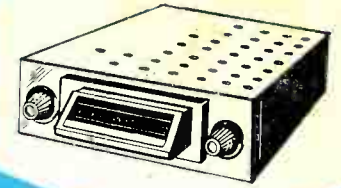
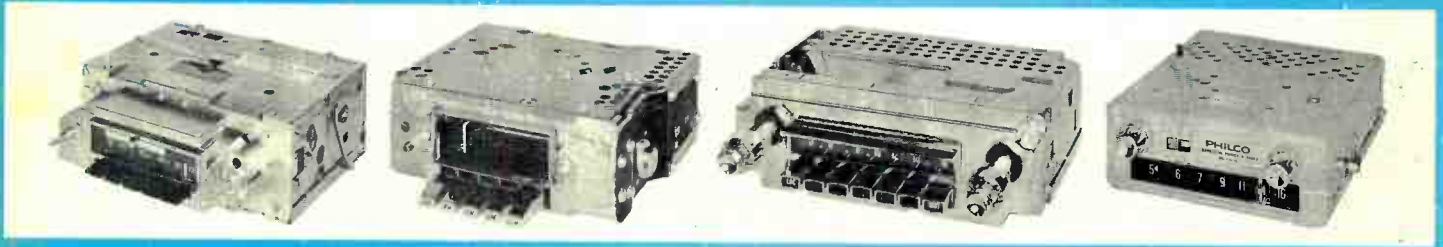


SAMS PHOTOFACT[®]



AUTO RADIO SERIES

AR-20
20
AUGUST 1963



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HOWARD W. SAMS

Indianapolis 6, Indiana

\$2.95

Cat. No. AR-20



SAMS PHOTOFACT[®] AUTO RADIO SERIES



VOLUME

20



by the *Howard W. Sams* ENGINEERING STAFF



HOWARD W. SAMS & CO., INC.
INDIANAPOLIS 6, INDIANA

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PHOTOFACT®
AUTO RADIO SERIES
VOLUME 20

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PHOTOFACT[®]

TRADE NAME : Automatic Model DUP-42
SUPPLIER : Automatic Radio Mfr. Co., Inc.
 122 Brookline Ave., Boston 15, Mass.
TYPE SET : 2 Tube, 2 Transistor AM Receiver
POWER SUPPLY : 12 Volt Storage Battery
RATING : 1.2 Amp. @ 12.6 VDC
TUNING RANGE : BROADCAST 540 - 1615KC



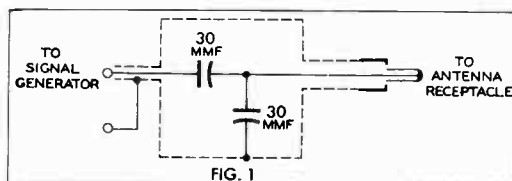
ALIGNMENT INSTRUCTIONS

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

A1 thru A4... GENERAL CEMENT #8606, 8606L, 8728A
 WALSCO #2543, 2544, 2588
 A5, A6, A7... GENERAL CEMENT #9087, 8290, 8868
 WALSCO #2525, 2528, 2587

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point A, low side to ground.	265KC (400% Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1615KC	"	"	A5, A6, A7	"

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

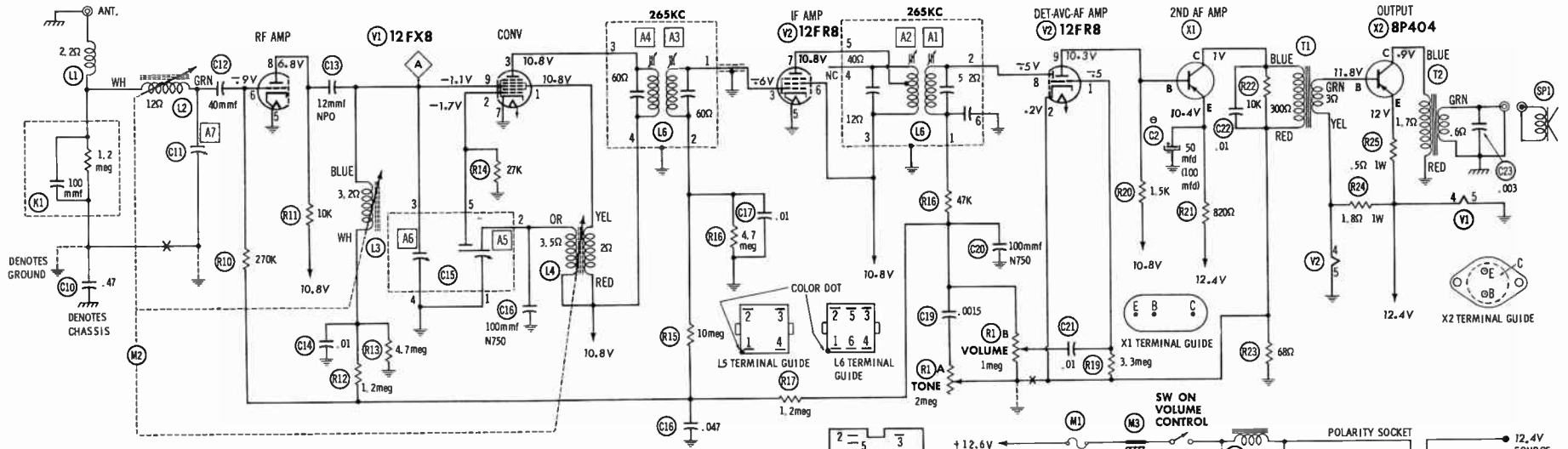


PUSH-BUTTON ADJUSTMENT

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

AUTOMATIC MODEL DUP-42

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



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

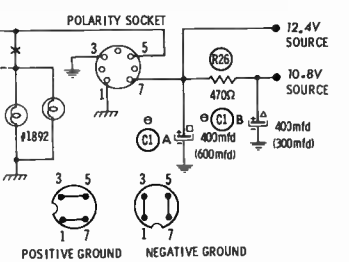
A PHOTOFAC STANDARD NOTATION SCHEMATIC
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RESISTANCE READINGS

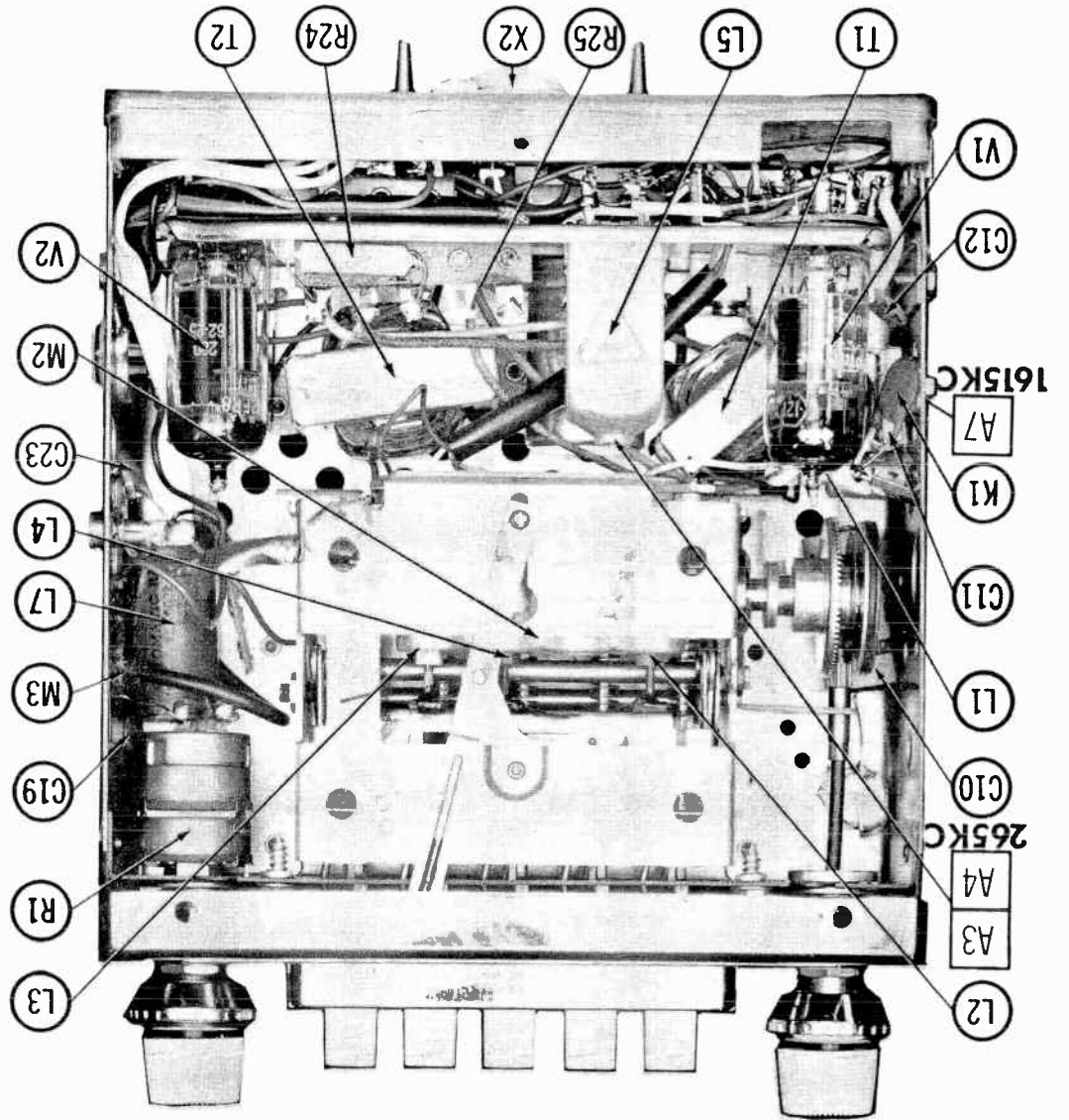
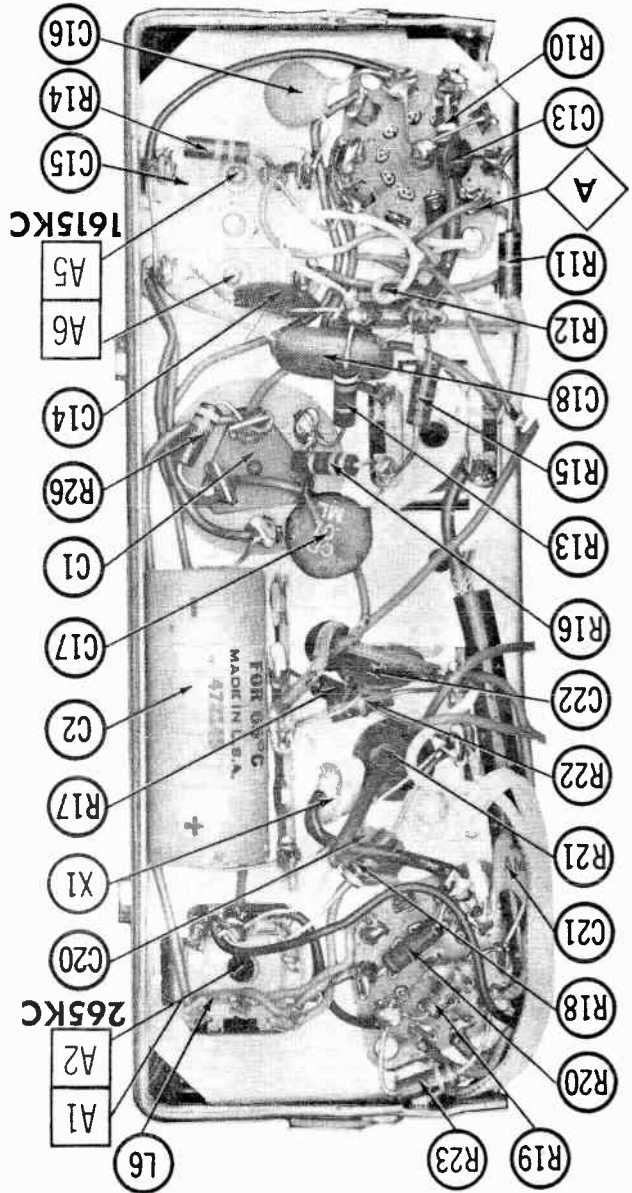
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12FX8	1470Ω	27K	1530Ω	FIL	FIL	1.5meg	0Ω	110K	2meg
V2	12FR8	3.3meg	68Ω	4meg	FIL	FIL	1470Ω	1480Ω	1meg	↑ 2000Ω

↑ MEASURED FROM PIN 1 OF POLARITY SOCKET.
 RESISTANCE OF X1 & X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE;

AUTOMATIC MODEL DUP-42



AUTOMATIC MODEL DUP-42



PARTS LIST AND DESCRIPTION

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

TUBES

• AMPEREX •		GENERAL ELECTRIC		RCA		RAYTHEON		SYLVANIA	
ITEM No.	USE	TYPE		ITEM No.	USE	TYPE			
V1	RF Amp. -Converter	12FX8		V2	IF Amp. -Det. -AVC- AF Amp.	12FR8			

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES	PART No.
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.		
X1 X2	8P404	2nd AF Amplifier Output	DS-26 DS-520	GE-2 GE-3	2N591 2N301	PNP PNP (Note 1)	6-63

Note 1. When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A B C2	400 400 50	15 15 150	Note 1	PWH2-02-40					
			Note 1	PRSI480	BR50-150	QTI-28	TD-50-150	TC49	TVA-1414

Note 1. Some versions may combine C1 and C2 into one unit (600-300-100mf.)

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10 C11 C12 C13 C14 C15A B C	.47 200V 40 12 NPO .01	#28-800-2 #28A1503	P288N-47 NPO-DI 39 BPD-01	TCZ-39 TCZ-12 DD-103	C10Q39C BYA10SI	2DP-5-474 CC TO-390 CC TO-120 CCD-103	GEM-2047 CNO-439 CNO-412 B-110	2TM-P47 10TCC-Q39 10TCC-Q12 5HK-S10
C16 C17 C18 C19 C20 C21 C22 C23	100 N750 .01 .047 100V .0015 100 N750 .01 .01 .003		N750-DI 100 BPD-01 P288N-047 BPD-0015 N750-DI 100 BPD-01 BPD-01 DI-3000	DTN-100 DD-103 DD-503 DD-152 DTN-100 DD-103 DD-103 DD-302	C10T1U BYA10SI WMF1547 L10D15 C10T1U BYA10SI BYA10SI LA10D3-C4	CC TN-101 CCD-103 1DP-2-473 CCD-152 CCTN-101 CCD-103 CCD-103 CCD-302	CN7-310 B-110 PVC1047 B-215 CN7-310 B-110 B-110 B-110 GP230	10TCU-T10 5HK-S10 2TM-S47 10TS-D15 10TCU-T10 5HK-S10 5HK-S10 10TS-D30

Part Number.

CONTROLS

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

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA					
			PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA B	Tone Volume & Switch	2meg 1meg	80A1320-B	F2-2meg, R2-2meg, FFS102, RFS110, AK-31, KR-4				

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA
K1	Antenna Isolation	1.2meg, 100mmf	89-4204	Sprague PRC-9

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1 L2 L3 L4 L5 L6 L7	RF Choke (6.2uh) Ant. RF Osc. Input IF Output IF "A" Lead Choke	14-6.2 ① ① ① 14-272X 14-273X 75A6002	BC-565	4610	RTC-8520	T859	① Part of M2

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO	REPLACEMENT DATA					NOTES
		PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	8:1	75A1859					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	16Ω	3-4Ω	75A1272					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		PART No.	QUAM PART No.	
SP1	5" x 7" PM	3-4Ω	73B2515	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				
			PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	SFE	7½Amp.			30707.5 (SFE 7½A)	15507.5A	SFE 7½ HDH

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M2 M3	Tuner Spark Plate	78B1571	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Knob - Tuning, Volume	47-50	Knob - Dummy	48B393-1
Knob - Tone	48B393	Eacutecheon	54C1304

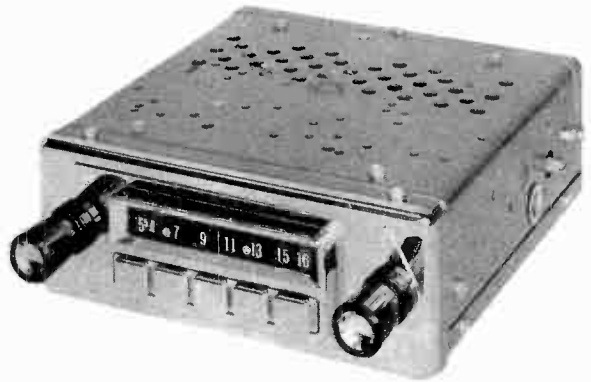
WIRING DATA

General-use Unshilded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shilded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8881 (3/8 In.) or 8670 (3/4 In.)



PHOTOFACT[®]

TRADE NAME : Automatic Model P-69
 SUPPLIER : Automatic Radio Mfg. Co., Inc.
 122 Brookline Ave., Boston 15, Mass.
 TYPE SET : 6 Transistor AM Receiver
 POWER SUPPLY : 6 or 12 Volt Storage Battery
 RATING : 1.2 Amp. @ 12.6 VDC
 TUNING RANGE : BROADCAST 540-1615KC



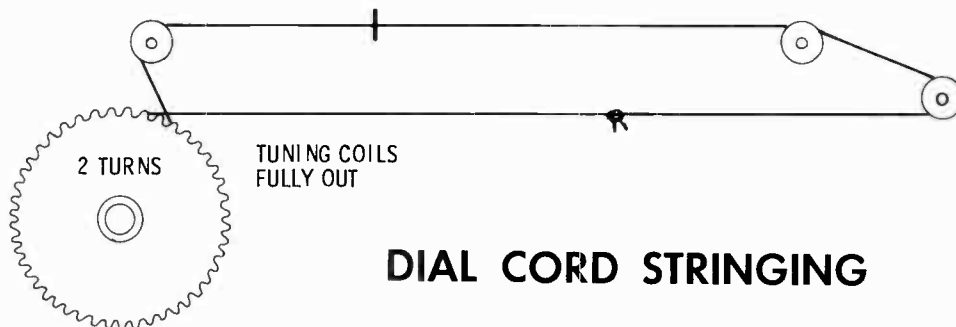
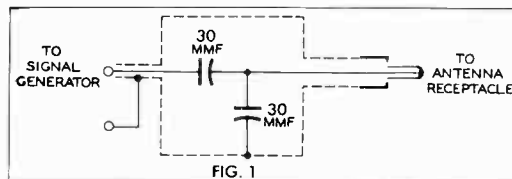
ALIGNMENT INSTRUCTIONS

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

A1, A2, A3, A4... GENERAL CEMENT #8606, 8606L, 8869
 WALSCO #2543, 2544, 2588
 A5, A6, A7... GENERAL CEMENT #9087, 8290, 8868
 WALSCO #2525, 2528, 2587

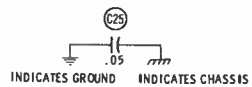
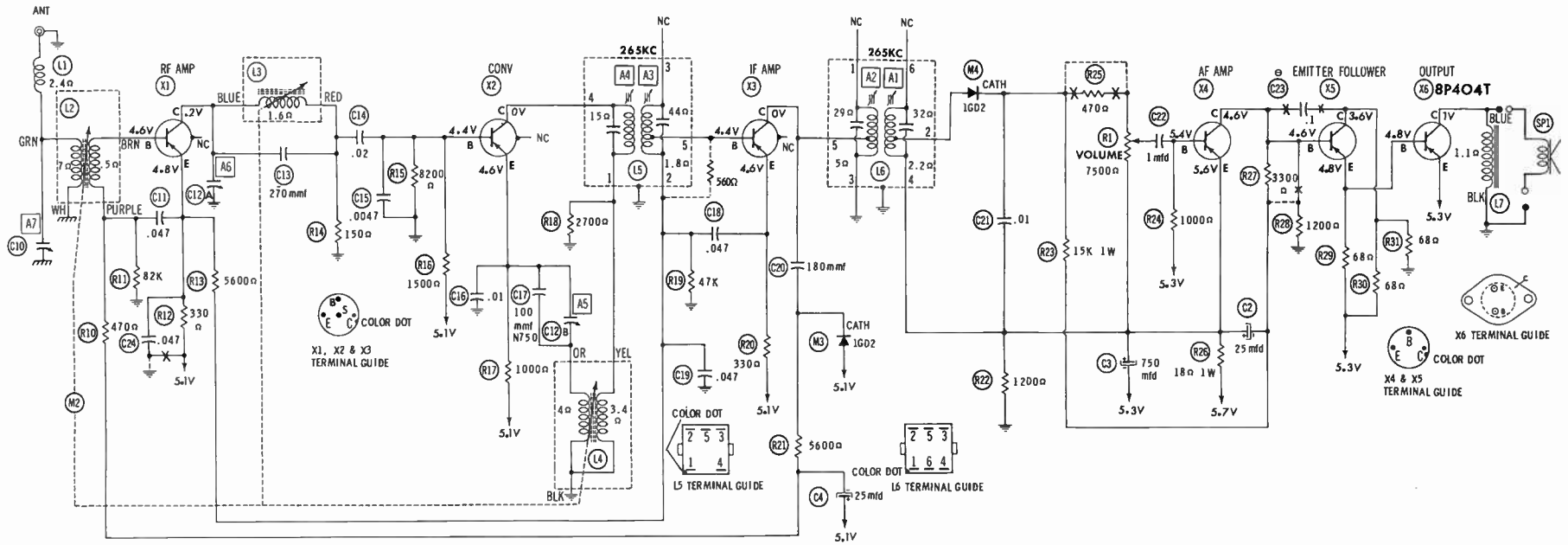
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point Δ , low side to ground.	265KC (400% Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1615KC	"	"	A5, A6, A7	"

With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A8 for maximum output.

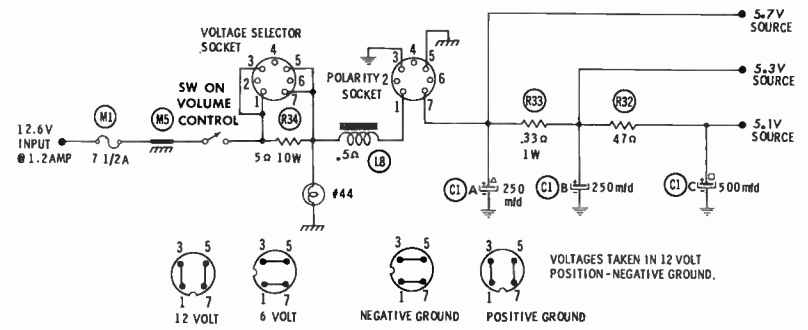


DIAL CORD STRINGING

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

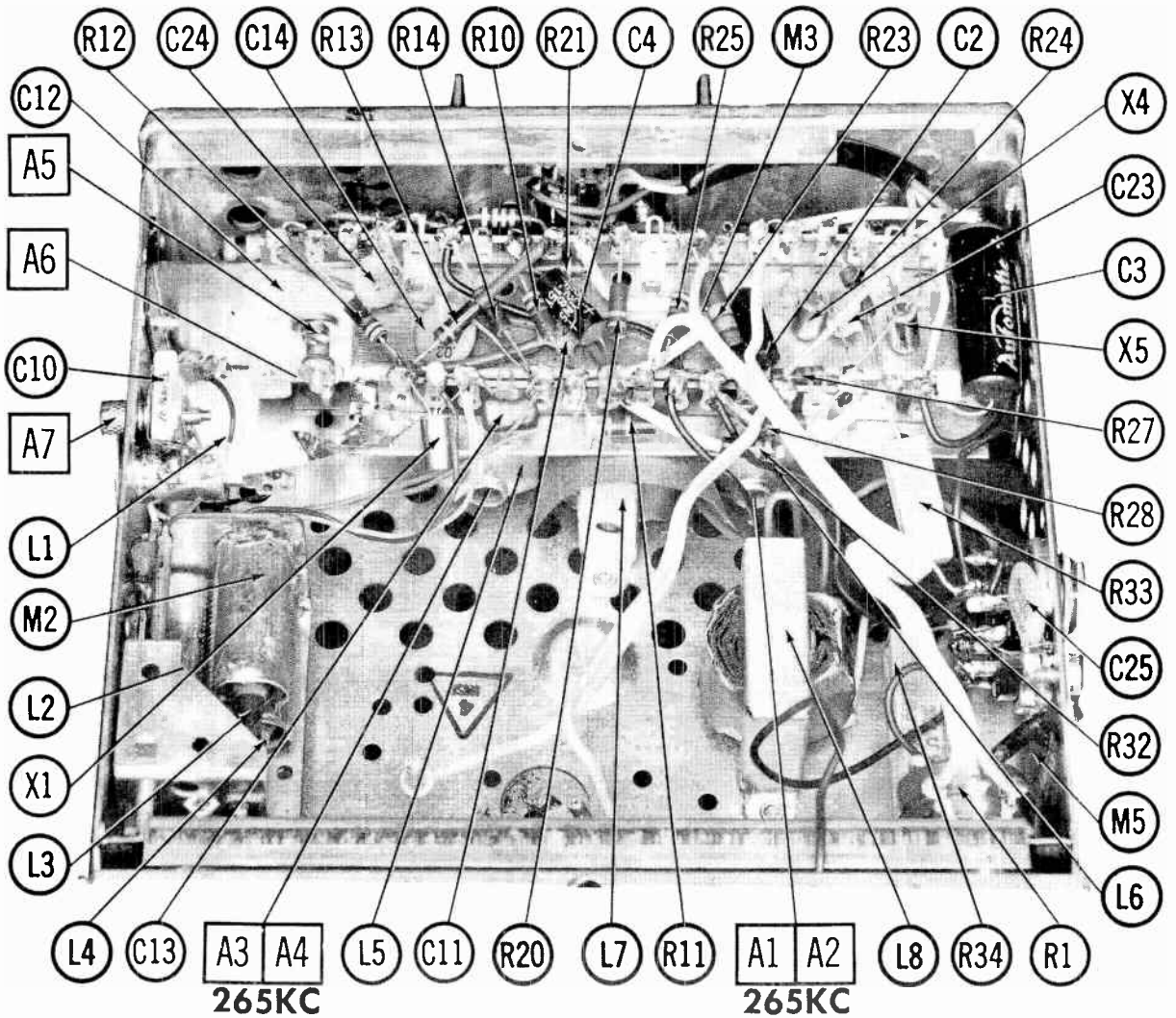
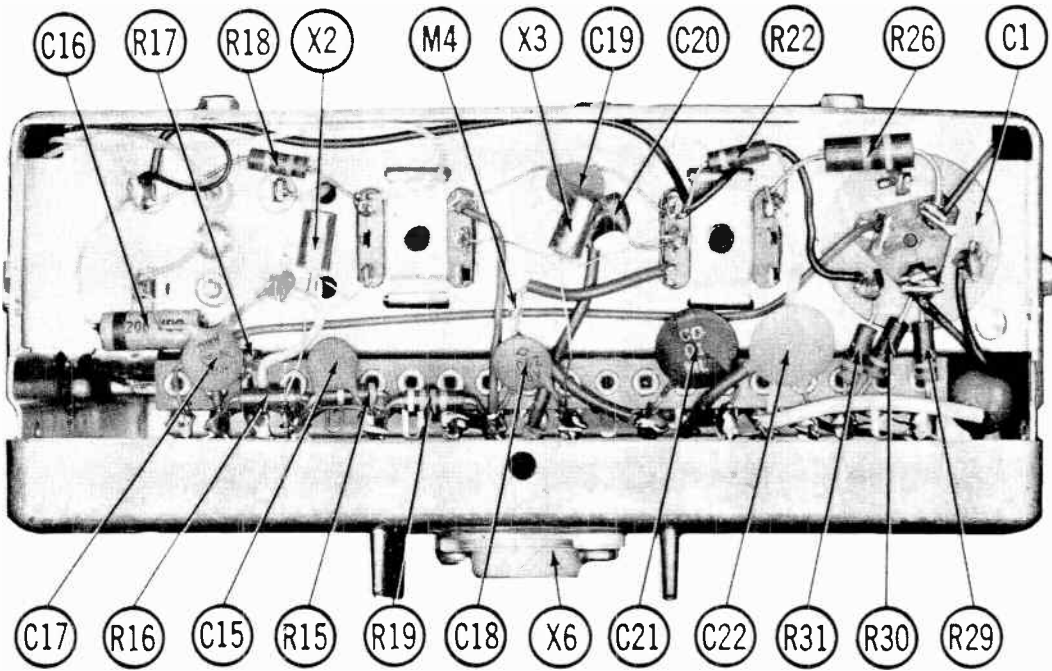


- ⊗ See parts list for alternate value or application.
- 1. Voltage measurements taken with vacuum tube voltmeter.
- 2. All controls set for normal operation, no signal applied.
- 3. Measured values are from socket pin or terminal to common ground.
- 4. All terminals viewed from bottom unless otherwise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



A PHOTOFAC STANDARD NOTATION SCHEMATIC
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AUTOMATIC MODEL P-69



PARTS LIST AND DESCRIPTION

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

TRANSISTORS

ITEM No.	MFGR. PART No.	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	6-60	RF Amplifier	DS-25	GE-1	2N1637	PNP
X2	6-61	Converter	DS-25	GE-1	2N1639	PNP
X3	6-62	IF Amplifier	DS-25	GE-1	2N1638	PNP
X4	6-63	AF Amplifier	DS-26	GE-2	2N591	PNP
X5	6-63	Emitter Follower	DS-26	GE-2	2N591	PNP
X6	8P404T	Output	DS-520	GE-3	2N301	PNP (Note 1)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	RF Choke (6.2uh)	14-6.2	BC-565	4610	RTC-8520	T859	① Part of M2
L2	Ant.	①					
L3	RF						
L4	Osc.						
L5	Input IF	14-274					
L6	Output IF	14-275					

Note 1. When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	250	15	20-328	PWH3-00-94		XC3-48.1			PCL-3026.6
B	250	15							
C	500	15							
C2	25	15	25-256	PTT69	NLW25-15	MT1-14	TD-25-25	TT15X25	TE-1207
C3	750	3	20-757				BL2211		
C4	25	15	25-256	PTT69	NLW25-15	MT1-14	TD-25-25	TT15X25	TE-1207

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C10		#20-800-2L							
C11	.047	} #28A1332							HY-310
C12A									
B									
C13	270		1459-00027	DD-271	5R5T27	CCD-271	GP327	5GA-T27	
C14	.02		TTD-02	CK-203	H05S2		TA-120	TG-S20	
C15	.0047		BPD-0047	DD-472	BYAJ0D47	CCD-472	B-247	5HK-D47	
C16	.01		TTD-01	CK-103	H05S1		TA-110	TG-S10	
C17	100 N750		N750-DI 100	DTN-100	C10TIU	CCTN-101	CN7-310	10TCU-T10	
C18	.047							HY-310	
C19	.047							HY-310	
C20	180							5GA-T18	
C21	.01			DD-181	22R5T18	CCD-181	GP318	TG-S10	
C22	1mfd			TTD-01	H05S1		TA-110	HY-135	
C23	.1			UK-105	HCC3105P		TA-010	TG-P10	
C24	.047		Note 1	CK-104	H05P1			HY-310	
C25	.05		TTD-05	CK-503	H05S5	TA-150	TG-S50		

Part Number.
Note 1. Not used in some versions.

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume & Switch	7500Ω	80A2364				

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	REMARKS			IRC PART No.	WORKMAN PART No.	REMARKS
R34	5Ω 10W		10W-SQ-5						

CHOKE (AUDIO OUTPUT)

ITEM No.	INDUCTANCE	REPLACEMENT DATA					NOTES
		PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L7	13MH	75A2057					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L8	.8A	.5Ω	10MH	75A1269			TR-155		

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		PART No.	QUAM PART No.	
SP1	5" PM 6-8Ω	73A2163	5A05Z7.4	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	7½A		12-1921B	30707.5 (SFE 7½A)	15507.5A	SFE 7½	HDH

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M2	Tuner	78A2380	
M3	AVC Det.	1GD2	
M4	Audio Det.	1GD2	
M5	Spark Plate	43-215	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Knob - Tuning, Volume	47-52B	Knob - Dummy	47A1249

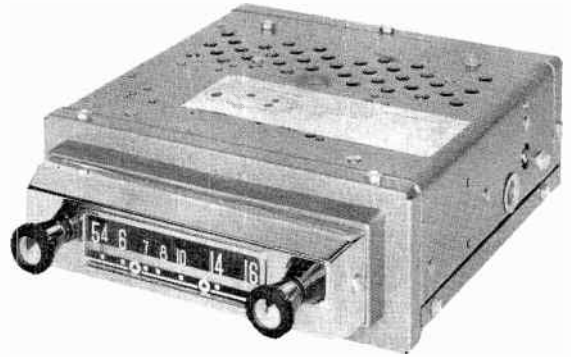
WIRING DATA

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



PHOTOFACT[®]

TRADE NAME : Automatic Model R-61
 SUPPLIER : Automatic Radio Mfg. Co., Inc.
 122 Brookline Ave., Boston 15, Mass.
 TYPE SET : 4 Tube, 1 Transistor AM Receiver
 POWER SUPPLY : 12 Volt Storage Battery
 RATING : 1.2 Amp. @ 12.6 VDC
 TUNING RANGE: BROADCAST 535 - 1615KC



ALIGNMENT INSTRUCTIONS

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

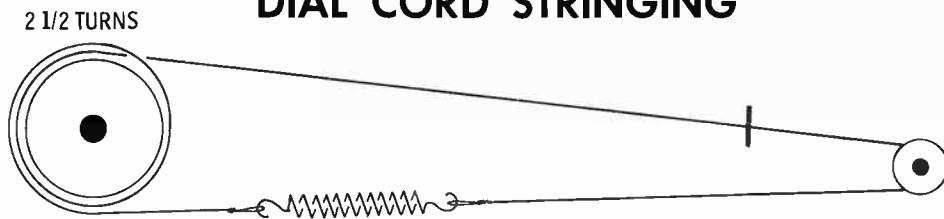
A1 thru A4..... GENERAL CEMENT #8606, 8606L, 8869
 WALSCO #2543, 2544, 2588
 A5, A6, A7..... GENERAL CEMENT #9087, 8290, 8868
 WALSCO #2525, 2528, 2587

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point Δ , low side to ground.	265KC (400v Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	High side thru 82mmf to antenna receptacle, low side to ground.	1615KC	"	"	A5, A6, A7	"

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

AUTOMATIC MODEL R-61

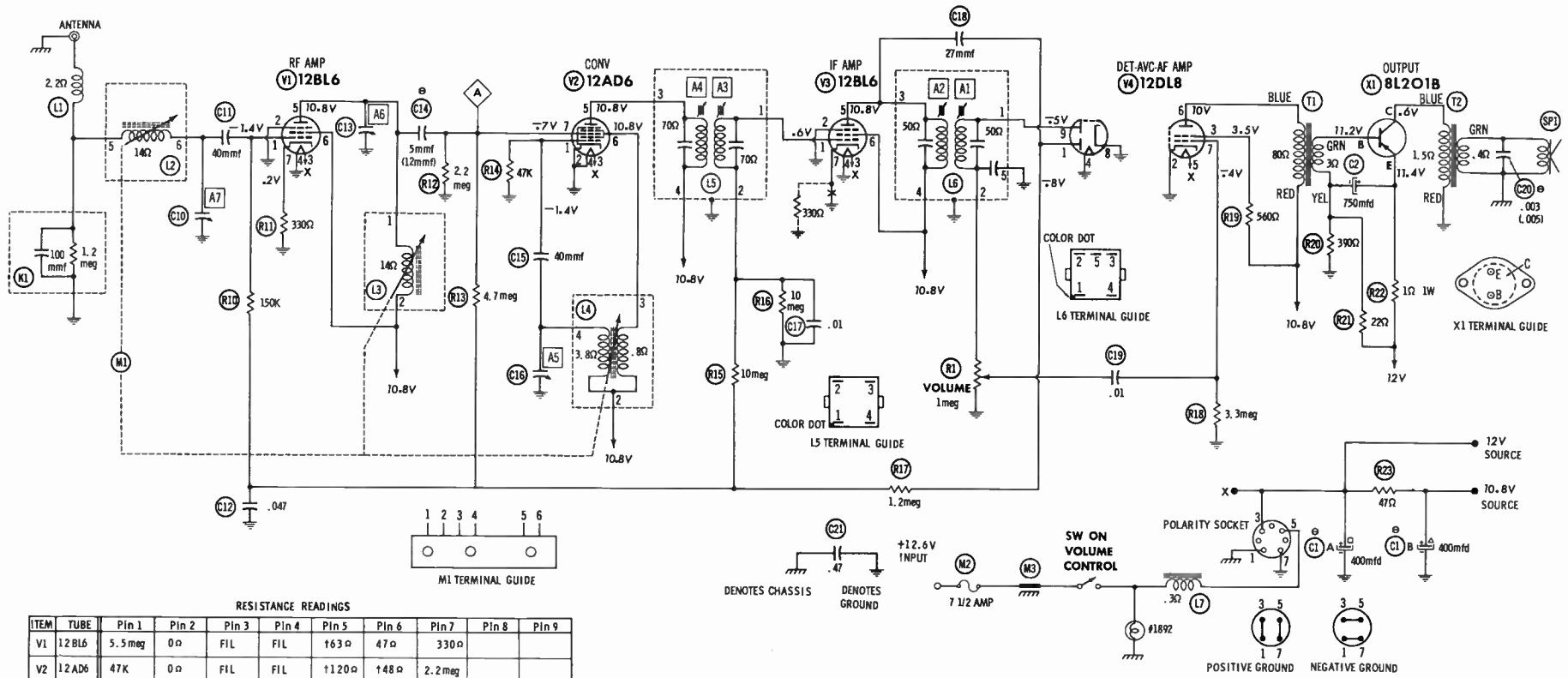
DIAL CORD STRINGING



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

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World Radio History



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	5.5 meg	0 Ω	FIL	FIL	†63 Ω	47 Ω	330 Ω		
V2	12AD6	47K	0 Ω	FIL	FIL	†120 Ω	†48 Ω	2.2 meg		
V3	12BL6	6.5 meg	0 Ω	FIL	FIL	†100 Ω	†47 Ω	0 Ω		
V4	12DL8	6.5 meg	0 Ω	†600 Ω	FIL	FIL	†130 Ω	3.3 meg	0 Ω	1 meg

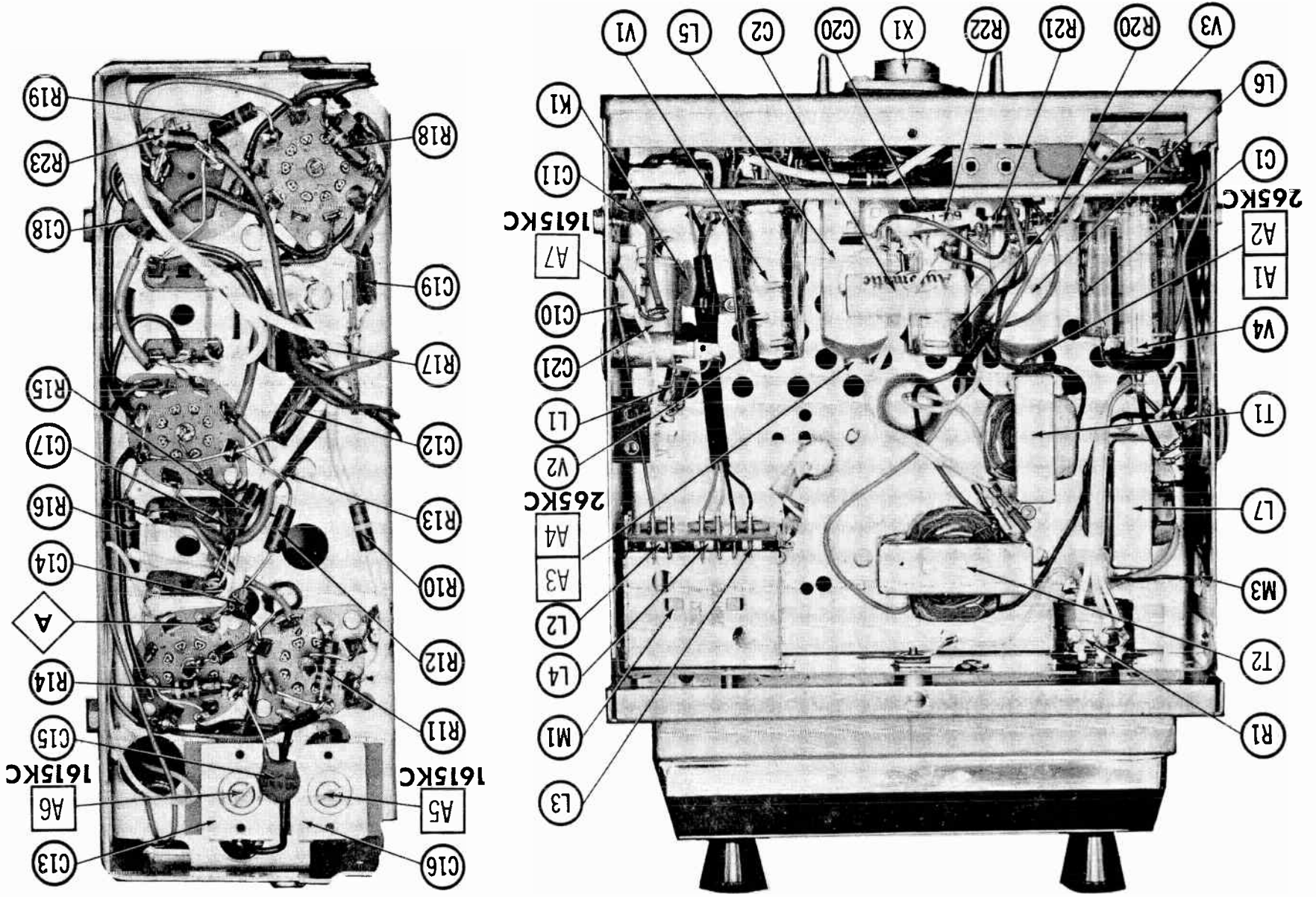
† MEASURED FROM PIN 3 OF POLARITY SOCKET.
RESISTANCE OF X1 NOT GIVEN BECAUSE OF WIDE VARIATION
IN INTERNAL RESISTANCE OF TRANSISTORS.

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

A PHOTOFAC STANDARD NOTATION SCHEMATIC
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AUTOMATIC MODEL R-61

AUTOMATIC MODEL R-61



PARTS LIST AND DESCRIPTION

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

TUBES

AMPEREX		GENERAL ELECTRIC		RCA		RAYTHEON		SYLVANIA	
ITEM No.	USE	TYPE		ITEM No.	USE	TYPE			
V1	RF Amplifier	12BL6		V3	IF Amplifier	12BL6			
V2	Converter	12AD6		V4	Det. - AVC - AF Amp.	12DL8			

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	8L201B	Output	DS-520	GE-3	2N301	PNP (Note 1)

Note 1. When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	400	15	20-320 ①	AFH2-02-40					
C1B	400	15							
C2	750	3	20-757				BL-2211	TC-310	

① C1 is 500-500mfd in some versions (Part #20-317).

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	40	#28-800-2	NPO-DI 39	TCZ-39	C10Q39C	CC TO-390	CNO-439	10TCC-Q39
C11	.047 200V		P288N-047	DD-503	CUB2947	4DP-3-473	GEM-2147	2TM-S47
C12		#28-400-2						
C13		(8.5, 12) †						
C14	5		NPO-DI 5.0	DTZ-4R7	C10V47C	CC TO-4R7	CNO-547	10TCC-V50
C15	40		NPO-DI 39	TCZ-39	C10Q39C	CC TO-390	CNO-439	10TCC-Q39
C16		#28-461						
C17	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	.27		DI-27	DD-270	LA10Q27	CCD-270	GP427	10TS-Q27
C19	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C20	.003	(.005) †	DI-3000	DD-302	LA10D3	CCD-302	GP230	10TS-D30
C21	.47 100V		P288N-47		WMF1P47	IDP-4-474	PVC1047	2PS-P47

Part Number.
† Alternate Value

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA					
			PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	Volume & Switch	1meg	80A1720	B-70-S, AK-26 ① or (F2-1meg, SU308, KR-4, AK-26 ①)	A47-1meg-Z, FS-3, XB-2 ①, SWE-13			UA18A, SL3500, EB158 ①, US41) or (RU16A, SL38, SL3500, EB158 ①, US-41) or (U53, EB158 ①, US-26)

① Alter Bushing to meet Requirements.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA
X1	Antenna Isolation	100mmf, 1.2meg	89-4204	Sprague PRC-9

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	RF Choke (6.2uh)	14-6.2	BC-565	4610	RTC-8520	7859	① Part of M2
L2	Ant.	①					
L3	RF	①					
L4	Osc.	①					
L5	Input IF	14-268					
L6	Output IF	14-269					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	
L7	1.2 Amp.	.3Ω	10MH	75A1269	C-4095	TC-2	TR-155	

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO	REPLACEMENT DATA					NOTES
		PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1		75A1264	A-4092	TA-48	TR-179		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	16Ω	3-4Ω	75A1272			TR-161		

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		PART No.	QUAM PART No.	
SPI	5" PM 3-4Ω	73A1275	5A05	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				
			PART No.	LITTELFUSE PART No.	BUSS PART No.	HOLDER	
M1	SFE	7½		30707.5 (SFE 7½A)	15507.5A	SFE 7½	NMH

MISCELLANEOUS

ITEM No.	PART NAME	PART No.
M2	Tuner	78A1721
M3	Spark Plate	43-215

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.
Knob - Volume, Tuning	47B319-1
Dial Pointer	84A158

WIRING DATA

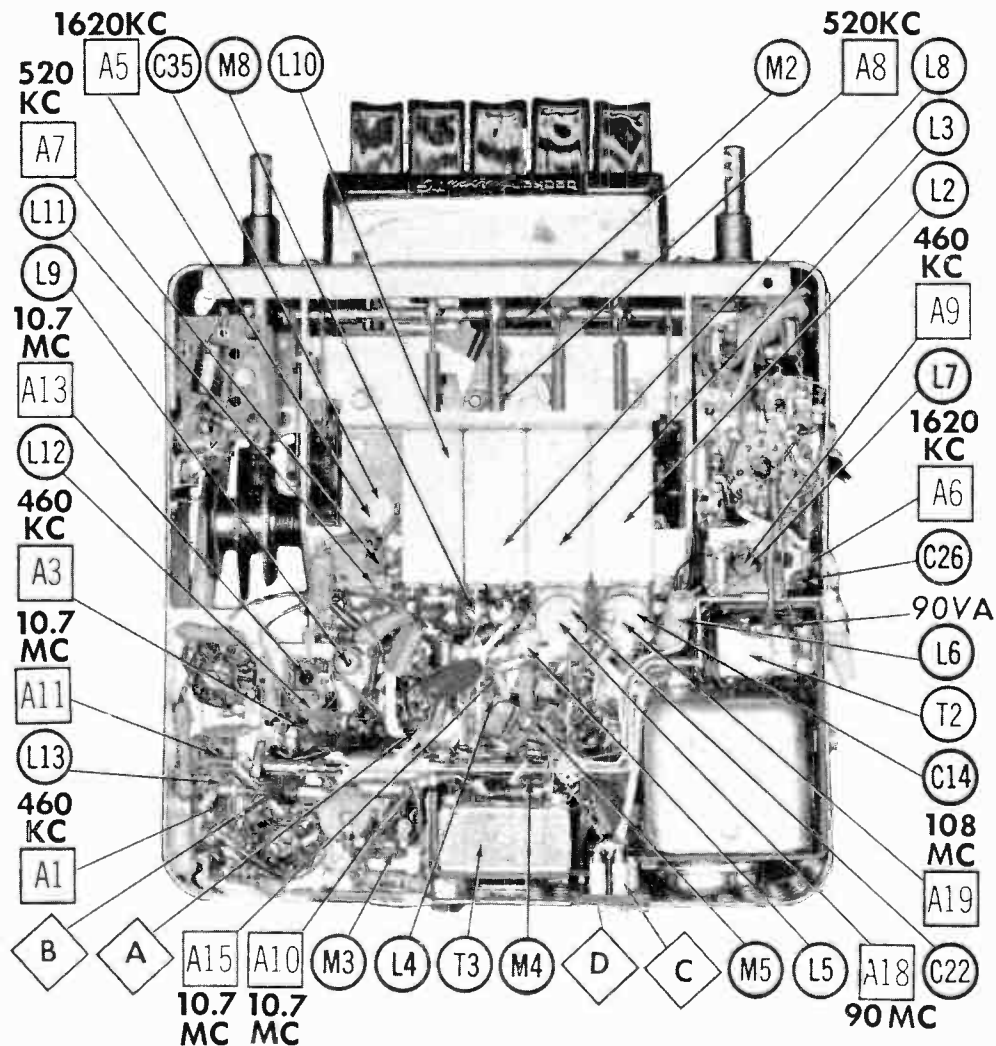
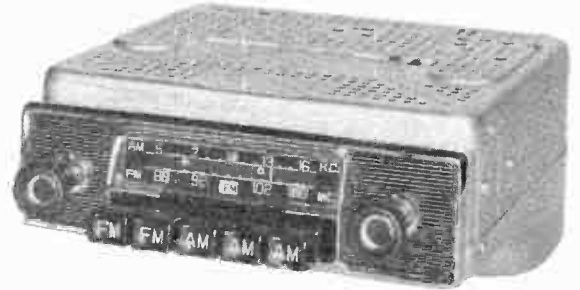
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or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



PHOTOFACT[®] with

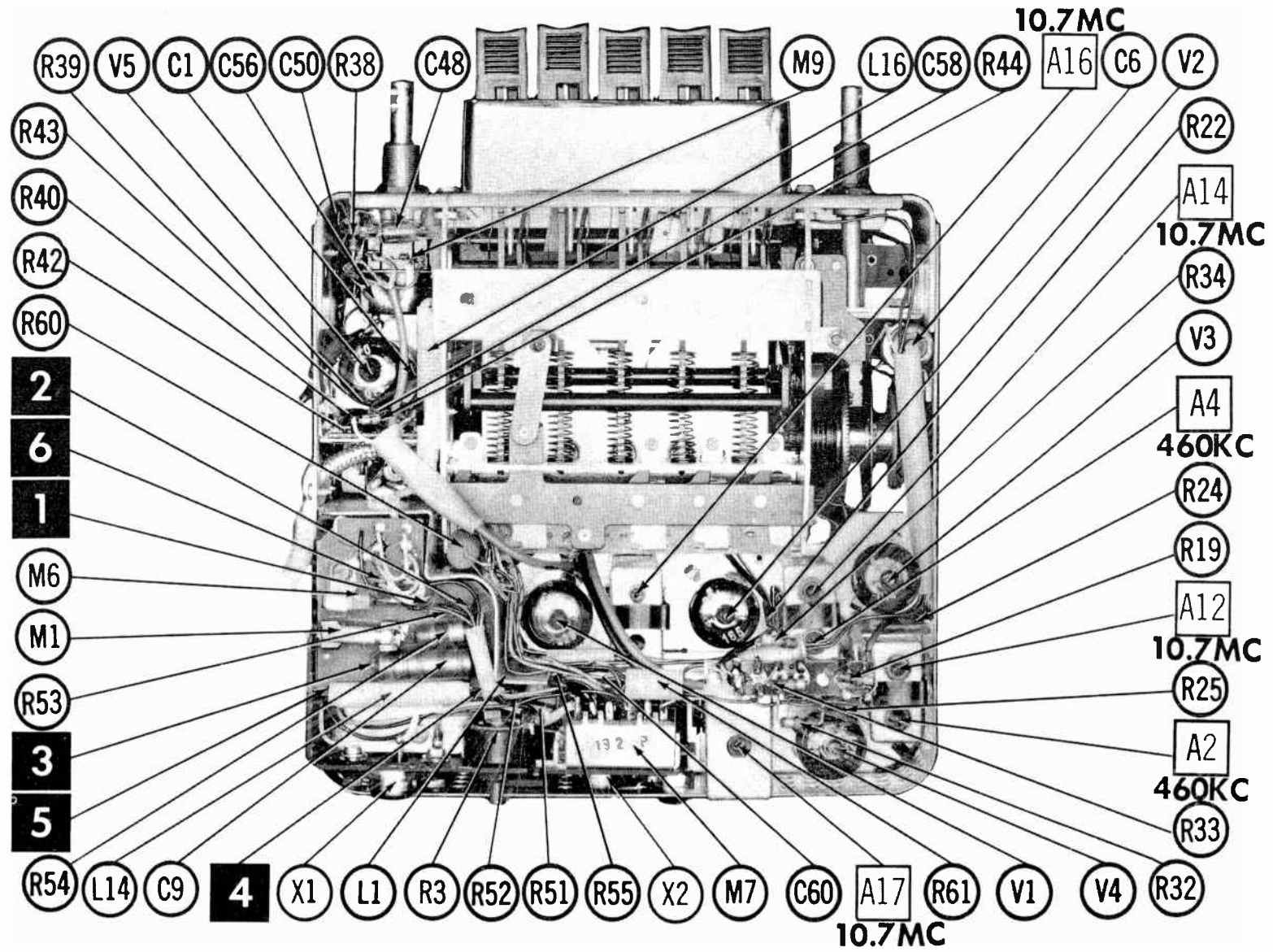
CIRCUITRACE[®]

TRADE NAME : Becker Model Europa TG/MU
SUPPLIER : Becker Auto Radio, Inc.
 613-19 S. 24th St.
 Philadelphia 46, Pa.
TYPE SET : 5 Tubes, 3 Transistor AM-FM
 Receiver with AFC
POWER SUPPLY : 6.3 or 12.6 Volts DC
RATING : 1.5A@6.3 or 12.6 Volts DC
TUNING RANGE : AM: 520 — 1620KC
 FM: 88 — 108MC



BECKER MODEL Europa TG/MU

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



A Howard W. Sams CIRCUITRACE® Photo

ALIGNMENT INSTRUCTIONS

Maintain line voltage at rated value. Allow a 15 minute warmup for receiver and equipment.
Use only enough generator output to obtain a suitable indication.

Suggested Alignment Tools:

A1 thru A4, A9 thru A17. GENERAL CEMENT #8282, 8606, 8606L
WALSCO #2526, 2543, 2543
A5, A6, A18, A19. GENERAL CEMENT #5000, 5003, 5006
WALSCO #2512, 2525, 2528

AM ALIGNMENT -- SELECTOR IN AM POSITION

Connect generator thru dummy antenna (See Fig. 1)

SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
460KC (Unmod.)	Tuning gang fully open.	DC probe of VTVM to point \diamond ; common to ground.	A1, A2, A3, A4	Adjust for maximum.
1620KC	"	"	A5, A6	"
520KC	Tune to signal.	"	A7, A8	Rock tuning gang and adjust for maximum. Repeat steps 2 and 3.
460KC	Tuning gang fully open.	"	A9	Adjust for MINIMUM.

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

Connect generator thru dummy antenna (See Fig. 1)

SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MC (Unmod.)	Point of non-interference.	DC probe of VTVM to point \diamond ; common to ground.	A10, A11, A12, A13, A14, A15, A16	Adjust for maximum.
"	"	DC probe to point \diamond ; common to chassis.	A17	Adjust for zero reading. A positive or negative reading will be obtained on either side of the correct setting.
90MC (Unmod.)	90MC	DC probe of VTVM to point \diamond ; common to ground.	A18	Adjust for maximum.
108MC	108MC	"	A19	"

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

Connect generator thru dummy antenna (See Fig. 1)

Use 60v frequency modulated signal with 450KC sweep. Use 120v sawtooth voltage in scope for horizontal deflection.

SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MC (450KC Swp)	Point of non-interference.	Vert. amp. of scope to point \diamond ; low side to ground.	A10, A11, A12, A13, A14, A15, A16	Disconnect stabilizing capacitor C7. Adjust for maximum gain and symmetry of response similar to Fig. 2 with marker as shown. Reconnect C7.
"	"	Vert. amp. to point \diamond ; low side to ground.	A17	Adjust to place marker at center of crossover lines similar to Fig. 3. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.

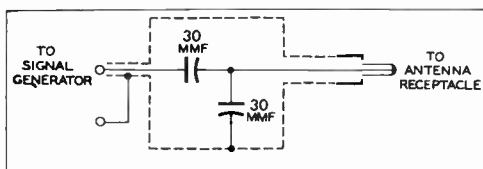


FIG. 1

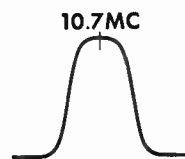


FIG. 2

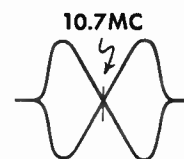
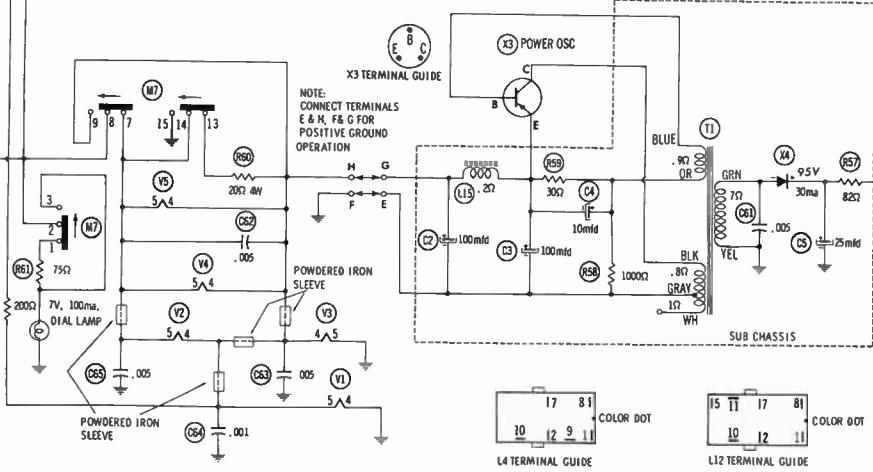
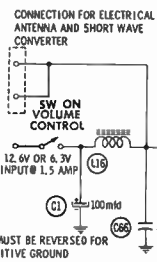
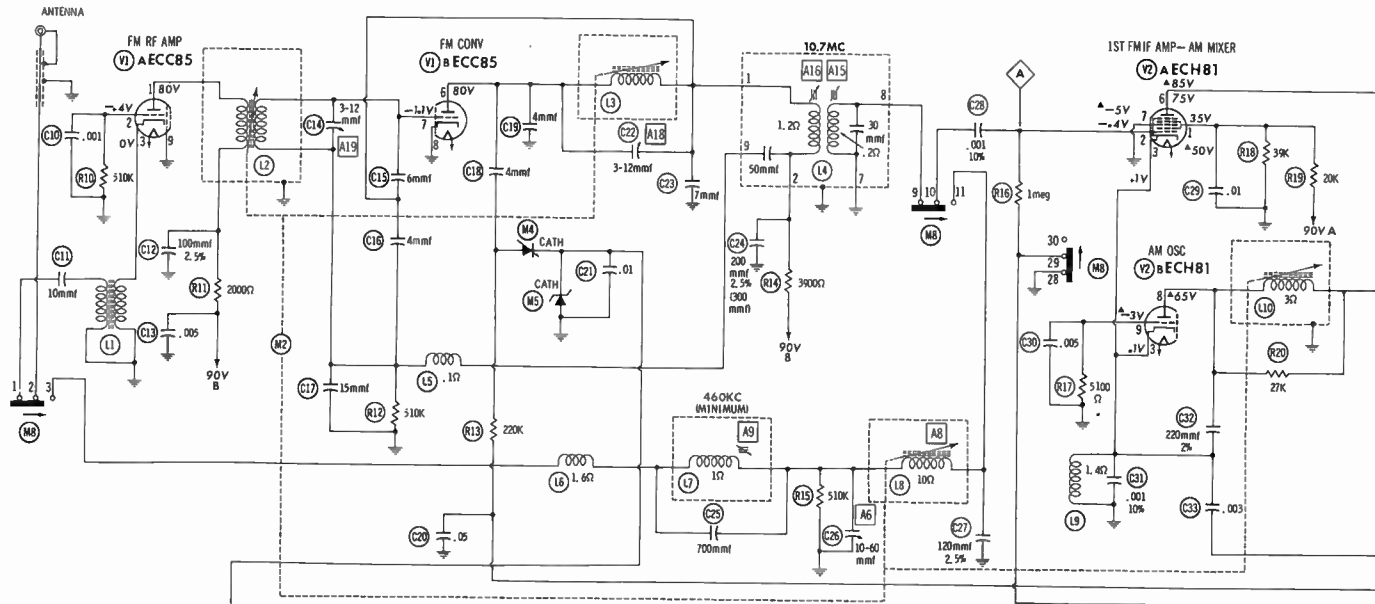


FIG. 3

PUSH-BUTTON ADJUSTMENT

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

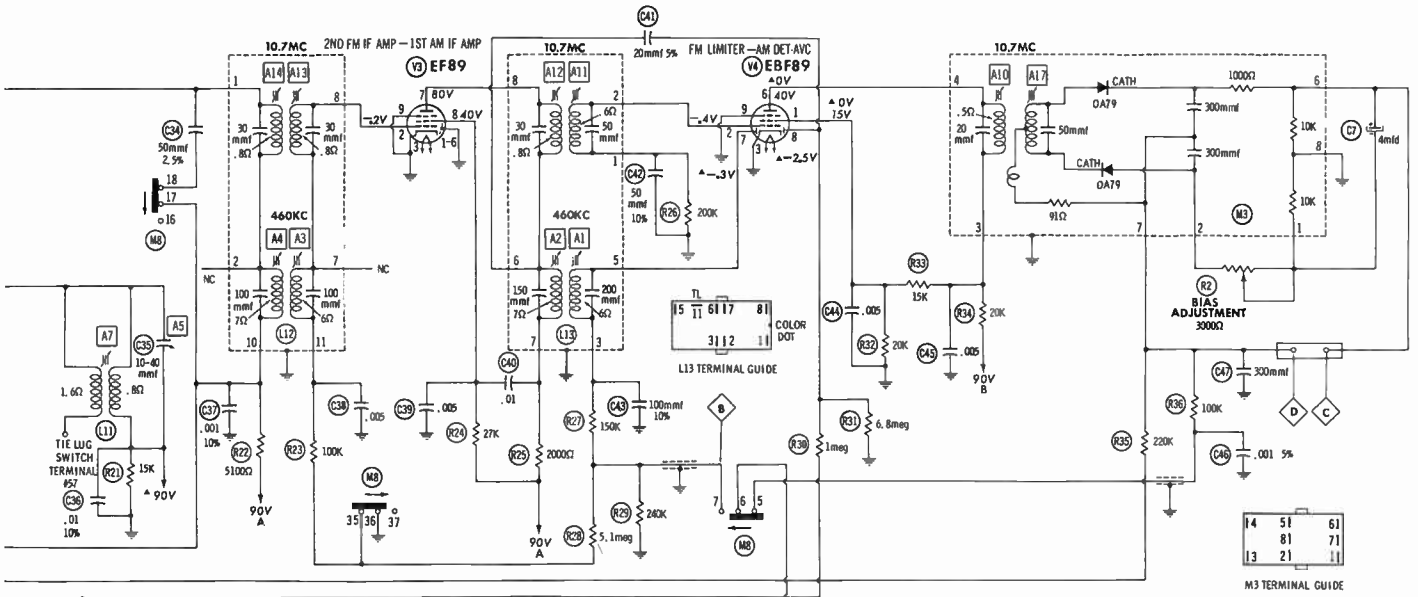


RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85	1200Ω	510K	0Ω	FIL	FIL	13900Ω	510K	0Ω	0Ω
V2	ECH81	118K	▲ 8.8meg 1meg	1.4Ω	FIL	FIL	15100Ω	0Ω	▲13900Ω	5100Ω
V3	EF89	0Ω	▲ 5.5meg 100K	0Ω	FIL	FIL	0Ω	12000Ω	127K	0Ω
V4	EF89	118K	200K	0Ω	FIL	FIL	118K	▲ 340K 380K	▲ 5.5meg 800K	0Ω
V5	ECF83	1000Ω	1meg	1340Ω	FIL	FIL	1220K	1820K	1000Ω	▲ 6.4meg 15.8meg

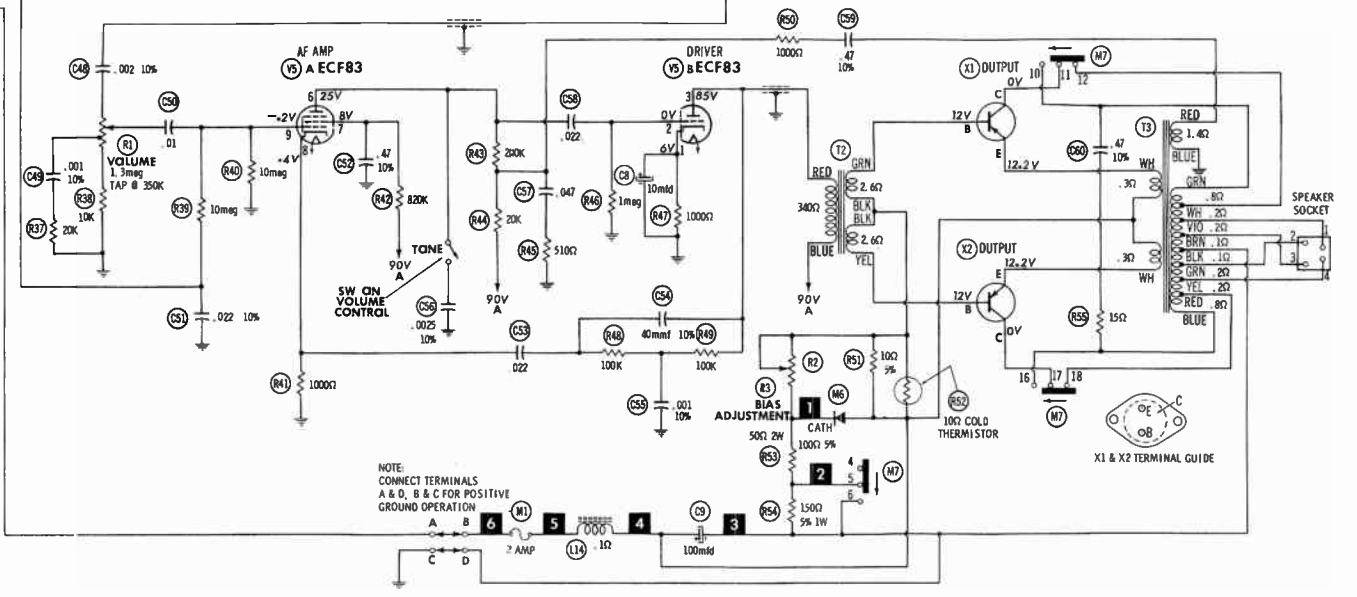
1. Voltage measurements taken with vacuum tube voltmeter.
2. All controls set for normal operation, no signal applied.
3. Measured values are from socket pin or terminal to common ground.
4. All terminals viewed from bottom unless otherwise designated.
5. Numbers assigned to terminals may not be found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

A PHOTOFAC STANDARD NOTATION SCHEMATIC
with **CIRCUITRACE**
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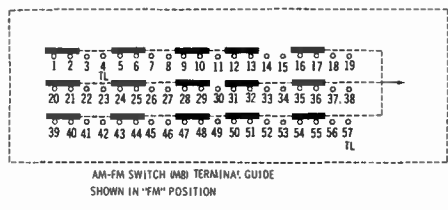
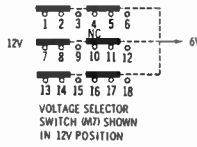
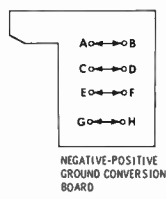


M3 TERMINAL GUIDE

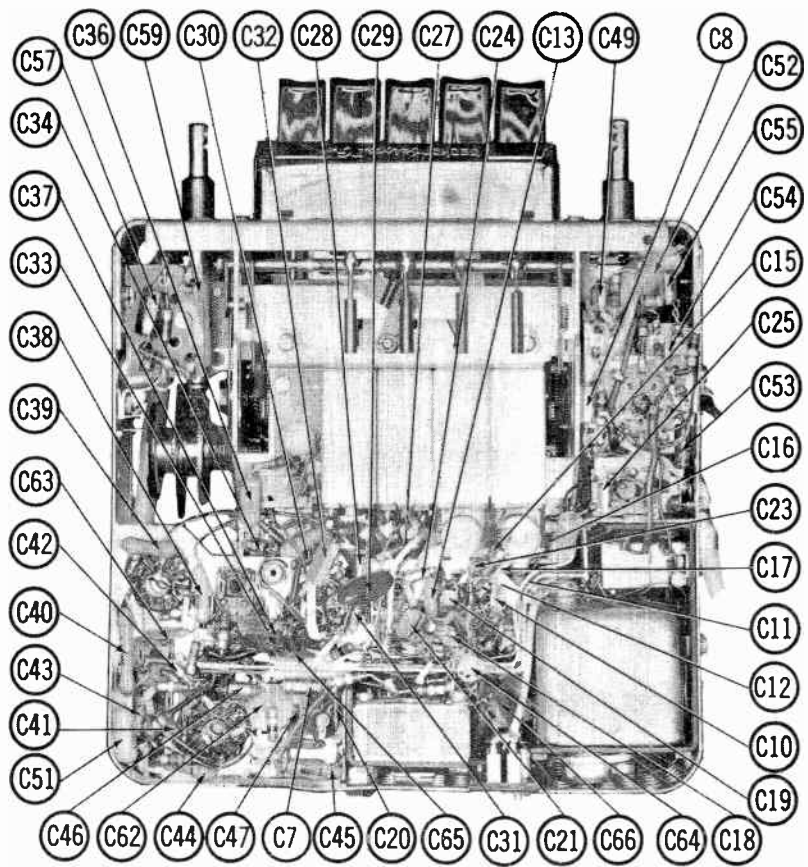
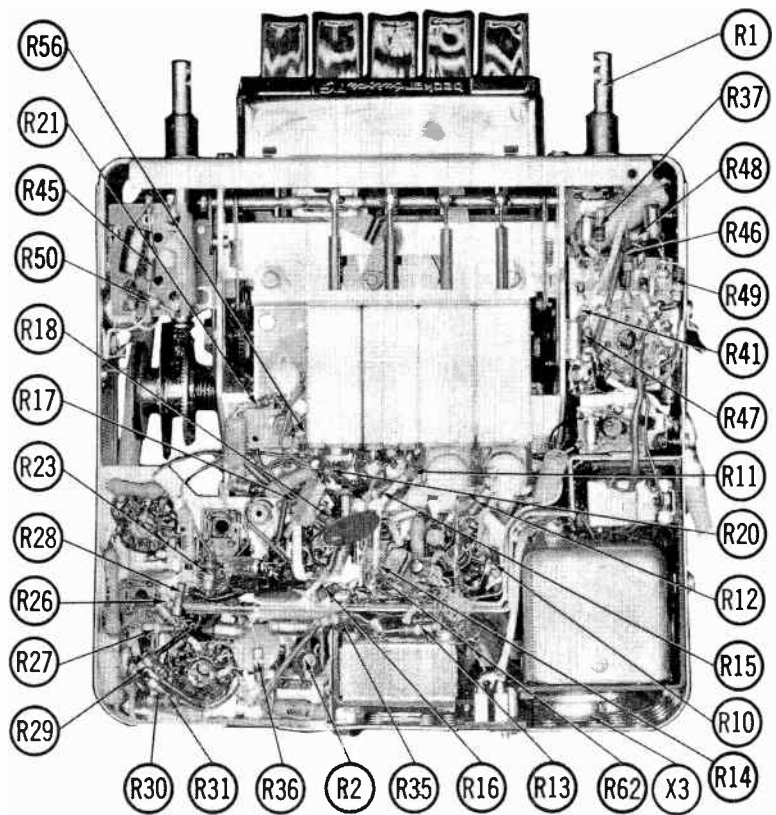
14	51	61
81	71	
13	21	11



NOTE: CONNECT TERMINALS A & D, B & C FOR POSITIVE GROUND OPERATION



BECKER MODEL Europa TG/MU



PARTS LIST AND DESCRIPTION

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

WIRING DATA

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

TUBES

AMPEREX		GENERAL ELECTRIC		RCA		RAYTHEON		SYLVANIA	
ITEM No.	USE	TYPE		ITEM No.	USE	TYPE			
V1	FM RF Amp. -FM Conv. 1st FM IF Amp. - AM Mixer-AM Osc.	ECC85		V3	2nd FM IF Amp. - 1st AM IF Amp.	EF89			
V2		ECH81		V4		FM Limiter -AM Det. - AVC	EBF80		
				V5	AF Amp. -Driver		ECF83		

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	GFT3008/40	Output Output Power Osc.				PNP PNP PNP
X2	GFT3008/40					
X3	TF80/302					

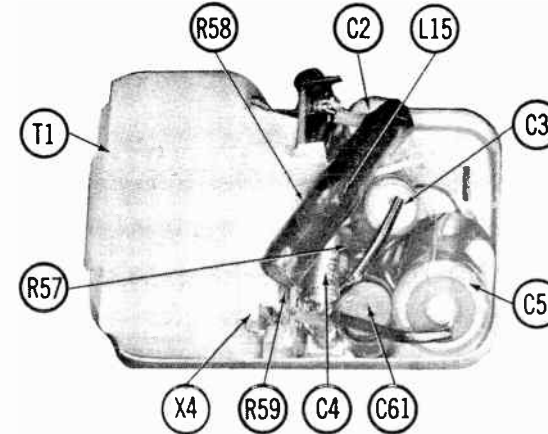
POWER RECTIFIERS

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS		
			MALLORY PART No.	RCA PART No.	SARKES TARZIAN PART No.
X4	30MA	672S108			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		BECKER PART No.	REPLACEMENT DATA					
	CAP.	VOLT.		AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	100	25		CRE623	NLW100-25	MT1-20	MLV100-25	TT25X100	TE-1211
C2	100	25		CRE823	NLW100-25	MT1-20	MLV100-25	TT25X100	TE-1211
C3	100	25		CRE623	NLW100-25	MT1-20	MLV100-25	TT25X100	TE-1211
C4	10	6		CRE307	NLW10-6	MT1-5	BL122050	TT6X10	TE-1087
C5	25	165					TD-20-150		
C6	25	165					TD-20-150		
C7	4	20		CRE603	NLW4-50	MT1-3	BL1150	TT25X5	TE-1201.2
C8	10	15		CRE457	NLW10-15	MT1-6	MLV10-15	TT15X10	TE1155
C9	100	25		CRE623	NLW100-25	MT1-20	MLV100-25	TT25X100	TE-1211

POWER SUBCHASSIS



FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENDO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	.001	(300) †	BPD-001	DD-102		CCD-102	B-210	5HK-D10
C11	10		NPO-SI 10	TCZ-10		CCTO-100	CNO-410	10TCC-Q10
C12	100 2.5%							
C13	.005		SI 5000	D6-502	LA10D5-C4	CCD-502	GP250	5HK-D50
C14	3-12							
C15	6							10TCC-V56
C16	4							10TCC-V39
C17	15		NPO-SI 15	TCZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C18	4							10TCC-V39
C19	4							10TCC-V39
C20	.05		BPD-05	DD-503		CCD-503	GP150	5HK-S50
C21	.01		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C22	3-12							
C23	7		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C24	200 2.5%							
C25	700							
C26	10-60							
C27	120 2.5%							
C28	.001 10%							
C29	.01		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C30	.005		SI 5000	D6-502	LA10D5-C4	CCD-502	GP250	5HK-D50
C31	.001 10%							
C32	220 2%							
C33			SI 3000	D6-302	CD15F221G	DM-15-221G	GP230	10TS-D30
C34	50 2.5%							
C35	10-40							
C36	.01 125V 10%							
C37	.001 10%		BE2SI	CF-103	WMF2SI	4DP-1-103	PVC211	4PS-S10
C38	.005		SI 5000	D6-502	LA10D5-C4	CCD-502	GP250	5HK-D50
C39	.005		SI 5000	D6-502	LA10D5-C4	CCD-502	GP250	5HK-D50
C40	.01		SI 10000	D6-103	BYA10SI	CCD-103	GP110	5HK-S10
C41	20 5%							
C42	50 10%							
C43	100 10%							
C44	.005		SI 5000	D6-502	LA10D5-C4	CCD-502	GP250	5HK-D50
C45	.005		SI 5000	D6-502	LA10D5-C4	CCD-502	GP250	5HK-D50
C46	.001 5%							
C47	300							
C48	.002 10%							

BECKER MODEL Europa TG/MU

PARTS LIST AND DESCRIPTION (CONTINUED)

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

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALLAB PART No.	CORNELL-DUBILIER PART No.	ELMENCOR PART No.	MALLORY PART No.	SPRAGUE PART No.	
C49	.001 10%		P488N-01 BE2S22 BE2P47 P488N-022	CPR-1000J D6-103	WMF2S1	4DP-1-103	GEM-411	4PS-S10	
C50	.01 250V			DD-203	WMF2S2	4DP-2-233	PVC2122	2PS-S22	
C51	.022 125V 10%			CPR-39J	WMF2P47	2DP-5-474	PVC2047	2PS-P47	
C52	.022 125V 10%			CPR-1000J	CUB4S22	4DP-2-223	GEM-4122	4TM-S22	
C53	.022 250V			CPR-2500J					
C54	40 10%								
C55	.001 10%			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C56	.0025 10%			P488N-022	DD-302	CUB4S22	4DP-2-233	GEM-4122	4TM-S22
C57	.047 250V			BE2P47		WMF2P47	2DP-5-474	PVC2047	2PS-P47
C58	.022 250V			BE2P47		WMF2P47	2DP-5-474	PVC2047	2PS-P47
C59	.47 125V 10%								
C60	.47 125V 10%								
C61	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50	
C62	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50	
C63	.005		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10	
C64	.001		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50	
C65	.005		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C66	.01								

† Alternate Value.

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			BECKER PART No.	CENTRALLAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume-Tone Switch	1.3meg	107S110				
R2	On-Off Switch	350K Tap					
R3	Bias Adjustment	3000Ω	107S115				
R3	Bias Adjustment	50Ω 2W	672S106				

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BECKER PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	FM Ant.	107S1510					
L2	FM RF	100S1350					
L3	FM Osc.	100S1360					
L4	1st FM IF	108S1610					
L5	RF Choke	288S140					
L6	RF Choke	65S115					
L7	460KC Trap	102S0620					
L8	AM Ant.	102S0710					
L9	RF Choke	65S135					
L10	AM Osc.	102S0720					
L11	AM Osc. Adj.	102S0650					
L12A	2nd FM IF	107S1620					
L12B	1st AM IF						
L13A	3rd FM IF	107S1630					
L13B	2nd AM IF						
L14	RF Choke	107S2402					
L15	RF Choke	107S2710					
L16	"A" Lead Choke	107S2403					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	BECKER PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	6.3V	95V @ .05Amp		107S2710					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO	REPLACEMENT DATA					NOTES
		BECKER PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	3.8: 1	510S1300					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
		BECKER PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T3	60Ω (12V)	107S2730					
	5Ω CT Tap @ 30Ω (6V)						
	2.5Ω CT						
	SEC. 2						
	2.4Ω						
SEC. 3							
	5Ω CT						

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			BECKER PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
M1		2A 250V						GMA 2	

MISCELLANEOUS

ITEM No.	PART NAME	BECKER PART No.	NOTES
M2	Tuner		
M3	Ratio Det. Assembly	107S1640	
M4	AFC Vari-Cap	BA101	
M5	AFC, Zener Diode	Z3	
M6	Bias Det.	116S2071	
M7	Switch, Voltage Selector	107U1110	
M8	Switch Band (AM-FM)	107S0505	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Glass, Dial	108V1001-01		



TRADE NAME : Buick Models 980464, 980464A
(1963 Specials)

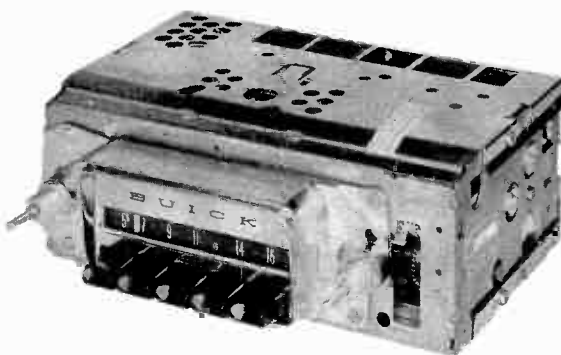
SUPPLIER : (Parts) United Delco Distributors

TYPE SET : 5 Transistor AM Receiver

POWER SUPPLY : 12 Volt Storage Battery

RATING : .84 Amp. @12.6 VDC

TUNING RANGE: BROADCAST 540 - 1615KC



ALIGNMENT INSTRUCTIONS

Check for specified source voltage.

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:

A1 thru A5, A9, A10.....GENERAL CEMENT #5009, 8728A, 8987
WALSCO #2531X, 2536

A6, A7, A8.....GENERAL CEMENT #8290, 8868, 9087
WALSCO #2525, 2528, 2587

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point Δ , low side to ground.	262KC (400% Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
Check setting of oscillator coil core (A5). Rear of core should be 1 3/8" from mounting end of coil form.						
2.	High side thru 82mmf to antenna receptacle, low side to ground.	1615KC	High Freq. End Stop.	Output Meter across voice coil.	A6, A7, A8	Adjust for maximum.
3.	"	600KC	600KC Signal	"	A9, A10	Adjust for maximum. Repeat step 2.
With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.						

REMOVAL INSTRUCTIONS

RADIO

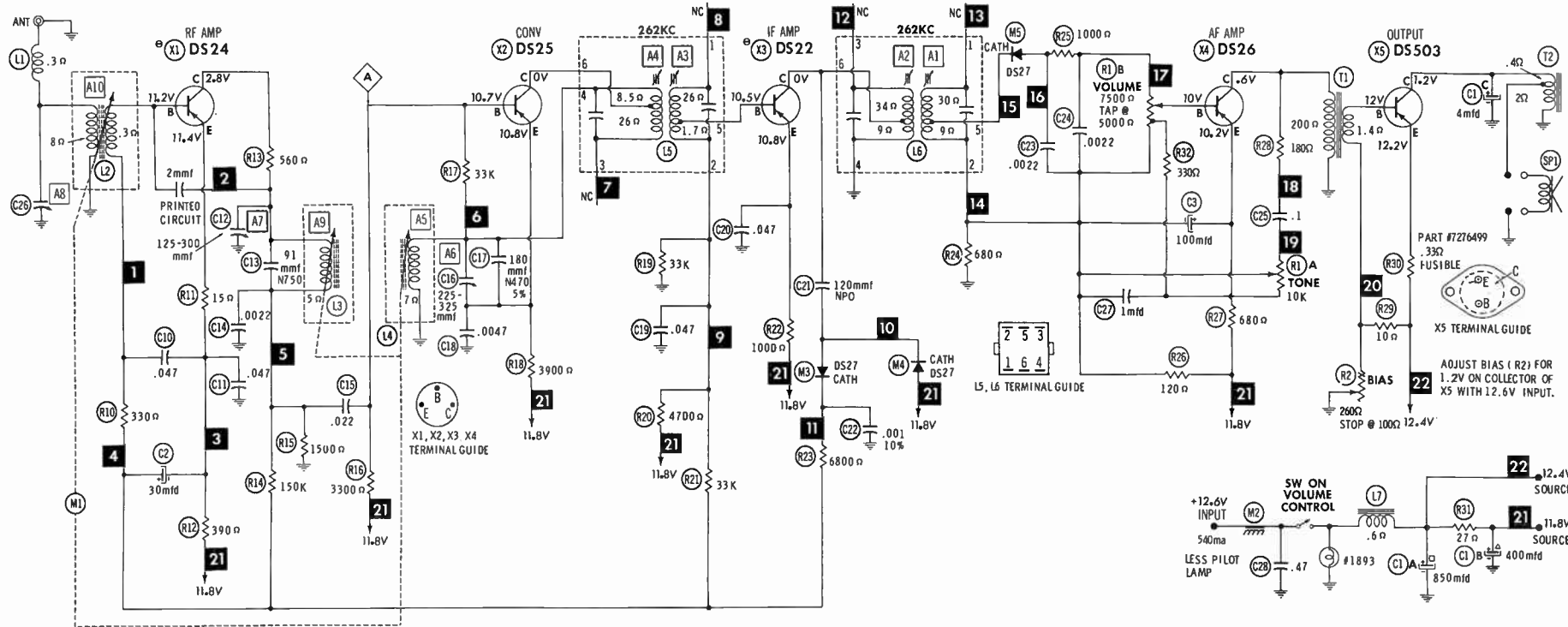
1. Pull off knobs.
2. Disconnect speaker leads, "A" lead clip and antenna plug.
3. Remove two 1/2" hex nuts from control bushings. Remove escutcheon.
4. Remove 3/8" hex bolt holding radio to right mounting support.

5. Remove radio from rear of instrument panel.

SPEAKER

1. Remove two hex nuts holding speaker mounting under top of instrument panel.
2. Remove speaker assembly from under instrument panel.

BUICK SPECIAL MODELS 980464, 980464A

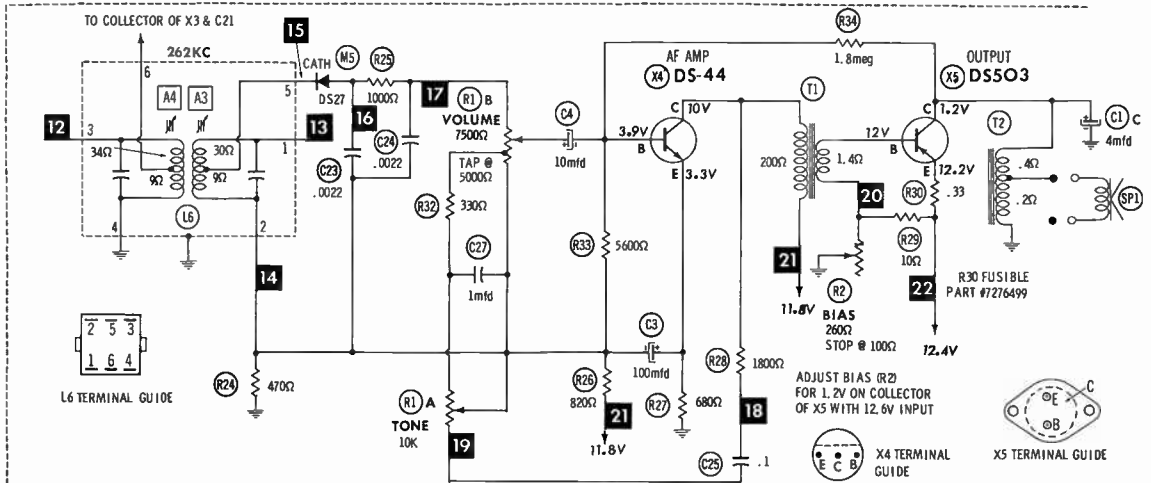


- ⊖ See parts list for alternate value or application.
- 1. Voltage measurements taken with vacuum tube voltmeter.
- 2. All controls set for normal operation, no signal applied.
- 3. Measured values are from socket pin or terminal to common ground.
- 4. All terminals viewed from bottom unless otherwise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

A PHOTOFAC STANDARD NOTATION SCHEMATIC
with **CircuitTrace**

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BUICK SPECIAL MODELS 980464, 980464A



PARTS LIST AND DESCRIPTION

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	DS-24*	RF Amplifier	DS-25	GE-1	2N1637	PNP
X2	DS-25	Converter	DS-25	GE-1	2N1639	PNP
X3	DS-22*	IF Amplifier	DS-25	GE-1	2N1638	PNP
X4	DS-26	AF Amplifier	DS-26	GE-2	2N591	PNP (Model 980464)
X5	DS-44	AF Amplifier	DS-44	GE-8	2N301	PNP (Model 980464A)
	DS-503	Output	DS-503	GE-3	2N301	PNP (Note 1)

* Manufacturer suggests using DS-25 when replacing.
 Note 1. When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely. Check bias adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	#850	18	7282272	AFH3-54-30		XC3-6.1		WP300, 7A	TVL-3021
B	400	18							
C	4	11.5AC							
C2	30	6							
C3	100	3	7279896	PTT27	NLW30-15	MTI-13	MLV30-6	TT6X30	TE-1092
C4	10	12	7279888	PTT13	NLW100-3	MTI-18	MLW100-3	TT8X100	TE-1059.5
			7283834	PTT53	NLW10-15	MTI-5	BL1241	TT12X10	TE-1128

① Used in Model 980464A.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C10	.047	#7281932	P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-S47	
C11	.047		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-S47	
C12	125-300	#7281933	P288N-0022	DD-222	TCN-91	C10Q91U	6DP-1-222	GEM-6222	6TM-D22
C13	91 N750				DD-222	CUB6D22	IDP-1-223	GEM-4122	2TM-S22
C14	.0022				DDM-303	CUB4S22			
C15	.022								
C16	225-325	#7284768	DI-4700	DD-472	DD-503	CUB2S47	CCD-472	10TS-D47	
C17	180 N470 5%						DD-503	CUB2S47	IDP-2-473
C18	.0047	#7281971	P288N-047	DD-503	DTZ-120	CUB2S47	IDP-2-473	GEM-4147	4TM-S47
C19	.047						DTZ-120	CNO-312	10TCC-T12
C20	.047	NPO-DI 120	DI-1000	DD-102	L10D1	CCD-102	GP210	10TS-D10	
C21	120 NPO						DD-222	L10D22	CCD-222
C22	.001 10%	DI-2200	DD-222	L10D22	CCD-222	GP222	GP222	10TS-D22	
C23	.0022						DDA-104	BC2PLJ	IDP-2-104
C24	.0022	P2151N-1	UK-105	DD-502	HCC3105P	IDP-4-474	GEM-2033	HY-135	
C25	.1								DD-502
C26		#7281971	P288N-47	DD-502	HCC3105P	IDP-4-474	GEM-2033	HY-135	
C27	1mfd								
C28	.47								

Delco Part Number.

CONTROLS

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

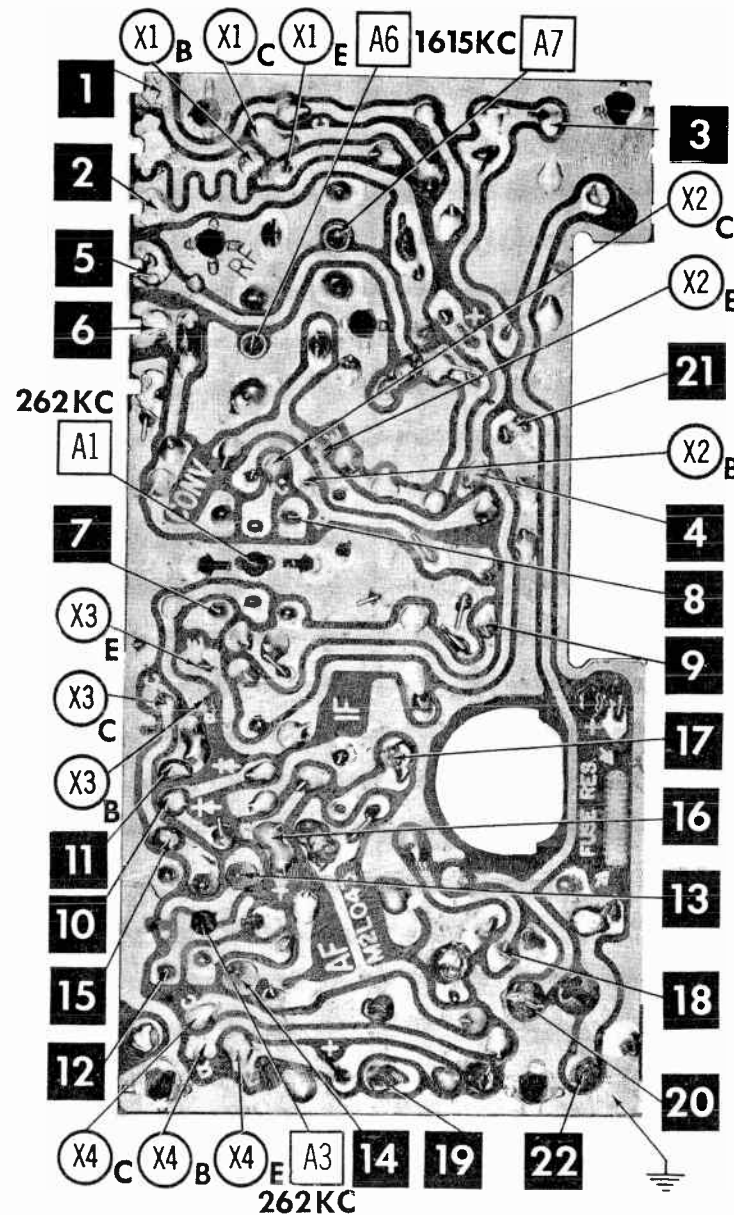
ITEM No.	USE	RESISTANCE	REPLACEMENT DATA					
			DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA	Tone	10K 7500Ω Tap @ 5000Ω 260Ω Stop @ 100Ω	7282546					# UE44258
B	Volume & Switch							
R2	Bias		7275474	①				

① Temperature Compensated.

"STA-LOC" Equivalent: FFI4A, RU752T53, OS1187, IS1750, US41.

PRINTED BOARD

A Howard W. Sams CIRCUITRACE Photo



BUICK SPECIAL MODELS 980464, 980464A

PARTS LIST AND DESCRIPTION (CONTINUED)

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

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	RF Choke (6.2uh)	7281946	BC-565	4610	RTC-8520	T859	
L2	Ant.	7281716					
L3	RF	7282042					
L4	Osc.	7281717					
L5	Input IF	1221856					
L6	Output IF	1221857					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	
L7	540ma	.6Ω	8MH	1221823	C-4095		TR-154	

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	10	1	7280915					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	12	10	7282057					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		DELCO PART No.	QUAM PART No.	
SP1	4" x 10" PM 10Ω	7282354		

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner	7281697	
M2	Spark Plate	7271584	
M3	AVC Det.	DS-27	
M4	AVC Det.	DS-27	
M5	Audio Det.	DS-27	

CABINETS & CABINET PARTS

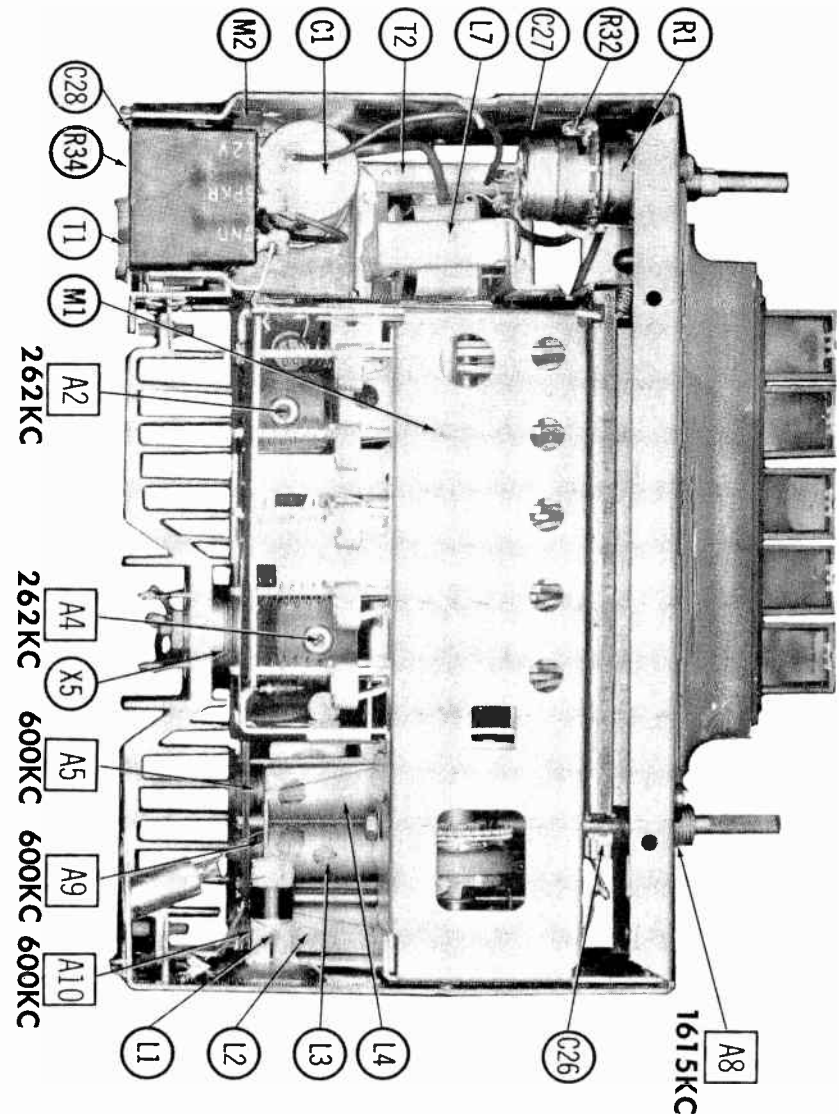
(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Knob - Tuning, Volume	1355878	Push Button	7276507
Knob - Tone	1355408	Dial Glass	7284058
Knob - Dummy	1355407		

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8861 (3/8 In.) or 8870 (3/4 In.)

CHASSIS—TOP VIEW





PHOTOFACT[®] with

CIRCUITRACE[®]



TRADE NAME : Buick Model 980655
 Late Production 1963 Buick
 SUPPLIER: (Parts) United Delco Distributors

TYPE SET : 6 Transistor AM Receiver

POWER SUPPLY : 12 Volt Storage Battery

RATING : 2.2 Amp. @12.6VDC

TUNING RANGE: BROADCAST 540 - 1615KC

ALIGNMENT INSTRUCTIONS

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

A1, A2, A3, A4, A5, A9, A10 .. GENERAL CEMENT #5009, 8728A, 8987
 WALSCO #2531X, 2536
 A6, A7, A8..... GENERAL CEMENT #9087, 8290, 8868
 WALSCO #2525, 2528, 2587

PUSH-BUTTON ADJUSTMENT

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

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point Δ , low side to ground.	262KC (400% Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
Check setting of oscillator coil core (A5). Rear of core should be 1 3/8" from mounting end of coil form.						
2.	High side thru 82mmf to antenna receptacle, low side to ground.	1615KC	High Freq. End Stop.	Output Meter across voice coil.	A6, A7, A8	Adjust for maximum.
3.	"	600KC	600KC Signal.	"	A9, A10	Adjust for maximum. Repeat step 2.
With radio installed in car and antenna extended, tune in a weak station near 1000KC and adjust A8 for maximum output.						

REMOVAL INSTRUCTIONS

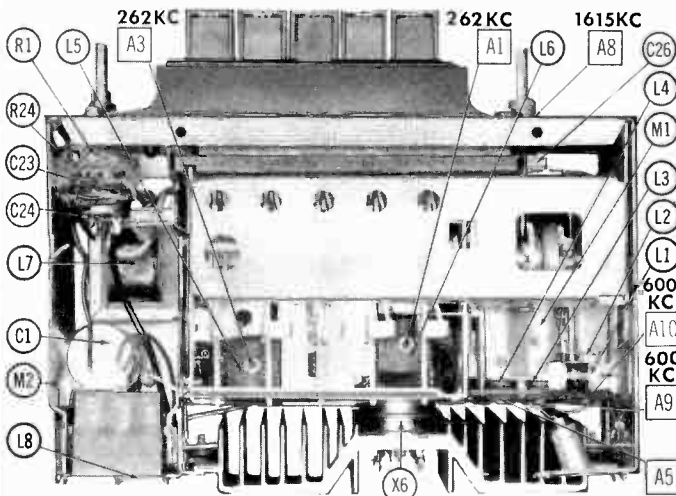
NOTE: To replace transistors, remove radio.

RADIO

1. Remove ash tray.
2. Using 3/8" wrench, remove 2 screws from bottom of radio and 2 nuts from rear of trim plate.
3. Using 5/8" wrench, remove 2 nuts from control bushings. Remove trim plate.
4. Slide radio out front of instrument panel.
5. Disconnect speaker connector and antenna lead.

SPEAKER

1. Use 3/8" wrench and remove 4 nuts. Remove speaker.



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

PARTS LIST AND DESCRIPTION

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

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	DS-24	RF Amp.	DS-25	GE-1	2N1637	PNP
X2	DS-25	Converter	DS-25	GE-1	2N1639	PNP
X3	DS-22	IF Amp.	DS-25	GE-1	2N1638	PNP
X4	DS-45	AF Amp.	DS-46	GE-8		NPN
X5	DS-46	AF Amp.	DS-46	GE-8		NPN
X6	DS-501	Output	DS-501	GE-4		PNP

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	DELCO PART No.	REPLACEMENT DATA
K1	Det. Filter	1000Ω, .001mfd, .001mfd	7287253 ①	① Some versions may use individual components.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	RF Choke(6.2uh)	7281946	BC-565	4610	RTC-8520	T859	① Part of M1
L2	Ant.	7281716 ①					
L3	RF	7282046 ①					
L4	Osc.	7281717 ①					
L5	Input IF	1221856					
L6	Output IF	1221857					

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	850	16	7282272	AFH3-54-30		XC3-6.1		WP300.7A	TVL-3021
B	400	16							
C	4	11.5AC							
C2	30	6	7278896	PTT27	NLW30-15	MT1-13	MLV30-6	TT6X30	TE-1092
C3	10	12	7283834	CRE407	NLW10-15	MT1-6	MLV10-12	TT12X10	TE-1128
C4A	100	3	7286539	BCD15X100/100	EC PAN7			PET-3400	VLS2115
B	100	3							

CHOKE (AUDIO OUTPUT)

ITEM No.	INDUCTANCE	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L7	29.5MH	7282278					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L8	1.4A	.6 Ω	8MH	1221623	C-4095	TC-2	TR-154		

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALLAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	.047 75V		BE2S47	DDA-503	WMF1S47	IDP-2-473	PVC1147	2PS-S47
C11	.047 75V		BE2S47	DDA-503	WMF1S47	IDP-2-473	PVC1147	2PS-S47
C12	125-300	#7281932						
C13	91 N750 10%	#7280995		TCN-91				
C14	.0022 75V		P288N-0022	CF-222	WMFID22			192P18292
C15	.022 75V		BE2S22		WMF1S22	IDP-2-223	PVC1122	2PS-S22
C16	225-325	#7281933						
C17	180 N470 5%	#7284768						
C18	.0047 100V 10%			CF-472	JB6D47			
C19	.047 75V		BE2S47	DDA-503	WMF1S47	IDP-2-473	PVC1147	2PS-S47
C20	.047 75V		BE2S47	DDA-503	WMF1S47	IDP-2-473	PVC1147	2PS-S47
C21	120 NPO 5%			DTZ-120	C10T12C		CNO-312	10TCC-T12
C22	.001 10%		DI-1000	DD-102	5R5DI	CCD-102	GP210	10TS-D10
C23	.033 75V		P288N-033		WMF1S33	IDP-1-333	PVC1133	192P33392
C24	.39 3V	#7286580						
C25	.1 16V		TTD-1	UK20-104	HCC25104Z			HY550
C26		#7281971						

Delco Part Number

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner	7281697	
M2	Spark Plate		
M3	AVC Det.	DS-27	
M4	AVC Det.	DS-27	
M5	Audio Det.	DS-27	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Glass, Dial	7280012	Push Button, U	7283756
Knob, Tuning or Volume	1355878	Push Button, I	7283757
Knob, Dummy or Tone	1355481	Push Button, C	7283758
Push Button, B	7283755	Push Button, K	7283759

CONTROLS

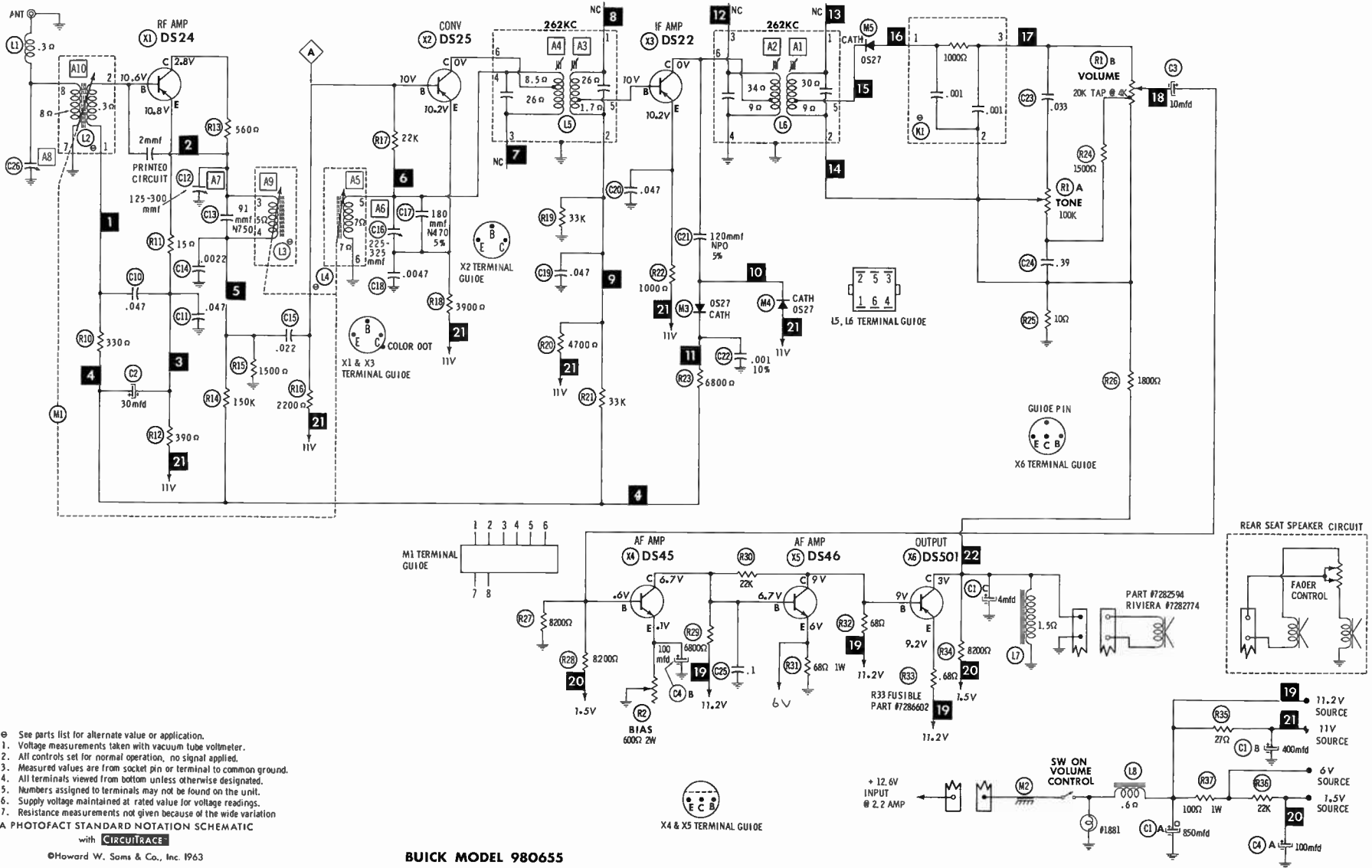
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			DELCO PART No.	CENTRALLAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
RIA	Tone	100K	7286594				
B	Volume, Switch	20K 4K Tap					
R2	Bias	600Ω 2W	7286601			110-600	PFL-600

WIRING DATA

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

BUICK MODEL 980655

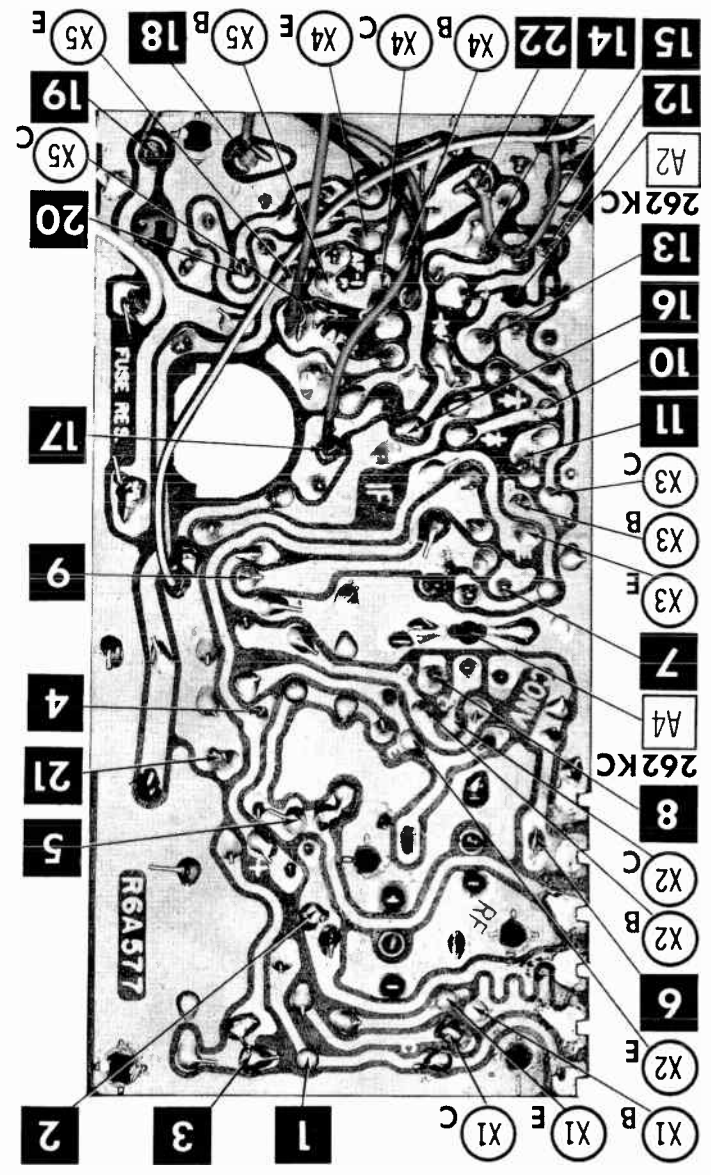
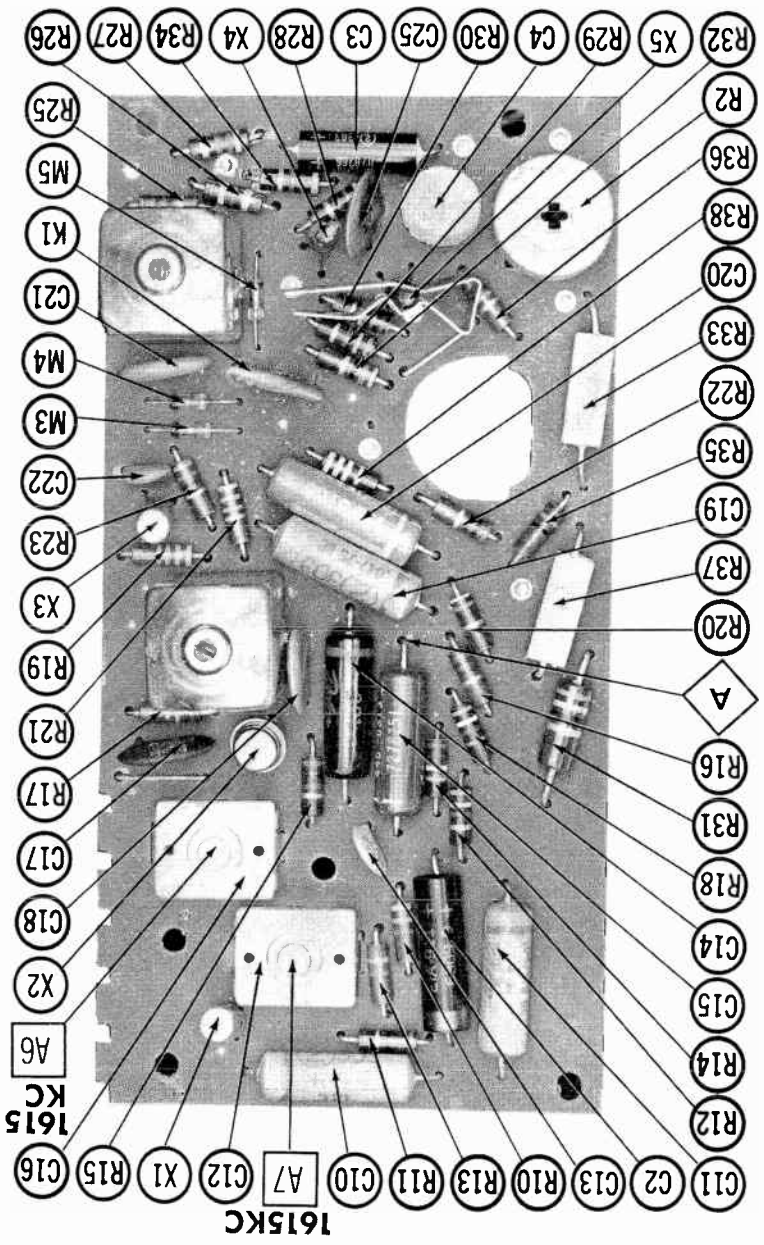


Ⓞ See parts list for alternate value or application.
 1. Voltage measurements taken with vacuum tube voltmeter.
 2. All controls set for normal operation, no signal applied.
 3. Measured values are from socket pin or terminal to common ground.
 4. All terminals viewed from bottom unless otherwise designated.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

A PHOTOFACT STANDARD NOTATION SCHEMATIC
 with **CIRCUITRACE**

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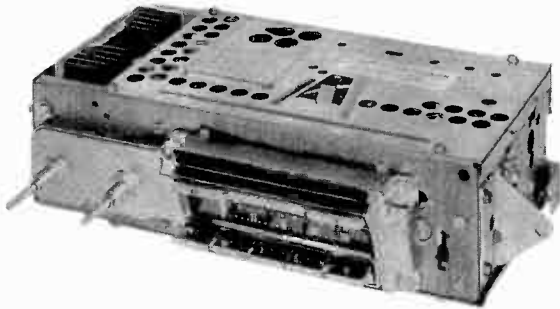
BUICK MODEL 980655





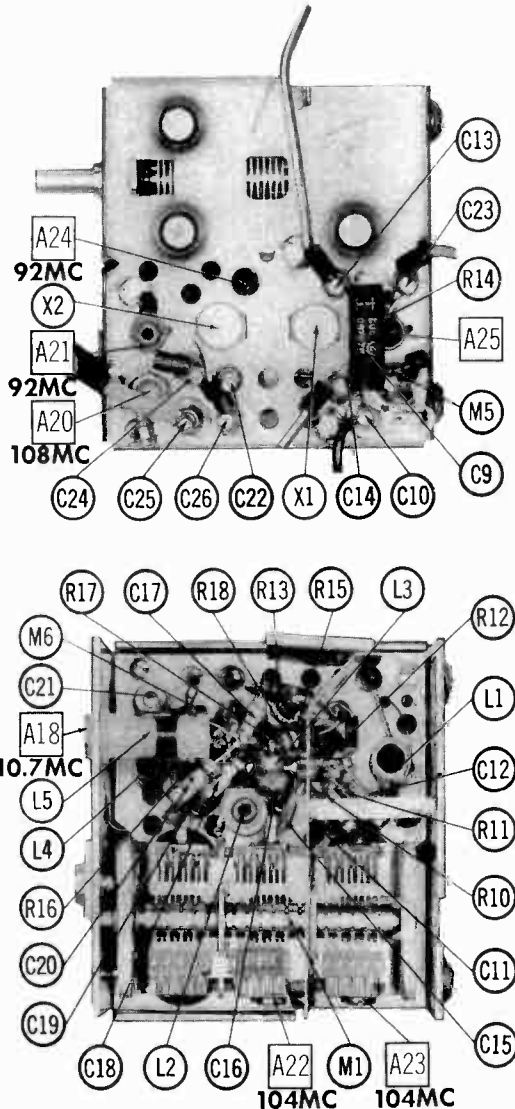
PHOTOFACT[®] with

CIRCUITRACE[®]



TRADE NAME : Cadillac Model 7283295 (For 1963 Cadillac)
 SUPPLIER : United Delco Distributors
 TYPE SET : 9 Transistor AM-FM Receiver
 POWER SUPPLY : 12 Volt Storage Battery
 RATING : 1. 4A mp. @ 12. 6VDC
 TUNING RANGE : BROADCAST 535-1615KC
 FREQ MOD 88-108MC

CADILLAC MODEL 7283295



REMOVAL INSTRUCTIONS

NOTE: To replace tubes or transistors, remove radio.

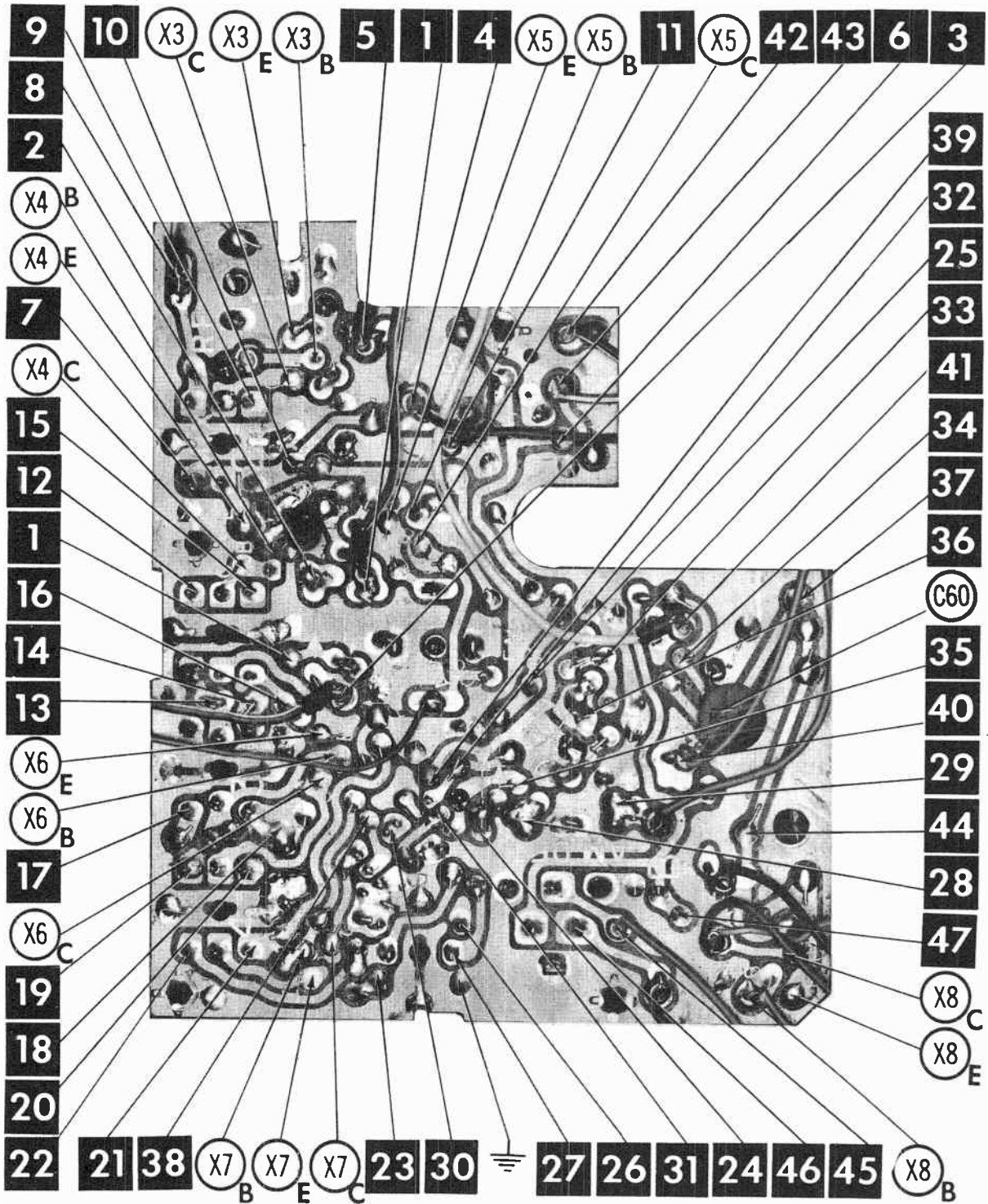
RADIO

1. Remove one large and 3 smaller screws from top of lower steering column cover.
2. Convertibles only: Disconnect electrical connector from rear of top control switch.
3. Remove 5 screws from bottom of lower steering column cover. Remove cover.
4. Disconnect left cigar lighter connector.
5. Loosen radio knob set screws with Allen wrench and remove knobs.
6. Use 1/2" spanner wrench and remove control shaft nuts.
7. Disconnect antenna, foot control unit, and 4-way connector.
8. Remove 7 Phillips head screws from glove box bottom front. Remove box.
9. Remove screw holding radio to rear support bracket.
10. If equipped, remove air conditioner center flange and duct boot.
11. Lower radio, disconnect dial lamp. and remove radio thru glove box opening.

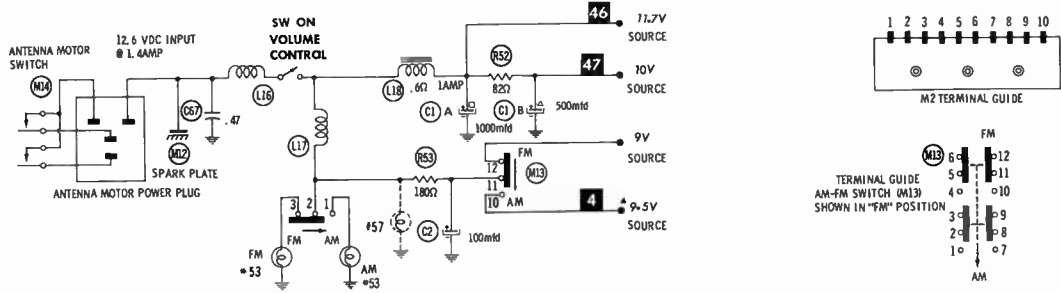
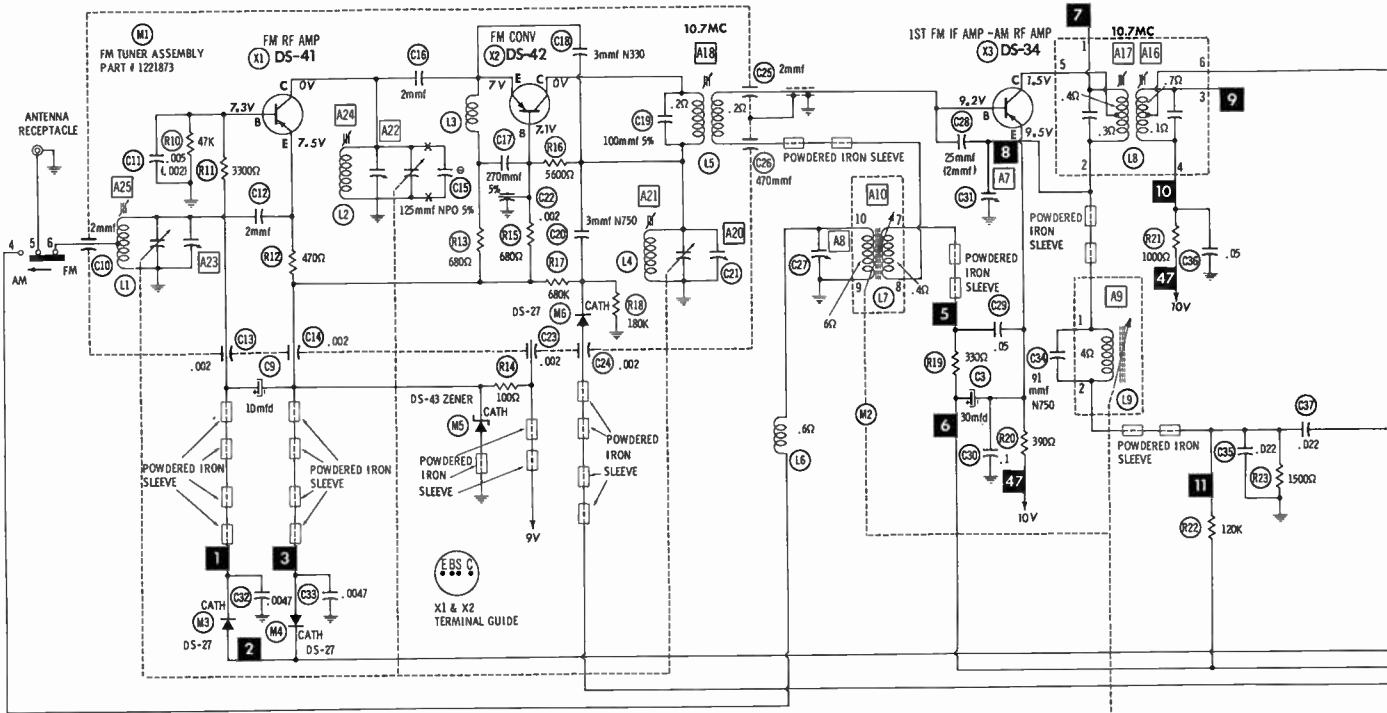
SPEAKER

1. Remove 3 screws in each windshield molding and remove moldings.
2. If equipped, remove press fit On-Off button of Cruise Control. Remove 2 screws holding Control escutcheon to upper instrument panel cover. Remove escutcheon.
3. Remove 5 screws holding upper panel cover to lower panel cover. (3 above instrument cluster and 2 inside top of glove box.)
4. Raise upper panel and disconnect map lamp and Guide-Matic connectors.
5. Remove cover by pulling toward rear to disengage 4 hooks at front of cover.
6. Remove four 3/8" nuts holding speaker to cowl bracket.
7. Perform step 1 thru 4 under Radio above.
8. Disconnect speaker lead and remove speaker and support.

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



A Howard W. Soms CIRCUITTRACE® Photo



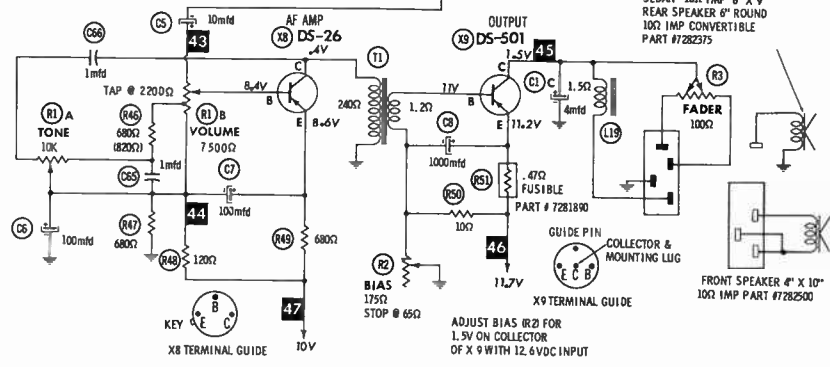
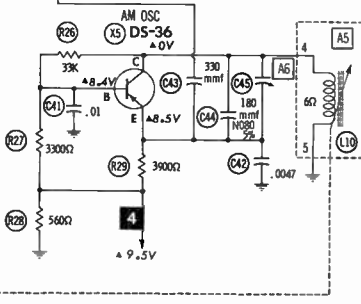
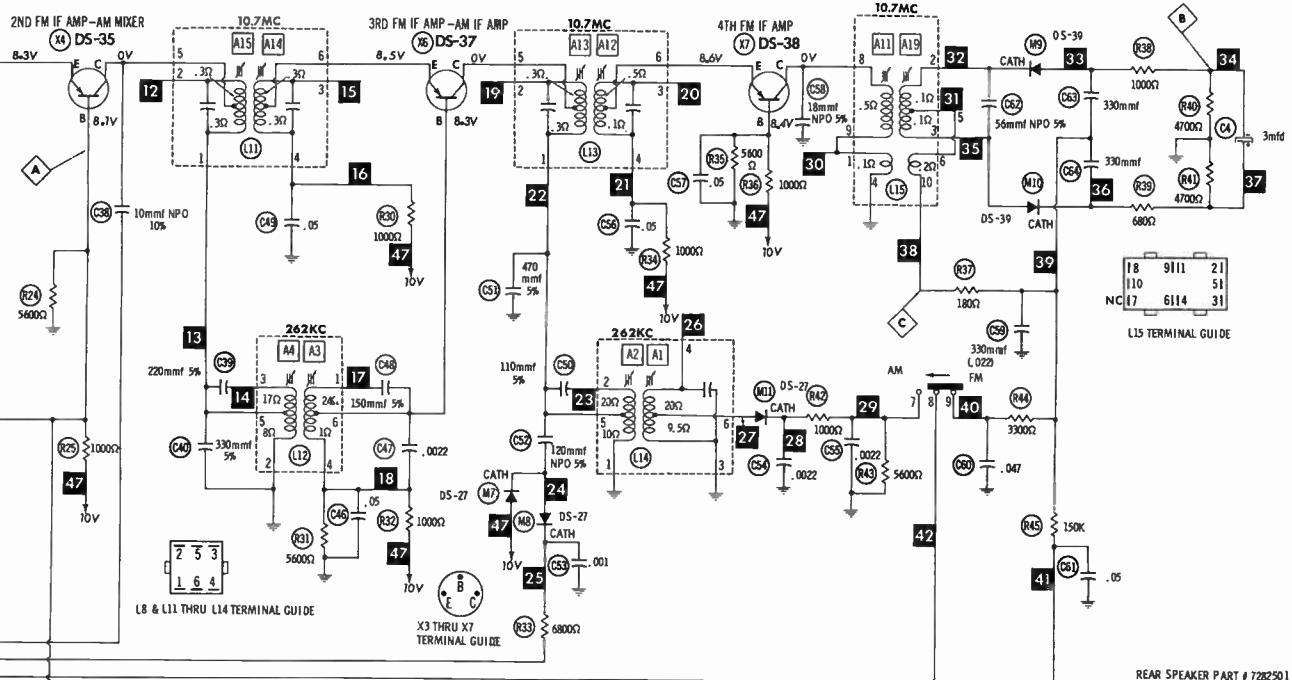
ALL VOLTAGES TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED

▲ MEASURED IN "AM" POSITION

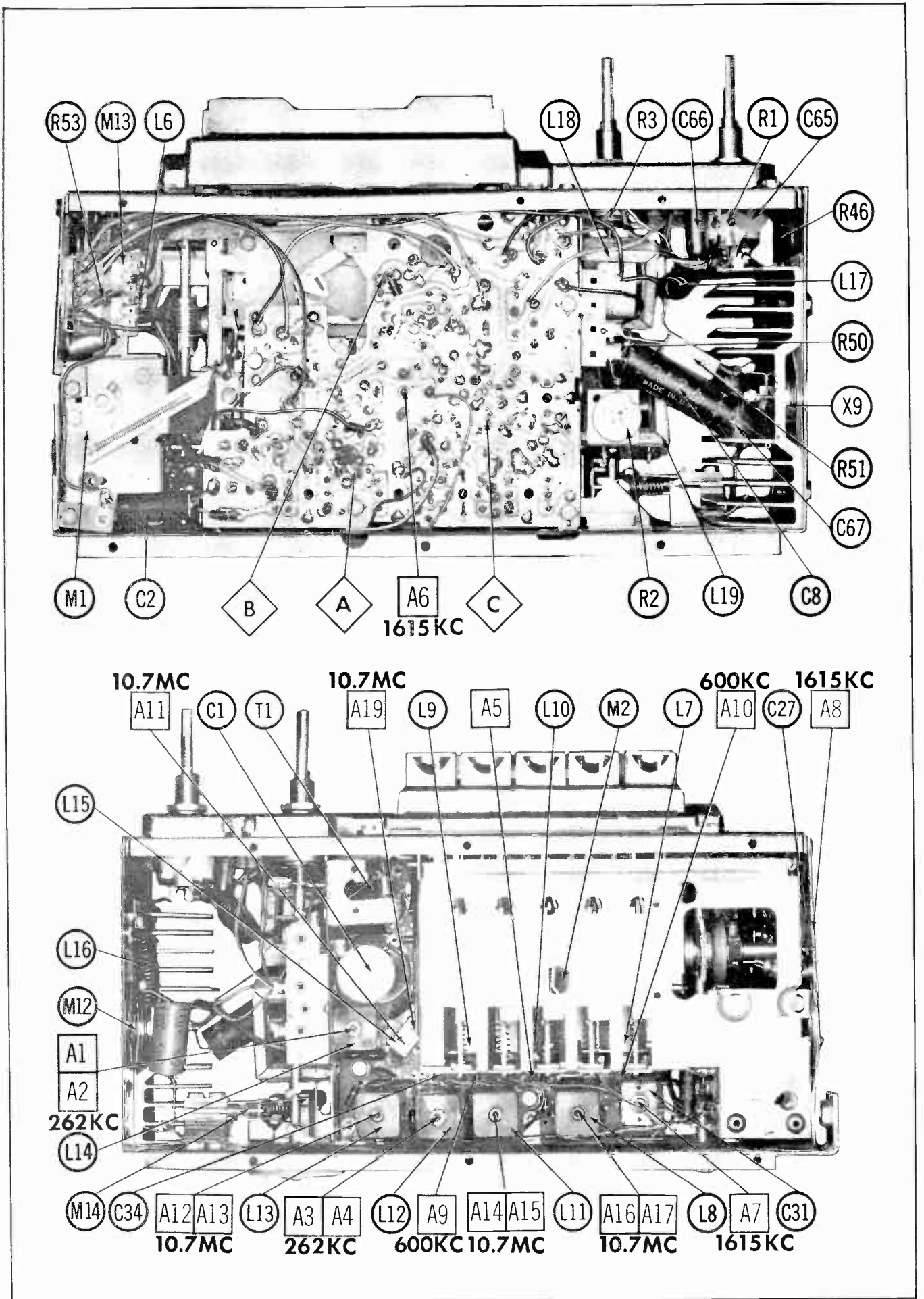
- ① See parts list for alternate value or application.
- 1. Voltage measurements taken with vacuum tube voltmeter.
- 2. All controls set for normal operation, no signal applied.
- 3. Measured values are from socket pin or terminal to common ground.
- 4. All terminals viewed from bottom unless otherwise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

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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CADILLAC MODEL 7283295



ALIGNMENT INSTRUCTIONS

Check for specified source voltage.
Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: A1 thru A10, A20, A22, A23

All Thru A19 A21, A24, A25	GENERAL CEMENT #8290, 8868, 9087 WALSCO #2525, 2528, 2587 GENERAL CEMENT #8282, 8606, 9302 WALSCO #2543, 2544, 2588 GENERAL CEMENT #9296, 9297, 9304 WALSCO #2510, 2546, 2547
-----------------------------------	--

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1. High side thru .1mf to point \diamond , low side to ground.	282KC (400% Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
Check setting of oscillator coil core (A5). Rear of core should be 1 5/8" from mounting end of coil form.					
2. High side thru 82mmf to antenna receptacle, low side to ground.	1615KC	High Freq. End Stop.	Output Meter across voice coil.	A6, A7, A8	Adjust for maximum.
3. " " "	600KC	600KC Signal	"	A9, A10	Adjust for maximum. Repeat step 2.

With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.

FM ALIGNMENT USING AM SIGNAL GENERATOR - SELECTOR IN FM POSITION

High side thru 68mmf to Ant. Terminal, low side to ground.

GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MC (Unmod.)	Point of non-interference.	DC probe of VTVM to point \diamond ; common to ground.	All thru A18	Adjust for maximum.
"	"	DC probe to point \diamond ; common to chassis.	A19	Adjust for zero reading. A positive or negative reading will be obtained on either side of the correct setting.
108MC (Unmod.)	108MC	DC probe of VTVM to point \diamond ; common to ground.	A20	Adjust for maximum.
92MC	92MC	"	A21	"
104MC (Unmod.)	104MC	DC probe of VTVM to point \diamond ; common to ground.	A22, A23	Adjust for maximum.
92MC	92MC	"	A24, A25	"

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

High side thru 68mmf to Ant. Terminal, low side to ground.
Use 60v frequency modulated signal with 450KC sweep. Use 120v sawtooth voltage in scope for horizontal deflection.

GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MC (450KC Swp.)	Point of non-interference.	Vert. amp. of scope to point \diamond ; low side to ground.	All thru A18	Disconnect stabilizing capacitor C4. Adjust for maximum gain and symmetry of response similar to Fig. 1 with marker as shown. Reconnect C4.
"	"	Vert. amp. to point \diamond ; low side to ground.	A19	Adjust to place marker at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A 11 for maximum amplitude and straightness of crossover lines.

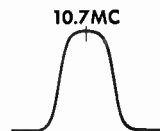


FIG. 1

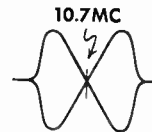
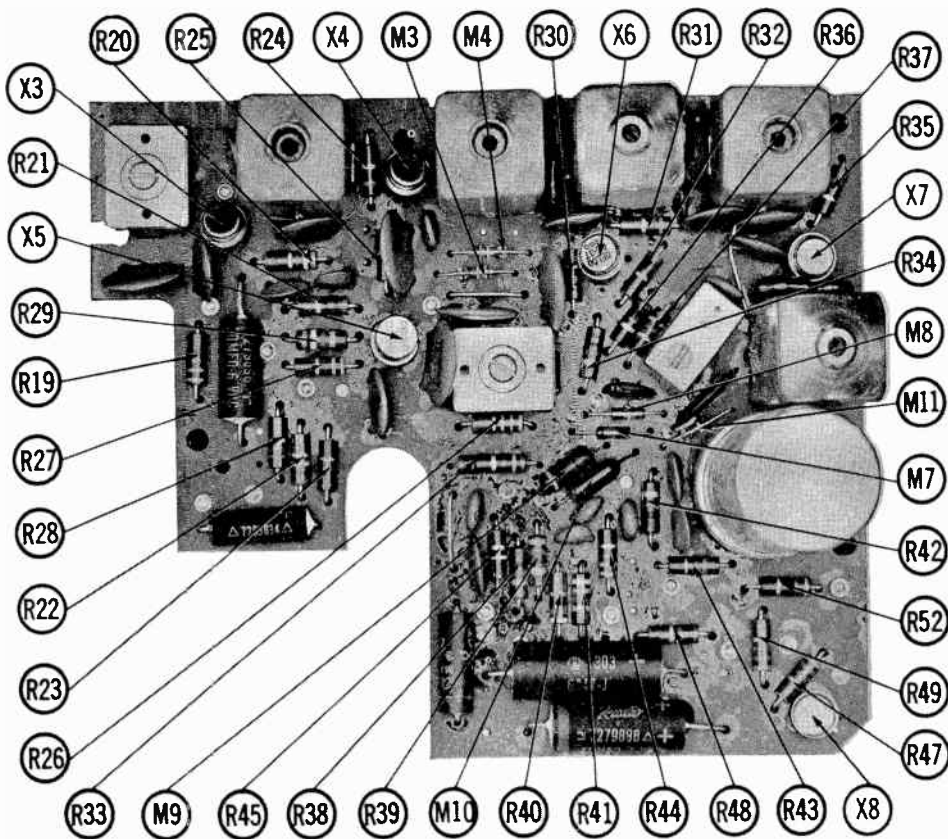
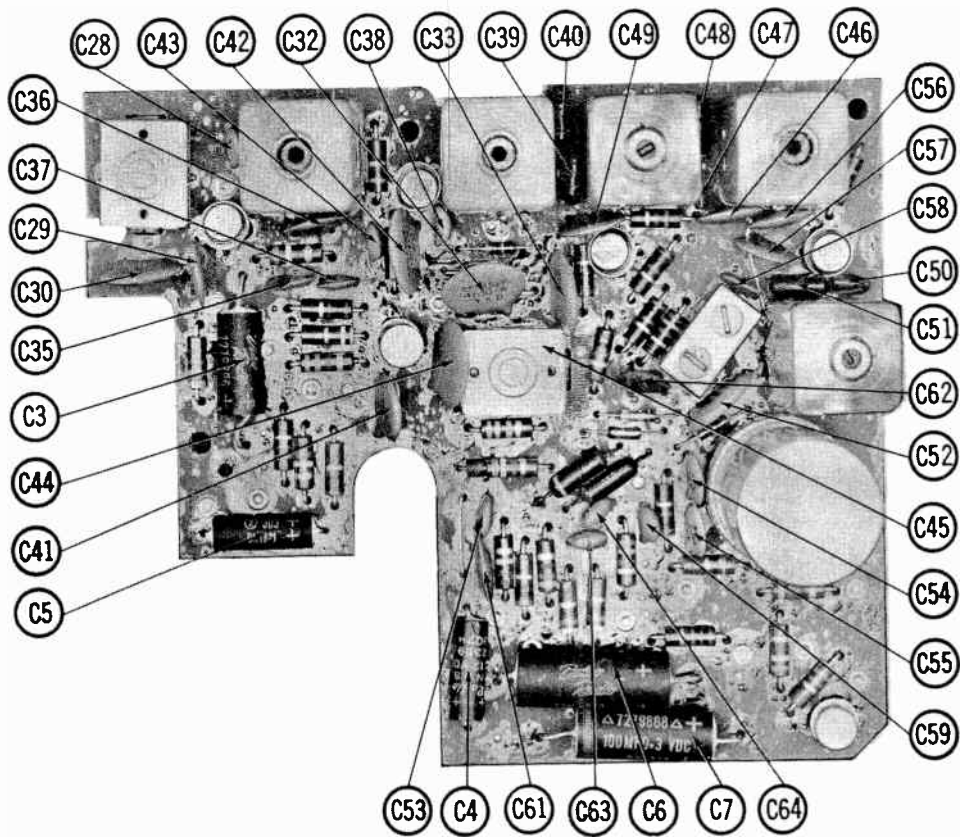


FIG. 2

PUSH-BUTTON ADJUSTMENT

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



PARTS LIST AND DESCRIPTION

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	DS-41	FM RF Amp.	DS-41			PNP
X2	DS-42	FM Conv.	DS-41			PNP
X3	DS-34	1st FM IF-AM RF Amp.	DS-34			PNP
X4	DS-35	2nd FM IF-AM Mixer	DS-34			PNP
X5	DS-36	AM Oac.	DS-25	GE-1	2N1639	PNP
X6	DS-37	3rd FM IF-AM IF	DS-34			PNP
X7	DS-38	4th FM IF	DS-34			PNP
X8	DS-26	AF Amp.	DS-26	GE-2	2N591	PNP
X9	DS-501	Output	DS-501	GE-4		PNP

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA							
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.		
C25	2									
C26	470									
C27										
C28	25	(2mm)*	BPD-000025	DD-250	LA10Q25-SL	CCD-250		GP-425	5GA-Q25	
C29	.05	16V		DDA-503					HU535	
C30	.1	16V		DDA-104					HY550	
C31										
C32	.047			DD-503			CCD-503	GP-150	5HK-850	
C33	.047			DD-503			CCD-503	GP-150	5HK-850	
C34	91	N750								
C35	.022			DD-203	BYA682	CCD-203			5HK-822	
C36	.05	16V		DDA-503					HY535	
C37	.022			DD-203	BYA682	CCD-203		5HK-822		
C38	10	NPO 10%	NPO-DI 10	DTZ-10	C10Q1C	CCTO-100		CNO-410	10TCC-Q10	
C39	220	5%		DTZ-220				CNO-322	10TCC-T22	
C40	330	5%							10TCC-T33	
C41	.01		BPD-01	DD-103	BYA10S1	CCD-103		B-110	5HK-810	
C42	.0047		BPD-0047	DD-472	BYA10D47	CCD-472		B-247	5HK-D47	
C43	330		DI-330	DD-331	L10T33	CCD-331		GP333	10TS-T33	
C44	180	N080 5%							10TCN-T18	
C45										
C46	.05	16V		DDA-503					HY535	
C47	.0022		DI-2200	DPR-2200J	IR5D22	CCD-222		GP222	10TS-D22	
C48	150	5%		DTZ-150	C10T15C			CNO-315	10TCC-T15	
C49	.05	16V		DDA-503					HY535	
C50	10	5%								
C51	470	5%								
C52	120	NPO 5%								
C53	.001		BPD-001	DD-102	C10T12C	CCD-102		CNO-312	10TCC-T12	
C54	.0022		DI-2200	CPR-2200J	IR5D22	CCD-222		GP222	5HK-D10	
C55	.0022		DI-2200	CPR-2200J	IR5D22	CCD-222		GP222	10TS-D22	
C56	.05		BPD-05	DD-503		CCD-503		GP-150	5HK-850	
C57	.05		BPD-05	DD-503		CCD-503		GP-150	5HK-850	
C58	18	NPO 5%						CNO-418	10TCC-Q18	
C59	330		DI-330	DD-331	L10T33	CCD-331		GP333	10TS-T33	
C60	.047	25V		DA-503				GP-150	5HK-850	
C61	.05		BPD-05	DD-503		CCD-503		CNO-456	10TCC-Q56	
C62	56	NPO 5%						GP333	10TS-T33	
C63	330		DI-330	DD-331	L10T33	CCD-331		GP333	10TS-T33	
C64	330		DI-330	DD-331	L10T33	CCD-331		GP333	HY135	
C65	1mfd	3V								
C66	1mfd	75V								
C67	.47	100V		CK-104	WMF1W1	IDP-5-105				

* Alternate Value Note 1 Not used in some versions.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	1000	16	7283675						PCL5302L 8
B	500	16							
C	1L5RMS								
C2	100	16	7283372	PTT86	NLW100-25	MT1-20	BL2050	TT25X100	TL-1162
C3	30	6	7279896	PTT27	NLW30-8	MT1-5	BL1321	TT6X30	TE-1092
C4	3	6	7282359	PTT3	NLW3-15	MT1-3	MLV5-3	TT6X3	TE-1052
C5	10	12	7823834	PTT53	NLW10-15	MT1-5	BL1241	TT12X10	TL-1128
C6	100	16	7283372	PTT86	NLW100-25	MT1-20	BL2050	TT25X100	TL-1162
C7	100	3	7279888	PTT13	NLW100-3	MT1-21	BL1610	TT-6X100	TL-1059.5
C8	1000	2	7285035	PRS1130	BR1000-6	QT1-32	BL2310	TC310	TVA-1104
C9	10	12	7283834	PTT53	NLW10-15	MT1-5	BL1241	TT12X10	TL-1128

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C10	2								
C11	.005	(.002)*	BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50	
C12	2		NPO-DI2.2	TCZ-2R2	C10V15C	CCTO-2R2	CNO-522	10TCC-V22	
C13	.002								
C14	.002								
C15	125	NPO 5%	Note 1						
C16	2			NPO-DI2.2	C10T12C	CCTO-121	CNO-312	10TCC-T12	
C17	270	125V 5%		TCZ-2R2	C10V15C	CCTO-2R2	CNO-522	10TCC-T12	
C18	3	N330		CPR-270J					
C19	100	125V 5%		CPR-100J				10TCS-V30	
C20	3	N750							
C21									
C22									
C23	.002								
C24	.002								

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA					
			DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA	Tone	10K	7283382	F1-10K, R14-7500				■ UE4415-S
B	Volume, Switch	7.5K		FF8014, RFS115,				
R2	Speaker Fader	2.2K Tap		RK-6, AK-26				
R3	Bias	100Ω	7282410					
		175Ω	1221422					
		65Ω Stop	(7275554)					

■ "STA-LOC" equivalent: FL44A, RU752T53, OS875A, IS1937, US41

CADILLAC MODEL 7283295

PARTS LIST AND DESCRIPTION (CONTINUED)

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

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	FM Ant.						↓ Part of M2
L2	FM RF						
L3	RF Choke						
L4	FM Osc.						
L5	1st FM IF						
L6	RF Choke (8uh)	7255738	BC-566	4611	RTC-8521	T822	
L7	AM Ant.	7282586 ①					
L8	2nd FM IF	1221860					
L9	AM RF	7282585 ①					
L10	AM Osc.	1221616					
L11	3rd FM IF	1221861					
L12	1st AM IF	1221858					
L13	4th FM IF	1221861					
L14	2nd AM IF	1221859					
L15	Ratio Det	7283623					
L16	"A" Lead Choke (1.4uh)	7241708					
L17	RF Choke (1.4uh)	7241708					

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	FM Tuner	1221873	⇒ Matched Pair
M2	AM Tuning Coils	7283463	
M3	AFC Det	DS-27	
M4	AFC Det	DS-27	
M5	Zener Diode	DS-43	
M6	AFC Det	DS-27	
M7	AVC Det	DS-27	
M8	AVC Det	DS-27	
M9	Ratio Det	DS-39	
M10	Ratio Det	DS-39	
M11	AM Det	DS-27	
M12	Spark Plate	7282370	
M13	Band Switch	7283318	
M14	Ant. Motor Switch	7271223	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	
L18	1A mp.	.6Ω	8mh	1221623	C-4095	TC-2	TR-154	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial, Calibrated	1221866	Push Buttons (Set of 5)	1221802
Dial, Glass	1479552	Belt, Manual Drive Pulley	7283393
Knob, Tuning or Volume	1480138	Pointer Assy.	1221801
Knob, Tone or Fader	1480179	Pulley, Drive Shaft (2)	7280176

CHOKE (AUDIO OUTPUT)

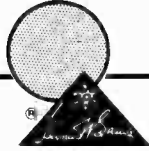
ITEM No.	INDUCTANCE	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L 19	29.5mh	7282278					

WIRING DATA

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

TRANSFORMER (DRIVER)

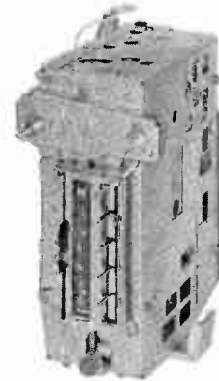
ITEM No.	TURNS RATIO		REPLACEMENT DATA				NOTES	
	PRI.	SEC.	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.		TRIAD PART No.
T1	10:	1	7283682					



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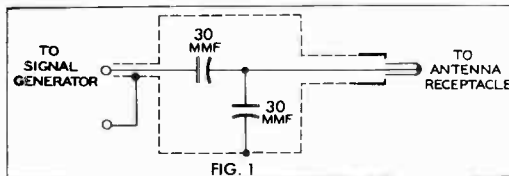
CIRCUITRACE®

TRADE NAME : Chevrolet Model 985396 (1963 Corvette)
 SUPPLIER : United Delco Distributors
 TYPE SET : 1 Tube - 5 Transistor AM Receiver
 POWER SUPPLY : 12 Volt Storage Battery
 RATING : 1.8 Amp. @ 12.6 VDC
 TUNING RANGE : BROADCAST 535 - 1615KC



ALIGNMENT INSTRUCTIONS

Check for specified source voltage. Use only enough generator output to provide a usable indication. Suggested Alignment Tools: A1, A2, A3, A4, A5, A9, A10... GENERAL CEMENT #5009, 8728A, 8987 WALSCO #2531X, 2536 A6, A7, A8..... GENERAL CEMENT #9087, 8290, 8868 WALSCO #2525, 2528, 2587					PUSH-BUTTON ADJUSTMENT 1. Pull button out. 2. Tune manually to desired station. 3. Press button in firmly. 4. Repeat for remaining buttons.
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1. High side thru .1mfd to point A , low side to ground.	262KC (400v Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
Check setting of oscillator coil core (A5). Rear of core should be 1 5/8" from mounting end of coil form.					
2. High side thru 82mmf to antenna receptacle, low side to ground.	1615KC	High Freq. End Stop.	Output Meter across voice coil.	A6, A7, A8	Adjust for maximum.
3. " " "	600KC	600KC Signal	"	A9, A10	Adjust for maximum. Repeat step 2.
With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.					



REMOVAL INSTRUCTIONS

RADIO

1. Pull off knobs.
2. Remove 5/8" nuts from control bushings.
3. Remove 3 Phillips head screws holding side panel.
4. Remove 3/8" nut from rear of radio.
5. Disconnect speaker connector and antenna lead.
6. Remove radio through panel opening.

SPEAKER

1. Disconnect "A" lead from speaker connector.
2. Remove four 5/16" nuts from speaker bracket.
3. Remove speaker and bracket through panel opening.

CHEVROLET MODEL 985396

PARTS LIST AND DESCRIPTION

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

TUBES

◆ AMPEREX ◆		GENERAL ELECTRIC ◆		RCA ◆		RAYTHEON ◆		SYLVANIA ◆	
ITEM No.	USE	TYPE		ITEM No.	USE	TYPE			
V1	Trigger	12AL8							

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	DS24*	RF Amplifier	DS-25	GE-1	2N1637	PNP
X2	DS25	Conv.	DS-25	GE-1	2N1639	PNP
X3	DS22*	IF Amplifier	DS-25	GE-1	2N1638	PNP
X4	DS26	AF Amplifier	DS-26	GE-2	2N591	PNP
X5	DS501	Output	DS-501	GE-4		PNP

* Manufacturer suggests replacing with DS-25.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
CLA	850	16							
B	400	16	7279775	AFH3-54-30				FPS300.75	PCLS-3021.2*
C	4	11.4AC							
C2	3	25	7282359	PTT-76	NLW3-25	MTI-3	BL1260	TT25X3	TE-1201.2
C3	100	3	7279888	PTT-13	NLW100-3	MTI-18	MLV100-3	TT6X100	TE-1059.5
C4	1000	2	7282789	PRS1130	BR-1000-6		BL2310	TC310	TVA-1104
C5	30	6	7279896	PTT27	NLW30-15	MTI-13	MLV30-6	TT6X30	TE-1092

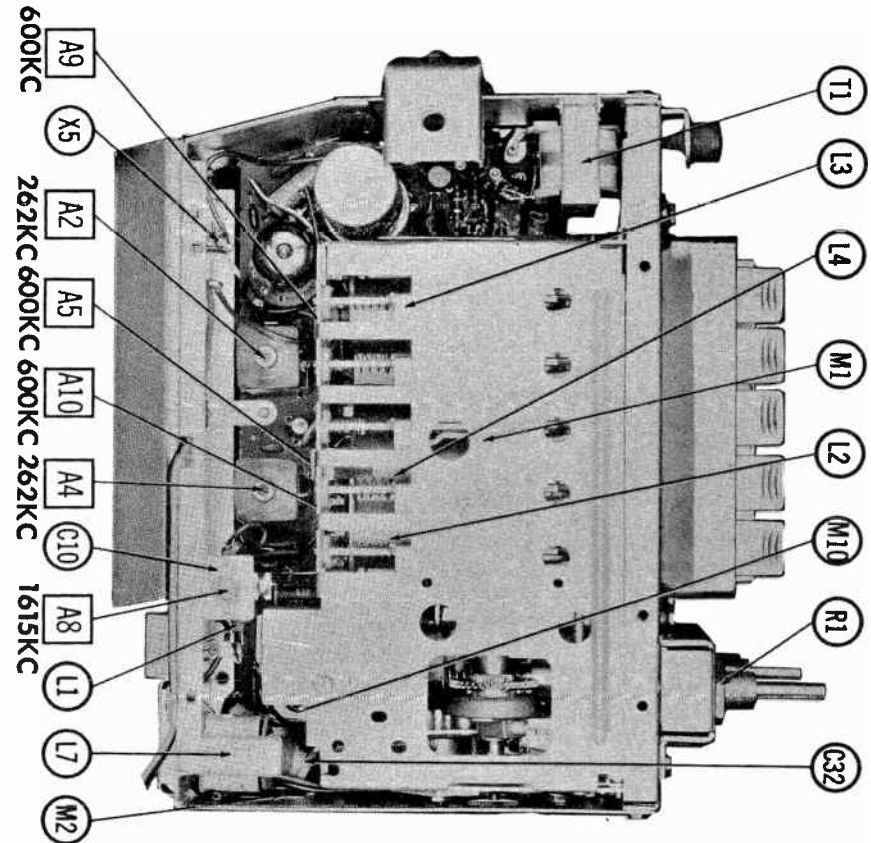
*Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMenco PART No.	MALLORY PART No.	SPRAGUE PART No.	
C10		#7282004							
C11	.047		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-847	
C12	.047		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-847	
C13	125-300	#7281932							
C14	91 N750	#7280995	TCN-91		C10Q91U				
C15	.0022		P288N-0022	DD-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22	
C16	.022		P288N-022	DDM-203	CUB4S22	IDP-1-223	GEM-4122	2TM-S22	
C17	30-160	#7282165							
C18	180 N080 5%	#7279821							
C19	.0047		DI-4700	DD-472		CCD-472		IDTS-D17	
C20	.047		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-847	
C21	.047		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-847	
C22	120 NPO		NPO-D1 120	DTZ-120			CNO-312	10TCC-T12	
C23	.001		DI-1000	DD-102	L10D1	CCD-102	GP210	10TS-D10	
C24	100 5%		1459-100	22R5T1		CM-15E-101	MCE235	MS-31	
C25	.0022		DI-2200	DD-222	L10D22	CCD-222	GP222	10TS-D22	
C26	.0022		DI-2200	DD-222	L10D22	CCD-222	GP222	10TS-D22	
C27	1mf			UK-105	HCC10474Z			HY-135	
C28	.1		P288N-1	DD-100	CUB2B10	2CP-4-154	GEM-2015	2TM-P15	
C29	100 5%		1459-100	22R5T1		CM-15E-101	MCE235	MS-31	
C30	100		D1-100	DD-101	L10T1	CCD-101	GP310	5GA-T10	
C31	.047		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-847	
C32	.47		P288N-47	DD-503	CUB2P47	IDP-4-474	GEM-2047	2TM-P47	

Delco Part Number.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTION (CONTINUED)

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

CONTROLS

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

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA					NOTES
			DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A B	Tone Volume & Switch	10K 7500K Tap @ 5K 175Ω (Stop @ 65Ω)	7282024					■ UE4427S
R2	Bias		1221422					

■ "STA-LOC" Equivalent: FL14A, RU752T53, OS887, IS1312, U842

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	RF Choke (8uh)	7255736	BC-566	4611	RTC-8521	T822	① Part of M1
L2	Antenna	7282586 ①					
L3	RF Coil	7282585 ①					
L4	Oscillator	1221616 ①					
L5	Input IF	1221856					
L6	Output IF	1221857					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L7	1.1A	.6Ω	8MH	1221623	C-4095		TR-154		

CHOKE (AUDIO OUTPUT)

ITEM No.	INDUCTANCE	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L8	29,5MH	7282278					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
		PRI.	SEC.				
T1	10: 1	7280915			TR-188 ①		① Use original channel.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		DELCO PART No.	QUAM PART No.	
SPI	6" x 9" PM 10Ω	7282256		

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner Assembly	7282309	450mmf
M2	Spark Plate	7271564	
M3	Sensitivity	DS-32	
M4	AVC	DS-27	
M5	AVC	DS-27	
M6	Detector	DS-33 (DS-27)	
M7	Search	DS-32	
M8	Trigger Bias	DS-31	
M9	Search Tuning Relay	7282263	
M10	Solenoid & Plunger Assembly	1221409	
M11	Recycle Switch	7288030	
M12	Pushbar Switch	7279443	
M13	Sensitivity Switch	7282014	
M14	Antenna Switch	7271223	
M15	Foot Control Switch	7280776	

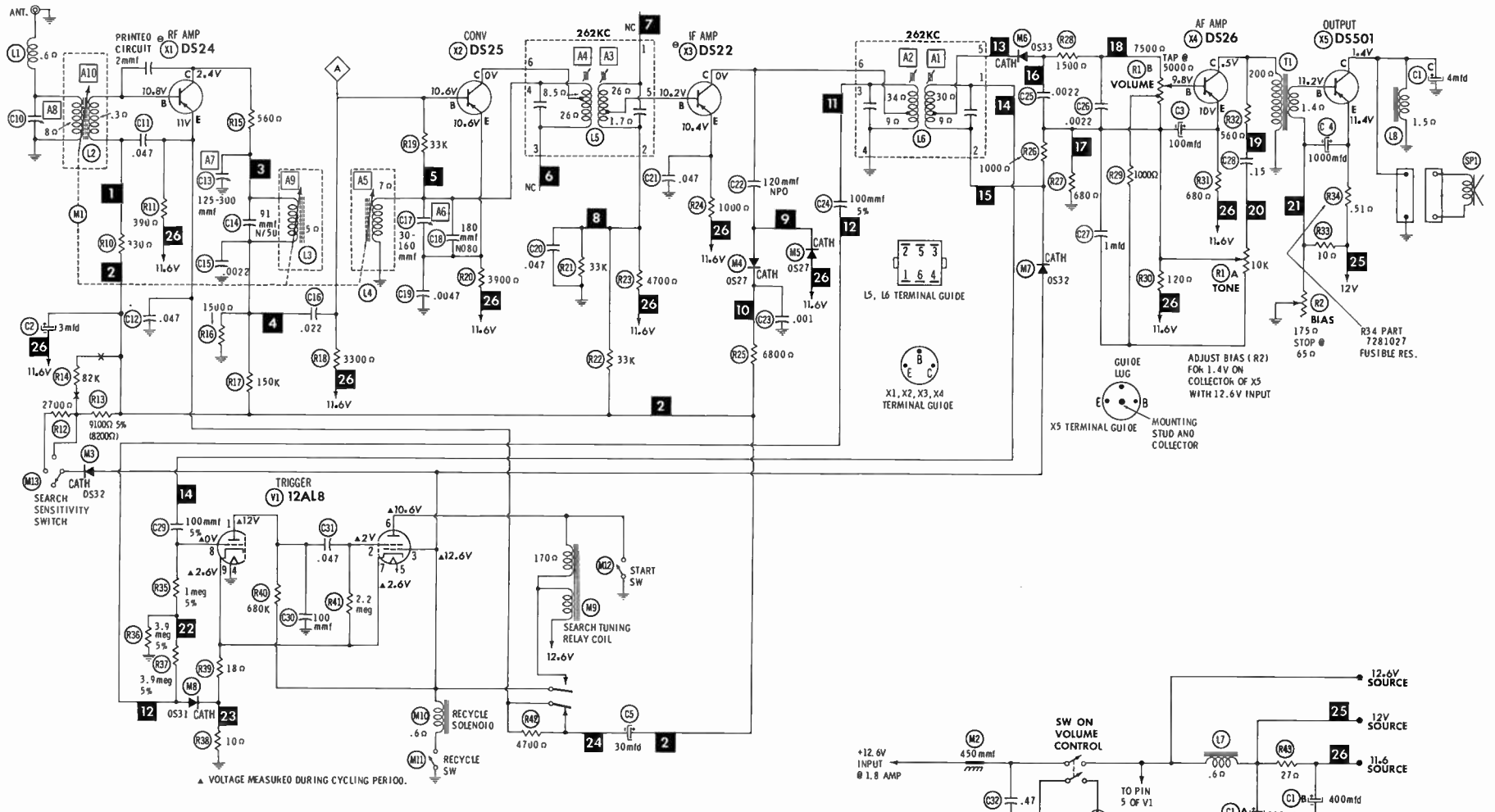
CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial Glass	7282017	Pointer Assembly	1221824
Knob - Tuning, Volume	7277055	Push Button (Set of 5)	1221825
Knob - Tone, Speaker	1480179		

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8861 (3/8 In.) or 8870 (3/4 In.)

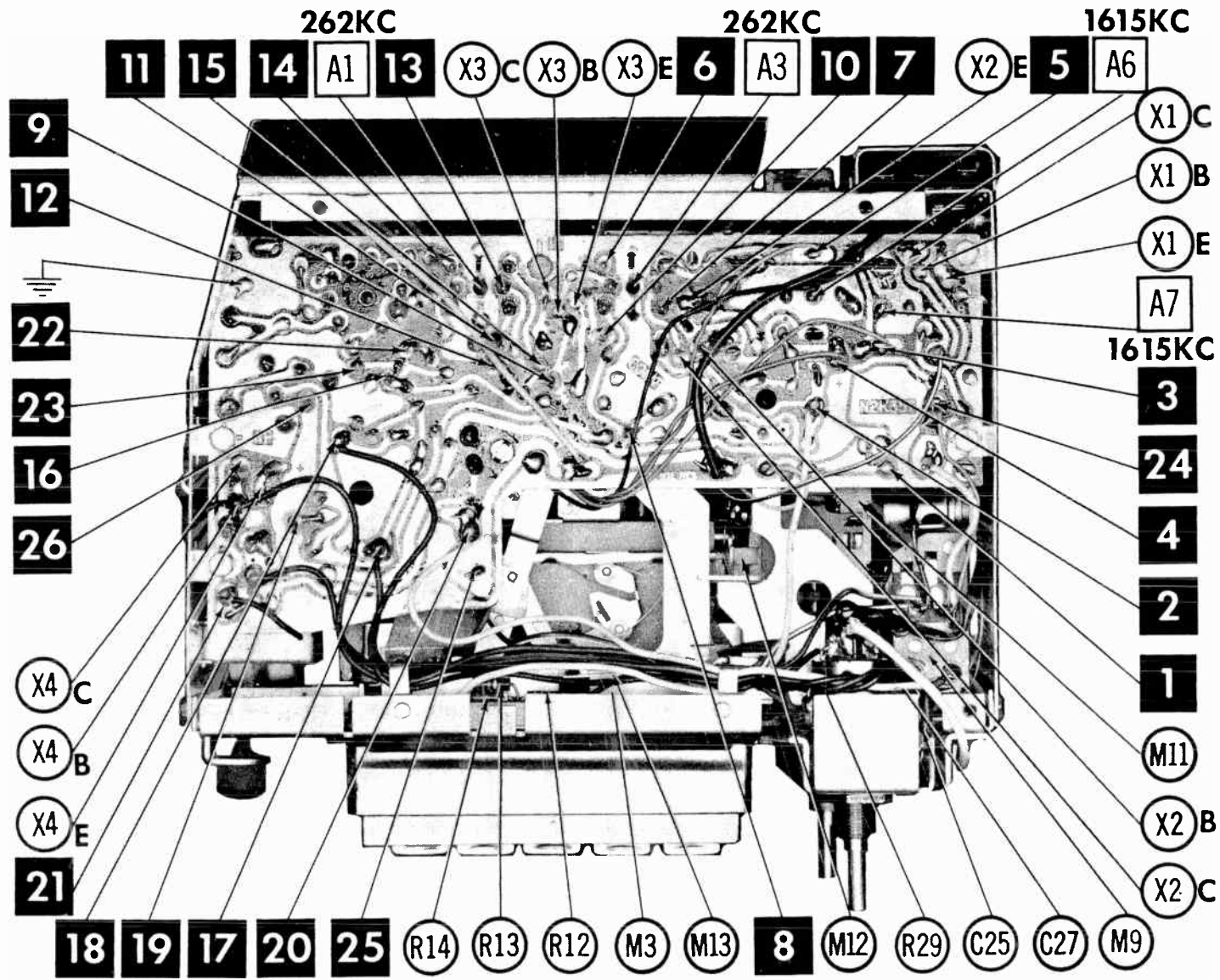


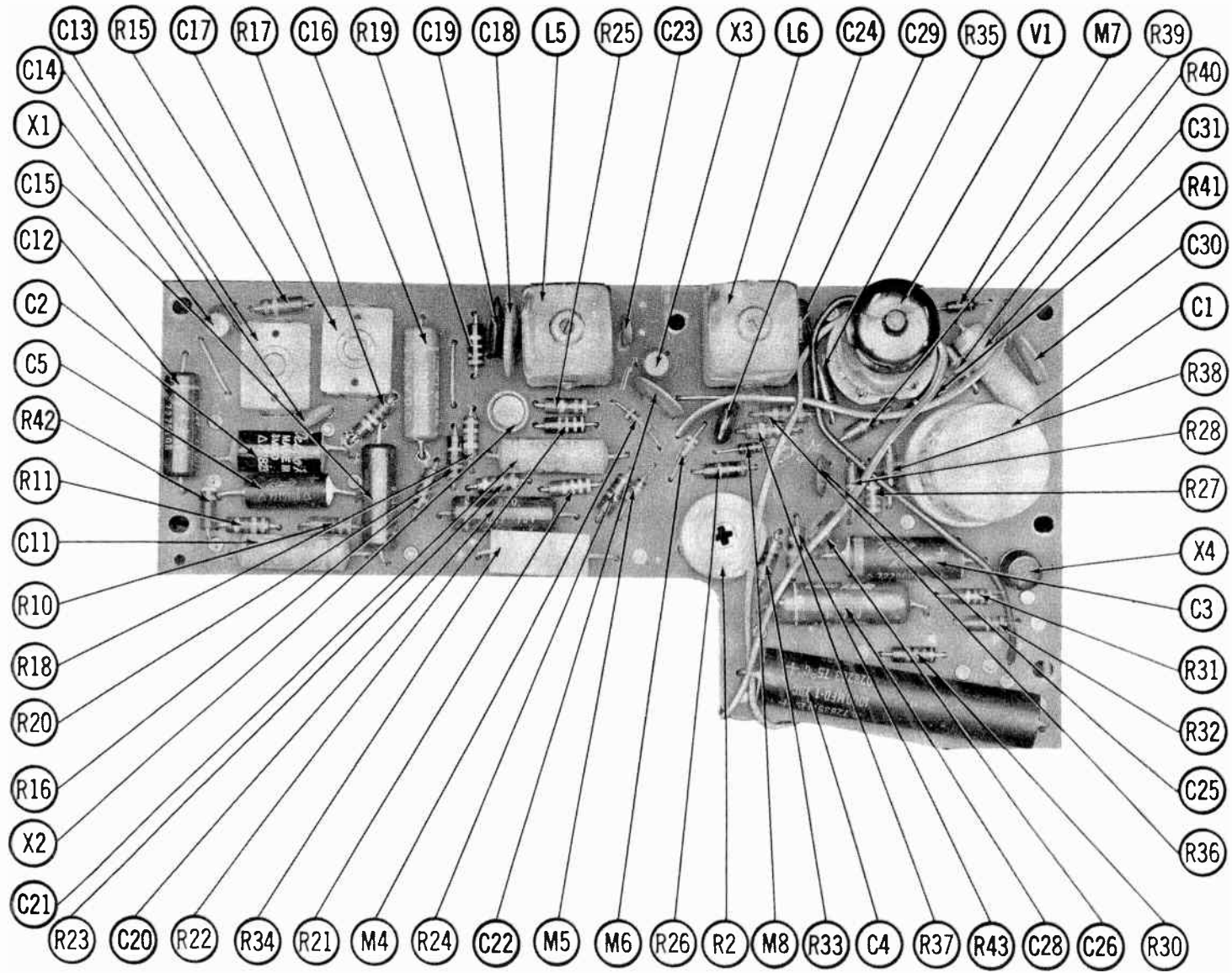
- See parts list for alternate value or application.
- 1. Voltage measurements taken with vacuum tube voltmeter.
- 2. All controls set for normal operation, no signal applied.
- 3. Measured values are from socket pin or terminal to common ground.
- 4. All terminals viewed from bottom unless otherwise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

A PHOTOFAC STANDARD NOTATION SCHEMATIC
with **CIRCUITRACE**

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CHEVROLET MODEL 985396







PHOTOFACT[®] with

CIRCUITRACE[®]

TRADE NAME : Chevrolet Model 985471 (1963 Chev. Trucks)
 GMC Model 2234003 (1963 GMC Trucks)

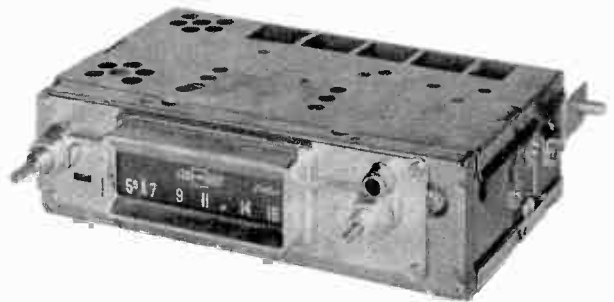
SUPPLIER: (Parts) United Delco Distributors

TYPE SET : 5 Transistor AM Receiver

POWER SUPPLY: 12 Volt Storage Battery

RATING: .84 Amp. @12.6 VDC

TUNING RANGE: BROADCAST 540 — 1615KC



ALIGNMENT INSTRUCTIONS

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

A1 thru A5, A9, A10....GENERAL CEMENT #5009, 8728A, 8987
 WALSCO #2531X, 2536
 A6, A7, A8..... GENERAL CEMENT #8290, 8868, 9087
 WALSCO #2525, 2528, 2587

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point A , low side to ground.	262KC (400v Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
Check setting of oscillator coil core (A5). Rear of core should be 1 3/8" from mounting end of coil form.						
2.	High side thru 82mmf to antenna receptacle, low side to ground.	1615KC	High Freq. End Stop.	Output Meter across voice coil.	A6, A7, A8	Adjust for maximum.
3.	"	600KC	600KC Signal	"	A9, A10	Adjust for maximum. Repeat step 2.
With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.						

REMOVAL INSTRUCTIONS

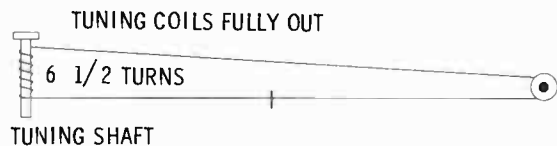
RADIO

1. Pull off knobs.
2. Remove 5/8" nuts from control bushings.
3. Disconnect speaker connector and antenna lead.
4. Remove 3/8" bolt from bottom of radio.
5. Remove radio from under instrument panel.

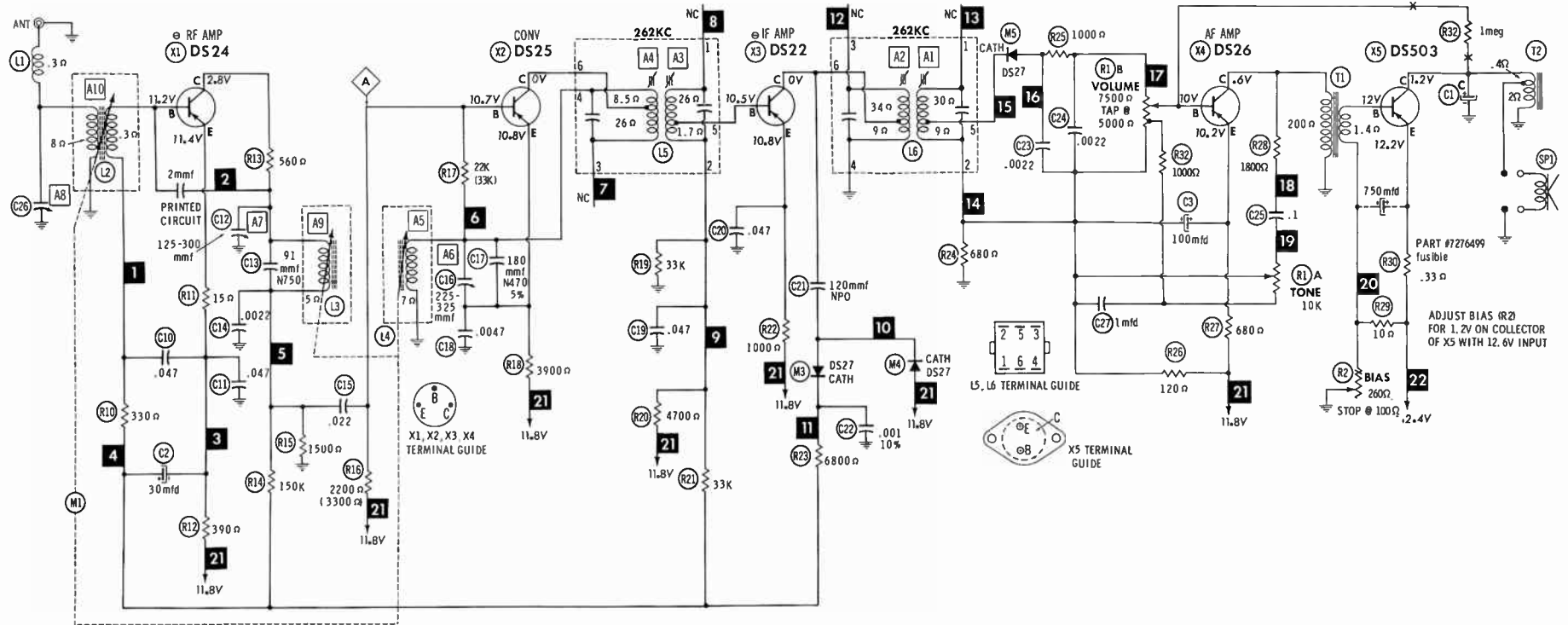
SPEAKER

1. Disconnect "A" lead from speaker connector.
2. Remove 5/16" head screws holding speaker bracket.
3. Remove speaker and bracket.

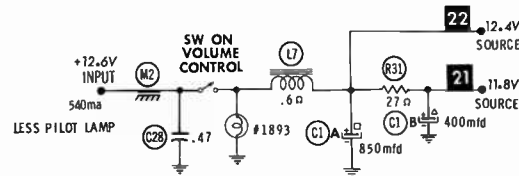
DIAL CORD STRINGING



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

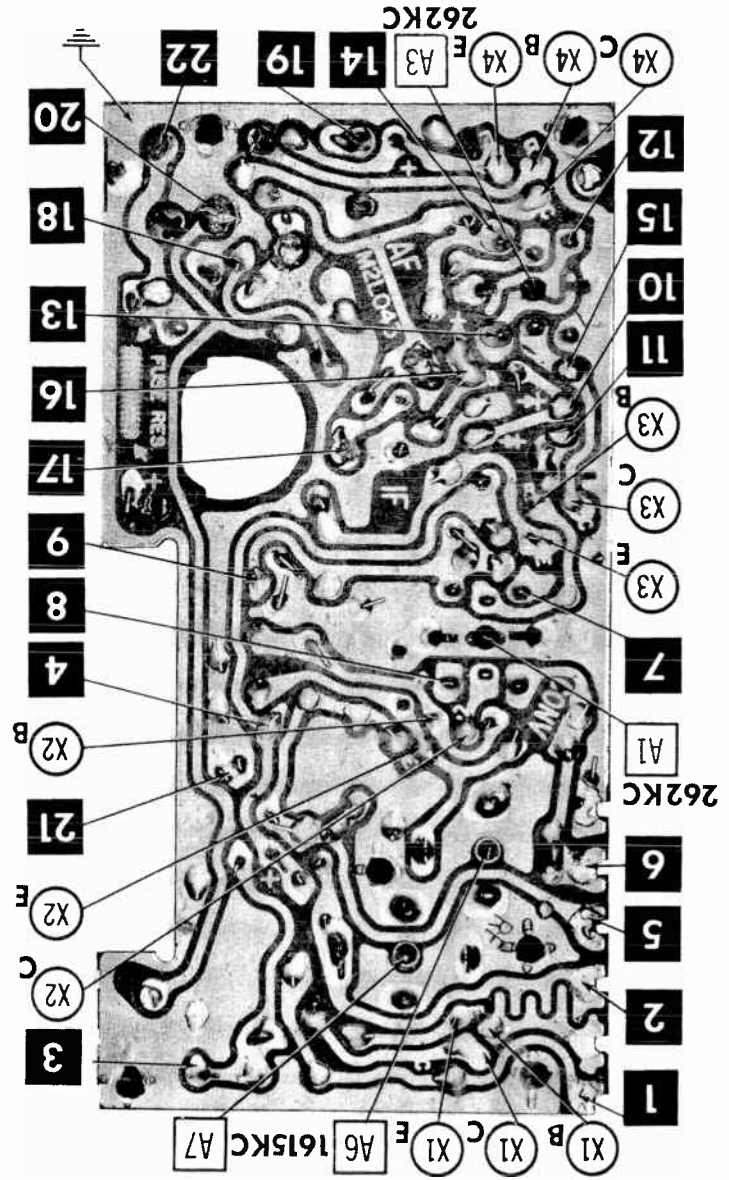
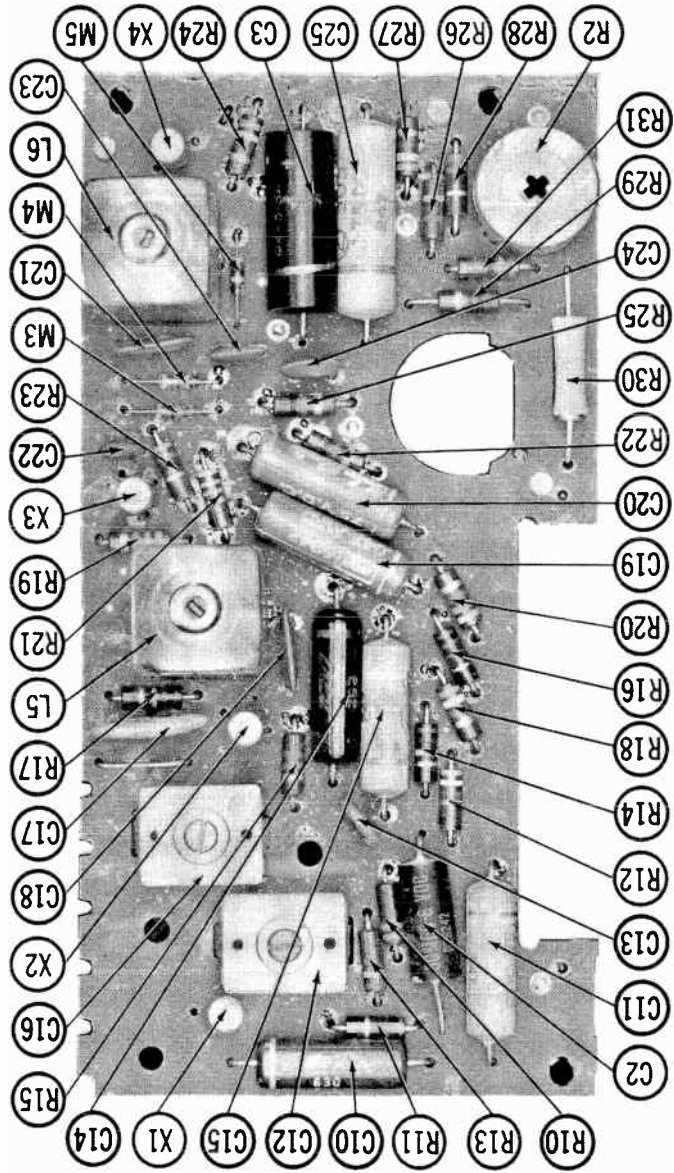


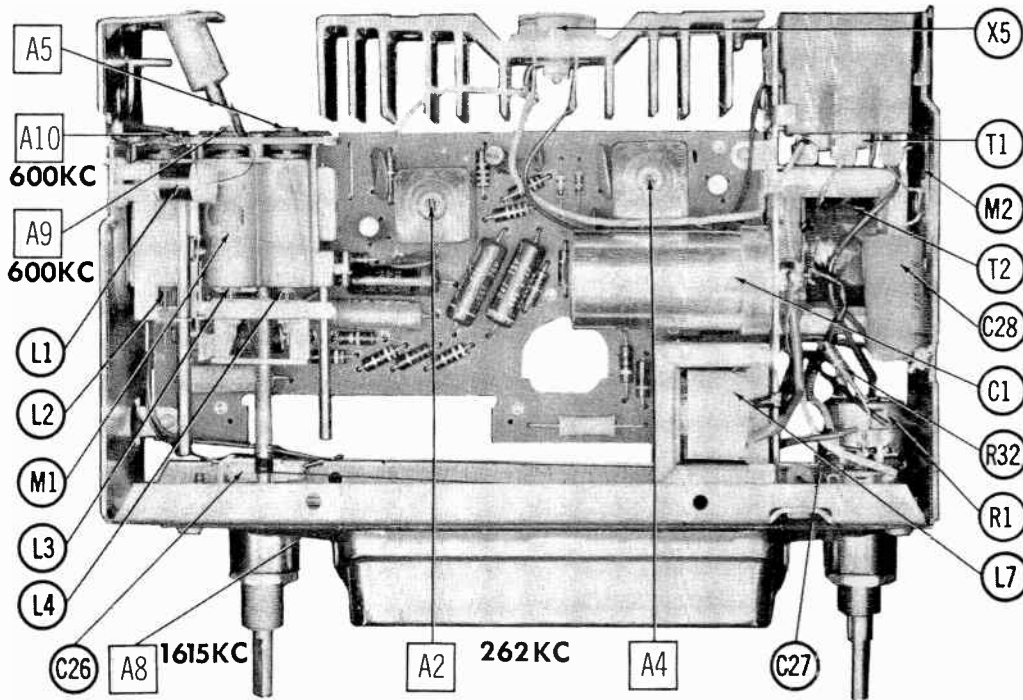
- ⊖ See parts list for alternate value or application.
- 1. Voltage measurements taken with vacuum tube voltmeter.
- 2. All controls set for normal operation, no signal applied.
- 3. Measured values are from socket pin or terminal to common ground.
- 4. All terminals viewed from bottom unless otherwise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



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with **CIRCUITRACE**
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CHEVROLET, GMC MODELS 985471, 2234003





CHASSIS—TOP VIEW

PARTS LIST AND DESCRIPTION

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

WIRING DATA

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	DS-24*	RF Amplifier	DS-25	GE-1	2N1637	PNP
X2	DS-25	Converter	DS-25	GE-1	2N1639	PNP
X3	DS-22*	IF Amplifier	DS-25	GE-1	2N1638	PNP
X4	DS-26	AF Amplifier	DS-26	GE-2	2N591	PNP
X5	DS-503	Output	DS-503	GE-3	2N301	PNP (Note 1)

* Manufacturer suggests using DS-25 when replacing.
 Note 1. When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely. Check bias adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALORY PART No.	SPRAGUE PART No.
C1A	850	16	7282272	AFH3-54-30		XC3-6,1		WP400, 7A	TVL-3021
B	400	16							
C	4	11, 5AC							
C2	30	6	7279696	PTT27	NLW30-15	MT1-13	MLV30-6	TTEK30	TE-1092
C3	100	3	7279888	PTT13	NLW100-3	MT1-18	MLV100-3	TTEK100	TE-1059, 5

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	.047	#7281932	P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-S47
C11	.047		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-S47
C12	125-300							
C13	91 N750	#7281933	P288N-0022	TCN-91	C10Q91U	8DP-1-222	GEM-6222	6TM-D22
C14	.0022		P288N-0022	DD-202	CUB6D22	IDP-1-223	GEM-4122	2TM-S22
C15	.022		P288N-022	DDM-203	CUB4S22			
C16	225-325	#7284768	DI-4700	DD-472		CCD-472		10TS-D47
C17	180 N470 5%		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-S47
C18	.0047		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-S47
C19	.047	#7281971	P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-S47
C20	.047		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-S47
C21	120 NPO		NPO-DI 120	DTZ-120			CNO-312	10TCC-T12
C22	.001 10%	DI-1000	DD-102	L10D1	CCD-102	GP210	10TS-D10	
C23	.0022	DI-2200	DD-222	L10D22	CCD-222	GP222	10TS-D22	
C24	.0022	DI-2200	DD-222	L10D22	CCD-222	GP222	10TS-D22	
C25	.1	P2151N-1	DDA-104	BC2PJ	IDP-2-104	GEM-401	2SE-P10	
C26								
C27	lmfd		UK-105	HCC3105P			HY-135	
C28	.47		P288N-47		CUB2P47	IDP-4-474	GEM-2033	2TM-P47

* Delco Part Number.

CONTROLS

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

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA				
			DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone	10K	7282033				
B	Volume & Switch	7500Ω Tap@ 5000Ω					■ UE4409S
R2	Bias	260Ω Stop@ 190Ω	7275474①				

① Temperature Compensated.

■ "STA-LOC" Equivalent: FJ14A, RU752T53, OS1125, ISI687, US41.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	RF Choke (8.2uh)	7281946	BC-565	4610	RTC-8520	T859	① Part of M1
L2	Ant.	7281716 ①					
L3	RF	7282042 ①					
L4	Osc.	7281717 ①					
L5	Input IF	1221856					
L6	Output IF	1221857					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L7	540ma	.6Ω	8MH	1221823	C-4095		TR-154		

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	10	1	7280915					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	12	10	7282057					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		DELCO PART No.	QUAM PART No.	
SP1	4" x 10" PM 10Ω	7282121		

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner	7281697	
M2	Spark Plate	7271564	
M3	AVC Det.	DS-27	
M4	AVC Det.	DS-27	
M5	Audio Det.	DS-27	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

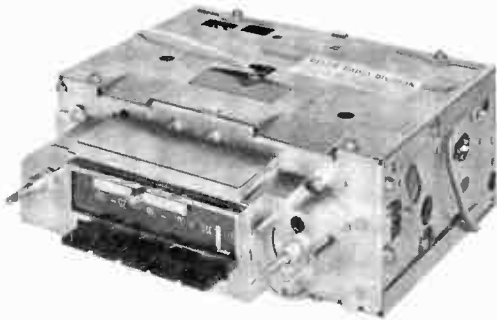
ITEM	PART No.	ITEM	PART No.
Dial Glass (Chev.)	7283873	Knob - Tuning, Volume (GMC)	1991012
Dial Glass (GMC)	7283927	Knob - Tone	3793636
Knob - Tuning, Volume (Chev.)	1990945	Knob - Dummy	3825878

CHEVROLET, GMC MODELS 985471, 2234003



PHOTOFACT[®] with

CIRCUITRACE[®]



TRADE NAME : Chevrolet Model 985694 (1963)
 SUPPLIER : (Parts) United Delco Distributors
 TYPE SET : 9 Transistor AM-FM Receiver
 POWER SUPPLY : 12 Volt Storage Battery
 RATING : 1.4 Amp @ 12.6VDC
 TUNING RANGE : BROADCAST 535-1615 KC
 Freq. Mod. 88-108MC

CHEVROLET MODEL 985694

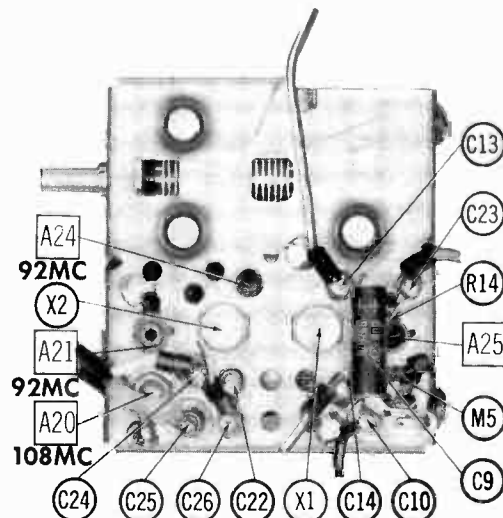
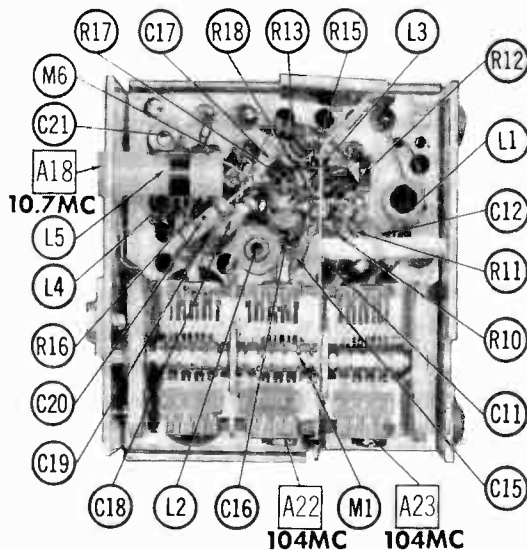
REMOVAL INSTRUCTIONS

RADIO

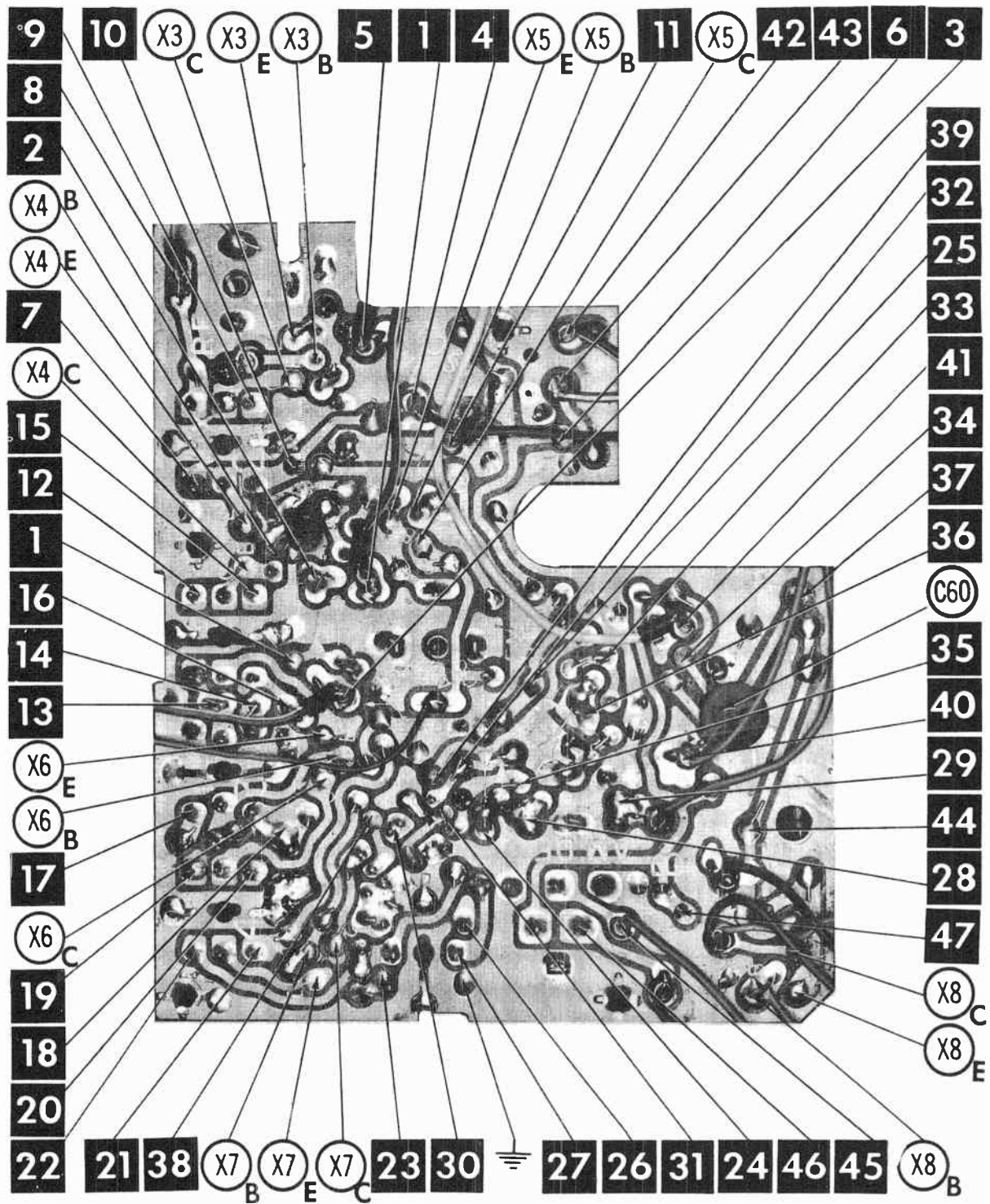
1. Pull off knobs.
2. Remove Speaker connector and antenna lead.
3. Use 3/8" wrench and remove screw holding mounting bracket to instrument panel.
4. Use 5/8" wrench and remove nuts from control bushing.
5. Remove radio from under instrument panel.

SPEAKER

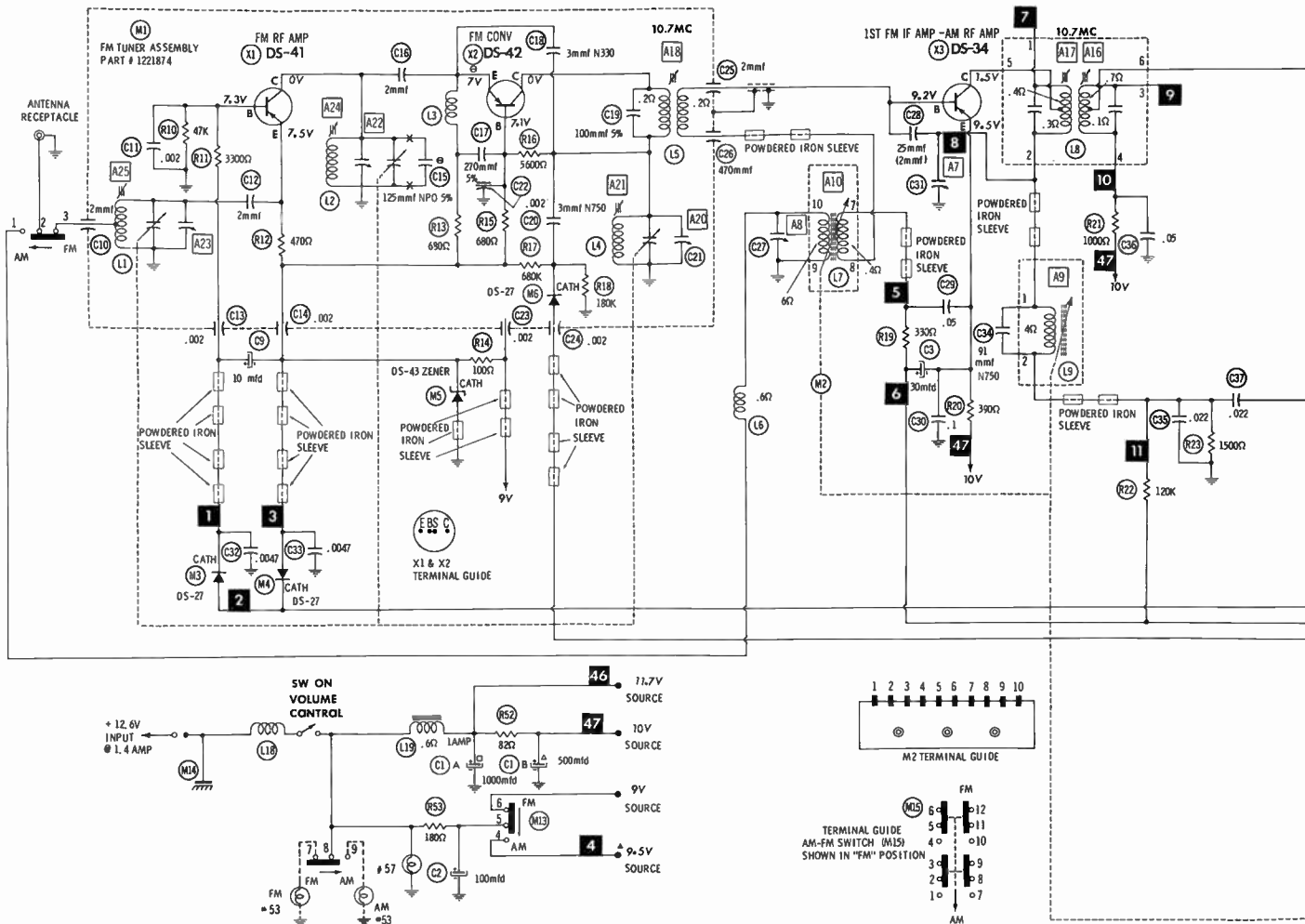
1. Remove glove box.
2. Remove "A" lead from speaker connector.
3. Use 3/8" wrench and remove screw from speaker bracket.
4. Remove bracket and speaker.



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



A Howard W. Sams CIRCUITRACE Photo



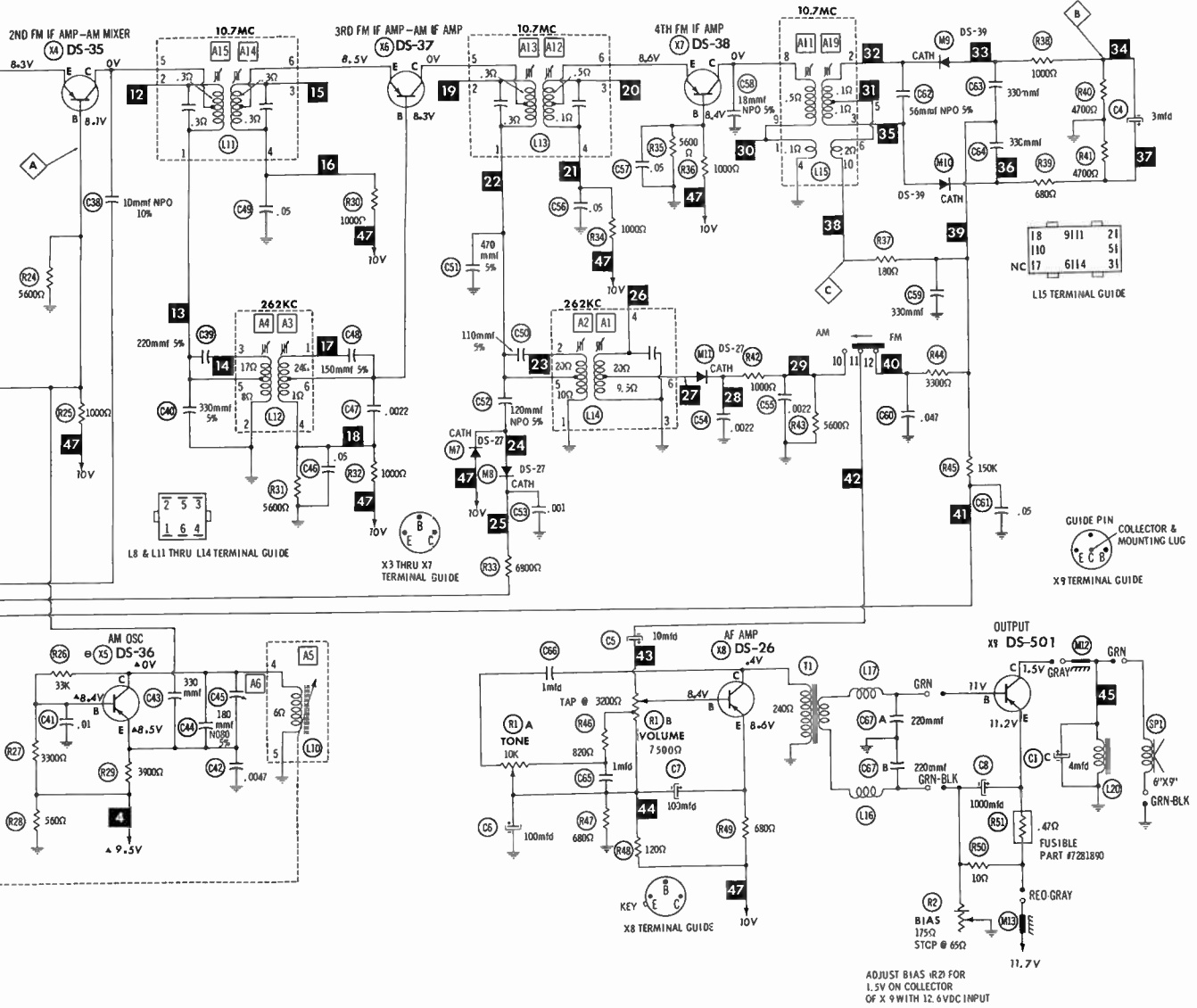
ALL VOLTAGES TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED

▲ MEASURED IN "AM" POSITION

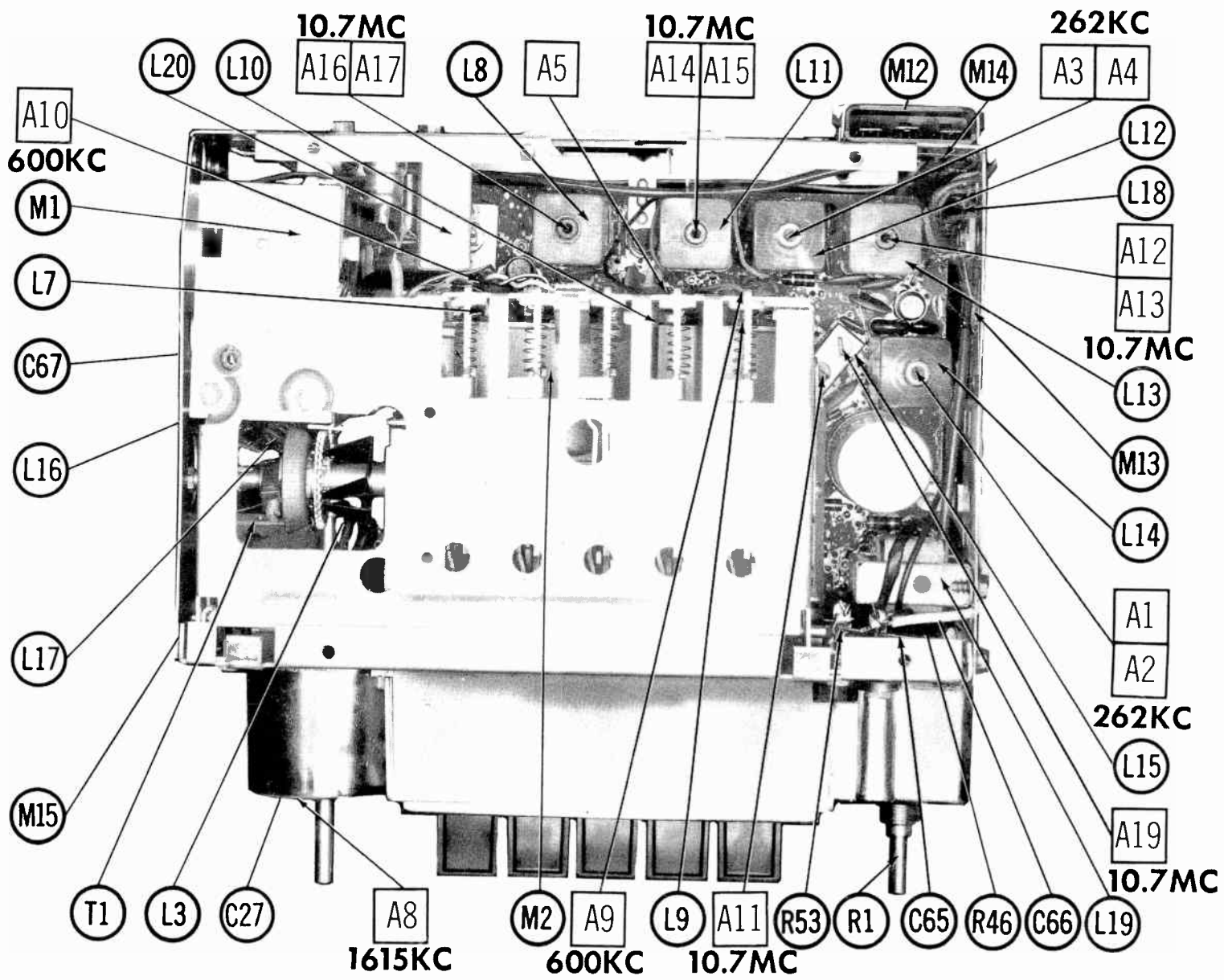
- ⊙ See parts list for alternate value or application.
- 1. Voltage measurements taken with vacuum tube voltmeter.
- 2. All controls set for normal operation, no signal applied.
- 3. Measured values are from socket pin or terminal to common ground.
- 4. All terminals viewed from bottom unless otherwise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

A PHOTOFAC T STANDARD NOTATION SCHEMATIC with **CIRCUITRACE**

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CHEVROLET MODEL 985694



ALIGNMENT INSTRUCTIONS

Check for specified source voltage.
Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: A1 thru A10, A20, A22, A23 .. GENERAL CEMENT #8280, 8888, 9087
WALSCO #2525, 2528, 2587
All thru A19 GENERAL CEMENT #8282, 8808, 9302
WALSCO #2543, 2544, 2588
A21, A24, A25 GENERAL CEMENT #9288, 9297, 9304
WALSCO #2510, 2548, 2547

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
High side thru .1mf to point Δ , low side to ground.	262KC (400v Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
Check setting of oscillator coil core (A5). Rear of core should be 1 5/8" from mounting end of coil form.					
High side thru 82mmf to antenna receptacle, low side to ground.	1615KC	High Freq. End Stop.	Output Meter across voice coil.	A6, A7, A8	Adjust for maximum.
"	600KC	600KC Signal	"	A9, A10	Adjust for maximum. Repeat step 2.
With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.					

FM ALIGNMENT USING AM SIGNAL GENERATOR - SELECTOR IN FM POSITION

High side thru 88mmf to A NT. terminal, low side to ground.

GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MC (Unmod.)	Point of non-interference.	DC probe of VTVM to point Δ ; common to ground.	All thru A18	Adjust for maximum.
"	"	DC probe to point Δ ; common to ground.	A19	Adjust for zero reading. A positive or negative reading will be obtained on either side of the correct setting.
108MC (Unmod.)	108MC	DC probe of VTVM to point Δ ; common to ground.	A20	Adjust for maximum.
92MC	92MC	"	A21	"
104MC (Unmod.)	104MC	DC probe of VTVM to point Δ ; common to ground.	A22, A23	Adjust for maximum.
92MC	92MC	"	A24, A25	"

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

High side thru 68mmf to antenna terminal, low side to ground.
Use 80v frequency modulated signal with 450KC sweep. Use 120v sawtooth voltage in scope for horizontal deflection.

GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MC (450KC Swp.)	Point of non-interference.	Vert. amp. of scope to point Δ ; low side to ground.	All thru A18	Disconnect stabilizing capacitor C 4 . Adjust for maximum gain and symmetry of response similar to Fig. 1 with marker as shown. Reconnect C 4 .
"	"	Vert. amp. to point Δ ; low side to ground.	A19	Adjust to place marker at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.

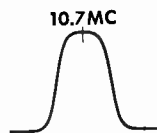


FIG. 1

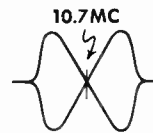
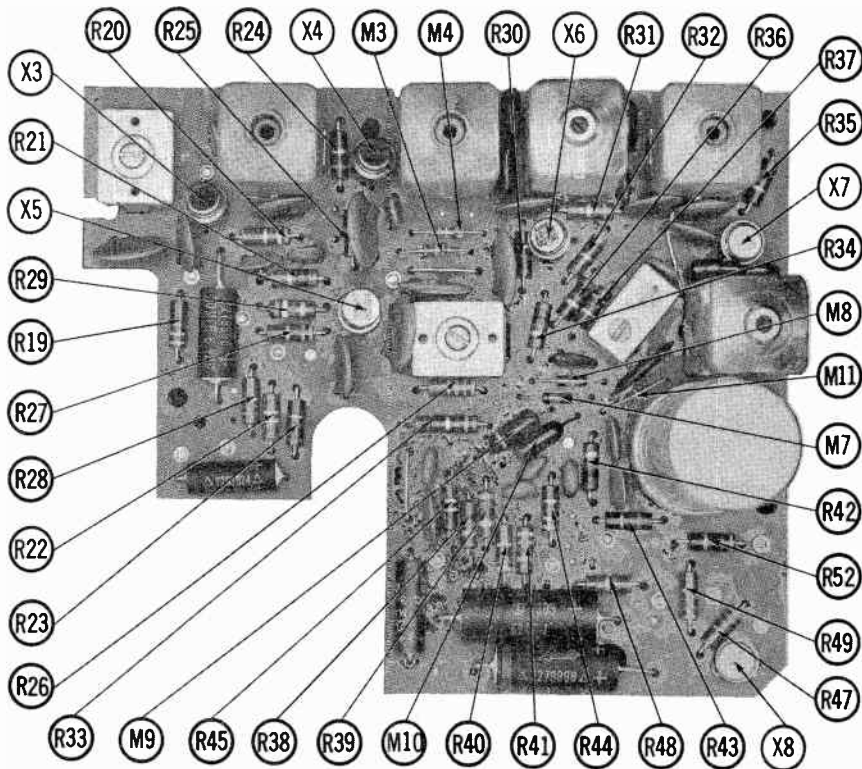
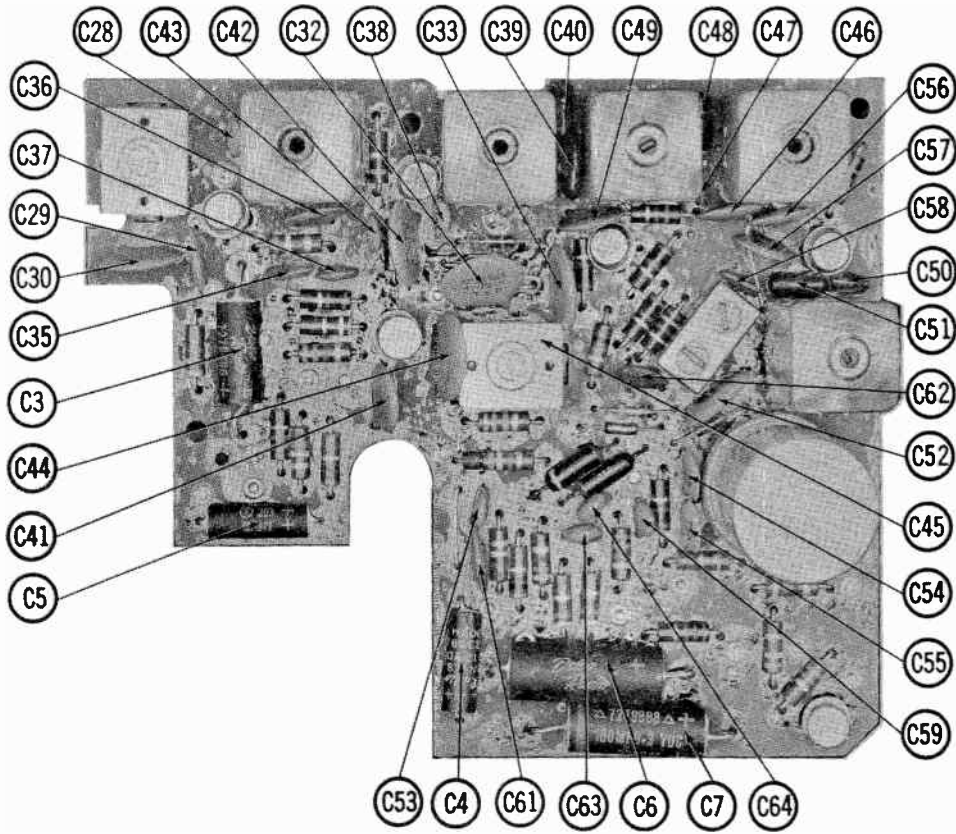


FIG. 2

PUSH-BUTTON ADJUSTMENT

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



PARTS LIST AND DESCRIPTION

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	DS-41	FM RF Amp.	DS-41			PNP
X2	DS-42	FM Converter	DS-41			PNP
X3	DS-34	1st FM IF - AM RF Amp.	DS-34			PNP
X4	DS-35	2nd FM IF - AM Mixer	DS-34			PNP
X5	DS-36	AM Oscillator	DS-25	GE-1	2N1639	PNP
X6	DS-37	3rd FM IF - AM IF	DS-34			PNP
X7	DS-38	4th FM IF	DS-34			PNP
X8	DS-26	AF Amp.	DS-26	GE-2	2N591	PNP
X9	DS-501	Output	DS-501	GE-4		PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						SPRAGUE PART No.
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	
CLA	1000	16	7283675						PCLS3021 . 8
B	4	16							
C	4	11.5RMS							
C2	100	16	7283372	PTT86	NLW100-25	MT1-20	BL2050	TT25X100	TL-1162
C3	30	6	7279896	PTT27	NLW30-6	MT1-5	BL1921	TT6X30	TE-1092
C4	3	6	7282359	PTT3	NLW3-15	MT1-3	MLV5-3	TT6X3	TE-1052
C5	10	12	7283834	PTT53	NLW10-15	MT1-5	BL1241	TT12X10	TL-1128
C6	100	16	7283372	PTT86	NLW100-25	MT1-20	BL2050	TT25X100	TL-1162
C7	100	3	7279888	PTT13	NLW100-3	MT1-21	BL1610	TT-5X100	TL-1059. 5
C8	1000	2	7285035	PRS1130	BR1000-6	QTI-32	BL2310	TC310	TVA-1104
C9	10	12	7283834	PTT53	NLW10-15	MT1-5	BL1241	TT12X10	TL-1128

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA							
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.		
C10	2	(.002) *	BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50		
C11	.005		NPO-DI 2.2	TCZ-2R2	C10V15C	CCTO-2R2	CNO-522	10TCC-V22		
C12	2		Note 1	NPO-DI 2.2	TCZ-2R2	C10T12C	CCTO-121	CNO-312	10TCC-T12	
C13	.002					C10V15C	CCTO-2R2	CNO-522	10TCC-T12	
C14	.002		Note 1	NPO-DI 2.2	CPR-270J	CPR-100J			10TCS-V30	
C15	125									
C16	2									
C17	270									125V 5%
C18	3		N330							
C19	100		125V 5%							
C20	3	N750								
C21										
C22	.002	(2mmf) *	BPD-000025	DD-250	LAI0Q25-SL	CCD-250	GP425	5GA-Q25		
C23	.002		DDA-503	DDA-104				HY535		
C24	.002		DDA-104					HY550		
C25	2							5HK-D47		
C26	470							5HK-D47		
C27										
C28	25									
C29	.05		18V							
C30	.1		16V							
C32	.0047			BPD-0047	DD-472	BYA10D47	CCD-472	B-247	5HK-D47	
C33	.0047		BPD-0047	DD-472	BYA10D47	CCD-472	B-247	5HK-D47		
C34	91	N750								
C35	.022			DD-203	BYA-682	CCD-203		5HK-822		
C36	.05	16V		DDA-503				HY535		
C37	.022			DD-203	BYA-682	CCD-203		5HK-822		
C38	10	NPO 10%	NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10		
C39	220	5%		DTZ-220			CNO-322	10TCC-T22		
C40	330	5%						10TCC-T33		

FIXED CAPACITORS(cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C41	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-D10	
C42	.0047		BPD-0047	DD-472	BYA10D47	CCD-472	B-247	5HK-D47	
C43	330		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33	
C44	180		N080 5%					10TCN-T18	
C45									
C46	.05		18V		DDA-503	IR5D22	CCD-222	GP222	HY535
C47	.002			DI-2200	CPR-2200J	C10T15C		CNO-315	10TCC-T15
C48	150		5%		DTZ-150				HY535
C49	.05		16V		DDA-503				
C50	110		5%						
C51	470	5%							
C52	120	NPO 5%							
C53	.001				C10T12C		CNO-312	10TCC-T12	
C54	.0022		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10	
C55	.0022		DI-2200	CPR-2200J	IR5D22	CCD-222	GP222	10TS-D22	
C56	.05		DI-2200	CPR-2200J	IR5D22	CCD-222	GP222	10TS-D22	
C57	.05		BPD-05	DD-503		CCD-503	GP150	5HK-850	
C58	.05		BPD-05	DD-503		CCD-503	GP150	5HK-850	
C59	18	NPO 5%					CNO-418	10TCC-Q18	
C60	.047	25V	DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33	
C61	.05		BPD-05	DD-503		CCD-503	GP150	5HK-850	
C62	56	NPO 5%					CNO-456	10TCC-Q56	
C63	330		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33	
C64	330		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33	
C65	1mf	3V						HY135	
C66	.1								
C67A	220		DI-220	DD-221	JB6T22	CCD-221	GP320	10TS-T22	
C67B	220		DI-220	DD-221	JB6T22	CCD-221	GP320	10TS-T22	

Note 1. Not used in some versions.

* Alternate Value

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA					
			DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA	Tone	10K	7285789	F1-10K, R14-7500,				
B	Volume, Switch	7500Ω & 3200Ω Tap		F5S009, RFS103, KR-6, AK-26				† UB4407-S
R2	Bias	175Ω 65Ω Stop	1221422 (7275554)					

† "STA-LOC" Equivalent: FG14A, RU752T53, OS562A, IS1187, US41.

PARTS LIST AND DESCRIPTION (CONTINUED)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	FM Ant.						
L2	FM RF						
L3	RF Choke						
L4	FM Osc.						
L5	1st FM IF						
L6	RF Choke (8uh)	7255738	BC-566	4611	RTC-8521	T822	⊙ Part of M2.
L7	AM Ant.	7282586					
L8	2nd FM IF	1221880					
L9	AM RF	7282585					
L10	AM Osc.	1221616					
L11	3rd FM IF	1221861					
L12	1st AM IF	1221858					
L13	4th FM IF	1221861					
L14	2nd AM IF	1221859					
L15	Ratio Det.	7283623					
L16	RF Choke (1.4uh)	7241708					
L17	RF Choke (1.4uh)	7241708					
L18	RF Choke (1.4uh)	7241708					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	
L19	1 Amp.	.6Ω	8 MH	1221623	C-4095	TC-2	TR-154 TR-154	

CHOKE (AUDIO OUTPUT)

ITEM No.	INDUCTANCE	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L20	29.5 MH	7282278					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	10:	1	7283682					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		DELCO PART No.	QUAM PART No.	
SPI	6" x 9" PM 8Ω	7285340		

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	FM Tuner	1221874	Matched Pair
M2	AM Tuning Coils	7283463	
M3	AFC Det.	DS-27	
M4	AFC Det.	DS-27	
M5	Zener Diode	DS-43	
M6	AFC Det.	DS-27	
M7	AVC Det.	DS-27	
M8	AVC Det.	DS-27	
M9	Ratio Det.	DS-39	
M10	Ratio Det.	DS-39	
M11	AM Det.	DS-27	
M12	Spark Plate	7271564	
M13	Spark Plate	7271564	
M14	Spark Plate	7271564	
M15	Bandswitch	7284009	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial, Calibrated Drum	7285858	Knob, Dummy	3823169
Dial, Glass Clear	7285806	Pointer, Assembly	1221921
Knob, Tuning or Volume	7277055	Push Button, Individual	7285473
Knob, Tone	3823170		

WIRING DATA

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



PHOTOFACT[®] with

CIRCUITRACE[®]

TRADE NAME : 1963 FORD MODELS
F3TBF (C3AA-18806) Galaxie
F3TBS (C3SA-18806) Thunderbird

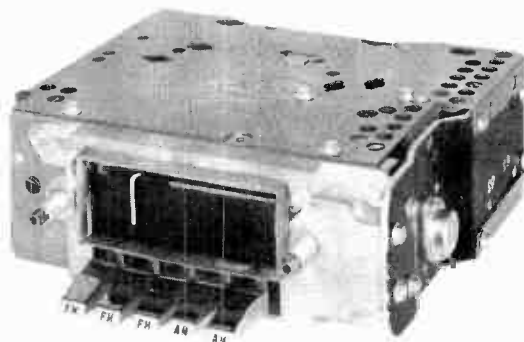
SUPPLIER : The Bendix Corp., Bendix Radio Div.,
Baltimore 4, Maryland

TYPE SET : 10 Transistor AM-FM Receiver

POWER SUPPLY : 12 Volt Storage Battery

RATING : .94 Amp. @ 12.6 Volts DC

TUNING RANGE: BROADCAST 540-1620KC
Freq. Mod. 88-108MC



REMOVAL INSTRUCTIONS

NOTE: To replace transistors, remove radio.

RADIO

1. Remove knobs.
2. Use 9/16" wrench and remove 2 nuts from control bushings.
3. Disconnect "A" lead from fuse block, Speaker Leads, Panel Lamp Lead, and Antenna Lead.
4. Use 7/16" wrench and remove nut from rear of radio.
5. Remove radio from under instrument panel.

SPEAKER

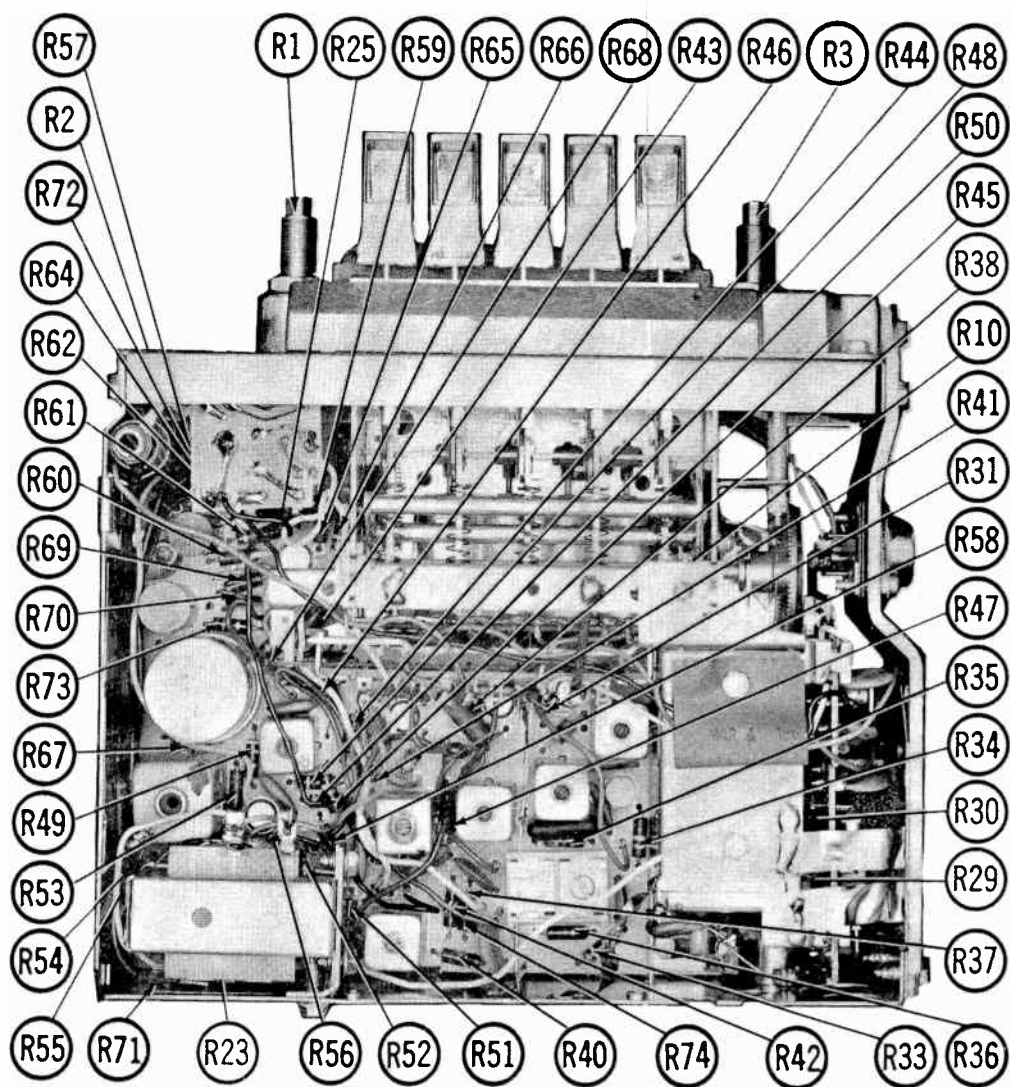
1. Remove 2 wing nuts from front of speaker grille. Remove grille.
2. Use 3/8" wrench and remove 2 metal screws. Lift speaker out the top of the instrument panel.

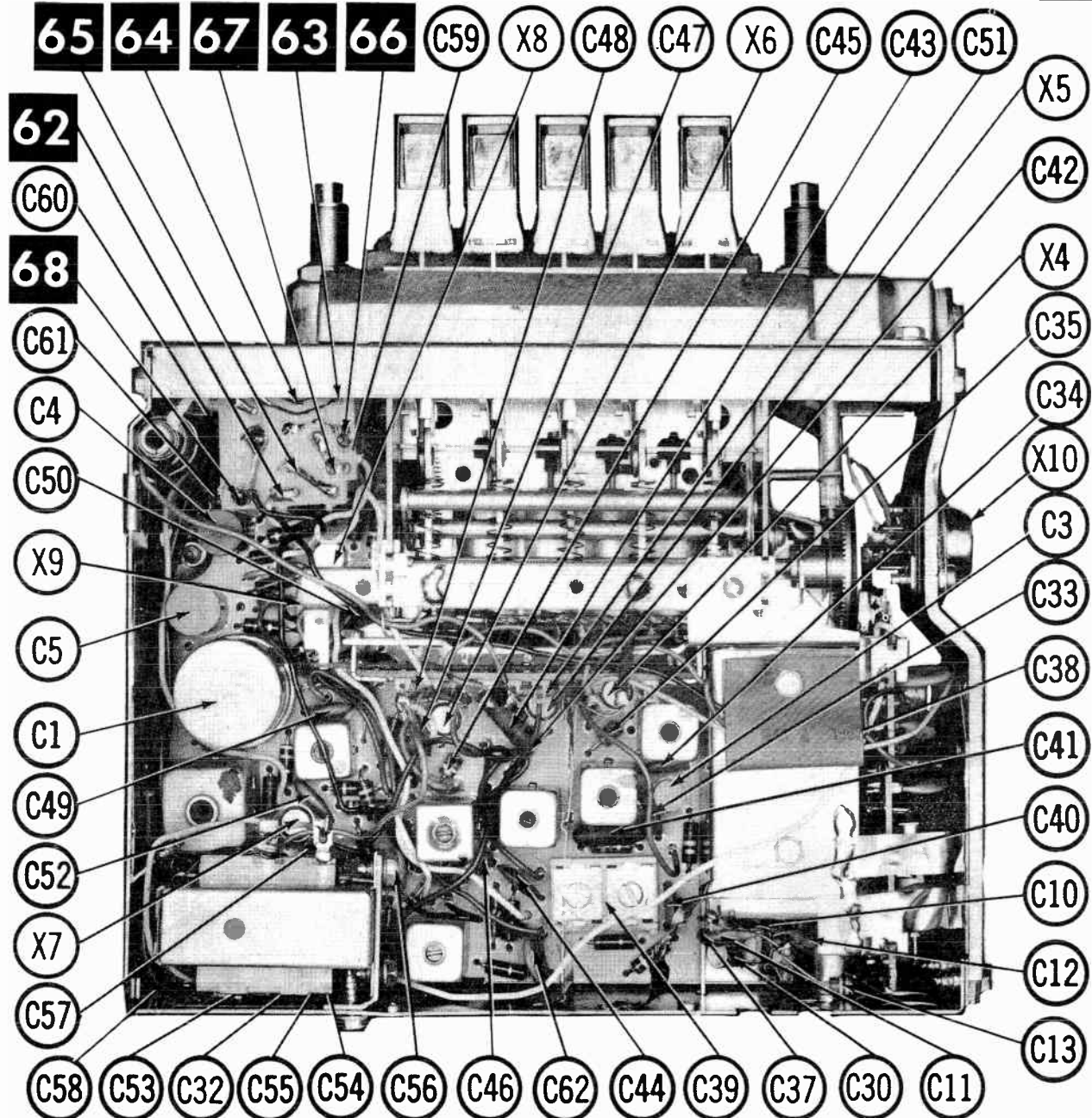
FORD MODELS F3TBF, F3TBS

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

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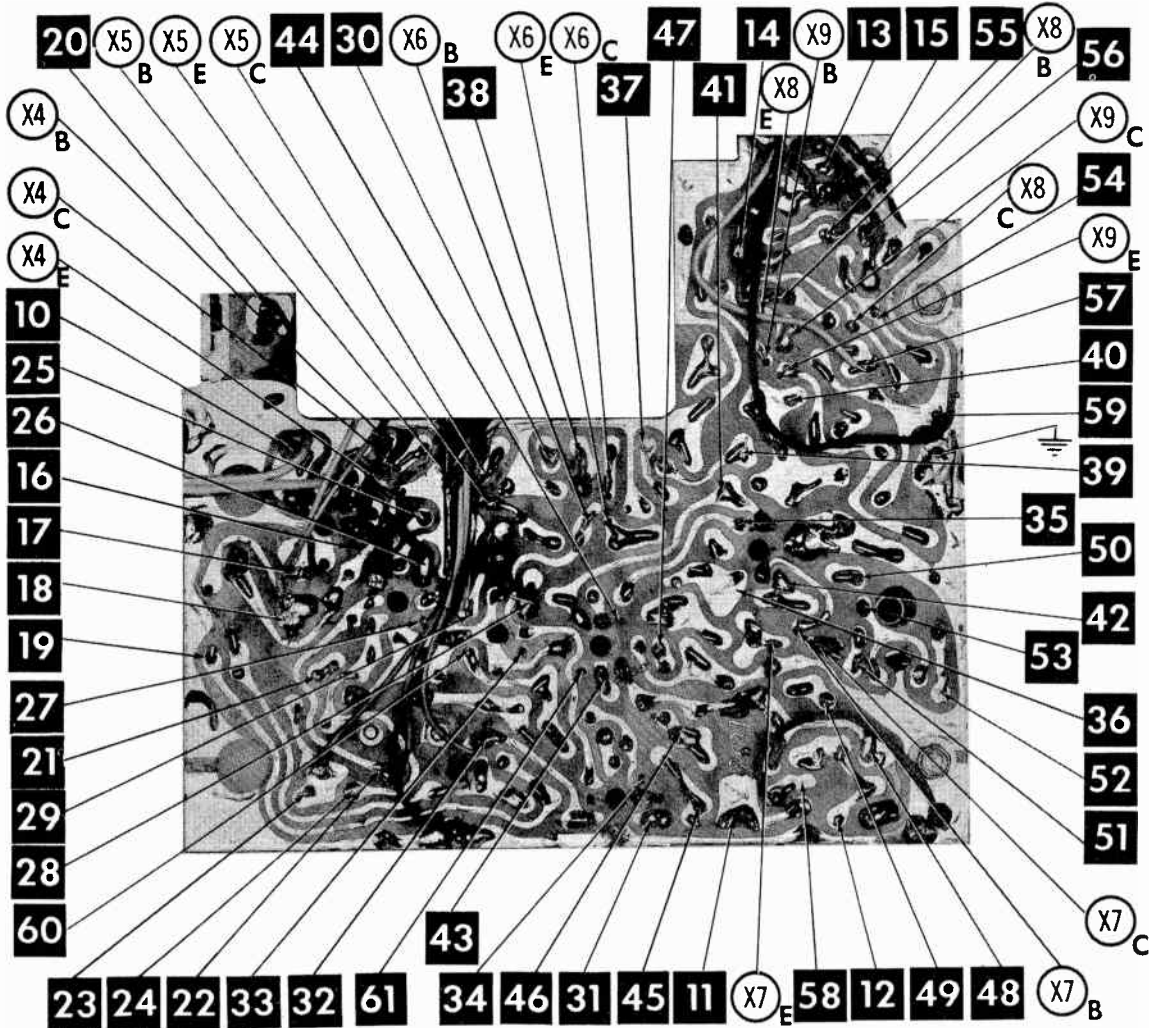
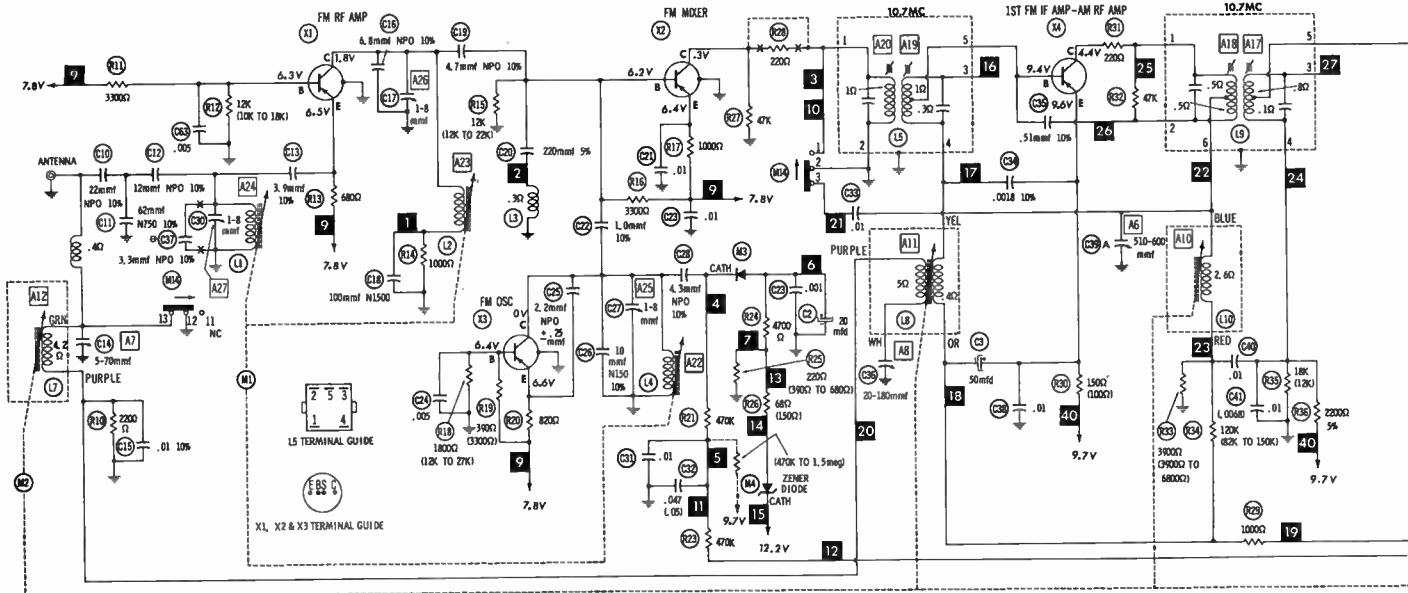
World Radio History



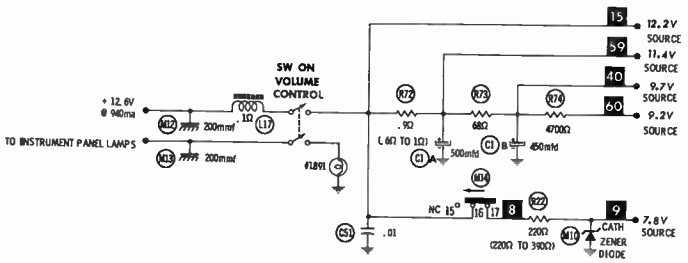
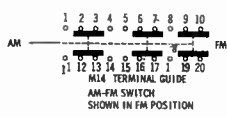
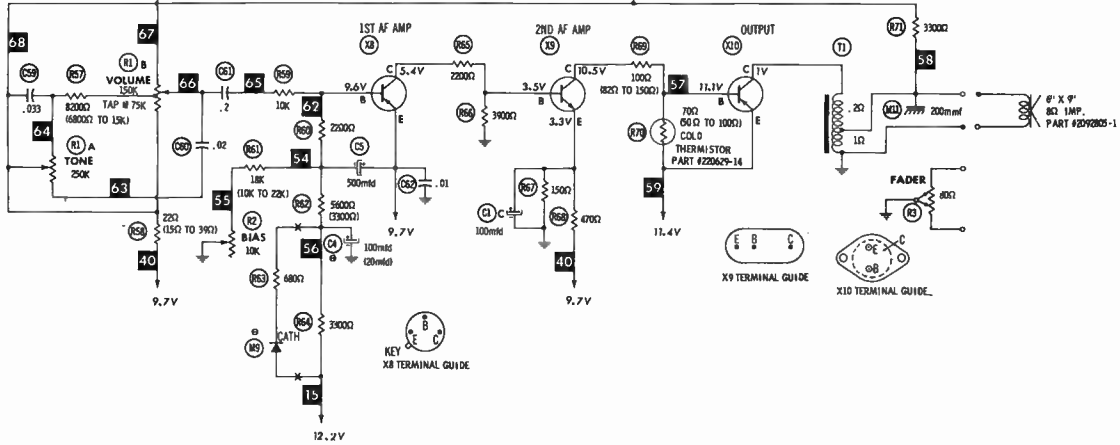
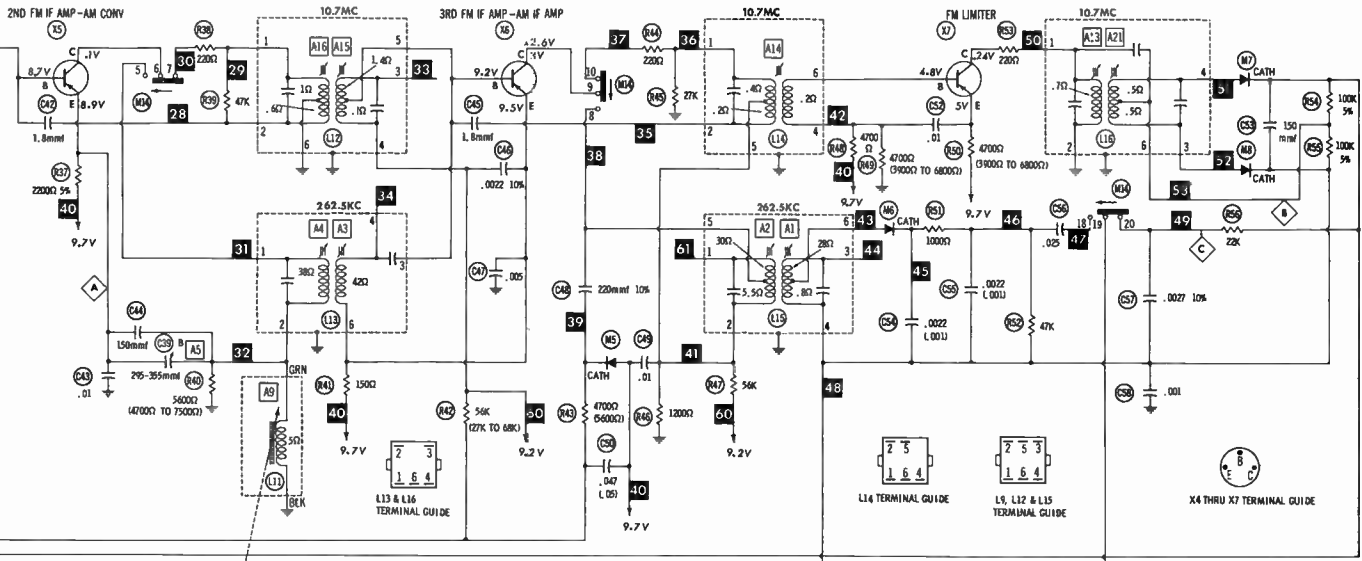


A Howard W. Sams **CIRCUITRACE** Photo

FORD MODELS F3TBF, F3TBS



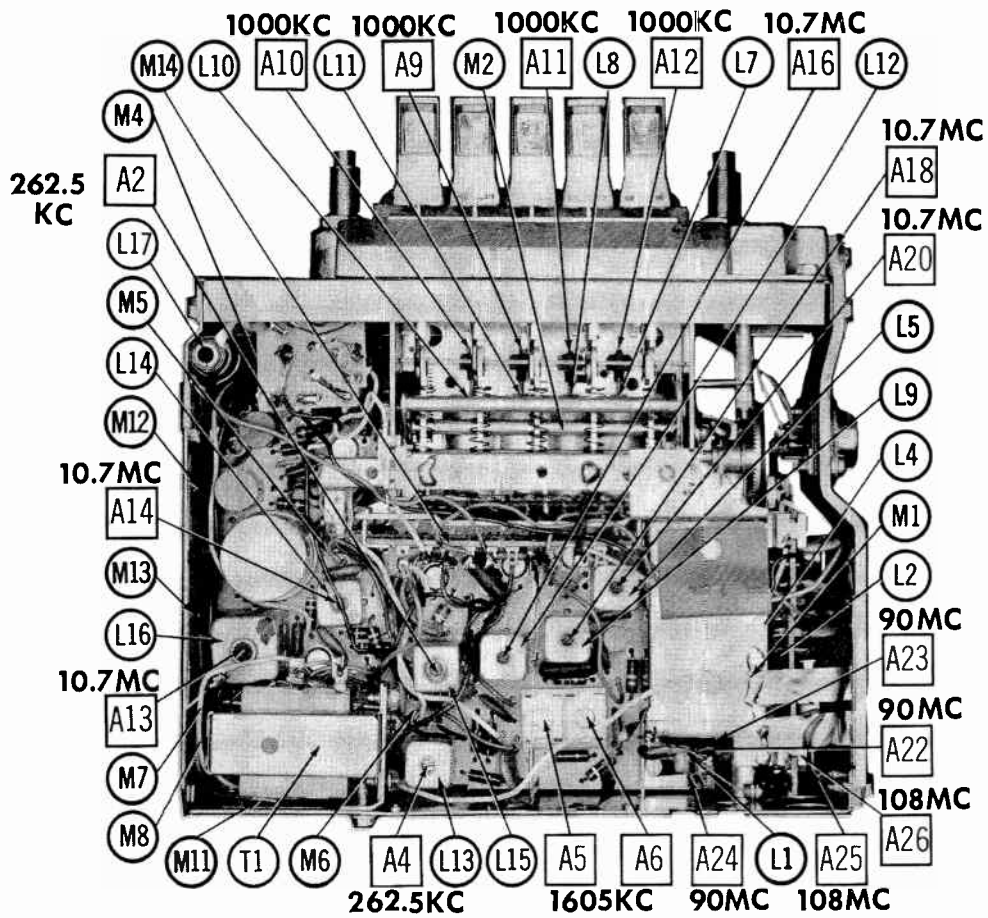
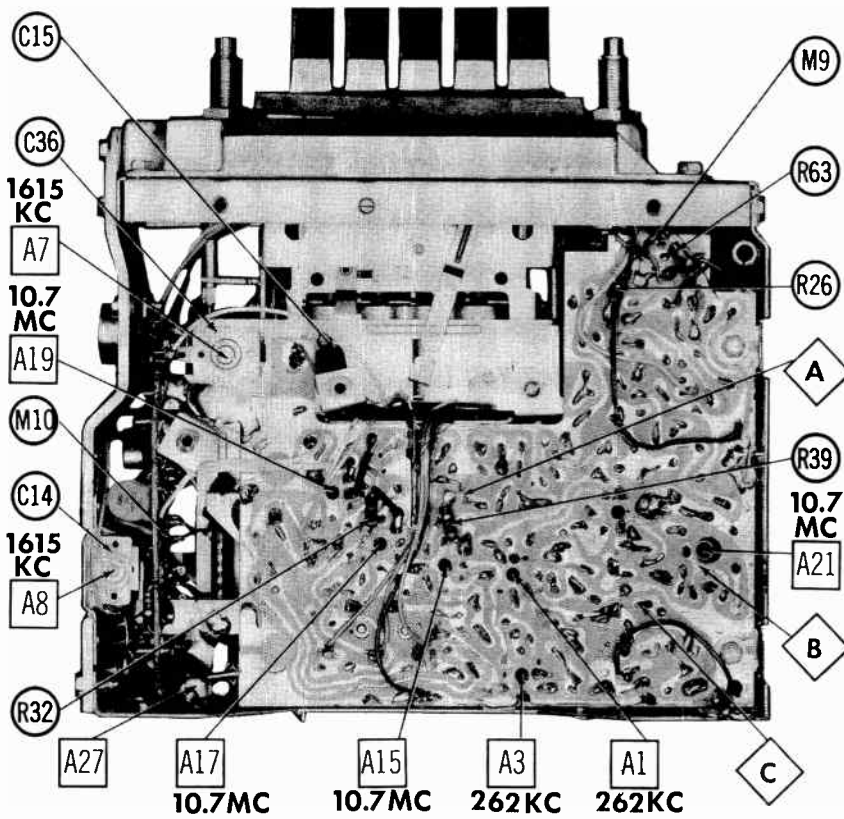
A Howard W. Sams CIRCUITRACE Photo



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

A PHOTOFAC STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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FORD MODELS F3TBF, F3TBS



ALIGNMENT INSTRUCTIONS

Check for specified source voltage.
 Use only enough generator output to provide a usable indication.
 Suggested Alignment Tools: A1 thru A12, A14 thru A20
 A22 thru A27
 A13, A21

GENERAL CEMENT #8290, 8868, 9087
 WALSCO #2525, 2528, 2587
 GENERAL CEMENT #8282, 8606, 9302
 WALSCO #2543, 2544, 2588

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mf to point \diamond , low side to ground.	262KC (400% Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1615KC	"	"	A5, A6, A7, A8	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. IF necessary, back tune cores out of coils but not out of forms. Repeat step 2.						
3.	Thru dummy (Fig. 1) to antenna receptacle.	1000KC	Tune to Signal.	Output Meter across voice coil.	A9, A10, A11, A12	Adjust for maximum. Repeat steps 2 & 3 until no further improvement is noted.
With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.						

FM ALIGNMENT USING AM SIGNAL GENERATOR - SELECTOR IN FM POSITION

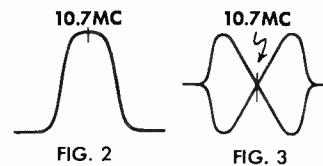
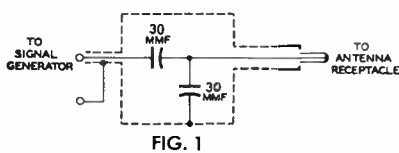
High side to ungrounded shield over FM converter tube, low side to ground; OR across FM antenna terminals with 120Ω carbon resistor in series with each lead.

	GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS
4.	10.7MC (Unmod.)	Point of non-interference.	DC probe of VTVM to point \diamond ; common to ground.	A13 thru A20	Adjust for maximum.
5.	"	"	DC probe to point \diamond ; common to ground.	A21	Adjust for zero reading. A positive or negative reading will be obtained on either side of the correct setting.
6.	90MC (Unmod.)	90MC	DC probe of VTVM to point \diamond ; common to ground.	A22, A23, A24	Adjust for maximum.
7.	108MC	108MC	"	A25, A26, A27	"

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

High side to ungrounded shield over FM converter, low side to ground.
 Use 60% frequency modulated signal with 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUST	REMARKS
4.	10.7MC (450KC Swp.)	Point of non-interference.	Vert. amp. of scope to point \diamond ; low side to ground.	A13 thru A20	Adjust for maximum gain and symmetry of response similar to Fig. 2 with marker as shown.
5.	"	"	Vert. amp. to point \diamond ; low side to ground.	A21	Adjust to place marker at center of crossover lines similar to Fig. 3. SLIGHTLY retouch A 13 for maximum amplitude and straightness of crossover lines.



PUSH-BUTTON ADJUSTMENT

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

FORD MODELS F3TBF, F3TBS

PARTS LIST AND DESCRIPTION

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES	BENDIX PART No.
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.		
X1		FM RF Amp.	DS-41			PNP	2092417-1
X2		FM Mixer	DS-41			PNP	2092417-2
X3		FM Osc.	DS-41			PNP	2092417-3
X4		1st FM IF Amp. -AM RF Amp	DS-34			PNP	2092418-1
X5		2nd FM IF Amp. -AM Conv.	DS-34			PNP	2092418-2
X6		3rd FM IF Amp. -AM IF Amp	DS-34			PNP	2092418-1
X7		FM Limiter	DS-34			PNP	2092418-2
X8		1st AF Amp.	DS-26	GE-2	2N591	PNP	2090924-8
X9		2nd AF Amp.	DS-44	GE-8		PNP	2091260-3
X10		Output	DS-520	GE-3		PNP	2091859-9

ELECTROLYTIC CAPACITORS

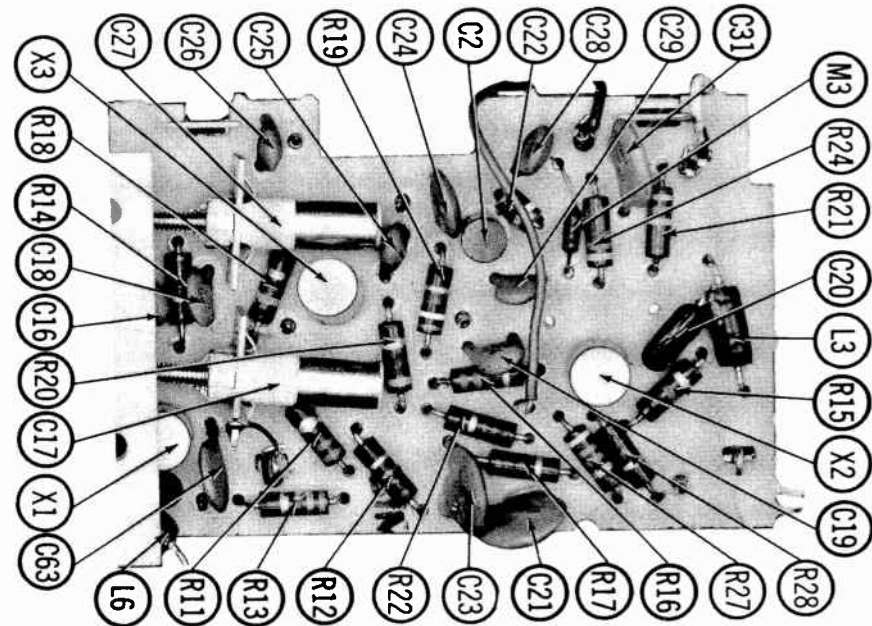
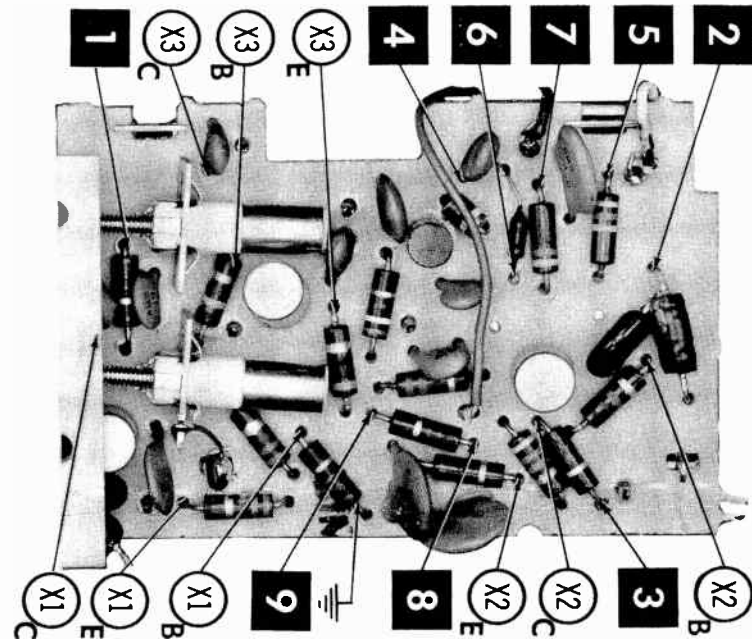
ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500	16	2091503-6			XC3-48②		PPF300.18	PCL3-3020.3*
B	450	16							
C	100	6							
C2	20	10	2090480-10	BCD12020	NLW20-15	MT1-10		TT12X20	
C3	50	3	2090480-4	BCD3050	ECSP50-3	MT1-15	MLV50-3	TT3X50	VL-1045
C4	100	16		BCD18100	NLW100-25	MT1-20	MLV100-25	TT25X100	TE-1211
C5	500	3	2090480-9	BCD12500	BR500-6	MT1-26	BL2111	TC305	TE-1068

① Some versions may use 20mfd @ 16V, Part #2090480-2 in this application. ② Use printed circuit board adapters.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	22	NPO 10%		NPO -DI22	DTZ-22	C10Q22C	CCTO-220	CNO-422	10TCC-Q22
C11	62	N750 10%	Note 1		TCN-62		CCTN-620		
C12	12	NPO 10%	Note 1		TCZ-12		CCTO-120	CNO-412	10TCC-Q12
C13	3.9mmf	10%	Note 1						
C14	5-70		#2092594-1						
C15	.01	100V 10%		BE2S1	CF-103	WMF1S1	1DP-1-103	PVC211	4PS-S10
C16	6.8mmf	NPO 10%	Note 1	NPO-DI 6.8	DTZ-6R8	C10V88C	CCTO-6R8	CNO-568	10TCC-V68
C17	1-8mmf		#2090517-1		829-10				
C18	100	N1500	#220332-37		TCL-100				
C19	4.7mmf	NPO 10%	Note 1	NPO-DI4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C20	220		5%	1489-00022	CPR-220J	CD10E22J	DM-15-221J		MS-322
C21	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	1.0mmf	10%	Note 1						
C23	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	.005			BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C25	2.2mmf	NPO ±.25			TCZ-2R2			CNO-522	10TCC-V22
C26	10	N150 10%	Note 1						10TCP-Q10
C27	1-8mmf		#2090517-1		829-10				
C28	4.3mmf	NPO 10%	Note 1						
C29	.001			BPD-001	DD-103	BYA10D1	CCD-102	B-210	5HK-D10
C30	1-8mmf		#2090517-1		829-10				
C31	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	.047	100V	(.05)†	BE2S47	DD-503	WMF1S47	1DP-2-473	PVC147	2PS-S47
C33	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C34	.0018	10%	Note 1	DI-1800	CF-182	JB6D18	CCD-182	GP218	10TS-D18
C35	.51mmf	10%	Note 1						

TUNER



PARTS LIST AND DESCRIPTION (CONTINUED)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNEILL-DUBIERRE PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C36	20-180mmf	#219083-8							
C37	3.3mmf NPO 10%	Note 2	NPO-D13.3	TCZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33	
C38	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C39A	510-600	#2092422-2							
C39B	295-355								
C40	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C41	.01 100V 10%	(.0068)†	BE2S1	CF-103	WMF1S1	IDP-1-103	PVC211	4PS-S10	
C42	1.8mmf 10%	Note 1							
C43	.01 100V 10%		BE2S1	CF-103	WMF1S1	IDP-1-103	PVC211	4PS-S10	
C44	150 N750 10%	Note 1	N750-DI 150	DTN-150	C10T15U	CCTN-151	CN7-315	10TCU-T15	
C45	1.8mmf 10%	Note 1							
C46	.0022 10%	Note 1	DI-2200	CPR-2200	IR5D22	CCD-222	GP222	10TS-D22	
C47	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50	
C48	220 10%		NPO-SI220	D6-221	JB6T22	CCD-221	GP322	10TS-T22	
C49	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C50	.047 100V	(.05)†	BE2S47	DD-503	WMF1S47	IDP-2-473	PVC1147	2PS-S47	
C51	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C52	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C53	150		BPD-00015	DD-151	LA10T15-S3	CCD-151	GP315	10TS-T15	
C54	.0022	(.001)†	SI2200	D6-222	JB6D22	CCD-222	GP222	5HK-D22	
C55	.0022	(.001)†	SI2200	D6-222	JB6D22	CCD-222	GP222	5HK-D22	
C56	.025 100V	Note 1	TTD-025	CK-253	H4		TA-125	TG-S25	
C57	.0027 10%	Note 1	DI-2700			CCD-272		10TS-D27	
C58	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10	
C59	.033 100V	Note 1	BE4S33		WMF1S33	IDP-1-333	PVC1133	4PS-S33	
C60	.02 100V		TTD-02	CK-203	H3		TA-120	TG-S20	
C61	.2 10V			UK20-204	HCC25224Z			HY-325	
C62	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C63	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50	

Note 1 Replace with same value as original. Note 2 Not used in some versions. † Alternate Value
 * Not normally in distributor's stock. Available thru distributor on order to manufacturer.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BENDIX PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	FM Ant.	①					①Part of M1.
L2	FM RF	①					
L3	FM IF Trap (1uh)	2092210-5	BC-561	4602	RTC-8515	T855	
L4	FM Osc.	②					②Part of M2.
L5	1st FM IF	2092421-1					
L6	RF Choke (2uh)	2092210-7	BC-563	4606	RTC-8517	T857	
L7	AM Ant.	②					
L8	AM Ant.	②					
L9	2nd FM IF	2092421-5					
L10	AM RF	②					
L11	AM Osc.	②					
L12	3rd FM IF	2092421-2					
L13	1st AM IF	2092419-1					
L14	4th FM IF	2092421-6					
L15	2nd AM IF	2092419-2					
L16	Discriminator	2092423-1					
L17	"A" Lead Choke	2092050-12					

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
RIA	Tone Volume, Switch	250K 150K 75K Tap	2092598-1①				
R2	Bias	10K (2W)	219555-22				
R3	Fader	80Ω (2W)	2092598-1②				

① Does not include printed circuit board. ② Not used in Model F3TBF.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BENDIX PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	12Ω Tap	8Ω	2092599-1					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BENDIX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
	SFE	7½ Amp.	SFE 7½		307007.5 (SFE 7½ Amp.)	15507.5	SFE 7½	HMH

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M1	FM Tuner Assy.	2092701-5	Includes Mounting bracket RCC Mfg. Less Mounting bracket RCC Mfg. Includes mounting bracket GIC Mfg. Less mounting bracket GIC Mfg. Include coupling rod, shuttle gate and pushbuttons RCC Mfg. Includes coupling rod, shuttle gate and pushbuttons GIC Mfg. Complete Assy.
	FM Tuner Assy.	2092701-7	
	FM Tuner Assy.	2092701-6	
	FM Tuner Assy.	2092701-8	
M2	AM Tuner Assy.	2092700-3	
	AM Tuning Assy.	2092700-4	
	FM AM Tuner Assy.	2092585-2	
M3	AFC Diode	2092055-3	
M4	Zener Diode	2092055-5	
M5	AVC Diode	2092055-1	
M6	AM Det. Diode	2092055-1	
M7	Discriminator Diode	2092055-1	
M8	Discriminator Diode	2092055-1	
M9	Bias Regulator Diode	2092055-1	
M10	Zener Diode	2092055-5	
M11	Spark Plate	220267-17	200mmf
M12	Spark Plate	220207-21	200mmf
M13	Spark Plate	220267-17	200mmf
M14	Switch	2092702-1	FM AM For RCC Mfg. Tuner
	Switch	2092702-3	FM AM For GIC Mfg. Tuner

CABINETS & CABINET PARTS

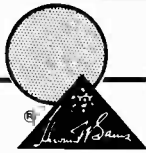
(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial Glass Model F3TBF	2092562-1	Escutcheon Model F3TBS	2091814-1
Bezel and Dial Glass Model F3TBS	2092902-1	Escutcheon Model F3TBF	2091814-2
Dial Pointer RCC Tuner	2090129-38	Push Buttons FM	2092578-2
Dial Pointer GIC Tuner	2090129-40	Push Buttons AM	2092578-1

WIRING DATA

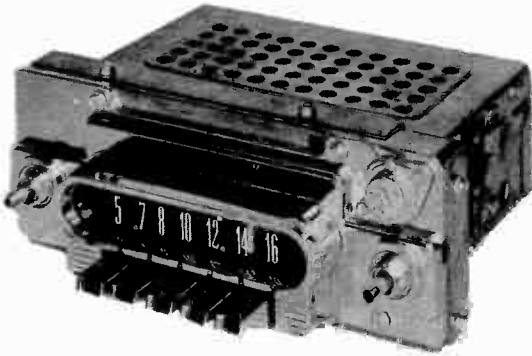
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors
	8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or 8870 (3/4 In.)

FORD MODELS F3TBF, F3TBS



PHOTOFACT[®] with

CIRCUITRACE[®]



TRADE NAME : 1962 Mercury
Model 2TBM (R2TBM, C2MY-188-05B)

SUPPLIER : Bendix Corp., Bendix Radio Div.,
Baltimore 4, Maryland

TYPE SET : 6 Transistor Custom-Built AM Receiver

POWER SUPPLY : 12 Volt Storage Battery

RATING : .68 Amp. @12.6 Volts DC

TUNING RANGE : BROADCAST 540 - 1615KC

ALIGNMENT INSTRUCTIONS

Check for specified source voltage.

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools: A1 thru A4.....GENERAL CEMENT #8606, 8606L, 8869
WALSCO #2543, 2544, 2588
A5, A6, A7..... GENERAL CEMENT #9087, 8290, 8868
WALSCO #2525, 2528, 2587
A8, A9, A10.....GENERAL CEMENT #5009, 8987, 8728A
WALSCO #2531X, 2536

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point Δ , low side to ground.	262.5KC (400% Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1615KC	"	"	A5, A6, A7	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. IF necessary, back tuning cores (A8, A9, A10) out of coils but not out of forms. Repeat step 2.						
3.	Thru dummy (Fig. 1) to antenna receptacle.	1000KC	Tune to Signal.	Output Meter across voice coil.	A8, A9, A10	Adjust for maximum. Repeat steps 2 & 3 until no further improvement is noted.
With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.						

REMOVAL INSTRUCTIONS

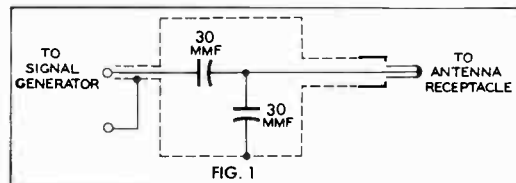
NOTE To replace transistors, remove radio.

RADIO

1. Remove knobs.
2. Use 9/16" wrench and remove 2 nuts from control bushings.
3. Disconnect "A" lead from fuse block, speaker leads, panel lamp lead and antenna lead.
4. Use 7/16" wrench and remove nut from rear of radio.
5. Remove radio from under instrument panel.

SPEAKER

1. Remove 2 Phillips screws on defroster & speaker cover on top of instrument panel.
2. Use 3/8" wrench and remove 2 metal screws. Lift speaker out the top of the instrument panel.

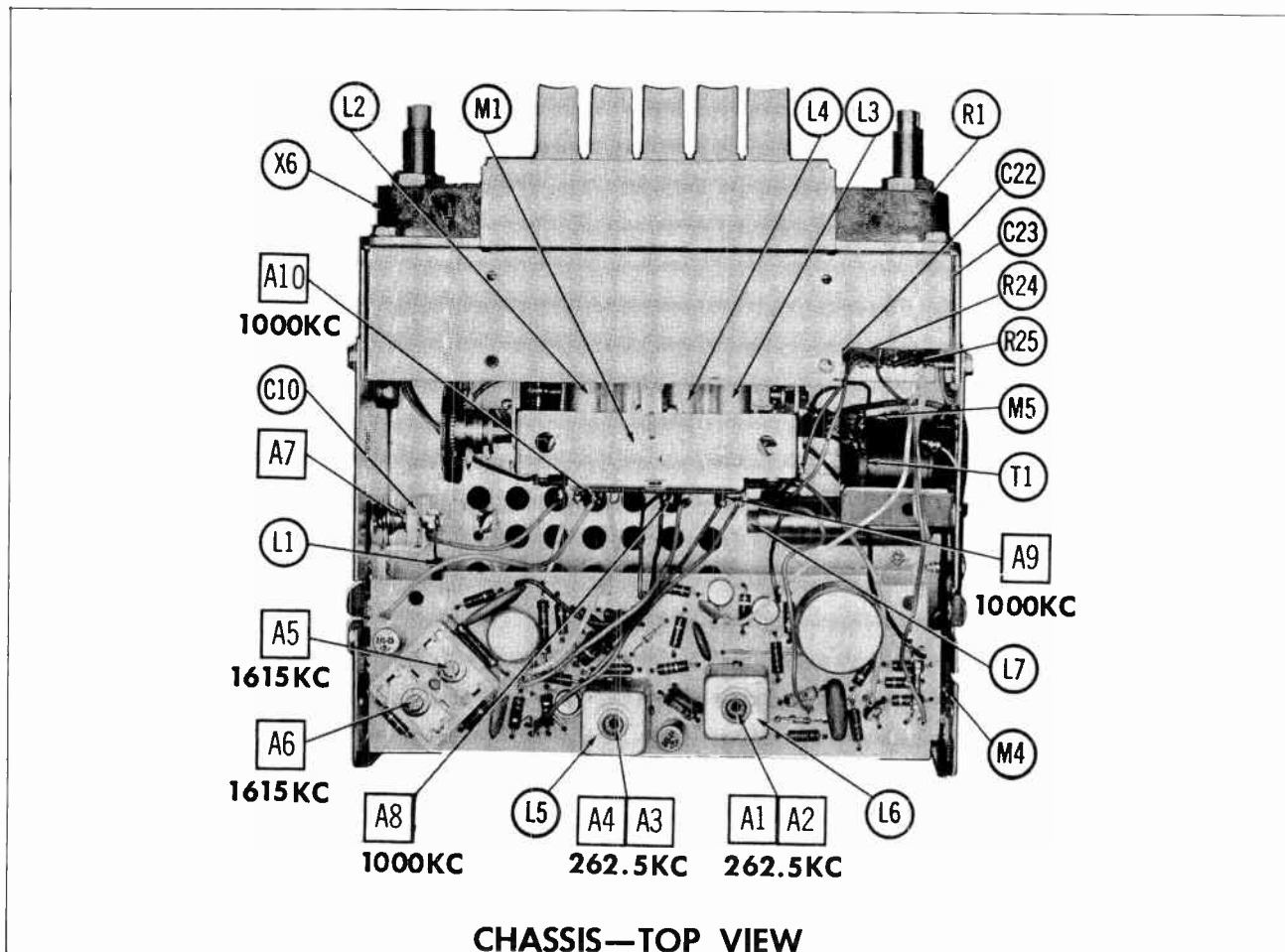


PUSH-BUTTON ADJUSTMENT

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

MERCURY MODEL 2TBM

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



CHASSIS—TOP VIEW

PARTS LIST AND DESCRIPTION

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

WIRING DATA

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

TRANSISTORS

ITEM No.	BENDIX PART No.	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	2091241-15	RF Amplifier	DS-25	GE-1	2N1637	PNP
X2	2091241-13	Converter	DS-25	GE-1	2N1639	PNP
X3	2091241-14	IF Amplifier	DS-25	GE-1	2N1638	PNP
X4	2090924-8	AF Amplifier	DS-26	GE-2	2N591	PNP
X5	2091260-3	AF Amplifier	DS-44	GE-8		NPN
X6	2091859-8	Output	DS-520	GE-3	2N301	PNP (Note 1)

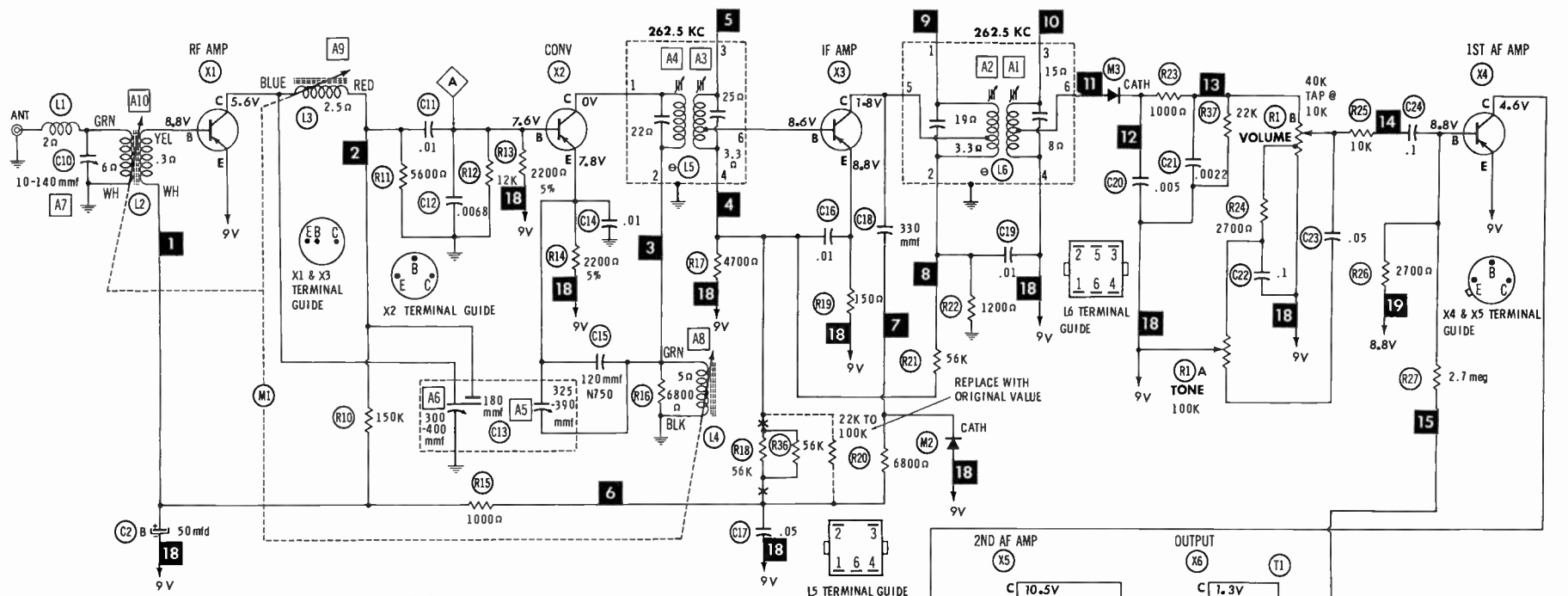
Note 1. When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

ELECTROLYTIC CAPACITORS

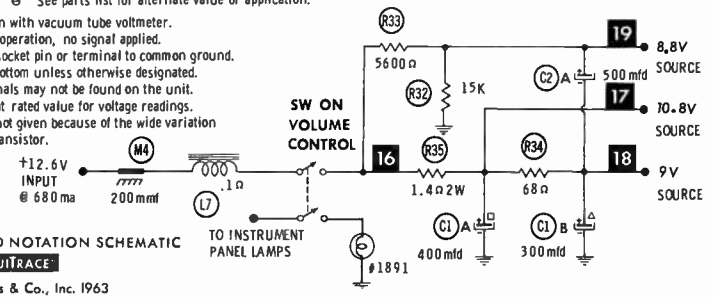
ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	400	16	2091503-5	PWH3-54-15		XC3-48.1	ATMT3001	PFF300.65	PCLS-3020.5*
B	300	16							
C	100	8							
C2A	500	3	2092246-1	BCD3X50050			A7MT3001	PET2160	
B	50	3							

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

cont PAGE 76

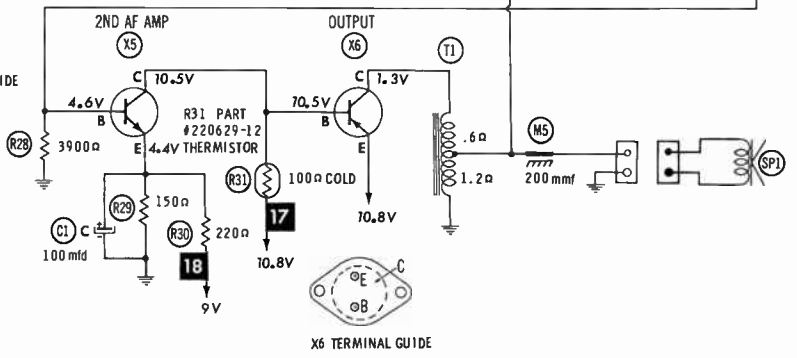


- 1. Voltage measurements taken with vacuum tube voltmeter.
- 2. All controls set for normal operation, no signal applied.
- 3. Measured values are from socket pin or terminal to common ground.
- 4. All terminals viewed from bottom unless otherwise designated.
- 5. Numbers assigned to terminals may not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

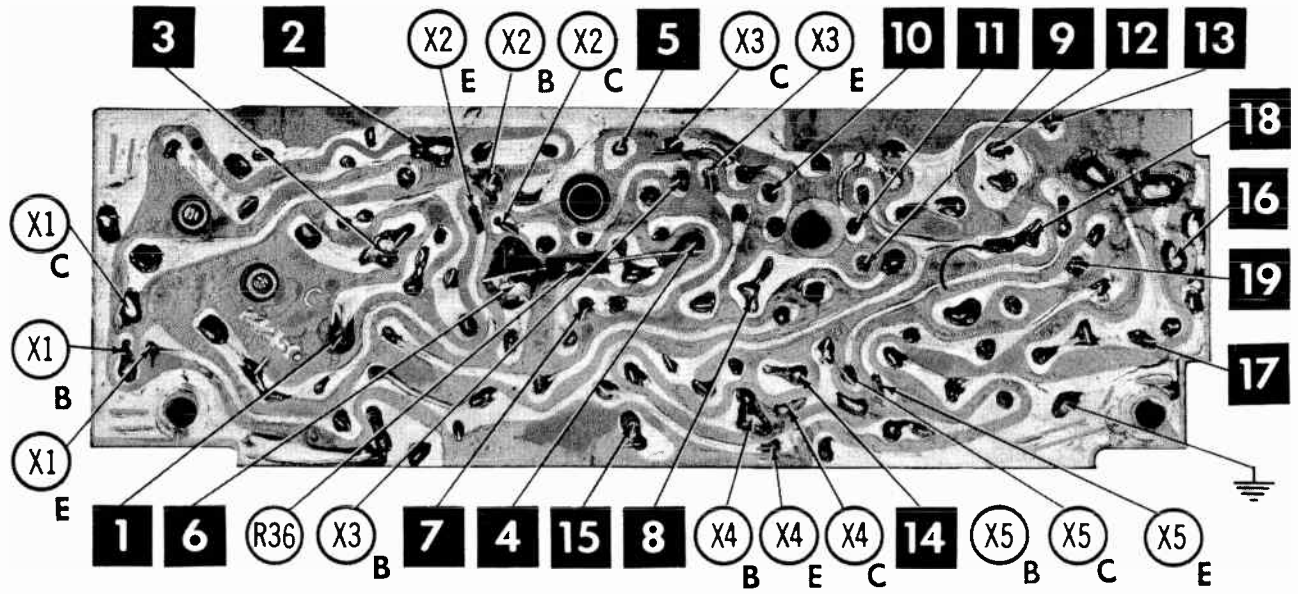
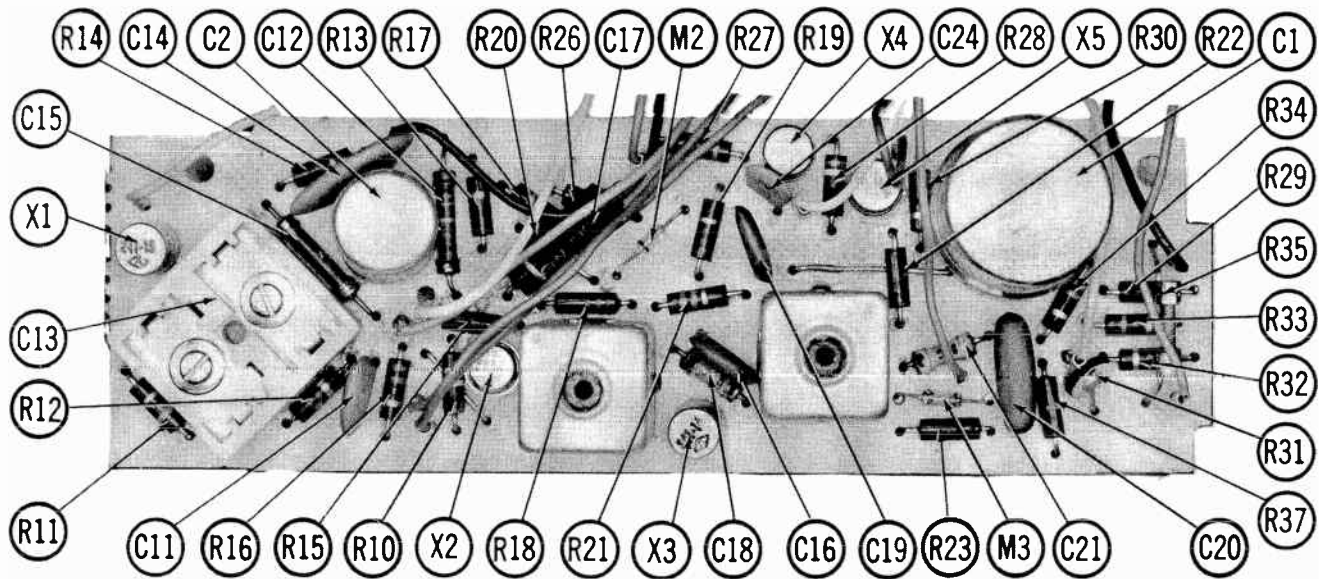


A PHOTOFAC STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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MERCURY MODEL 2TBM



A Howard W. Sams **CIRCUITRACE** Photo

MERCURY MODEL 21BM

PARTS LIST AND DESCRIPTION (CONTINUED)

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

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	10-140	#2091504-4	TTD-01 SI 6800	CK-103 D6-682	H05S1 DPMS8D68	1DP-1-682	TA-110 GEM-6268	TG-S10 30GA-D68
C11	.01							
C12	.0068	#219092-25	TTD-01 N750-SI 120	CK-103 TCN-120	H05S1 C10T12U	CCTN-121	TA-110 CN7-312	TG-S10 10TCU-T12
C13A	300-400							
B	180							
C	325-390							
C14	.01							
C15	120 N750							
C16	.01							
C17	.05							
C18	330							
C19	.01							
C20	.005							
C21	.0022							
C22	.1							
C23	.05							
C24	.1							
			TTD-05	CK-503	H06S5		TA-150	TG-S10
			DI-330	DD-331	LI0T33		GP333	10TS-T33
			TTD-01	CK-103	H05S1		TA-110	TG-S10
			TTD-005	CK-502	H05D5		TA-250	TG-D50
			DM-202					
			TTD-1	CK-104	H05P1		TA-010	TG-P10
			TTD-05	CK-503	H05S5		TA-150	TG-S50
			TTD-1	CK-104	H05P1		TA-010	TG-P10

Bendix Part Number.

CONTROLS

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

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA				
			BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
RIA B	Tone Volume & Switch	100K 40K Tap @ 10K	2091369-2				

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BENDIX PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	RF Choke (9uh)	2092210-4	BC-566	4612	RTC-8522	T860	
L2	Ant.	⓪					
L3	RF	⓪					
L4	Osc.	⓪					
L5	Input IF	2092202-2(or -3)					
L6	Output IF	2092203-2(or -3)					
L7	"A" Lead Choke (1.2MH)	2092050-8					

⓪ Part of M1 or tuner coil assembly Part #2090131-44 (RCC) or Part #2090131-45 (GIC).

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
		BENDIX PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	12Ω Tap @ 8Ω	2092138-2			TR-184		

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		BENDIX PART No.	QUAM PART No.	
SP1	6" x 9" PM 6-8Ω	2090421-1		

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M1	Tuner (RCC)	2092453-8	(185mmf) (200mmf) Includes Transistors Volume-Tone
	Tuner (GIC)	2092453-4	
M2	AVC Detector	2092055-1	
M3	AF Detector	2092055-1	
M4	Spark Plate	220287-25	
M5	Spark Plate	220287-9	
	Printed Board	2092452-1 (or -4)	
	Printed Board	2092451-2	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			BENDIX PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
	SFE	7½			30707, 5 (SFE 7½A)			SFE 7½	

CABINETS & CABINET PARTS

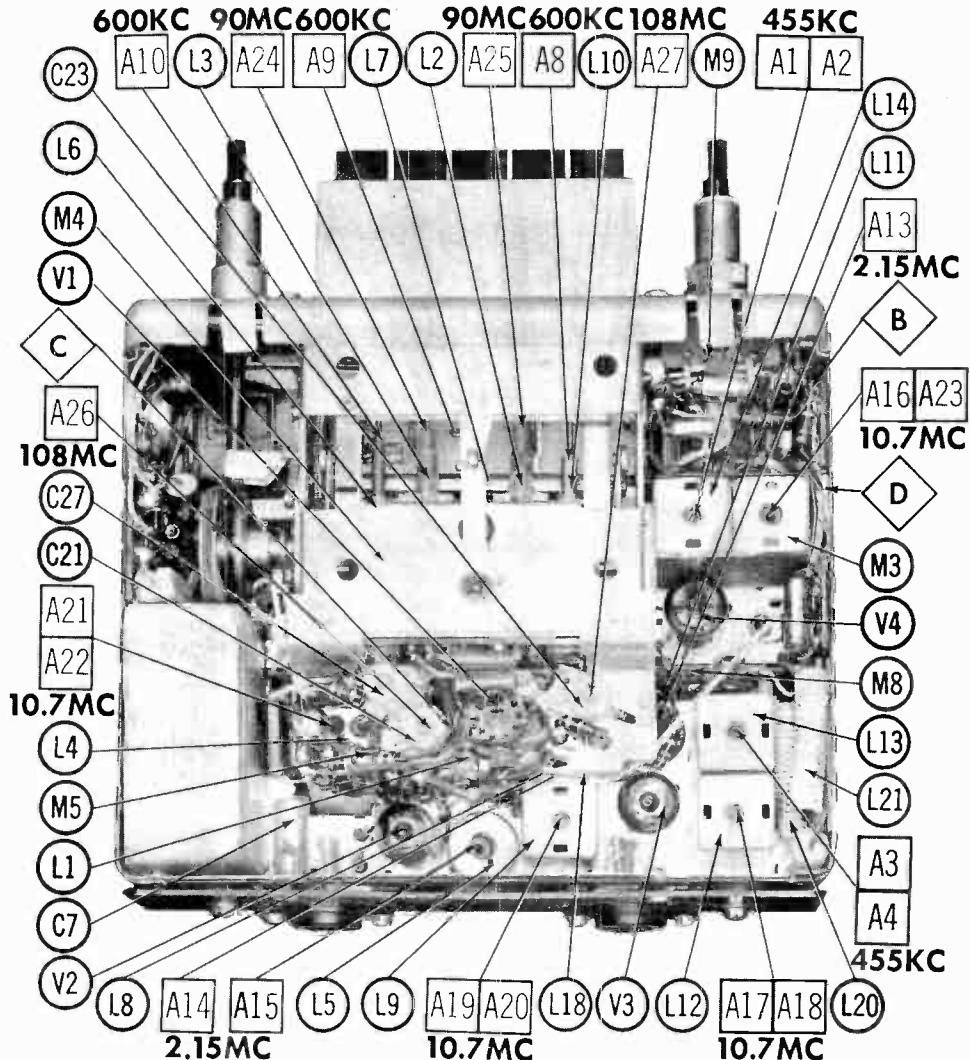
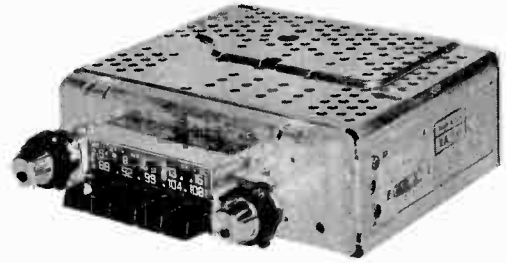
(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial Glass	2092009-1	Knob - Tone, Dummy	2092039-1
Knob - Tuning, Volume	2092041-1		



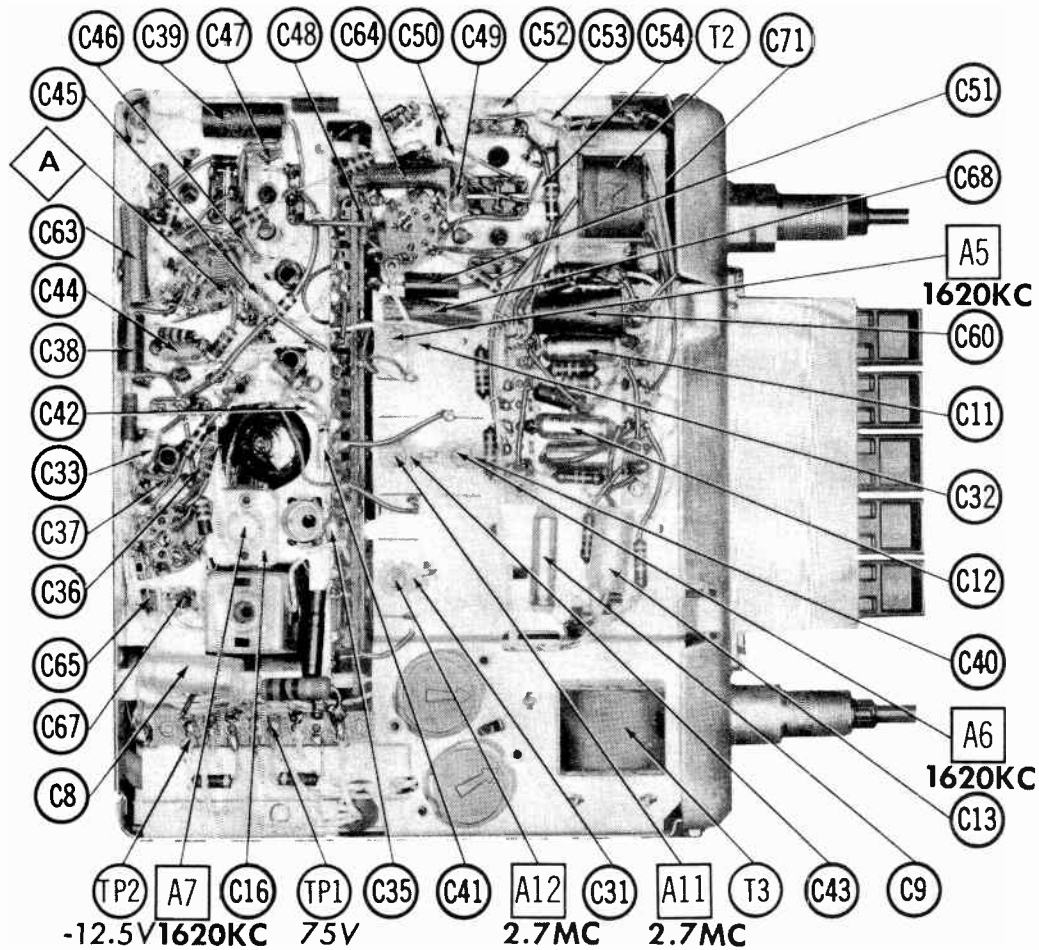
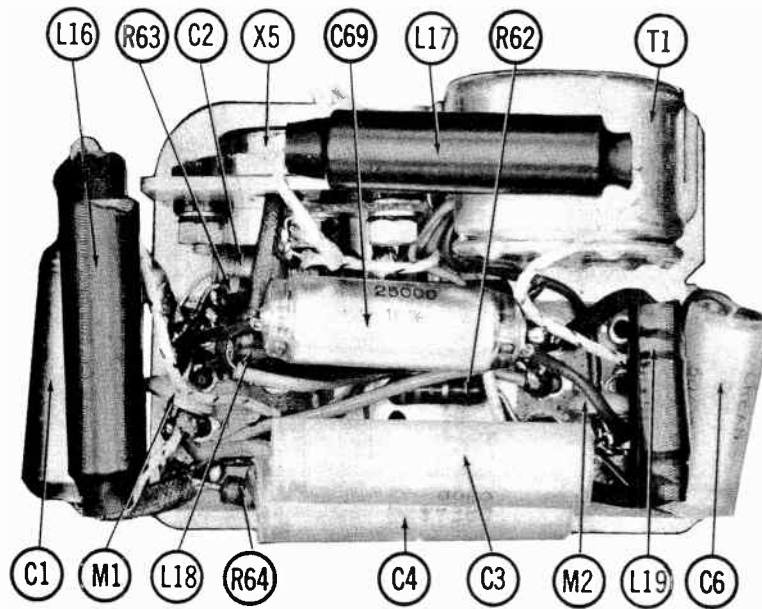
PHOTOFACT[®]

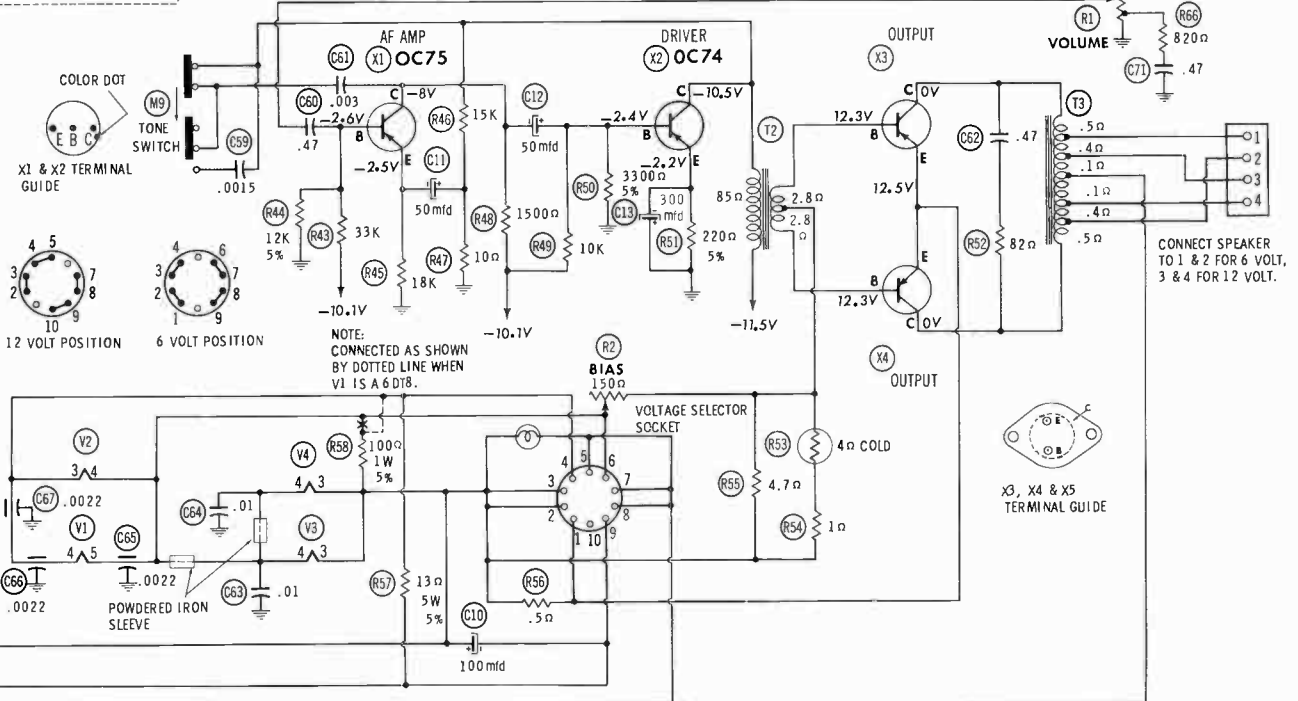
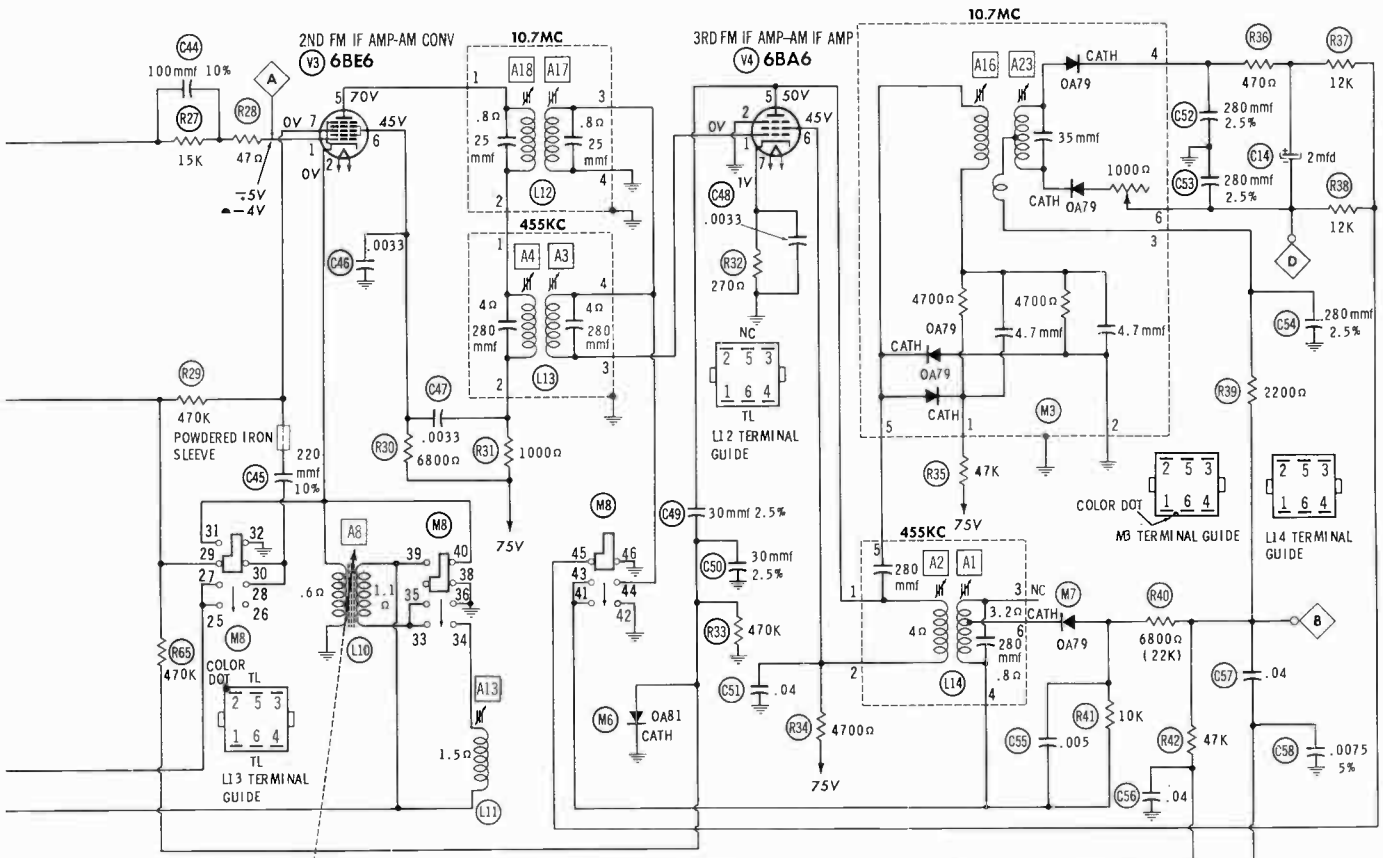
TRADE NAME : Metravox Model RA144 (Sutton)
SUPPLIER : Metravox Corp., 726-65th Street,
 Brooklyn 20, N. Y.
TYPE SET : 4 Tube - 5 Transistor
 AM-FM-SW Receiver
POWER SUPPLY : 6-12 Volt Storage Battery
RATING : 2.2 Amp @ 6.3 Volts DC
 1.3 Amp @ 12.6 Volts DC
TUNING RANGE : BROADCAST 540-1620 KC
 Freq. Mod. 88-108 MC
 Short Wave 2150-2700 KC



METRAVOX MODEL Sutton RA144

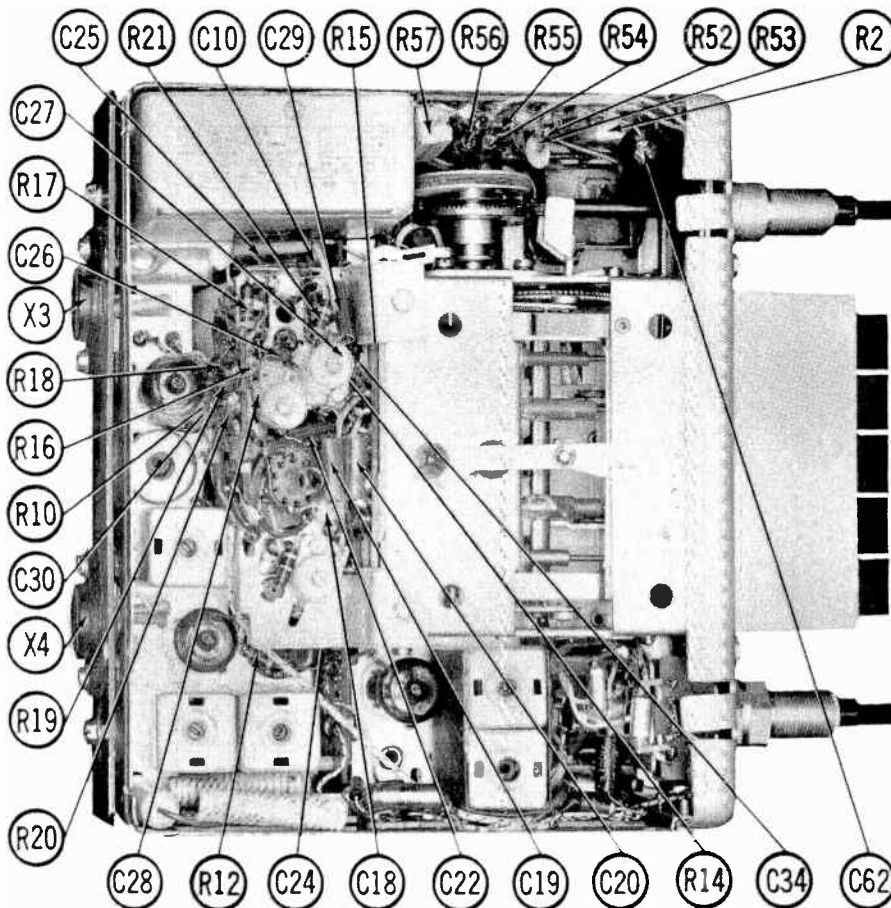
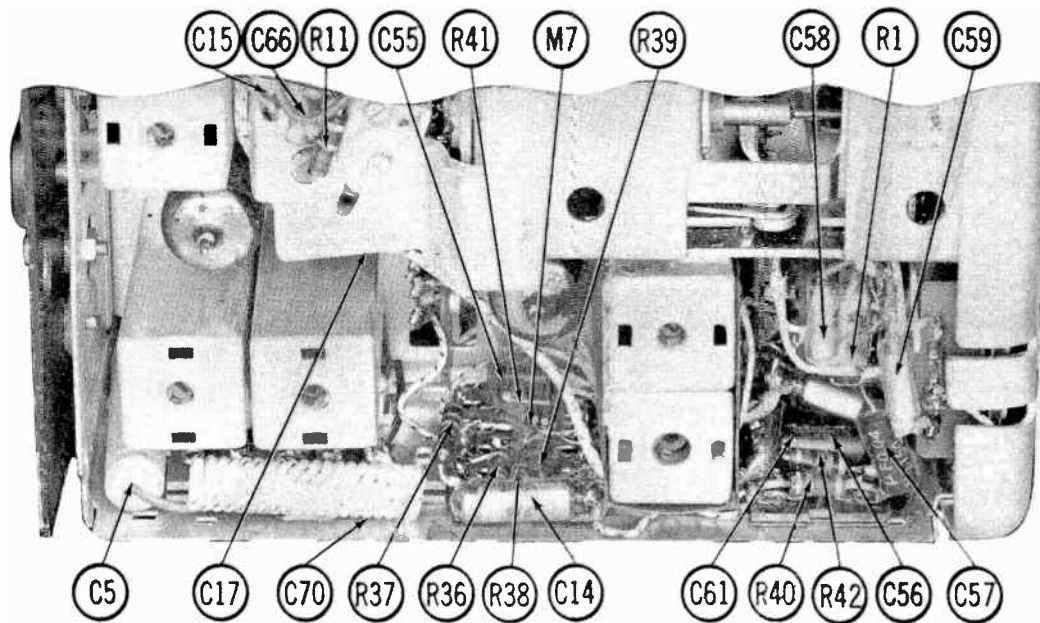
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana





ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
 - TAKEN IN AM POSITION † MEASURED FROM TP 1
 RESISTANCE FOR X1, X2, X3, X4, X5 NOT GIVEN BECAUSE OF WIDE VARIATION
 IN INTERNAL RESISTANCE OF TRANSISTORS.

METRVOX MODEL Sutton RA144



PARTS LIST AND DESCRIPTION

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

WIRING DATA

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

TUBES

ITEM No.	USE	TYPE	TUBES			
			AMPEREX	GENERAL ELECTRIC	RCA	RAYTHEON
V1	FM RF Amp. -FM Conv. 1st FM IF Amplifier- AM RF Amplifier	ECC 85 (6DT8)*				
V2		6BA6				
V3	2nd FM IF Amplifier- AM Converter					6BE6
V4						6BA6

* Used in some versions.

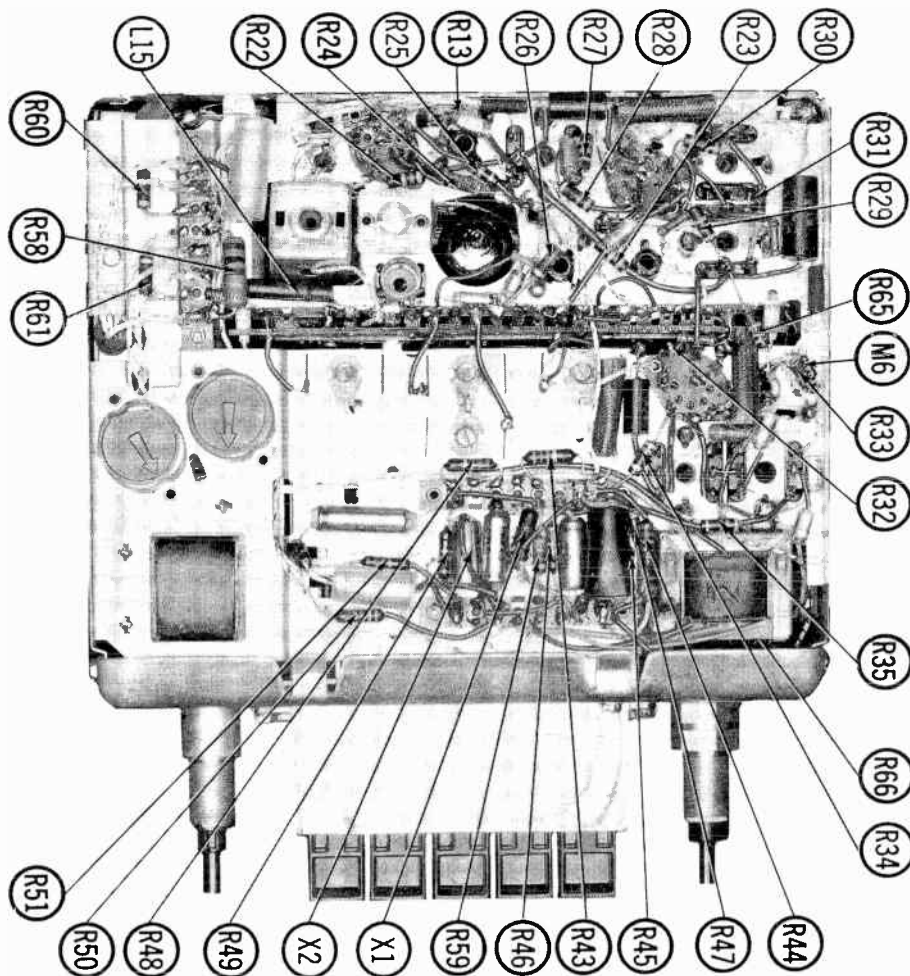
TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	OC75	AF Amp.	DS-26	GE-2	2N591	PNP
X2	OC74	Driver	DS-26	GE-2	2N591	PNP
X3		Output	DS-520	GE-3	2N301	PNP (Part #2, 4341.0018)
X4		Output	DS-520	GE-3	2N301	PNP (Part #2, 4341.0018)
X5	OC26	Power Osc.				PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ME TRAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	100	25	0107.4201	CRE623	NLW100-25	MTI-20	MLV100-25	TT25X100	TE-1211
C2	2	6	0205.2201	CRE301	NLW2-50	MTI-1	MLV2-12	TT6X2	TE-1081
C3	12	150	0126.6201	CRE959	NLW12-150	MTI-8	MLV15-150	TT150X12	TE-1508
C4	12	150	0126.6201	CRE959	NLW12-150	MTI-8	MLV15-150	TT150X12	TE-1508
C5	12	150	0126.6201	CRE959	NLW12-150	MTI-8	MLV15-150	TT150X12	TE-1508
C6	50	25	0506.4203	CRE617	NLW50-25	MTI-20	MLV50-25	TT25X50	TE-1209
C7	100	15	0107.3203	CRE473	NLW100-15	MTI-19	MLV100-15	TT15X100	TE-1162
C8	100	15	0107.3203	CRE473	NLW100-15	MTI-19	MLV100-15	TT15X100	TE-1162
C9	50	12	0506.3201	CRE417	NLW50-15	MTI-16	MLV50-15	TT15X50	TE-1160
C10	100	12	0107.3201	CRE423	NLW100-12	MTI-19	MLV100-12	TT12X100	TE-1135
C11	50	3	0506.2201	CRE217	NLW50-3	MTI-18	MLV50-3	TT3X50	TE-1058
C12	50	3	0506.2201	CRE217	NLW50-3	MTI-18	MLV50-3	TT3X50	TE-1058
C13	300	3	0307.1201	CRE235	NLW300-3	MTI-26	MLV300-3	TT3X300	TE-1066
C14	2	6	0205.2201	CRE301	NLW2-50	MTI-1	MLV2-12	TT6X2	TE-1081

CHASSIS—BOTTOM VIEW RESISTOR INDUCTOR & TRANSISTOR



METRAVOX MODEL SUTON RA144

PARTS LIST AND DESCRIPTION (CONTINUED)

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

FIXED CAPACITORS

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

COILS (RF-IF)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C15	220		DI-220	DD-221	LI0T22	CCD-221	GP322	10TS-T22
C16	10-120	#4187, 1026						
C17	.005		P288N-005	DD-502	DPMS8D5	IDP-1-502	GEM-425	6TM-D50
C18	3.3		NPO-SI 3.3	DTZ-3R3	C10V33C	CC TO-3R3	CNO-533	10TCC-V33
C19	8 ±.5		NPO-SI 8.2					
C20	8 ±.5		NPO-SI 8.2					
C21	2-8	#4187, 0119						
C22	25 5%		NPO-SI 25	TCZ-25	C10Q25C		CNO-525	10TCC-Q25
C23	2-8	#4187, 0119						
C24	.0047		SI 4700	D6-472	JB6D47	CM-20B-472M	GP247	5GA-D47
C25	.1		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C26	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C27	4-20	#4187, 0122						
C28	6.8		NPO-DI 6.8	DTZ-6R8	C10V68C	CC TO-6R8	CNO-568	10TCC-V68
C29	100		NPO-SI 100	TCZ-100	C10T1C	CC TO-101	CNO-310	10TCC-T10
C30	.04		P288N-04	DD-403	DPMS8S4	4DP-3-403	GEM-414	4TM-S40
C31	10-100							
C32	10-100							
C33	250 2.5%					CM-20D-251G		
C34	70 2.5%							
C35	50 2.5%							
C36	.0033		P288N-0033	DD-332	DPMS8D33	6DP-1-332	GEM-6233	6TM-D33
C37	.0033		SI 3300	D6-332	LA10D33	CM-20B-332M	GP233	5GA-D33
C38	.04		P288N-04	DD-403	DPMS8S4	4DP-3-403	GEM-414	4TM-S40
C39	.1		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C40	10-100							
C41	22 + 1							
C42	120 2.5%					CM-15E-121G		
C43	10-100							
C44	100 10%		NPO-SI 100	DTN-100	C10T1C	CM-20B-101K	CNO-310	6TM-T10
C45	220 10%		DI-220	DD-221	LI0T22	CCD-221	GP322	10TS-T22
C46	.0033		SI 3300	D6-332	LA10D33	CM-20B-332M	GP233	5GA-D33
C47	.0033		SI 3300	D6-332	LA10D33	CM-20B-332M	GP233	5GA-D33
C48	.0033		SI 3300	D6-332	LA10D33	CM-20B-332M	GP233	5GA-D33
C49	30 2.5%			TCZ-30		CM-15E-300G		
C50	30 2.5%			TCZ-30		CM-15E-300G		
C51	.04		P288N-04	DD-403	DPMS8S4	4DP-3-403	GEM-414	4TM-S40
C52	280 2.5%							
C53	280 2.5%							
C54	280 2.5%							
C55	.005		P288N-005	DD-502	DPMS8D5	6DP-1-502	GEM-425	6TM-D50
C56	.04		P288N-04	DD-403	DPMS8S4	4DP-3-403	GEM-414	4TM-S40
C57	.04		P288N-04	DD-403	DPMS8S4	4DP-3-403	GEM-414	4TM-S40
C58	.0075 5%			CPR-7500J		VCN-35B-752J		
C59	.0015		P288N-0015	CPR-1500J	DPMS16D15	CM-30B-152M	GEM-6215	6TM-D15
C60	.47		P288N-47		DPMS2P47	2DP-5-474	GEM-2047	2TM-P47
C61	.003		P288N-003	DD-302	DPMS6D3	6DP-1-302	GEM-623	6TM-D30
C62	.47		P288N-47		DPMS2P47	6DP-6-474	GEM-6047	6TM-P47
C63	.01		SI 10000	DD6-103	BYA10SLM	CM-35B-103M	MC475	5GA-S10
C64	.01		SI 10000	DD6-103	BYA10SLM	CM-35B-103M	MC475	5GA-S10
C65	.0022		EF-001					
C66	.0022		EF-001					
C67	.0022		EF-001					
C68	.01		SI 10000	DD6-103	BYA10SLM	CM-35B-103M	MC475	5GA-S10
C69	.025		P288N-025		DPMS6S25	6DP-2-253	MC460	4PS-S25
C70	.5		P288N-5		DPMS2P5	2DP-5-504	GEM-205	2PS-P50
C71	.47		P288N-47		DPMS2P47	2DP-5-474	GEM-2047	2TM-P47

ITEM No.	USE	REPLACEMENT DATA					NOTES
		METRAVOX PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	FM Ant.	2652.0501					① Part of M4
L2	FM RF	Ⓛ					
L3	FM Osc.	2666.3101 ①					
L4	1st FM IF	2641.1130					
L5	SW Ant.						
L6	AM Ant.	Ⓛ					
L7	AM RF	Ⓛ					
L8	SW RF						
L9	2nd FM IF	2641.3125					
L10	AM Osc.	2656.5001 ①					
L11	SW Osc.						
L12	3rd FM IF	2641.3125					
L13	1st AM IF	2641.1120					
L14	2nd AM IF	2641.3126					
L15	RF Choke						
L16	RF Choke						
L17	RF Choke						
L18	RF Choke						
L19	RF Choke						
L20	RF Choke						
L21	RF Choke						

TRANSFORMER (POWER)

ITEM No.	RATING		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	METRAVOX PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1			2621.0511					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	METRAVOX PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2			2621.2335					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	METRAVOX PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T3			2621.1160					

POWER RECTIFIERS

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS		
			MALLORY PART No.	RCA PART No.	SARKES TARZIAN PART No.
M1	20ma	4354.0012	1N2069	1N2859 (or 1N2860, 1N3193, 1N3759)	2F4
M2	20ma	4354.0012	1N2069	1N2859 (or 1N2860, 1N3193, 1N3759)	2F4

MISCELLANEOUS

ITEM No.	PART NAME	METRAVOX PART No.
M3	Ratio Detector Assy	2641.6501
M4	Tuner	2597.1012
M5	APC (BA102)	4354.0013
M6	AVC (OA81)	4351.0031
M7	AM Det. (OA79)	4351.0012
M8	Band Switch	
M9	Tone Switch	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.
Plug - Polarity, Voltage	4652.3020
Knob - Volume, Tuning	2751.1501
Knob - Tone	2751.3006
Knob - Band Switch	2751.0107

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			METRAVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume & Switch	20K Tap Ⓛ 12K	4284.0156				
R2	Bias	150Ω 1.5W	4281.0150		39-150		



PHOTOFACT[®] with

CIRCUITRACE[®]

TRADE NAME: MoPar Model 411 (34BCS) '63 Chrysler
Model 413 (34BI) '63 Imperial TY-1

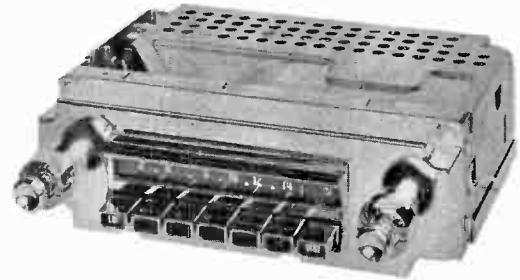
SUPPLIER: The Bendix Corp., Bendix Radio Div.,
Baltimore 4, Maryland

TYPE SET: 4 Tube - 3 Transistor AM Receiver

POWER SUPPLY: 12 Volt Storage Battery

RATING: 1.1 Amp @ 12.6 Volts DC

TUNING RANGE: BROADCAST 535-1620 KC



ALIGNMENT INSTRUCTIONS

Check for specified source voltage.

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools: A1, A4..... GENERAL CEMENT #8606, 8606L, 8869
WALSCO #2543, 2544, 2588

A5, A6, A7... GENERAL CEMENT #9087, 8290, 8868
WALSCO #2525, 2528, 2587

A8, A9, A10... GENERAL CEMENT #5009, 8987, 8728A
WALSCO #2531X, 2536

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfid to point Δ , low side to ground.	262.5KC (400v Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1615KC	"	"	A5, A6, A7	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. IF necessary, back tuning cores (A8, A9, A10) out of coils but not out of forms. Repeat step 2.						
3.	Thru dummy (Fig. 1) to antenna receptacle.	1000KC	Tune to Signal.	Output Meter across voice coil.	A8, A9, A10	Adjust for maximum. Repeat steps 2 & 3 until no further improvement is noted.

With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.

REMOVAL INSTRUCTIONS

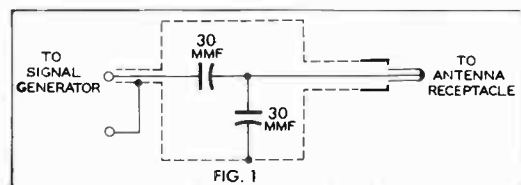
NOTE: To replace transistors, remove radio.

RADIO

1. Pull off knobs.
2. Disconnect speaker leads, "A" lead at connector, antenna plug and pilot-light lead at wiring harness.
3. Remove two 1/2" hex nuts from control bushings.
4. Remove 3/8" hex nut washer assembly from rear mount.
5. Remove receiver from rear of instrument panel.

SPEAKER

1. Remove four Phillips screws holding speaker to adapter mounted under top of instrument panel and remove speaker.

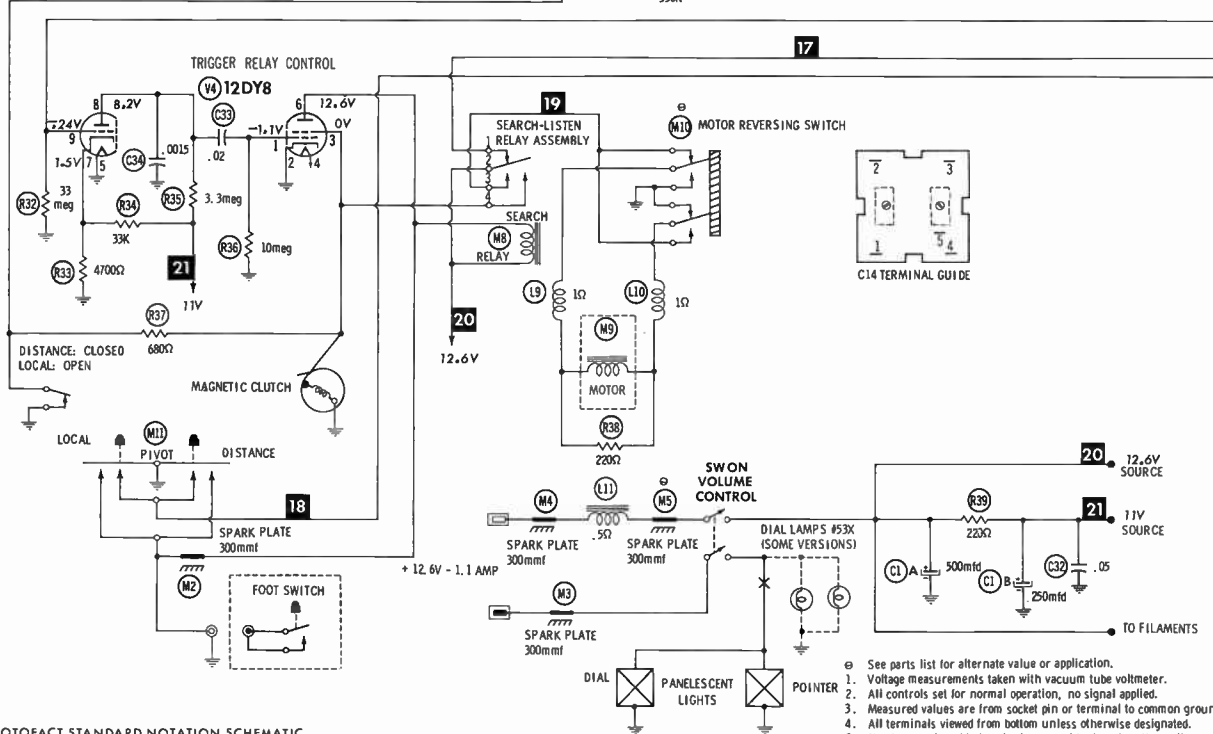
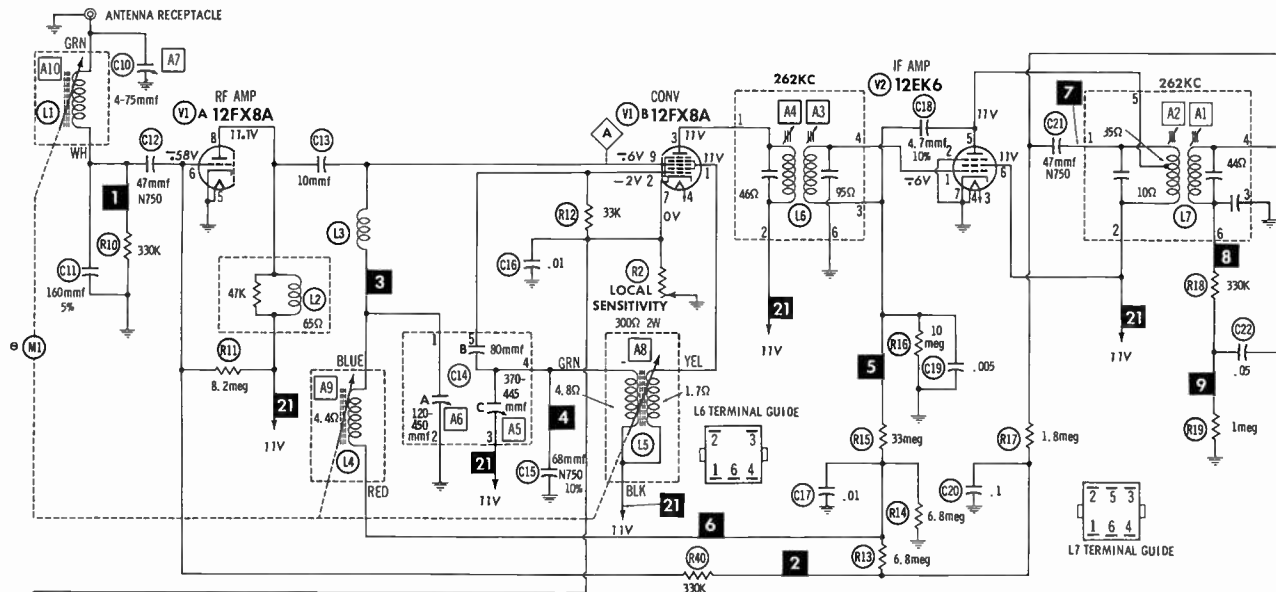


PUSH-BUTTON ADJUSTMENT

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

MOPAR MODELS 411 (34BCS), 413 (34BI)

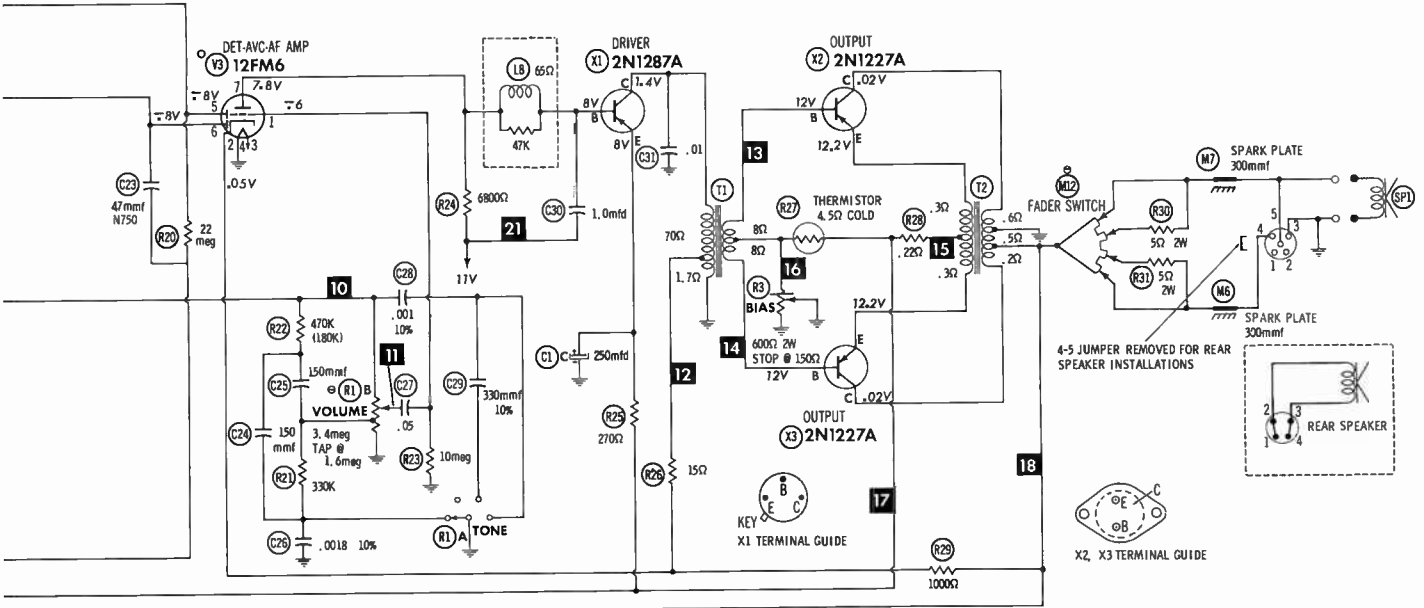
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana



A PHOTOFAC STANDARD NOTATION SCHEMATIC
with **CIRCUITRACE**

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

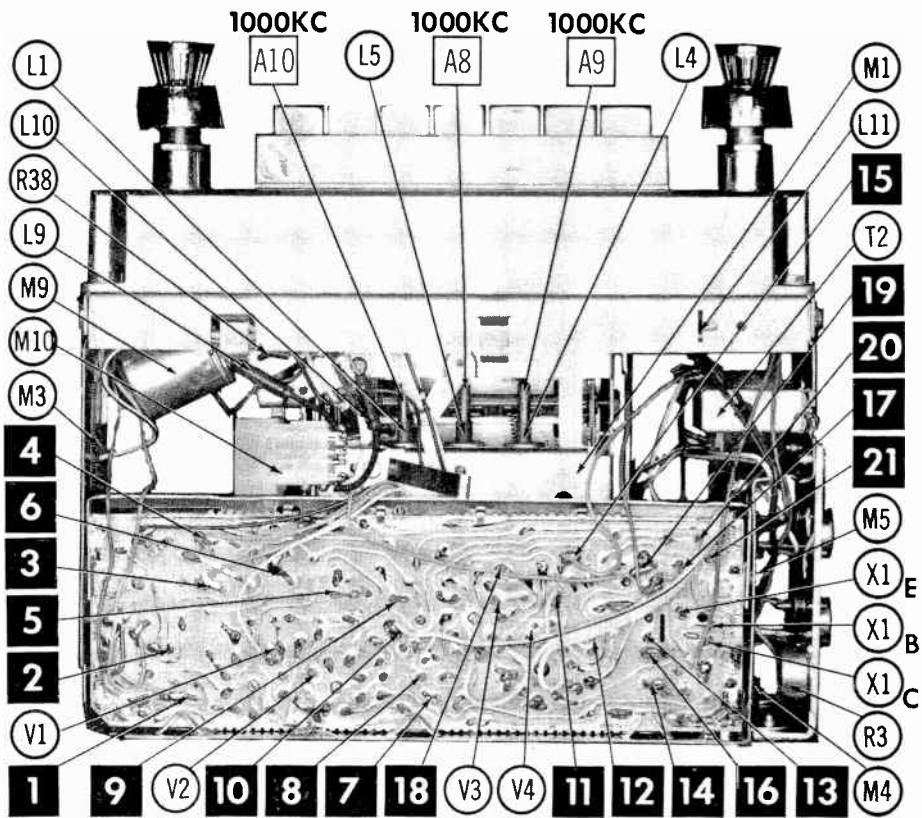


RESISTANCE READINGS

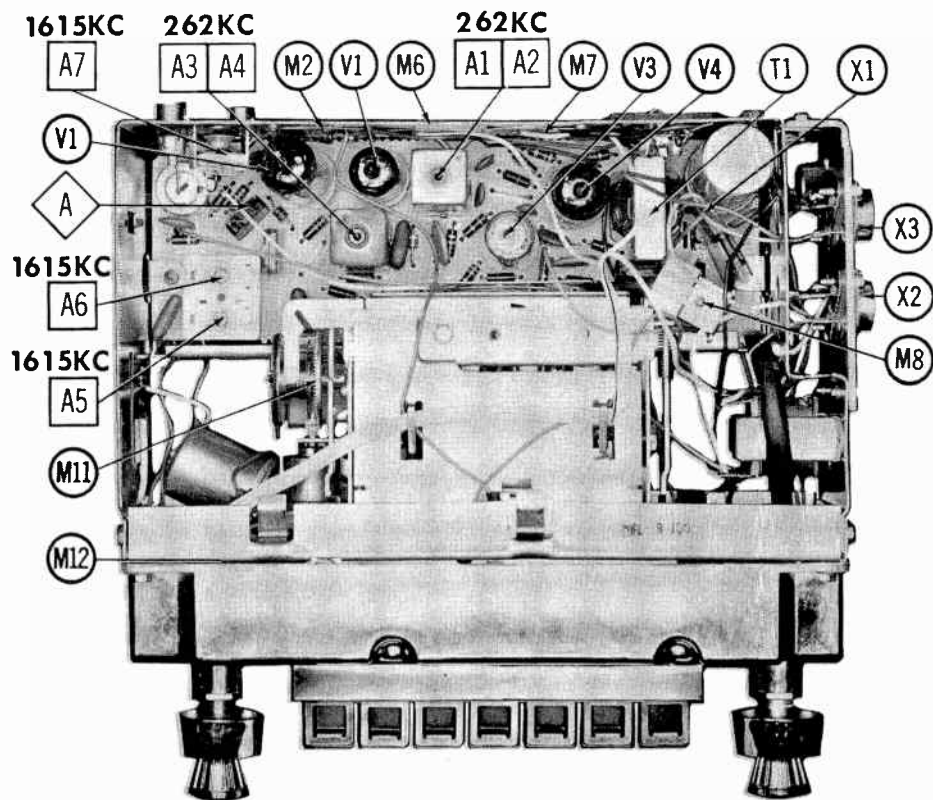
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12FX8A	230Ω	33K	280Ω	5Ω	0Ω	5.2meg	50Ω	30Ω	3.8meg
V2	12EK6	9meg	0Ω	5Ω	0Ω	235Ω	225Ω	0Ω		
V3	12FM6	13meg	18Ω	5Ω	0Ω	6.5meg	1.3meg			
V4	12DY8	10meg	0Ω	70Ω	0Ω	5Ω	650Ω	4700Ω	3.3meg	16meg

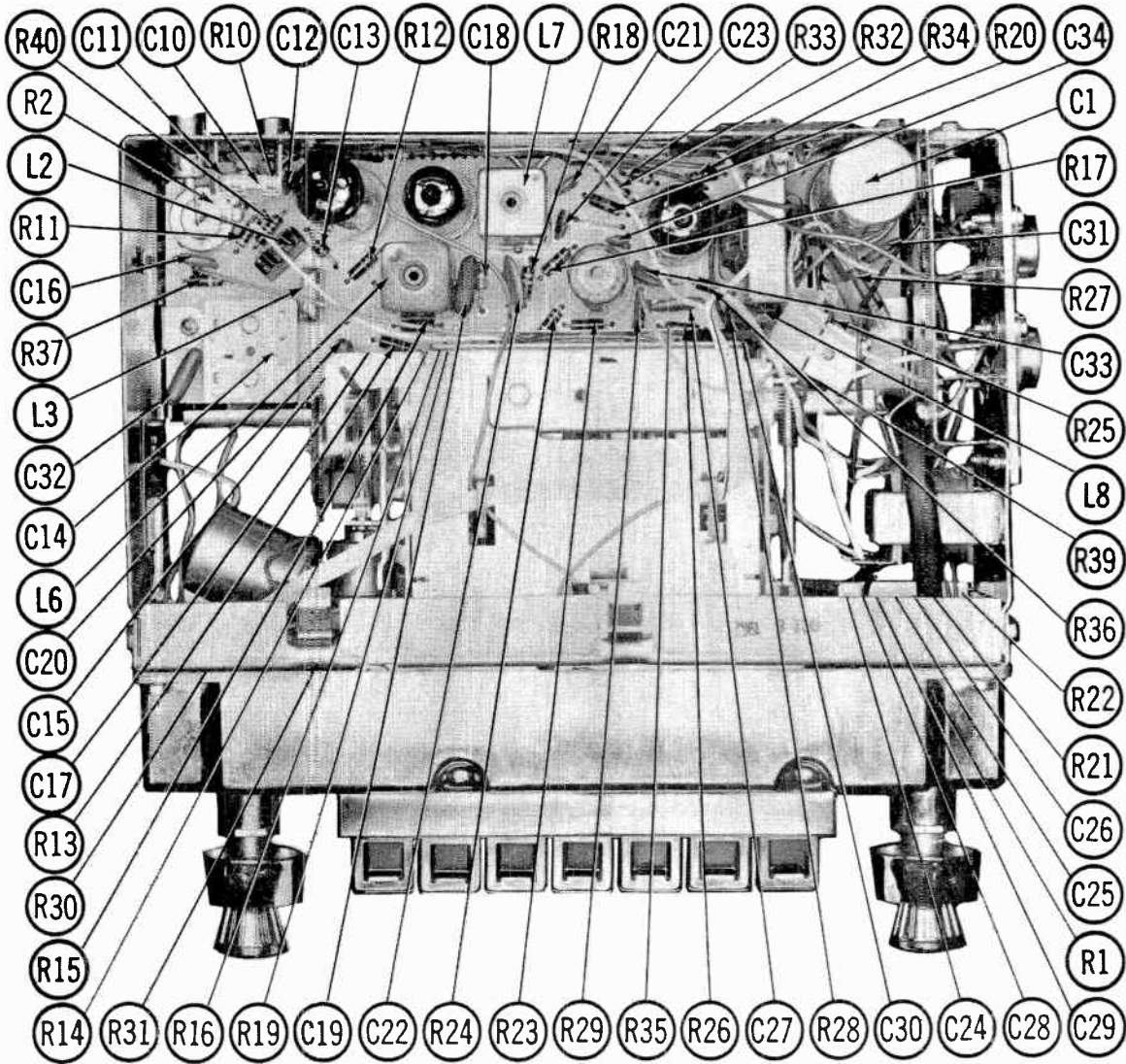
TRANSISTOR CIRCUIT RESISTANCE FOR X1, X2 AND X3 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE;
ALL MEASUREMENTS MADE IN "LISTEN DISTANT" POSITION UNLESS OTHERWISE DESIGNATED

MOPAR MODELS 411 (34BCS), 413 (34BI)



A Howard W. Sams **CIRCUITRACE** Photo





PARTS LIST AND DESCRIPTION

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

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8881 (3/8 In.) or 8870 (3/4 In.)

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	2N1287A	Driver	DS28	GE2	2N591	PNP
X2	2N1227A	Output	DS520	GE3	2N301	PNP Note 1
X3	2N1227A	Output	DS520	GE3	2N301	PNP Note 1

Note 1. When replacing apply silicone grease to both sides of insulator. Tighten mounting screws securely. Check bias adjustment.

TUBES

♦ AMPEREX ♦		♦ GENERAL ELECTRIC ♦		♦ RCA ♦		♦ RAYTHEON ♦		♦ SYLVANIA ♦	
ITEM No.	USE	TYPE		ITEM No.	USE	TYPE			
V1	RF Amp. - Conv.	12FX8A		V3	Det. - AVC - AF Amp. Trigger Relay Control	12FM8 (12FK6) *			
V2	IF Amp.	12EK8		V4		12DY8			

* Alternate Part Number

PARTS LIST AND DESCRIPTION (CONTINUED) FILTER CHOKE

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES	
	CAP.	VOLT.	PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.		SPRAGUE PART No.
C1A	500	16	220353-13	PWE3-00-94		XCS-48.1 ①		PWP300.4	PCL-3028.8	
B	250	16								
C	250	16								

① Use printed board adapters.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						NOTES	
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.		
C10	4-75		#2091853-1							
C11	180	5%								
C12	47	N750								
C13	10		#2091473-100M							
C14A	120-450									
B	80		#219092-16							
C	370-445									
C15	68	N750								
C16	.01									
C17	.01									
C18	4.7	10%	#2091473-479K							
C19	.005	100V								
C20	.1	100V								
C21	47	N750								
C22	.05	100V								
C23	47	N750								
C24	150									
C25	150									
C26	.0018	10%								
C27	.05	100V								
C28	.001	10%								
C29	330	10%								
C30	1.0mfd 3V									
C31	.01									
C32	.05	100V								
C33	.02	100V								
C34	.0015									

Part Number

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA					NOTES
			PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	Tone Switch		209110-4 ①					
B	Volume, Switch	3.4meg, 1.6meg Tap					↑ UE4342S	
R1A	Tone Switch		209110-5 ②					
B	Volume, Switch	3.4meg Tap					▲ UE4430S	
R2	Local Sensitivity	1.7meg Tap	2090181-4			110-300		
R3	Bias	300Ω 2W 600Ω 2W 150Ω Stop	219555-14		39-700-200	112-500 ③	FL-6008	

① Used in Model 413.

② Used in Model 411.

③ Connect a 150Ω 2 watt resistor in series with the terminal.

↑ "STA-LOC" Equivalent: TS-3, RU36T155, O81250A, 181667, US-42
 ▲ "STA-LOC" Equivalent: TS-5, RU36T155, O8667, 181125.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	Ant.						
L2	RF Choke (3MH)	2090088-17 ②					① Part of M1.
L3	RF Choke (62uh)	2090088-16	TV-193	6110	RTC-6573	T338	② Includes 47K resistor.
L4	RF						
L5	Oac.						
L6	Input IF	2090876-7					
L7	Output IF	2090877-8					
L8	RF Choke (3MH)	2090088-17 ②					
L9	RF Choke (2.4uh)	2091855-1	SW630	4604	RTC-6517	T857	
L10	RF Choke (2.4uh)	2091855-1	SW630	4604	RTC-6517	T857	

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (O CURRENT 1000~)	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L11	1.1Ω	.5Ω	1.9 MH	2090520-8					

CHOKE (AUDIO OUTPUT)

ITEM No.	INDUCTANCE	REPLACEMENT DATA					NOTES
		PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	25Ω 3-4Ω	2091880-3					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO	REPLACEMENT DATA					NOTES
		PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	25: 1	2090433-8					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
	3AG	7½ Amp 32V	AGC 7½		31107.5 (7½ Amp 32V)	155020	AGC 7½	

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		PART No.	QUAM PART No.	
SPI	7" PM 3-4Ω 6" x 9" PM 3-4Ω	2091269-3 2091000-2	7A31	Model 413 Model 411

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Tuner	2091312-3	Complete Less Pointer, Model 413.
	Tuner	2091312-6	
	Tuner Coil Assembly	2090131-24	
M2	Spark Plate	220287-16	Complete Less Pointer, Model 411. Models 411, 413. 300mmf
M3	Spark Plate	220287-12	
M4	Spark Plate	220287-12	
M5	Spark Plate	220287-12	
	Spark Plate	220287-23	
M6	Spark Plate	220287-16	200mmf, used in Model 411.
M7	Spark Plate	220287-16	300mmf
M8	Relay	220287-16	300mmf
M9	Motor	2091297-2	Search Listen Relay and Cover Assembly
M10	Motor	2091522-1	
	Switch	2091661-1	Tuning Motor
	Switch	2090051-1	Motor Reverse with mounting bracket and cover
M11	Switch	2091315-2	Motor Reverse without mounting bracket
M12	Switch	2090886-5	Local-Distance
	Switch	2090886-6	Fader, Model 413.
	Printed Board	2091317-2	Fader, Model 411.

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	MODEL 413	PART No.	ITEM	MODEL 411	PART No.
Dial Lens, Both Models		2090999-1	Dial Pointer and Arm Assembly		2090129-37
Dial Pointer		2090966-1	Pushbutton Assembly Station		2092069-4
Pushbutton Assembly Station		2091683-1	Pushbutton Assembly Local		2092069-5
Pushbutton Assembly Local		2091683-2	Pushbutton Assembly Dist.		2092069-6
Pushbutton Assembly Dist.		2091683-3	Knob, Tuning, Volume		2091142-1
Knob, Tuning, Volume		2091122-1	Knob, Tone, Fader		2092372-1
Knob, Tone, Fader		2091121-1			



PHOTOFACT[®] with

CIRCUITRACE[®]

TRADE NAME : MOTOROLA MODELS
 BKA62, BKA62-1 (1962 Buick)
 PCA62, PCA62-1 (1962 Pontiac)
SUPPLIER : Motorola Inc.
 9401 W. Grand Ave., Franklin Park, Ill.
TYPE SET : 6 Transistor Custom AM Receiver
POWER SUPPLY : 12 Volt Storage Battery
RATING : 420 MA @ 12.6 VDC
TUNING RANGE : BROADCAST 540 - 1620KC



ALIGNMENT INSTRUCTIONS

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

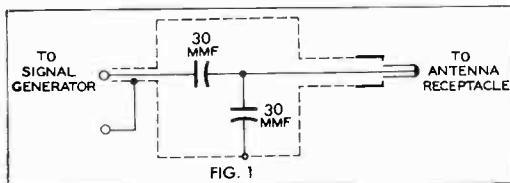
A1, A2, A3, A4. . . . GENERAL CEMENT #8606, 8606L, 8869. . . WALSCO #2543, 2544, 2588
 A5, A6, A7, A8. . . . GENERAL CEMENT #8290, 8868, 9087. . . WALSCO #2525, 2528, 2587

Ant. Trimmer (A8) is located on rear of radio and to the right of ant. input.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfid to point Δ , low side to ground.	262KC (400v Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1615KC	"	"	A5, A6, A7, A8	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. IF necessary, back tuning cores (A8, A9, A10) out of coils but not out of forms. Repeat step 2.						
3.	Thru dummy (Fig. 1) to antenna receptacle.	1000KC	Tune to Signal.	Output Meter across voice coil.	A9, A10, A11, A12	Adjust for maximum. Repeat steps 2 & 3 until no further improvement is noted.
With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A8 for maximum output.						

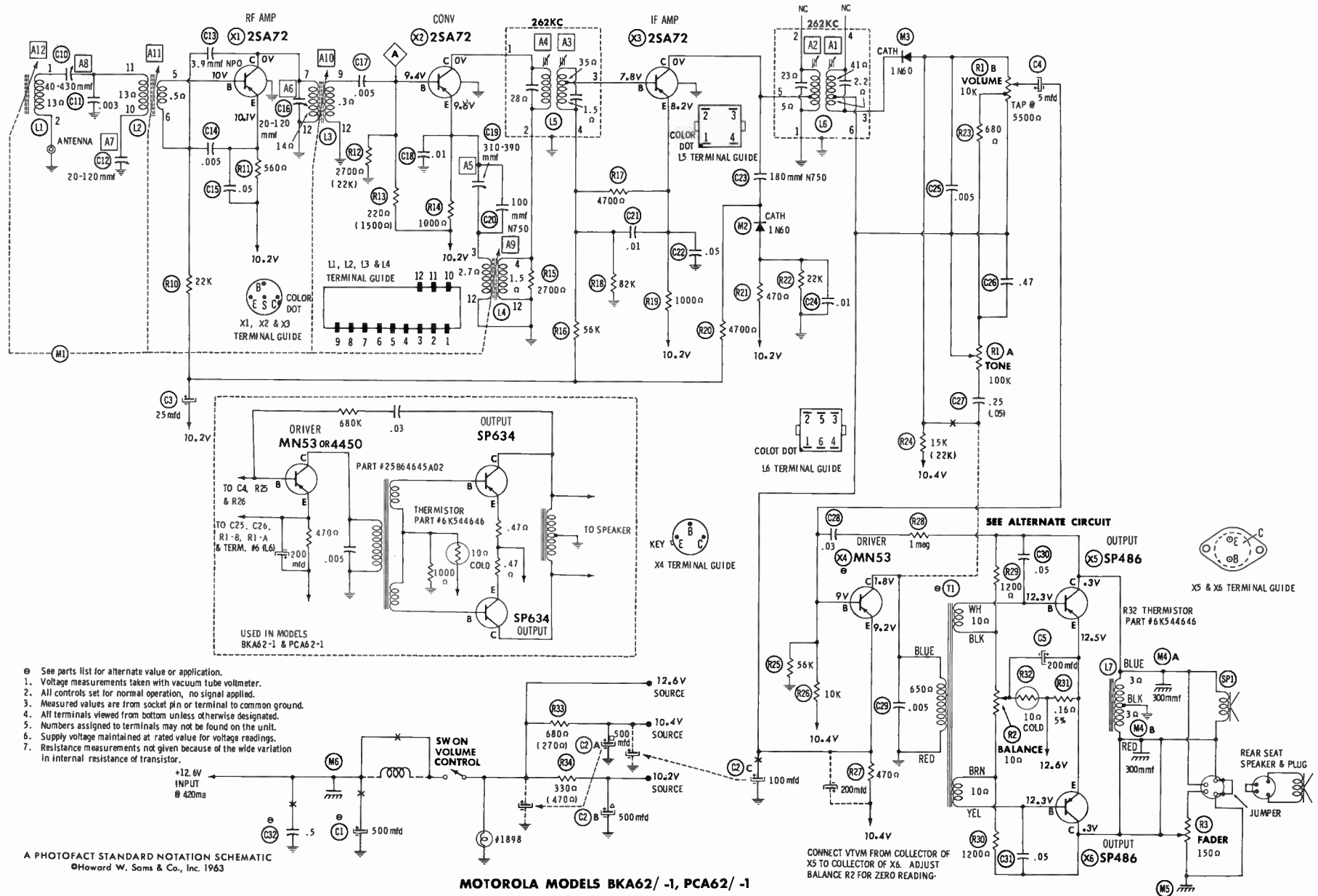
PUSH-BUTTON ADJUSTMENT

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



MOTOROLA MODELS BKA62/-1, PCA62/-1

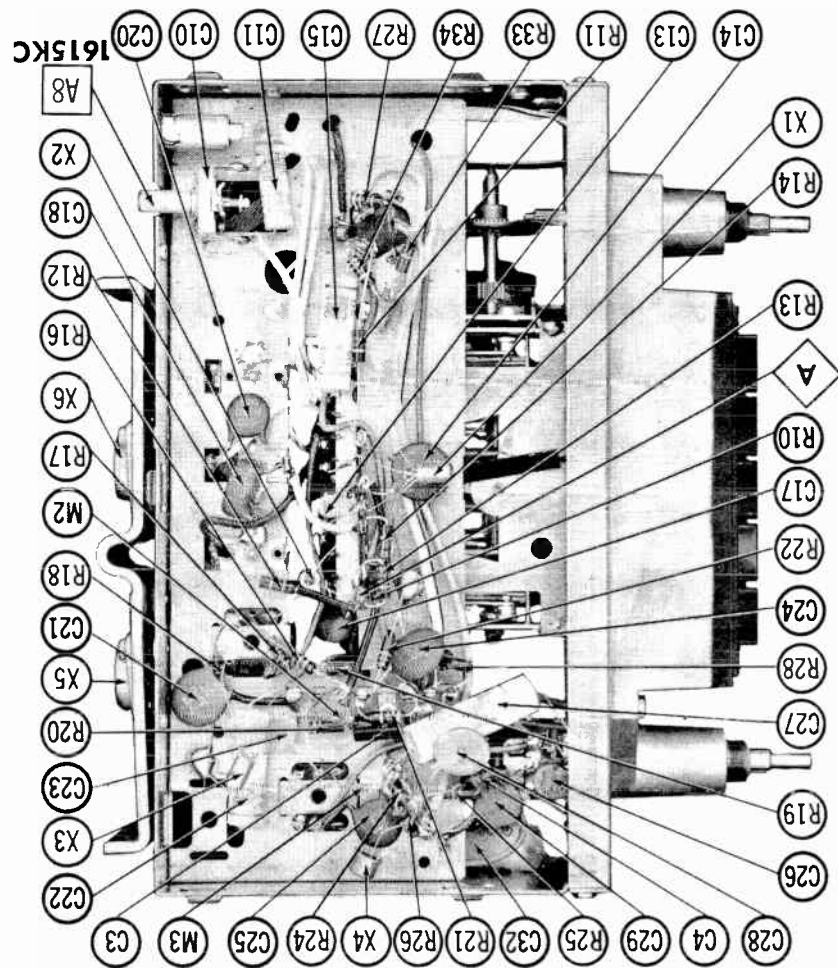
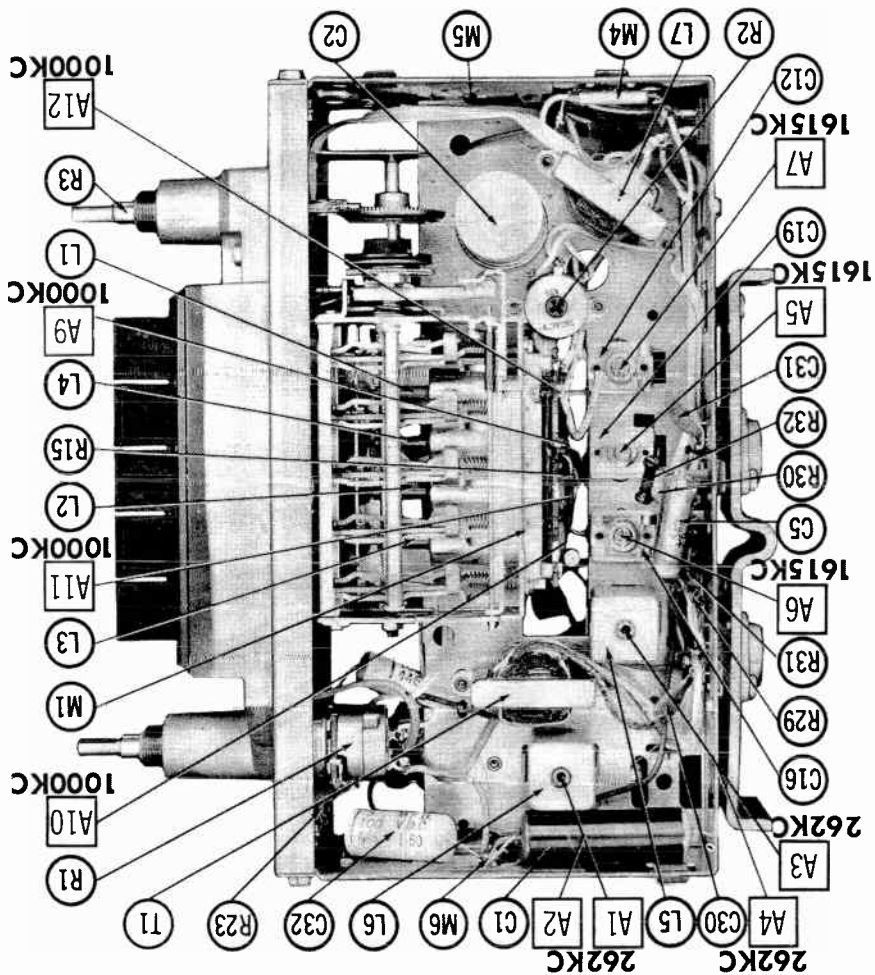
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana



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

A PHOTOFAC STANDARD NOTATION SCHEMATIC
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MOTOROLA MODELS BKA62/-1, PCA62/-1



PARTS LIST AND DESCRIPTION

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

TRANSISTORS

Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement. **CHOKE (AUDIO OUTPUT)**

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	2SA72	RF Amplifier	DS25	GE-1		PNP
X2	2SA72	Converter	DS25	GE-1		PNP
X3	2SA72	IF Amplifier	DS25	GE-1		PNP
X4	MN53†	Driver	DS26	GE-2	2N591	PNP
X5	SP486*	Output	DS520	GE-3	2N301	PNP (Note 1)
X6	SP486*	Output	DS520	GE-3	2N301	PNP (Note 1)

† Alternate Type 4450. * Alternate Type 2N176. Models BKA62-1, PCA62-1 use SP634.
 Note 1. When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely. Check Balance adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	500	15	23C65282A04	PRSI220	BR500-15	QT1-32	TD-500-15	TC1505	TVA-1J62
C2A	500	16	23B543279	AFH3-00-95		XC3-48		WP300.85	TVL-3026.8
C B	500	16							
C C	100	16							
C3	25	3	23K544540	PTT9	NLW25-3	MT1-10	MLV25-3	TT3X25	TE-1055
C4	5	3	23K543076	PTT4	NLW5-15	MT1-3	MLV5-12	TT6X5	TE-1052.2
C5	200	3	23K544617	PTT14	NLW200-3	MT1-22	MLV200-3	TT3X200	TE-1064

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCOPART PART No.	MALLORY PART No.	SPRAGUE PART No.	
C10	40-430	#20B6487A01							
C11	.003			DM-302					
C12	20-120	#20K541014							
C13	3.9 NPO	#21R128596							
C14	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	10TCC-V39	5HK-D50
C15	.05		TTD-05	CK-503	H5		TA-150	TG-850	
C16	20-120	#20K541014							
C17	.005		TTD-005	CK-502	H1		TA-250	TD-D50	
C18	.01		TTD-01	CK-103	H2		TA-110	TG-810	
C19	310-390	#20K541700							
C20	100 N750		N750-D1 100	DTN-100	C10TIU	CCTN-101	CNT-310	10TCU-T10	
C21	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C22	.05		TTD-05	CK-503	H5		TA-150	TG-850	
C23	180 N750		N750-D1 180	TCN-180	C10TI8U		CNT-318	10TCU-T18	
C24	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C25	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50	
C26	.47			UK10-404	HCC10474Z			HY-330	
C27	.25	(.05) † ①	P288N-25		PM2P25	2DP-4-254	PVC-2025	2TM-P25	
C28	.03		TTD-03	CK-303	H5		B-250	TG-830	
C29	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50	
C30	.05		TTD-05	CK-503	H5		TA-150	TG-850	
C31	.05		TTD-05	CK-503	H5		TA-150	TG-850	
C32	.5		P288N-5		PM2P5	2DP-5-504	PVC-205	2TM-P50	

Motorola Part Number. † Alternate Value.
 ① Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	Antenna	24K563896 ①					① Part of M1 or Coil Ass'y. #1V40800A57
L2	Antenna	24B40431A02 ①					
L3	RF	24B40431A01 ①					
L4	Oscillator	24B40817A01 ①					
L5	Input IF	24B64861A03					
L8	Output IF	24B64861A02					

ITEM No.	INDUCTANCE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	
L7	120MH	25B64737A02				

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-HRC PART No.	MALLORY PART No.
RIA B	Tone Volume & Switch	100K 10K Tap ④ 5500Ω	18C64779A01 ①				
R2	Balance Fader	10Ω	18C64735A09				
R3		150Ω	18B84772A01 ②				

① Part #18B64779A04 used in Model PCA62. ② Part #18B64772A02 used in Model PCA62.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	7:1	25B64666A01 ①					① Alternate Part #25B64738A02
			SEC 2				
			1				

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MOTOROLA PART No.	QUAM PART No.	
SP1	4" x 10" PM 40Ω	50C64797A01	410A2240	

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	Tuner	77D40974A01	AT-386, Complete. Model BKA62
	Tuner	77D41001A01	
M2	AVC (1N60)	48K640675	AT-383 Complete. Model PCA62
M3	Detector (1N60)	48K640675	
M4A	Spark Plate	21A522033	300mmf
B	Spark Plate		300mmf
M5	Spark Plate	64K561877	
M6	Spark Plate	64K530177	

CABINETS & CABINET PARTS (When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
MODEL BKA62		MODEL PCA62	
Dial Scale	34B64792A01	Dial Scale	34B64791A01
Knob - Tuning, Volume	36B64755A01	Knob - Tuning, Volume	36B64836A01
Knob - Fader, Tone	36B64756A01	Knob - Fader, Tone	36B64827A01
Push Button 2 & 4	38C40947A01	Push Button 2 & 4	38C41002A01
Push Button 1, 3 & 5	38C40947A03	Push Button 1, 3 & 5	38C41002A03

WIRING DATA

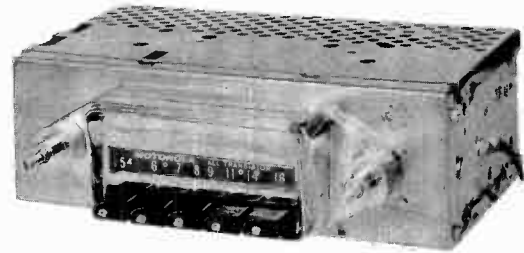
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors
	8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or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



PHOTOFACT[®] with

CIRCUITRACE[®]

TRADE NAME : Motorola Models
 CA62, CA62-1 (1961/62 F-85, Special,
 Tempest) CRA62, CRA62-1 (1960/61/62
 Corvair) CYA62, CYA62-1 (1962 Chevy II)
SUPPLIER : Motorola, Inc.
 9401 W. Grand Ave., Franklin Park, Ill.
TYPE SET : 6 Transistor AM Receiver
POWER SUPPLY : 12 Volt Storage Battery
RATING : 420 MA @ 12.6 VDC
TUNING RANGE : BROADCAST 540 - 1615KC



ALIGNMENT INSTRUCTIONS

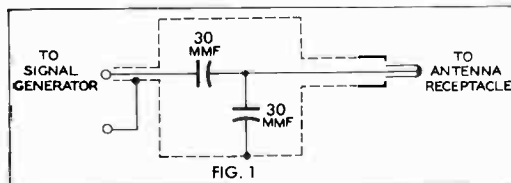
Check for specified source voltage.

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:

A1, A2, A3, A4, GENERAL CEMENT #8606, 8606L, 8869, WALSCO #2543, 2544, 2588
 A5, A6, A7, A8, GENERAL CEMENT #8290, 8868, 9087, WALSCO #2525, 2528, 2587

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mf to point Δ , low side to ground.	262KC (400v Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1615KC	"	"	A5, A6, A7, A8	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. IF necessary, back tuning cores (A8, A9, A10) out of coils but not out of forms. Repeat step 2.						
3.	Thru dummy (Fig. 1) to antenna receptacle.	1000KC	Tune to Signal.	Output Meter across voice coil.	A9, A10, A11, A12	Adjust for maximum. Repeat steps 2 & 3 until no further improvement is noted.
With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A 8 for maximum output.						

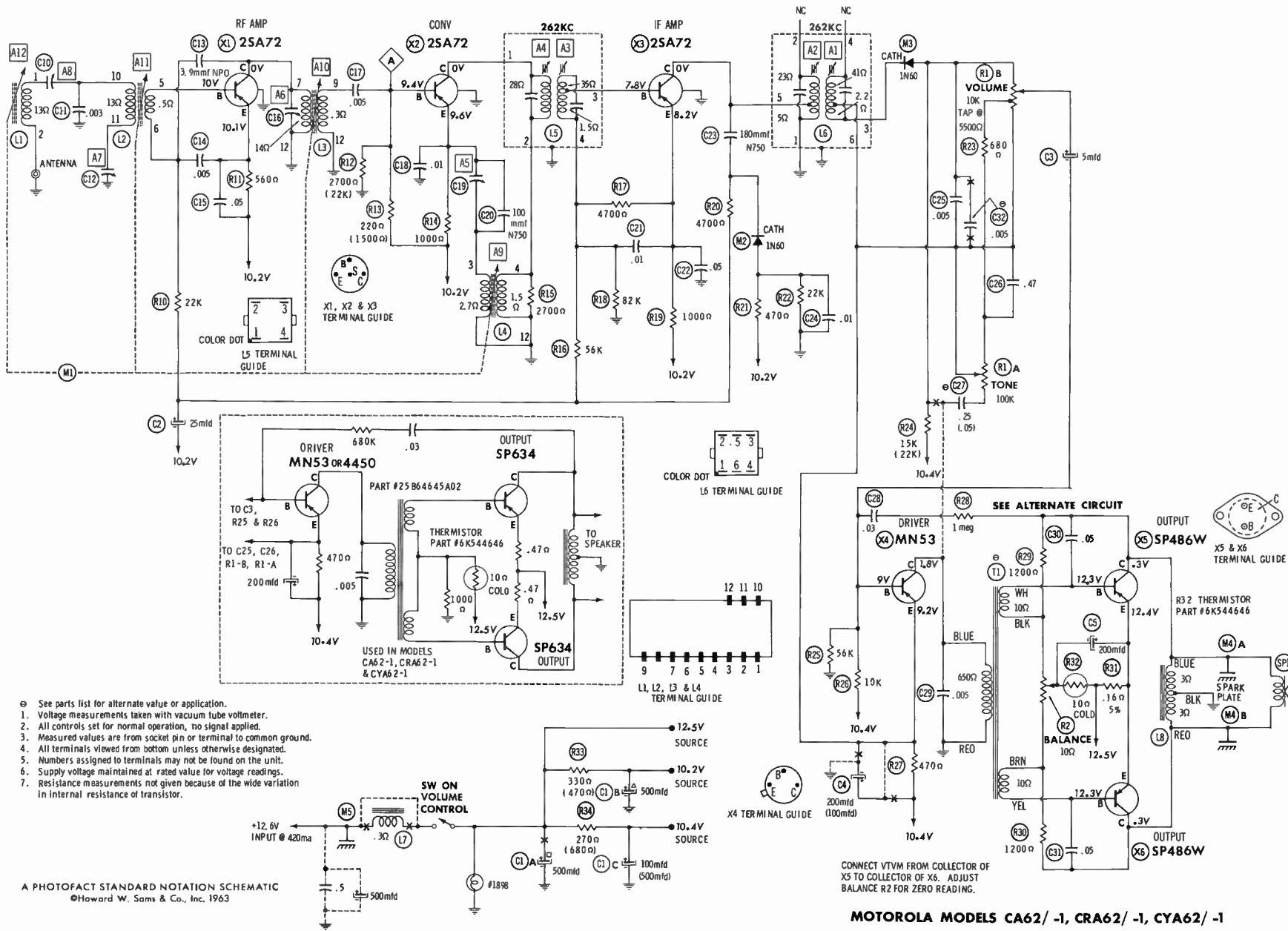


PUSH-BUTTON ADJUSTMENT

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

MOTOROLA MODELS CA62 / -1, CRA62 / -1, CYA62 / -1

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



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

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PARTS LIST AND DESCRIPTION

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

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

TRANSISTORS

COILS (RF-IF)

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	2SA72	RF Amp.	DS-25	GE-1		PNP PNP PNP PNP (Note 1) PNP (Note 1)
X2	2SA72	Converter	DS-25	GE-1		
X3	2SA72	IF Amp.	DS-25	GE-1		
X4	MN53+	Driver	DS-26	GE-2	2N591	
X5	SP486W	Output	DS-520	GE-3	2N301	
X6	SP486W	Output	DS-520	GE-3	2N301	

Note 1. When replacing apply silicone grease to both sides of insulator. Tighten mounting screws securely. Check Balance control.

* Alternate 4450.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	
C1A	500	16	23B543279	AFH3-00-95		XC3-48	TMT3002	WP300.85	TVL-3026.8
B	500	16							
C	100	16							
C2	25	3	23K544540	PTT9	NLW25-3	MT1-10	MLV25-3	TT3X25	TE-1055
C3	5	3	23K543076	PTT4	NLW5-15	MT1-3	MLV5-12	TT6X5	TE-1052.2
C4	200	3	23K544617	PTT14	NLW200-3	MT1-22	MLV200-3	TT3X200	TE-1064
C5	200	3	23K544617	PTT14	NLW200-3	MT1-22	MLV200-3	TT3X200	TE-1064

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					SPRAGUE PART No.
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCOPART No.	MALLORY PART No.	
C10	40-430	#20B4871A01						
C11	.003 200V			DM-302				
C12	20-120	#20K541014						
C13	3.9 NPO							10TCC-V39
C14	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C15	.05 200V		TTD-05	CK-503	H5		TA-150	TG-S50
C16	20-120	#20K541014						
C17	.005 200V		TTD-005	CK-502	H1		TA-250	TG-D50
C18	.01 100V		TTD-01	CK-103	H2		TA-110	TG-S10
C19	310-390	#20K541700						
C20	100 N750		N750-DI 100	DTN-100	C10TIU	CCTN-101	CN7-310	10TCU-T10
C21	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	.05 200V		TTD-05	CK-503	H5		TA-150	TG-S50
C23	180 N750		N750-DI 180	TCN-180	C10TI8U		CN7-318	10TCU-T18
C24	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C26	.47			UK10-404	HCC10474Z			HY-330
C27	.25 100V	(.05) †	P288N-25		PM2P25	2DP-4-254	PVC-2025	2TM-P25
C28	.03		TTD-03	CK-303	H5		TG-S30	
C29	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C30	.05		TTD-05	CK-503	H5		TA-150	TG-S50
C31	.05		TTD-05	CK-503	H5		TA-150	TG-S50
C32	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50

Note 1. Not used in some versions.

† Alternate Value.

Motorola Part Number.

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone	100K	18C64779A03				
B	Volume & Switch	10K Tap @ 5500Ω	Ⓛ				
R2	Balance	10K	18C64735A09				

Ⓛ Part #18C64779A02 used in Model CRA62

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	Ant.	24K563896 Ⓛ					Ⓛ Part of M1 or Coil Assembly #1V40800A57
L2	Ant.	24B40431A02					
L3	RF	24B40431A01					
L4	Osc.	24B40817A01 Ⓛ					
L5	Input IF	24B64861A03					
L6	Output IF	24B64861A02					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	
L7	420MA	.3Ω	3MH	25B64747A03				TR-157

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.1	MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	7:	1	25B64666A01 Ⓛ					Ⓛ Alternate Part #25B64738A02

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	INDUCTANCE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L8	120MH	25B64737A02					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MOTOROLA PART No.	QUAM PART No.	
SP1	4" x 10" PM 40Ω 6" x 9" PM 40Ω	50C64797A01 50C64697A01	410A2Z40	Models CA62, CYA62 Model CRA62

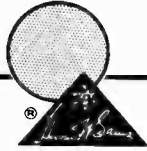
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	Tuner	77D40553A02	Model CA62 (AT-388, Complete)
	Tuner	77D41066A01	Model CRA62 (AT-389, Complete)
	Tuner	77D40553A03	Model CYA62 (AT-394, Complete)
M2	AVC (1N60)	48K640675	
M3	Det. (1N60)	48K640675	
M4A	Spark Plate	21A522033	300mmf
B	Spark Plate		300mmf
M5	Spark Plate	64K530177	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
PUSHBUTTONS		KNOBES	
#2 and 4 - Model CA62	38C40523A01	Dummy - Models CRA62, CYA62	36B543332
#2 and 4 - Model CRA62	38C41212A01	Tone - Models CRA62, CYA62	36B543330
#2 and 4 - Model CYA62	38C40947A01	Volume, Tuning - Models CRA62, CYA62	36B64859A01
#1, 3 and 5 - Model CA62	38C40523A02		
#1, 3 and 5 - Model CRA62	38C41212A02		
#1, 3 and 5 - Model CYA62	38C40947A03		



PHOTOFACT[®]

TRADE NAME : Motorola Model 2MT
 SUPPLIER : Motorola Inc.,
 9401 W. Grand Ave., Franklin Park, Ill.
 TYPE SET : 6 Transistor AM Receiver
 POWER SUPPLY : 12 Volt Storage Battery
 RATING : 420 MA @ 12.6 VDC
 TUNING RANGE : BROADCAST 540 - 1615KC



ALIGNMENT INSTRUCTIONS

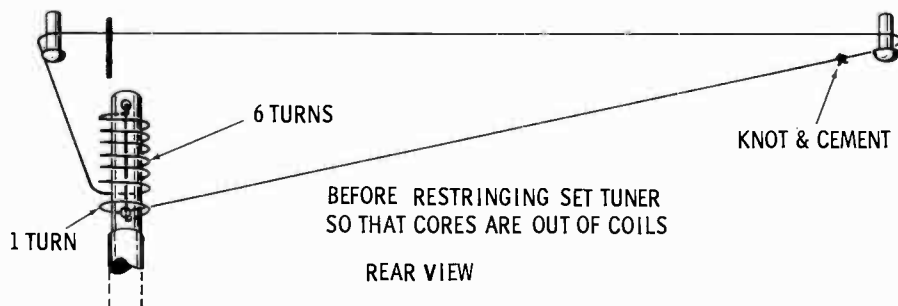
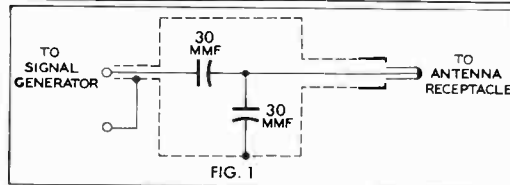
Check for specified source voltage.

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:

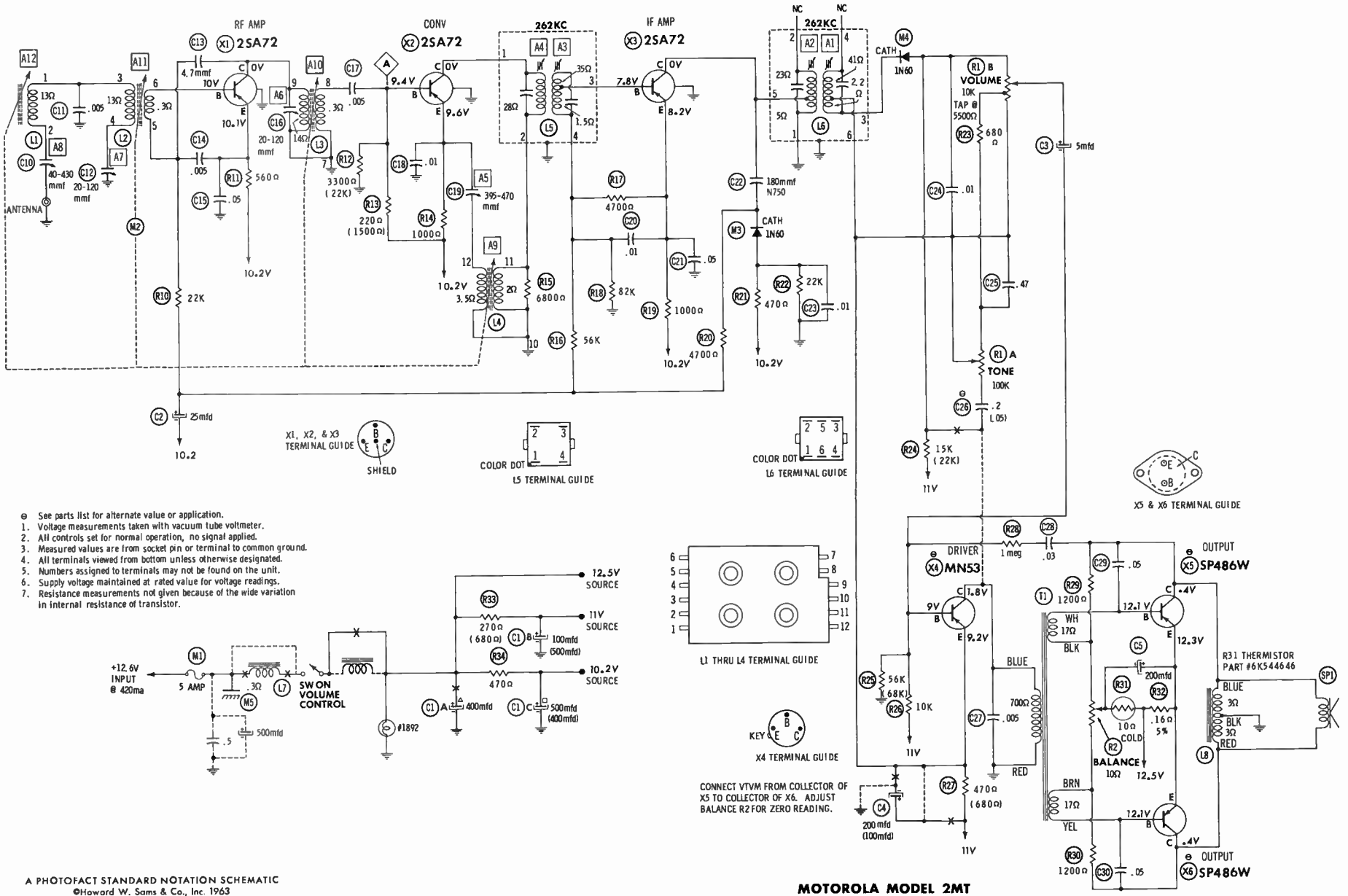
A1, A2, A3, A4..... GENERAL CEMENT #8606, 8606L, 8869... WALSCO #2543, 2544, 2588
 A5, A6, A7, A8..... GENERAL CEMENT #8290, 8868, 9087.... WALSCO #2525, 2528, 2587

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point Δ , low side to ground.	262KC (400v Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1615KC	"	"	A5, A6, A7, A8	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. IF necessary, back tuning cores (A9, A10, A11, A12) out of coils but not out of forms. Repeat step 2.						
3.	High side thru 82mmf to antenna receptacle, low side to ground.	1200KC	Tune to Signal.	Output Meter across voice coil.	A9, A10, A11, A12	Adjust for maximum. Repeat steps 2 & 3 until no further improvement is noted.
With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A8 for maximum output.						



DIAL CORD STRINGING

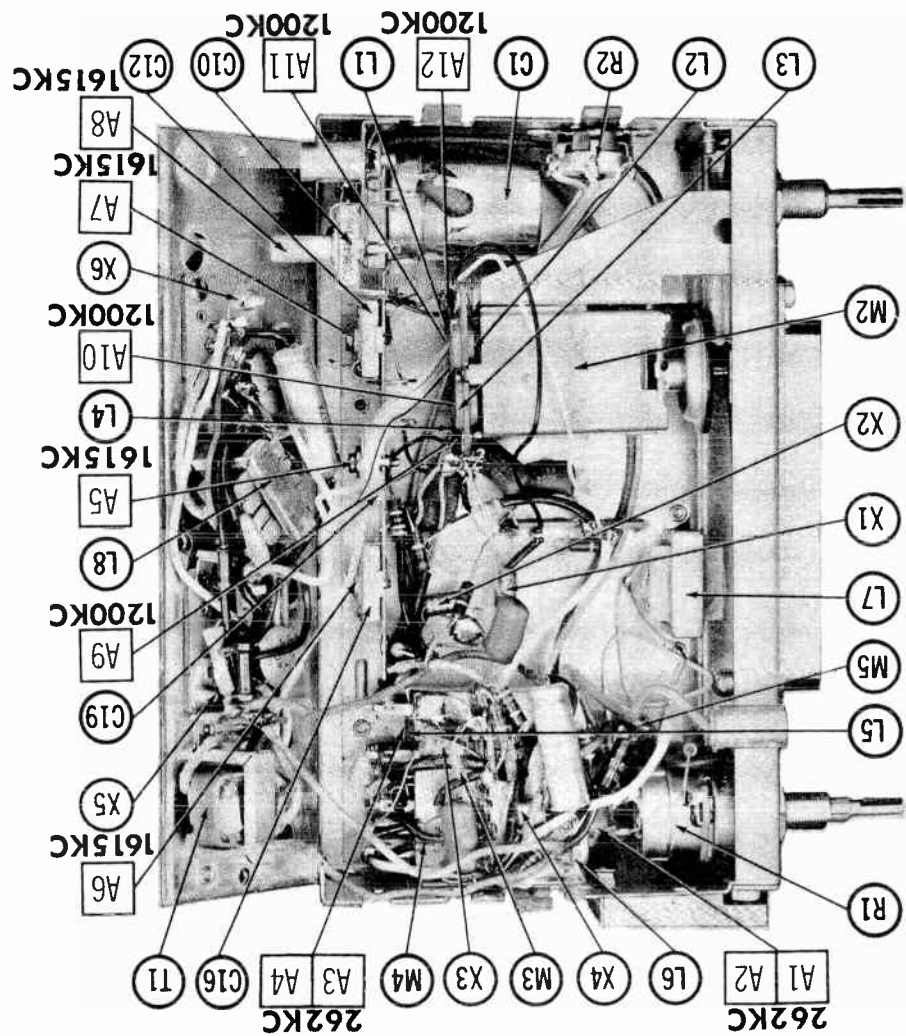
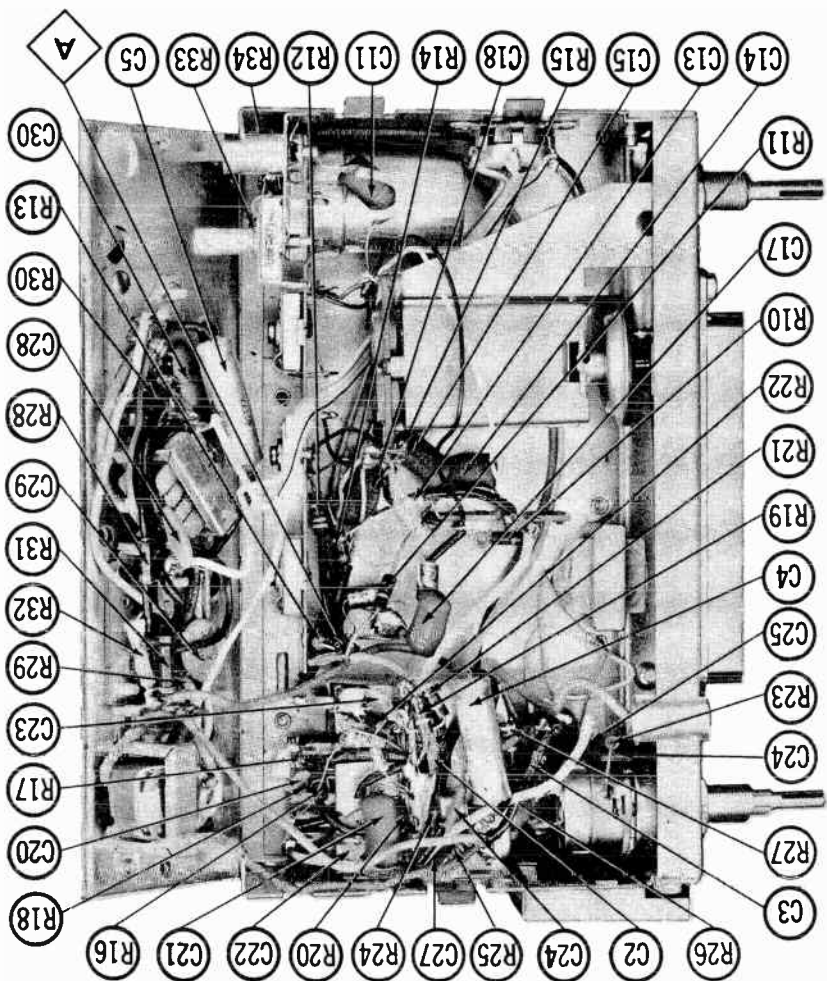
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana



A PHOTOFAC STANDARD NOTATION SCHEMATIC
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MOTOROLA MODEL 2MT

MOTOROLA MODEL 2MT



PARTS LIST AND DESCRIPTION

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

WIRING DATA

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	2SA72	RF Amp.	DS-25	GE-1		PNP
X2	2SA72	Converter	DS-25	GE-1		PNP
X3	2SA72	IF Amp.	DS-25	GE-1		PNP
X4	MN53*	Driver	DS-26	GE-2	2N591	PNP
X5	SP486W†	Output	DS-520	GE-3	2N301	PNP (Note 1)
X6	SP486W†	Output	DS-520	GE-3	2N301	PNP (Note 1)

* Alternate Type 4450. † When replacing, use 2N176 (Part #48C124246).
Note 1. When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely. Check Balance adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	▲ 400	16	23B64722A01	AFH3-00-94.5					
B	▲ 100	16							
C	▲ 500	16							
C2	25	3	23K544540	PTT9	NLW25-3	MT1-10	MLV25-3	TT3X25	TE-1055
C3	5	3	23K543076	PTT4	NLW5-15	MT1-3	MLV5-12	TT6X5	TE-1052.2
C4	200	3	23K544617	PTT14	NLW200-3	MT1-22	MLV200-3	TT3X200	TE-1064
C5	200	3	23K544617	PTT14	NLW200-3	MT1-22	MLV200-3	TT3X200	TE-1064

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	40-430	#20B64871A01	TTD-005	CK-502	H1		TA-250	TG-D50
C11	.005 200V							
C12	20-120	#20K541014	NPO-SI 4.7	DTZ-4R7	C10V47C	CC20-4R7	CN7-547	10TCC-V47
C13	4.7 NPO							
C14	.005 200V		TTD-005	CK-502	H1		TA-250	TG-D50
C15	.05 200V		TTD-05	CK-503	H5		TA-150	TG-S50
C16	20-120	#20K541014	TTD-005	CK-502	H1		TA-250	TG-D50
C17	.005 200V							
C18	.01 100V		TTD-01	CK-103	H2		TA-110	TG-S10
C19	395-470	#20A 485708	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C20	.01							
C21	.05 200V		TTD-05	CK-503	H5		TA-150	TG-S50
C22	180 N750		N750-DI 180	TCN-180	C10T18U	CCD-103	CN7-318	10TCU-T18
C23	.03		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	.47			UK10-404	HCC10474Z			HY-330
C26	.2			UK20-204	HCC25224Z			HY-325
C27	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C28	.03		TTD-03	CK-303			TA-150	TG-S30
C29	.05		TTD-05	CK-503	H5		TA-150	TG-S50
C30	.05		TTD-05	CK-503	H5		TA-150	TG-S50

Motorola Part Number.

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
RLA	Tone	100K	18C64773A01				
B	Volume & Switch	10K Tap @5500Ω					
R2	Balance	10Ω	18C64735A09				

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	Ant.	24B40844A01					① Part of M2 or Coil Assembly #1V41000A38
L2	Ant.	24B40895A02					
L3	RF	24B40895A01					
L4	Osc.	24B40898A01					
L5	Input IF	24B4861A03					
L6	Output IF	24B4861A02					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	
L7	420ma	.3Ω	3MH	25B64747A02			TR-157	

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO	REPLACEMENT DATA					NOTES		
		PRI.	SEC.	MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.		THORDARSON PART No.	TRIAD PART No.
T1	7:1	1	25B64738A01						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	INDUCTANCE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L8	120MH	25B64737A02					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MOTOROLA PART No.	QUAM PART No.	
SP1	5" x 7" PM 40Ω	50D64729A01		

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	9K543179	301005 (LAG 5A 32V)	155004A	AGA 5	HAF

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Tuner	77K544587	MT-374, Complete
M3	AVC (IN60)	48K640875	
M4	Detector (IN60)	48K640675	
M5	Spark Plate	64A530176	

CABINETS & CABINET PARTS

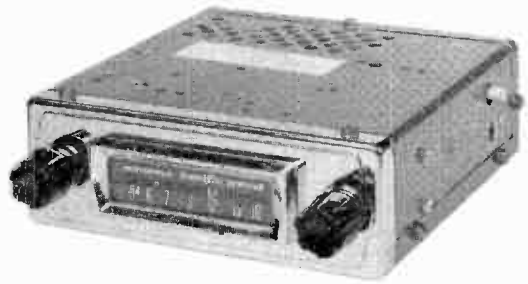
(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial Scale	34B64692A01	Knob - Tone	36B543398
Dial Pointer	52A64771A01	Knob - Dummy	36K543399
Knob - Tuning, Volume	36B543382		



PHOTOFACT[®]

TRADE NAME : Motorola Model 250X
SUPPLIER : Motorola Inc.
 9401 W. Grand Ave., Franklin Park, Ill.
TYPE SET : 3 Tube, 2 Transistor AM Receiver
POWER SUPPLY : 12 Volt Storage Battery
RATING : 1 Amp. @ 12.6 VDC
TUNING RANGE : BROADCAST 540 - 1615KC



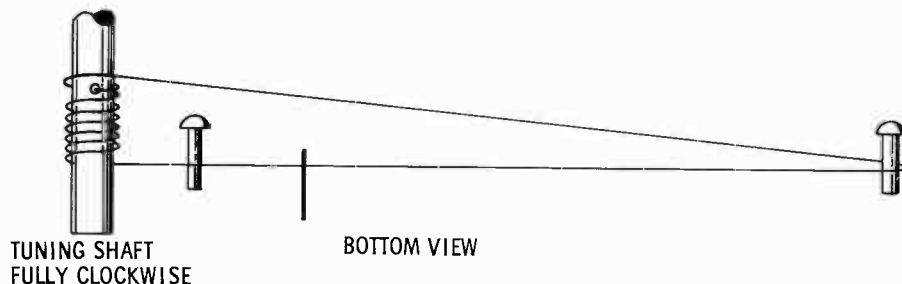
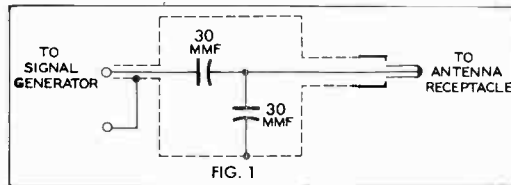
ALIGNMENT INSTRUCTIONS

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

A1, A2, A3, A4... GENERAL CEMENT #8606, 8606L, 8869 WALSCO #2543, 2544, 2588
 A5, A6, A7... GENERAL CEMENT #8290, 8868, 9087 WALSCO #2525, 2528, 2587

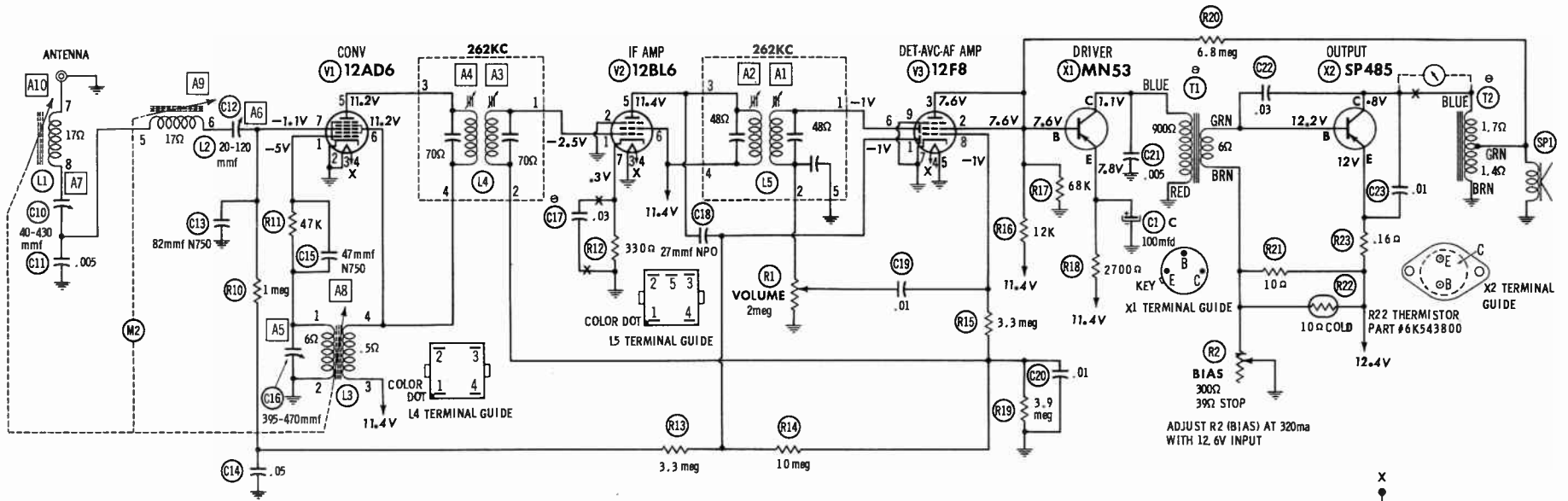
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point Δ , low side to ground.	262KC (400v Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1615KC	"	"	A5, A6, A7	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. IF necessary, back tuning cores (A8, A9, A10) out of coils but not out of forms. Repeat step 2.						
3.	Thru dummy (Fig. 1) to antenna receptacle.	1000KC	Tune to Signal.	Output Meter across voice coil.	A8, A9, A10	Adjust for maximum. Repeat steps 2 & 3 until no further improvement is noted.

With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.



DIAL CORD STRINGING

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



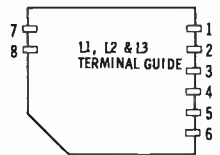
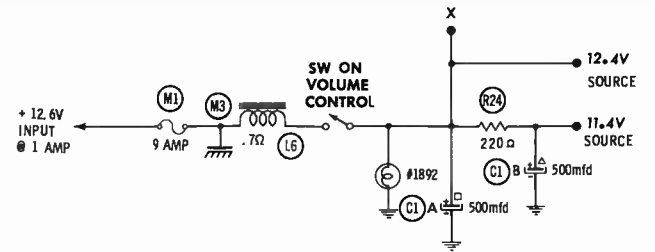
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AD6	47K	0Ω	FIL	FIL	†290Ω	†220Ω	20meg		
V2	12BL6	3.9meg	0Ω	FIL	FIL	†268Ω	†220Ω	330Ω		
V3	12F8	14meg	†12K	†12K	FIL	FIL	1.8meg	0Ω	7meg	0Ω

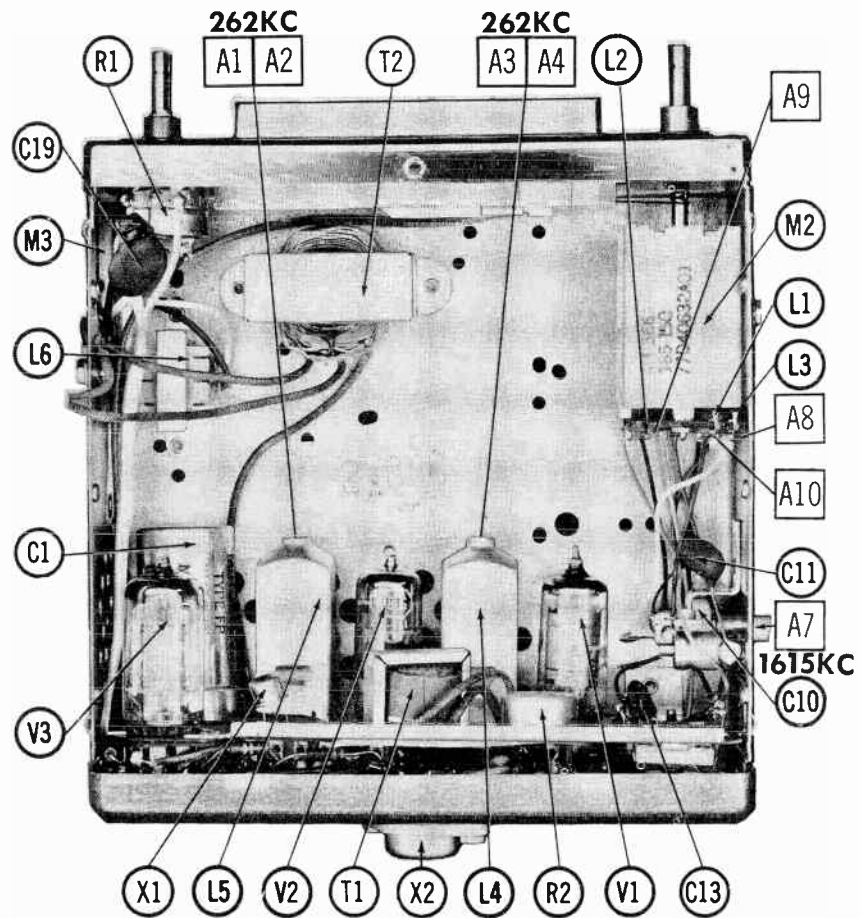
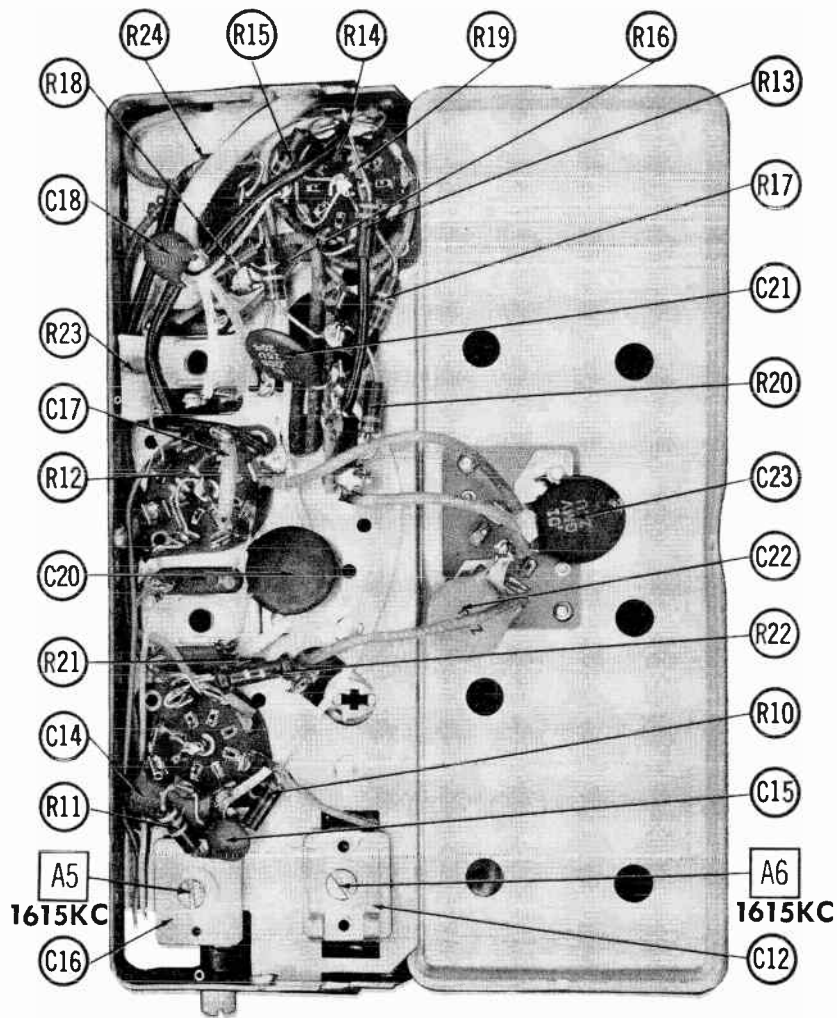
† MEASURED FROM SOURCE INPUT

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

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MOTOROLA MODEL 250X



MOTOROLA MODEL 250X

PARTS LIST AND DESCRIPTION

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

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

TUBES

ITEM No.	USE	REPLACEMENT DATA		ITEM No.	USE	TYPE
		AMPEREX	GENERAL ELECTRIC			
V1	Converter IF Amp.	12AD6		V3	Det. -AVC-AF Amp.	12F8
V2		12BL6				

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	MN53 †	Driver Output	DS-28	GE-2	2N591	PNP (Note 1)
X2	SP485*		DS-520	GE-3	2N301	

† Alternate 4450 * Alternate 2N176
 Note 1. When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely. Check Bias adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500	16	23B543279	AFH3-00-95		XC3-48	TMT-3002	WP300.85	TVL-3026.8
C1B	500	16							
C1C	100	16							

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	40-430'	20B544017 # 20K541014 # N750-DI 82 P288N-05 N750-DI 47 20A485708 # Note 1	P288N-005	CPR-5000J	PM6D5	6DP-1-502	PVC-625	6PS-D50
C11	.005 200V							
C12	20-120							
C13	82 N750							
C14	.05 200V							
C15	47 N750							
C16	395-470							
C17	.03							
C18	27 NPO							
C19	.01							
C20	.01							
C21	.005							
C22	.03							
C23	.01							

Motorola Part Number.
 Note 1. Not used in some versions.

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume & Switch	2meg	18K543803	AB-76, AK-8, AK-31, KR-4	39-300 *	112-300 *	FL500 *
R2	Bias	300Ω, 39Ω Stop (2WW)	18K543483				

* Use 39Ω 2W Series Resistor.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	Ant.	24B40644A01	BC-350	12-H1	RTC-8638	T604	
L2	Ant.	24B40644A01					
L3	Osc.	24B40641A01					
L4	Input IF	24B543286					
L5	Output IF	24K543287					

① Part of M2 or Coil Assembly Part #1V40800A73.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	
L6	1A	.7Ω	2.9MH	25B64747A03				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	20 / 1	25B543386					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	8Ω Tap@	3-4Ω	25B543443				

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA	
		MOTOROLA PART No.	QUAM PART No.
SP1	4" PM 3-4Ω	50C64719A01	4A05

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.
Dial Scale	34B64786A01
Dial Pointer	52A64748A01
Knob - Tuning, Volume	36B543382

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
M1	SFE	9A	FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
			65K16248	9K541619	307009 (SFE 9A)	155009A	SFE 9	HDH

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Tuner	77D40632A01	MT-366, Complete
M3	Spark Plate	64K530177	

WIRING DATA

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



PHOTOFACT[®] with

CIRCUITRACE[®]

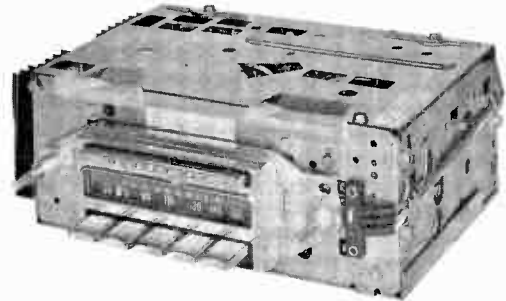
TRADE NAME : Oldsmobile Model 982137
 (1963 Oldsmobile)
 SUPPLIER : (Parts) United Delco Distributors

TYPE SET : 1 Tube, 5 Transistor AM Receiver

POWER SUPPLY : 12 Volt Storage Battery

RATING : 1.8 Amp. @12.6 VDC

TUNING RANGE: BROADCAST 535 - 1615KC



ALIGNMENT INSTRUCTIONS

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

A1 thru A5, A9, A10..... GENERAL CEMENT #5009, 8728A, 8987
 WALSCO #2531X, 2536
 A6, A7, A8..... GENERAL CEMENT #8290, 8868, 9087
 WALSCO #2525, 2528, 2587

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point Δ , low side to ground.	262KC (400% Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
Check setting of oscillator coil core (A5). Rear of core should be 1 5/8" from mounting end of coil form.						
2.	High side thru 82mmf to antenna receptacle, low side to ground.	1615KC	High Freq. End Stop.	Output Meter across voice coil.	A6, A7, A8	Adjust for maximum.
3.	"	600KC	600KC Signal	"	A9, A10	Adjust for maximum. Repeat step 2.
With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.						

REMOVAL INSTRUCTIONS

NOTE: To replace transistors, remove radio.

RADIO

- Loosen set screws in knobs and remove knobs.
- Use 5/8" wrench and remove 2 nuts from control bushings.
- Disconnect speaker connector & antenna lead. (And rear seat speaker lead if used).
- Use 7/16" wrench and remove screws from both ends of rear mounting bracket and remove bracket.
- Remove radio from under instrument panel.

SPEAKER

- Remove "A" lead from speaker connector.
- Use 3/8" wrench and remove 2 nuts holding speaker mounting plate. Remove speaker and mounting plate.

PUSH-BUTTON ADJUSTMENT

- Pull button out.
- Tune manually to desired station.
- Press button in firmly.
- Repeat for remaining buttons.

OLDSMOBILE MODEL 982137

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

PARTS LIST AND DESCRIPTION

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

TUBES

• AMPEREX •		GENERAL ELECTRIC		RCA		RAYTHEON		SYLVANIA	
ITEM No.	USE	TYPE		ITEM No.	USE	TYPE			
V1	Trigger	12A18							

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	DS24*	RF Amplifier	DS-25	GE-1	2N1637	PNP
X2	DS25	Conv.	DS-25	GE-1	2N1639	PNP
X3	DS22*	IF Amplifier	DS-25	GE-1	2N1638	PNP
X4	DS26	AF Amplifier	DS-26	GE-2	2N591	PNP
X5	DS501	Output	DS-501	GE-4		PNP

* Manufacturer suggests replacing with DS-25.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	850	16	7279775	AFH3-54-30		MT1-3	BL1260	FPS300, 75	PCLS-3021.2*
B	400	16							
C	4	11.4AC							
C2	3	25							
C3	100	3	7282359	PTT76	NLW3-25	MT1-18	MLV100-3	TT25X3	TE-1201.2
C4	1000	2	7279888	PTT13	NLW100-3		BL2310	TT6X100	TE-1059, 5
C5	30	6	7282789	PRSL130	BR-1000-6		MLV30-6	TC310	TVA-1104
			7279896	PTT27	NLW30-15	MT1-13		TT6X30	TE-1092

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

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENDO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C10		#7284971							
C11	.047		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	4TM-847	
C12	.047		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	4TM-847	
C13	125-300	#7281932							
C14	91 N750	#7280995	TCN-91		C10Q91U	6DP-1-222	GEM-6222	6TM-D22	
C15	.0022		P288N-0022	DD-222	CUB6D22	1DP-1-223	GEM-4122	2TM-S22	
C16	.022		P288N-022	DDM-203	CUB4S22				
C17	30-160	#7282165							
C18	180 N080 5%	#7279821							
C19	.0047		DI-4700	DD-472		CCD-472		10TD-D47	
C20	.047		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	4TM-847	
C21	.047		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	4TM-847	
C22	120 NPO		NPO-DI 120	DTZ-120			CNO-312	10TCC-T12	
C23	.001		DI-1000	DD-102	L10D1	CCD-102	GP210	10TS-D10	
C24	100 5%		1459-100	22R5T1		CM-15E-101	MCE235	MS-31	
C25	.0022		DI-2200	DD-222	L10D22	CCD-222	GP222	10TS-D22	
C26	.0022		DI-2200	DD-222	L10D22	CCD-222	GP222	10TS-D22	
C27	1mf			UK-105	HCC10474Z			HY-135	
C28	.1		P288N-1	DD-100	CUB2P1	2CP-4-104	GEM-2010	2TM-P10	
C29	100 5%		1459-100	22R5T1		CM-15E-101	MCE235	MS-31	
C30	100		DI-100	DD-101	L10T1	CCD-101	GP310	5GA-T10	
C31	.047		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	4TM-847	
C32	.47		P288N-47	DD-503	CUB2P47	1DP-4-473	GEM-2047	2TM-P47	

Delco Part Number

CONTROLS

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

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA					
			DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	Tone	10K						
B	Volume & Switch	7500Ω Tap @ 5K	7281868					UE4411S#
R2	Bias	175Ω Stop @ 65Ω	1221422					

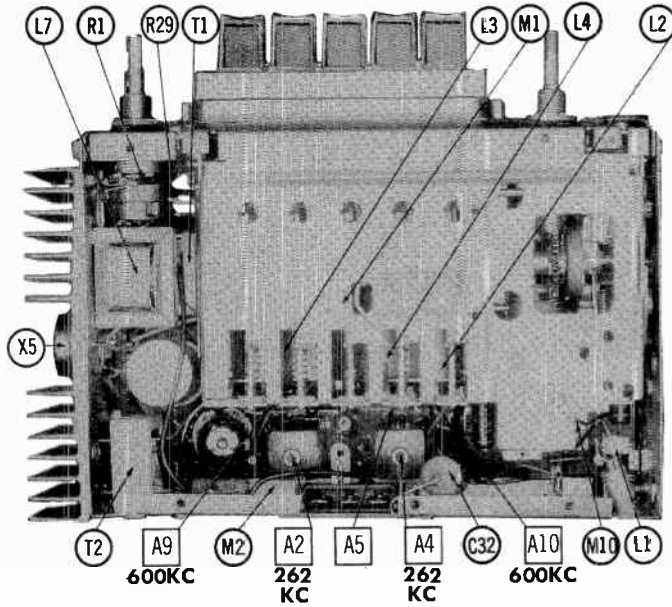
#"STA-LOC" Equivalent: FX14A, RU752T53, OS100DA, 1S1500, US41.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	RF Choke (6.2uh)	7281946	BC-565	4610	RTC-8520	T859	① Part of M1
L2	Antenna	7282586					
L3	RF Coil	7282585					
L4	Oscillator	1221616					
L5	Input IF	1221856					
L6	Output IF	1221857					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L7	1.1A	.6Ω	8MH	1221623	C-4095			TR-154	



CHOKE (AUDIO OUTPUT)

ITEM No.	INDUCTANCE	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L8	29.5MH	7282278					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	10:	1	7280915			TR-186①		① Use original channel

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		DELCO PART No.	QUAM PART No.	
SP1	4" x 10" PM 10Ω	7281633	410A2Z10	

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner Assembly	7282309	450mmf
M2	Spark Plate	7271564	
M3	Sensitivity	DS-32	
M4	AVC	DS-27	
M5	AVC	DS-27	
M6	Detector	DS-33 (DS-27)	
M7	Search	DS-32	
M8	Trigger Bias	DS-31	
M9	Search Tuning Relay	7282263	
M10	Solenoid & Plunger Assembly	1221409	
MU	Recycle Switch	7268030	
M12	Pushbar Switch	1221869	
M13	Sensitivity Switch	7282396	
M14	Foot Control Switch	7280183	

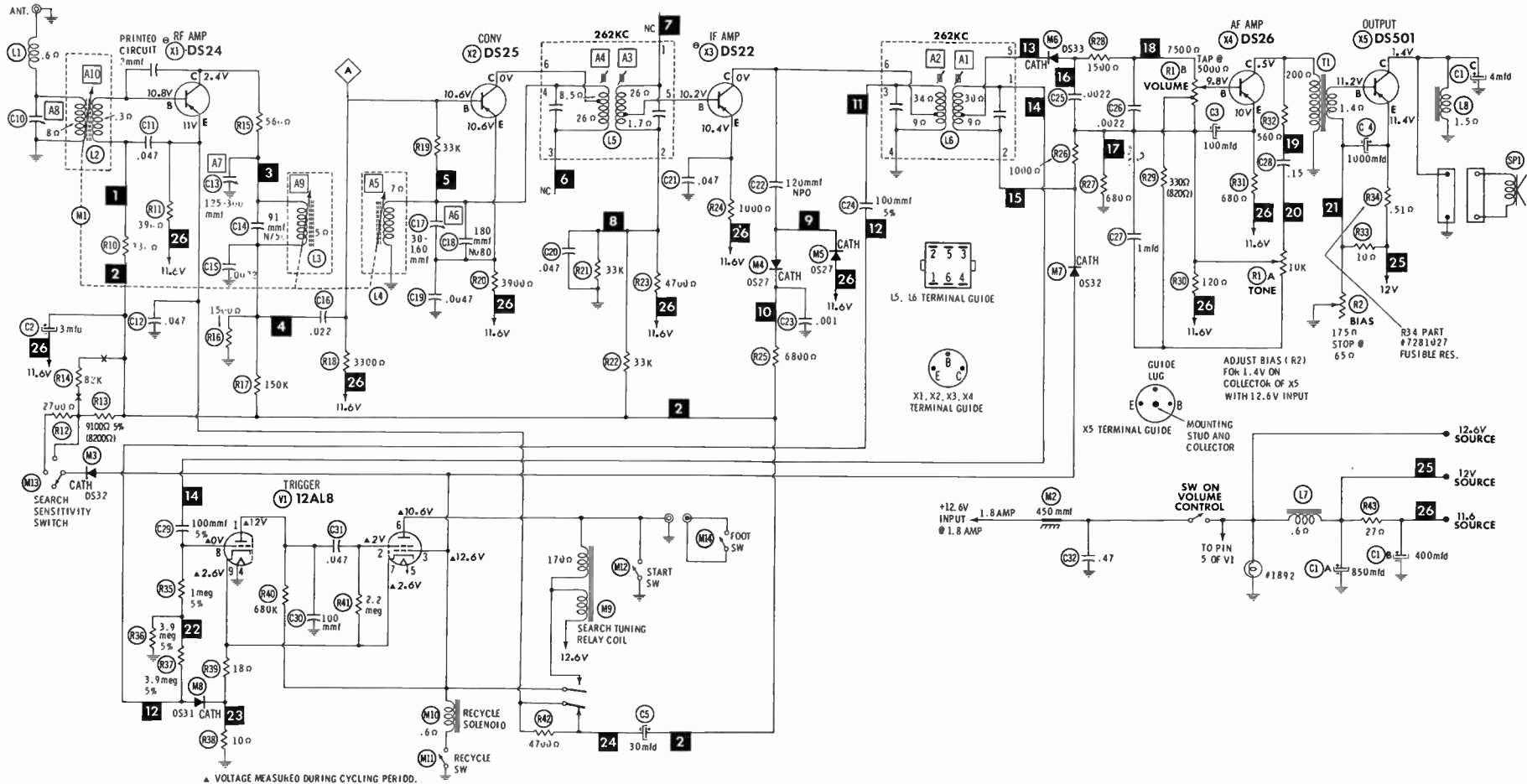
CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial Glass	728213L	Knob Dummy	587075
Knob - Tuning, Volume	587487	Pointer Assembly	1221852
Knob - Tone	587074	Push Button (Set of 5)	1221853

WIRING DATA

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



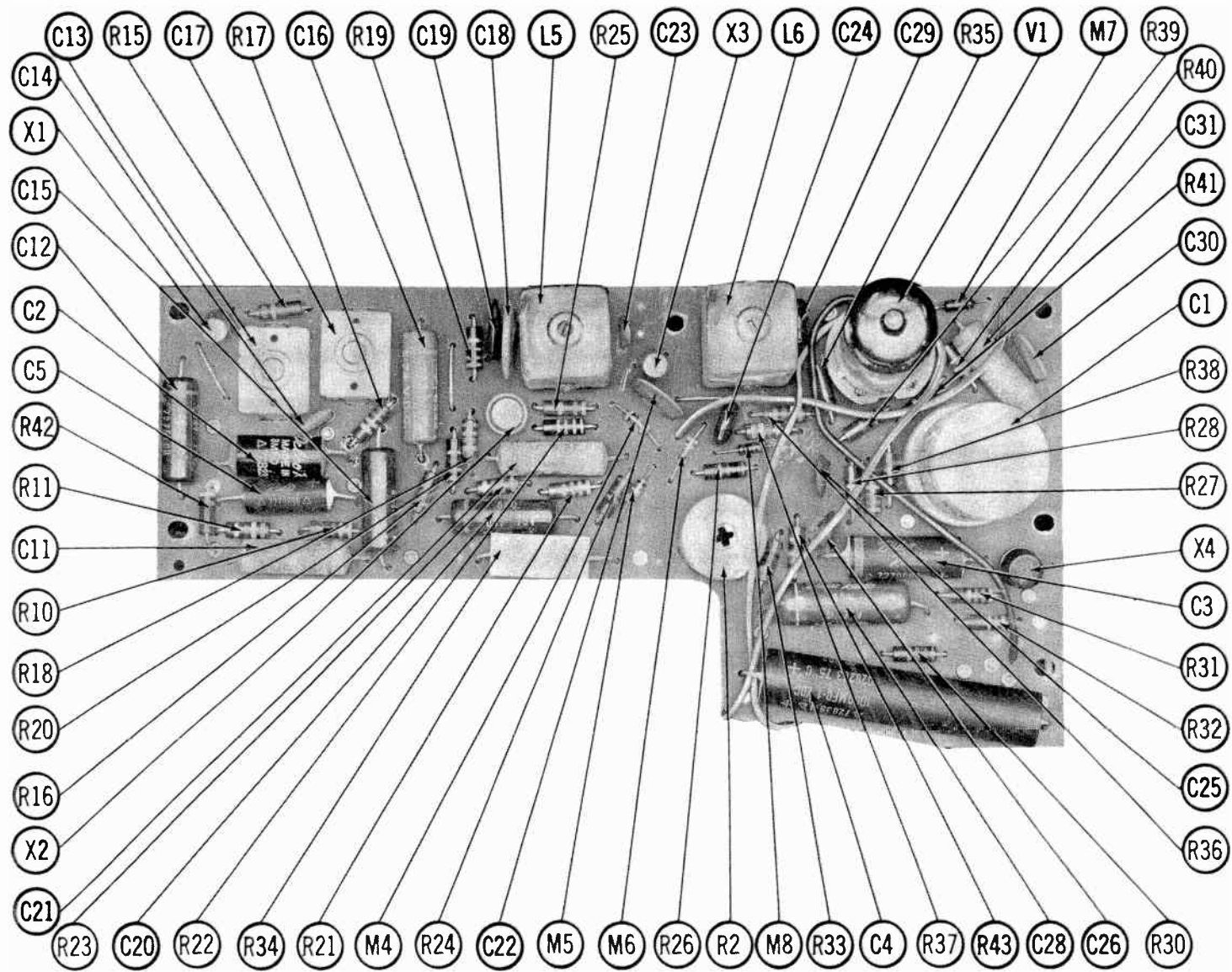
⊙ See parts list for alternate value or application.

1. Voltage measurements taken with vacuum tube voltmeter.
2. All controls set for normal operation, no signal applied.
3. Measured values are from socket pin or terminal to common ground.
4. All terminals viewed from bottom unless otherwise designated.
5. Numbers assigned to terminals may not be found on the unit.
6. Supply voltage maintained at rated value for voltage readings.
7. Resistance measurements not given because of the wide variation in internal resistance of transistor.
7. Waveforms taken with controls set to produce 50 volts peak-to-peak signal at picture tube.

A PHOTOFAC STANDARD NOTATION SCHEMATIC
with **CIRCUITRACE**

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OLDSMOBILE MODEL 982137

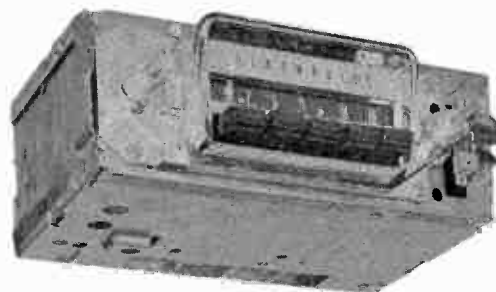




PHOTOFACT[®] with

CIRCUTRACE[®]

TRADE NAME: Oldsmobile Model 982149
(1963 Oldsmobile F-85)
SUPPLIER: (Parts) United Delco Distributors
TYPE SET: 5 Transistor Custom Built AM Receiver
POWER SUPPLY: 12 Volt Storage Battery
RATING: 840 MA @ 12.6 VDC
TUNING RANGE: BROADCAST 535 - 1615KC



ALIGNMENT INSTRUCTIONS

Check for specified source voltage.

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:

A1 thru A5, A9, A10... GENERAL CEMENT #5009, 8728A, 8987
WALSCO #2531X, 2536
A6, A7, A8..... GENERAL CEMENT #8290, 8868, 9087
WALSCO #2525, 2528, 2587

PUSH-BUTTON ADJUSTMENT

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

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point (A), low side to ground.	262KC (400v Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
Check setting of oscillator coil core (A5). Rear of core should be 1 3/8" from mounting end of coil form.						
2.	High side thru 82mmf to antenna receptacle, low side to ground.	1615KC	High Freq. End Stop.	Output Meter across voice coil.	A6, A7, A8	Adjust for maximum.
3.	"	600KC	600KC Signal	"	A9, A10	Adjust for maximum. Repeat step 2.

With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.

REMOVAL INSTRUCTIONS

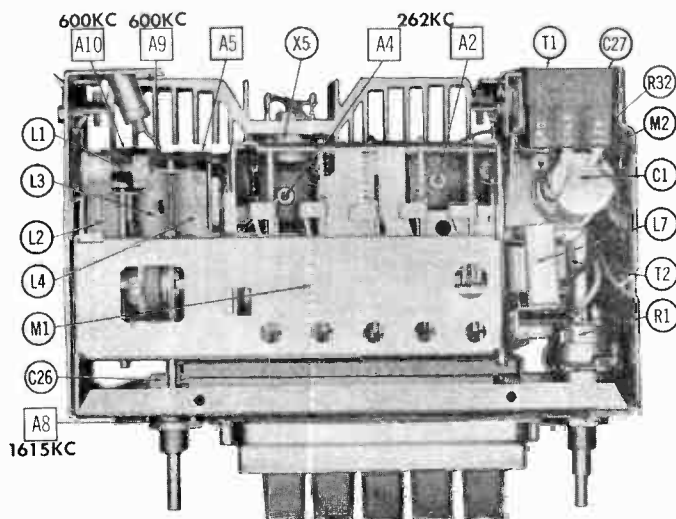
NOTE: To replace transistors, remove radio.

RADIO

1. Loosen set screws in knobs and remove knobs.
2. Remove 5/8" nuts from control bushings.
3. Disconnect speaker connector & antenna lead. (And rear seat speaker lead if used).
4. Remove 3/8" bolt from bottom of radio.
5. Remove radio from under instrument panel.

SPEAKER

1. Disconnect "A" lead from connector.
2. Remove four 5/16" nuts holding speaker bracket. Remove speaker and bracket.



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

PARTS LIST AND DESCRIPTION

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	DS-24	RF Amp	DS-25	GE-1	2N1637	PNP
X2	DS-25	Converter	DS-25	GE-1	2N1639	PNP
X3	DS-22	IF Amp.	DS-25	GE-1	2N1638	PNP
X4	DS-26	AF Amp.	DS-26	GE-2	2N591	PNP
X5	DS-503	Output	DS-503	GE-3	2N301	PNP (Note 1)

Note 1. When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely. Check bias adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.	
CLA	#850	16								
B	400	16	7282272	AFH3-54-30		XC3-6.1		WP300, 7A		TVL-3021
C	4	11.5AC								
C2	30	6	7279896	PTT27	NLW30-15	MT1-13		MLV30-6	TT6X30	TE-1092
C3	100	3	7279888	PTT13	NLW100-3	MT1-18		MLV100-3	TT6X100	TE-1059, 5

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	.047	#7281932	P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-S47
C11	.047		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-S47
C12	125-300							
C13	91 N750							
C14	.0022	#7281933	P288N-0022	TCN-91	C10Q91U	6DP-1-222	GEM-6222	6TM-D22
C15	.022		P288N-022	DD-222	CUB8D22	IDP-1-223	GEM-4122	2TM-S22
C16	225-325							
C17	180 N470 5%		#7284768					
C18	.0047	#7281971	DI-4700	DD-472		CCD-472		10TS-D47
C19	.047		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-S47
C20	.047		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-S47
C21	120 NPO							
C22	.001 10%	#7281971	NPO-D1120	DTZ-120		CNO-312		10TCC-T12
C23	.0022		DI-1000	DD-102	L10D1	CCD-102	GP210	10TS-D10
C24	.0022		DI-2200	DD-222	L10D22	CCD-222	GP222	10TS-D22
C25	.1		DI-2200	DD-222	L10D22	CCD-222	GP222	10TS-D22
C26		#7281971	P2151N-1	DDA-104	BC2P1J	IDP-2-104	GEM-401	2SE-P10
C27	.47		P288N-47		CUB2P47	IDP-4-447	GEM-2059	2TM-P47

Delco Part Number.

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone	10K	7282177				
B	Volume & Switch	7500Ω Tap @ 5000Ω		F2-10K*, R2-10K, FFS103, RFS113, KR-4, AK-38			#UE4424S
R2	Bias	260Ω Stop @ 100Ω	7275474				

* Connect wire from center terminal of front section to chassis.
"STA-LOC" Equivalent: FFIYA, RU73A, OS1187, IS1687, US41

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	RF Choke (6.2uh)	7281946	BC-565	4610	RTC-8520	T859	
L2	Ant.	7281716 ①					
L3	RF	7282042 ①					
L4	Osc.	7281717 ①					
L5	Input IF	1221856					
L6	Output IF	1221857					

① Part of Coil and Housing Assembly Part #7281697.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	
L7	540ma	.6Ω	8MH	1221623	C-4095			TR-154

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
			DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
	PRI.	SEC.						
T1	10	1	7280915					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
			DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
	PRI.	SEC.						
T2	1:	.9	7282057					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		DELCO PART No.	QUAM PART No.	
SP1	4" x 10" PM 10Ω	7282213		

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner	7281697	
M2	Spark Plate	7271564	
M3	AVC Det.	DS27	
M4	AVC Det.	DS27	
M5	Audio Det.	DS27	

CABINETS & CABINET PARTS

ITEM	PART No.	ITEM	PART No.
Dial Glass	7276519	Knob - Dummy	579157
Knob - Tuning, Volume	58815	Push Button	7276507
Knob - Tone	579156		

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8861 (3/8 In.) or 8870 (3/4 In.)



PHOTOFACT[®]

TRADE NAME: Philco Model P-6234
SUPPLIER: Philco Corp., Subsidiary of Ford Motor Co., Tioga & "C" Streets Philadelphia, Pa.
TYPE SET: 4 Tube - 1 Transistor AM Receiver
POWER SUPPLY: 12 Volt Storage Battery
RATING: 1.2 Amp @ 12.6 Volts DC
TUNING RANGE: BROADCAST 540-1615 KC



ALIGNMENT INSTRUCTIONS

Check for specified source voltage.

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools: A1 thru A4

GENERAL CEMENT #8282, 8606, 9302

WALSCO #2543, 2544, 2585

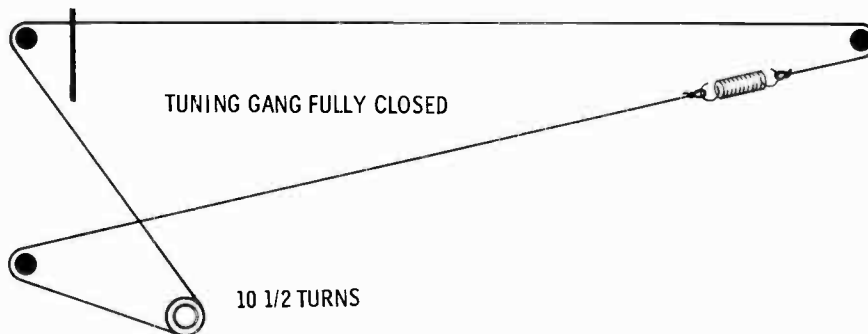
A5 thru A7

GENERAL CEMENT #8290, 8868, 9087

WALSCO #2525, 2528, 2587

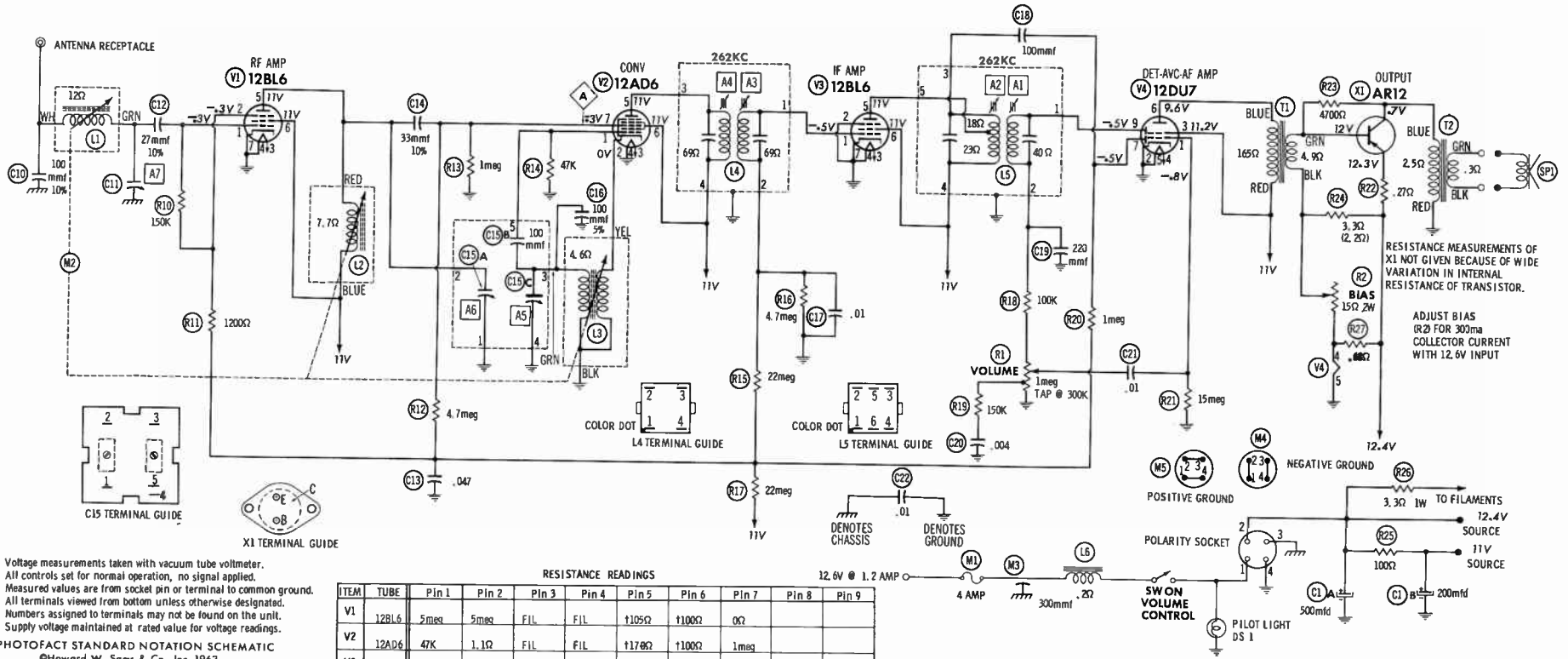
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point Δ , low side to ground.	262KC (400v Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	High side thru 82mmf to antenna receptacle, low side to ground.	1615KC	"	"	A5, A6, A7	"

With radio installed in car and antenna fully extended, tune in a weak station near 1200KC and adjust A7 for maximum output.



DIAL CORD STRINGING

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



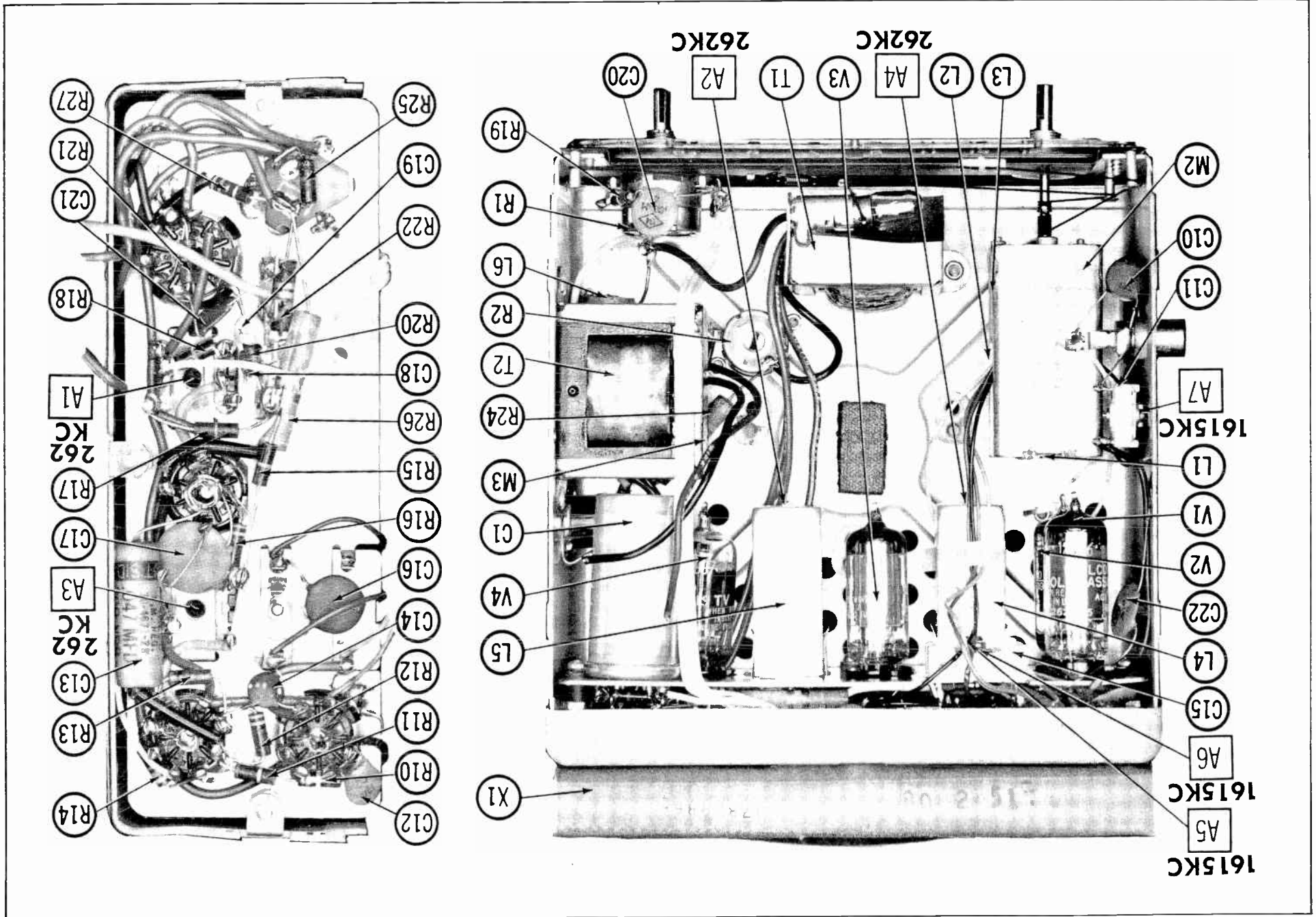
1. Voltage measurements taken with vacuum tube voltmeter.
2. All controls set for normal operation, no signal applied.
3. Measured values are from socket pin or terminal to common ground.
4. All terminals viewed from bottom unless otherwise designated.
5. Numbers assigned to terminals may not be found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

A PHOTOFACT 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	12BL6	5meg	5meg	FIL	FIL	†105Ω	†100Ω	0Ω		
V2	12AD6	47K	1.1Ω	FIL	FIL	†178Ω	†100Ω	1meg		
V3	12BL6	4meg	0Ω	FIL	FIL	†123Ω	100Ω	0Ω		
V4	12DU7	15meg	0Ω	†100Ω	FIL	FIL	†265Ω	5meg	TP	1.2meg

† MEASURED FROM PIN 2 OF POLARITY SOCKET TP TIE POINT



- R27
- R21
- C21
- R18
- A1
- 262 KC
- R17
- C17
- A3
- 262 KC
- C13
- R13
- R14
- R25
- C19
- R22
- R20
- C18
- R26
- R15
- R16
- C16
- C14
- R12
- R11
- R10
- C12

- 262KC
- A2
- T1
- V3
- A4
- L2
- L3
- R19
- R1
- L6
- R2
- T2
- R24
- M3
- C1
- V4
- L5
- X1
- M2
- C10
- C11
- A7
- 1615KC
- L1
- V1
- V2
- C22
- L4
- C15
- A6
- 1615KC
- A5
- 1615KC

PARTS LIST AND DESCRIPTION

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	AR12	Output	DS-520	GE-3	2N301	PNP

TUBES

ITEM No.	USE	TYPE	REPLACEMENT DATA		ITEM No.	USE	TYPE
			AMPEREX	GENERAL ELECTRIC			
V1	RF Amp.			12BL6	V3	IF Amp.	12BL6
V2	Conv.			12AD6	V4	Det-AVC-AF Amp.	12DU7

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500	16	61-0086-9	PWH2-02-75				WP200.7A	TVL-2190
C1B	200	16							

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCOPART No.	MALLORY PART No.	SPRAGUE PART No.
C10	100	10%	DI 100	DD-101	LA10T1-S3	CCD-101	GP310	10TS-T10
C11								
C12	27	10%	DI27	DD-270	LA10Q27-S1	CCD-270	GP427	10TS-Q27
C13	.047	200V	P288N-047	DD-503	CUB2847	4DP-3-473	GEM-2147	2TM-S47
C14	33	10%	DI33	DD-330	LA10Q33-S1	CCD-330	GP433	10TS-Q33
C15A								
C15B	100		#31-6522-8					
C15C								
C16	100	5%		DTN-100	C10T1C	CCTO-101	CNO-310	10TCC-T10
C17	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	100		BPD-0001	DD-101	LA10T1-S3	CCD-101	GP310	5GA-T10
C19	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C20	.004		BPD-004	DD-402	LA10D4-C4		GP240	5GA-D40
C21	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

Philco Part Number

CONTROLS

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

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA					
			PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	Volume, Switch	1meg 300K Tap	33-5580-20	ABT-73, AK-33 KR-4 or (F14-1meg, SFs212, KR-4)	A47F4-1meg RS-3/16 SWE-13		B13-137X, SK9, 78-1 or (BU, CF44T, SS4, GC)*	U1A18T35, SD3500, US-41 or (RU18T35, SL35, IS1000, US-41) or (UT-438, DS-37, US-28) FL-15
R2	Bias Adjustment	15Ω (2W)	33-5591-19					

*"SNAPTROL"

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		PHILCO PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	Ant.	32-4730-27					
L2	RF	32-4730-25					
L3	Osc.	32-4730-26					
L4	Input IF	32-4678-6	BC-350				
L5	Output IF	32-4677-8					
L6	"A" Lead Choke	32-4720-3					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	PHILCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	40Ω	3-4Ω	32-8833-1					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	PHILCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	4.8:	1	32-8875-2					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω 36-1625-20	4AIR

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PHILCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	AGC	4 A mp.	45-2856	41-4244-8	312004 (4A mp)	155020	AGC4	HMJ

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M2	Tuner	76-10937-1	
M3	Spark Plate	30-1254-1	300mmf
M4	Polarity Plug	54-4878-20	Negative Ground (Black)
M5	Polarity Plug	54-4878-19	Positive Ground (Red)

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial Glass	54-5329	Dial Pointer	56-4382-11
Dial Background	28-12142	Knob, Tuning, Volume	27-4687-23

WIRING DATA

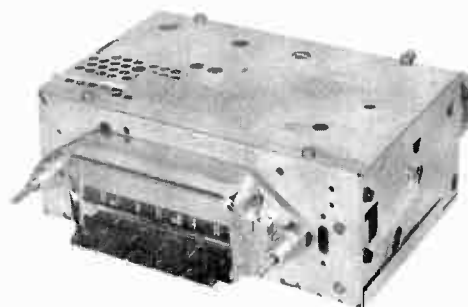
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors
Shielded Hook-up Wire	Use BELDEN No. 8524 (Stranded) Available in 12 Colors
Rear Seat Speaker Extension Cable	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
	Use BELDEN No. 8661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



PHOTOFACT® with

CIRCUITRACE®

TRADE NAME: Pontiac 983687 (1963)
 SUPPLIER: (Parts) United Delco Distributors
 TYPE SET: 5 Transistor AM Receiver
 POWER SUPPLY: 12 Volt Storage Battery
 RATING: .78 Amp. @ 12.6 VDC
 TUNING RANGE: BROADCAST 540-1615KC



ALIGNMENT INSTRUCTIONS

Check for specified source voltage.

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:

A1, A2, A3, A4. GENERAL CEMENT #8282, 8606, 8606-L, 9091
 WALSCO #2526, 2541, 2542, 2543, 2544
 A6, A7, A8. GENERAL CEMENT #5097, 8727
 WALSCO #2515

PUSH-BUTTON ADJUSTMENT

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

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point A , low side to ground.	262KC (400% Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
Check setting of oscillator coil core (A5). Rear of core should be 1 5/8" from mounting end of coil form.						
2.	High side thru 82mmf to antenna receptacle, low side to ground.	1615KC	High Freq. End Stop.	Output Meter across voice coil.	A6, A7, A8	Adjust for maximum.
3.	"	600KC	600KC Signal	"	A9, A10	Adjust for maximum. Repeat step 2.
4.	"	1615KC	1615KC	"	A7, A8	Adjust for maximum deflection.
5.	"	900KC	900KC	"		Adjust pointer adjustment until pointer coincides with 900 on dial.
6.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.					

REMOVAL INSTRUCTIONS

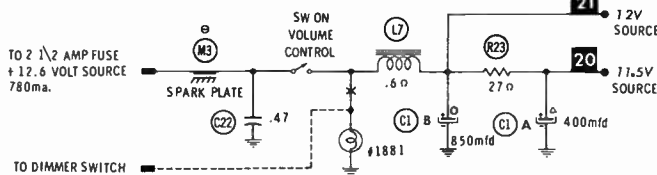
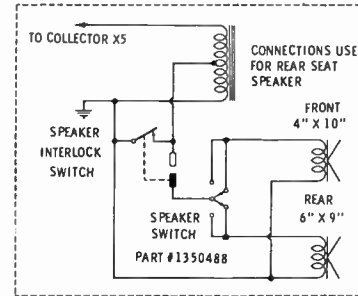
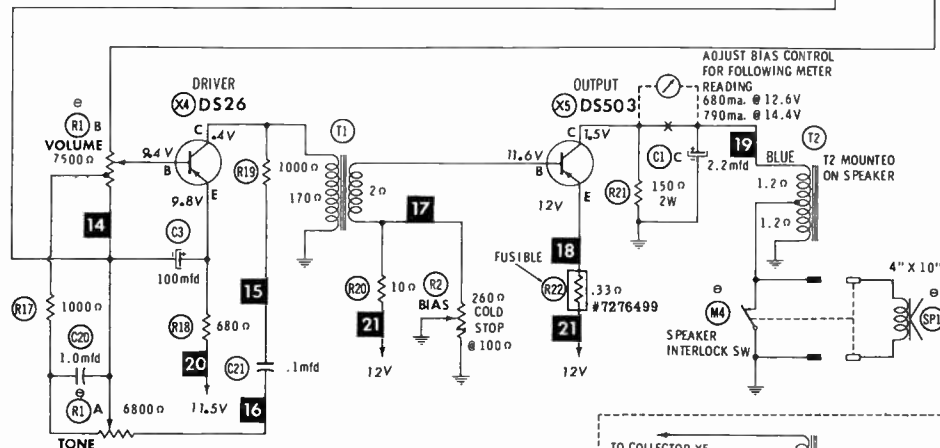
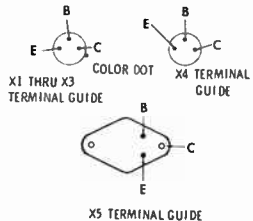
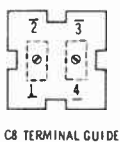
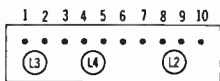
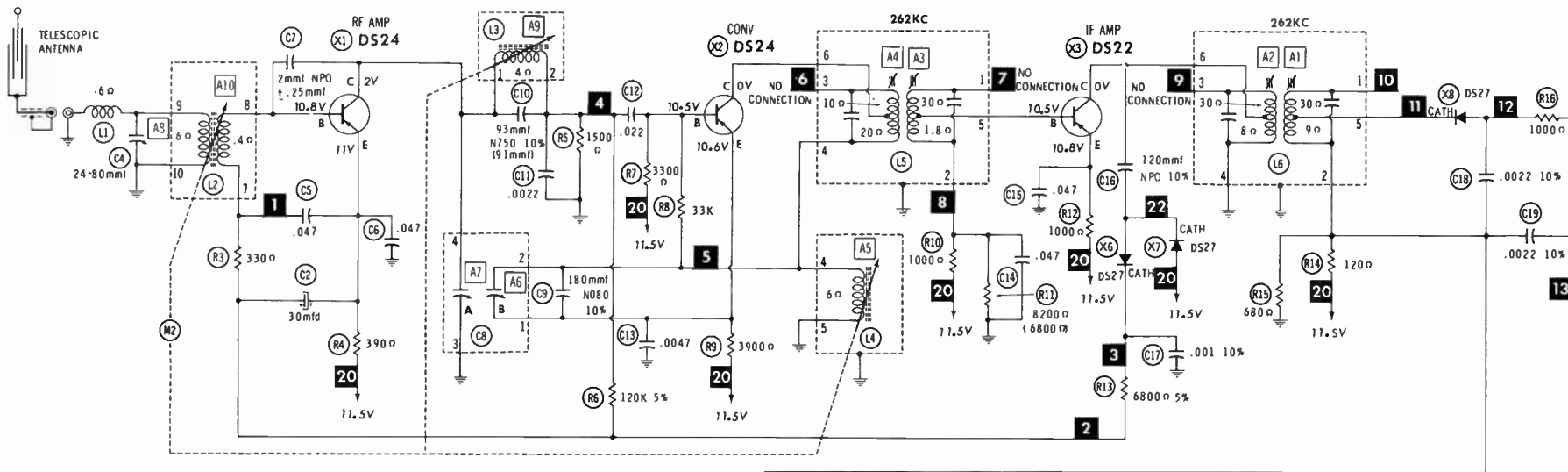
RADIO

1. Loosen two Allen Screws and remove knobs.
2. Disconnect speaker leads, "A" lead clip and antenna plug.
3. Remove two 1/2" hex nuts from control bushings. Remove escutcheon.
4. Remove 3/8" hex bolt holding radio to right mounting support.
5. Remove radio from rear of instrument panel.

SPEAKER

1. Remove two hex nuts holding speaker mounting under top of instrument panel.
2. Remove speaker assembly from under instrument panel.

PONTIAC MODEL 983687



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

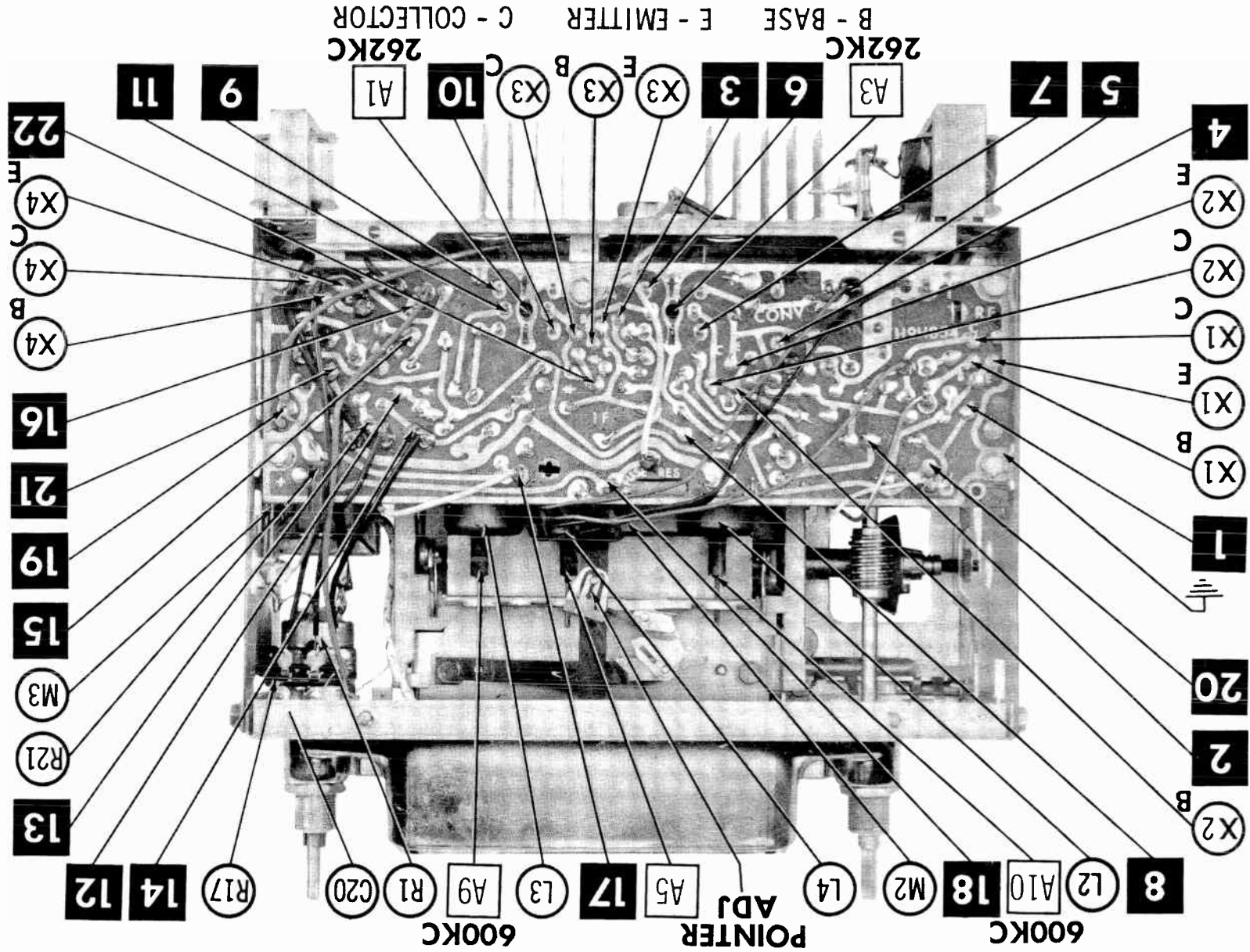
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

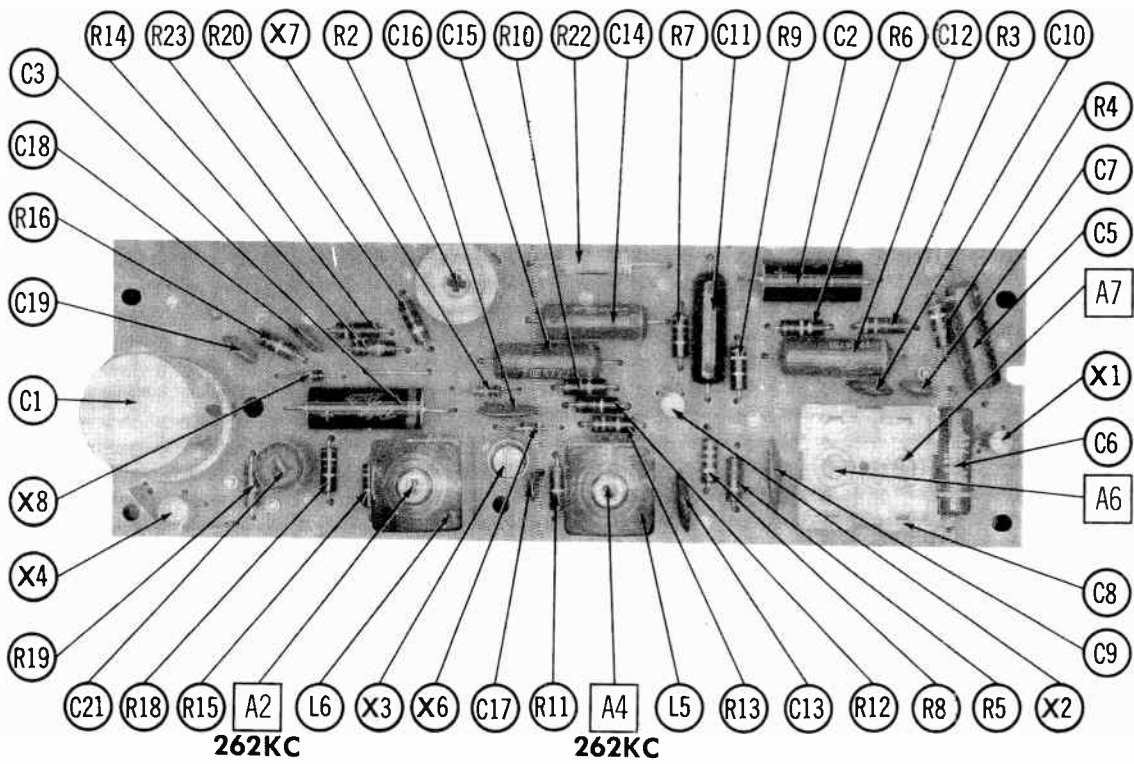
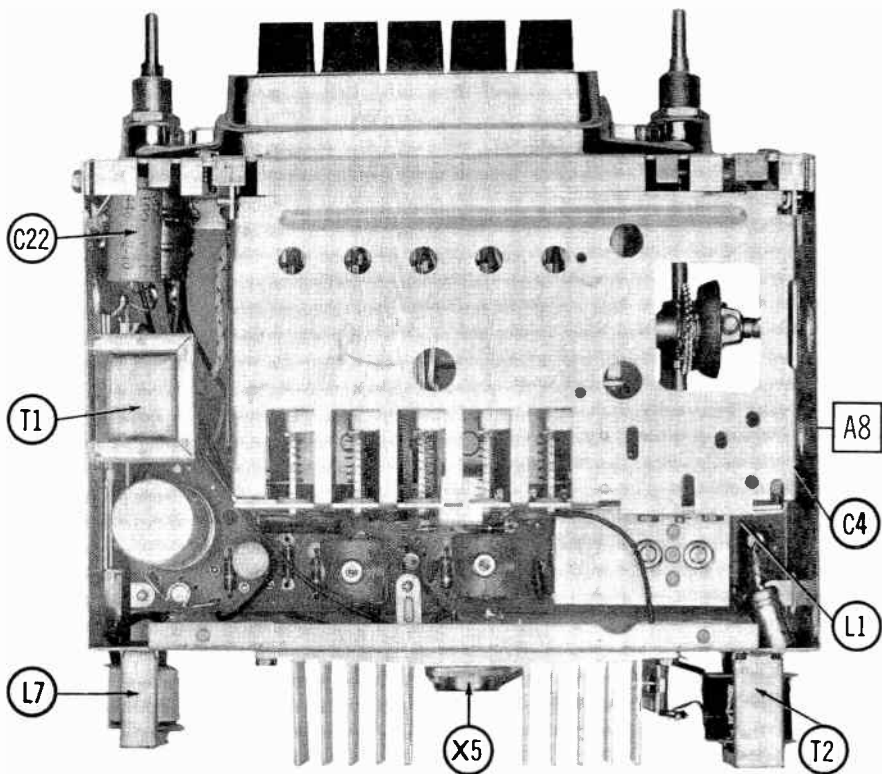
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

- DC voltage measurements taken with vacuum tube voltmeter.
- Socket connections shown as bottom views.
- Measured values are from socket pin to common ground.
- 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.

A PHOTOFACIT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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PARTS LIST AND DESCRIPTION

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

WIRING DATA

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	
X1	DS24	RF Amplifier	GE-1	2N1637	2N416	PNP
X2	DS25	Converter	GE-1	2N1639	2N406	PNP
X3	DS22	IF Amplifier	GE-1	2N1638	2N483	PNP
X4	DS26	Driver	GE-2	2N591	2N362	PNP
X5	DS503	Output	GE-3	2N301		PNP Note 1

Note 1. When replacing, check to see if heat sink is insulated from chassis. If not, install insulator Part #1221643 between transistor and heat sink. Check bias adjustment.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	CURRENT RATING (Measured)	ORIGINAL Part or Type No.	RECTIFIERS		DIODES	NOTES
			RCA PART No.	SARKES TARZIAN PART No.	RAYTHEON PART No.	
X6		DS27			1N60	AVC
X7		DS27			1N60	Overload
X8		DS27			1N60	Detector

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
CLA	400	16	7279775						
B	850	16					FPS300.75		PCLS3021.2*
C	2.2	11.5AC							
C2	30	6	7279896	PTT27	NLW30-15	MT1-13	TT6X30	MLV30-6	TE-1092
C3	100	3	7279888	PTT13	NLW100-3	MT1-18	TT6X100	MLV100-3	TE-1059.5

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

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	EUMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	24-80	#7280095				462		
C5	.047 75V		P288N-047	DDA-503	CUB2S47	IDP-2-473	GEM-4147	2TM-547
C6	.047 75V		P288N-047	DDA-503	CUB2S47	IDP-2-473	GEM-4147	2TM-547
C7	2 NPO ±.25mmf		NPO-DI 2.2	DTZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22
C8A		#7279801						
B		#7279821						
C9	180 N080 10%			TCN-91	C10Q91U	*		
C10	98 N750 10%	(91) †		DD-222		6DP-1-222	GEM-6222	8TM-D22
C11	.022 75V		P288N-022	DDM-203	CUB4S22	IDP-1-223	GEM-4122	2TM-522
C12	.022 75V		P288N-022	DD-472		CCD-472		10TS-D47
C13	.047 75V		P288N-047	DDA-503	CUB2S47	IDP-2-473	GEM-4147	2TM-547
C14	.047 75V		P288N-047	DDA-503	CUB2S47	IDP-2-473	GEM-4147	2TM-547
C15	.047 75V		P288N-047	DDA-503	CUB2S47	IDP-2-473	GEM-4147	2TM-547
C16	120 NPO 10%		NPO-DI 120	DTZ-120			CNO-312	10TCC-T12
C17	.001 10%		DI-1000	DD-102	L10D1	CCD-102	GP210	10TS-D10
C18	.0022 10%		DI-2200	DD-222	L10D22	CCD-222	GP222	10TS-D22
C19	.0022 10%		DI-2200	DD-222	L10D22	CCD-222	GP222	10TS-D22
C20	1.0mfd 3V			UK-105				HY-135
C21	.1mfd 75V		P2151N-1	DDA-104	BC2P1J	IDP-2-104	ACE-401	2SE-P10
C22	.47 100V		P288N-47		CUB2P47	IDP-4-474	GEM-2047	2TM-P47

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

Delco Part Number.

† Alternate Value.

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
RIA	Tone	6800Ω					
B	Volume & Switch	7500Ω 23000Ω	7281105				UE4321-S
R2	Bias Adjustment	Tap 260Ω 100Ω Stop	7275474				

■ "STA-LOC" Equivalent: FG682L, RU752T222, OS1312, IS1987, US41

PARTS LIST AND DESCRIPTION (CONTINUED)

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

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman PART No.	
L1	Ant. Loading	7295736					
L2	Ant.	1221614					
L3	RF	1221615					
L4	Osc.	1221616					
L5	1st IF	1221617					
L6	2nd IF	1221618					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 \sim)	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L7	.7A @12VDC	.6 Ω	8 MH	1221623					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		DELCO PART No.	QUAM PART No.	
SPI	4" x 10" PM 3-4 Ω	7276547	410A2	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			DELCO PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
M1	AGW	2 $\frac{1}{2}$ A			30302.5 (AGW 2 $\frac{1}{2}$ A)			AGW 2 $\frac{1}{2}$	

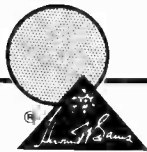
MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M2	Tuner		Series P2, Push Button
M3	Spark Plate	7271564	
M4	Switch	7274985	Speaker Interlock

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

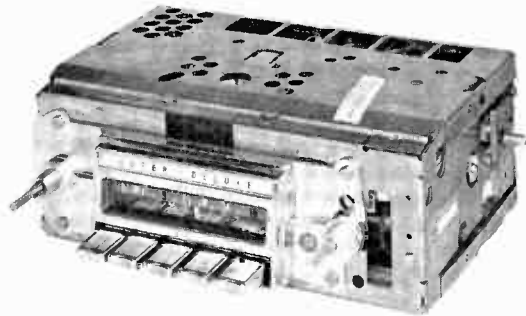
ITEM	PART No.	ITEM	PART No.
Dial	7278948	Knob - Volume, Tuning	535908
Pointer Assembly	1221067	Knob - Tone	539611
Push Button	7276507	Knob - Dummy	539610



TRADE NAME : Pontiac Model 983873
(1963 Pontiac)
SUPPLIER : (Parts) United Delco Distributors

TYPE SET : 5 Transistor AM Receiver
POWER SUPPLY : 12 Volt Storage Battery
RATING : 1.7 Amp. @ 12.6 VDC

TUNING RANGE : BROADCAST 540 - 1615KC



ALIGNMENT INSTRUCTIONS

Check for specified source voltage.

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:

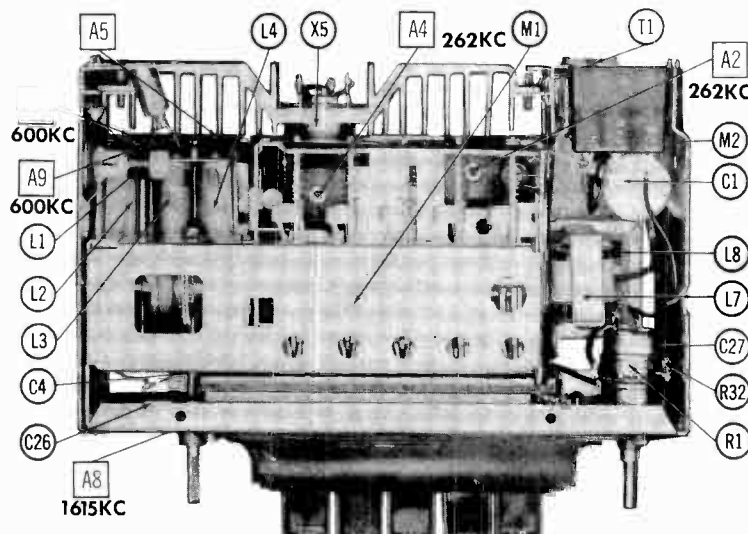
A1, A2, A3, A4, A5, A9, A10... GENERAL CEMENT #5009, 8728A, 8987
WALSCO #2531X, 2536
A6, A7, A8..... GENERAL CEMENT #9087, 8290, 8868
WALSCO #2525, 2528, 2587

PUSH-BUTTON ADJUSTMENT

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

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point A, low side to ground.	262KC (400% Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
Check setting of oscillator coil core (A5). Rear of core should be 1 3/8" from mounting end of coil form.						
2.	High side thru 82mmf to antenna receptacle, low side to ground.	1615KC	High Freq. End Stop.	Output Meter across voice coil.	A6, A7, A8	Adjust for maximum.
3.	"	600KC	600KC Signal	"	A9, A10	Adjust for maximum. Repeat step 2.

With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.



REMOVAL INSTRUCTIONS

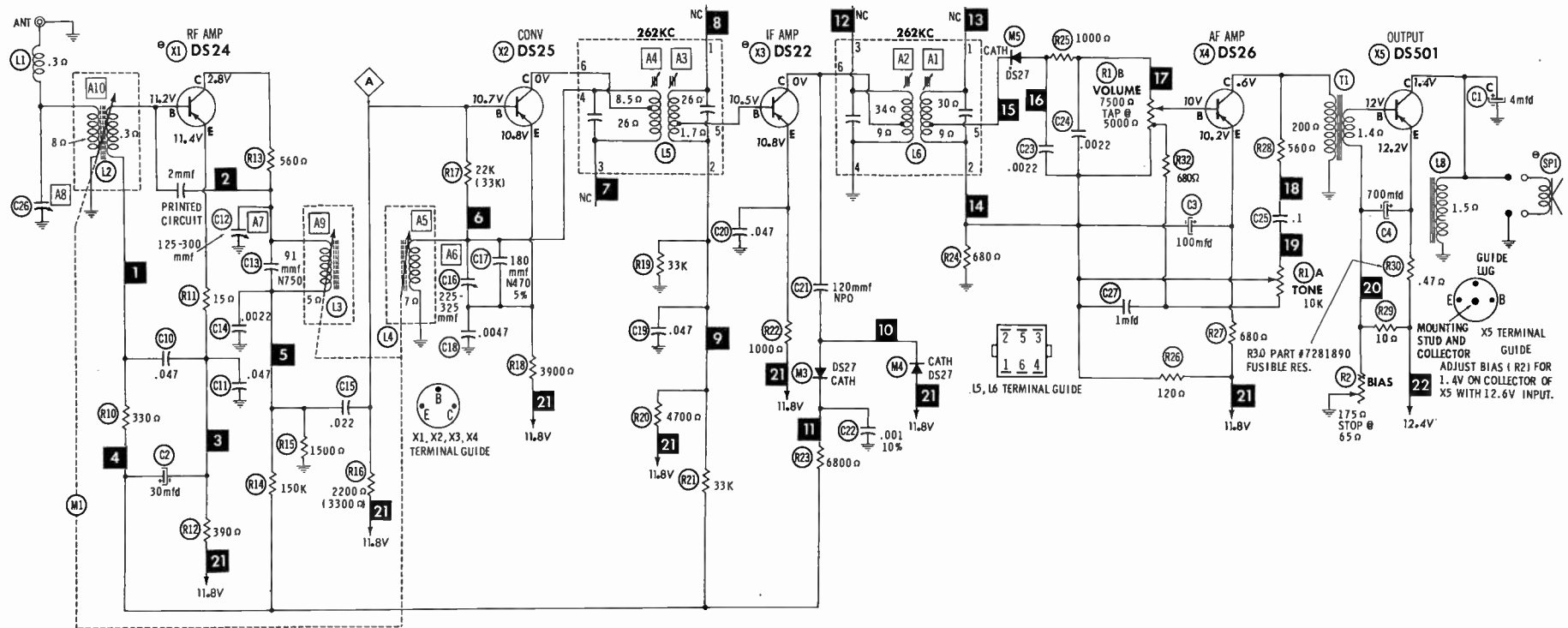
NOTE: To replace transistors, remove radio.

RADIO

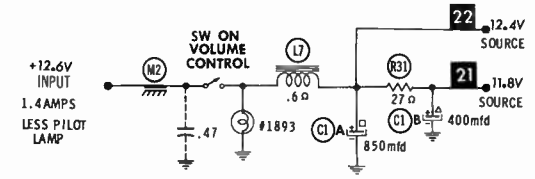
1. Use Allen wrench and remove tuning and volume knobs.
2. Use 5/8" wrench and remove nuts from control bushings. Remove ferrule.
3. Disconnect antenna lead, speaker connector and dial lamp.
4. Remove radio from under instrument panel.

SPEAKER

1. Disconnect "A" lead from speaker connector.
2. Use 7/16" wrench and remove 4 nuts holding speaker. Remove speaker.

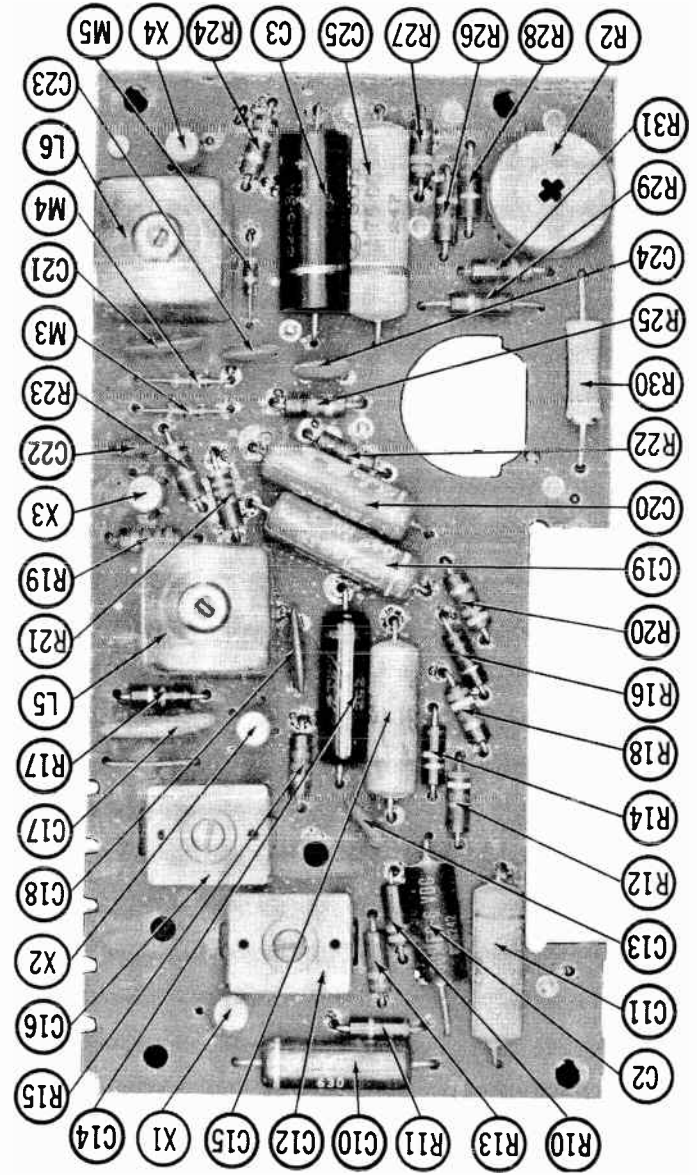
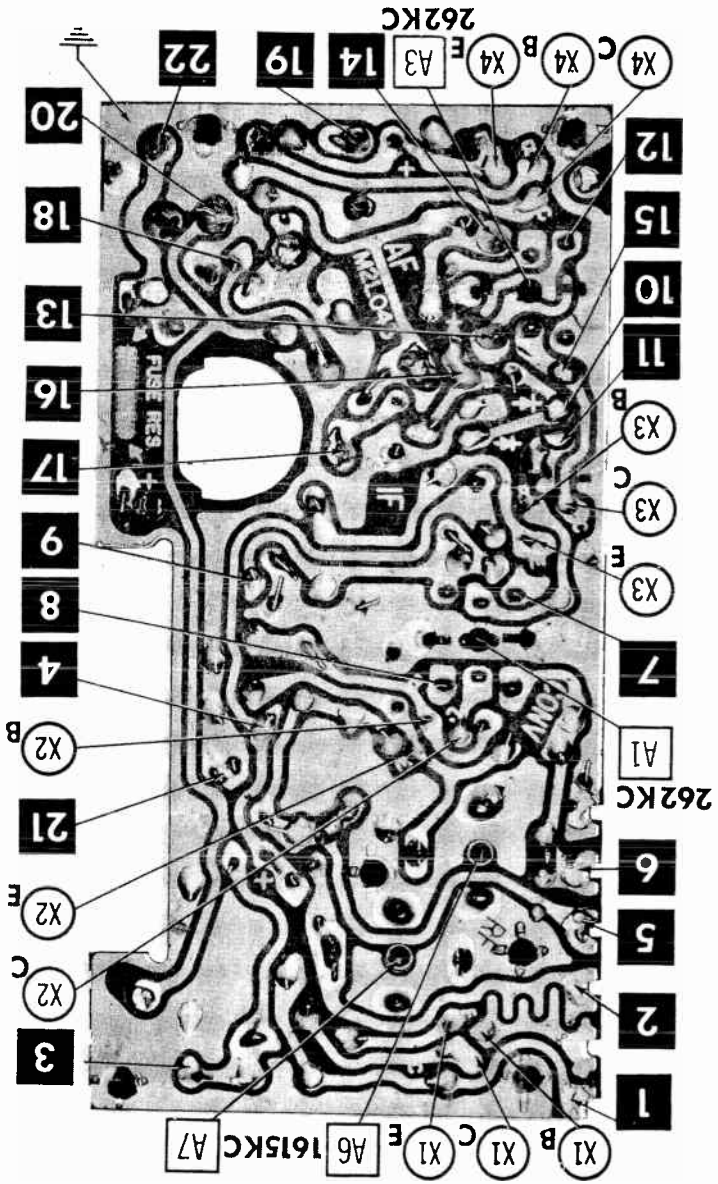


- See parts list for alternate value or application.
- 1. Voltage measurements taken with vacuum tube voltmeter.
- 2. All controls set for normal operation, no signal applied.
- 3. Measured values are from socket pin or terminal to common ground.
- 4. All terminals viewed from bottom unless otherwise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



A PHOTOFAC STANDARD NOTATION SCHEMATIC
with **CIRCUITRACE**
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PONTIAC MODEL 983873



PARTS LIST AND DESCRIPTION

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	DS-24	RF Amplifier	DS-25	GE-1	2N1637	PNP
X2	DS-25	Converter	DS-25	GE-1	2N1639	PNP
X3	DS-22	IF Amplifier	DS-25	GE-1	2N1638	PNP
X4	DS-26	AF Amplifier	DS-26	GE-2	2N591	PNP
X5	DS-501	Output	DS-501	GE-4		PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	
C1A	850	16	7282272	AFH3-54-30				WP300, 7A	TVL-3021
B	400	16							
C	4	11.5AC							
C2	30	6	7279896	PTT27	NLW30-15	MT1-13	MLV30-6	TT6X30	TE-1092
C3	100	3	7279888	PTT13	NLW100-3	MT1-18	MLV100-3	TT6X100	TE-1059, 5
C4	700	1	7282789	PRS1130	BR1000-6		BL2211		TVA-1104

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	.047		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-S47
C11	.047	#7281932	P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-S47
C12	125-300							
C13	91 N750		P288N-0022	TCN-91	C10Q91U	6DP-1-222	GEM-6222	6TM-D22
C14	.0022		P288N-022	DD-222	CUB6D22	IDP-1-223	GEM-4122	2TM-S22
C15	.022			DDM-203	CUB4S22			
C16	225-325	#7281933						
C17	180 N470 5%	#7284768						
C18	.0047		DI-4700	DD-472		CCD-472		10TS-D47
C19	.047		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-S47
C20	.047		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	4TM-S47
C21	120 NPO		NPO-DI 120	DTZ-120			CNO-312	10TCC-T12
C22	.001 10%		DI-1000	DD-102	L10D1	CCD-102	GP210	10TS-D10
C23	.0022		DI-2200	DD-222	L10D22	CCD-222	GP222	10TS-D22
C24	.0022		DI-2200	DD-222	L10D22	CCD-222	GP222	10TS-D22
C25	.1		P2151N-1	DDA-104	BC2P1J	IDP-2-104	GEM-401	2SE-P10
C26		#7281971						
C27	1mfd			UK-105	HCC3105P			HY-135

Delco Part Number.

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA					
			DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RLA	Tone	10K	7282316					■ UE441JS
B	Volume & Switch	7500Ω Tap @ 5000Ω						
R2	Bias	175Ω	7275554 ①					

① Alternate Part #1221422

■ "STA-LOC" Equivalent: FK14A, RU752T52, OS1000, IS1500, US41

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	RF Choke (6.2uh)	7281946	BC-565	4610	RTC-8520	T859	① Part of M1
L2	Ant.	7281716 ①					
L3	RF	7282042 ①					
L4	Osc.	7281717 ①					
L5	Input IF	1221856					
L6	Output IF	1221857					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L7	1.4 Amp.	.6Ω	8MH	1221623	C-4095			TR-154	

CHOKE (AUDIO OUTPUT)

ITEM No.	INDUCTANCE	REPLACEMENT DATA					NOTES
		DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L8	29.5MH	7282278					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
			DELCO PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
	PRI.	SEC.						
T1	10	1	7280915					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		DELCO PART No.	QUAM PART No.	
SPI	4" x 10" PM 10Ω	7281642	410A2210	

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner	7281697	
M2	Spark Plate	7271564	
M3	AVC Det.	DS-27	
M4	AVC Det.	DS-27	
M5	Audio Det.	DS-27	

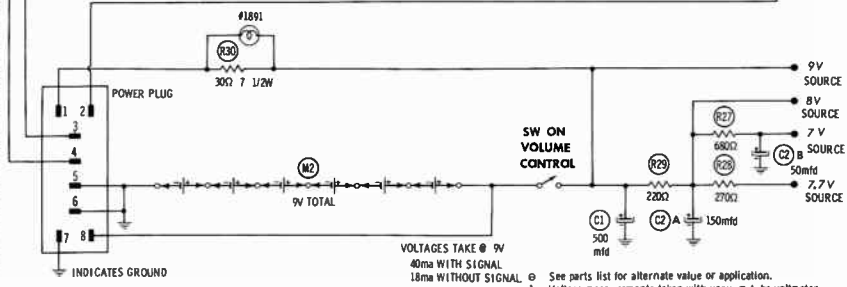
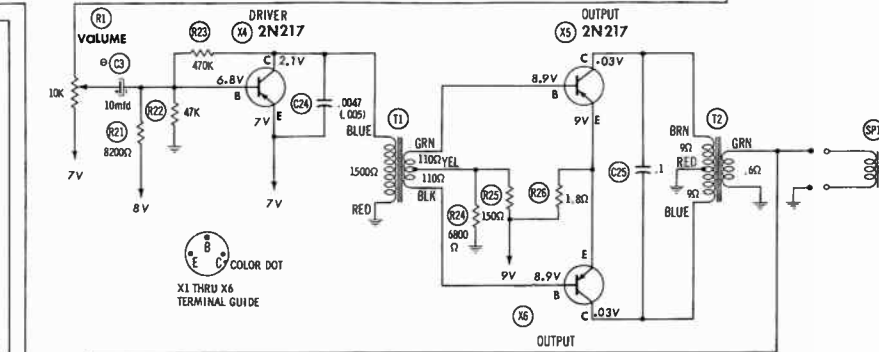
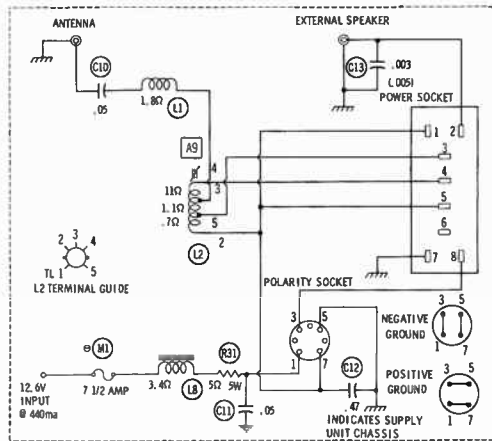
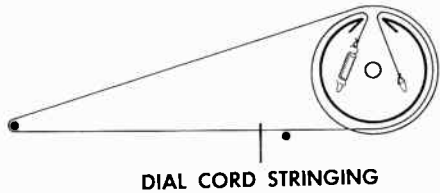
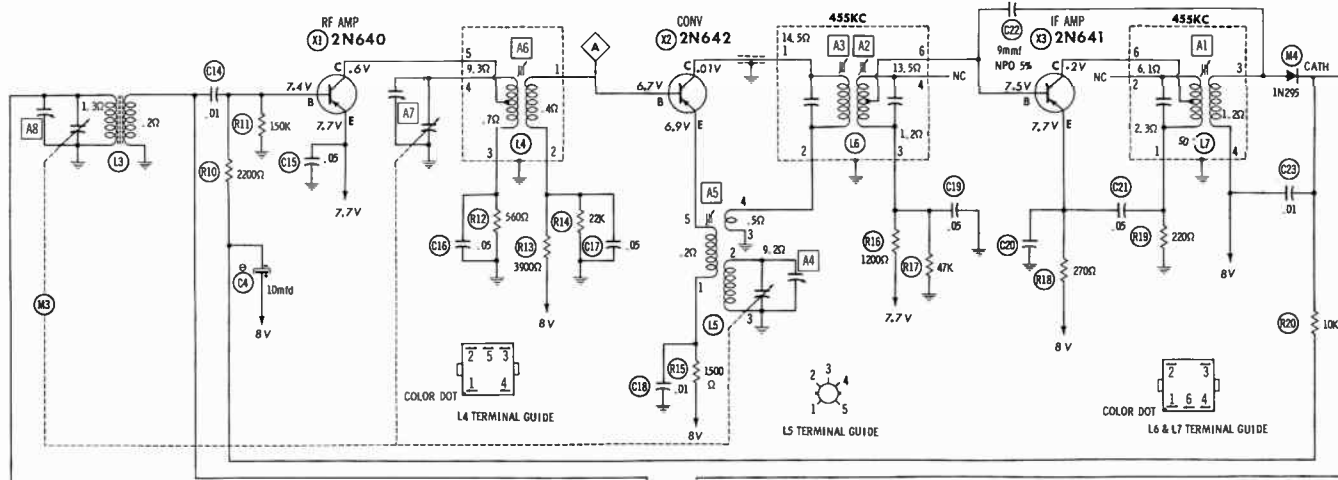
CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial Glass	7283852	Knob - Tone	544309
Knob - Tuning, Volume	544207	Knob - Dummy	544472

WIRING DATA

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



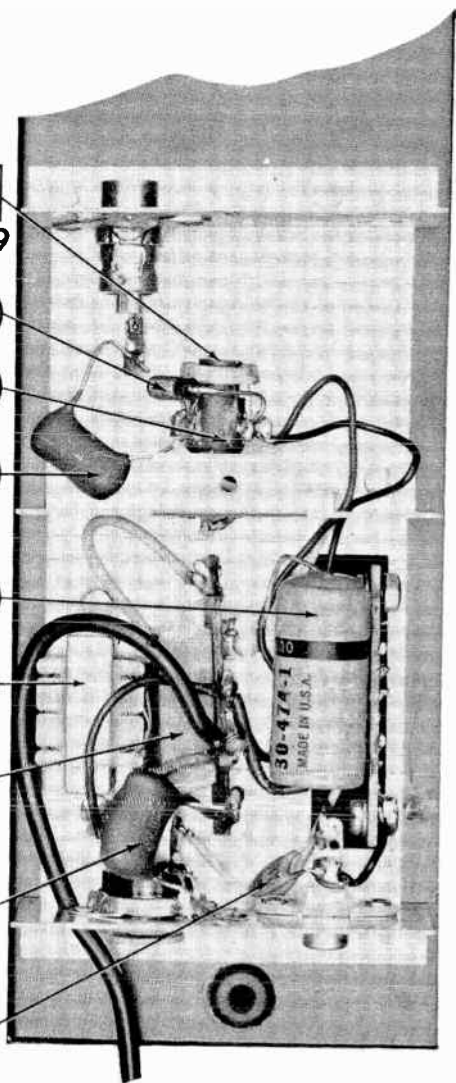
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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- See parts list for alternate value or application.
1. Voltage measurements taken with vacuum tube voltmeter.
 2. All controls set for normal operation, no signal applied.
 3. Measured values are from socket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

RIVERSIDE MODEL FJB-6587A

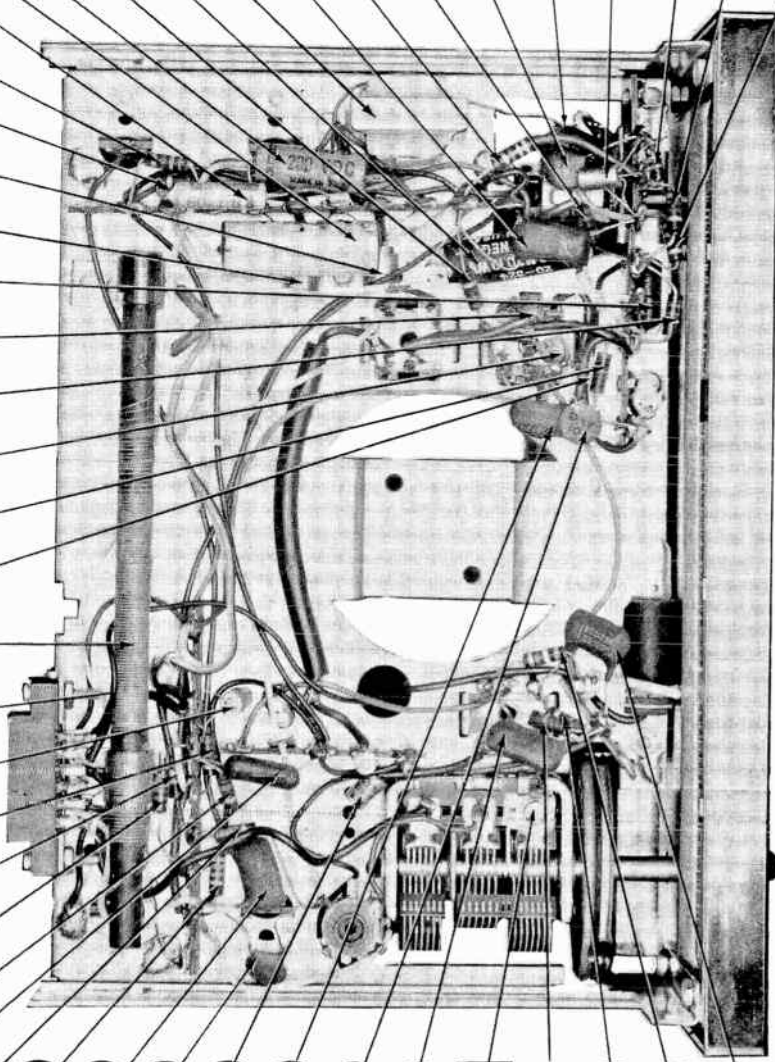
A9
600KC

- L1
- L2
- C10
- C12
- L8
- R31
- C11
- C13



- R27
- R21
- R23
- X4
- C3
- C24
- R29
- R22
- C20
- T1
- C2
- R19
- C25
- C1
- R26
- R24
- R25
- X5
- X6
- C4
- X3
- R18
- C22
- R20
- M3
- L3
- C14
- X1
- R10
- R11
- R16
- R28
- C16
- R13
- R12
- R14
- A7
- C17
- C23
- C21
- X2
- C18
- C19
- R17
- R15
- C15

1400KC



PARTS LIST AND DESCRIPTION

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	2N640	RF Amp.	D825	G#1	2N640	PNP
X2	2N642	Converter	D825	G#1	2N642	PNP
X3	2N641	IF Amp.	D825	G#1	2N641	PNP
X4	2N217	Driver	D826	G#2	2N217	PNP
X5	2N217	Output	D826	G#2	2N217	PNP
X6	2N217	Output	D826	G#2	2N217	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		RIVERSIDE PART No.	REPLACEMENT DATA					MALLORY PART No.	SPRAGUE PART No.
	CAP.	VOLT.		AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MLV10-15		
C1	500	15	20-507				BL2342	TC-1505	TYA1162	
C2A	150	10	20-324	CRE428A	NLW150-10	MT1-23	MLV150-12	TT12X150	TE-1136	
B	50	10		CRE417A	NLW50-10	MT1-16	MLV50-10	TT10X50	TE-1119	
C3	10	15	Note 1	CRE457A	NLW10-15	MT1-5	MLV10-15	TT15X10	TE-1155	
C4	10	15	Note 1	CRE457A	NLW10-15	MT1-5	MLV10-15	TT15X10	TE-1155	

Note 1. Some versions may use 10mf 10V, part #20-106.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	.05 100V	Note 1	P288N-05	DDA-503	PM285	IDP-2-503	PVC215	2TM-850
C11	.05 100V		P288N-05	DDA-503	PM285	IDP-2-503	PVC215	2TM-850
C12	.47 100V	Note 1	P288N-47		WMF1P47	IDP-4-474	PVC1047	2TM-P47
C13	.003	(.005) †	DI-3000	DM-302	LA10D3-C4	CCD-302	GP230	10TS-D30
C14	.01		BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-D10
C15	.05 100V		P288N-05	DDA-503	PM285	IDP-2-503	PVC215	2TM-850
C16	.05 100V		P288N-05	DDA-503	PM285	IDP-2-503	PVC215	2TM-850
C17	.05 100V		P288N-05	DDA-503	PM285	IDP-2-503	PVC215	2TM-850
C18	.01		BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-810
C19	.05 100V		P288N-05	DDA-503	PM285	IDP-2-503	PVC215	2TM-850
C20	.05 100V		P288N-05	DDA-503	PM285	IDP-2-503	PVC215	2TM-850
C21	.05 100V		P288N-05	DDA-503	PM285	IDP-2-503	PVC215	2TM-850
C22	8mmf NPO 5%	#15-9						
C23	.01		BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-810
C24	.0047	(.005) †	BPD-0047	DD-472	BYA10D47	CCD-472	B-247	5HK-D47
C25	.1 200V		P288N-1	DDA-104	PM2P1	2DP-3-104	GEM-201	2TM-P10

Note 1. Not used in some versions.
† Alternate Value

CONTROLS

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

* Riverside Part Number

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			RIVERSIDE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume, Switch	10K	80A1620, B	AB-15, AK-33 KR-7 or (F2-10K, SFS212, KR-7)	A47-10K-Z, RS-3/16 SWE-23	B13-116, SK9, 76-2	UA14A, SD3500, US-42 or (RU14A, SL35, IS1375, US-42) or (U18, DS-37, US-27)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		RIVERSIDE PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	RF Choke (6.2uh)	14-6.2					
L2	Ant. Matching	14A2017					
L3	Loopstick	10A2015					
L4	RF	14-23					
L5	Osc.	14A2016					
L6	Input IF	14-21					
L7	Output IF	14-22					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	RIVERSIDE PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	
L8	440 MA	3.4Ω	37 MH	75A1636				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	RIVERSIDE PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	100Ω CT	3-4Ω	75A1561					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO	REPLACEMENT DATA					NOTES
		RIVERSIDE PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	2.2 : 1	75A787C					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		RIVERSIDE PART No.	QUAM PART No.	
BPI	4½" x 4½" PM	3-4Ω	78A836	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			RIVERSIDE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER		
M1	SFE	7½ Amp			307007.5 (7½ Amp)	15507.5	SFE 7½	HMH
Alt.	3AG	2 Amp	108-100	12A1912B	312002 (2 Amp)	155020	AGC 2	HHJ

BATTERIES

ITEM No.	VOLTAGE	RIVERSIDE PART No.	REPLACEMENT DATA			NOTES
			BURGESS	EVEREADY	MALLORY	
M2	1½V		230 (AL-2)	A100 (E95)	M-13R (MNL300)	6 used

MISCELLANEOUS

ITEM No.	PART NAME	RIVERSIDE PART No.	NOTES
M3	Tuning Cap.	35A1682	3 Gang
M4	Def. - AFC Diode	1N295	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial Glass Escutcheon	55A1806 54C1604	Knob, Volume, Tuning	48A1613

WIRING DATA

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



PHOTOFACT[®]

TRADE NAME : Riverside Model FJB-6649A
 SUPPLIER : Montgomery Ward & Co.,
 619 Chicago Ave., Chicago 7, Illinois
 TYPE SET : 7 Transistor Am Receiver
 POWER SUPPLY : 6-12 Volt Storage Battery
 RATING : .2 Amp @ 6.3 Volts DC
 .42 Amp @ 12.6 Volts DC
 TUNING RANGE : BROADCAST 540-1615 KC



ALIGNMENT INSTRUCTIONS

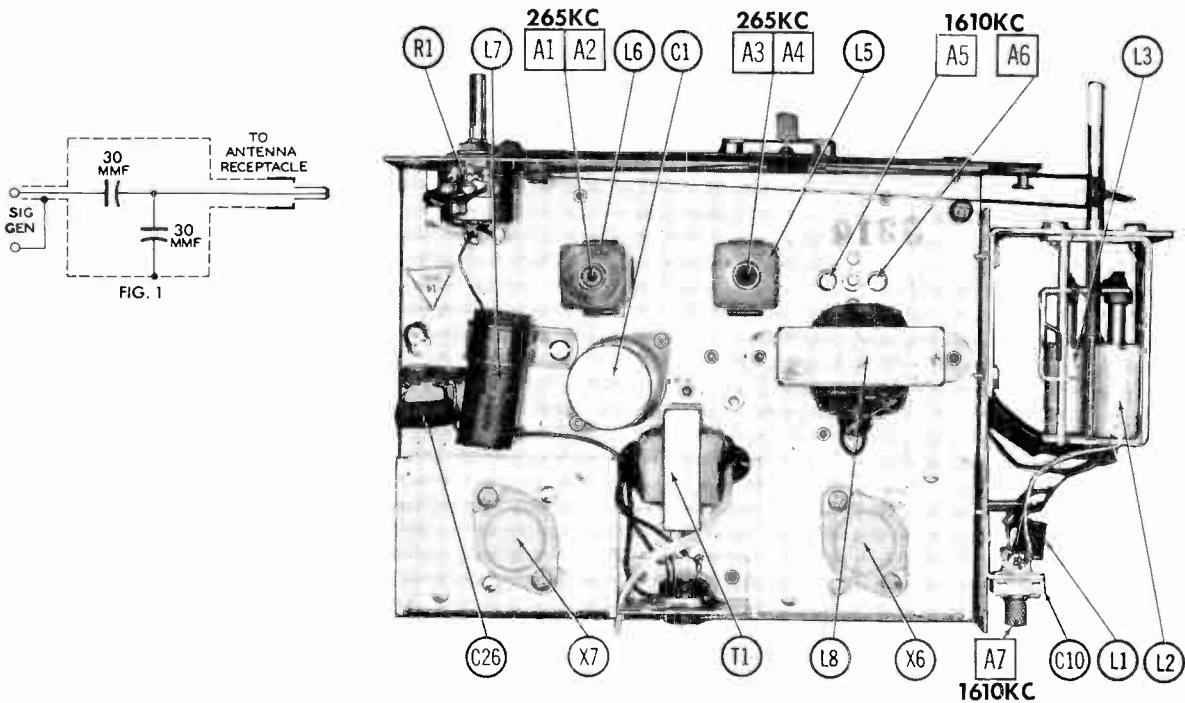
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools: GENERAL CEMENT 8282, 8606, 9302 WALSCO #2543, 2544, 2588

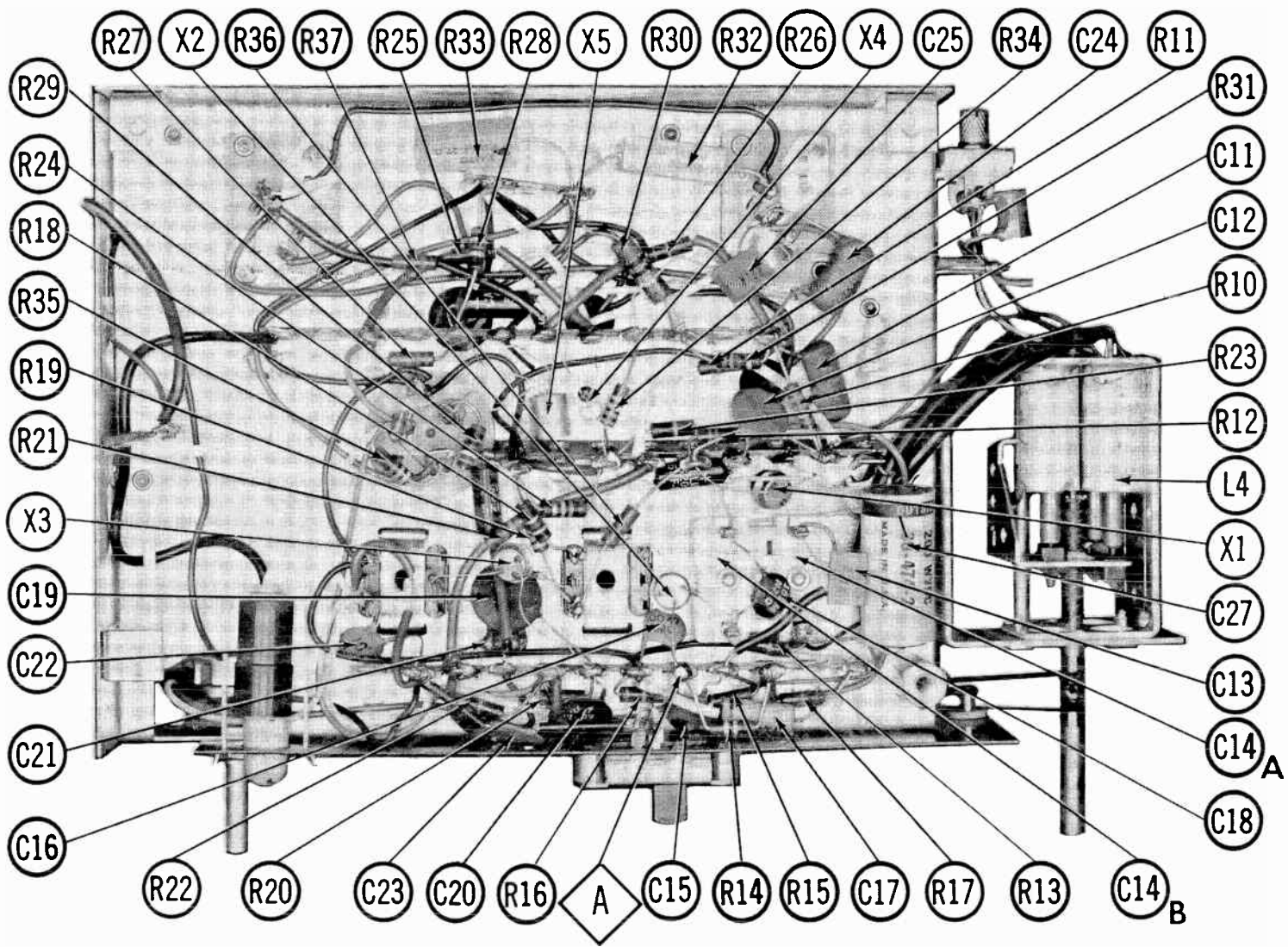
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7, V2, low side to chassis.	265KC (Unmod.)	High Freq. End Stop.	DC VTVM across volume control.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1610KC	1610KC	"	A5, A6, A7	"

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



RIVERSIDE MODEL FJB-6649A

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



RIVERSIDE MODEL FJB-6649A

PARTS LIST AND DESCRIPTION

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	2N640	R F Amp.	DS-25	GE-1	2N640	PNP
X2	2N642	Converter	DS-25	GE-1	2N642	PNP
X3	2N641	IF Amp.	DS-25	GE-1	2N641	PNP
X4	2N591	A F Amp.	DS-26	GE-2	2N591	PNP
X5	2N591	Driver	DS-26	GE-2	2N591	PNP
X6	2N176	Output	DS-520	GE-3	2N176	Note 1
X7	2N176	Output	DS-520	GE-3	2N176	Note 1

Note 1 When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely. Check Bias Adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	RIVERSIDE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500	15	20-328	PWH3-00-94		XC3-48.1		PWP300.4A	PCL-3026.6
B	250	15							
C	250	15							
C2	25	15	20-256-015	CRE462A	NLW25-15	MT1-10	MLV25-15	TT15X25	TE-1157.1
C3	5	15	20-505-015	CRE454A	NLW5-15	MT1-3	MLV5-15	TT25X5	TE-1152
C4	5	15	20-505-015	CRE454A	NLW5-15	MT1-3	MLV5-15	TT25X5	TE-1152

FIXED CAPACITORS

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	.05	100V	#28-800-36	P288N-05	CK-503	PM4S5	1DP-2-503	GEM-415	2TM-S50
C11	.1	16V		TTD-1468LS-270	CK-104	H6	22R5T27	TA-010	TG-P10
C12	270						CM-15-E-271J	MCB-240.5	MS-327
C13			#28A1332						
C14									
C15	.02			BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C16	.0047			BPD-0047	DD-472	BYA10D47	CCD-472	B-247	5HK-D47
C17	.01	200V	(.015)*	P288N-.01	DM-103	WMF2S1	4DP-1-103	PVC-211	2TM-S10
C18	100	N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C19	.047	100V		TTD-05	CK-503				
C20	.047	100V		TTD-05	CK-503				
C21	180			1468LS-180		22R5T18	CM-15-E-181J		MS-318
C22	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	.1			TTD-1	CK-104	H6		TA-010	TG-P10
C24	.05	100V		P288N-.05	CK-503	PM2S5	1DP-2-503	GEM-415	2TM-S50
C25	270			1468LS-270					
C26	.05	100V		P288N-.05	CK-503	PM2S5	1DP-2-503	GEM-415	2TM-S50
C27	.47	200V		P288N-.47		PM2P47	2DP-5-474	GEM2047	2TM-P47

* Alternate Value # Riverside Part Number

CONTROLS

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

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA					
			RIVERSIDE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RI	Volume & Switch	10K	80A2090					

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		RIVERSIDE PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	RF Choke (6.2uh)	14-6.2					① Part of M2.
L2	Ant.	①					
L3	RF	①					
L4	Osc.	①					
L5	Input IF	14-270					
L6	Output IF	14-271					
L7	"A" Lead Choke (200uh)	75A6002				TF606	

CHOKE (AUDIO OUTPUT)

ITEM No.	INDUCTANCE	REPLACEMENT DATA					NOTES
		RIVERSIDE PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L8	7.5mh	75A2075					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	RIVERSIDE PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			RIVERSIDE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3Amp. 250V	108-303	12-TR12	312003 (3Amp.)	155020	AGC3	HMJ

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA			
		RIVERSIDE PART No.	QUAM PART No.		
SP1	6" X 9" PM 6-8Ω	73B2093	69A3Z6.4		

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.
Knob, Volume, Tuning	48A1069

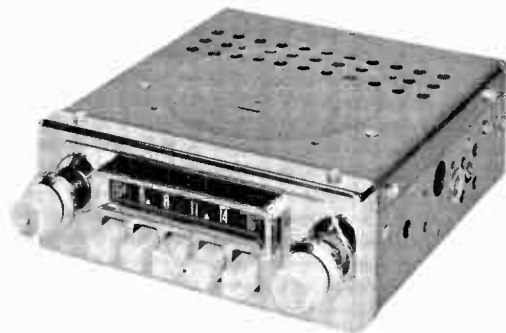
WIRING DATA

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



PHOTOFACT[®]

TRADE NAME : Riverside Model FJB-16566A
 SUPPLIER : Montgomery Ward & Co.,
 619 Chicago Ave., Chicago 7, Illinois
 TYPE SET : 2 Tube - 2 Transistor AM Receiver
 POWER SUPPLY : 12 Volt Storage Battery
 RATING : 1.2 Amp @ 12.6 Volts DC
 TUNING RANGE: BROADCAST 540-1615 KC



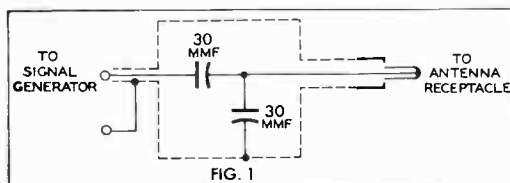
ALIGNMENT INSTRUCTIONS

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

A1 thru A4..... GENERAL CEMENT #8606, 8606L, 8728A
 WALSCO #2543, 2544, 2588
 A5, A6, A7..... GENERAL CEMENT #9087, 8290, 8868
 WALSCO #2525, 2528, 2587

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mf to point Δ , low side to ground.	265KC (400v Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1615KC	"	"	A5, A6, A7	"

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

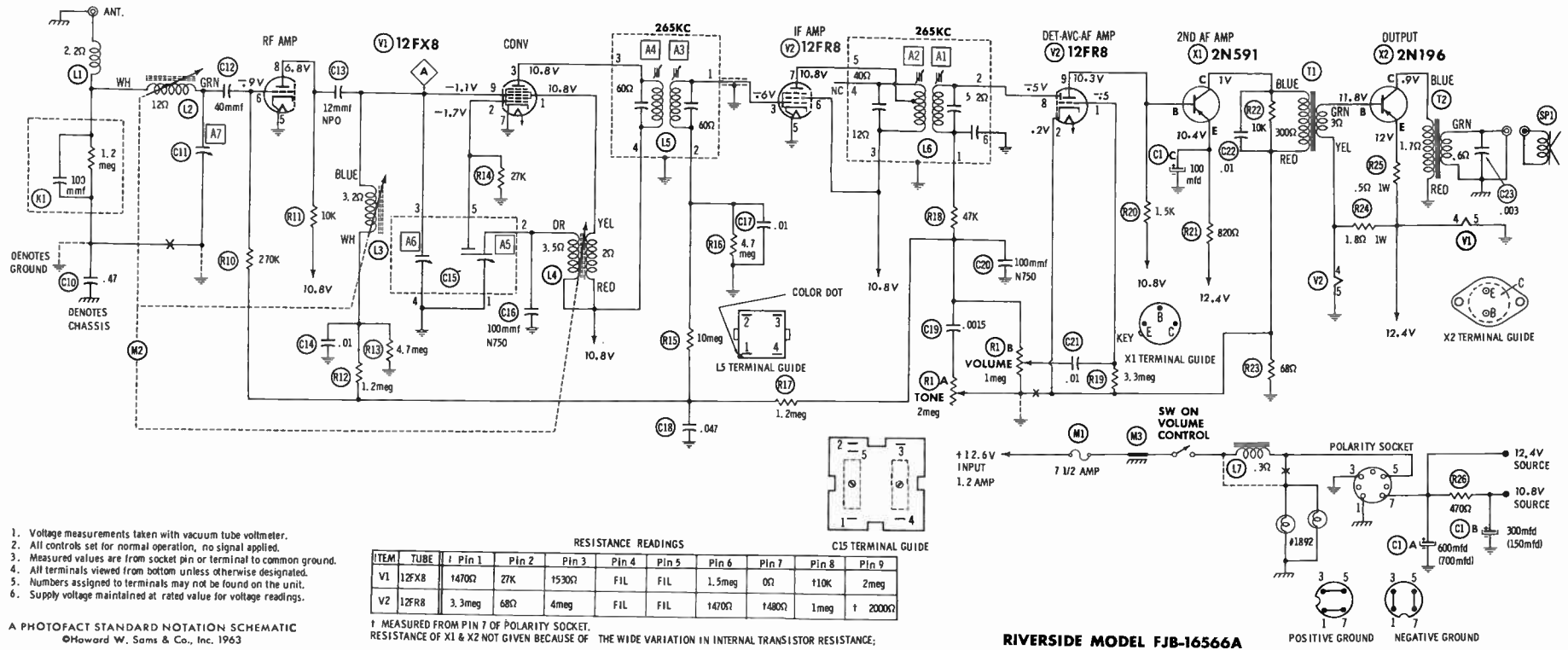


PUSH-BUTTON ADJUSTMENT

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

RIVERSIDE MODEL FJB-16566A

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



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

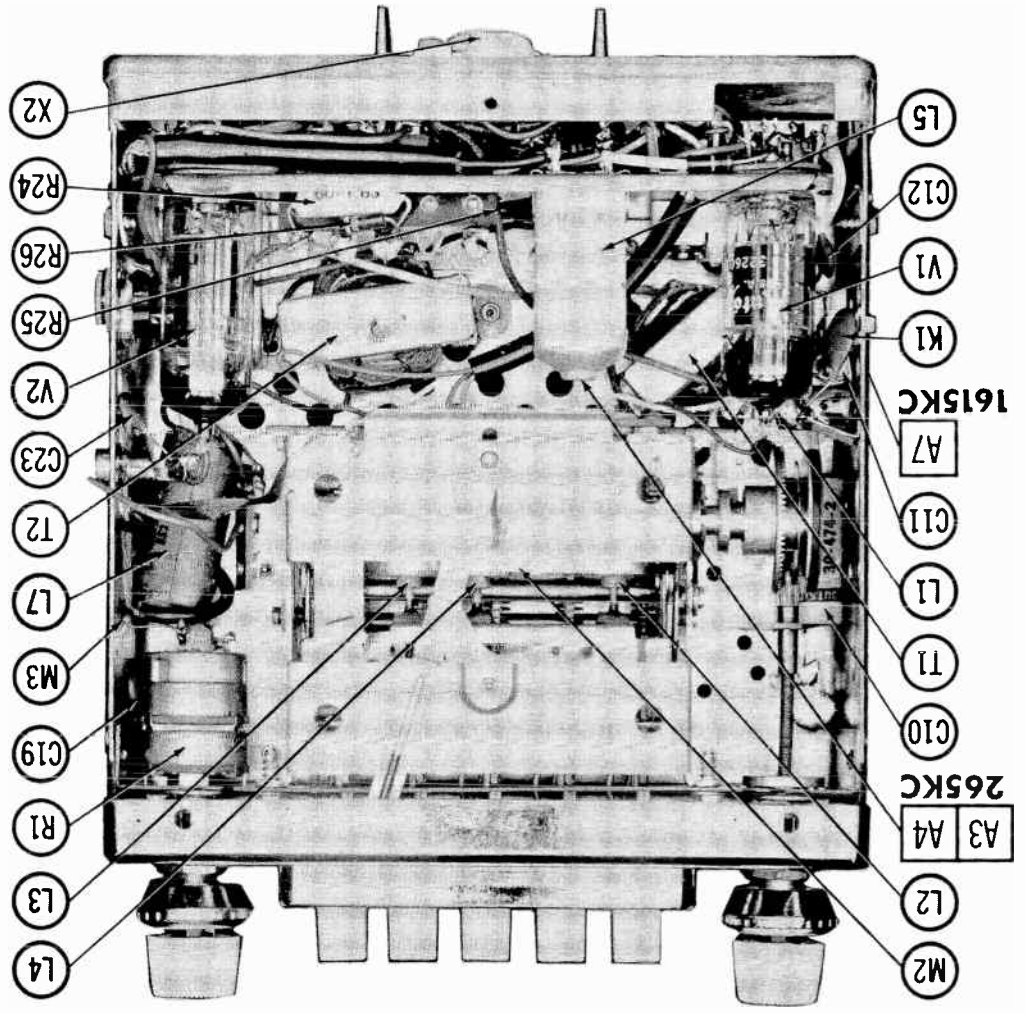
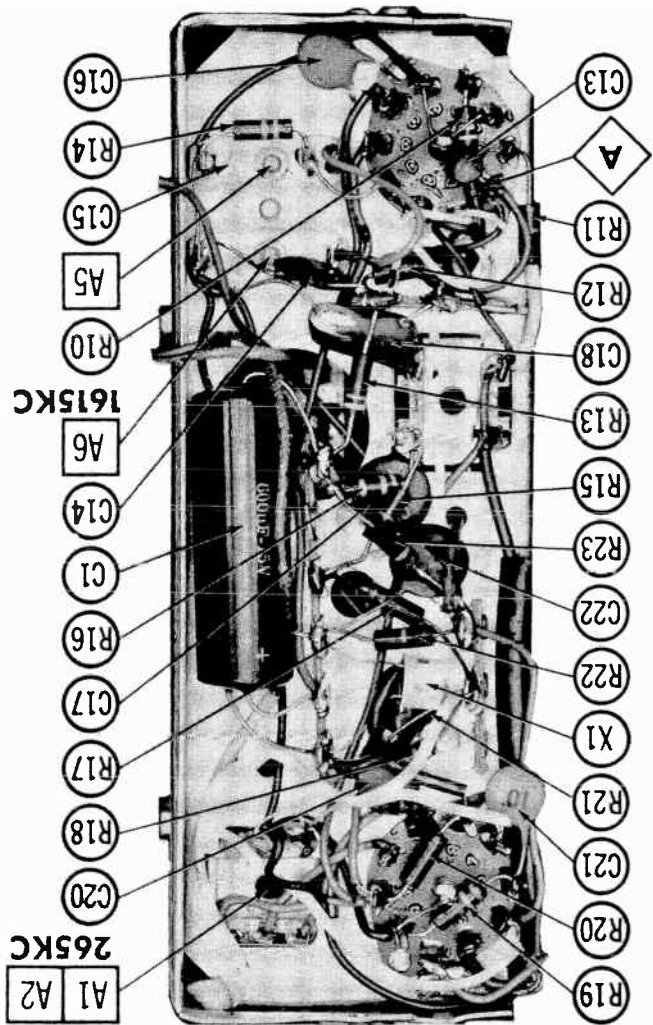
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12FX8	1470Ω	27K	1530Ω	FIL	FIL	1.5meg	0Ω	110K	2meg
V2	12FR8	3.3meg	68Ω	4meg	FIL	FIL	1470Ω	1480Ω	1meg	1 2000Ω

† MEASURED FROM PIN 7 OF POLARITY SOCKET.
 RESISTANCE OF X1 & X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE;

A PHOTOFAC STANDARD NOTATION SCHEMATIC
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RIVERSIDE MODEL FJB-16566A



PARTS LIST AND DESCRIPTION

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	2N591	Driver	DS-26	GE-1	2N591	PNP
X2	2N176	Output	DS-520	GE-3	2N176	PNP

TUBES

♦ AMPEREX ♦		GENERAL ELECTRIC ♦		RCA ♦		RAYTHEON ♦		SYLVANIA ♦	
ITEM No.	USE	TYPE		ITEM No.	USE	TYPE			
V1	RF Amp. -Conv.	12FX8		V2	IF Amp. -DET-AVC-AF Amp	12FR8			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	RIVERSIDE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A B C	800 300 100	15 15 15	20-427						

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	.47	200V	P288N-.47		PM2P47	2DP-5-474	GEM-2047	2TM-P47
C11								
C12	40		DI-39	DD-390	LA10Q39-S3	CCD-390	GP-439	5GA-Q39
C13	12	NPO				CCTO-120	CNO-412	10TCC-Q12
C14	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15A C15B C15C								
C16	100	N750	N750-II 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C17	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	.047	100V	P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-2147	2TM-S47
C19	.0015		BPD-0015	DD-152	L10D15	CCD-152	B-215	10TS-D15
C20	100	N750	N750-D1-100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C21	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	.003			DM-302				

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA					
			RIVERSIDE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A R1B	Tone Volume, Switch	2meg 1meg	80A1320-B	F2-2meg R2-1meg FFS102, RFS110 AK-31, KR-4				

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RIVERSIDE PART No.	REPLACEMENT DATA
K1	Antenna Isolation	1.2meg, 100mmf	89-4204	Sprague PRC-9

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		RIVERSIDE PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1 L2 L3 L4 L5 L6 L7	RF Choke (6.2uh) Ant. RF Osc. Input IF Output IF "A" Lead Choke (200uh)	14-6.2 ① ① ① 14-272 14-273 75-A6002	BC-565	4610	RTC-8520	T859	①Part of M2

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	RIVERSIDE PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	16Ω	3-4Ω	75A1272					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	RIVERSIDE PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	8:	1	75A1859					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		RIVERSIDE PART No.	QUAM PART No.	
SP1	4" X 8" PM	3-4Ω	73B2515 48A2	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			RIVERSIDE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	7½ Amp 32V			307007.5 (7½A mp. 32V)	15507.5	SFE7½	HMH

MISCELLANEOUS

ITEM No.	PART NAME	RIVERSIDE PART No.	NOTES
M2 M3	Tuner Spark Plate	78B1571 43-215	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Escutcheon	54C1304	Knob, Tone	48B393
Knob, On-Off Volume, Tuning (2Used)	47-50	Knob, Dummy	48B393-1

WIRING DATA

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



PHOTOFACT[®] with

CIRCUITRACE[®]

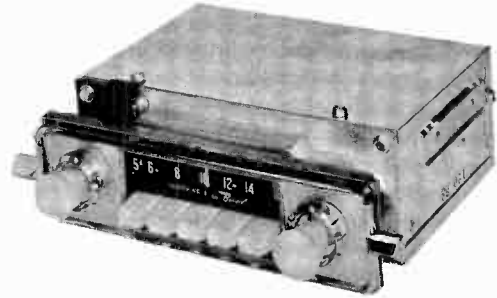
TRADE NAME: Volkswagen Model 3TBV (E3 Sedan)
 Model 3TBVT ('63 Transporter)
 Karmann Ghia Model 3TBG (1963)
 SUPPLIER: The Bendix Corp., Bendix Radio Div.,
 Baltimore 4, Maryland

TYPE SET: 6 Transistor AM Receiver

POWER SUPPLY: 6 Volt Storage Battery

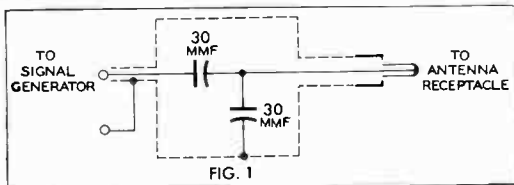
RATING: .81 Amp @ 6.3 Volts DC

TUNING RANGE: BROADCAST 540-1615 KC



ALIGNMENT INSTRUCTIONS

Check for specified source voltage. Use only enough generator output to provide a usable indication. Suggested Alignment Tools: A1 thru A4 A5 thru A10					PUSH-BUTTON ADJUSTMENT	
GENERAL CEMENT #8282, 8606, 9302 WALSCO #2543, 2544, 2588 GENERAL CEMENT #8290, 8868, 9087 WALSCO #2525, 2528, 2587					1. Pull button out. 2. Tune manually to desired station. 3. Press button in firmly. 4. Repeat for remaining buttons.	
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS	
1. High side thru .1mfd to point Δ , low side to ground.	262KC (400v Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.	
2. Thru dummy (Fig. 1) to antenna receptacle.	1615KC	"	"	A5, A6, A7	"	
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. IF necessary, back tuning cores (A8, A9, A10) out of coils but not out of forms. Repeat step 2.						
3. Thru dummy (Fig. 1) to antenna receptacle.	1000KC	Tune to Signal.	Output Meter across voice coil.	A8, A9, A10	Adjust for maximum. Repeat steps 2 & 3 until no further improvement is noted.	
With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.						



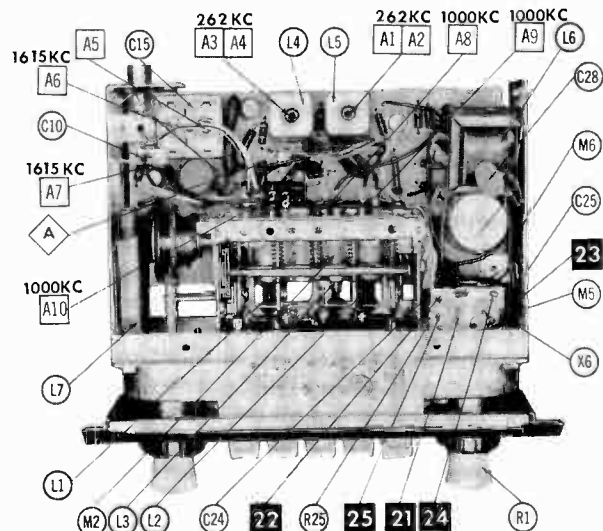
REMOVAL INSTRUCTIONS

RADIO

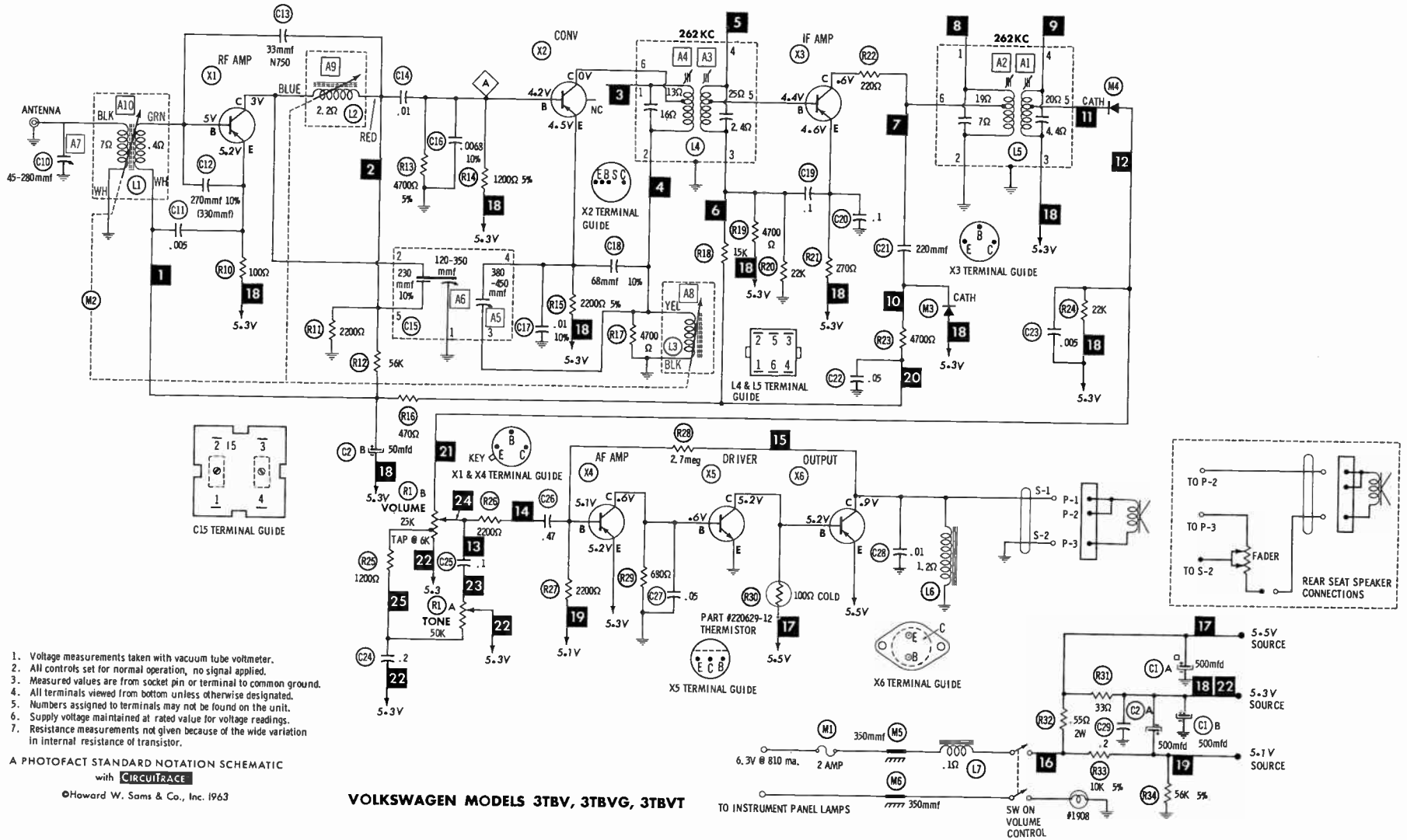
1. Pull off knobs.
2. Remove 5/8" nuts holding trim plate.
3. Remove trim plate.
4. Remove 5/8" nuts from control bushings.
5. Disconnect speaker leads, antenna lead, and "A" lead at fuse holder.
6. Remove 7/16" nut from rear of radio.
7. Remove radio from under instrument panel.

SPEAKER

1. Remove four 5/16" nuts from speaker bracket.
2. Remove speaker.



VOLKSWAGEN MODELS 3TBV, 3TBVG, 3TBVT

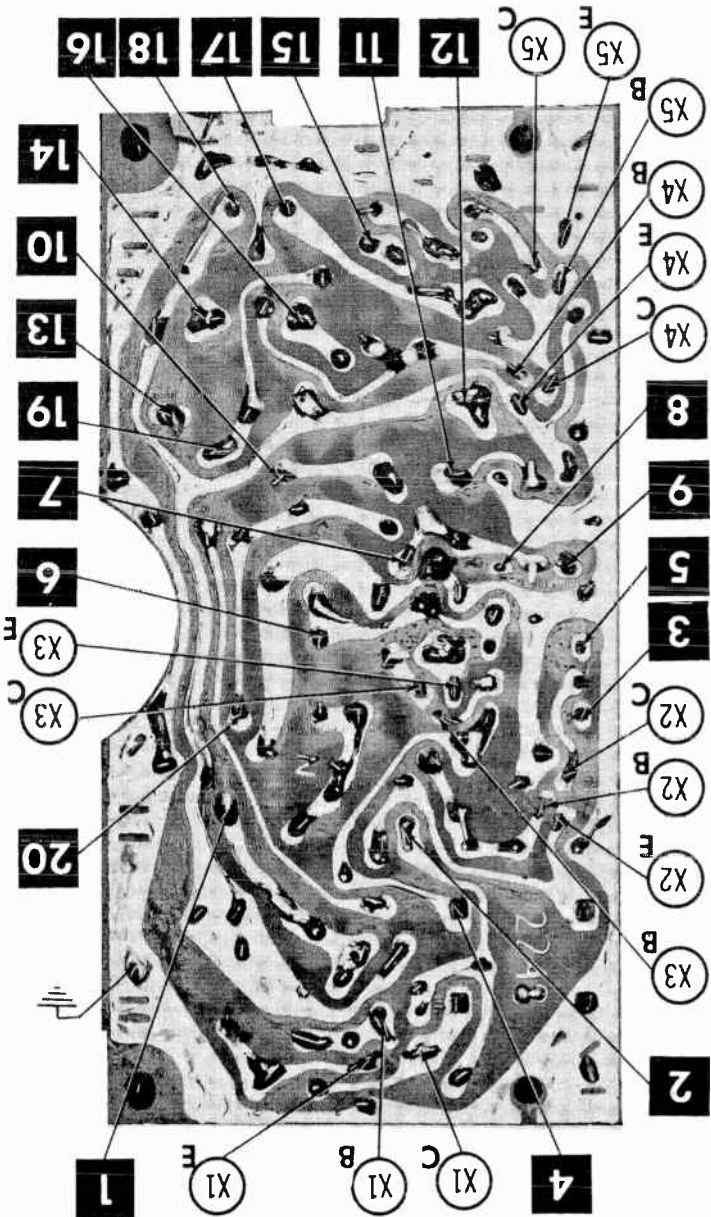
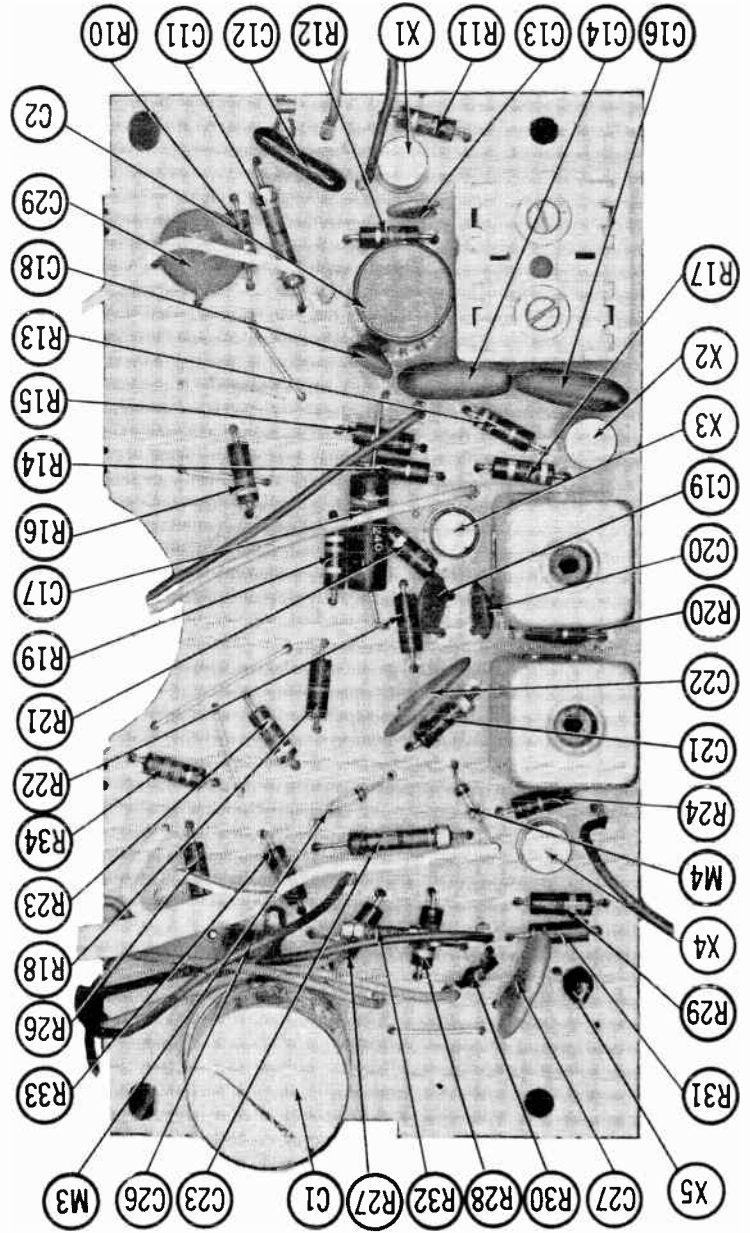


1. Voltage measurements taken with vacuum tube voltmeter.
2. All controls set for normal operation, no signal applied.
3. Measured values are from socket pin or terminal to common ground.
4. All terminals viewed from bottom unless otherwise designated.
5. Numbers assigned to terminals may not be found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

A PHOTOFAC STANDARD NOTATION SCHEMATIC
with **CIRCUITRACE**
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VOLKSWAGEN MODELS 3TBV, 3TBVG, 3TBVT

VOLKSWAGEN MODELS 3TBV, 3TBVG, 3TBVT



PARTS LIST AND DESCRIPTION

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES	BENDIX PART No.
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.		
X1		RF Amp.	DS-25	GE-1	2N1637	PNP	2091241-15
X2		Converter	DS-25	GE-1	2N1639	PNP	2091241-13
X3		IF Amp.	DS-25	GE-1	2N1638	PNP	2091241-14
X4		AF Amp.	DS-26	GE-2	2N591	PNP	2090924-8
X5		Driver	DS-44	GE-8		PNP	2092609-1
X6		Output	DS-520	GE-3	2N176	PNP	2091859-10

COILS (RF-IF)

ITEM No.	USE	BENDIX PART No.	REPLACEMENT DATA				NOTES
			MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	Ant.	①					① Part of M2 Part # 209732-3.
L2	RF	②					
L3	Osc.	③					
L4	Input IF	2091217-8					
L5	Output IF	2091218-7					
L6	"A" Lead Choke (240mh)	2092050-14					

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		BENDIX PART No.	REPLACEMENT DATA					
	CAP.	VOLT.		AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500	8	220353-31	PWH2-02-40					
B	500	8							
C2A	500	3	2092246-1	BCD3X50050	NLW450-3	MT1-26	BL2111	PET2160	TE-1068
B	50	3			NLW50-3	MT1-15	BL1410		TE-1058

CHOKE (AUDIO OUTPUT)

ITEM No.	INDUCTANCE	BENDIX PART No.	REPLACEMENT DATA				NOTES
			MERIT PART No.	STANCOR PART No.	THORNDARSON PART No.	TRIAD PART No.	
L6	19mh	2092245-4					

SPEAKER

ITEM No.	TYPE	BENDIX PART No.	REPLACEMENT DATA		NOTES
			QUAM PART No.		
SP1	6 1/2" PM	6-8Ω	2092255-2	6A21Z6.4	Volkswagen Sedan and Transporter Karmann Gbia
	5" PM	6-8Ω	2092256-2		

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	45-280	#2091221-8						
C11	.005		SI5000	D6-502	H05D5	CCD-502	GP250	TH-D50
C12	270	10% (330)†	1489-00027	CPR-270J	CD15F271K	DM-15-271K	MCB240.5	MS-327
C13	33 N750		N750-D133	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C14	.01 100V		P288N-01	DM-103	WMFISI	IDP-1-103	TA-110	2TM-S10
C15A	230	10%						
C15B	120-350							
C15C	380-450	#219092-23						
C16	.0068 100V	10%			WMF1D68	IDP-1-682	PYC211	2TM-S10
C17	.01 100V	10%	BE2S1		WMFISI	IDP-1-103	TA-010	10TS-Q68
C18	68 10V	10%	DI-68	DD-680	LA10Q68-S3	CCD-680	GP488	HY320
C19	.1 10V		TTD-1	UK10-104	HCC10104Z		TA-010	HY320
C20	.1 10V		TTD-1	UK10-104	HCC10104Z		GP322	5GA-T22
C21	220		SI220	D6-221	LA10T22-S3	CCD-221	TA-150	TH-S50
C22	.05 100V		TTD-05	DDA-503	H0585		GP250	TH-D50
C23	.005		SI5000	D6-502	H05D5	CCD-502		HY325
C24	.2 10V			UK10-204	HCC10224Z		TA-010	HY320
C25	.1 10V		TTD-1	UK10-104	HCC10104Z		TA-150	TH-S50
C26	.47 3V			UK-474	HCC3474P		B-110	5HK-S10
C27	.05 100V		TTD-05	DDA-503	HU585			HY325
C28	.01		BPD-01	DD-103	BYA10S1	CCD-103		
C29	.2 10V			UK10-204	HCC10224Z			

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BENDIX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	1AG	2Amp.	AGA-2	2091699-1	301002 (2A mp.)	155004	AGA-2	HMF

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M2	Tuner	2092732-3	
M3	AVC Diode	2092055-1	
M4	Det. Diode	2092055-1	
M5	Spark Plate	2093050-1	350mmf
M6	Spark Plate	2093050-1	350mmf

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial Glass	2092225-1	Escutcheon Including Dial Glass	2092149-1
Dial Pointer	2090129-33	Knob, Tuning, Volume	2091244-1

WIRING DATA

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

† Alternate Value # Bendix Part Number

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone	50K	2091258-2				
B	Volume, Switch	25K 6K Tap	①				

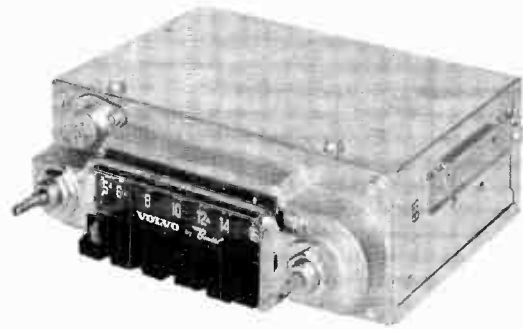
① Less printed circuit board.



PHOTOFACT[®] with

CIRCUITRACE[®]

TRADE NAME: Volvo Model 3BN (279958/59/60)
 SUPPLIER: The Bendix Corp., Bendix Radio Div.
 Baltimore 4, Maryland
 TYPE SET: 6 Transistor AM Receiver
 POWER SUPPLY: 12 Volt Storage Battery
 RATING: .74 Amp @ 12.6 Volts DC
 TUNING RANGE: BROADCAST 540-1615 KC



ALIGNMENT INSTRUCTIONS

Check for specified source voltage.

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools: A1 thru A4... GENERAL CEMENT #8606, 8606L, 8869
 WALSCO #2543, 2544, 2588
 A5, A6, A7... GENERAL CEMENT #8290, 8868, 9087
 WALSCO #2525, 2528, 2587
 A8, A9, A10... GENERAL CEMENT #5009, 8728A, 8987
 WALSCO #2531X, 2536

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	High side thru .1mfd to point Δ , low side to ground.	262.5KC (400% Mod.)	High Freq. End Stop.	Output Meter across voice coil.	A1, A2, A3, A4	Adjust for maximum.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1615KC	"	"	A5, A6, A7	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. IF necessary, back tuning cores (A8, A9, A10) out of coils but not out of forms. Repeat step 2.						
3.	Thru dummy (Fig. 1) to antenna receptacle.	1000KC	Tune to Signal.	Output Meter across voice coil.	A8, A9, A10	Adjust for maximum. Repeat steps 2 & 3 until no further improvement is noted.

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

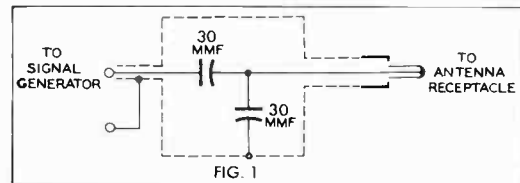
REMOVAL INSTRUCTIONS

RADIO

1. Pull off knobs.
2. Remove 5/8" nuts from control bushings.
3. Disconnect speaker leads, antenna lead, and "A" lead at fuse holder.
4. Remove 7/16" nut holding rear of radio.
5. Remove radio from under instrument panel.

SPEAKER

1. Remove four 5/16" nuts from speaker mounting.
2. Remove speaker.

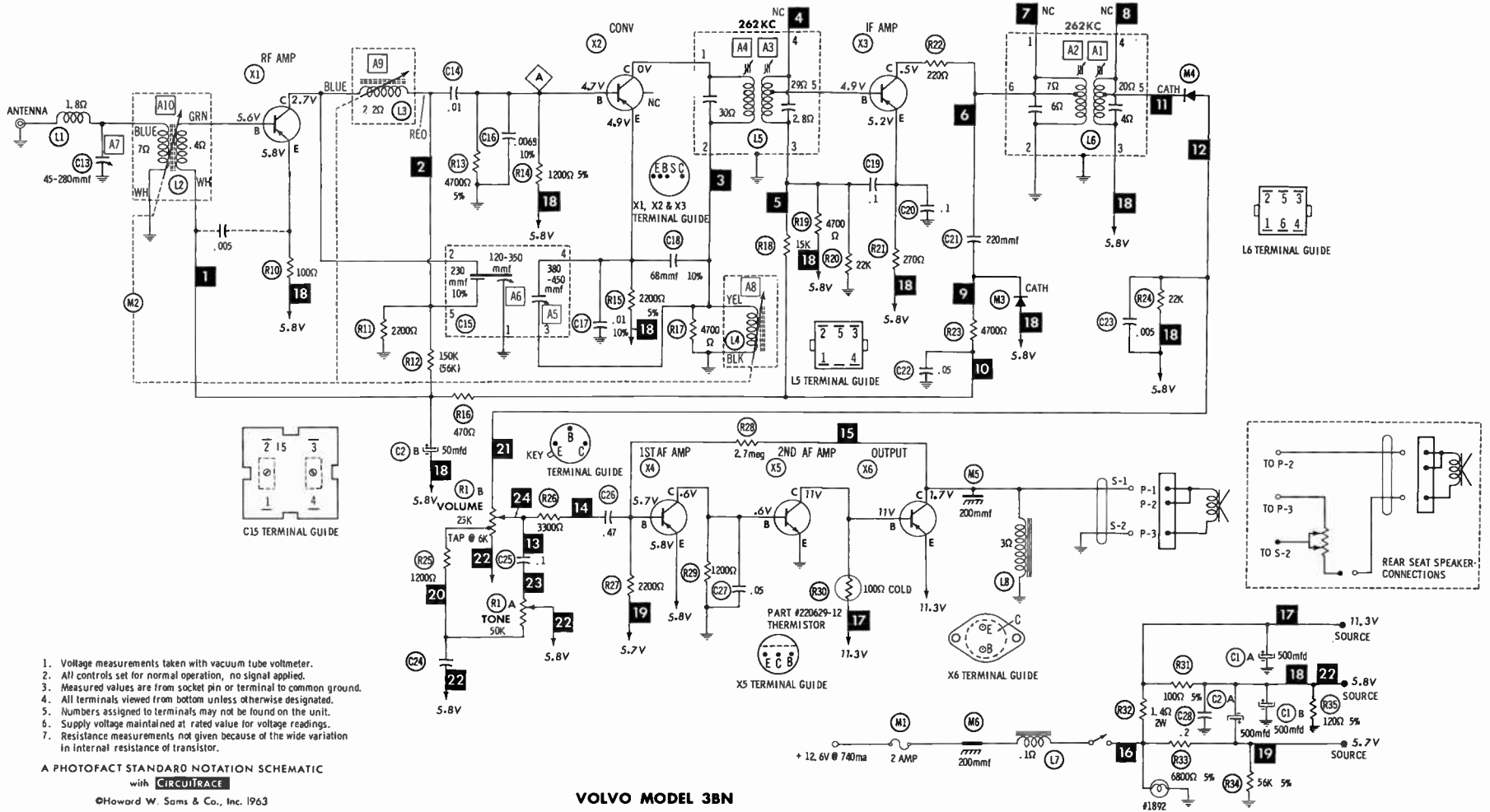


PUSH-BUTTON ADJUSTMENT

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

VOLVO MODEL 3BN

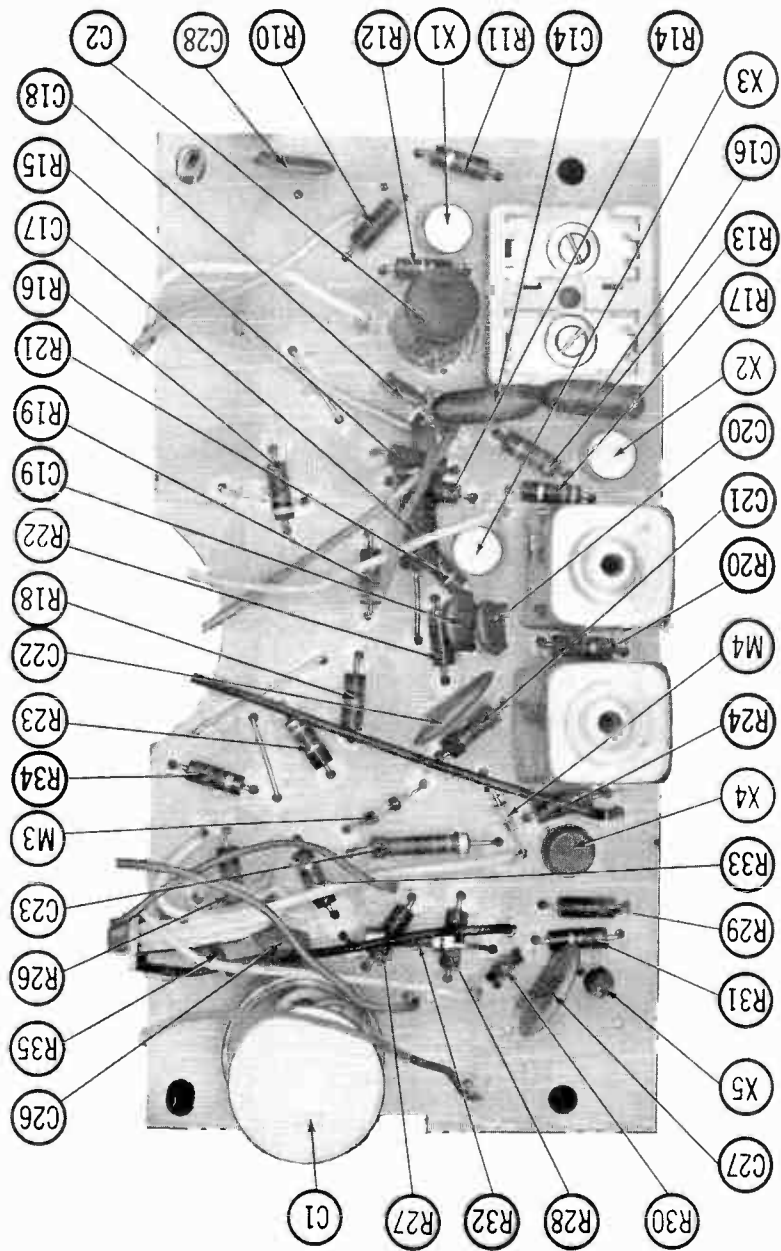
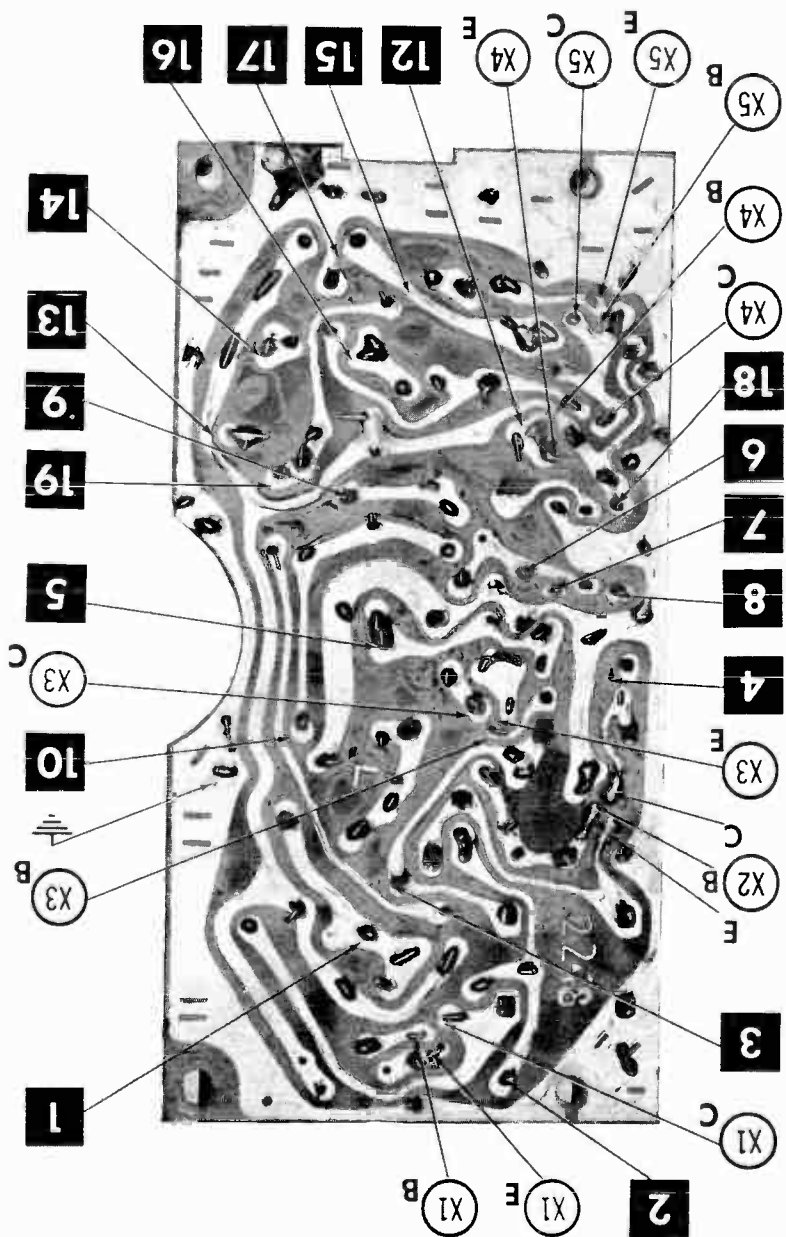
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

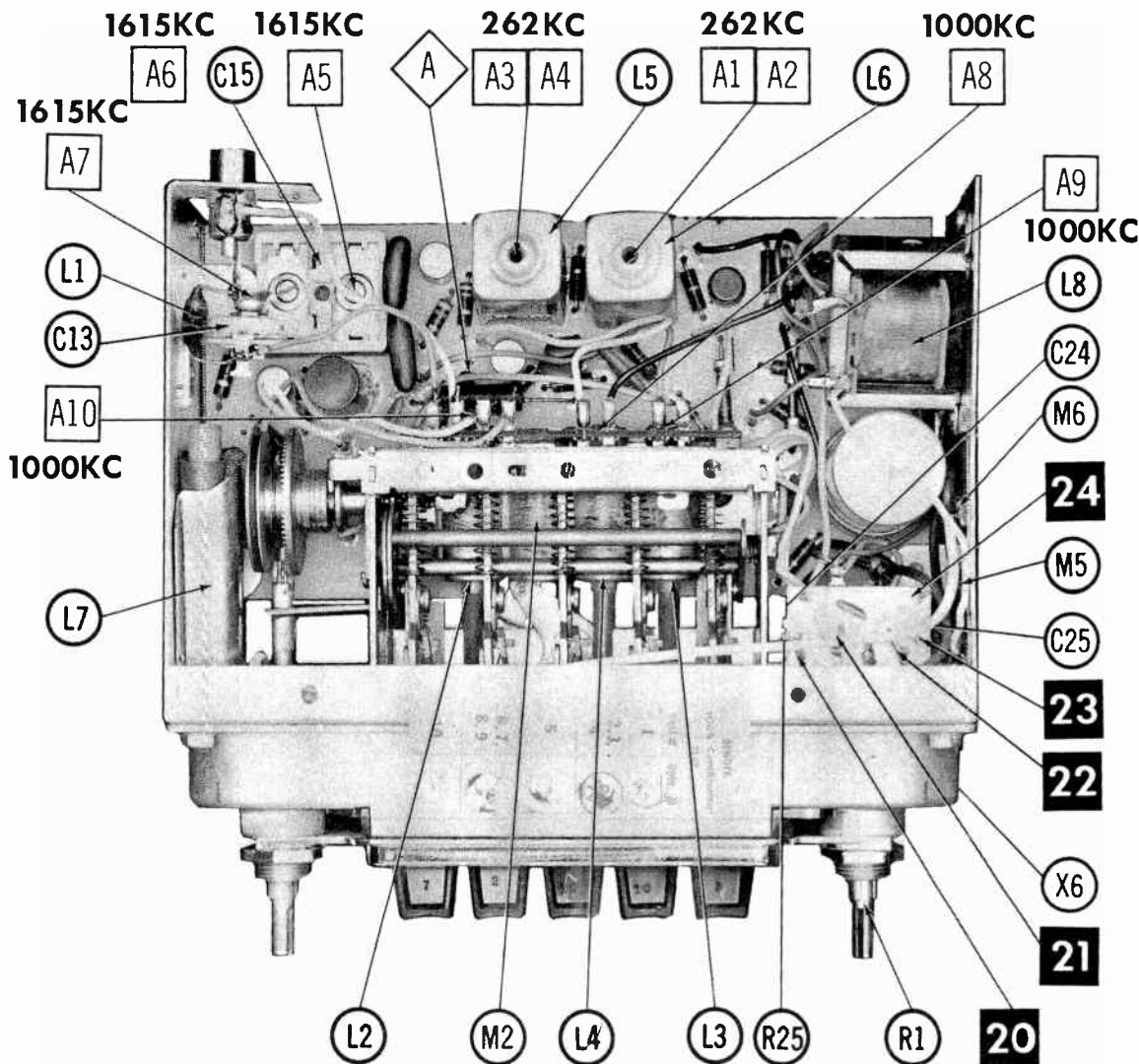


VOLVO MODEL 3BN

VOLVO MODEL 3BN

A Howard W. Sams CIRCUITRACE Photo





PARTS LIST AND DESCRIPTION

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES	BENDIX Part No.
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.		
X1		RF A mp.	DS-25	GE-1	2N1637	PNP	2091241-1 ①
X2		Conv.	DS-25	GE-1	2N1639	PNP	2091241-13 ②
X3		IF	DS-25	GE-1	2N1638	PNP	2091241-3 ③
X4		1st A F A mp.	DS-26	GE-2	2N591	PNP	2090924-8
X5		2nd A F A mp.	DS-44	GE-8		NPN	2092609-1
X6		Output	DS-520	GE-3	2N176	PNP ④	2091859-8

① Alternate Part #2091241-15

② Alternate Part #2091241-2

③ Alternate Part #2091241-14

④ When replacing apply silicone grease to both sides of insulator. Tighten mounting screws securely. Check bias adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500	16	220353-30						
B	500	8							
C2A	500	3	2092246-1	BCD3X50050			ATMT3001	PET-2160	TE1068&TE1058
B	50	3							

PARTS LIST AND DESCRIPTION (CONTINUED)

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C13	5-80	#2091221-7	BE2S1	DM-103	WMFIS1	IDP-1-103	GEM-211	2TM-S10
C14	.01 100V							
C15A	230 10%							
C15B	120-350	#210902-23						
C15C	380-450							
C16	.0068 100V 10%							
C17	.0082 100V 10%	#2090207-45	P288N-0068	CF-822	WMFID68	IDP-1-682		
C18	68 N750 10%							
C19	.1 10V							
C20	.1 10V		N750-D168	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C21	220							
C22	.05 100V							
C23	.005		SI220	D6-221	LA10T22-S3	CCD-221	GP322	10TS-T22
C24	.2 10V							
C25	.1 10V							
C26	.47 3V		TTD-1	CK-104	H6		TA-010	TG-P10
C27	.05 100V							
C28	.2 10V							
			SI5000	D6-502	LA10D5-C4	CCD-502	GP250	10TS-D50
			UK10-204	HCC10224Z			HY325	
			UK10-404	HCC10474Z			TA-010	TG-P10
			UK10-503	H5			TA-150	TG-S50
			UK10-204	HCC10224Z			TA-150	TG-S50
							HY325	

Bendix Part Number

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
RIA B	Tone Switch, Volume	50K 25K 6K Tap	2091258-4				

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BENDIX PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	RF Choke (5uh)	2092210-3	SW-631	4609	RTC-8519	T837	① Part of M2
L2	Ant.	①					
L3	RF	②					
L4	Osc.	③					
L5	Input IF	2091217-6 ②					② Alternate Part # 2091217-7.
L6	Output IF	2091218-4 ③					③ Alternate Part # 2091218-6.
L7	"A" Lead Choke (240uh)	2092050-7					

CHOKE (AUDIO OUTPUT)

ITEM No.	INDUCTANCE	REPLACEMENT DATA					NOTES
		BENDIX PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L8	50mh	2092245-2					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BENDIX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	LAG	2A 32V	AGA-2	221633-21	301002	155004A	AGA2	HMF

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M2	Tuner	2092223-7	
M3	AVC Det	2092055-1	
M4	Audio Det	2092055-1	
M5	Spark Plate (200mmf)	220267-1	
M6	Spark Plate (200mmf)	220267-1	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial Glass	2092474-1	Knob, Tone or Dummy	2092235-1
Knob, Tuning or Volume	2091244-2		

WIRING DATA

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

VOLVO MODEL 3BN

PARTS LIST AND DESCRIPTION

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

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	AR12	Output	DS-520	GE-3	2N301	PNP

TUBES

ITEM No.	USE	TYPE	REPLACEMENT DATA			
			AMPEREX	GENERAL ELECTRIC	RCA	RAYTHEON
V1	RF Amp.	12BL6				
V2	Conv.	12AD6				
V3	IF Amp.	12BL6				
V4	Det-AVC-AF Amp.	12DU7				

CONTROLS

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

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA				
			PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume, Switch	1meg 300K Tap	33-5580-20	ABT-73, AK-33 KR-4 or (F14-1meg, SFS212, KR-4)	A47F4-1meg RS-3/16 SWS-13	B13-137X, SK9 76-1 or (BU1, CF44T, SS4, GC)*	UA16T35, SD3500, US-41 or (RU16T35, SL35, IS1000, US-41) or (UT438, DS-37, US-26) FL-15
R2	Bias Adjustment	15Ω (2W)	33-5591-19				

*"SNAPTROL"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1A	500	16	61-0086-9	PWH2-02-75				WP200.7A	TVL-2190
C1B	200	16							

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	100	10%	DI 100	DD-101	LA10T1-S3	CCD-101	GP310	10TS-T10
C11								
C12	27	10%	DI27	DD-270	LA10Q27-SL	CCD-270	GP427	10TS-Q27
C13	.047	200V	P288N-047	DD-503	CUB2847	4DP-3-473	GE M-2147	2TM-S47
C14	33	10%	DI33	DD-330	LA10Q33-SL	CCD-330	GP433	10TS-Q33
C15A								
C15B	100		#31-6522-8					
C15C								
C16	100	5%		DTN-100	C10T1C	CCTO-101	CNO-310	10TCC-T10
C17	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	100		BPD-0001	DD-101	LA10T1-S3	CCD-101	GP310	5GA-T10
C19	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C20	.004		BPD-004	DD-402	LA10D4-C4		GP240	5GA-D40
C21	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

* Part Number

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	
L1	Ant.	32-4730-27					
L2	RF	32-4730-25					
L3	Osc.	32-4730-26					
L4	Input IF	32-4676-6	BC-350				
L5	Output IF	32-4677-8					
L6	"A" Lead Choke	32-4720-3					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	40Ω	3-4Ω	32-8833-1					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO	REPLACEMENT DATA					NOTES
		PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	4:8:	1	32-8875-2				

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		PART No.	QUAM PART No.	
SP1	4" PM	3-4Ω	36-1625-20	4AIR

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	AGC	4A mp.	45-2656	41-4244-8	312004 (4A mp)	155020	AGC4	HMJ

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M2	Tuner	76-10837-1	
M3	Spark Plate	30-1254-1	300mmf
M4	Polarity Plug	54-4878-20	Negative Ground (Black)
M5	Polarity Plug	54-4878-19	Positive Ground (Red)

CABINETS & CABINET PARTS

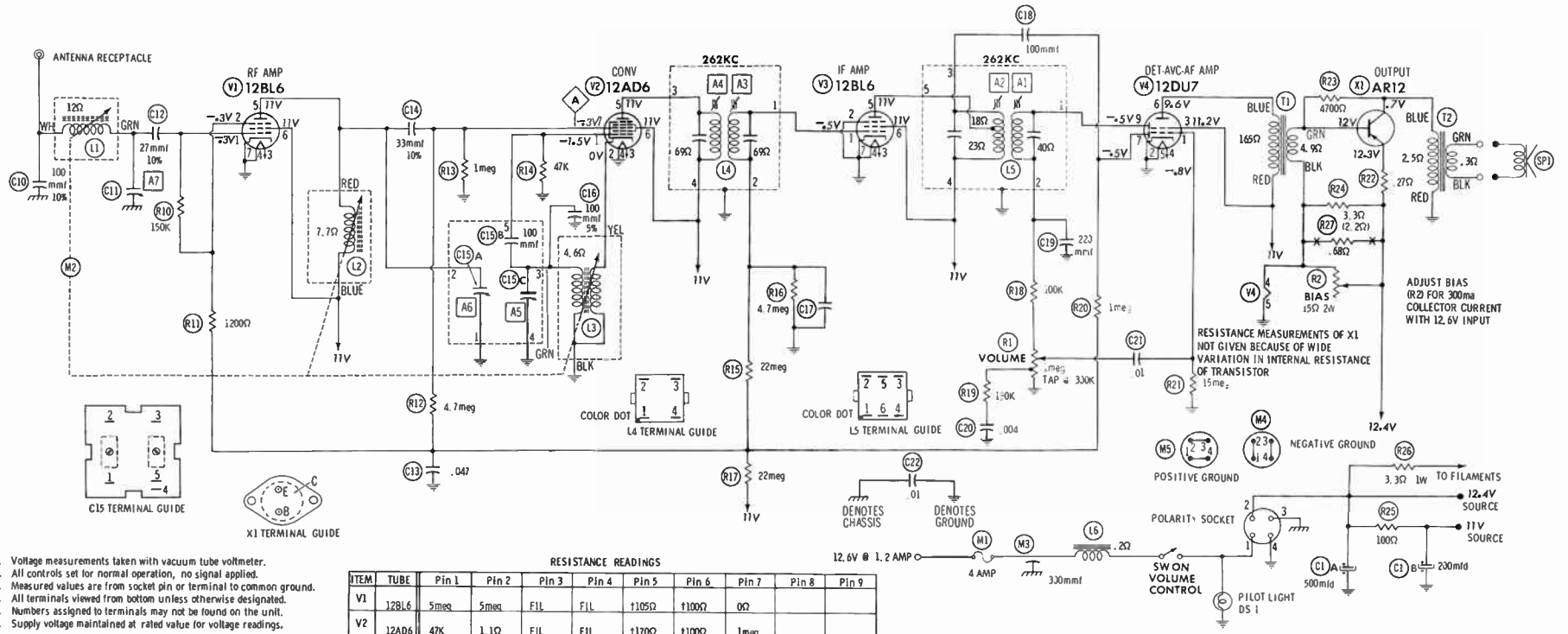
(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial Glass	54-5328	Dial Pointer	56-4362-11
Dial Background	28-12142	Knob, Volume, Tuning	27-4687-23

WIRING DATA

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

WHITE MODEL W-6234



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

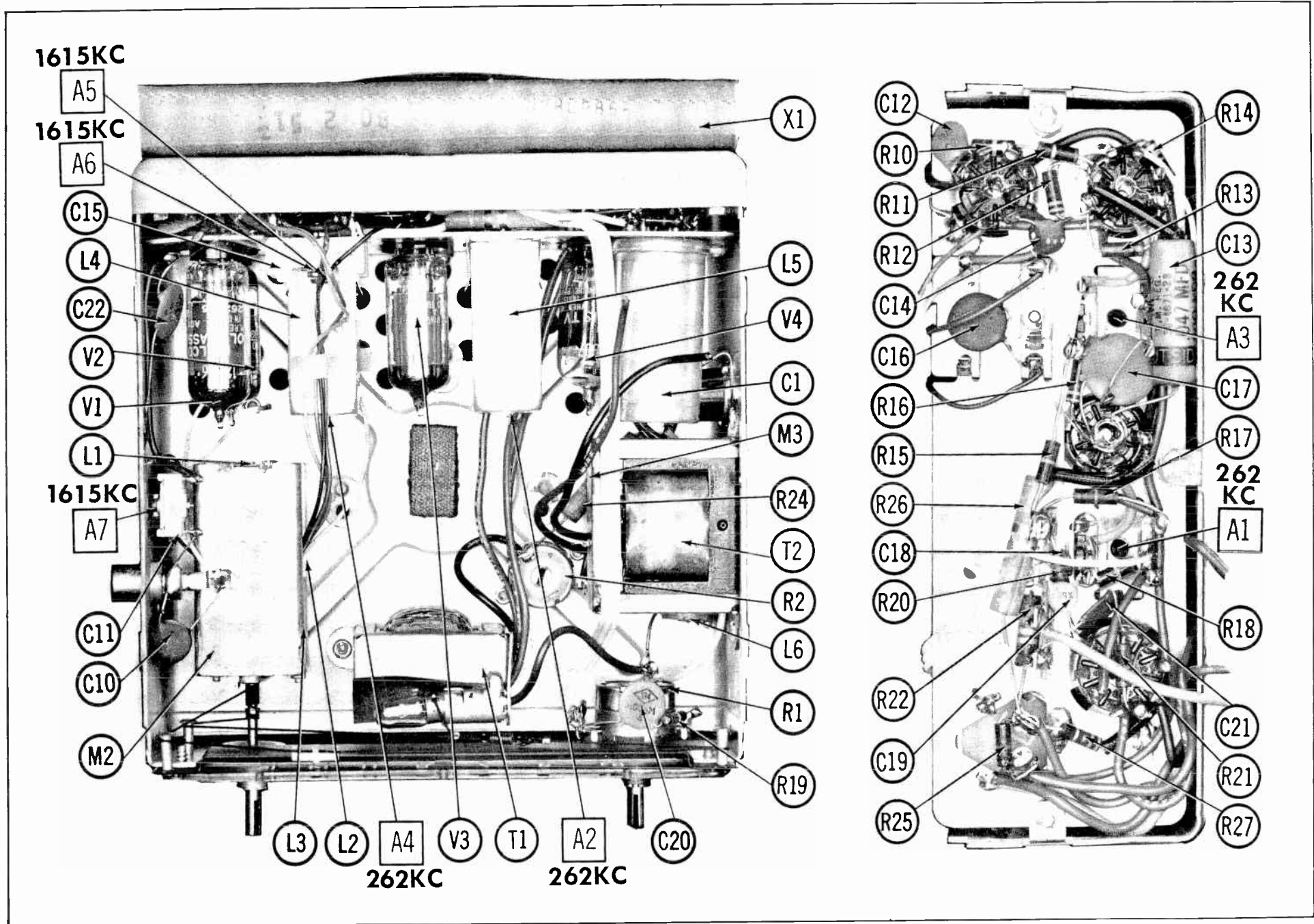
A PHOTOFAC STANDARD NOTATION SCHEMATIC
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RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	5meg	5meg	FIL	FIL	†105Ω	†100Ω	0Ω		
V2	12AD6	47K	1.1Ω	FIL	FIL	†170Ω	†100Ω	1meg		
V3	12BL6	4meg	0Ω	FIL	FIL	†123Ω	100Ω	0Ω		
V4	12DU7	15meg	0Ω	†100Ω	FIL	FIL	1265Ω	5meg	TP	L 2meg

† MEASURED FROM PIN 2 OF POLARITY SOCKET
 TP TIE POINT

WHITE MODEL W-6234



WHITE MODEL W-6234

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