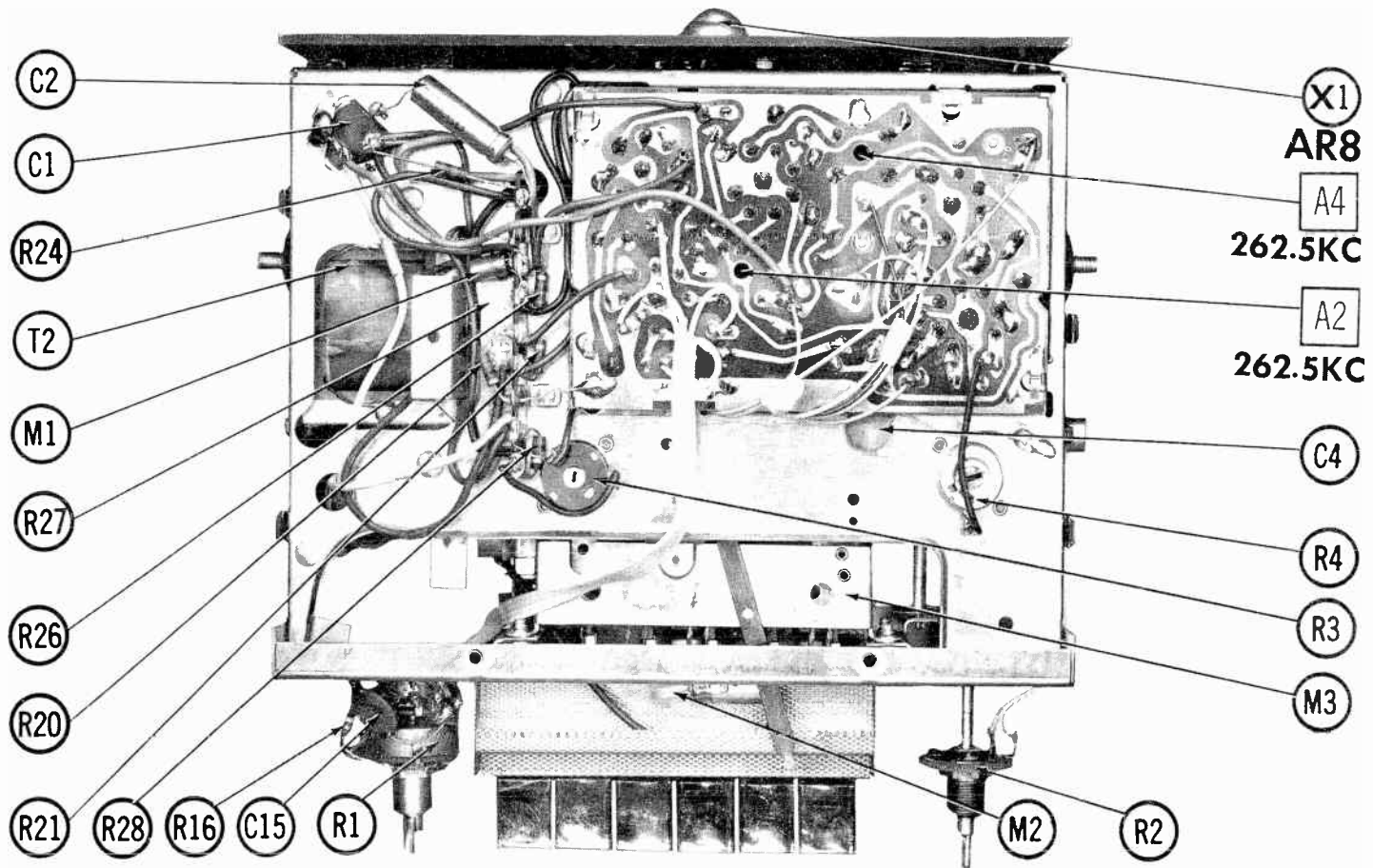
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Bezel	28-11850-1	
Push Button	76-11387-8	"Off"
Push Button	76-11387-7	5 Used
Dial Scale	54-8966	

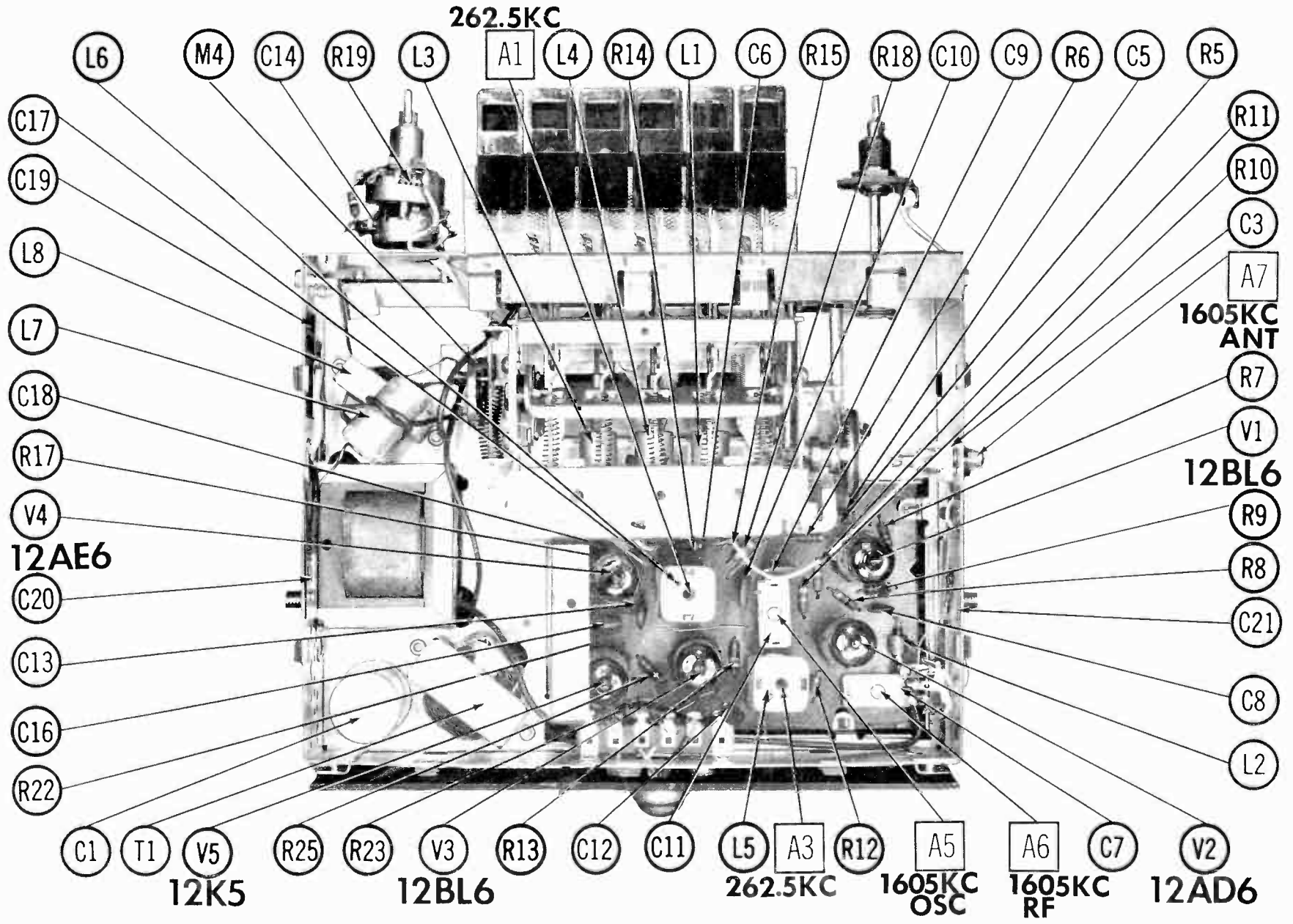
### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in Ten Colors
	8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8885
Bonding Strap .....	Use BELDEN No. 8661

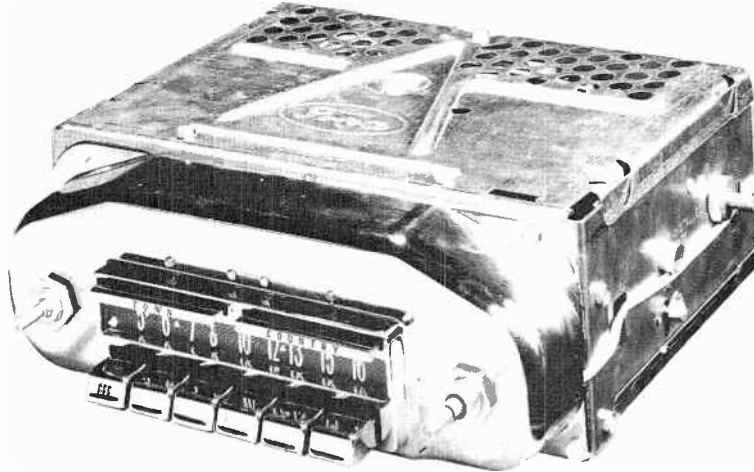




CHASSIS-BOTTOM VIEW



CHASSIS TOP VIEW



<b>TRADE NAME</b>	Mercury Model 85BM (FEW-18805-T) for 1958 Mercury Automobiles	
<b>MANUFACTURER</b>	Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Maryland	
<b>TYPE SET</b>	Battery Operated Custom Built AM Automobile Receiver with Transistorized Output	
<b>TUBES (Five)</b>	Types 12CX6 RF Amplifier, 12AD6 Converter, 12CN5 IF Amplifier, 12J8 Det-AVC-Relay Cont.-Driver, 12U7 AF Amp.-Trigger.	
<b>POWER SUPPLY</b>	12 Volt Storage Battery	<b>RATING</b> 1.5 Amp. @ 12.6 Volts DC
<b>TUNING RANGE—BROADCAST</b>	540-1600KC	

## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2) Low side to chassis	262.5KC (400% Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4, Adjust for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle.	1605KC	"	"	A5, A6, A7 "
3. With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and adjust A7 for maximum output.						
Step 4 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores A8, A9, A10 out of coils but not out of coil forms. Repeat Step 2.						
4.	Fig. 1	Thru dummy to antenna receptacle.	1000KC	Carriage 1/2" from high end stop.	Across voice coil.	A8, A9, A10, Adjust for maximum output. Repeat Steps 2 and 4.
5.	"	"	1000KC @ 3 microvolts.	Tune for 1000KC signal.	"	R3, Adjust for 1.75 volt output (approx. 1W)
6.	"	"	1000KC @ 250 microvolts.	Press Town seek bar.	"	R4, Set R4 counterclockwise. Press Town seek bar. Advance R4 slowly until tuner stops on 1000KC @ 250 microvolts signal.
7.	"	"	1000KC @ 125 microvolts.	"	"	Tuner should not stop on 1000KC @ 125 microvolts signal. If necessary, Repeat Steps 5 and 6.

### PUSHBUTTON ADJUSTMENT

1. Tune manually to desired station.
2. Pull button out, then press in firmly.
3. Repeat for remaining buttons.

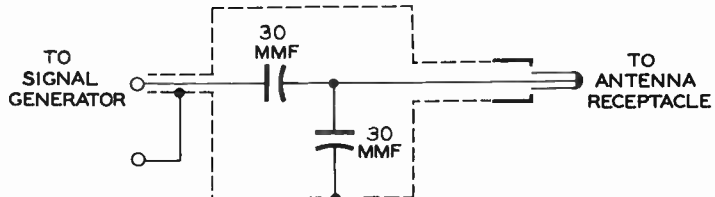


FIG. 1

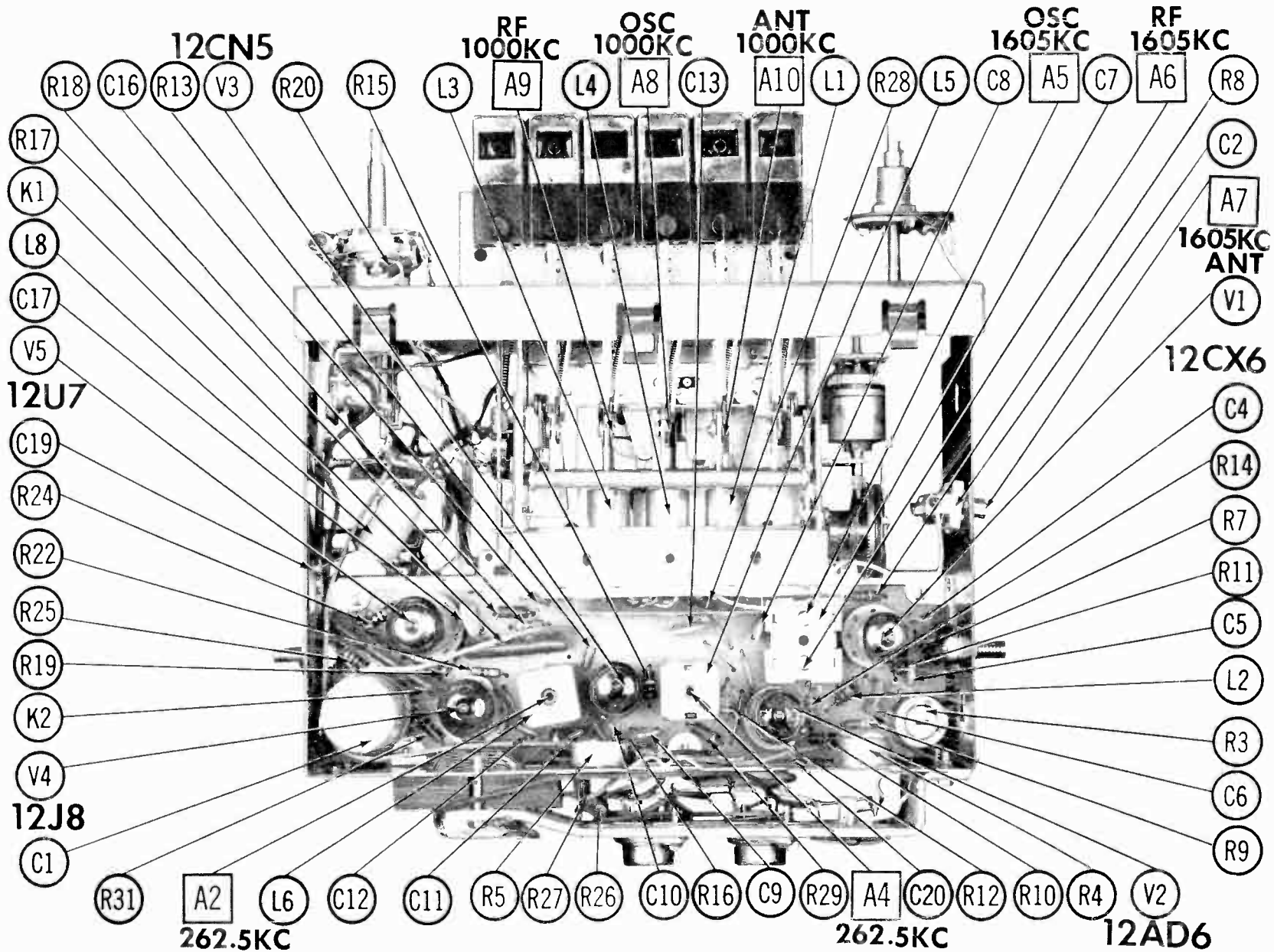
**HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana**

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**MERCURY MODEL  
85BM (FEW-18805-T)**





CHASSIS-TOP VIEW



## PARTS LIST AND DESCRIPTIONS

### TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12CX6	
V2	Converter	12AD6	
V3	IF Amplifier	12CN5	

ITEM No.	USE	TYPE	NOTES
V4	Det-AVC-Relay Cont. Driver	12J8	
V5	AF Amp-Trigger	12U7	

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N401	O <sub>1</sub> tput	CBS-2N401			2N350	
X2	2N401	Output	CBS-2N401			2N350	

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	250	16	220353-5	AFH3-00-80					R2669*
B	250	16							
C	50	16							

\* Non-Catalog Item

### FIXED CAPACITORS

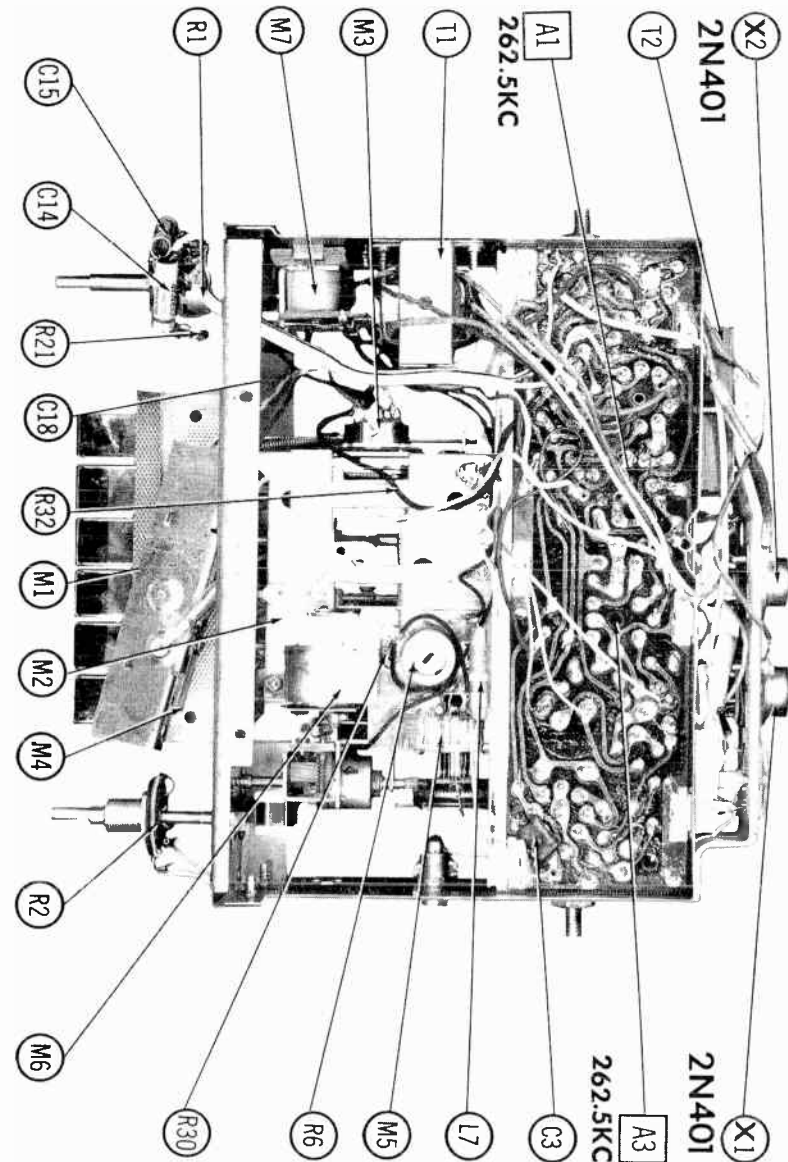
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

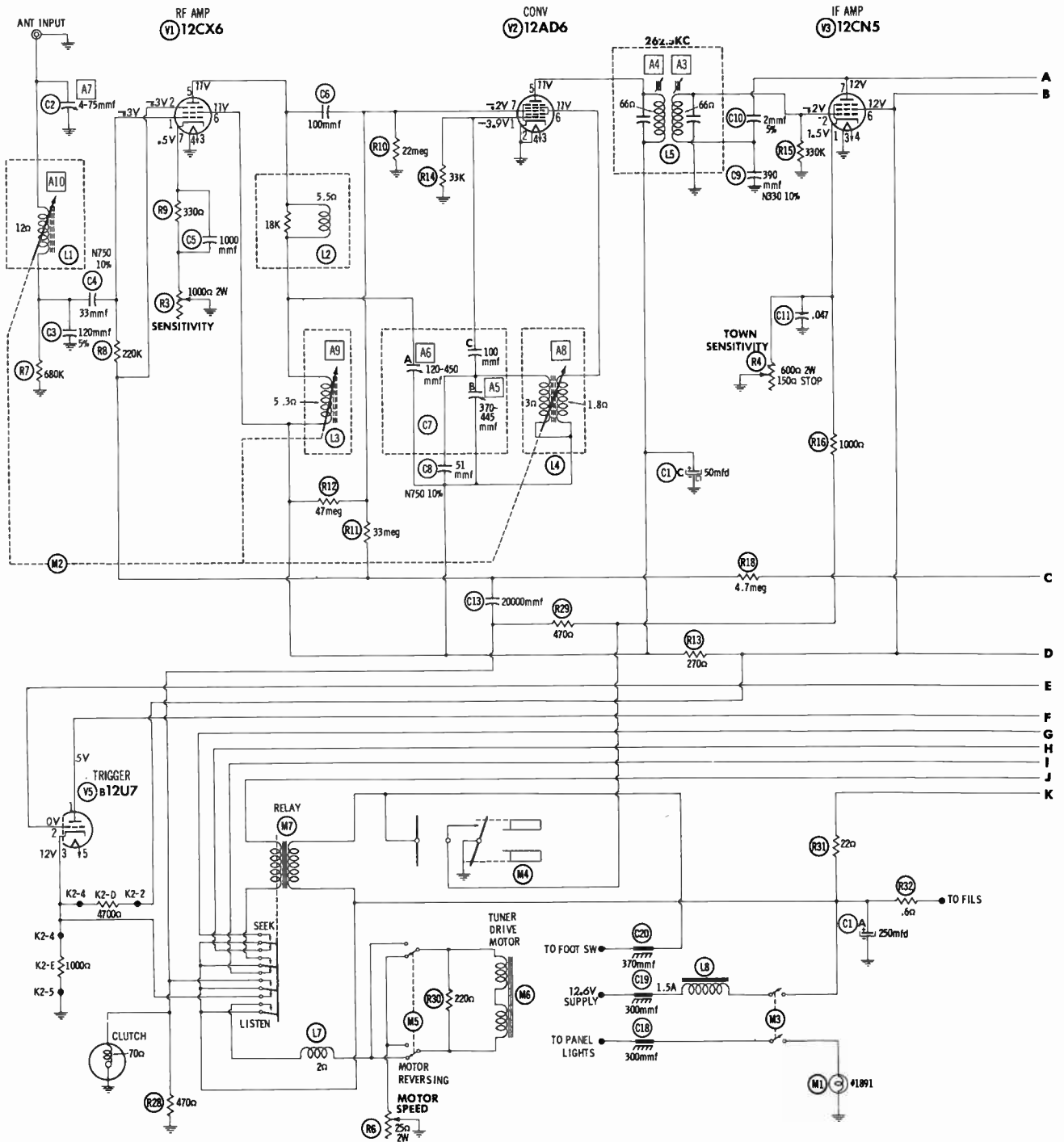
ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	BENDIX PART No.	AEROVOX PART No.	CENTRALLAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	4-75		219083-1						
C3	120	300	220348-407						5%
C4	33	500	220332-19						N750 10%
C5	1000	100	220332-36						
C6	100	500	220332-14						
C7A	120-450								
B	370-445		219082-2						
C	100								
C8	51	500	220332-16						N750 10%
C9	390	500	220332-34						N330 10%
C10	2	500	220212-11						5%
C11	.047	200	2090585-9	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C12	100	100	220332-37	BPD-0001	DD-101	L10T1	UC-631	5GA-T1	
C13	20000	100	220332-24	BPD-02	DD-203	BYA6S2		5HK-52	
C14	.0018	100	2090059A-182L						10%
C15	.0018	100	2090059A-182L						10%
C16	330	500	220332-25	BPD-00033	DD-331	L10T33	UC-5333	5GA-T33	
C17	20000	100	220332-24	BPD-02	DD-203	BYA6S2		5HK-52	
C18	300		220267-12						
C19	300		220267-12						
C20	370		220267-6						

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	CENTRALLAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	Switch							Tone
B	2meg		219689-4					Volume, Tap @1meg
R2	11.5Ω	1(WW)	219679-1					Speaker Fader
R3	1000Ω	2(WW)	219682-2					Sensitivity
R4	600Ω	2(WW)	219555-14		39-700-200			Town Sensitivity, 150Ω Stop
R5	300Ω	2(WW)	219555-17					Transistor Bias, 100Ω Stop
R6	25Ω	2(WW)	219555-12		39-50			Motor Speed

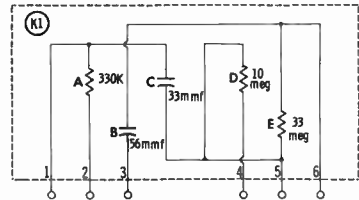
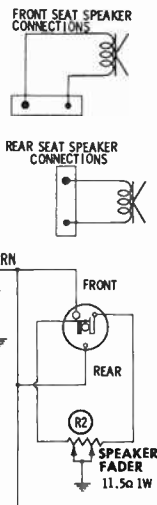
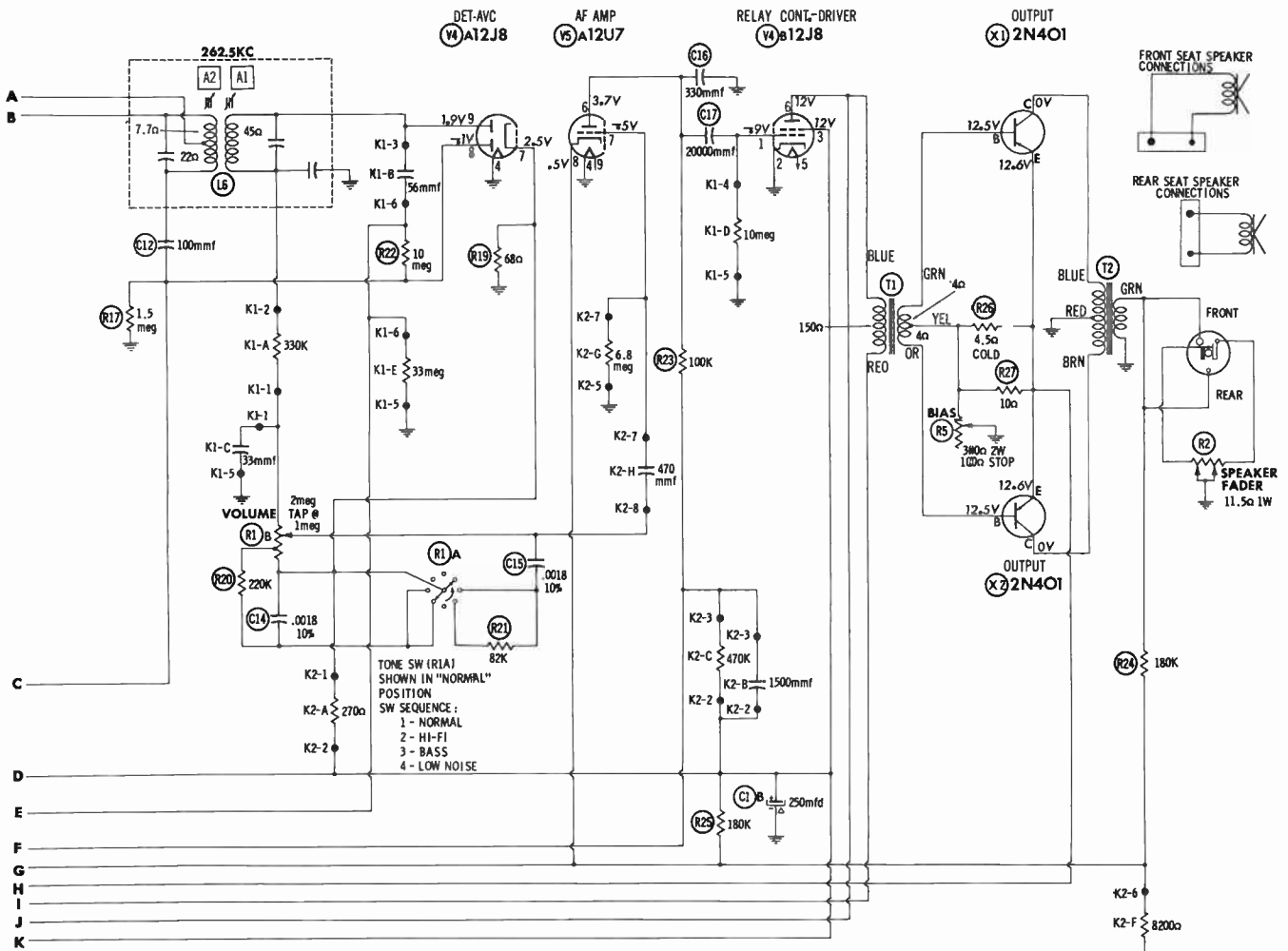
## CHASSIS—BOTTOM VIEW





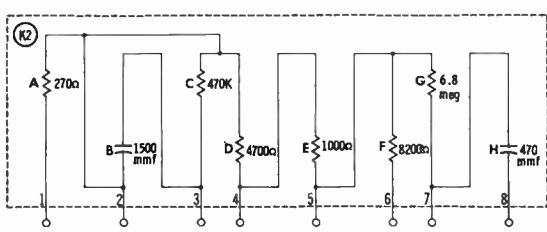
DC COIL RESISTANCE VALUES UNDER ONE OHM  
NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
©Howard W. Sams & Co., Inc. 1958



**TRANSISTOR BIAS ADJUSTMENT (R5)**

1. Disconnect primary center tap (red lead) of output transformer (T2) from ground.
2. Connect a low resistance DC millimeter in series from ground to the center tap lead.
3. Set bias control (R5) fully counterclockwise (maximum resistance).
4. Turn on receiver and with no input signal, adjust R5 for a meter reading of 110mA.



**RESISTANCE READINGS**

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12CX6	6.2meg	6meg	1.1a	0a	†300a	†290a	350a		
V2	12AD6	33K	0a	1.1a	0a	†350a	†290a	12meg		
V3	12CN5	350a	330K	0a	1.1a	NC	†22a	144a		
V4	12J8	10meg	0a	†22a	0a	1.1a	†150a	50a	1.5meg	1.2meg
V5	12U7	†470K	†8meg	0a	0a	1.1a	†570K	6.8meg	6500a	3.5a

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

† MEASURED FROM POSITIVE TERMINAL OF C1A

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

## PARTS LIST AND DESCRIPTIONS (Continued)

### RESISTORS

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

ITEM No.	RATING		BENDIX PART No.	NOTES	ITEM No.	RATING		BENDIX PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R7	680K		220604B-684		R20	220K		220604B-224	
R8	220K		220604B-224		R21	82K		220604B-823	
R9	330Ω		220604B-331		R22	10meg		220603B-106	
R10	22meg		220604B-226		R23	100K		220604B-104	
R11	33meg		220604B-336		R24	180K		220603B-184	
R12	47meg		220604B-476		R25	180K		220603B-184	
R13	270Ω		220604B-271		R26	4.5K Cold		220629-1	
R14	33K		220604B-333		R27	10Ω		220604B-100	
R15	330K		220604B-334		R28	470Ω		220604B-471	
R16	1000Ω		220604B-102		R29	470Ω		220604B-471	
R17	1.5meg		220604B-155		R30	220Ω		220604B-221	
R18	4.7meg		220604B-475		R31	22Ω		220604B-220	
R19	68Ω		220603B-680		R32	0.6Ω		2090438-12	6" Cupron Wire

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BENDIX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil	*					
L2	IF Trap Coil	2090088-1					50 microhenries; wound on 18K
L3	RF Coil	*					
L4	Osc. Coil	*					
L5	Input IF	2090239-3					
L6	Output IF	2090237-4					
L7	RF Choke	2090671-1	19-1003	BC-564	4608		3.9 microhenries; IRC Part #CL-1
L8	"A" Lead Choke	216188-12					

\* Part of tuner Coil assembly Part #2090131-13

### TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO	REPLACEMENT DATA							NOTES
		BENDIX PART No.	Holldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	7.2 :1CT	2090586-1							

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	TURNS RATIO	REPLACEMENT DATA							NOTES
		BENDIX PART No.	Holldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	3.5 :1 CT	2090554-1							

## PARTS LIST AND DESCRIPTIONS (Continued)

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BENDIX PART No.	QUAM PART No.	
	6" x 9"	PM		282634-6		Front Speaker
	6" x 9"	PM		282634-8		Rear Speaker

### COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BENDIX PART No.	REPLACEMENT DATA
K1	Audio Couplate	33mmf, 56mmf, 330K, 10meg 33meg	2090525-1	
K2	Search Control Plate	470mmf, 1500mmf, 1000Ω, 4700Ω, 8200Ω, 270Ω, 470K, 6.8meg	2090528-1	

### MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M1	Lamp	1891	#1891
M2	Tuner	2090552-2	Includes Mtg. Plate Ass'y. and Pushbuttons
M3	Switch	218669-1	Power On-Off, DPST, Rotary Snap Type
M4	Switch	2090124-1	Seek, Seek Sensitivity
M5	Switch		Motor Reversing Part of Motor Mtg. Plate Ass'y, Part #2090673-1
M6	Motor	2090533-1	Tuner Drive
M7	Relay	2090507-1	
	Foot Switch	2090403-4	
	Speaker Receptacle	223476-3	
	Printed Board	2090751-1	

### CABINETS & CABINET PARTS

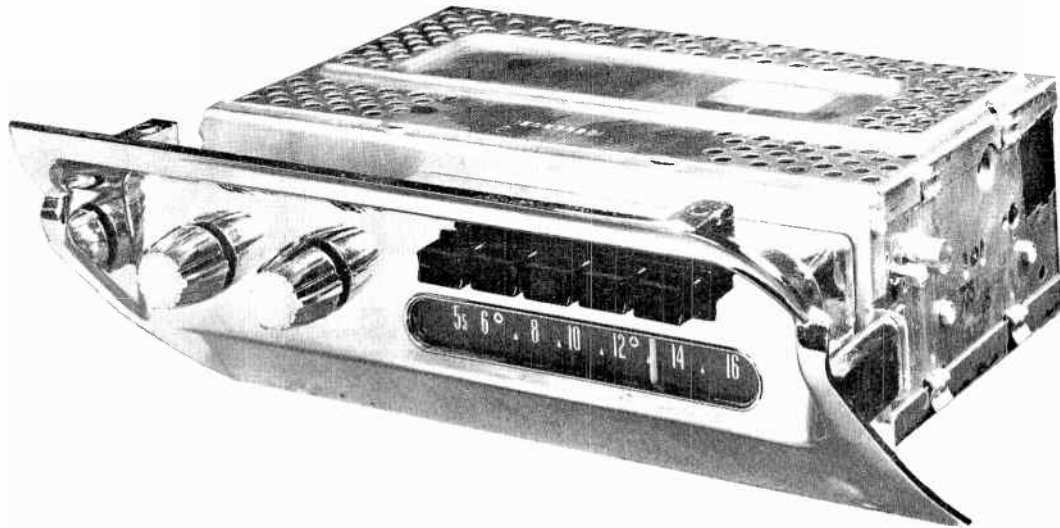
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	2090685-1	Volume
Knob	2090686-1	Tuning
Disc	2090007-1	Tone & Fader

### WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8524 (Stranded) Available in Ten Colors
Bonding Strap	Use BELDEN No. 8661





TRADE NAME Mopar Model 854 (For 1958 LP1, LP2 Plymouth Automobiles)  
 MANUFACTURER Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois  
 TYPE SET Battery Operated Custom Built AM Automobile Receiver with Transistorized Output  
 TUBES (Four) Types 12BL6 RF Amplifier, 12AD6 Converter, 12BL6 IF Amplifier, 12DL8 Det. - AVC-AF Amp.

POWER SUPPLY 12 Volt Storage Battery RATING 1.4 Amp. @12.6 Volts DC  
 TUNING RANGE—BROADCAST 535-1605KC

## ALIGNMENT INSTRUCTIONS

### ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.  
 Set tone control to treble.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1mfd	High side to pin 7 (grid) of 12AD6 (V2) Low side to chassis.	262.5KC (400v Mod.)	High frequency end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2. Fig. 1	Thru Dummy to antenna receptacle.	1610KC	"	"	A5, A6	"
3. "	"	1400KC	Tune to 1400KC signal.	"	A7	"

Steps 4 & 5 are not necessary unless tuner has been tampered with or associated components have been replaced. Back tuning cores (A8, A9, A10) 1 3/8" out of coils. Alignment tool, Motorola Part #66A76278, may be used.

4. Fig. 1	Thru Dummy to antenna receptacle.	1610KC	High end stop	Across voice coil.	A5, A6, A7	Adjust for maximum output.
5. "	"	1020KC	Tuner carriage 49/64" in from high end stop.	"	A8, A9, A10	Adjust for maximum output. Repeat Steps 4 & 5. Step 4 should be the last step. Cement cores.

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

### POINTER ADJUSTMENT

With radio tuned to a 1000KC signal, adjust pointer adjustment so that pointer coincides with 1000KC mark on dial.

### PUSHBUTTON ADJUSTMENT

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

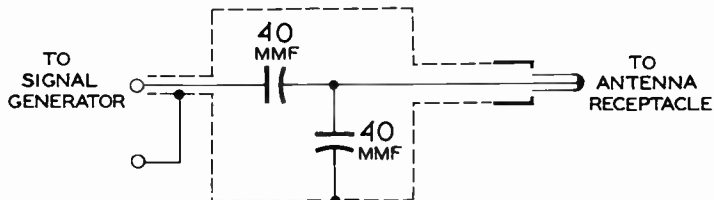


FIG. 1.

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The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H575

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MOPAR  
MODEL 854

# PARTS LIST AND DESCRIPTIONS

## TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6	
V2	Converter	12AD6	

ITEM No.	USE	TYPE	NOTES
V3	1F Amplifier	12BL6	
V4	Det. -AVC-AF Amp.	12DL8	

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N176	Output	CBS-2N155	2N176		2N176	

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	400	16	23B542329	AFH3-00-90		WP300, 5			R2634*
C1B	100	16							
C1C	100	16							

\* Non-Catalog Item

### FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	18-115	200	20K542026	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C3	1		8R121573						
C4A	50-260		20K560255						
C4B	47								
C4C	20-210								
C5	12		21R121462	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	N150 N220
C6	100	21R124032							
C7	10000	21R121946							
C8	100		21R400537	N750-D1 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750
C9	100		21R400537	N750-D1 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750
C10	3300		21R120422	BPD-0033	DD-332	BYA10D33	UC-5233	5HK-D33	
C11	10000		21R121946	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
RLA	1.3meg	1/2	18B560415		A47F5-1meg	Q19-137X †		
B	Switch				SWE-13	76-1		
R2	210Ω	1.5(W/W)	18K540718		39-200			

\* Use shaft RS-3/16

† Use shaft NQ

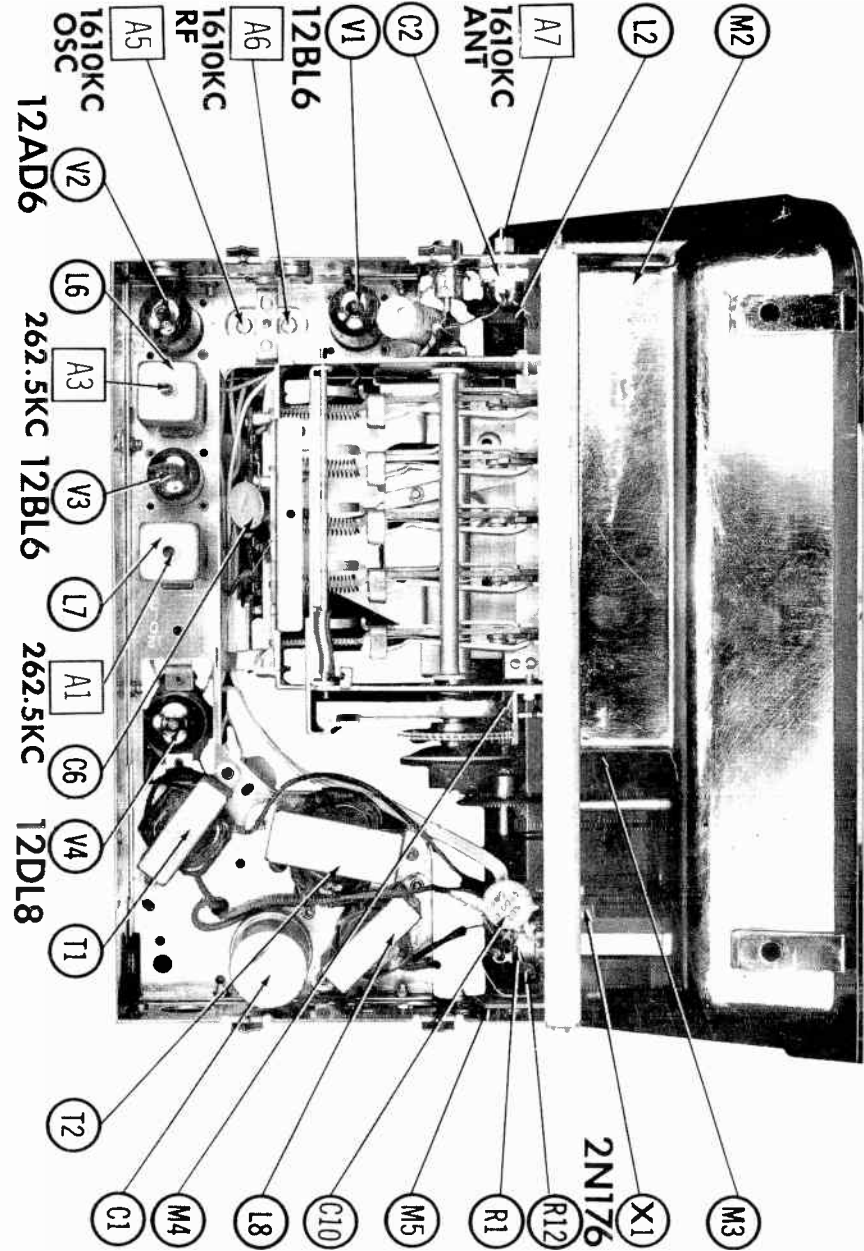
### RESISTORS

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

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R3	3.3meg		6K119407	
R4	1000Ω		6R6301	
R5	22meg		6R118247	
R6	1.5meg		6R3966	
R7	1.5meg		6R3966	
R8	3.3meg		6K119407	
R9	33K		6K121704	
R10	12meg		6R400334	

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R11	47K		6K121687	
R12	100K		6K125534	
R13	10meg		6K119408	
R14	33Ω		6K121304	
R15	5.6Ω		17K139323	
R16	.47Ω		17K488266	
R17	10Ω Cold		6K540634	
R18	100Ω		6K119402	

# CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Ant. Coil	24C536308					Note 1. Includes 27mmf Cap. 133 microhenries Note 1. Note 1.
L2	RF Choke	24K539955					
L3	IF Trap Coil	24K539616	19-3125	TV-195			
L4	RF Coil	24C536308					
L5	Osc. Coil	24B536300					
L6	Input IF	24K560418	16-6752	BC-350	12-H1	RF-3	
L7	Output	24B542371					

Note 1. Part of M4

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 Hz)	MOTOROLA PART No.	Haldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.	Triod PART No.
L8	1.4A	.2Ω	.004HY	25K560752						

## TRANSFORMER (INTERSTAGE)

ITEM No.	TURNS RATIO		REPLACEMENT DATA							NOTES
	PRI.	SEC.	MOTOROLA PART No.	Haldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.	Triod PART No.	
T1	6.4	:1	25K542376							

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	MOTOROLA PART No.	Haldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.	Triod PART No.	
T2	33.5Ω Tap@	3-4Ω	25C542105							

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	5" x 7"	PM	3-4Ω	50D540184		

## FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	7AG	7½A 32V	65R122346	9C540493	30707.5 (7½A 32V)	155009	SFE7½	HDH

## MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Lamp	65R10867	#44
M3	Lamp	65R10867	#44 Not used in some versions.
M4	Tuner	77E560180	(AT-224) Complete
M5	Spark Plate	48K539953	Selenium Type (Use #43A539954 Bushing, #5K124848 Eyelet, #4A542137 Cup Washer for Mounting)

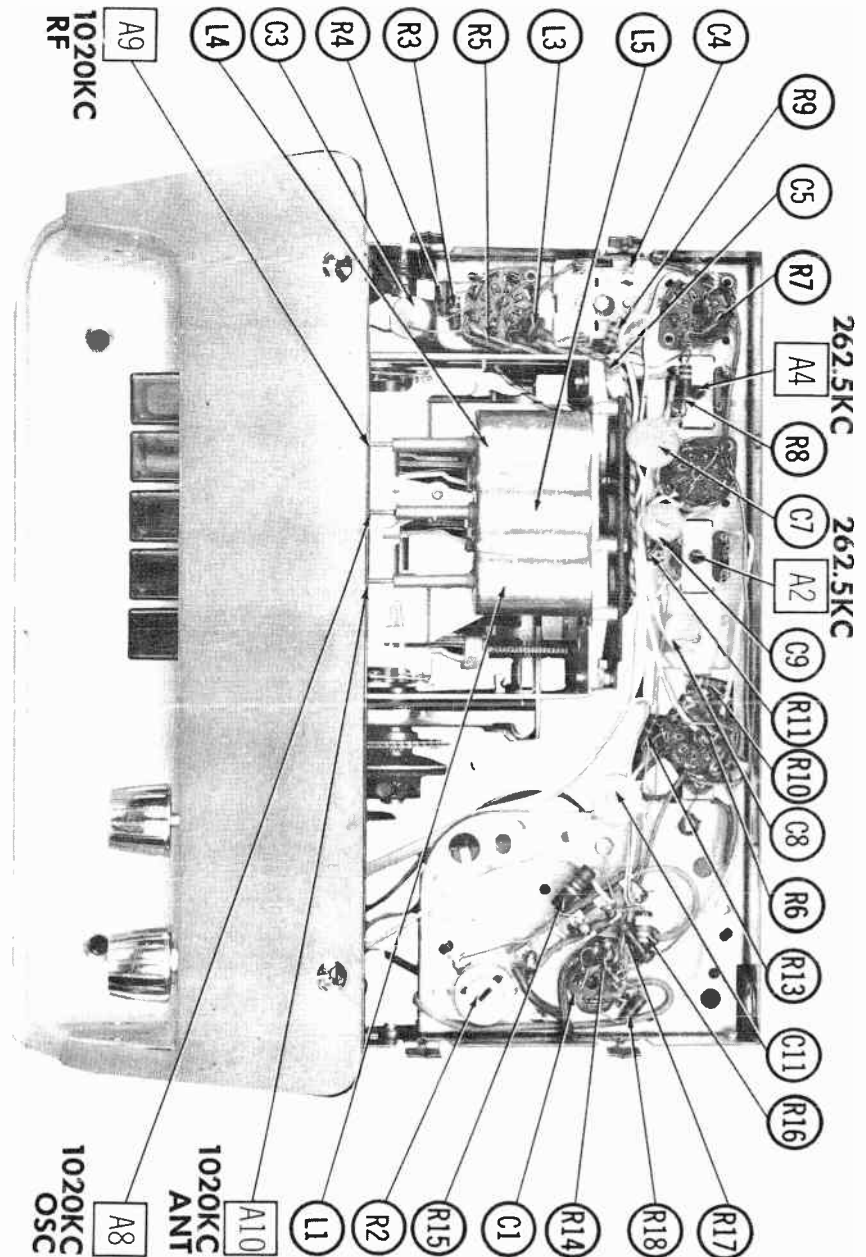
## CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

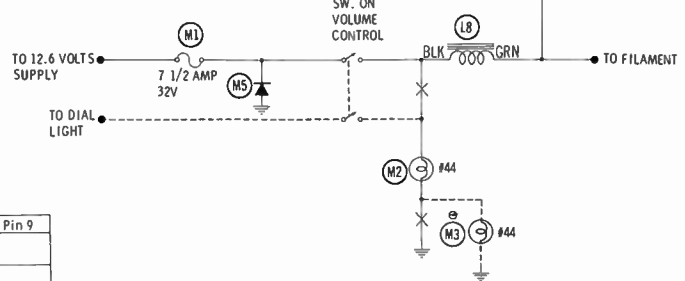
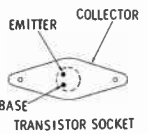
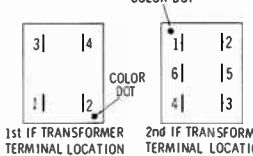
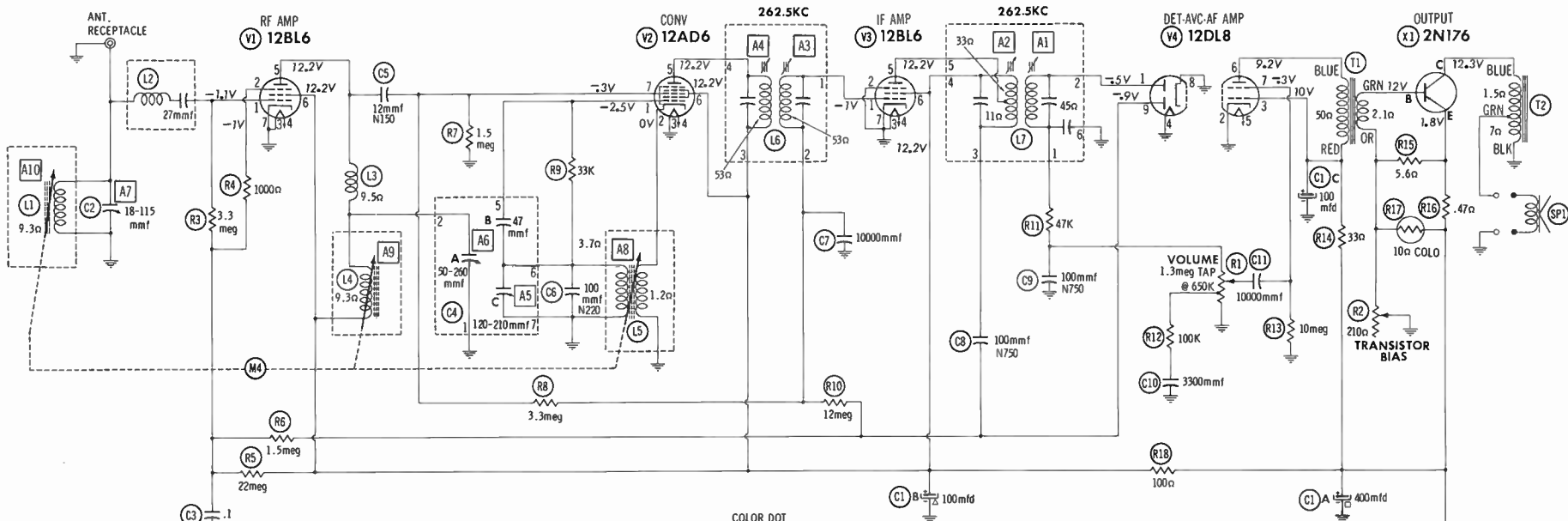
### WIRING DATA

General-use Shielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

# CHASSIS—BOTTOM VIEW







RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	15meg	115meg	0 0a	1.2a	†120a	†100a	0a		
V2	12AD6	33K	1.2a	0a	1.2a	†150a	†100a	1.5meg		
V3	12BL6	4.8meg	0a	0a	1.2a	†130a	†100a	0a		
V4	12DL8	1.3meg	0a	†33a	0a	1.2a	†83a	10meg	0a	15meg

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.  
 † MEASURED FROM POSITIVE TERMINAL OF C1A

TRANSISTOR BIAS ADJUSTMENT (R2)

1. Set R2 for maximum resistance
2. Connect a low range DC VTVM from transistor collector to chassis.
3. Allow radio to warm up for 15 minutes.
4. Adjust R2 for a meter reading of .85 volts DC. This is equivalent to a collector current of 425mA.
5. Repeat approximately 30 minutes later.

1. DC voltage measurements taken with vacuum tube volt meter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

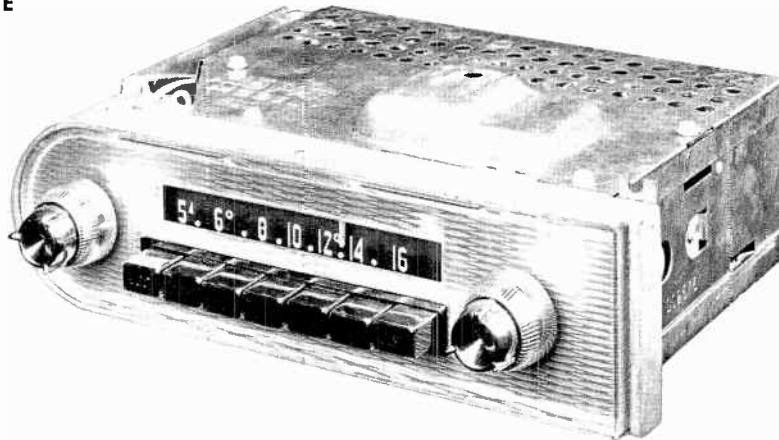
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM





with CIRCUITRACE\*  
TRADE MARK



TRADE NAME	Mopar Model 922 (85BC) For 1958 Chrysler Automobiles	RATING	2 Amp @ 12.6 Volts DC
MANUFACTURER	Bendix Radio Div. Bendix Aviation Corp., Baltimore 4, Maryland		
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output		
TUBES (Five)	Types 12CX6 RF Amplifier, 12AD6 Converter, 12CN5 IF Amplifier, 12J8 Det.-AVC-Relay-Driver, 12U7 AF Amp.-Trigger		
POWER SUPPLY	12 Volts DC		
TUNING RANGE—BROADCAST	530 - 1605KC		

## ALIGNMENT INSTRUCTIONS

### ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at MINIMUM, tone control fully clockwise. Output of signal generator should be no higher than necessary to obtain an indication. Use an insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1. .1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5KC (Unmod.)	High frequency end stop	DC probe to point $\Delta$ . Common to pin 7 (Cath.) 12J8 (V4).	A1, A2, A3, A4	Adjust for maximum deflection.
2. Fig. 1	Thru dummy to antenna receptacle	1605KC	"	"	A5, A6, A7	"
3.	With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and adjust A7 for maximum output. Step 4 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, A10) out of coils but not out of coil forms. Repeat step 2.					
4. Fig. 1	Thru dummy to antenna receptacle	1000KC (Unmod.)	Tuning carriage $\frac{1}{2}$ " from high frequency end stop	DC probe to point $\Delta$ . Common to pin 7 (Cath.) 12J8 (V4).	A8, A9, A10	Adjust for maximum deflection. Repeat steps 2 and 4.
To adjust sensitivity controls, disconnect VTVM; set volume to maximum and tone fully clockwise. Proceed with step 5.						
5. Fig. 1	Thru dummy to antenna receptacle	1000KC @ 3 Microvolts (40% Mod.)	Tune to 1000KC signal	Output Meter Across voice coil	R6	Adjust for 1.75V (Approx. 1W) output.
6. "	"	1000KC @ 250 Microvolts	"	"	R3	Set R3 maximum counterclockwise. Press "Distant" button to start set searching. Turn R3 slowly until tuner stops.
7.	Adjust generator to 1000KC @ 125 Microvolts. Press "Local" button. Tuner should continue to seek.					

### PUSHBUTTON ADJUSTMENT

1. Tune manually to desired station.
2. Pull out pushbutton; then press in firmly.
3. Repeat for remaining buttons.

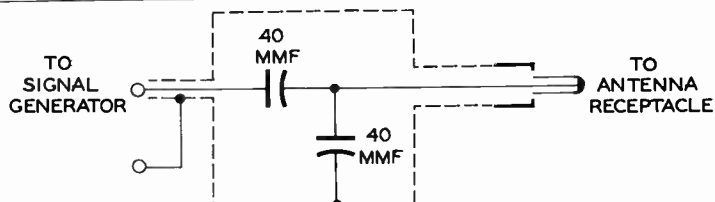


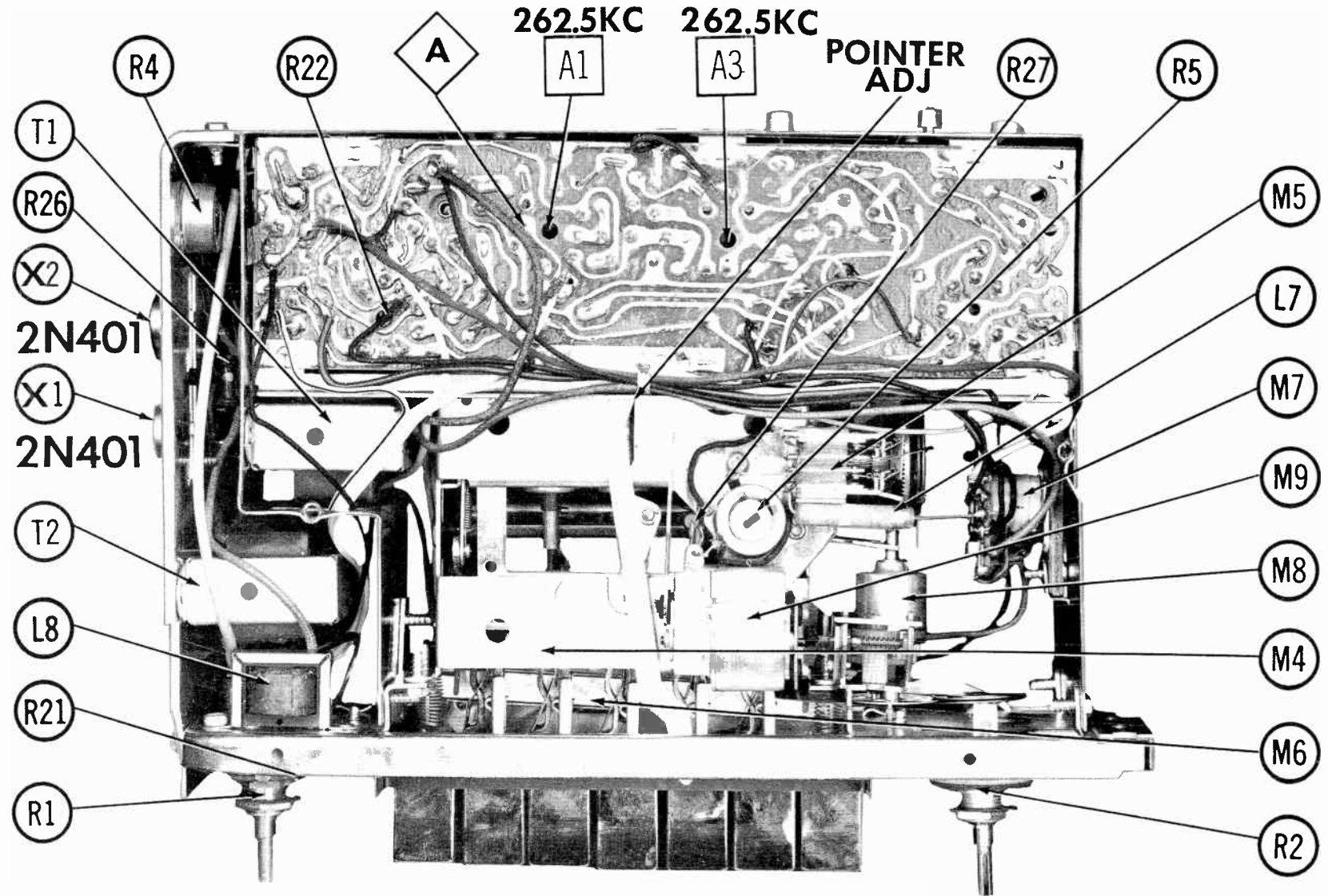
FIG. 1

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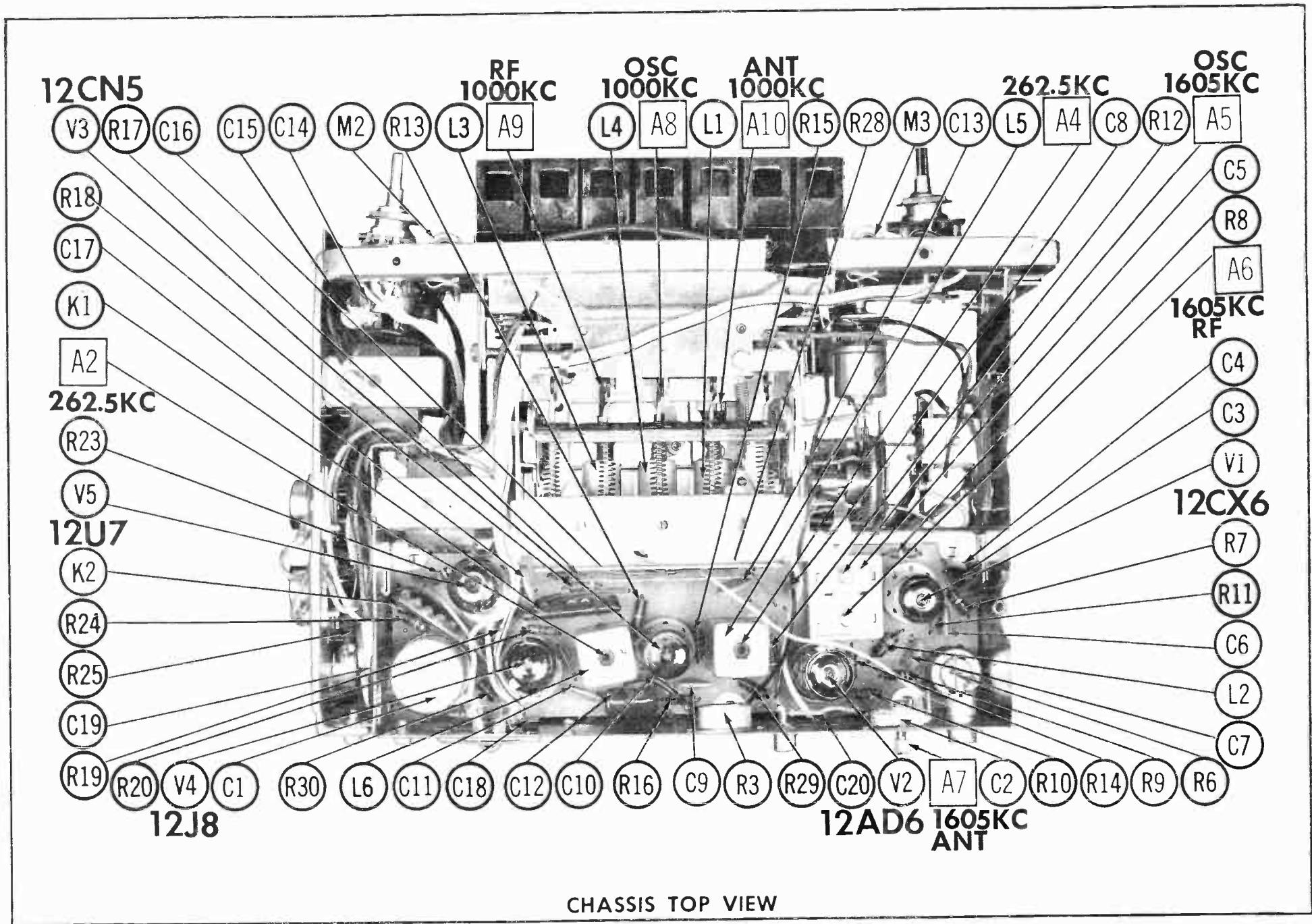
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MOPAR MODEL  
922 (85BC)

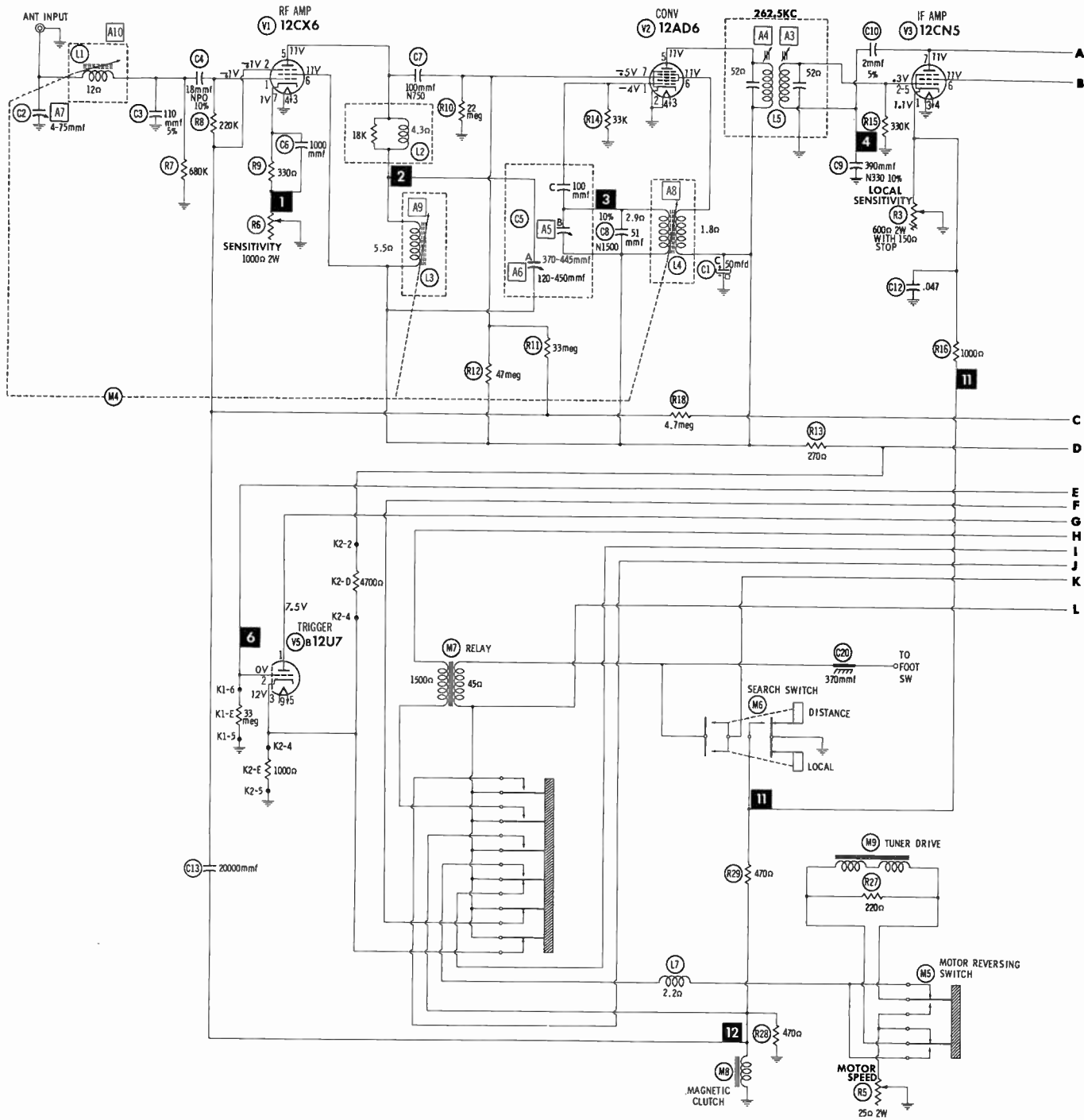


CHASSIS-BOTTOM VIEW





CHASSIS TOP VIEW



**SEARCH SPEED ADJUSTMENT (R5)**

Connect a power source of 13.2 volts DC to the receiver. Adjust R5 for a search speed of 11 seconds per cycle from one end of the dial to the other end and back to the starting point.

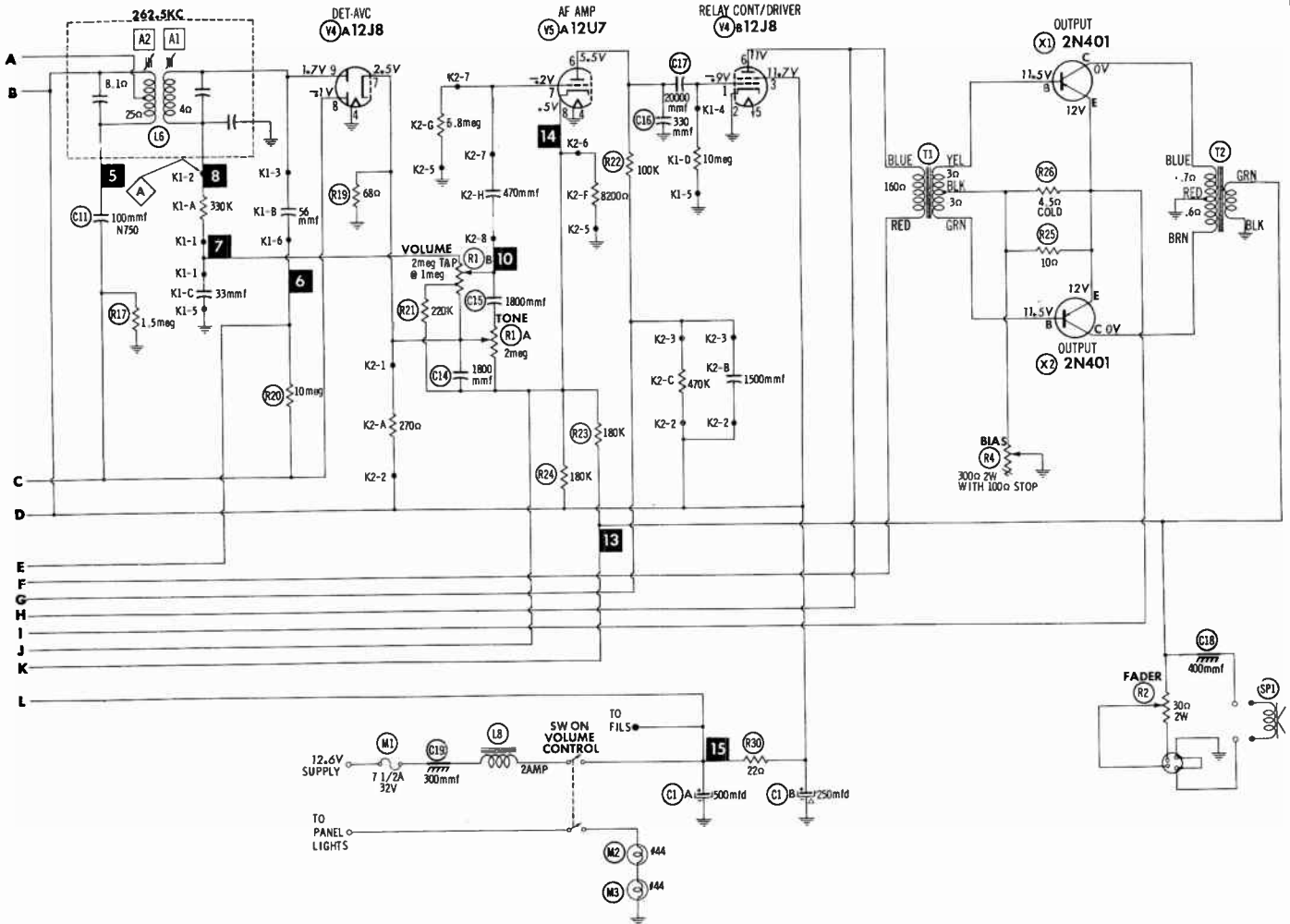
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFAC STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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RESISTANCE READINGS

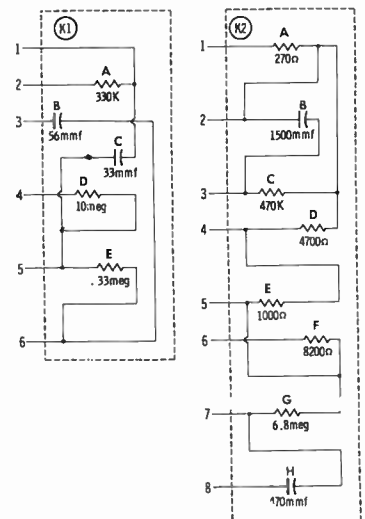
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12CX6	6meg	5.8meg	1.1 $\Omega$	0 $\Omega$	1300 $\Omega$	1290 $\Omega$	900 $\Omega$		
V2	12AD6	33K	0 $\Omega$	1.1 $\Omega$	0 $\Omega$	1340 $\Omega$	1290 $\Omega$	8meg		
V3	12CN5	300 $\Omega$	330K	0 $\Omega$	1.1 $\Omega$	330K	122 $\Omega$	130 $\Omega$		
V4	12J8	10meg	0 $\Omega$	122 $\Omega$	0 $\Omega$	1.4 $\Omega$	1140 $\Omega$	68 $\Omega$	1.3meg	2meg
V5	12U7	1470K	8meg	1.2 $\Omega$	0 $\Omega$	1.2 $\Omega$	1570K	6.8meg	7000 $\Omega$	4 $\Omega$

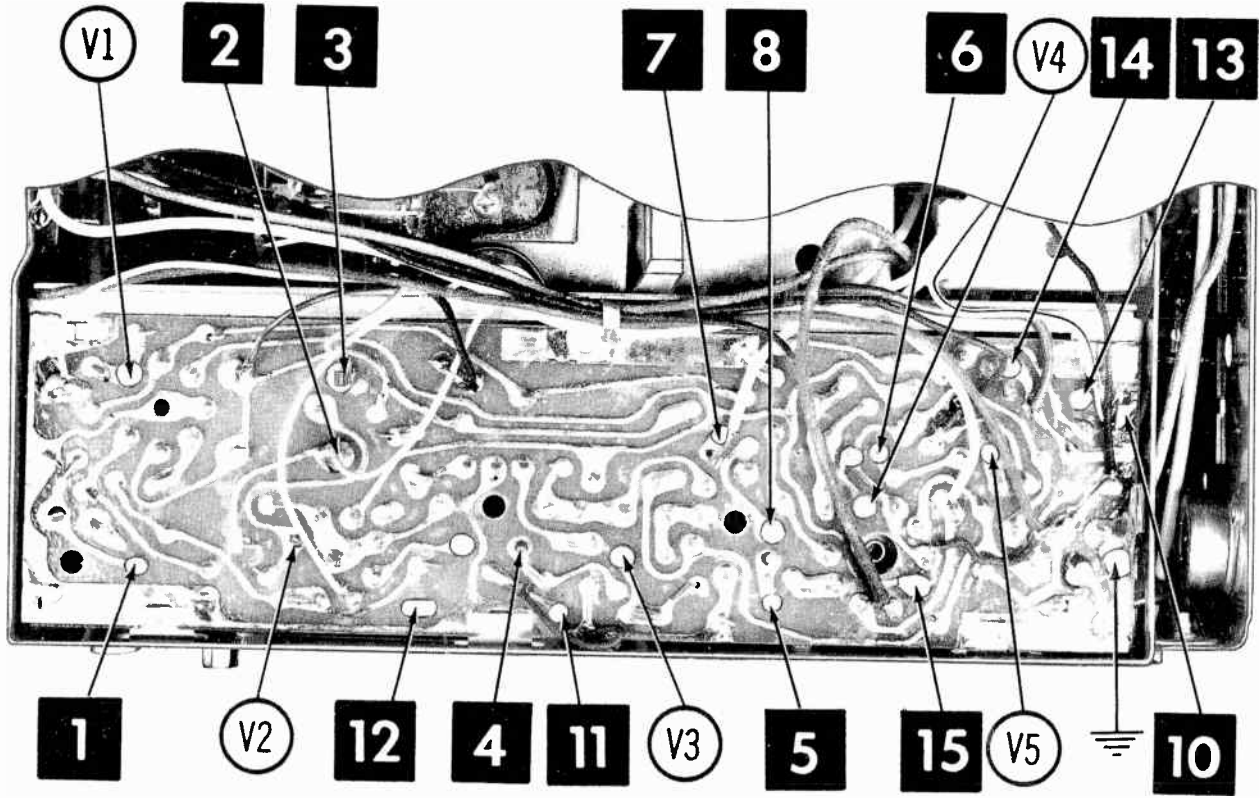
TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE  
 † MEASURED FROM POSITIVE TERMINAL OF C1A  
 NC NO CONNECTION

- DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
- Socket connections shown as bottom views.
- Measured values are from socket pin to common negative.
- Battery voltage maintained at 12.6 volts for voltage readings.
- Nominal tolerance on component values makes possible a variation of  $\pm 15\%$  in voltage and resistance readings.
- Volume control at maximum, no signal applied for voltage measurements.

TRANSISTOR BIAS ADJUSTMENT (R4)

Connect a low range milliammeter in series with the center tap of the output transformer (T2). With the receiver operating but with no input signal, adjust R4 for a meter reading of 110mA.





A Howard W. Sams CIRCUITRACE\* Photo  
 \*TRADE MARK

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE  
 POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

# PARTS LIST AND DESCRIPTIONS

## TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12CX6	
V2	Converter	12AD6	
V3	IF Amplifier	12CN5	

ITEM No.	USE	TYPE	NOTES
V4	Det. -AVC-Relay-Driver	12J8	
V5	AF Amp.-Trigger	12U7	

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N401	Output	CBS-2N401			2N350	PNP
X2	2N401	Output	CBS-2N401			2N350	PNP

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
ClA	500	16	220353-7	AFH3-00-93					R2685 *
B	▲250	16							
C	■50	16							

\* Non-Catalog Item

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.		
C2	4-75		219083-1							
C3	110		220348-406							
C4	18		220332-33	1469-00011	TCZ-110	22R5T11		MS-311		5% NPO 10%
C5A	120-450									
B	370-445		219092-2							
C	100									
C6	1000		220332-36	BPD-001	DD-102	BYA6D1	DC521	5HK-D1		
C7	100		220332-37	N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1		N750
C8	51		220332-22							N1500 10%
C9	390		220332-34							N330 10%
C10	2		220212-11							5%
C11	100		220332-37	N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1		N750
C12	.047	100	2090585-9	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47		
C13	20000		220332-24	BPD-02	DD-203	BYB6S2		5HK-S2		
C14	1800		2090058R-182M	DI-1800	DD-182	L10D18	UC-5218	5GA-D18		
C15	1800		2090058R-182M	DI-1800	DD-182	L10D18	UC-5218	5GA-D18		
C16	330		220332-25	DI-330	DD-331	L10T33	UC-5333	5GA-T33		
C17	20000		220332-24	BPD-02	DD-203	BYB6S2		5HK-S2		
C18	400		220267-10							
C19	300		220267-12							
C20	370		220267-6							

# PARTS LIST AND DESCRIPTIONS (Continued)

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg	1/2	2090816-2	F1-87 †				Tone Volume, Tap @ 1meg Power On-Off Speaker Fader Local Sensitivity, With 150Ω Stop Transistor Bias, With 100Ω Stop Motor Speed Sensitivity
B	2meg			R2-72				
C	Switch				KB-7 or KR-7*			
R2	30Ω	2(WW)	2090827-1					
R3	600Ω	2	219555-14					
R4	300Ω	2	219555-17					
R5	25Ω	2	219555-12					
R6	1000Ω	2	219682-2					

† Use AK-28 Adaptor Bushing.

\* Use KR with CRL "Red Label" Controls and KB with "Blue Label" Controls.

## RESISTORS

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

ITEM No.	RATING		BENDIX PART No.	NOTES	ITEM No.	RATING		BENDIX PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R7	680K		220604B-684		R19	68Ω		220603B-680	
R8	220K		220604B-224		R20	10meg		220603B-106	
R9	330Ω		220604B-331		R21	220K		220604B-224	
R10	22meg		220604B-226		R22	100K		220604B-104	
R11	33meg		220604B-336		R23	180K		220604B-184	
R12	47meg		220604B-476		R24	180K		220603B-184	
R13	270Ω		220604B-271		R25	10Ω		220604B-100	
R14	33K		220604B-333		R26	4.5Ω Cold		220629-1	
R15	330K		220604B-334		R27	220Ω		220604B-221	
R16	1000Ω		220604B-102		R28	470Ω		220604B-471	
R17	1.5meg		220604B-155		R29	470Ω		220604B-471	
R18	4.7meg		220604B-475		R30	22Ω		220604B-220	

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		BENDIX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.		
L1	Antenna Coll							
L2	IF Trap Coll	* 2090088-1						50 Microhenries; wound on 18K
L3	RF Coll	*						
L4	Osc. Coll	*						
L5	Input IF	2090239-3						
L6	Output IF	2090237-4						
L7	RF Choke	2090871-1	19-1003	BC-564	4808			3.9 Microhenries; IRC Part #CLA

\* Part of Tuner Coil Assembly (Part #2090131-11).

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 C)	BENDIX PART No.	Holldarson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L8	2A	.2Ω	.0005 Hy.	2090520-2						

## PARTS LIST AND DESCRIPTIONS (Continued)

### TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES	
			BENDIX PART No.	Holldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.		Triod PART No.
	PRI.	SEC.								
T1	7	: 1	2090265-4							

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES	
			BENDIX PART No.	Holldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.		Triod PART No.
	PRI.	SEC.								
T2	45ΩCT	3-4Ω	2090554-2							

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
				BENDIX PART No.	QUAM PART No.	
	SIZE	FIELD	V. C. IMP.			
SP1	5½" X 7½"	PM	3-4Ω	2090744-2	57A21	

### COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BENDIX PART No.	REPLACEMENT DATA
K1	Audio Couplate	33mmf, 56mmf, 330K, 33meg, 10meg	2090525-1	
K2	Search Control Plate	470mmf, 1500mmf, 270Ω, 1000Ω, 8200Ω, 470K, 0.8meg, 4700Ω	2090528-1	

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BENDIX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	7½A 32V	SFE-7½	221633-9	30307.5 (7½A 32V)	155009	SFE 7½	HDH

### MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M2	Lamp	44	#44
M3	Lamp	44	#44
M4	Tuner	2090593-4	Complete
M5	Switch	2090759-1	Motor Reversing, Part of Motor Mtg. Plate Ass'y. Part #2090759-1
M6	Switch	2090630-1	Search, Complete Ass'y. includes Local, Distant Switch
M7	Relay	2090507-1	Search, Listen, includes Mtg. Board Ass'y.
M8	Clutch Ass'y	2090046-5	Magnetic
M9	Motor	2090533-1	Tuner Drive
	Printed Board	2090743-1	

## PARTS LIST AND DESCRIPTIONS (Continued)

### CABINETS & CABINET PARTS

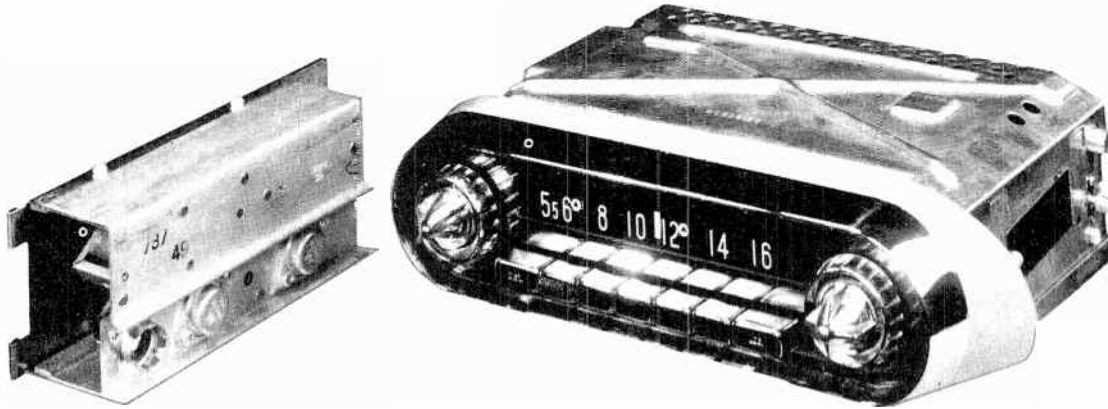
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	2090610-2	Assembly
Disc	2090611-1	Tone and Fader
Pushbutton Ass'y	2090694-2	Local
Pushbutton Ass'y	2090694-3	Distant
Pushbutton Ass'y	2090694-1	Stations
Cover	2090587-1	Top
Cover	2090588-1	Bottom
Pointer Ass'y	2090129-10	
Sub Dial	2090595-2	

### WIRING DATA

General-use Shielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Shielded Hook-up Wire .....	8524 (Stranded) Available in Ten Colors
Bonding Strap .....	Use BELDEN No. 8885
	Use BELDEN No. 8661





**TRADE NAME** Mopar Model 923 (For 1958 L51, L52, L53 DeSoto Automobiles)  
**MANUFACTURER** Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois  
**TYPE SET** Battery Operated Custom Built AM Automobile Receiver With Transistorized Output  
**TUBES (Six)** Types 12EG6 RF Amplifier, 12AD6 Converter, 12BL6 1st. IF Amplifier, 12BL6 2nd. IF Amplifier, 12DL8 Det.-AVC-AF Amp., 12AL8 Trigger

**POWER SUPPLY** 12 Volt Storage Battery **RATING** 2 Amp. @ 12.6 Volts DC  
**TUNING RANGE--BROADCAST** 535-1605KC

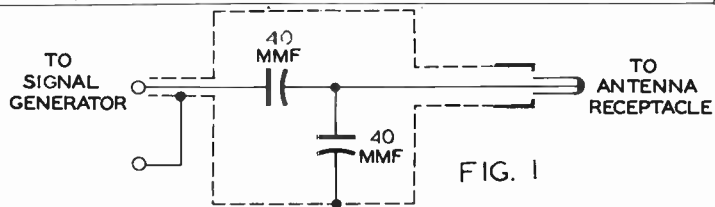
**ALIGNMENT INSTRUCTIONS**

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5KC (400% Mod)	High Freq. End Stop	Use VTVM. DC probe to point (A). Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
2. "	"	"	"	"	A4	Adjust for zero deflection.
3. Fig. 1	Thru dummy to ant. receptacle.	1610KC	"	OUTPUT METER Across voice coil.	A5, A6, A7	Adjust for maximum output.
Steps 4, 5 and 6 are not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, remove escutcheon to expose tuning cores. Back cores (A8, A9, A10) out of coil forms. Repeat step 3.						
4. Fig. 1	Thru dummy to ant. receptacle.	1020KC	Tuning carriage 4 9/64" from high frequency end stop.	OUTPUT METER Across voice coil.	A8, A9, A10	Adjust for maximum output.
5. "	"	1610KC	High Freq. End Stop.	"	A5, A6, A7	Adjust for maximum output. Repeat steps 4 and 5.
6. "	"	1925KC	1400KC	"	All	Adjust for MINIMUM output.
7. "	"	1000KC (@ 5 microvolts)	Tune to 1000KC signal	"	R4	Adjust for 1.79V meter reading.
8. "	"	1000KC (@ 250 microvolts)	"	"	R3	Turn off radio. Press local button, release. Short "B" of M8 relay to chassis. Turn on radio. Adjust R3 for 1.75V meter reading.
9.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

**PUSHBUTTON ADJUSTMENT**

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



**HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana**

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**MOPAR  
MODEL 923**

## PARTS LIST AND DESCRIPTIONS TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES	ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12EG6		V4	2nd. IF Amp.	12BL6	
V2	Converter	12AD6		V5	Det. -AVC-AF Amp.	12DL8	
V3	1st. IF Amp.	12BL6		V6	Trigger	12AL8	

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N176	Output	CBS-2N155	2N176		2N176	
X2	2N176	Output	CBS-2N155	2N176		2N176	

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
CLA	100	16	23B542329	AFH3-00-90		WP300.5			R2634 *
B	400	16							
C	100	16							

\* Non-catalog item.

### FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES					
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.						
C2	18-115	200	20K542026	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	10%					
C3	10000		21R482726							P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5
C4	.05		8R121005											
C5	3.9		21R115953											
C6A	50-260		47	20B539612										
B	120-210													
C	100													
C7	100		21R124032	BPD-01	DD-103	BYA10S1	DC511	5HK-S1		N220 5%				
C8	10000		21R482726							MD-221	L10T22			5TCC-T22
C9	220		21K121698											
C10	2.7		21R115950							10%				
C11	100		21R410036	N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1		N750 10%				
C12	3300		21R120422	BPD-0033	DD-332	BYA10D33	UC-5233	5HK-D33						
C13	2000		21R121106	BPD-002	DD-202	BYA10D2	DC522	5HK-D2						
C14	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1						
C15	100		21R410036	N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1		N750 10%				
C16	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1						
C17	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1						
C18	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1						
C19	50000	21K542384	BPD-05	DF-503	BYA10S1	DC511	5HK-S5							

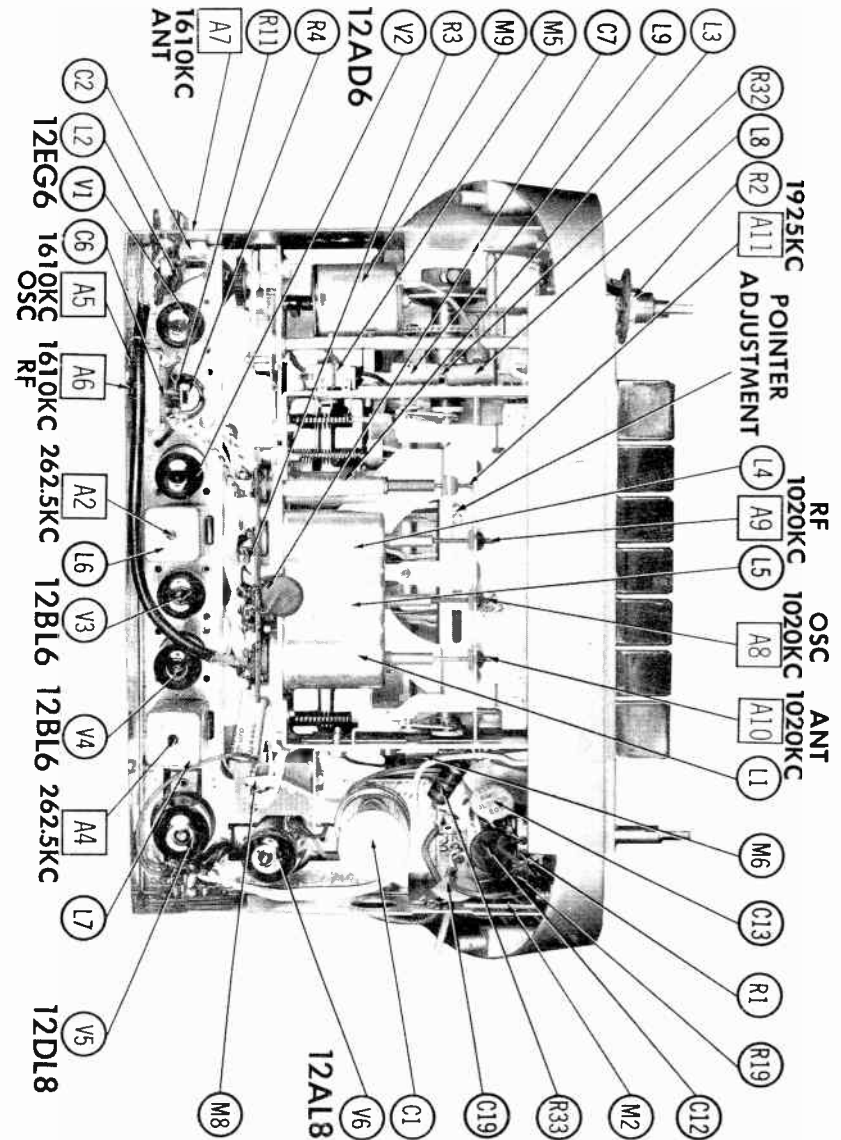
### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
RIA	4meg	1(WW)	18B539819	F1-83	RTV-816C		■ UE3746	Tone Volume, Tap @ 330K
B	1.5meg			R2-59				
C	Switch			KB-7 or KB-7*				
R2	15Ω		18K540132					
R3	1000Ω		18K538798					
R4	2000Ω	18K520298		39-2000			Speaker Fader	
R5	400Ω	18B541877					Sensitivity, Town	
							Sensitivity, Normal	
							Balance	

■ "STA-LOC" Equivalent: FB46L, OS1625, RUI8T334, B2062, US-42.

\* Use KR with CRL "red label" controls and KB with "blue label" controls.

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS

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

ITEM No.	RATING		MOTOROLA PART No.	NOTES	ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R6	6.8meg		6K122321		R20	10meg		6K119408	
R7	1.5meg		6R3966		R21	10Ω		6R118245	
R8	6.8meg		6K122321		R22	8.2meg		6R5585	
R9	12K		6K119933		R23	680K		6R6475	
R10	5.6meg		6R3966		R24	1.5meg		6R3966	
R11	33K		6K121704		R25	4.7meg		6K122326	
R12	22K		6K119405		R26	3300Ω		6R6036	
R13	4700Ω		6R6039		R27	.33Ω		17K542316	
R14	6.8meg		6K122321		R28	7.5Ω		6K542314	Note 1
R15	4.7meg		6K122326		R29	.33Ω		17K542316	
R16	120Ω		6R5551		R30	7.5Ω		6K542314	Note 1
R17	2.2meg		6R3927		R31	27Ω		6B119401	
R18	47K		6K121687		R32	47Ω	2	6K488035	
R19	33K		6R6410		R33	22Ω	2	6R2009	

Note 1. Temperature compensating unit, 7.5Ω @ 25°C.

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil	24C536308					31 Microhenries
L2	RF Choke	24A532148	19-6033				
L3	IF Trap	24K542330					
L4	RF Coil	24C536308					
L5	Osc. Coil	24B536300					
L6	Input IF	24K542374	16-6752	BC-350	12-H1	RF-3	
L7	Output IF	24B533073	16-6754	BC-354	12-H6		
L8	Search Motor Choke	24A542379					3.2 Microhenries
L9	Search Motor Choke	24A542379					3.2 Microhenries

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	MOTOROLA PART No.	Holldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L10	2A	.3Ω	.0045 Hy.	25C542312						

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES	
	PRI.	SEC.1	MOTOROLA PART No.	Holldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.		Triad PART No.
T1	5.5 :	1	25K542303						
	5.5 :	SEC. 2							
		1							

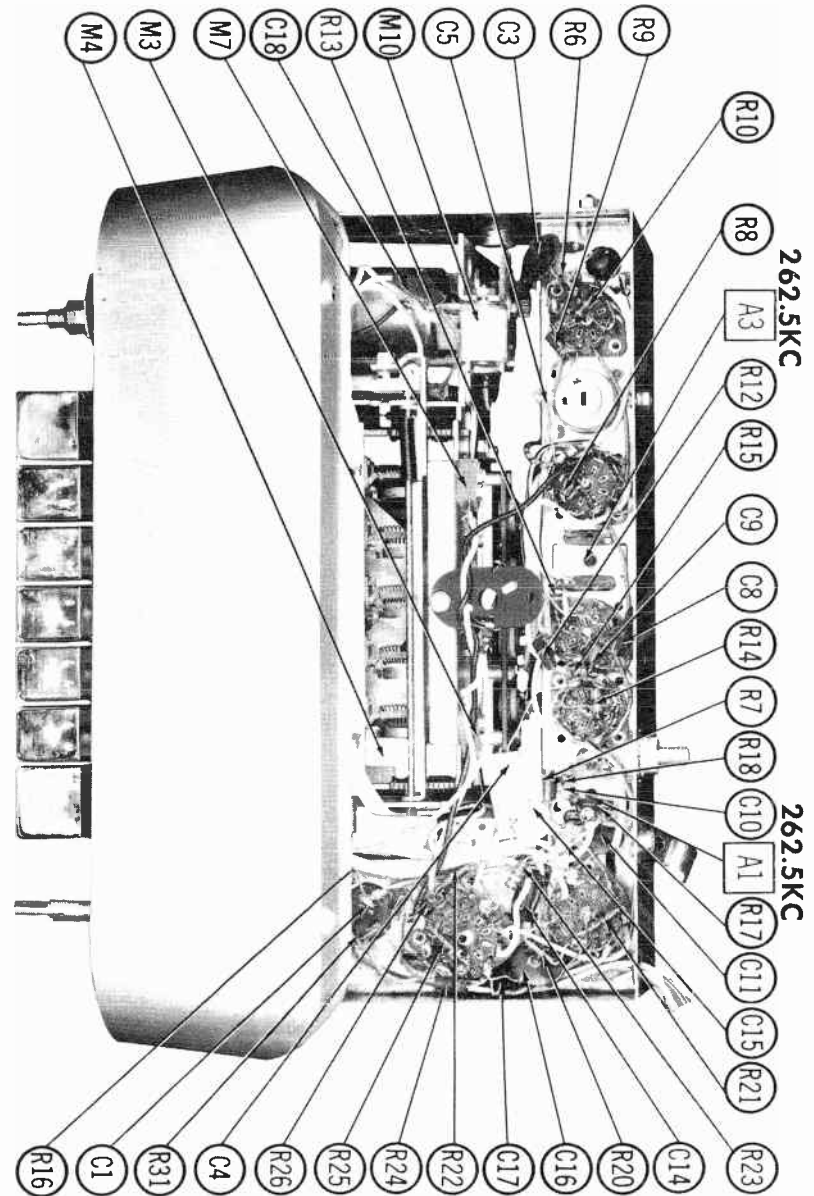
## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Holldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	
T2	47Ω	4-6Ω	25K542313					TR-60	
	CT								

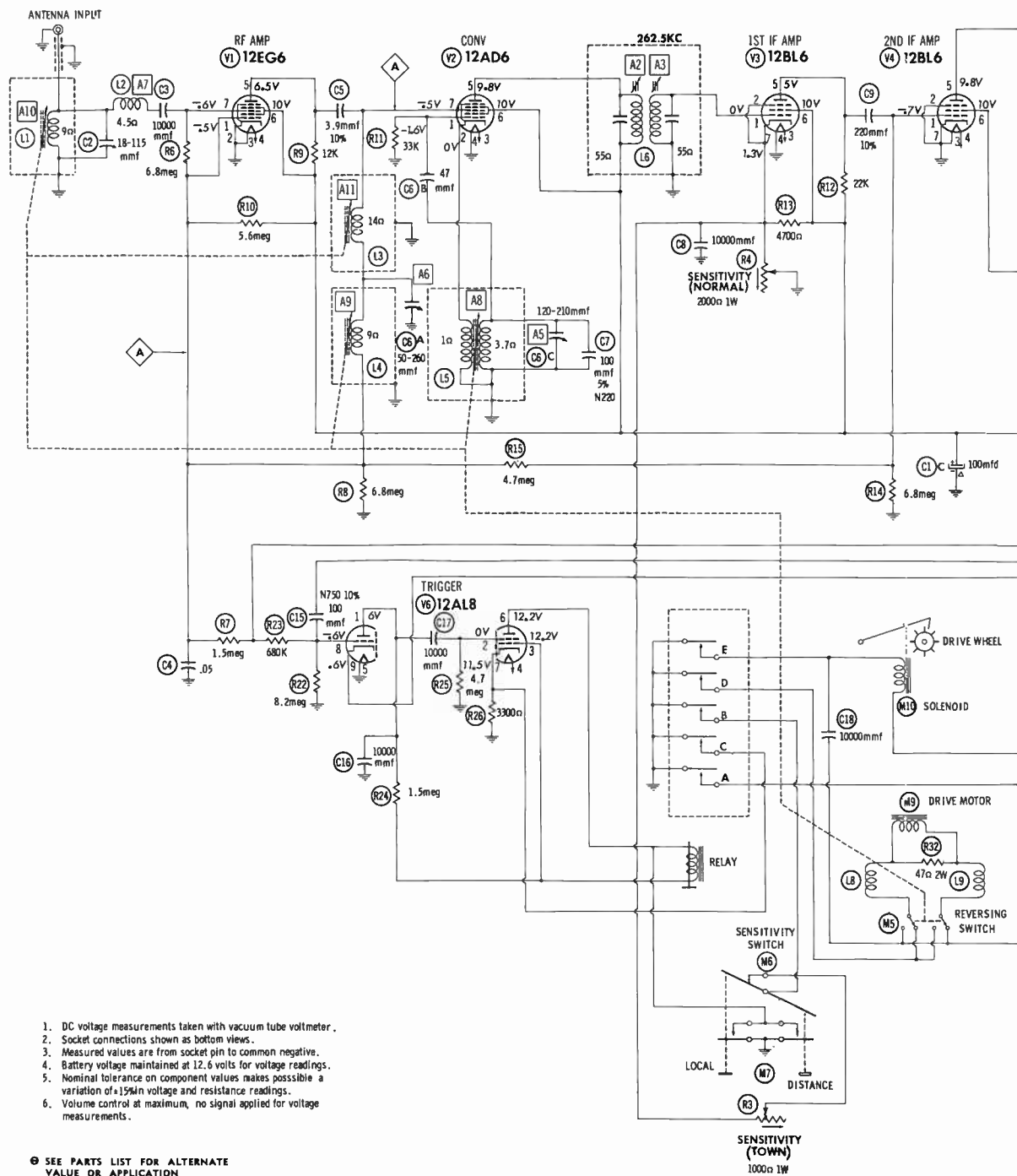
## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	5" x 7"	PM	4-6Ω	50K560421	57A15	

# CHASSIS—BOTTOM VIEW

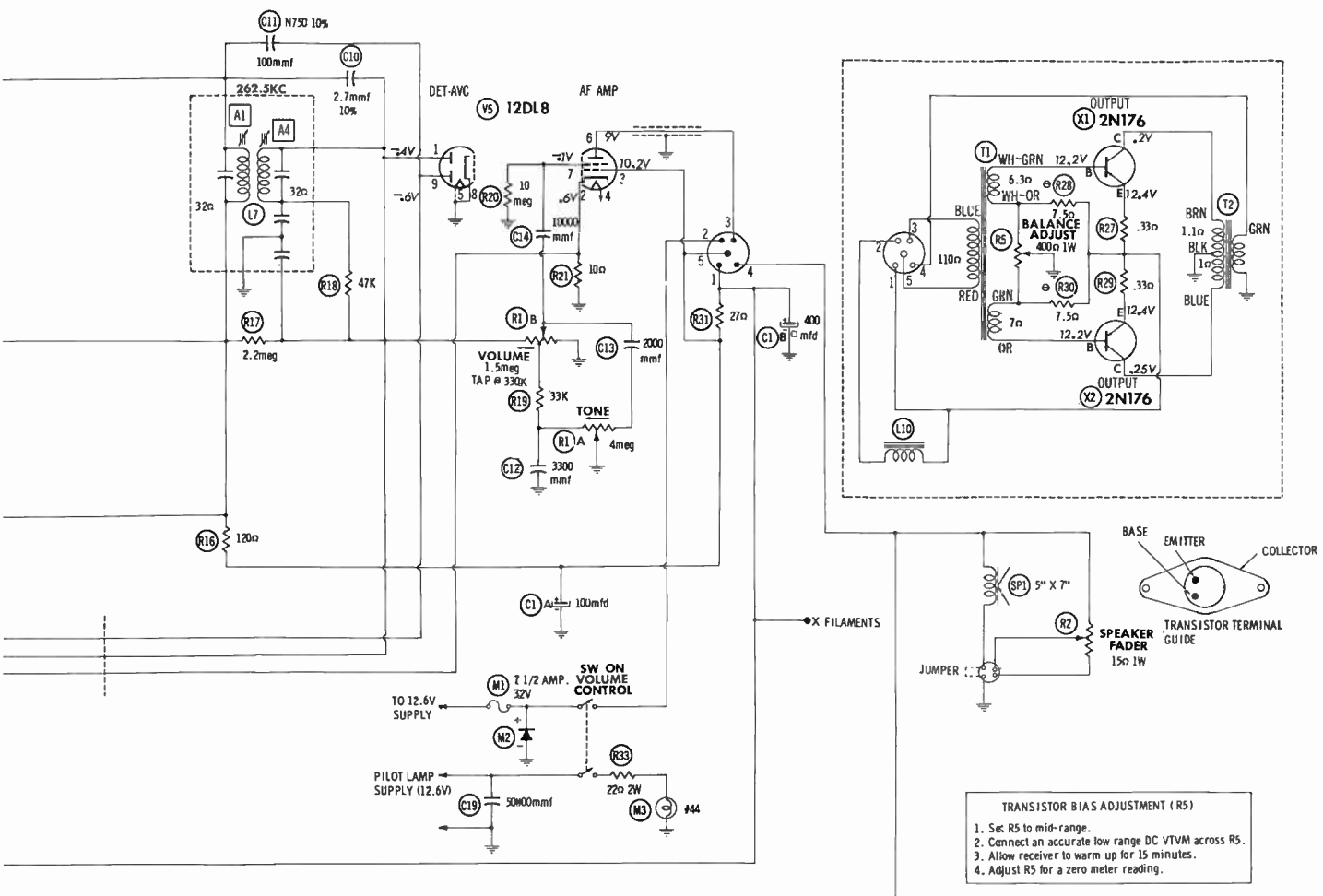






A PHOTOFAC STANDARD NOTATION SCHEMATIC  
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RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12EG6	1.8meg	0 $\Omega$	0 $\Omega$	.9 $\Omega$	†12K	†150 $\Omega$	8.5meg		
V2	12AD6	33K	1 $\Omega$	.9 $\Omega$	0 $\Omega$	†200 $\Omega$	†150 $\Omega$	1.6meg		
V3	12BL6	55 $\Omega$	380 $\Omega$	.9 $\Omega$	0 $\Omega$	†22K	†150 $\Omega$	380 $\Omega$		
V4	12BL6	3meg	0 $\Omega$	0 $\Omega$	.9 $\Omega$	†180 $\Omega$	†150 $\Omega$	0 $\Omega$		
V5	12DL8	1meg	10 $\Omega$	†27 $\Omega$	.9 $\Omega$	0 $\Omega$	†135 $\Omega$	10meg	0 $\Omega$	2.7meg
V6	12AL8	†1.5meg	4.7meg	†0 $\Omega$	.9 $\Omega$	0 $\Omega$	†160 $\Omega$	3300 $\Omega$	2.8meg	10 $\Omega$

TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.  
 † MEASURED FROM JUNCTION OF R31 AND C1A.

## PARTS LIST AND DESCRIPTIONS (Continued)

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	7AG	7½A 32V	65R122346	9K540495	30707.5 (7AG-7½A-32V)	155009	SFE 7½	HDH

### MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Spark Plate	48K539953	Selenium Type (Use #43A539954 Bushing, #5K124848 Eyelet, #4A542137 Cupwasher)
M3	Lamp	65R10867	#44
M4	Tuner	77E560264	(ST-228) Complete
M5	Switch	40B535396	Reversing
M6	Switch	40A535418	Sensitivity
M7	Switch	40A539926	Search, Distant, Local
M8	Relay	80K541296	
M9	Motor	59C542120	
M10	Solenoid	59A537563	

### CABINETS & CABINET PARTS

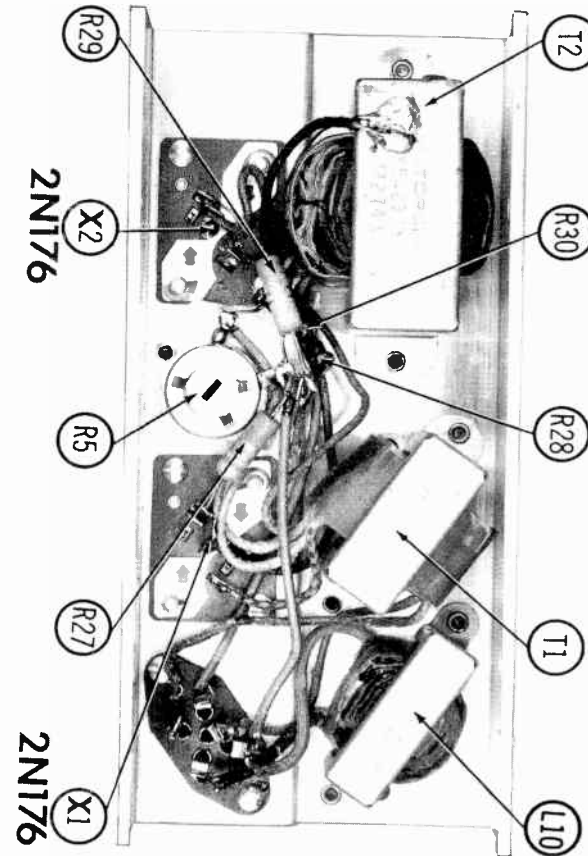
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

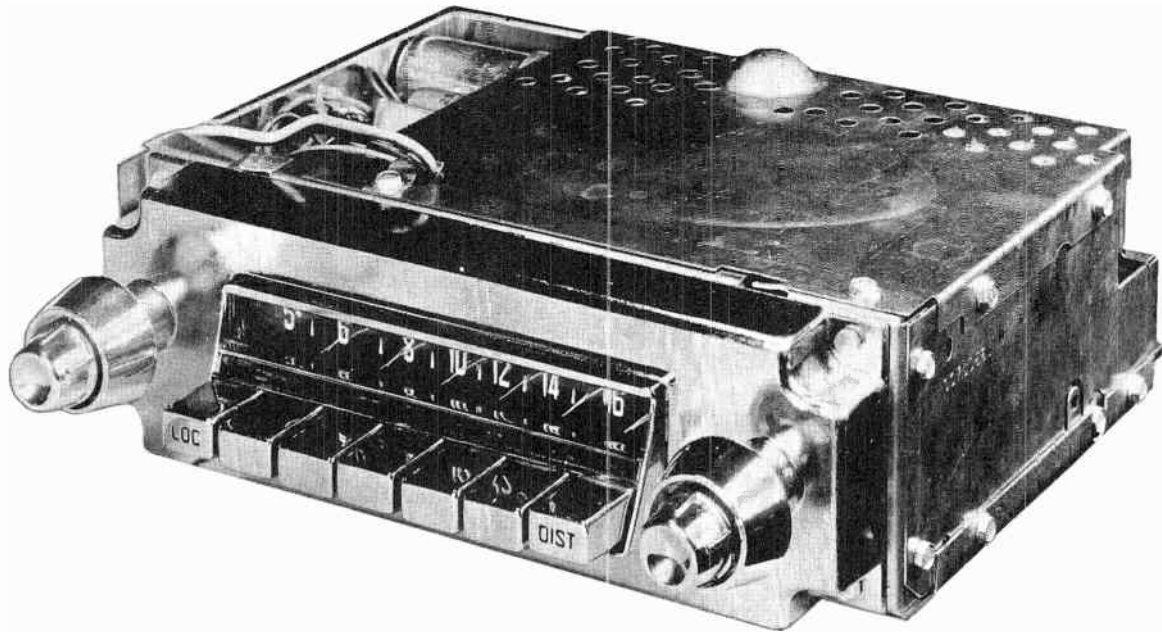
NAME	PART NO.	DESCRIPTION
Knob	1V540099	Volume and tuning
Knob	36C539088	Tone and speaker
Pushbutton	1B540078	5 Used
Pushbutton	1K560526	Search Selector, Distant
Pushbutton	1K560525	Search Selector, Local
Pointer	1A539832	Includes Stud Ass'y.
Dial Scale	34C539142	

### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Shielded Hook-up Wire .....	8524 (Stranded) Available in Ten Colors
Bonding Strap .....	Use BELDEN No. 8885
	8861

### POWER CHASSIS





TRADE NAME	Mopar Model 924 (C-5809)		
MANUFACTURER	Philco Corp., Tloga & "C" Streets, Philadelphia, Pa.		
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output		
TUBES (Five)	Types 12BL6 RF Amplifier, 12AD6 Converter, 12CX6 (or) 12BL6 IF Amplifier, 12DL8 Det.-AVC-Driver, 12U7 Trigger-AF Amplifier		
POWER SUPPLY	12 Volt Storage Battery	RATING	1.1 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540 - 1610KC		(1.3 Amp. when seeking)

MOPAR MODEL  
924HR (C-5809)

## ALIGNMENT INSTRUCTIONS

### ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1. .047mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis	262.5KC (400% Mod.)	Tuning gang fully open	DC probe to point A. Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
2. "	"	"	"	"	A4	Adjust for MINIMUM deflection.
3. Fig. 1	Thru dummy antenna to antenna receptacle	1610KC	1610KC	Output Meter across voice coil	A5, A6, A7	Adjust for maximum output.
4. With radio installed in car and antenna fully extended, tune in a weak station near 1200KC and adjust A7 for maximum output.						

### PUSHBUTTON ADJUSTMENT

1. Tune manually to desired station.
2. Pull out pushbutton, then press in firmly.
3. Repeat for remaining pushbuttons.

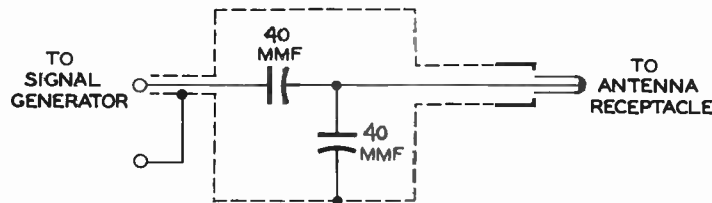


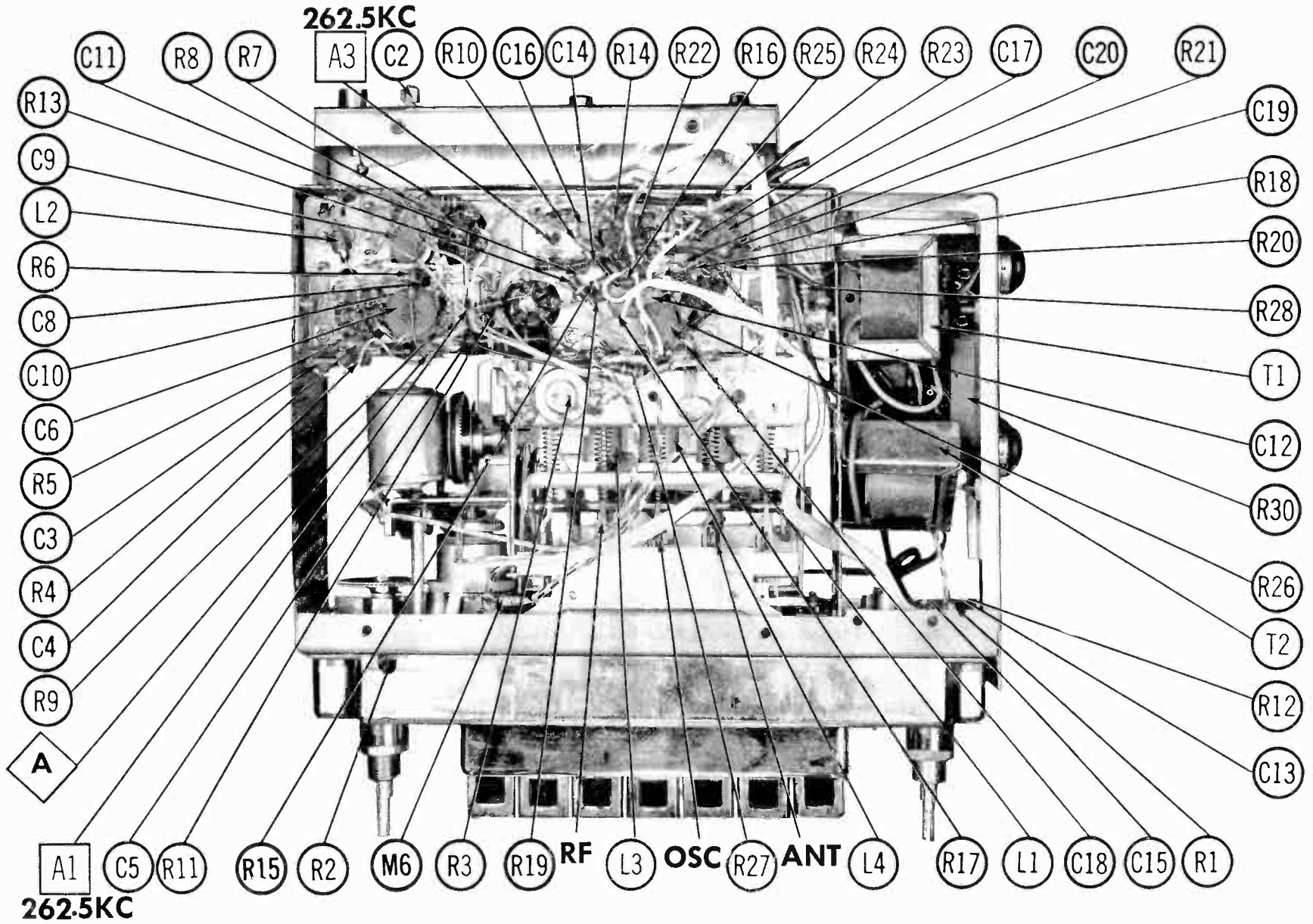
FIG. 1

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H620

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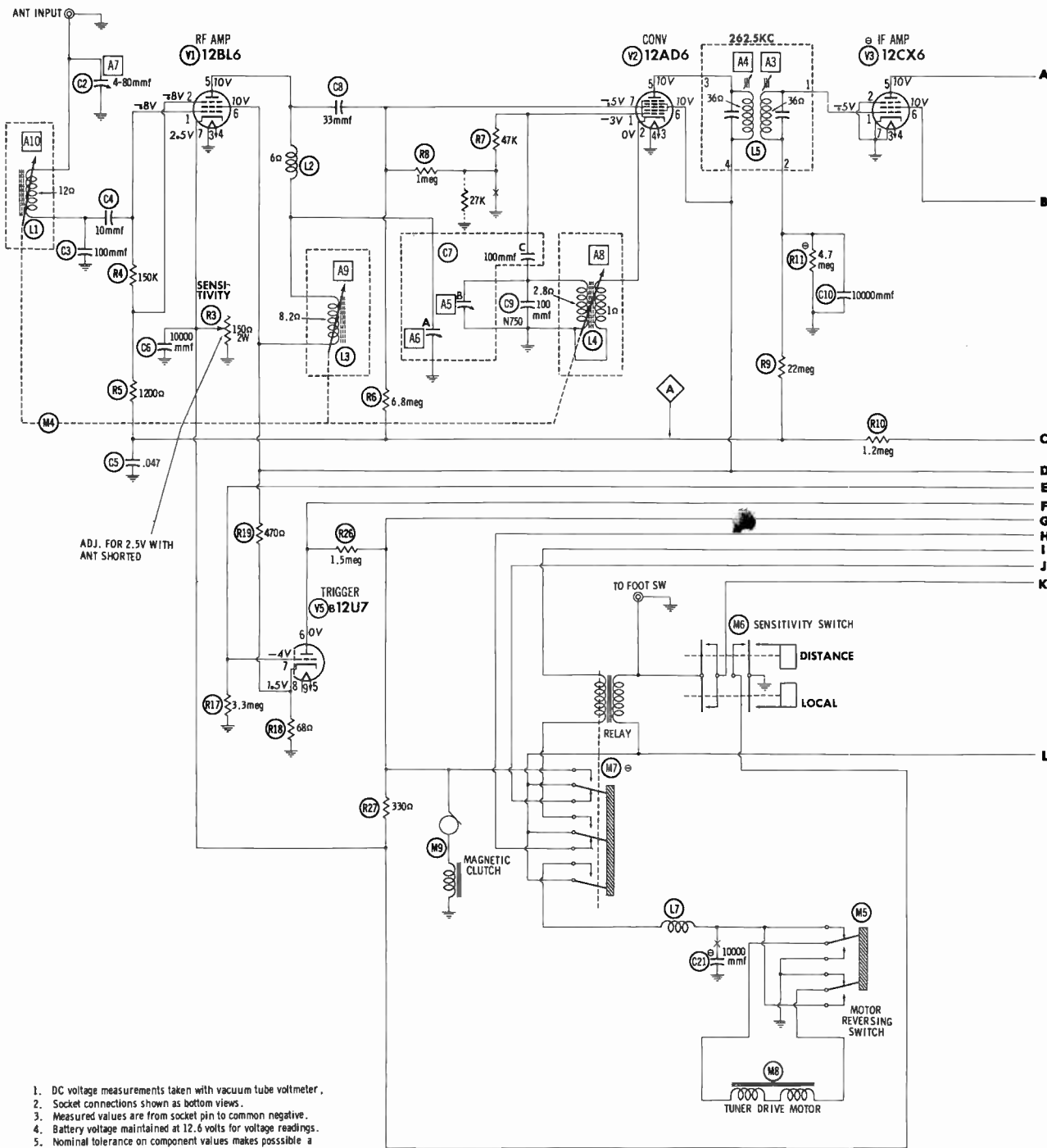




CHASSIS BOTTOM VIEW



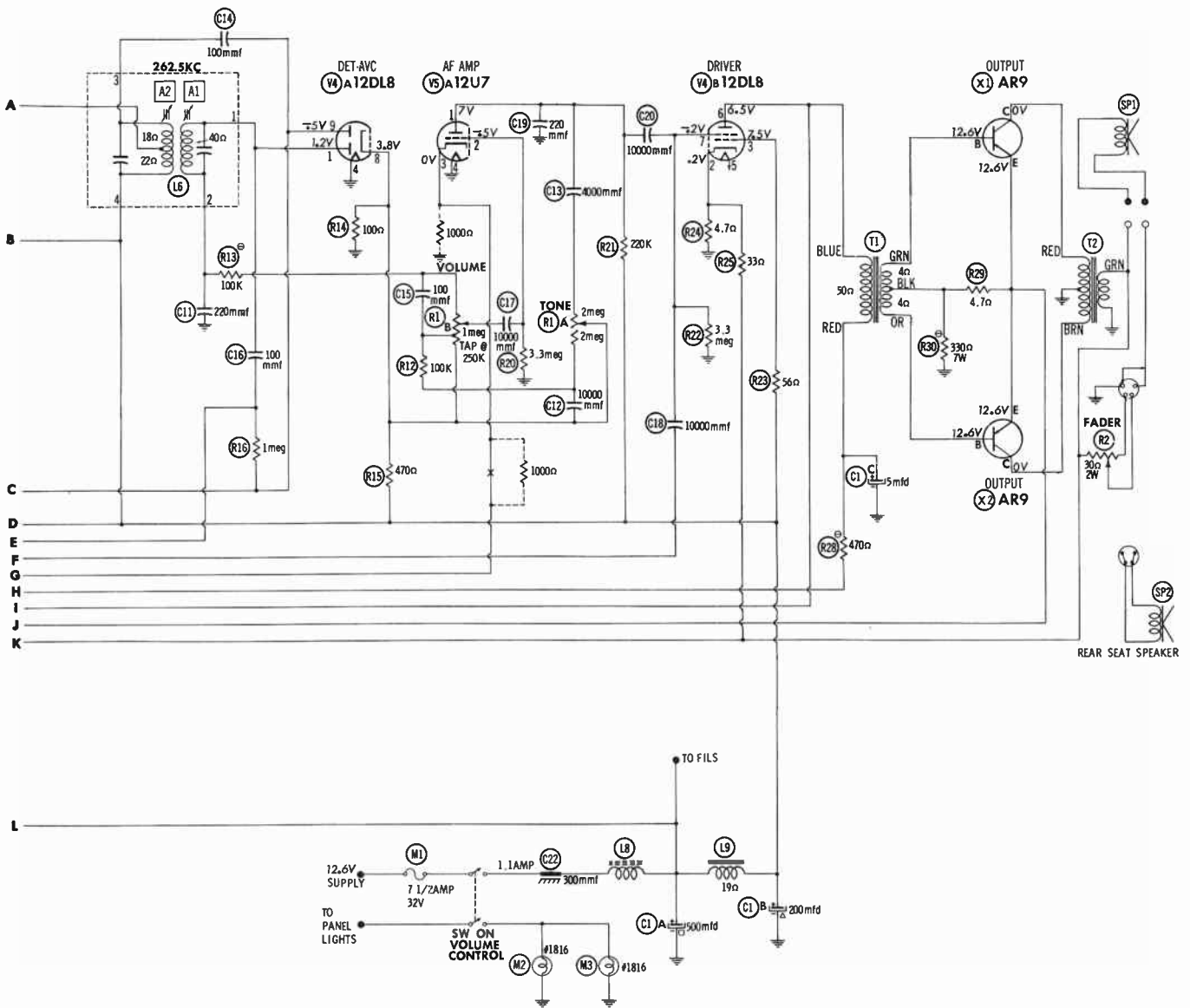




1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of  $\pm 15\%$  in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	3.5meg	3.4meg	0Ω	1.6Ω	† 33Ω	† 20Ω	130Ω		
V2	12AD6	47K	1Ω	1.6Ω	0Ω	† 55Ω	† 20Ω	1meg		
V3	12CX6	5meg	0Ω	0Ω	1.6Ω	† 40Ω	† 20Ω	0Ω		
V4	12DL8	1.3meg	† 4.7Ω	† 75Ω	0Ω	1.6Ω	† 470Ω	3.3meg	100Ω	3meg
V5	12U7	† 220K	3.3meg	330Ω	0Ω	1.6Ω	† 1.5meg	2.5meg	68Ω	NC

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE  
 † MEASURED FROM JUNCTION OF C22 AND L8  
 NC NO CONNECTION

## PARTS LIST AND DESCRIPTIONS (Continued)

### RESISTORS

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

ITEM No.	RATING		PHILCO PART No.	NOTES	ITEM No.	RATING		PHILCO PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R4	150K		66-4158340		R18	68Ω		66-0688340	
R5	1200Ω		66-2128340		R19	470Ω		66-1478340	
R6	6.8meg		66-5688340		R20	3.3meg		66-5338340	
R7	47K		66-3478340		R21	220K		66-4228340	
R8	1meg		66-5108340		R22	3.3meg		66-5338340	
R9	22meg		66-6228340		R23	56Ω		66-0568340	
R10	1.2meg		66-5128340		R24	4.7Ω		66-9473380	
R11	4.7meg			①	R25	33Ω		66-0338340	
R12	100K		66-4108340		R26	1.5meg		66-5158340	
R13	100K		66-4108340	②	R27	330Ω		66-1338340	
R14	100Ω		66-1108340		R28	470Ω		66-1478340	③
R15	470Ω		66-1478340		R29	4.7Ω		66-9473260	
R16	1meg		66-5108340		R30	330Ω	7	33-1367-4	④
R17	3.3meg		66-5338340						

① Some versions use 10meg in this application  
 ② Some versions use 220K in this application

③ Some versions use 220Ω in this application  
 ④ Temperature compensating unit.

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		PHILCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.		
L1	Antenna Coil	32-4730-19						Note 1 160 Microhenries Note 1 Note 1
L2	RF Choke	32-4480-24	19-3160	TV-196	6120			
L3	RF Coil	32-4730-20						
L4	Osc. Coil	32-4730-21						
L5	Input IF	32-4676-2	16-6756	BC-344	12-HI	RF3		
L6	Output IF	32-4677-8					7.5 Microhenries; IRC Part #CL-1	
L7	RF Choke							
L8	"A" Lead Choke	32-4720-3						

Note 1. Part of Tuner Assembly Part #76-10378-1. **FILTER CHOKE**

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 Hz)	PHILCO PART No.	Holldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	.011A ② 12.6VDC	19Ω	.5 Hy.	32-8788						

### TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	PHILCO PART No.	Holldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3	: 1	32-8835					TR-66 ①	① Drill new mounting hole

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
			PHILCO PART No.	Holldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
	PRI.	SEC.								
T2	60Ω CT	3-4Ω	32-8834							

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
				PHILCO PART No.	QUAM PART No.	
	SIZE	FIELD	V. C. IMP.			
SP1	5" X 7"	PM	3-4Ω	36-1670-2	57A15	
SP2	5" X 7"	PM	3-4Ω	36-1670-2	57A15	

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PHILCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	7½A 32V	45-2656-53		30707.5 (7½A 32V)	155009	SFE 7½	HDE

### MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M2	Lamp	32-2064	#1816
M3	Lamp	32-2064	#1816
M4	Tuner	76-10378-1	Complete
M5	Switch	76-11522	Motor Reversing
M6	Switch Ass'y	76-1411-3	Sensitivity
M7	Relay	42-4033	Alternate Part #42-4032
M8	Motor	76-11379-1	Tuner Drive, Includes Bracket Assembly
M9	Clutch	76-11519	Magnetic

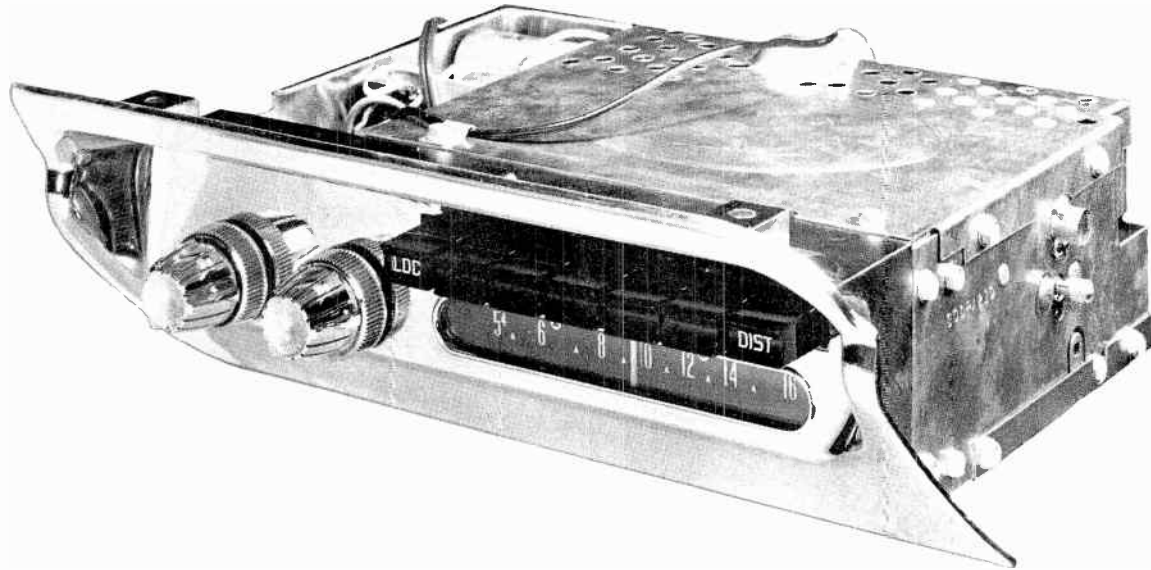
### CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8524 (Stranded) Available in Ten Colors
Bonding Strap .....	Use BELDEN No. 8661





TRADE NAME	Mopar Model 925 (P-5803) For 1958 LP1 & LP2 Plymouth Automobiles	
MANUFACTURER	Philco Corp., Tioga & "C" Streets, Philadelphia, Pa.	
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output	
TUBES (Five)	Types 12BL6 RF Amplifier, 12AD6 Converter, 12CX6 (or) 12BL6 IF Amplifier, 12DL8 Det.-AVC-Driver, 12U7 Trigger-AF Amplifier	
POWER SUPPLY	12 Volt Storage Battery	RATING 1.2 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540 - 1610KC	

## ALIGNMENT INSTRUCTIONS

### ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.047mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5KC (400% Mod)	Tuning gang fully open	DC probe to point A. Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
2.	"	"	"	"	"	A4	Adjust for MINIMUM deflection. Repeat steps 1 and 2.
3.	Fig. 1	Thru dummy to antenna receptacle.	1610KC	1610KC	Across voice coil	A5, A6, A7	Adjust for maximum output.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1200KC and adjust A7 for maximum output.						

#### PUSHBUTTON ADJUSTMENT

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

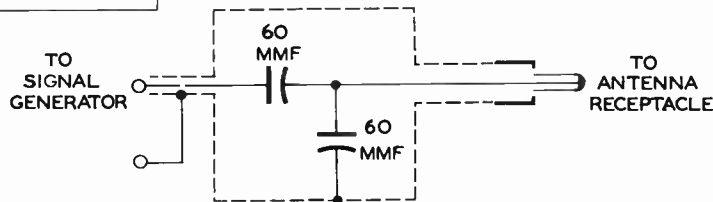


FIG. 1

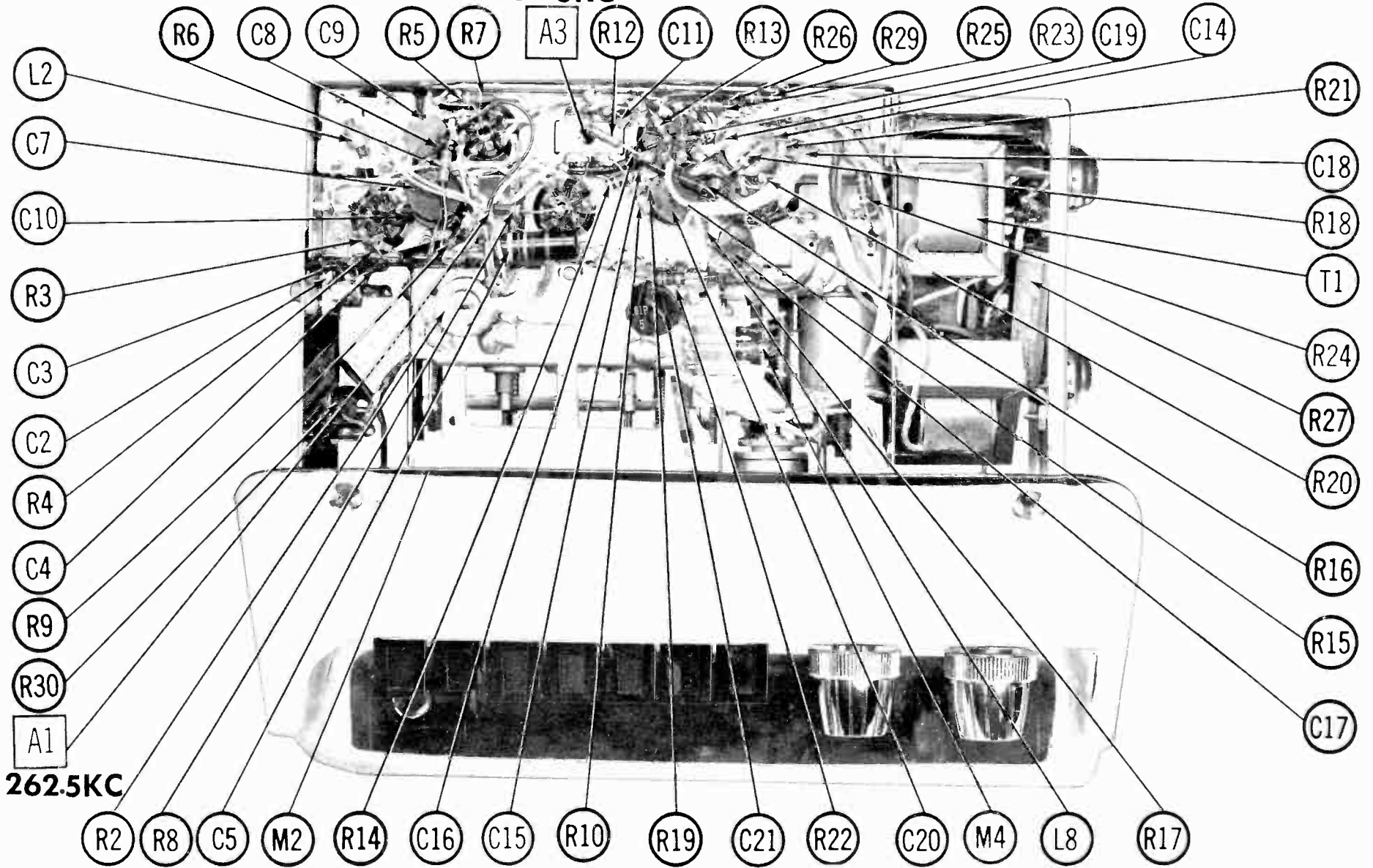
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MOPAR MODEL  
925 (P-5803)

262.5KC



CHASSIS-BOTTOM VIEW



## PARTS LIST AND DESCRIPTIONS TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES	ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6		V4	Det. - AVC - Driver	12DL8	
V2	Converter	12AD6		V5	Trigger - AF Amp.	12U7	
V3	IF Amplifier	12CX6	Note 1				

Note 1. Alternate type 12BL6.

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	AR9	Output					PNP
X2	AR9	Output					PNP

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	500	16	61-0086-10	AFH3-54-50		WP200. 7			R2865 *
B	200	16				TT25X5			
C	5	25							

\* Non-Catalog Item

### FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	5-80		31-6533-1						
C3	100		30-1251-22	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	5% Note 1
C4	5								
C5	.047	200	30-4650-45	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C6A	19-160								
B	325-395		31-6522-8						
C	100								
C7	10000		30-1238-2	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C8	33		30-1251-9	NPO-DI 33	DD-330	L10Q33	ZT-5433	5TCC-Q33	10%
C9	100		30-1251-22	N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750
C10	10000		30-1238-2	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C11	220		30-1238-4	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C12	100		30-1238-11	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C13	4000		30-1238-18	BPD-004	DD-402	BYA10D4	UC-5240	5HK-D4	Note 2
C14	4000		30-1238-18	BPD-004	DD-402	BYA10D4	UC-5240	5HK-D4	
C15	100		30-1238-11	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C16	100		30-1238-11	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C17	10000		30-1238-2	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C18	220		30-1238-4	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C19	10000		30-1238-2	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C20	10000		30-1238-2	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C21	10000		30-1238-2	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C22	300		30-1254-1	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	

Note 1. Some versions may use 10mmf in this application (Part #30-1251-6).

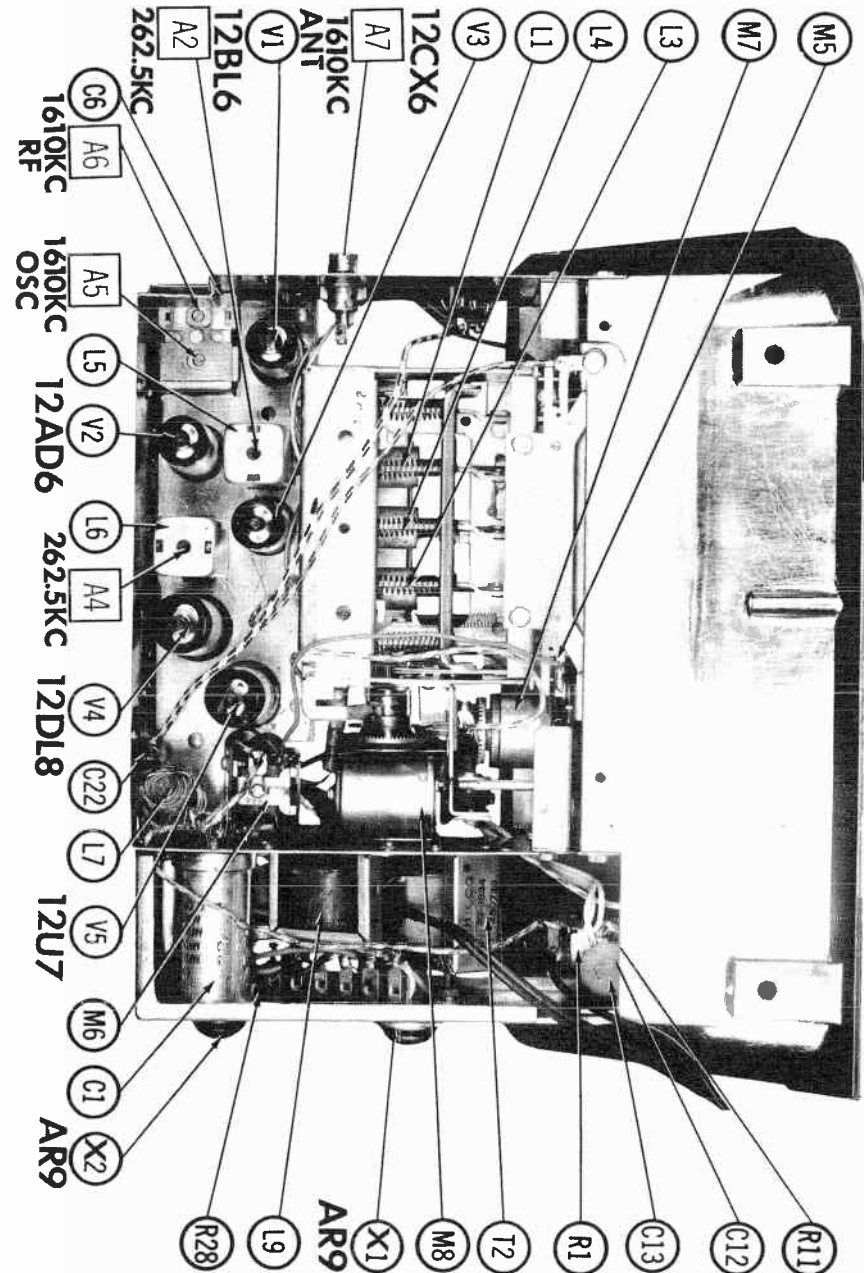
Note 2. Some versions may use 10000mmf in this application (Part #30-1238-2).

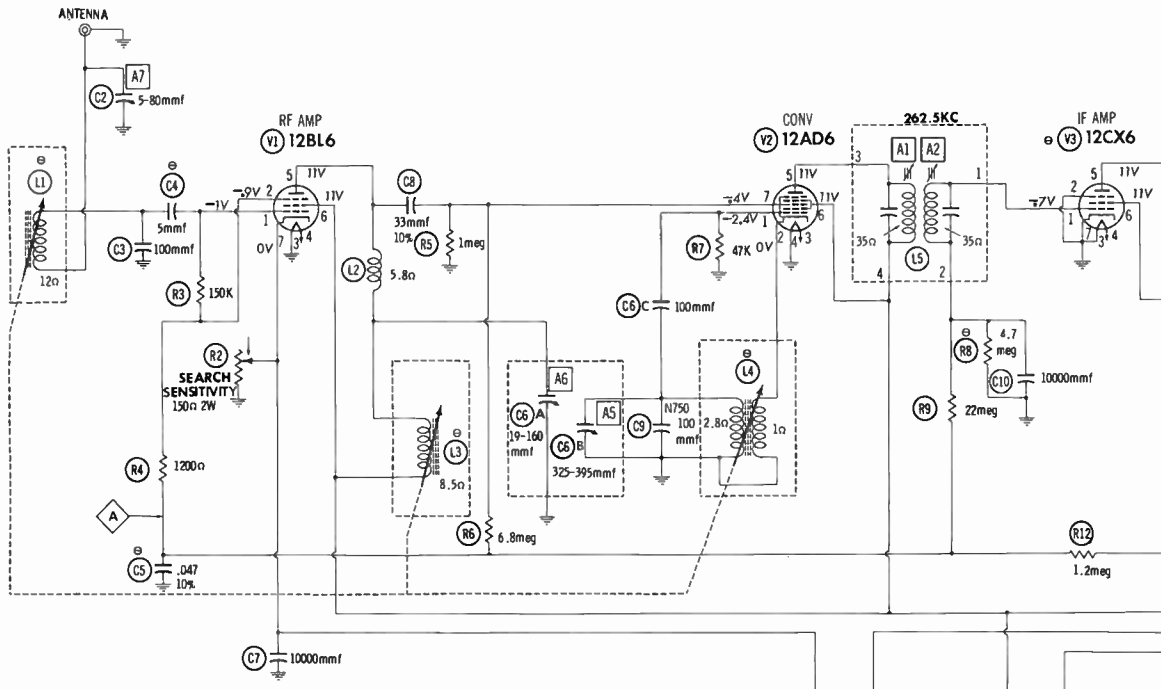
### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
RIA	4meg	1/2	33-5580-17 *					Tone
B	1meg							Volume, Tap @ 300K
C	Switch							
R2	150Ω	2(W/W)	33-5591-4		39-150		FL-150	Search Sensitivity

\* Tone control open in center of range, 2 meg each side of center.

## CHASSIS—TOP VIEW

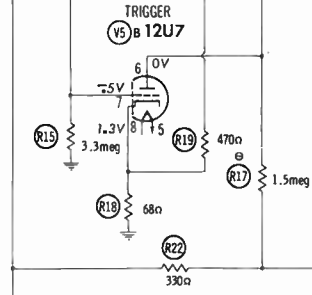




RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	3meg	2.9meg	0 $\Omega$	1.2 $\Omega$	†33 $\Omega$	†19 $\Omega$	75 $\Omega$		
V2	12AD6	47K	1 $\Omega$	1.2 $\Omega$	0 $\Omega$	†54 $\Omega$	†19 $\Omega$	1meg		
V3	12CX6	3.5meg	0 $\Omega$	0 $\Omega$	1.2 $\Omega$	†41 $\Omega$	†19 $\Omega$	0 $\Omega$		
V4	12DL8	1meg	4 $\Omega$	†75 $\Omega$	0 $\Omega$	1.2 $\Omega$	†520 $\Omega$	3.3meg	80 $\Omega$	2.8meg
V5	12U7	†220K	3.3meg	58 $\Omega$	0 $\Omega$	1.2 $\Omega$	1.5meg	2.5meg	68 $\Omega$	NC

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE  
 † MEASURED FROM JUNCTION OF L7 AND L9  
 NC NO CONNECTION

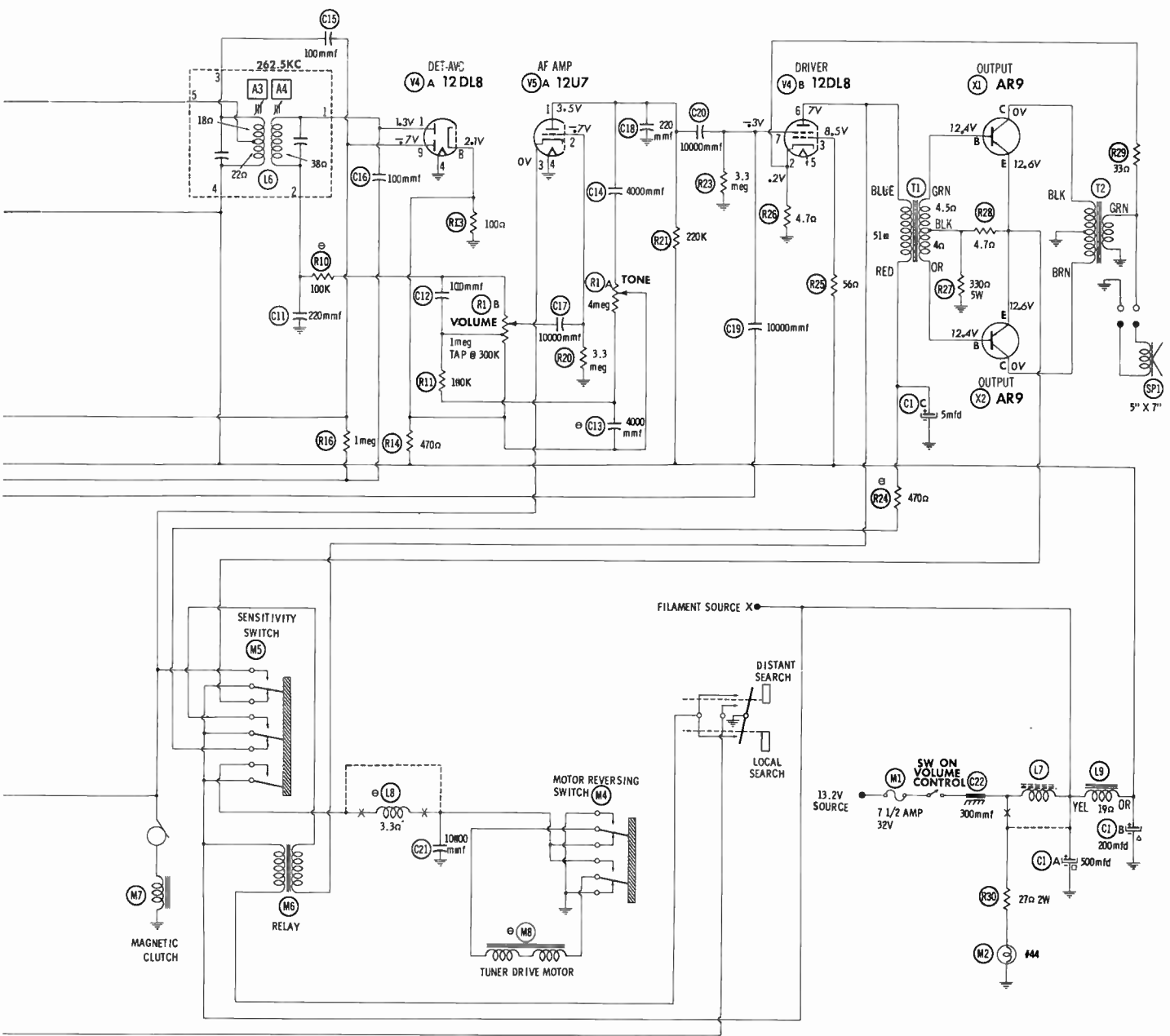


† SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION  
 DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of  $\pm 15\%$  in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
 Howard W. Sams & Co., Inc. 1958





## PARTS LIST AND DESCRIPTIONS (Continued)

### RESISTORS

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

ITEM No.	RATING		PHILCO PART No.	NOTES	ITEM No.	RATING		PHILCO PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R3	150K		66-4158340		R17	1.5meg		66-5158340	Note 3
R4	1200Ω		66-2128340		R18	68Ω		66-0668340	
R5	1meg		66-5108340		R19	470Ω		66-1478340	
R6	6.8meg		66-5668340		R20	3.3meg		66-5338340	
R7	47K		66-3478340		R21	220K		66-4228340	
R8	4.7meg		66-5478340	Note 1	R22	330Ω		66-1338340	
R9	22meg		66-6228340	Note 2	R23	3.3meg		66-5338340	Note 4
R10	100K		66-4108340		R24	470Ω		66-1478340	
R11	100K		66-4108340		R25	56Ω		66-0568340	
R12	1.2meg		66-5128340		R26	4.7Ω	(WW)	66-9473360	Note 5
R13	100Ω		66-1108340		R27	330Ω	5	33-1367-4	
R14	470Ω		66-1478340		R28	4.7Ω	(WW)	66-9473260	
R15	3.3meg		66-5338340		R29	33Ω		66-0338340	
R16	1meg		66-5108340		R30	27Ω	2	66-0276340	

Note 1. Some versions may use 10meg in this application (Part #66-6108340).  
 Note 2. Some versions may use 220K in this application (Part #66-4228340).  
 Note 3. Some versions may use 1.2meg in this application (Part #66-5128340).  
 Note 4. Some versions may use 100Ω in this application (Part #66-1108340).  
 Note 5. Temperature compensating unit.

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		PHILCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Antenna Coil	32-4730-19					
L2	RF Choke	32-4480-24	19-3160	TV-196	6120		Note 1 150 Microhenries
L3	RF Coil	32-4730-20					Note 1
L4	Osc. Coil	32-4730-21					Note 1
L5	Input IF	32-4676-2	16-6756	BC-344	12-HI	RF-3	
L6	Output IF	32-4677-8					
L7	"A" Lead Choke	32-4720-3					
L8	RF Choke						7.5 Microhenries, IRC Part #CL-1 Note 2

Note 1. Part of Tuner M3. Note 2. Not used in some versions.

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	PHILCO PART No.	Halldarson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	.01A	19Ω	.5 Hy	32-8788						

### TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
			PHILCO PART No.	Halldarson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
	PRI.	SEC.							
T1	3	: 1	32-8835					TR-66 ①	① Drill new mounting hole.

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
			PHILCO PART No.	Halldarson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordarson PART No.	
	PRI.	SEC.							
T2	60ΩCT	3-4Ω	32-8834						

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
				PHILCO PART No.	QUAM PART No.	
	SIZE	FIELD	V. C. IMP.			
SP1	5" X 7"	PM	3-4Ω	36-1670-2	57A15	

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			PHILCO PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
M1		7½A 32V	45-2656-53						

### MISCELLANEOUS

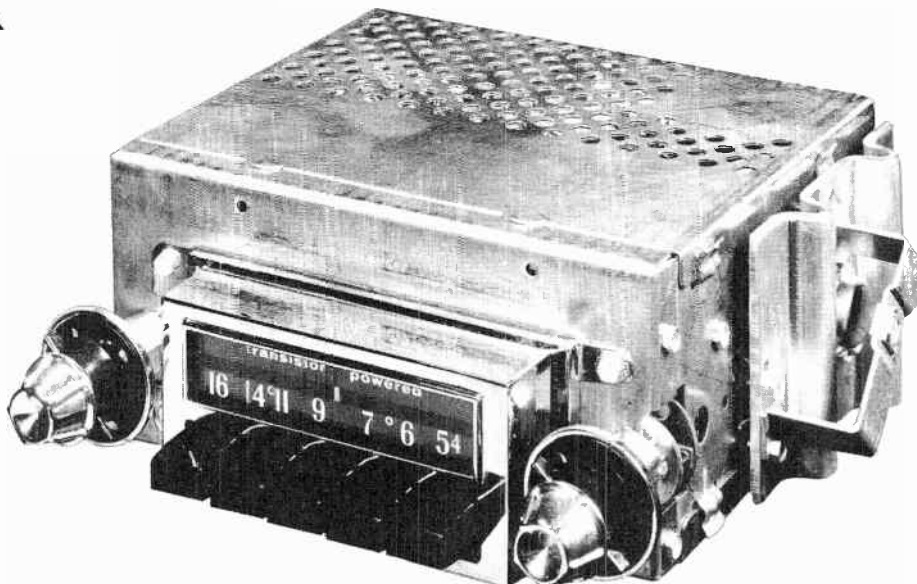
ITEM No.	PART NAME	PHILCO PART No.	NOTES
M2	Lamp	32-2064	#44
M3	Tuner	76-10377-1	Complete
M4	Switch	76-11522	Motor Reversing (Part of M3)
M5	Switch	76-11411-1	Sensitivity, Assembly (Part of M3)
M6	Relay	42-4033	Alternate Part #42-4032
M7	Clutch Ass'y	76-11519	Magnetic (Part of M3)
M8	Motor	76-10379-1	Tuner Drive, Includes Bracket Assembly (Part of M3)

### CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8885
Bonding Strap .....	Use BELDEN No. 8661



TRADE NAME	Motorola Model CTA8X (For 1958 Chevrolet Automobiles)		
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois		
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output		
TUBES (Five)	Types 12BL6 RF Amplifier, 12AD6 Converter, 12BL6 IF Amplifier, 12F8 Det.-AVC-AF Amp., 12K5 AF Amplifier		
POWER SUPPLY	12 Volt Storage Battery	RATING	1.8 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540 - 1610KC		

## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5KC (400v Mod.)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2. Fig. 1	Thru dummy antenna to antenna receptacle	1610KC	"	"	A5, A6, A7	"
Steps 3 and 4 are not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, A10) 7/16" out of coils. (Alignment tool Part #66A76278 may be used). Repeat step 2.						
3. Fig. 1	Thru dummy antenna to antenna receptacle	1200KC	Tuner carriage 9/32" from high freq. end stop	Across voice coil	A8, A9, A10	Adjust for maximum output.
4. "	"	1610KC	High frequency end stop	"	A5, A6, A7	Adjust for maximum output. Repeat steps 3 and 4 until no further improvement can be obtained.
5.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

### PUSHBUTTON ADJUSTMENT

1. Tune manually to desired station.
2. Pull out pushbutton. Press in firmly.
3. Repeat for remaining pushbuttons.

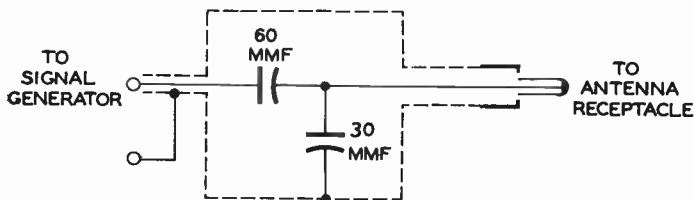


FIG. 1

### HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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MOTOROLA  
MODEL CTA8X

# PARTS LIST AND DESCRIPTIONS

## TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES	ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6		V4	Det.-AVC-AF Amp.	12F8	
V2	Converter	12AD6		V5	AF Amplifier	12K5	
V3	IF Amplifier	12BL6					

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N176	Output	CBS-2N155	2N176		2N176	PNP

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	500	16	23B560487	AFH3-00-90		WP300. 5I			R2664 *
B	100	16							
C	100	16							

\* Not normally in distributors stock. Available thru distributor on order to manufacturer.

### FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

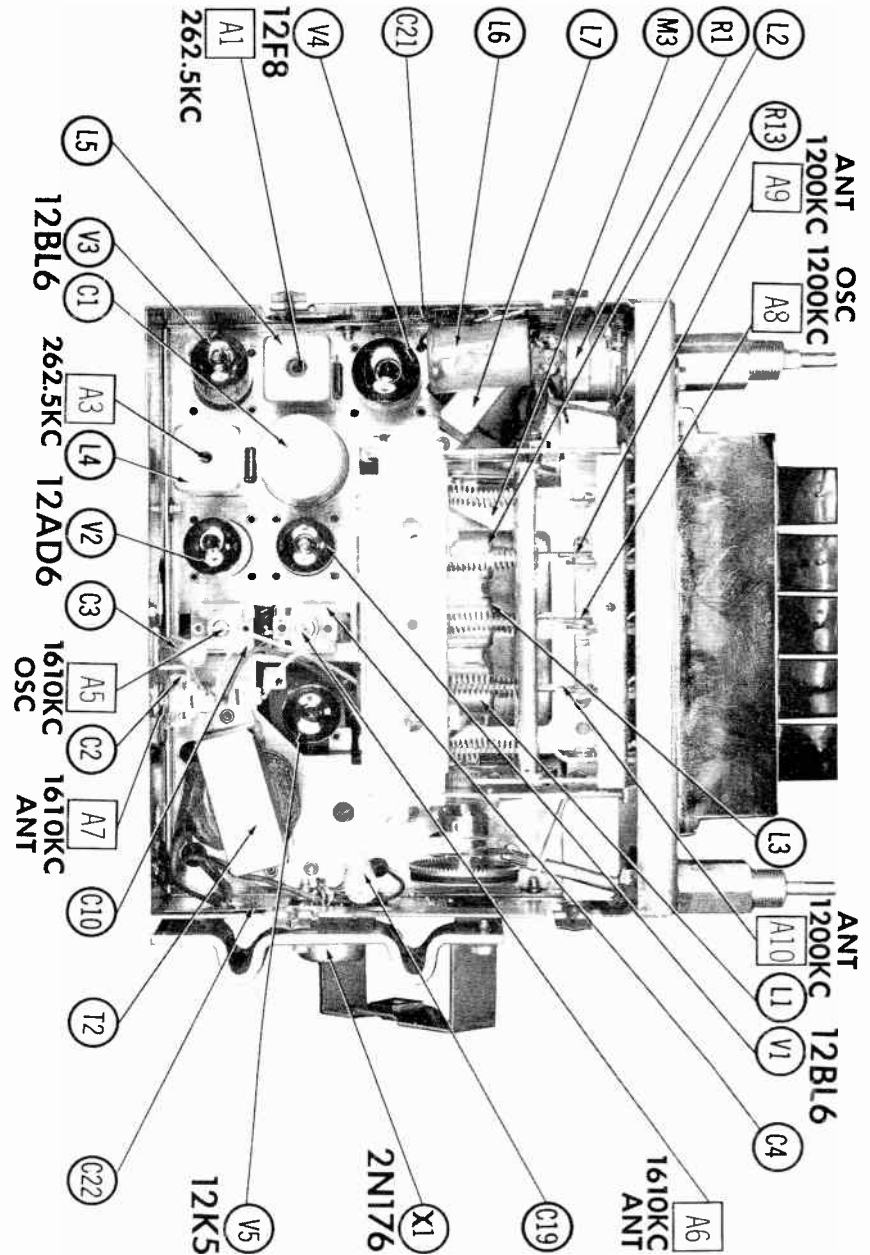
ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	40-430	800	20K542441	P688N-003	D6-302	CUB6D3	GEM-623	6TM-D3	
C3	.003		8R121589						
C4	20-120		20K541014						
C5	47	200	21R114207	N750-DI 47	DTN-47	C10Q47U	NT-5447	5TCU-Q47	N750 10%
C6	.05		8R121005	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C7	220		21K121698	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	10%
C8	47	200	21R115593	N750-DI 47	DTN-47	C10Q47U	NT-5447	5TCU-Q47	N750 10%
C9	100		21R410036	N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750 10%
C10	310-390		20K541700						
C11	27	200	21R410089			C10Q27C			NPO 10%
C12	.05		8R121005	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C13	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C14	.002	600	8R121588	P288N-002	D6-202	CUB6D2	GEM-622	6TM-D2	
C15	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C16	.05		8R121005	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C17	.01	200	8R121888	P288N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C18	330		21R410118	DI 330	DD-331	L10T33	UC-5333	5GA-T33	
C19	.02		8R121003	P288N-02	DD-203	CUB2S2	GEM-412	2TM-S2	
C20	.5	100	8K121686	P288N-5		CUB2P5	GEM-205	2TM-P5	
C21			64K530177						
C22			64K530177						

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
RIA	500K	1	18B542657	F1-41	RTV-654C	QJ-1083A	■ UE-3828S	Tone Volume, Tap @ 1meg
B	2.2meg		8R121588	R2-75	Not Req.	Not Req.		
C	Switch		125Ω	18K542493	KB-4	39-125		

■ "STA-LOC" Equivalent: FA55A, RU26T16, OS1562, IS2000. IS41

## CHASSIS—TOP VIEW





# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS

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

ITEM No.	RATING		MOTOROLA PART No.	NOTES	ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R3	22meg		6R488158		R14	3.3meg		6K121278	
R4	3300Ω		6K121725		R15	120K		6K127540	
R5	22meg		6R488158		R16	270K		6R6414	
R6	47K		6K121299		R17	3.3meg		6K121278	
R7	5.6meg		6R3988		R18	270Ω		6K121303	
R8	91meg		6K538716		R19	27Ω		6B119401	
R9	330Ω		6K127940		R20	47Ω	2	6K121419	
R10	22K		6K119405		R21	5.6Ω	1(WW)	6K488139	
R11	4.7meg		6K121277		R22	10Ω Cold		6K540634	
R12	6.8meg		6K121933		R23	220Ω		6R6270	
R13	100K		6K122313		R24	470Ω		6K127633	

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Antenna Coil	24C535458					Part of M3.
L2	Antenna Coupling	24C535458					
L3	Osc. Coil	24C535458					
L4	Input IF	24B542748	16-8752	BC-350	12-HI	RF-3	Part of M3.
L5	Input IF	24K542491	16-8752	BC-350	12-HI	RF-3	
L6	Output IF "A" Lead Choke	24K542675 24A472535	16-8754	BC-354	12-H6		

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 Hz)	MOTOROLA PART No.	Haldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.
L7	.56A	.6Ω	.01 Hy.	25K541701						

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Haldorson PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	
T1	6.5	:1	25K542876			TA-43			

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
		MOTOROLA PART No.	Haldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	
	PRI.								
T2	23.5Ω Tap 3-4Ω	25C542489							

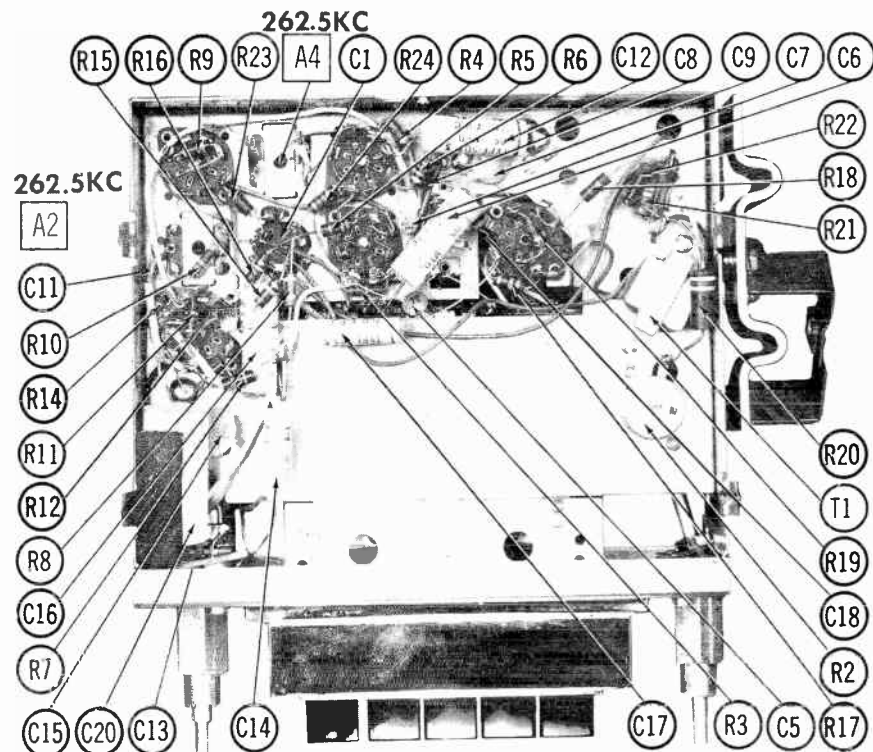
## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	8" x 9"	PM	3-4Ω	50K541105	89A3	

## FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
M1		10A 32V	65R10286						

# CHASSIS—BOTTOM VIEW



## MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Lamp	65R533821	#1891
M3	Tuner	77K541218	AT-214, Complete

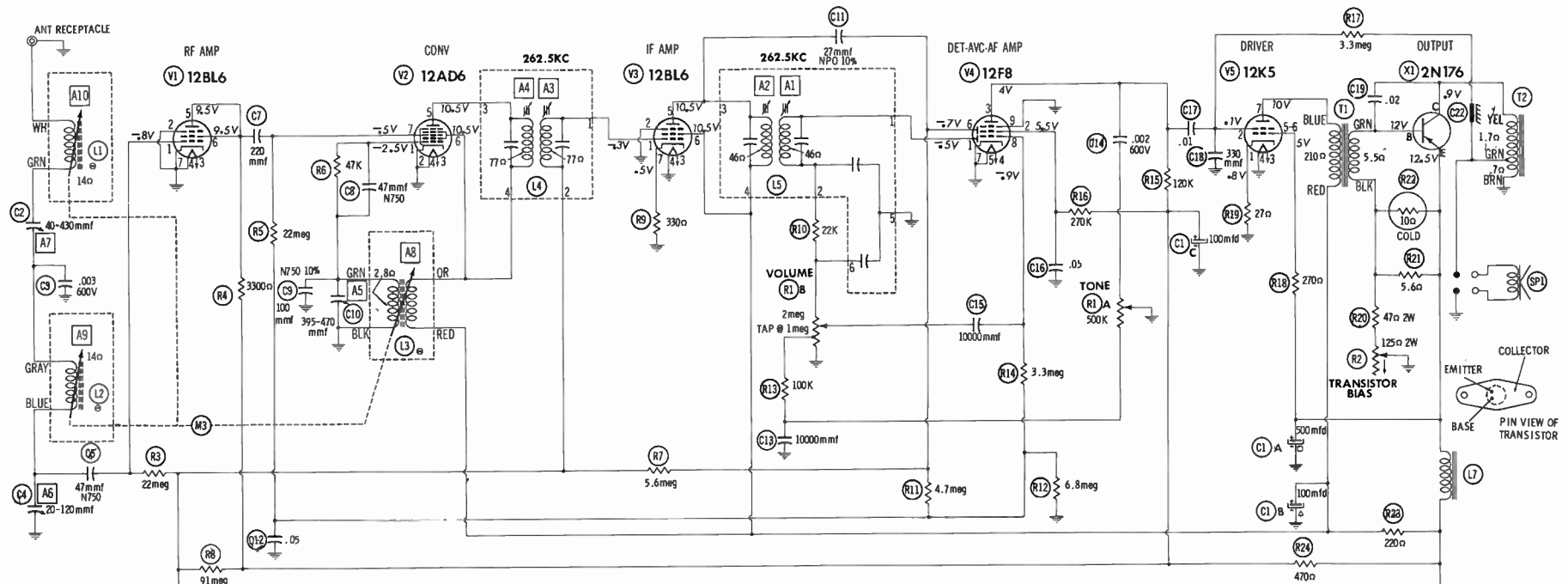
## CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36B542650	On-Off-Volume, Tuning Tone Dummy Station Selector, Five used
Knob	36B542663	
Knob	36K542664	
Pushbutton	36B542665	
Dial Pointer	1V538789	
Dial Scale	34B542837	

## WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661



**TRANSISTOR BIAS ADJUSTMENT (R2)**

1. Set R2 for maximum resistance (fully clockwise).
2. Connect a 0-1A DC ammeter (.05Ω max. internal resistance) in series with transistor collector. Connect the speaker.
3. Connect a 12.6V DC supply to the receiver and allow a 15 minute warm-up period.
4. Adjust R2 for a meter reading of 360mA.  
(If an input supply of 14V DC is available, adjust R2 for a meter reading of 440mA.)

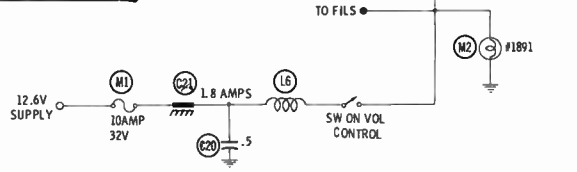
1. DC voltage measurements taken with vacuum tube volt meter;
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

**RESISTANCE READINGS**

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	35meg	0Ω	1.2Ω	0Ω	† 3800Ω	† 3800Ω	0Ω		
V2	12AD6	47K	0Ω	1.2Ω	0Ω	† 300Ω	† 220Ω	28meg		
V3	12BL6	17meg	0Ω	1.2Ω	0Ω	† 270Ω	† 220Ω	330Ω		
V4	12F8	1meg	† 270K	† 120K	1.2Ω	0Ω	11meg	0Ω	10meg	0Ω
V5	12K5	27Ω	3.3meg	1.2Ω	0Ω	† 270Ω	† 270Ω	† 430Ω		

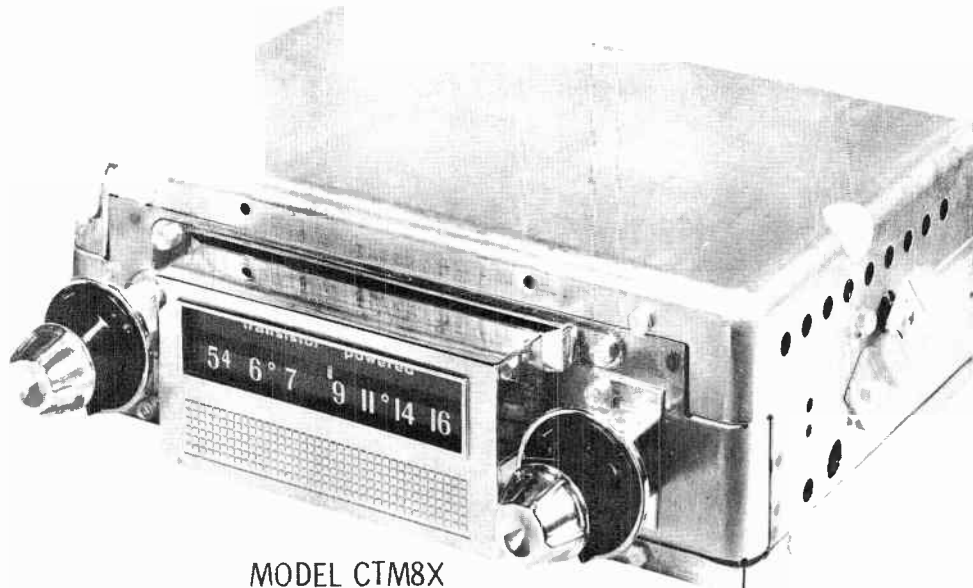
TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.  
† MEASURED FROM JUNCTION OF L7 AND R24.

⊙ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION  
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM



A PHOTOFACIT STANDARD NOTATION SCHEMATIC  
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**MOTOROLA  
MODEL CT8X**



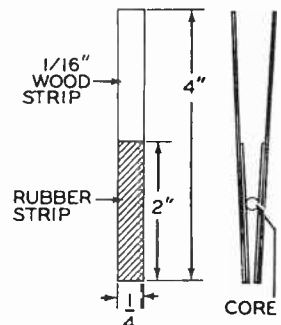
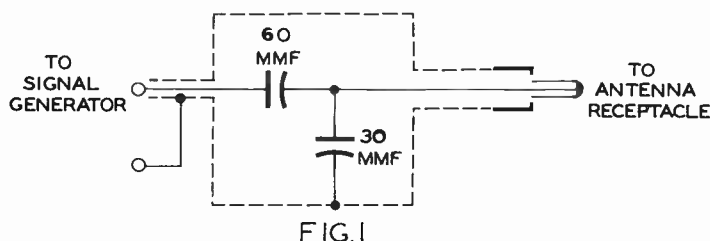
MODEL CTM8X

<b>TRADE NAME</b>	Motorola Models CTM57X (1957 Chevrolet), CTM8X (1958 Chevrolet), 398X (Universal Type)
<b>MANUFACTURER</b>	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
<b>TYPE SET</b>	Battery Operated AM Automobile Receiver With Transistorized Output
<b>TUBES (Five)</b>	Types 12BL6 RF Amplifier, 12AD6 Converter, 12BL6 IF Amplifier, 12F8 Det.-AVC-1st. AF Amp., 12K5 2nd. AF Amplifier
<b>POWER SUPPLY</b>	12 Volt Storage Battery
<b>TUNING RANGE—BROADCAST</b>	540-1610KC
	<b>RATING</b> 1.5 Amp. @ 12.6 Volts DC

### ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5KC (400v Mod)	High Freq. End Stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2. Fig. 1	Thru dummy to antenna receptacle	1610KC	"	"	A5, A6, A7	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, A10) out of coils but not out of coil forms. A tool similar to Fig. 2 may be used. Repeat step 2.						
3. Fig. 1	Thru dummy to antenna receptacle	1400KC	Tuner carriage 13/64" from high freq. end	Across voice coil	A8, A9, A10	Adjust for maximum output. Repeat steps 2 and 3. Cement cores.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

MOTOROLA MODELS  
CTM8X, CTM57X, 398X

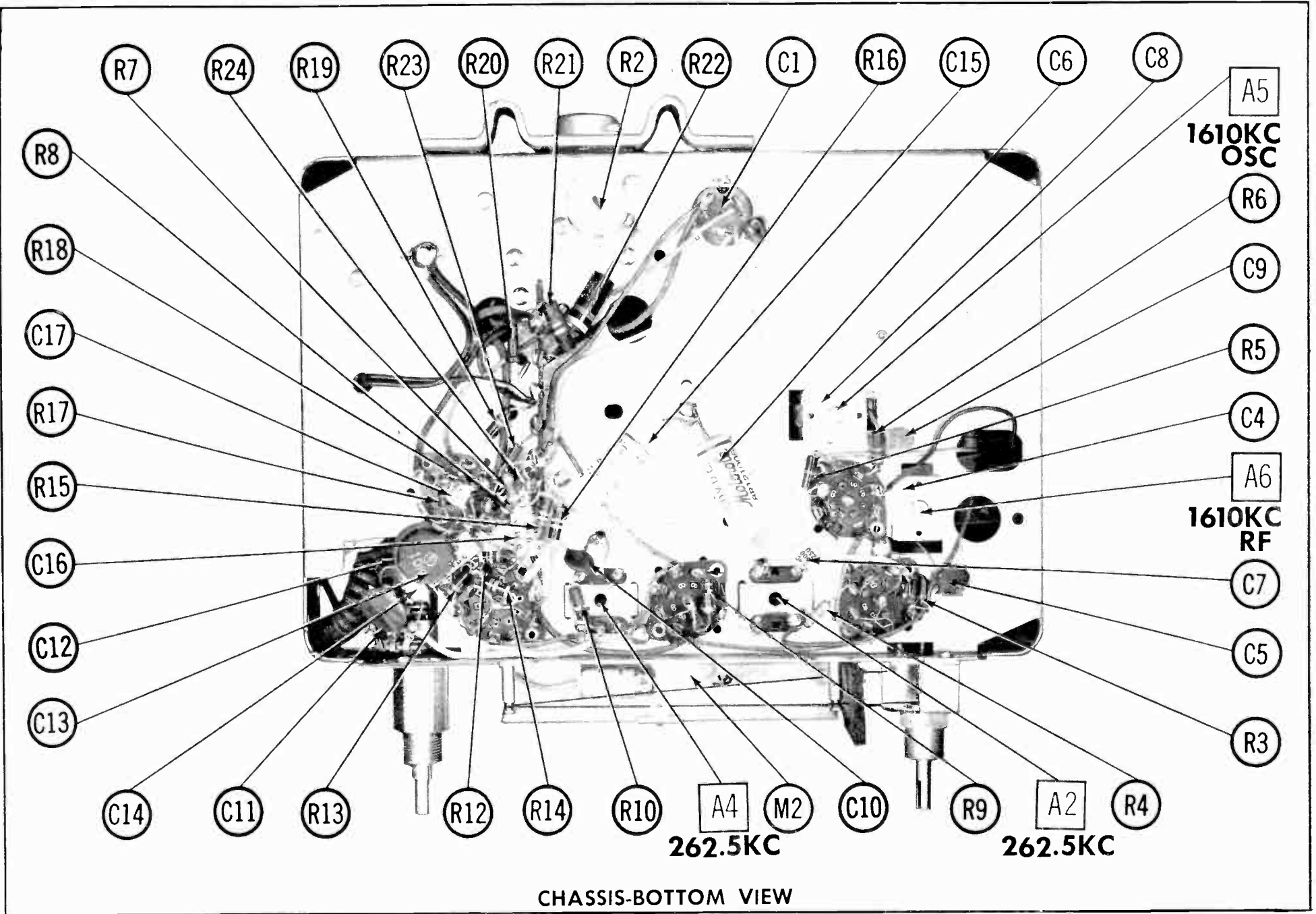


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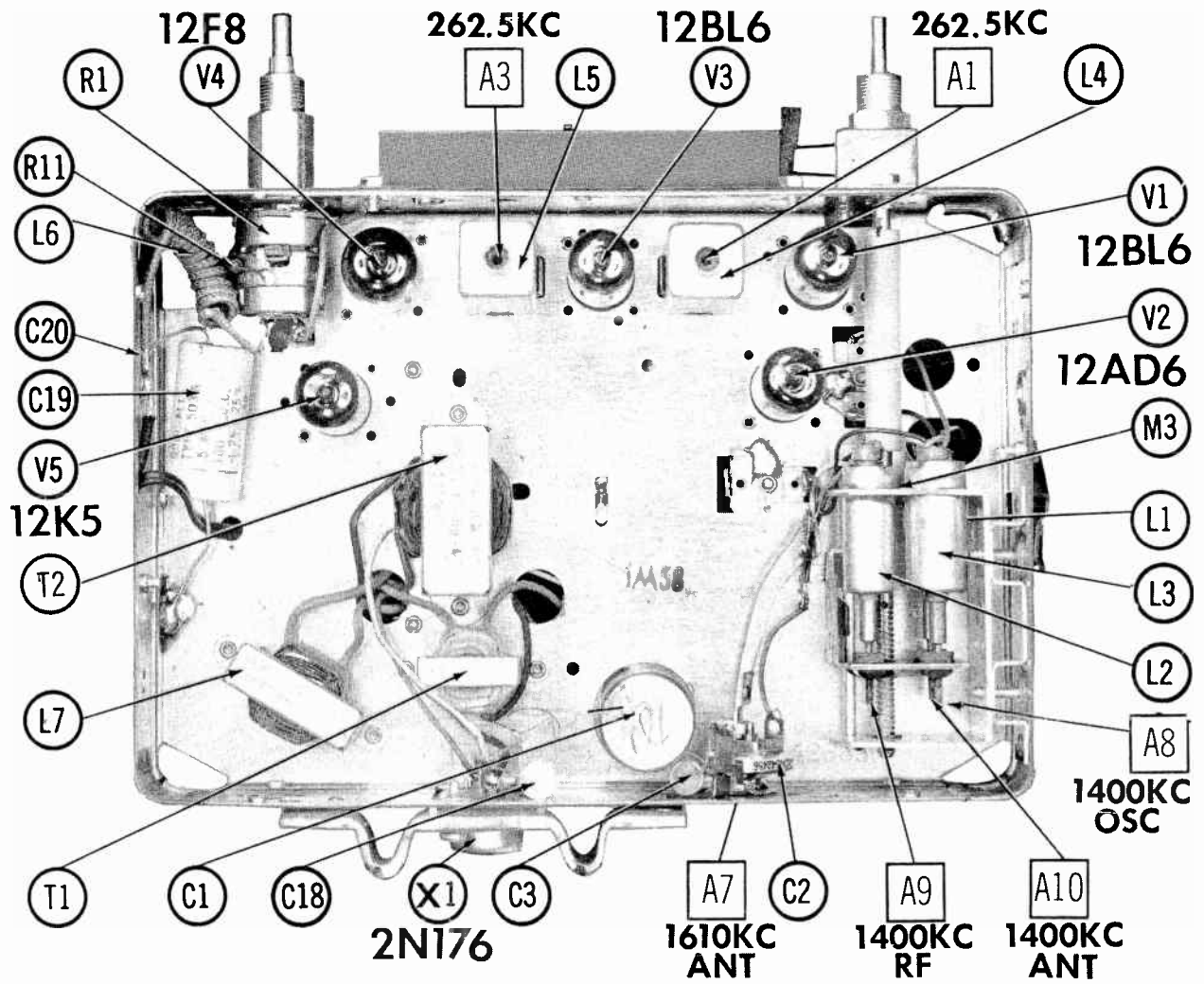
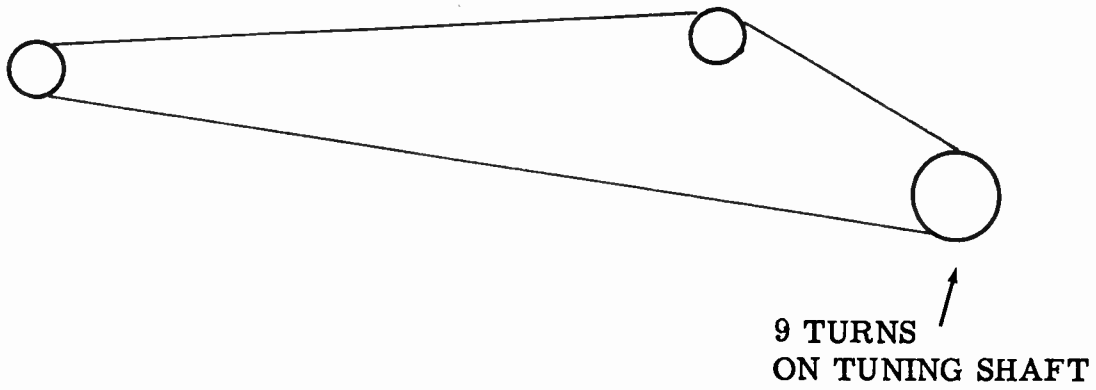








# DIAL CORD STRINGING



CHASSIS - TOP VIEW

# PARTS LIST AND DESCRIPTIONS

## TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6	
V2	Converter	12AD6	
V3	IF Amplifier	12RL6	

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N176	Output	CBS2N155	2N176		2N176	PNP

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	#500	16	23B560487	AFH3-00-90	B0045	WP300.5			R2664 *
B	100	16			BBR100-15	TC2501			
C	100	16							

\*Non-catalog item.

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	40-430	600	20K542456	P688N-003	D6-302	CUB6D3	GEM-623	6TM-D3	N750 10%
C3	.003		8R121569						
C4	20-120		20K541014						
C5	47	200	21R114207	N750-DI 47	DTN-47	C10Q47U	NT-5447	5TCU-Q47	N750 10%
C6	.05		8R121005						
C7	1500		21R120100						
C8	395-470	600	20A485708	N750-DI 47	DTN-47	C10Q47U	NT-5447	5TCU-Q47	N750 10%
C9	47		21R115593						
C10	27		21R410089						
C11	10000	400	21R482726	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	N750 10%
C12	10000		21R482726						
C13	10000		21R482726						
C14	.002	200	8R121568	P688N-002	D6-202	CUB6D2	GEM-622	6TM-D2	N750 10%
C15	.05		8R121005						
C16	.01		8R121002						
C17	330	400	21R410118	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	N750 10%
C18	.02		8R121003						
C19	.5		8R121666						
C20		100	64K535152	P288N-5	DD-203	CUB2P5	GEM-205	2TM-P5	

- ① Model 398X uses .220mmf in this application (Part #21K121698).
- ② Not used in Model 398X.
- ③ Model 398X uses .05mfd in this application (Part #8R121005).
- ④ Model 398X uses 1000mmf in this application (Part #21R115386).

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	1/2	18B542657	F1-41	RTV-634C			Tone, Note 1 Volume, Tap @ 1meg Transistor Bias
B	2.2meg			R2-75	Not req.		■ UE3828S	
C	Switch			KB-4	Not req.			
R2	125Ω	1.5(WW)	18K542493					

Note 1. Part #18K542494 used in Model CTM57X. Part #18K542457 (2meg volume & switch) used in Model 398X.  
■ "STA-LOC" Equivalent: FA55A, OS1562, RU26T16, IS2000, US-41.

## RESISTORS

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

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R3	22meg		6R118247	Note 1
R4	3300Ω		6K121725	
R5	22meg		6R118247	
R6	47K		6K121299	
R7	91meg		6K538716	
R8	5.6meg		6R3988	
R9	330Ω		6K127940	
R10	22K		6K119405	
R11	100K		6K122313	
R12	4.7meg		6K121277	
R13	3.3meg		6K119407	

Note 1. Not used in Model 398X.

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Ant. Coll	24K560430					Note 1 Note 1 Note 1
L2	RF Grid Coll	24K560433					
L3	Osc. Coll	24K560426					
L4	Input IF	24K542491	16-6752	BC-350	12-H1	RF-3	
L5	Output IF	24K542675	16-6754	BC-354	12-H6		
L6	"A" Lead Choke	24K580706					

Note 1. Part of M3.

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	MOTOROLA PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.	Triod PART No.
L7	.42A @ 12.6VDC	.6Ω	.001 Hy.	25K542487 ①						

① Part #25B736760 used in Models CTM8X, CTM57X.

## TRANSFORMER (INTERSTAGE)

ITEM No.	TURNS RATIO		REPLACEMENT DATA							NOTES
	PRI.	SEC.	MOTOROLA PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.	Triod PART No.	
	T1	6.5	1	25B540658	GH8 ①				TR21 ①	

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES	
	PRI.	SEC.	MOTOROLA PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.		Triod PART No.
T2	23Ω	Tap @ 3-4Ω	25C542489							

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SPI	6" x 9"	PM	3-4Ω	50K541105 ①	69A3	① Used in Models CTM8X, CTM57X ② Used in Model 398X.
	5 1/4"	PM	3-4Ω	50C534259 ②	52A1	

## PARTS LIST AND DESCRIPTIONS (Continued)

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
M1		10A 32V	65R10286 ①						

① Part #65R16248 (9A) used in Model CTM57X. Part #65K1624 (9A) used in Model 398X.

### MISCELLANEOUS

ITEM No.	PART NAME *	MOTOROLA PART No.	NOTES
M2	Dial Lamp	65R533821	#1891
M3	Tuner	77K560424	MT-239, Complete

### CABINETS & CABINET PARTS

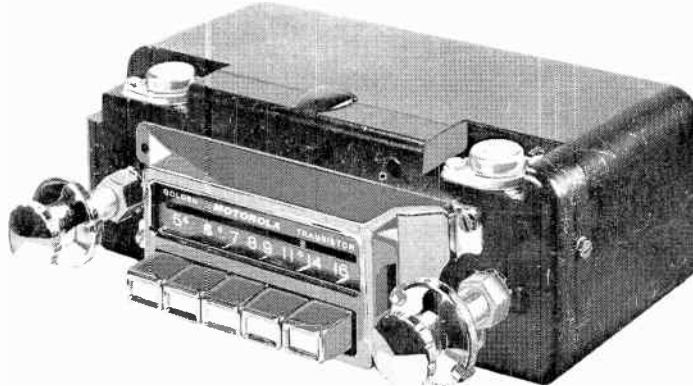
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36K541140	Dummy, Model CTM57X
Knob	36K542664	Dummy, Model CTM8X
Knob	36B541139	Tone, Model CTM57X
Knob	36B542663	Tone, Model CTM8X
Knob	36B541129	Volume and Tuning, Model CTM57X
Knob	36B536544	Volume and Tuning, Model 398X
Knob	36B542650	Volume and Tuning, Model CTM8X
Pointer	52A541314	Models CTM8X, CTM57X
Pointer	1A501293	Model 398X
Dial Scale	34B542490	Model 398X
Dial Scale	34B542838	Model CTM8X
Dial Scale	34B542495	Model CTM57X

### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in Ten Colors
	8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8885
Bonding Strap .....	Use BELDEN No. 8661





TRADE NAME Motorola Model GV-800  
 MANUFACTURER Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois  
 TYPE SET Battery Operated Universal Type Transistorized AM Automobile Receiver

POWER SUPPLY 12 Volt Storage Battery  
 TUNING RANGE—BROADCAST 540-1610KC

RATING .46 Amp. @ 12.6 volts DC

## ALIGNMENT INSTRUCTIONS

### ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Suggested alignment tools: A1, A2, A3, A4..... General Cement #8282, 8728, 8274, 8988, 5008, 8195, 8987, 8729  
 Walsco #2531, 2532  
 A5, A6, A7 ..... General Cement #5008, 9106, 5004, 9291  
 Walsco #2537, 2523, 2538, 2520, 2515, 2534  
 A8, A9, A10.....General Cement #8279, 8897  
 Walsco #2521, 2524

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1mf	High side to antenna receptacle. Low side to chassis.	262.5KC (400% Mod)	1000KC	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2. Fig. 1	Thru dummy to antenna receptacle.	1610KC	High Freq. end stop	"	A5, A6, A7	"
3. "	"	1200KC	Tune to 1200KC signal	"	A6, A7	"

The following steps are not necessary unless tuner has been tampered with or associated circuits have been repaired. If necessary, back tuning (cores A8, A9, A10) 7/16" out of coils. (Alignment tool Motorola #66A76278 may be used.)

4. Fig. 1	Thru dummy to antenna receptacle.	1610KC	High Freq. end stop	Across voice coil	A5, A6, A7	Adjust for maximum output.
5. "	"	1200KC	Tuner carriage 9/32" from high end stop	"	A8, A9, A10	Adjust for maximum output. Repeat steps 4 and 5. Step 4 should be last adjustment.
6. "	"	"	Tune to 1200KC signal	"	A6, A7	Adjust for maximum output.

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

#### PUSHBUTTON ADJUSTMENT

1. Tune to desired station manually.
2. Pull out pushbutton, then press in firmly.
3. Repeat for remaining buttons.

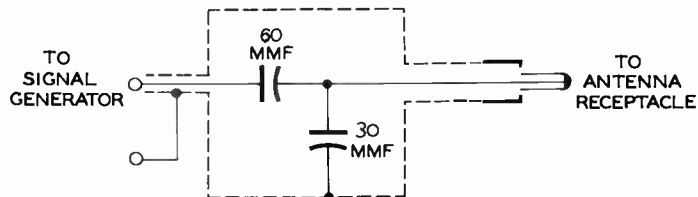


FIG. 1

### HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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MOTOROLA  
MODEL GV-800

## PARTS LIST AND DESCRIPTIONS TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N247	RF Amplifier Converter 1st IF Amplifier 2nd IF Amplifier AF Amplifier Driver Output		2N247		2N247	PNP
X2	2N140			2N140		2N140	PNP
X3	2N139			2N139	2N486	2N139	PNP
X4	2N139			2N139	2N484	2N139	PNP
X5	2N109			2N109	2N362	2N109	PNP
X6	2N270			2N270	2N360	2N270	PNP
X7	2N176			2N176		2N176	PNP
X8	2N176			CBS-2N155	2N176		PNP

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	100	16	23B560487	AFH3-00-80	D0045	WP300.5			TVLS-3026 *
B	100	16			BBR100-15				
C	500	16							
C2	25	15	23K543075	PWE25025	NL30-15	TT15X30	ML30-15	MQ-0225	TE-1157.1
C3	1	25	23K543077	PWE25001	NL1-6		ML1-25		TE-1200
C4	5	15	23K543076	PWE25005	NL5-15	TT25X5	ML5-15		TE-1152
C5	5	15	23K543076	PWE25005	NL5-15	TT25X5	ML5-15		TE-1152
C6	100	15	23B543074	SRE15V100	NLW100-15	TT15X100	ML100-15		TE-1162

\* Not normally in distributors stock. Available thru distributor on order to manufacturer.

### FIXED CAPACITORS

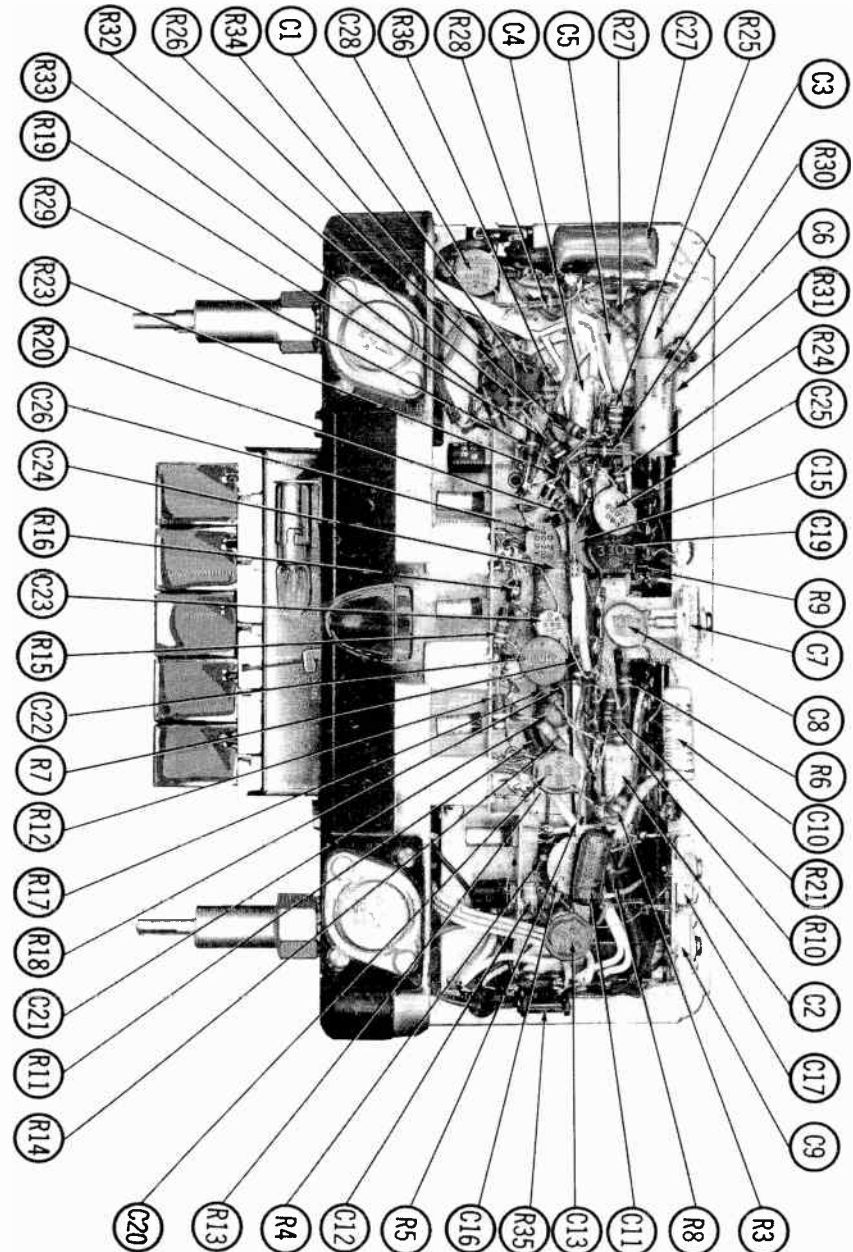
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C7	40-430		20K542847						
C8	100		21R24032						
C9	20-120		20K541014	N750-DI 100	DTN-100	C10TIU	CN7-310	5TCU-T1	N750 10%
C10	.002	1000	8R122291	P1088N-002	DD-202	CUB10D2	GEM-1022	10TM-D2	
C11	.1	50	8R128280	P285N-1	DF-104	STMIPI	GEM-201	2TM-P1	
C12	4.7		21R115954	NPO-SI 4.7	TCZ-4R7	CTA6V47C	CNO-547	5TCCB-V47	
C13	50000	200	21A740805	BPD-05	DF-503				
C14	.1	50	8R128280	P285N-1	DF-104	STMIPI	GEM-201	2TM-P1	
C15	50000	200	21A740805	BPD-05	DF-503				
C16	100		21R124032						
C17	20-120		20A77536						N220 5%
C18	270		21R128288						
C19	3300		21R120422						N750 5%
C20	50000	200	21A740805	BPD-05	DF-503	C10T27U	CN7-327	5HK-D33	
C21	.1	50	8R128280	P285N-1	DF-104	BYA10D33	B-233		
C22	50000	200	21A740805	BPD-05	DF-503	STMIPI	GEM-201	2TM-P1	
C23	15		21R122331	NPO-DI 15	DTZ-15	C10Q15C	CNO-415	5TCC-Q15	NPO 10%
C24	.1	50	8R128280	P285N-1	DF-104	STMIPI	GEM-201	2TM-P1	
C25	2000		21R121106	BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C26	25000	300	21K740806			CUB6P2	GEM-402	2TM-P2	
C27	.2	50	8R128281	P288N-2					
C28	25000	200	21K740806						
C29	25000	200	21K740806						
C30	25000	200	21K740806						
C31A	300	300	21A522033						
B	300	300							
C32	.5	100	8K122076	P185N-5		CUB2P5	GEM-205	68P20	

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES	
	RESIST. ANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.		MALLORY PART No.
R1A	10K		18B543069					Tone
B	10K							Volume, Tap @ 300Ω
C	Switch							
R2	500Ω	1/2(WW)	18B542930		39-500-100		FL-500-S	Transistor Bias, With 50Ω Stop

## CHASSIS—BOTTOM VIEW





# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS

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

ITEM No.	RATING		MOTOROLA PART No.	NOTES	ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R3	10K		6K119932		R20	6800Ω		6K119930	
R4	10K		6K119932		R21	15K		6K119934	
R5	1000Ω		6K121302		R22	120Ω		6K128226	
R6	100K		6K125534		R23	1000Ω		6K121301	
R7	6800Ω		6K119930		R24	82K		6K125179	
R8	15K		6K119934		R25	390K		6R5648	
R9	1200Ω		6K119926		R26	10K		6K119932	
R10	3300Ω		6K121725		R27	2700Ω		6K119926	
R11	220Ω		6K127099		R28	100K		6K125534	
R12	150K		6K182383		R29	1000Ω		6K121301	
R13	10K		6K119932		R30	82Ω		6K127516	
R14	1000Ω		6K121301		R31	6800Ω		6K119930	
R15	390Ω		6K122312		R32	2700Ω		6K119926	
R16	8200Ω		6K119931		R33	15Ω		6R2034	
R17	1800Ω		6K122445		R34	470Ω		6K127633	
R18	1000Ω		6K121301		R35	4.5Ω Cold		6K542967	
R19	390Ω		6K122312		R36	330Ω		6K127940	

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil	24C535458					Part of M5
L2	Ant. Trans.	24K561162					Part of M5
L3	RF Trans.	24B543066					
L4	Osc. Coil	24C535456					Part of M6
L5	1st IF Trans.	24B543085					
L6	2nd IF Trans.	24K543086	16-9001				
L7	3rd IF Trans.	24K543087	16-9001				
L8	Hash Choke	24A538914					10.3 Microhenries

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 Hz)	MOTOROLA PART No.	Hallderson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	.017A	41Ω	.64 Hy.	25B538791						

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES	
			MOTOROLA PART No.	Hallderson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.		
	PR1	SEC.								
T1	4.5	:1	25K543072							

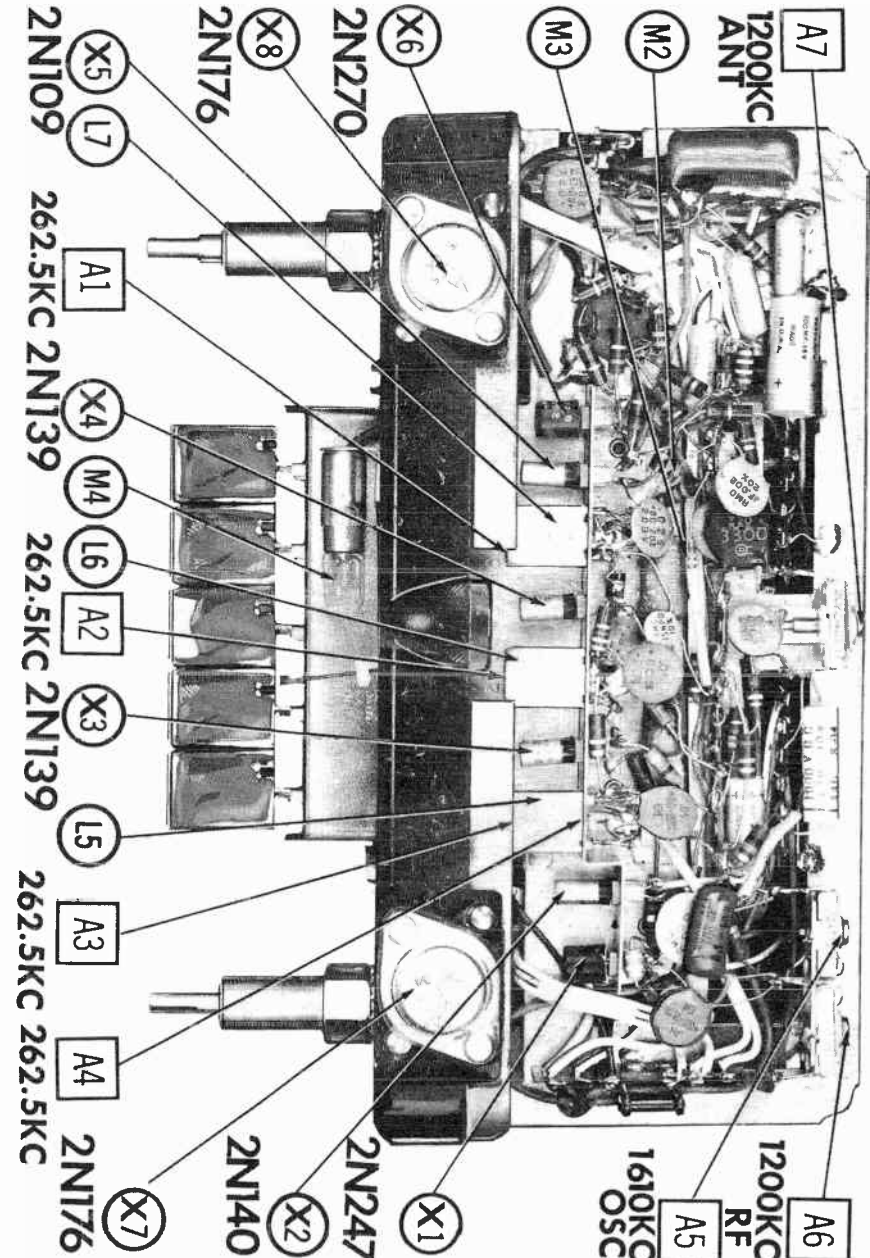
## TRANSFORMER (AUDIO OUTPUT)

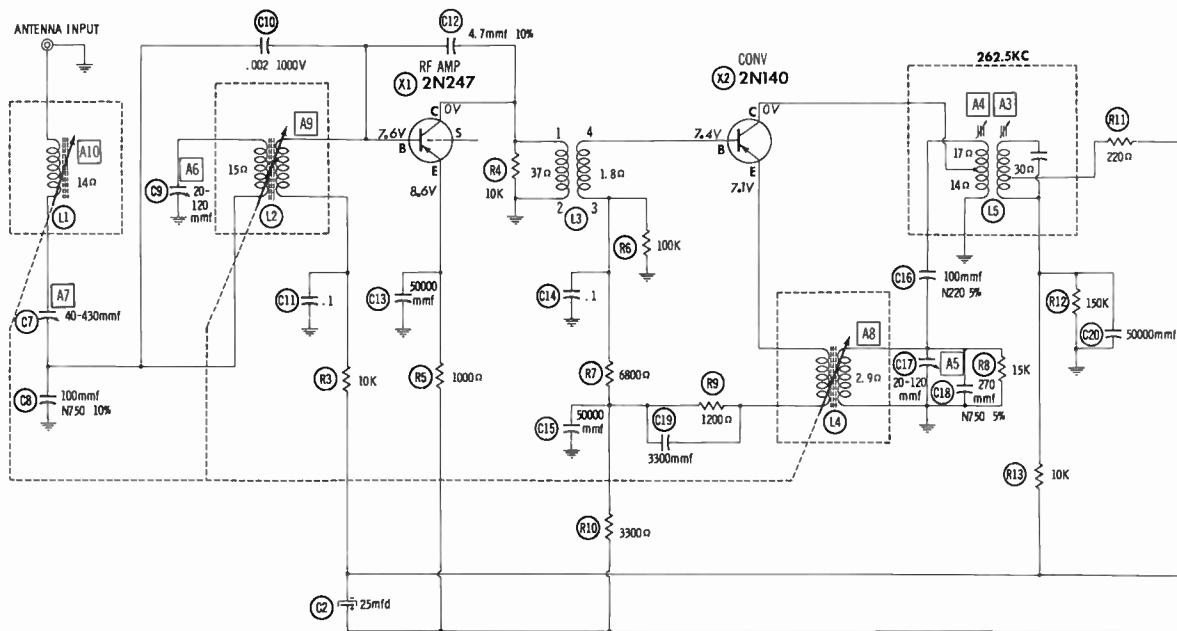
ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES	
			MOTOROLA PART No.	Hallderson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordarson PART No.		Triad PART No.
	PR1	PR2								
T2	33Ω CT	3-4Ω from CT	25K543073							

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
				MOTOROLA PART No.	QUAM PART No.	
	SIZE	FIELD	V. C. IMP.			
SP1	8" x 9"	PM	3-4Ω	50C541101 ①	69A3	① Alternate Part #50K541105

# CHASSIS—BOTTOM VIEW



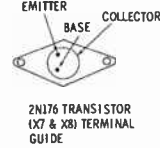
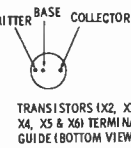
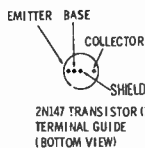
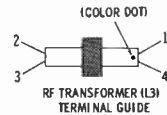


**TRANSISTOR BIAS ADJUSTMENT (R2)**

- R2 should be adjusted if X7 or X8 is replaced.
1. Turn the Bias Control (R2) for maximum resistance (fully CCW).
  2. Unsolder the black lead of T5, and the speaker lead from chassis. Connect these two leads together.
  3. Connect a D-1A DC ammeter (.05Ω max. internal resistance) positive lead to these leads, negative lead to chassis.
  4. Connect the speaker.
  5. With a power source of 12.6V DC connected to the receiver, adjust R2 for a meter reading of 230mA.
- (If a power source of 14DC is used, adjust R2 for 300mA).

**NOTE**

When replacing X7 or X8 be certain that the insulator is in place. Both sides of the insulator should be coated with a heat dissipation grease such as DC-4 (Motorola Part #11M490487). Check to determine that the transistor mounting screws are tight.



**RESISTANCE READINGS**

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N247	170K ± 35K	† 1300Ω	37Ω
X2	2N140	† 7500Ω	† 4500Ω	14Ω
X3	2N139	55K	† 1250Ω	6Ω
X4	2N139	8200Ω	† 1250Ω	6Ω
X5	2N109	45K	† 1250Ω	2700Ω
X6	2N270	2500Ω	† 485Ω	125Ω

CIRCUIT RESISTANCE OF X7 and X8 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.  
 † TRANSISTOR REMOVED FOR RESISTANCE MEASUREMENTS  
 ‡ MEASURED FROM POSITIVE TERMINAL OF C1A.  
 \* REVERSE METER LEADS.

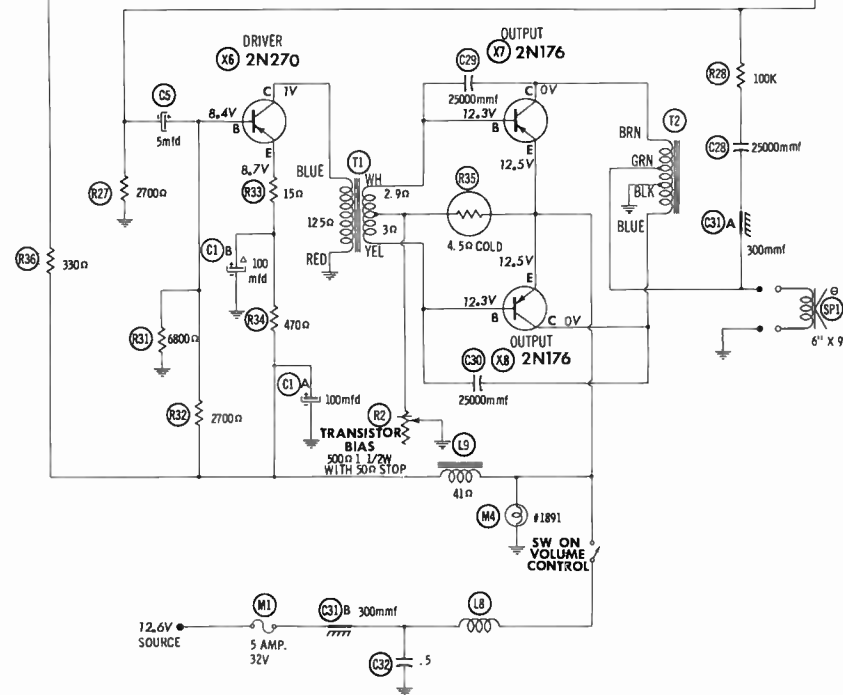
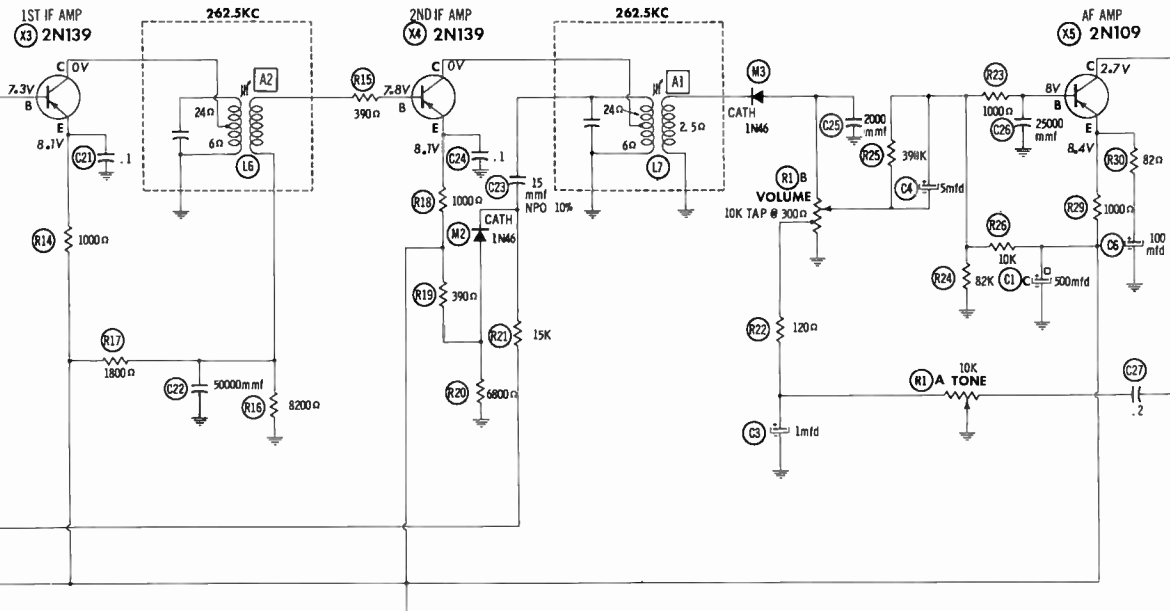
1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊗ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
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## PARTS LIST AND DESCRIPTIONS (Continued)

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	LAG	5A 32V	65R122345	1V543183	301005. (LAG 5A 32V)	155004	AGA5	HAF

### CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		MOTOROLA PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N46	48B543138	1N48	1N34A	AVC Rectifier (Pigtail) Detector (Pigtail)
M3	1N46	48B543138	1N48	1N34A	

### MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M4	Lamp	85R533821	#1891
M5	Tuner	77K561180	AT-245, Complete

### CABINETS & CABINET PARTS

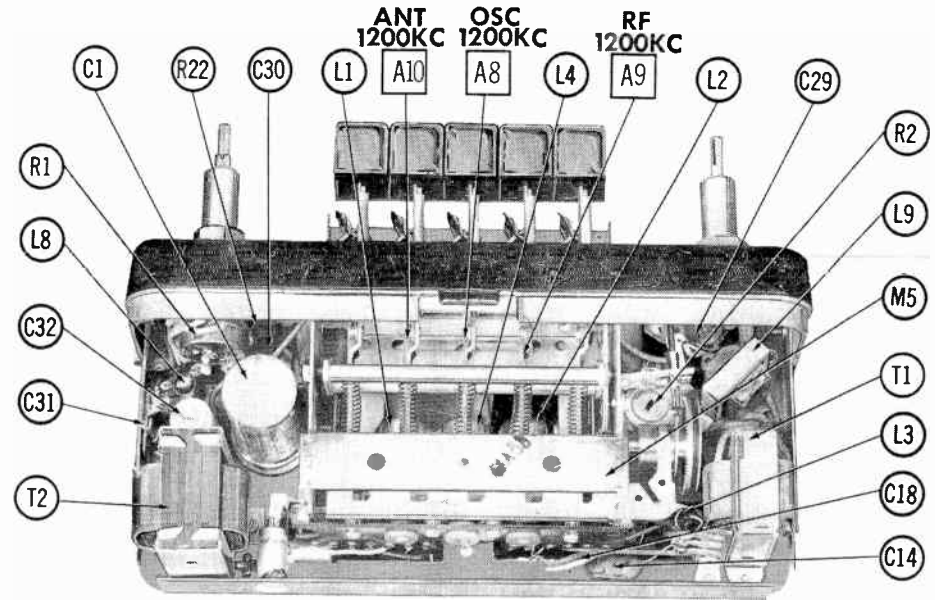
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

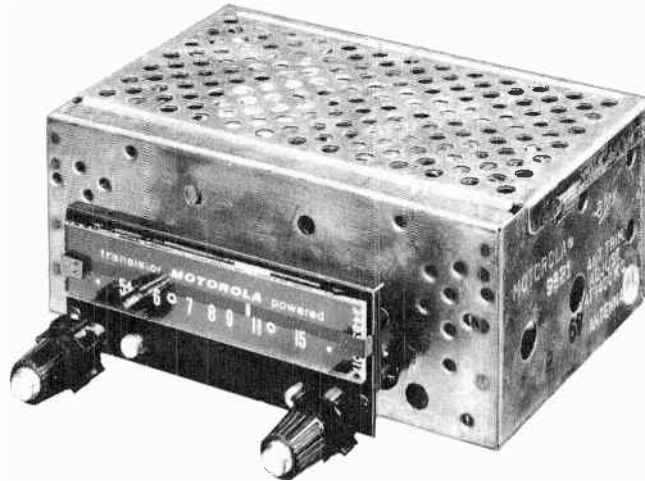
NAME	PART NO.	DESCRIPTION
Knob	1V543113	Off-On-Volume, Tuning Tone Dummy 5 used
Knob	38K543082	
Knob	38K543093	
Pushbutton	1V543112	
Cover	1V543103	
Pointer	1V536738	
Dial Scale	34B543090	

### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8885
Bonding Strap .....	Use BELDEN No. 8881

## CHASSIS—TOP VIEW

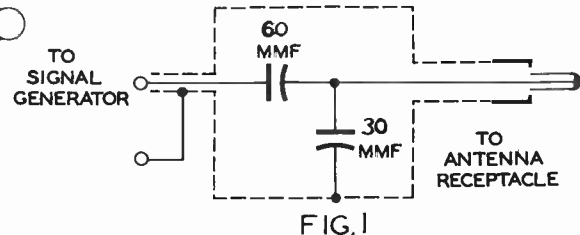
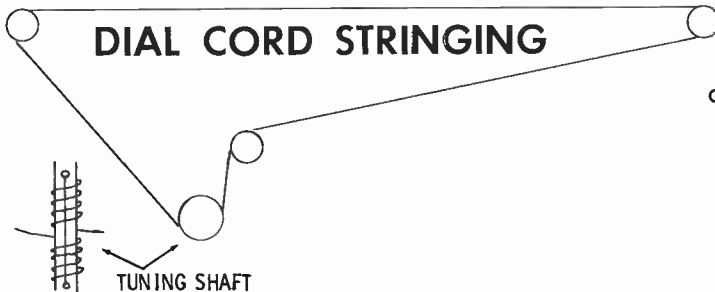




TRADE NAME	Motorola Model 8MX	
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois	
TYPE SET	Battery Operated Universal Type AM Automobile Receiver	
TUBES (Five)	Types 12BL6 RF Amplifier, 12AD6 Converter, 12BL6 IF Amplifier, 12F8 Det.-AVC-AF Amplifier, 12K5 Driver	
POWER SUPPLY	12 Volt Storage Battery	RATING 1.4 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	535 - 1605KC	

## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at high frequency end of dial.						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1mf	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5KC (400% Mod.)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2. Fig. 1	Thru dummy to antenna receptacle.	1610KC	"	"	A5, A6, A7	"
The following steps are not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, remove dial scale mounting assembly and back tuning cores (A8, A9, A10) out of coils but not out of coil forms. Alignment tool #66A76278 may be used. Repeat step 2.						
3. Fig. 1	Thru dummy to antenna receptacle.	1200KC	Carriage 9/32" from high end stop.	Across voice coil	A8, A9, A10	Adjust for maximum output.
4. "	"	1610KC	High frequency end stop	"	A5, A6, A7	Adjust for maximum output. Repeat steps 3 & 4. Cement cores in place.
5.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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MOTOROLA MODEL 8MX

# PARTS LIST AND DESCRIPTIONS

## TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6	
V2	Converter	12AD6	
V3	IF Amplifier	12BL6	

ITEM No.	USE	TYPE	NOTES
V4	Det. - AVC - AF Amplifier	12F8	
V5	Driver	12K5	

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N176	Output	CBS-2N155	2N176		2N176	PNP

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	500	16	23B560487	AFH3-00-90		WP300.51			R2664 *
B	100	16							
C	100	16							

\* Non-catalog item.

### FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

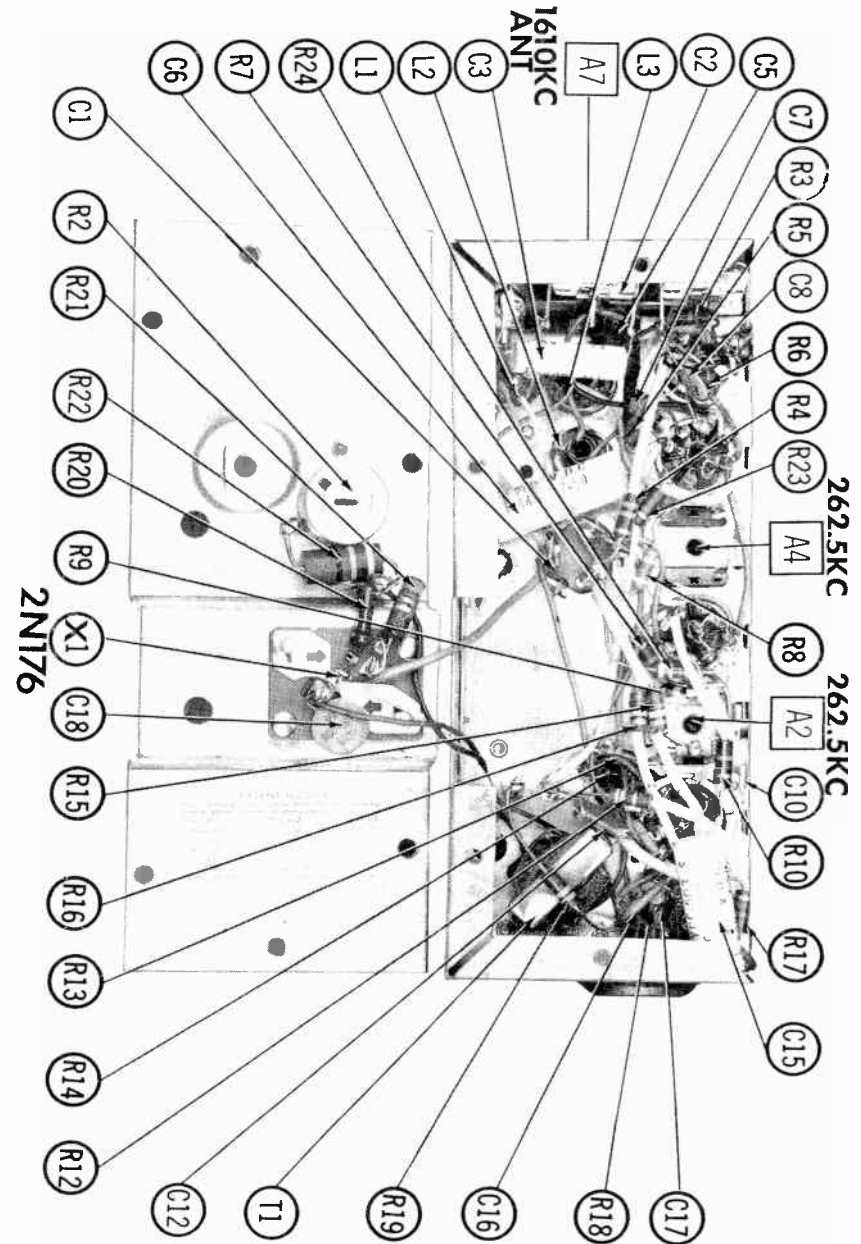
ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	40-430	600	20A542758	P688N-003	D6-302	CUB6D3	GEM-623	6TM-D3	
C3	.003		8R121569						
C4	20-120		20K541014						
C5	47	200	21R14207	N750-DI 47	DTN-47	C10Q47U	GEM-415	5TCU-Q47	N750
C6	.05		8R121005						
C7	220		21K121698						
C8	47	200	21R115593	N750-DI 47	DTN-47	C10Q47U	UC-5322	5GA-T22	N750
C9	395-470		20A485708						
C10	27		21R410089						
C11	10000	200	21R482726	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C12	10000		21R482726						
C13	.01		8R121868						
C14	.002	600	8R121568	P288N-01	D6-103	CUB2S1	GEM-411	2TM-S1	
C15	.05		8R121005						
C16	10000		21R482726						
C17	330	200	21R410118	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C18	25000		21K740806						
C19	.5		8K122076						
C20		100	64K530177	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C21			64K530177						
				BPD-00033	DD-331	L10T33	UC-5333	5GA-T33	
				P288N-5		CUB2P5	GEM-205	TG-S25	
								2TM-P5	

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	1/2	18K542446	F1-42	RTV-664C	QJ-1084A	UE3837S	Tone Volume, Tap @ 1meg Transistor Bias
B	2meg		R2-72	Not Req.	Not Req.	Not Req.		
C	Switch		KB-1 or KR-1*	Not Req.	Not Req.	Not Req.		
R2	125Ω	2(WW)	18K542493	KB-1 or KR-1*	39-125		FL-150	

\* Use KR with CRL "Red Label" controls and KB with "Blue Label" controls.  
 ■ "STA-LOC" Equivalent: FA55A, OS1875, RU26T16, IS2500, US41

## CHASSIS—BOTTOM VIEW





# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS

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

ITEM No.	RATING		MOTOROLA PART No.	NOTES	ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R3	22meg		6R11847		R14	6.8meg		6K121933	
R4	3300Ω		6K121725		R15	270K		6R8414	
R5	22meg		6R118247		R16	120K		6K127540	
R6	47K		6K121687		R17	270Ω		6K121303	
R7	330Ω		6K1217940		R18	27Ω		6B119401	
R8	91meg		6K538716		R19	3.3meg		6K119407	
R9	22K		6K119405		R20	10Ω Cold		6K540834	
R10	5.6meg		6R3988		R21	5.6Ω	(WW)	17K79923	
R11	100K		6K122313		R22	47Ω	2	6R127673	
R12	4.7meg		6K121277		R23	220Ω		6R6270	
R13	3.3meg		6K119407		R24	470Ω		6K127633	

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Ant. Coupling Coil	24B580429					Part of M3.
L2	Ant. Coil	24B580432					
L3	Osc. Coil	24B580425					Part of M3.
L4	Input IF	24K542491	16-6752	BC-350	12-H1	RF-3	
L5	Output IF	24K542749	16-6754	BC-354	12-H6		
L6	Output IF "A" Lead Choke	24A472535	16-6754	BC-354	12-H6		Alternate

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 C.)	MOTOROLA PART No.	Haldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordarson PART No.	Triod PART No.
L7	.6A @	.58Ω	.012 Hy.	25B538780						

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Haldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triod PART No.	
T1	6.5	:1	25K542760						

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
		MOTOROLA PART No.	Haldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordarson PART No.	Triod PART No.	
T2	23Ω Tap @ 3-4Ω	25C542489							

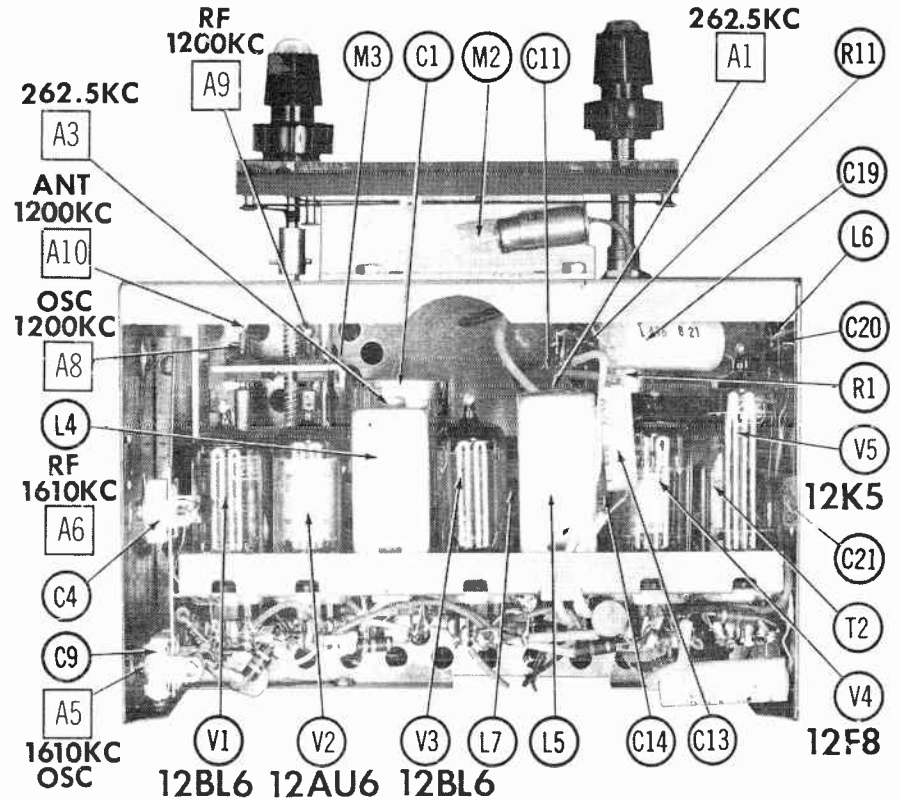
## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	6" x 9"	PM	3-4Ω	50C541101	69A2	

## FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	9A 32V	65K16248	1V541705	307009 (9A 32V)	155009	SFE9	HDE

# CHASSIS—TOP VIEW



## MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Lamp	65R533821	#1891
M3	Tuner	77D560423	(MT-238) Complete

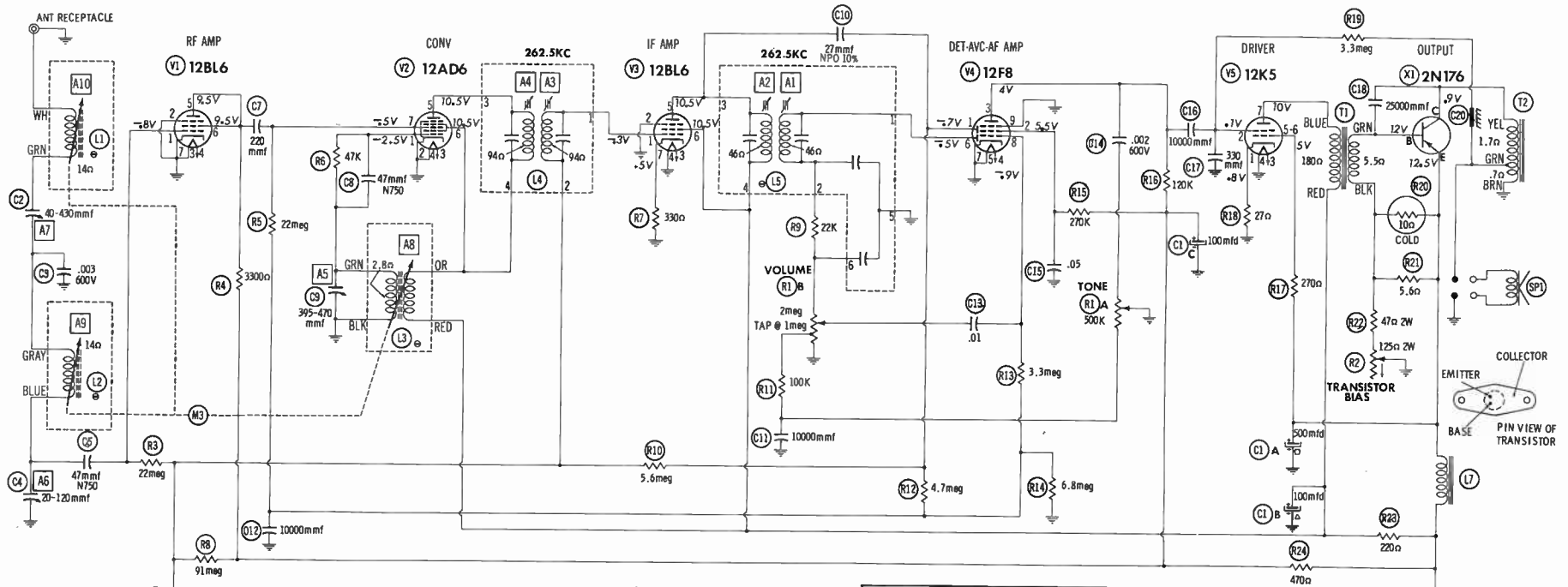
## CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36B540048	On-Off Volume, Tuning Tone Dummy
Knob	36B540050	
Knob	36K540051	
Top Cover	15C542733	
Dial Pointer	1K532594	
Dial Scale	34B541017	

## WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8524 (Stranded) Available in Ten Colors
Bonding Strap	Use BELDEN No. 8661



**TRANSISTOR BIAS ADJUSTMENT (R2)**

1. Set R2 for maximum resistance (fully clockwise).
2. Connect a 0-1A DC ammeter (1.0Ω max. internal resistance) in series with transistor collector. Connect the speaker.
3. Connect a 12.6V DC supply to the receiver and allow a 15 minute warm-up period.
4. Adjust R2 for a meter reading of 360mA.  
 (If an input supply of 14V DC is available, adjust R2 for a meter reading of 440mA.)

1. DC voltage measurements taken with vacuum tube voltmeter ;
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

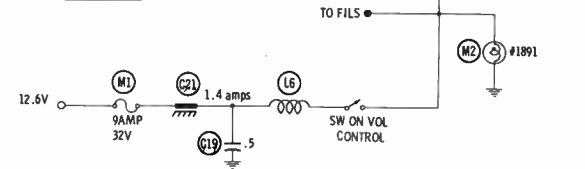
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

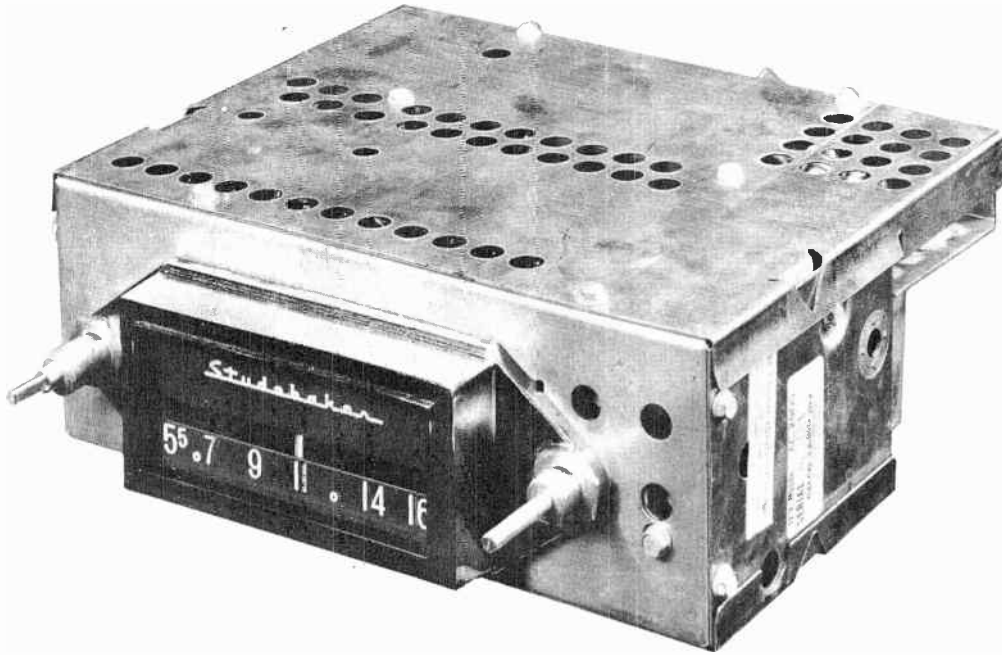
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	39meg	0Ω	0Ω	1.3Ω	↑ 3800Ω	↑ 3800Ω	0Ω		
V2	12AD6	47K	0Ω	1.3Ω	0Ω	↑ 320Ω	↑ 220Ω	28meg		
V3	12BL6	17meg	0Ω	1.3Ω	0Ω	↑ 260Ω	↑ 220Ω	330Ω		
V4	12F8	11meg	↑ 270K	↑ 120K	1.3Ω	0Ω	800K	0Ω	10meg	0Ω
V5	12K5	27Ω	3.3meg	1.3Ω	0Ω	↑ 270Ω	↑ 270Ω	↑ 400Ω		

TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.  
 † MEASURED FROM JUNCTION OF L7 AND R24.





<b>TRADE NAME</b>	Studebaker Model AC-2905 (For 1958 Studebaker Automobiles)	
<b>MANUFACTURER</b>	Delco Radio Div., G. M. Corp., Kokomo, Indiana.	
<b>TYPE SET</b>	Battery Operated Custom Built AM Automobile Receiver	
<b>TUBES (Six)</b>	Types 12BA6 RF Amplifier, 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 12V6GT Output, OZ4 Rectifier	
<b>POWER SUPPLY</b>	12 Volt Storage Battery	<b>RATING</b> 2.2 Amp. @12.6 Volts DC
<b>TUNING RANGE—BROADCAST</b>	540-1600KC	

### ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. Set tone control to treble.						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1mfd	High side to Pin 7 (grid) of 12BE6 (V2). Low side to chassis.	262KC (400v Mod.)	High frequency stop.	Across Voice Coil	A1, A2, A3 A4	Adjust for maximum output.
Check setting of Osc. Coil core (A5). Rear of core should be 1 5/8" from mounting end of coil form.						
2. 68mmf	High side to Ant. connector. Low side to chassis.	1615KC	High frequency stop.	Across Voice Coil	A6, A7, A8	Adjust for maximum output.
3. "	"	600KC	Tune for 600KC signal.	"	A9, A10	"
4. "	"	1615KC	High frequency stop.	"	A7, A8	"
5.	With radio installed in car, adjust A8 for maximum output.					
POINTER ADJUSTMENT						
With radio tuned to a 1100KC signal, move pointer on dial card so that pointer coincides with 1100KC mark on dial.						

TUNING SHAFT  
8 Turns



SLUGS ALL WAY OUT  
(Low Freq. End of Dial)

### DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H589

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STUDEBAKER-PACKARD  
MODEL AC-2905



# PARTS LIST AND DESCRIPTIONS

## TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES	ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BA6		V4	Det. -AVC-AF Amp.	12AV6	
V2	Converter	12BE6		V5	Output	12V6GT	
V3	1F Amplifier	12BA6		V6	Rectifier	OZ4	

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	20	400	6309	AFH2-51	B0400	FP234	TMD-50	D-215	TVI.-2755
B	20	400							

### FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					NOTES	
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.		SPRAGUE PART No.
C2A	5-50		7270434						10% NP0
B	32								
C3	.047	100	6612	P288N-047	DF-503	CUB2847	GEM-4147	2TM-S47	
C4	15		6361	NP0-DI 15	DTZ-15	C10Q15C		5TCC-Q15	
C5A			7268828						5%
B									
C									
D									
C6	39		6366	DI-000039	DD-390	L10Q39	UC-5439	5GA-Q39	
C7	200		7270129	1489-0002		22R5T2	MCE237	MS-32	
C8	.047	400	6612	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C9	2000		6352	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C10	.01	200	6610	P288N-01	D6-103	CUB2S1	GEM-411	2TM-S1	
C11	.047	400	6612	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C12	1000		6350	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C13	.006	800	6566	P1088N-006	DD16-602	CUB16D6	GEM-1626	MB-D6	
C14	.007	1600	6567	P1688N-007	DD16-702	CUB16D7	GEM-1627	MB-D7	
C15	.47	100	6692	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C16	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C17			7271769						

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg		7271808					Tone Volume
B	300K							
C	Switch							

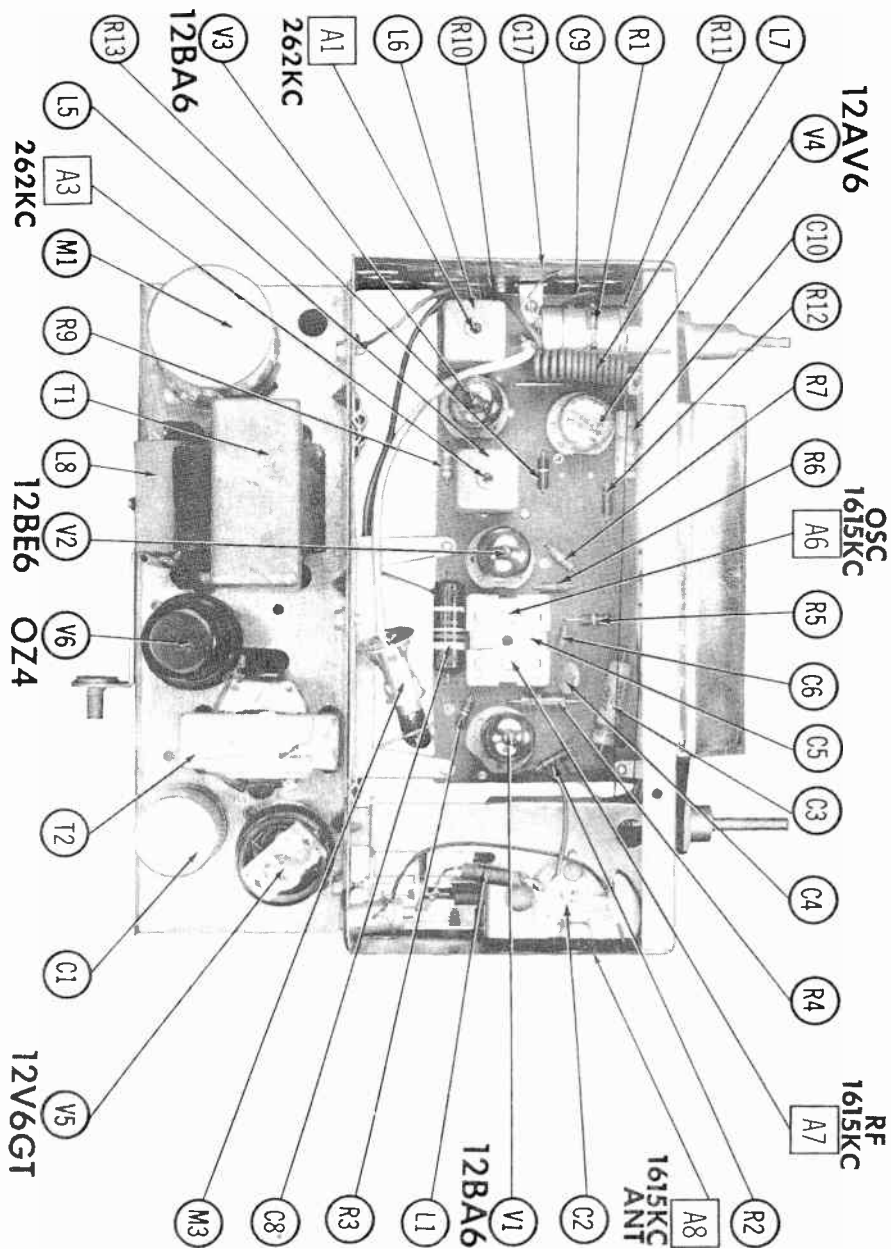
### RESISTORS

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

ITEM No.	RATING		DELCO PART No.	NOTES	ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT				OHMS	WATT		
R2	2.2meg		1239		R10	47K		1219	
R3	150Ω		1115		R11	1meg		1235	
R4	10K		1174		R12	6.8meg		1245	
R5	330K		1229		R13	220K		1227	
R6	100Ω		1113		R14	220K		1227	
R7	22K		1215		R15	330Ω	1(WW)	1156	
R8	15K	1	1253		R16	1800Ω	2(WW)		Note 1.
R9	330Ω		1119		R17	15K	2	1277	

Note 1. Mfg. recommends replacing with 2700Ω 2W (Part #1204) and 5600Ω 1W (Part #1171) in parallel.

## CHASSIS—TOP VIEW





## PARTS LIST AND DESCRIPTIONS (Continued)

### TRANSFORMER (VIBRATOR)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	DELCO PART No.	Halldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	12.6VCT ② 1.8A	530VCT ③ .052A		7265604		P-2860①			22R79 ①	

① Use original channel frame.

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6600Ω	3-4Ω	7271816	Z1002 ①	A-3020①	AU-600①	A-3823①	26S48①	S-53X①	① Use Original Channel Frame

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SPI	4" x 8"	PM	3-4Ω	7272368		

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES	
		DELCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.		
L1	Ant. Coil	7255738	19-1004	BC-565	4610	6.5 Microhenries		
L2	Ant. Coil	1221138						
L3	RF Coil	1221138						
L4	Osc. Coil	1221150						
L5	Input IF	1220990	16-6756	BC-317	13-PH1			
L6	Output IF	1220992					BC-320	13-PH6
L7	Fl. Choke	1217846						
L8	Hash Choke	1221077						
						1.4 Microhenry		

### VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA				NOTES
				DELCO PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	12.6 VDC	115%	8555	6330	G1602/G883	6330	

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			DELCO PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
M2		7½A 32V	455640	153-R					

### MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M3	Lamp	274020	#1892
M4	Speaker Ass'y Printed Board	Model AC-2908 7269376-J	Complete, for 5" x 7" Rear Seat Speaker Installation

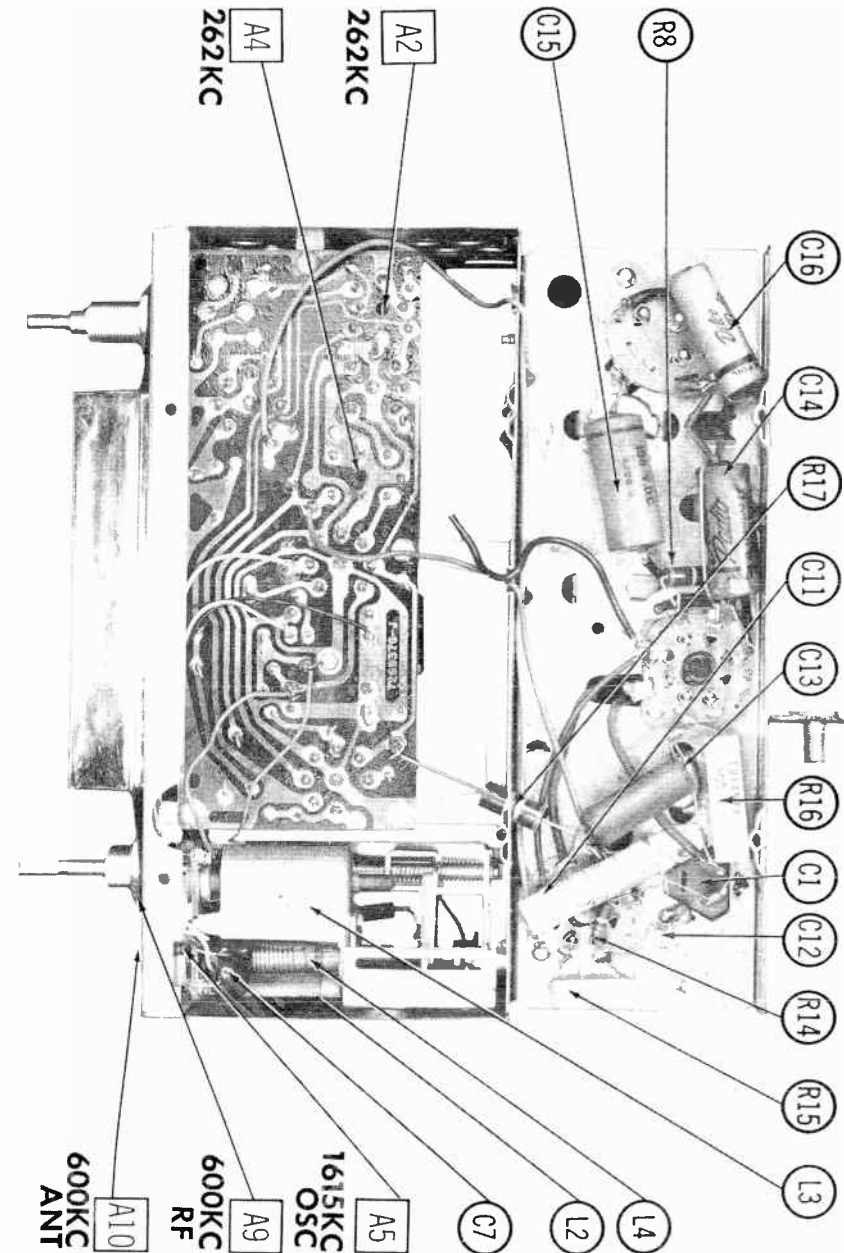
### CABINETS & CABINET PARTS

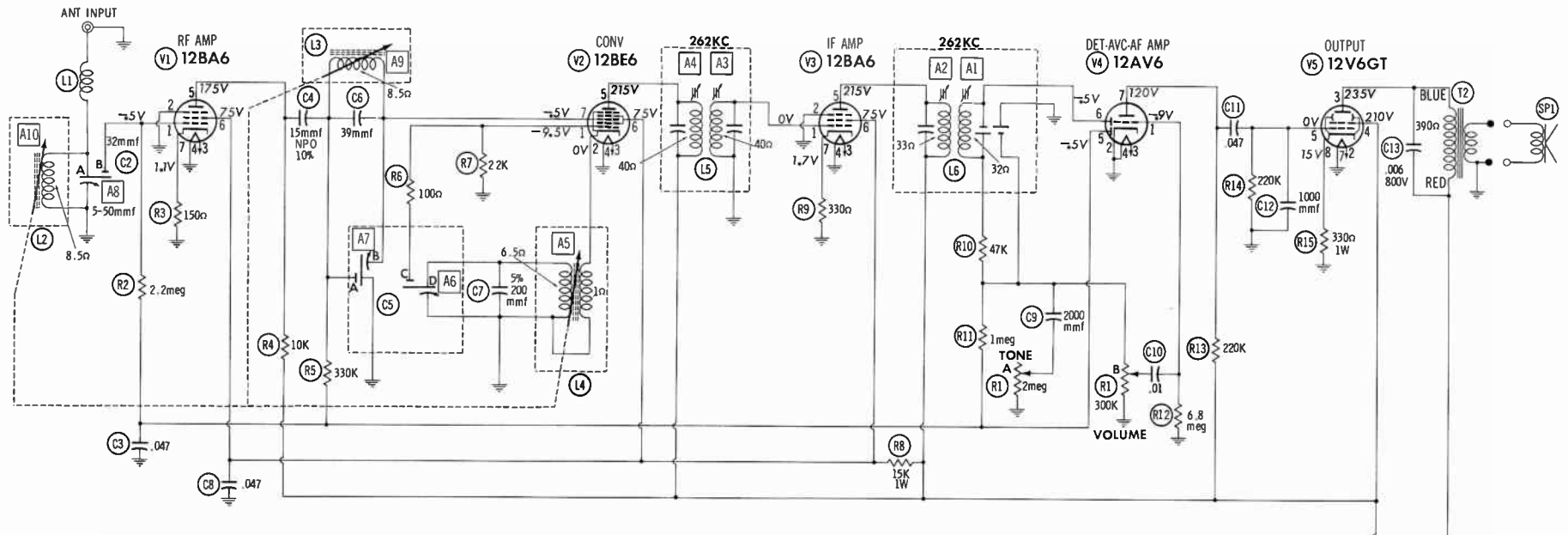
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

### WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

## CHASSIS—BOTTOM VIEW



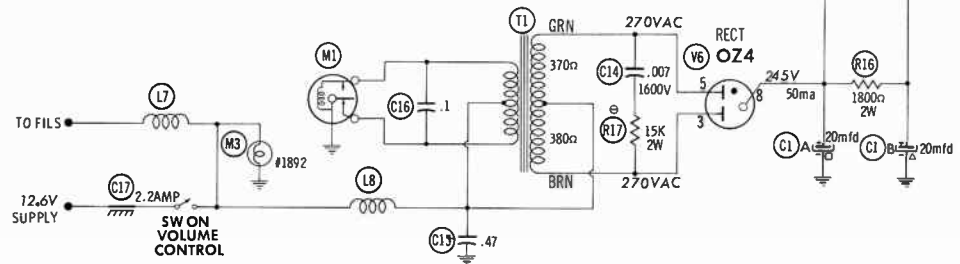


RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	12BA6	3.5meg	0 $\Omega$	1.9 $\Omega$	0 $\Omega$	†12K	†17K	150 $\Omega$	
V2	12BE6	22K	1 $\Omega$	1.9 $\Omega$	0 $\Omega$	†1800 $\Omega$	†17K	1.6meg	
V3	12BA6	40 $\Omega$	0 $\Omega$	1.9 $\Omega$	0 $\Omega$	†1800 $\Omega$	†17K	330 $\Omega$	
V4	12AV6	6.8meg	0 $\Omega$	1.9 $\Omega$	0 $\Omega$	1.3meg	350K	†220K	
V5	12V6GT	TP	1.9 $\Omega$	†390 $\Omega$	†1800 $\Omega$	220K	NC	0 $\Omega$	330 $\Omega$
V6	OZ4	0 $\Omega$	TP	380 $\Omega$	TP	370 $\Omega$	NC	NC	20K(MIN)

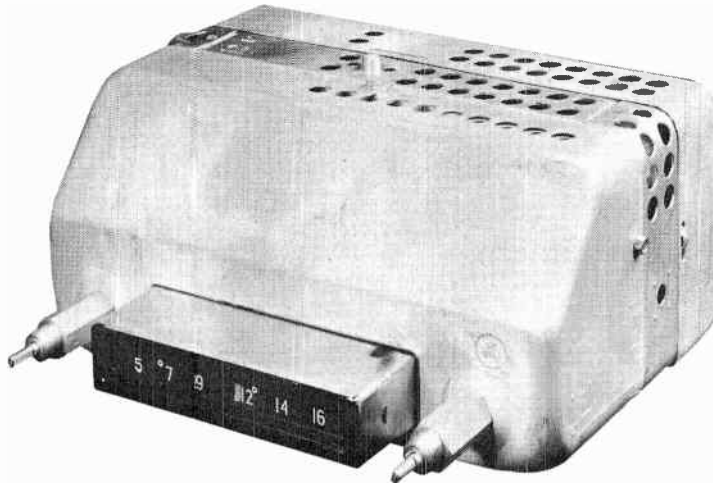
† MEASURED FROM PIN 8 OF V6  
 NC NO CONNECTION  
 TP TIE POINT

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM



1. DC voltage measurements taken with vacuum tube voltmeter ; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
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TRADE NAME	Willys Model 815395 (For Willys Automobiles)	
MANUFACTURER	Delco Radio, Div. of G. M. Corp., Kokomo, Indiana	
TYPE SET	Battery Operated Custom Built AM Automobile Receiver	
TUBES (Six)	Types 12BA6 RF Amplifier, 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 12V6GT Output, 0Z4 Rectifier	
POWER SUPPLY	12 Volt Storage Battery	RATING 2.4 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	540-1600KC	

## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1mfd	High side to Pin 7 (grid) of 12BE6 (V2). Low side to chassis.	262KC (400v Mod.)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
Check setting of Osc. Coil Core (A5). Rear of core should be 1 25/32" from mounting end of coil form.						
2. 82mmf	High side to antenna receptacle. Low side to chassis.	1615KC	"	"	A6, A7, A8	Adjust for maximum output.
3. "	"	1000KC	Tune to 1000KC signal	"	A9, A10	"
4. "	"	1615KC	High frequency end stop	"	A7, A8	"
5.	With radio tuned to a 900KC signal, slide pointer on dial cord to coincide with 900KC mark on dial.					
With radio installed in car and antenna fully extended, tune in a weak station between 600KC and 1000KC. Adjust A8 for maximum output.						

WILLYS MODEL  
815395

## DIAL CORD STRINGING



8 TURNS ON TUNING SHAFT

### HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H622

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## PARTS LIST AND DESCRIPTIONS (Continued)

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Ant. Coil	7255738	19-1004	BC-565	4610		6.5 microhenries
L2	Ant. Coil	7258914					
L3	RF Choke	7240251					25 microhenries
L4	RF Coil	7258914					
L5	Osc. Coil	7258911					1.4 microhenries
L6	Input IF	1218725	16-8752	BC-350	12-H1	RF-3	
L7	Output IF	1218726	16-8754	BC-354	12-H6		
L8	Fl. Choke	1217846					

### TRANSFORMER (VIBRATOR)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	DELCO PART No.	Haldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.
T1	12.6VCT @1.8A	600VCT @.054A		1220887						

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	DELCO PART No.	Haldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	
T2	6000Ω	3-4Ω	6062	Z1002①	A-3019①		A-3823①	26S49①	S-5Z①	① Use original channel frame.

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	6"	PM	3-4Ω	7270369	6A15	

### VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA				NOTES
				DELCO PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	12.6 VDC	115%	8550	6330	G-874	6330	

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			DELCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2		7½A. 32V	7263227	1220177				

### MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M3	Lamp		#57
M4	Spark Plate	1221226	

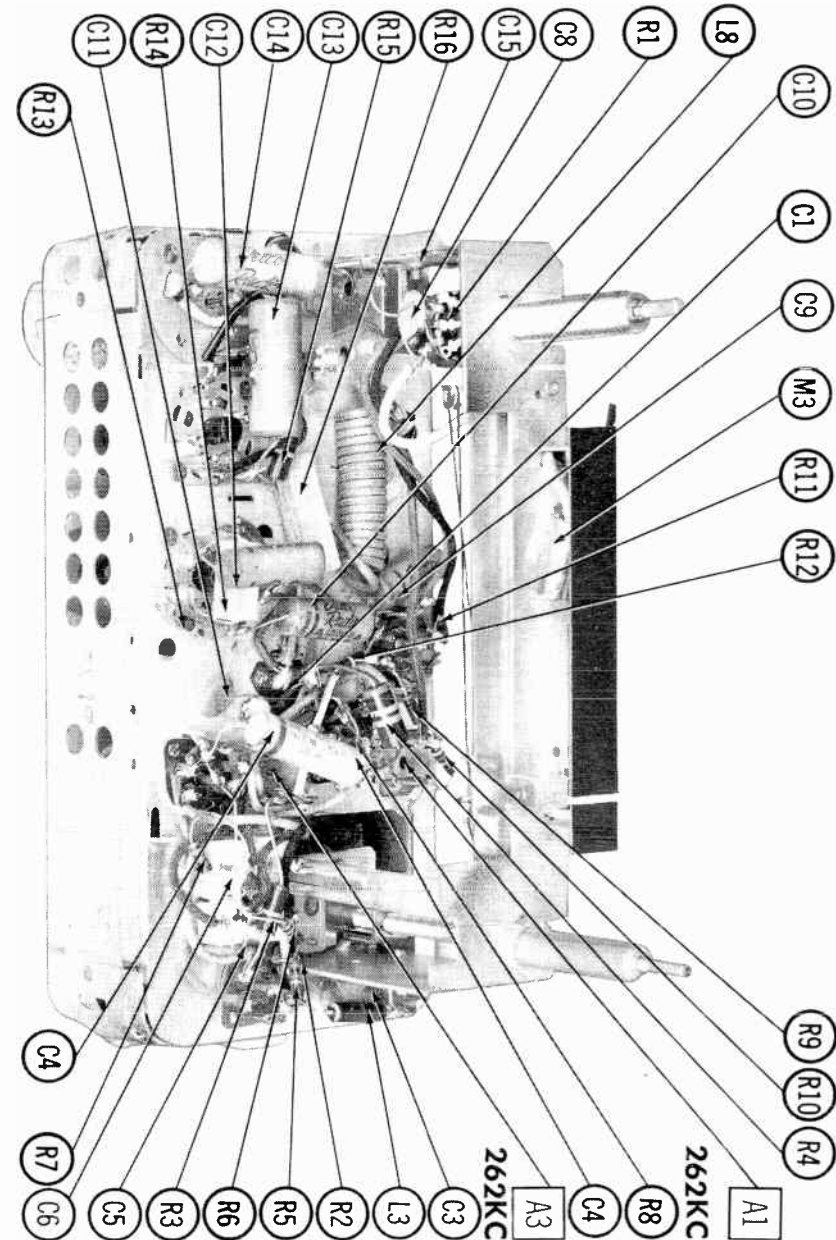
### CABINETS & CABINET PARTS

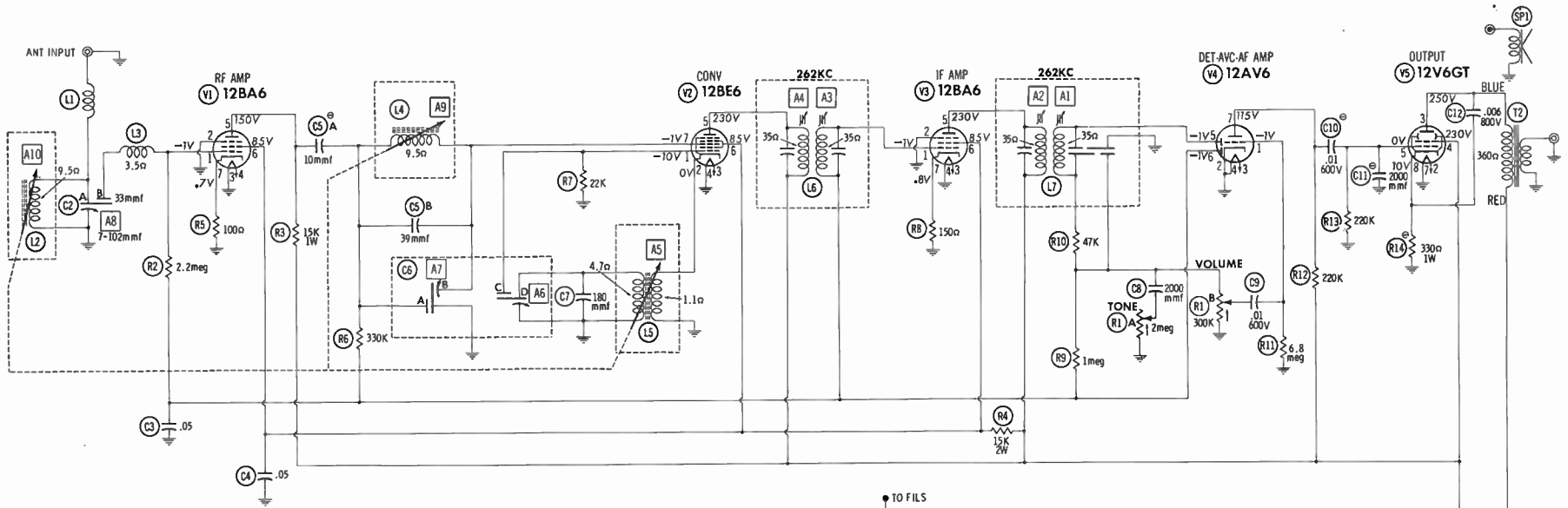
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

### WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8524 (Stranded) Available in Ten Colors
Bonding Strap	Use BELDEN No. 8885
	Use BELDEN No. 8661

## CHASSIS—BOTTOM VIEW

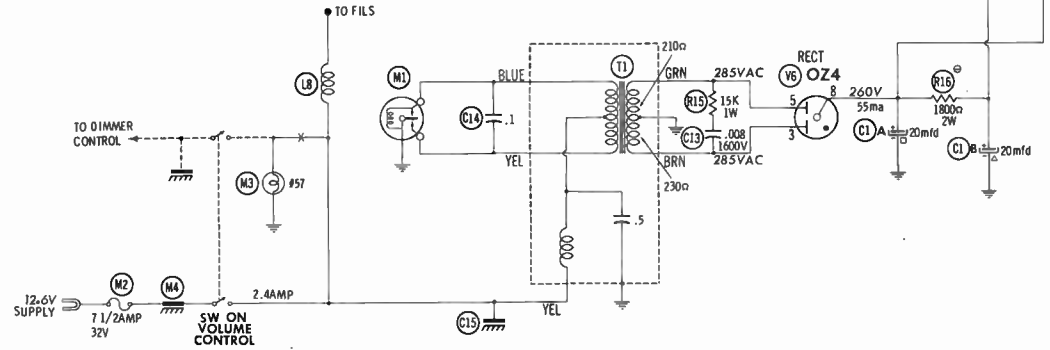




RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	12BA6	3.7meg	0 $\Omega$	0 $\Omega$	1.5 $\Omega$	$\dagger$ 17K	$\dagger$ 17K	100 $\Omega$	
V2	12BE6	22K	1.1 $\Omega$	1.5 $\Omega$	0 $\Omega$	$\dagger$ 1800 $\Omega$	$\dagger$ 17K	1.6meg	
V3	12BA6	1.3meg	0 $\Omega$	1.5 $\Omega$	0 $\Omega$	$\dagger$ 1800 $\Omega$	$\dagger$ 17K	150 $\Omega$	
V4	12AV6	6.8meg	0 $\Omega$	1.5 $\Omega$	0 $\Omega$	300K	1.3meg	$\dagger$ 220K	
V5	12V6GT	NC	1.5 $\Omega$	$\dagger$ 360 $\Omega$	$\dagger$ 1800 $\Omega$	220K	NC	0 $\Omega$	330 $\Omega$
V6	OZ4	0 $\Omega$	NC	230 $\Omega$	NC	210 $\Omega$	NC	TP	$\dagger$

$\dagger$  THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.  
 $\dagger$  MEASURED FROM PIN 8 OF V6.  
 NC NO CONNECTION  
 TP TIE POINT



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of  $\pm 15\%$  in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION  
 DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM  
 ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
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# AUTO RADIO MANUAL

## VOLUME 9

This manual contains complete PHOTOFAC<sup>4</sup>T service literature on 1958-59 auto radios produced under the following trade names:

ALLSTATE

AMERICAN MOTORS

AUTOMATIC

BLAUPUNKT

CHEVROLET

FORD

GMC

GONSET

LINCOLN

MERCURY

MOPAR

MOTOROLA

STUDEBAKER-PACKARD

WILLYS



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