

**\$2.95**  
Cat. No. AR-15

# **AUTO RADIO MANUAL**

**VOLUME 15**

**service data on 42  
models produced in 1960-1961**

by

*The Howard W. Sams Engineering Staff*



**HOWARD W. SAMS & CO., INC.**  
**THE BOBBS-MERRILL COMPANY, INC.**

*Indianapolis • New York*

**FIRST EDITION**  
**FIRST PRINTING — JUNE, 1962**

## **AUTO RADIO MANUAL, VOL. 15**

Copyright © 1962 by Howard W. Sams & Co., Inc., Indianapolis 6,  
Indiana. Printed in the United States of America.

Reproduction or use, without express permission, of editorial or  
pictorial content, in any manner, is prohibited. No patent liability is  
assumed with respect to the use of the information contained herein.

Library of Congress Catalog Card Number: 54-5377



## TABLE OF CONTENTS

Trade Name and Model No.	Page No.
American Motors 8990833 (14MR) . . . . .	13
Automatic ATC-60 . . . . .	17
Automatic CEF-119 . . . . .	23
Automatic PAP-69, PP-819 . . . . .	29
Automatic PAP-80, PP-330, VPA-280, VTP-440 . . . . .	33
Automatic TUN-5 . . . . .	37
Automatic WP-167 . . . . .	41
Blaupunkt 9798 . . . . .	47
Buick 980132 . . . . .	57
Chevrolet 988336, 988460 . . . . .	63
Chevrolet 988413 . . . . .	69
Ford 1TMC, 1TMS . . . . .	75
Granco ARC-60 . . . . .	81
Mopar 107 . . . . .	87
Mopar 109, 111, 113, 114 . . . . .	93
Mopar 317 . . . . .	97
Mopar 404, 407 . . . . .	103
Motorola BKA60X, CRA60X, PCA60X . . . . .	111
Motorola BKA61 . . . . .	117
Motorola CTA61 . . . . .	123
Motorola 10AX . . . . .	129
Oldsmobile 989387 . . . . .	57
Oldsmobile 989392 . . . . .	133
Pontiac 989693 . . . . .	139
Pontiac 989792 . . . . .	63
Pontiac 989831 . . . . .	57
Stromberg-Carlson IM-60-M . . . . .	145
Studebaker AC-3085, AC-3087 . . . . .	149
Voxson 736 . . . . .	155



# INDEX

Lists auto radios appearing in Volumes 4 through 15 of the Auto Radio Manual.

Trade Name and Model No.	Vol. No.	Trade Name and Model No.	Vol. No.
<b>AIRCASTLE</b>		<b>AMERICAN MOTORS (Also See Hudson and Nash) (Cont'd)</b>	
610.A67 . . . . .	AR-4	8990582 (93MR) (1959 Rambler) . . . . .	AR-10
610.FE-153 (1952-53 Ford) . . . . .	AR-4	8990706 (04MA) (1960 Rambler) . . . . .	AR-11
610.W-100 (Universal). . . . .	AR-5	8990811 (03AR) (1960 Rambler) . . . . .	AR-12
<b>AIRLINE</b>		8990831 (13MAM) (1960 Rambler) . . . . .	AR-14
FJB-6590A (1955 Ford) . . . . .	AR-6	8990832 (13MA) (1960 Rambler) . . . . .	AR-14
35BR-6796A (Universal) . . . . .	AR-5	8990833 (14MR) (1961 Rambler) . . . . .	AR-15*
61-6787 (1952 Ford) . . . . .	AR-5	For other custom equipment for use in American Motors product cars, see Motorola listings.	
61-6788 (1952-53 Ford) . . . . .	AR-5	<b>ATR (American Television and Radio)</b>	
61-6789 (1951-52 Chevrolet). . . . .	AR-5	TR1279-6V (Universal) . . . . .	AR-11
61-6792 (1953 Dodge) . . . . .	AR-4	TR1279-12V (Universal) . . . . .	AR-11
61-6793 (1953 Chevrolet). . . . .	AR-5	1279-6V (Universal) . . . . .	AR-11
61-6794 (1953 Plymouth) . . . . .	AR-5	1279-12V (Universal) . . . . .	AR-11
61-6795 (1953 Mercury). . . . .	AR-5	<b>AUTOMATIC</b>	
61-12601 (Tractor Installations) . . . . .	AR-5	ATC-60 (1959-1960 Chevrolet) . . . . .	AR-15*
<b>ALLSTATE</b>		BAP-9 (1959 Buick) . . . . .	AR-13
5028 (Ch. 528.50280, 528.50281) (Universal) . . . . .	AR-7	BAP-20 (1960 Buick). . . . .	AR-14
5033 (Ch. 528.50330, 528.50331) (Universal) . . . . .	AR-7	BP-340 (1960 Buick) . . . . .	AR-14
5098 (Ch. 833.50980) (Tractor Installations) . . . . .	AR-9	BP-668 (1957-1958 Buick) . . . . .	AR-12
5099 (Ch. 833.50990) (Tractor Installations) . . . . .	AR-9	BP-679 (1959 Buick) . . . . .	AR-13
6225 (Ch. 528.55040, 528.55041) (Universal) . . . . .	AR-11	C-12 (Universal) . . . . .	AR-11
6231 (Ch. 528.62310) (Universal) . . . . .	AR-9	C-300 (Revised) (1949-50 Chevrolet) . . . . .	AR-6
6232 (Ch. 528.62320) (Universal) . . . . .	AR-9	C-388-C (1958 Chevrolet) . . . . .	AR-12
6240 (Ch. 528.62400) (Universal) . . . . .	AR-5	C-349 (1959 Chevrolet) . . . . .	AR-11
6256 (Ch. 528.55040, 528.55041) (Universal) . . . . .	AR-11	CA-109 (1959 Chevrolet) . . . . .	AR-11
6263 (Ch. 528.6263) (Universal). . . . .	AR-5	CAP-49 (1959 Chevrolet) . . . . .	AR-14
6263-2 (Ch. 528.6263-2) (Universal) (See Model 6263) . . . . .	AR-5	CAP-60 (1959-1960 Chevrolet) . . . . .	AR-14
6264 (Ch. 528.6264) (Universal). . . . .	AR-5	CEF-119 (English Ford Consuls). . . . .	AR-15*
6264-1 (Ch. 528.6264-1) (Universal) (See Model 6264) . . . . .	AR-5	CM-333 (1953 Chevrolet) . . . . .	AR-4
6266 (Ch. 528.6266) (Universal). . . . .	AR-5	CP-478-C (1958 Chevrolet) . . . . .	AR-12
6268 (Ch. 528.62680, 528.62681) (Universal) . . . . .	AR-7	CP-489F (1959 Chevrolet) . . . . .	AR-14
6269 (Ch. 528.62690, 528.62691) (Universal) . . . . .	AR-7	CP-500 (1959-1960 Chevrolet) . . . . .	AR-14
6284 (Ch. 528.6284) (Universal). . . . .	AR-4	CT-356 (1955,56 Chevrolet) . . . . .	AR-13
6286-4 (Ch. 528.6286-4) (Universal). . . . .	AR-4	CT-387 (1957 Chevrolet) . . . . .	AR-12
6287-4 (Ch. 528.6287-4) (Universal). . . . .	AR-4	CTR-6A (1955-1956 Chevrolet) . . . . .	AR-12
6295-6 (Ch. 528.6295-6) (Universal). . . . .	AR-4	CTR-6B (1955,56 Chevrolet). . . . .	AR-13
6330 (Ch. 528.63300) (Universal) . . . . .	AR-5	CTR-77A (1957 Chevrolet) . . . . .	AR-9
<b>AMERICAN MOTORS (Also See Hudson and Nash)</b>		CU-39 (Universal) . . . . .	AR-12
8990377 (6MR) (1956 Rambler) . . . . .	AR-6	D-2 (1959 Renault Dauphine). . . . .	AR-12
8990378 (6MA) (1956 Hudson and Nash). . . . .	AR-6	D-8 (1959 Renault Dauphine). . . . .	AR-12
8990378 (76MA) (1957 Hudson and Nash). . . . .	AR-6	DAP-39 (1959 Dodge) . . . . .	AR-13
8990455 (7MR) (1957 Rambler) . . . . .	AR-6	DE-300 (1960 DeSoto) . . . . .	AR-14
8990494 (84MA) (1958 Hudson, Nash and Rambler) . . . . .	AR-8	DET-28 (1957-58 DeSoto). . . . .	AR-9
8990543 (83MR) (1958 Rambler) . . . . .	AR-8	DM-132 (1953 Dodge) . . . . .	AR-5
8990576 (94MA) (1959 Rambler) . . . . .	AR-9	DP-6 (1957-1959 Renault Dauphine). . . . .	AR-12
		DP-11 (1957-1959 Renault Dauphine) . . . . .	AR-12
		DTX-67A (1957-1958 Dodge). . . . .	AR-12
		DTX-68 (1957-1958 Dodge). . . . .	AR-12
		DX-410 (1960 Dart, DeSoto, Dodge). . . . .	AR-14
		DX-619 (1959 Dodge). . . . .	AR-13
		DXA-50 (Dart, DeSoto, Dodge) . . . . .	AR-14
		EP-108 (1958 Edsel) . . . . .	AR-12
		F-100 (Revised) (1949-50 Ford) . . . . .	AR-6

\* Signifies coverage in this volume.

Trade Name and Model No.	Vol. No.
<b>AUTOMATIC (Cont'd)</b>	
F-128 (1958 Ford) . . . . .	AR-12
F-128C (1958 Ford) . . . . .	AR-12
F-139 (1959 Ford) . . . . .	AR-11
F-151 (Revised) (1951 Ford) . . . . .	AR-6
F-152 (1952 Ford) . . . . .	AR-6
F-241 (1954 Ford) . . . . .	AR-6
FA-219 (1959 Ford) . . . . .	AR-11
FAP-70 (1960 Ford) . . . . .	AR-14
FM-61 (Universal FM Converter) . . . . .	AR-14
FM-731 . . . . .	AR-6
FNP-430 (1960 Falcon) . . . . .	AR-14
FP-238 (1958 Ford) . . . . .	AR-12
FP-238C (1958 Ford) . . . . .	AR-12
FP-260 (1960 Ford) . . . . .	AR-14
FP-276TR (1959 Ford) . . . . .	AR-11
FPA-220 (1960 Falcon) . . . . .	AR-14
FT-227 (1957 Ford) . . . . .	AR-12
FTP-37A (1957 Ford) . . . . .	AR-9
H-4 (1958 Hillman) . . . . .	AR-12
H-9 (1958 Hillman) . . . . .	AR-12
H-400 (1949-50-51 Hudson) . . . . .	AR-6
HP-10 (1958 Hillman) . . . . .	AR-12
HP-15 (1958 Hillman) . . . . .	AR-12
K-700 (1951 Henry J) . . . . .	AR-6
L-390 (1959-1960 Studebaker Lark) . . . . .	AR-14
L-559 (Early) (1959 Studebaker Lark) . . . . .	AR-11
L-559 (Late) (1959-1960 Studebaker Lark) . . . . .	AR-14
LA-449 (1959 Studebaker Lark) . . . . .	AR-11
LAP-29 (1959 Studebaker Lark) . . . . .	AR-11
LAP-40 (1959-1960 Studebaker Lark) . . . . .	AR-14
LP-929 (1959 Studebaker Lark) . . . . .	AR-11
MAP-99 (Early) (1959 Mercury) . . . . .	AR-11
MAP-99 (Late) (1959-1960 Mercury) . . . . .	AR-14
MM-430 (1953 Mercury) . . . . .	AR-4
MP-69 (Universal) . . . . .	AR-6
MP-126 (Universal) . . . . .	AR-6
MT-47C (1957 Mercury) . . . . .	AR-12
MT-419 (Early) (1959 Mercury) . . . . .	AR-11
MT-419 (Late) (1959-1960 Mercury) . . . . .	AR-14
MT-530 (1959-1960 Mercury) . . . . .	AR-14
MU-34 (Universal) . . . . .	AR-6
N-638 (1958, 1959 Rambler American) . . . . .	AR-13
N-639 (1958, 1959 Rambler American) . . . . .	AR-13
NA-749 (1958, 1959 Rambler American) . . . . .	AR-13
NY-400 (1960 Chrysler) . . . . .	AR-14
NY-598A (1958 Chrysler) . . . . .	AR-10
OAE-10 (1960 Oldsmobile) . . . . .	AR-14
OE-160 (1960 Oldsmobile) . . . . .	AR-14
P-651 (Revised) (1951 Plymouth) . . . . .	AR-6
PAC-90 (1960 Pontiac) . . . . .	AR-14
PAP-69 (1959 Plymouth) . . . . .	AR-15•
PAP-80 (1960 Plymouth) . . . . .	AR-15•
PC-350 (1960 Oldsmobile) . . . . .	AR-14
PM-236 (1953 Plymouth) . . . . .	AR-5
PP-330 (1960 Plymouth) . . . . .	AR-15•
PP-819 (1959 Plymouth) . . . . .	AR-15•
R-54, B (Universal) . . . . .	AR-11
RAP-89 (1959 Rambler) . . . . .	AR-13
RAP-100 (1960 Rambler) . . . . .	AR-13
RG-59 (Universal) . . . . .	AR-14
RG-59C (Universal) . . . . .	AR-14
RP-470 (1960 Rambler) . . . . .	AR-13
RP-519 (1959 Rambler) . . . . .	AR-13

Trade Name and Model No.	Vol. No.
<b>AUTOMATIC (Cont'd)</b>	
RT-7B . . . . .	AR-13
RT-7D . . . . .	AR-11
S-91 (1958-59 Simca Aronde) . . . . .	AR-11
S-500 (1950-51 Studebaker) . . . . .	AR-6
S-551 (Revised) (1950-51 Studebaker) . . . . .	AR-6
SA-529 (1958-59 Simca Aronde) . . . . .	AR-11
SP-1 (1958-59 Simca Aronde) . . . . .	AR-11
SPA-209 (1958-59 Simca Aronde) . . . . .	AR-11
TPP-87A (1957 Plymouth) . . . . .	AR-13
TPP-88 (1957-1958 Plymouth) . . . . .	AR-13
TPP-88C (1957-1958 Plymouth) . . . . .	AR-13
TR-12 (Tractor Installations) . . . . .	AR-4
TUN-5 (Universal) . . . . .	AR-15•
UN-40 (Universal) . . . . .	AR-12
VP-12 (Universal) . . . . .	AR-12
VPA-280 (1960 Valiant) . . . . .	AR-15•
VTP-440 (1960 Valiant) . . . . .	AR-15•
W-76 (Thru 1957 Volkswagen) . . . . .	AR-12
W-89 (1958-1959 Volkswagen) . . . . .	AR-12
WP-4 (1958, 1959 Volkswagen) . . . . .	AR-12
WP-7 (Thru 1957 Volkswagen) . . . . .	AR-12
WP-7G (Karmann-Ghia) . . . . .	AR-12
WP-19 (1958-1959 Volkswagen) . . . . .	AR-12
WP-167 (Universal) . . . . .	AR-15•
WPC-8 (Thru 1957 Volkswagen) . . . . .	AR-12
<b>BECKER</b>	
"Europa" MU (Universal) . . . . .	AR-8
"Europa" MUK (Universal) . . . . .	AR-8
<b>BLAUPUNKT</b>	
"Bremen" (Above Serial #G14001) (Universal) . . . . .	AR-9
"Frankfurt" (Universal) . . . . .	AR-8
"Frankfurt" 3798 (Serial Q553083 and above) (Universal) . . . . .	AR-14
"Frankfurt" 9798 (From Serial #890001) . . . . .	AR-15•
"Hamburg" (Universal) . . . . .	AR-8
"Koln" (Universal) . . . . .	AR-8
"Wolfsburg" 9160 (Serial #G450001 and above) (Universal) . . . . .	AR-9
3598 (Universal) . . . . .	AR-13
9180 (Universal) . . . . .	AR-13
<b>BUICK</b>	
980051 (1960) . . . . .	AR-12
980052 (1960) . . . . .	AR-13
980132 (1961 Special) . . . . .	AR-15•
980135 (1961) . . . . .	AR-14
981320 (1953, Series 40) . . . . .	AR-4
981321 (1953, Series 50 and 70) . . . . .	AR-4
981323 (1953, Series 50 and 70) . . . . .	AR-4
981550 (1954, Series 40, 50, and 70) . . . . .	AR-4
981551 (1954, Series 40, 50, and 70) . . . . .	AR-5
981651 (1955) (See Model 981550) . . . . .	AR-4
981652 (1955) . . . . .	AR-5
981707 (1956) . . . . .	AR-6
981708 (1956) . . . . .	AR-6
981813 (1957) . . . . .	AR-7
981814 (1957) . . . . .	AR-7

• Signifies coverage in this volume.

Trade Name and Model No.	Vol. No.
<b>BUICK (Cont'd)</b>	
981902 (1958) . . . . .	AR-8
981903 (1958) . . . . .	AR-8
981968 (1959) . . . . .	AR-10
981969 (1959) . . . . .	AR-11
981970 (1959) . . . . .	AR-10

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

**CADILLAC**

7264165, 7264185 (1954) . . . . .	AR-5
7265825, 7265845 (1955) . . . . .	AR-6
7266505, 7266535 (1956) . . . . .	AR-6
7268005 (1957) . . . . .	AR-7
7268035 (1957 Ambulance) . . . . .	AR-7
7268085 (1958 Brougham) . . . . .	AR-8
7270405 (1958) . . . . .	AR-8
7270555 (1958 Ambulance) . . . . .	AR-8
7272505 (1959) . . . . .	AR-10
7274905 (1960) . . . . .	AR-12
7274925 (1960 75 Series) . . . . .	AR-12

**CHEVROLET**

986668 (1953) . . . . .	AR-4
986669 (1953) . . . . .	AR-4
986771 (1954 Truck) . . . . .	AR-5
987086 (1955) . . . . .	AR-5
987087 (1955) . . . . .	AR-5
987088 (1955) . . . . .	AR-5
987187 (1955 Truck) . . . . .	AR-6
987366 (1956) (See Model 987088) . . . . .	AR-5
987368 (1956) . . . . .	AR-6
987573 (1957) . . . . .	AR-7
987575 (1957) . . . . .	AR-7
987577 (1957) . . . . .	AR-7
987693 (1957) . . . . .	AR-7
987724 (1958) . . . . .	AR-8
987727 (1958) . . . . .	AR-8
987730 (1958) . . . . .	AR-9
987888 (1959) . . . . .	AR-10
987891 (1959) . . . . .	AR-10
987893 (1959) . . . . .	AR-10
988062 (1960 Corvair) . . . . .	AR-12
988080 (1960 Truck) . . . . .	AR-13
988275 (1960) . . . . .	AR-12
988276 (1960) . . . . .	AR-12
988336 (1961 Truck Series 95) . . . . .	AR-15
988413 (1961) . . . . .	AR-15
988414 (1961) . . . . .	AR-14
988460 (1961 Corvair) . . . . .	AR-15
988468 (1961 Corvair) . . . . .	AR-14
3711897 (1955 Corvette) . . . . .	AR-6
3725156 (1956-57 Corvette) . . . . .	AR-7
3748611 (1958 Corvette) . . . . .	AR-9

For other custom equipment for use in Chevrolet cars, see Aircastle, Airline, Automatic, Firestone, Motorola, and Stromberg-Carlson listings.

**CHRYSLER (See Mopar)**

Trade Name and Model No.	Vol. No.
<b>CONTINENTAL</b>	
6BC (4047424) (1956) . . . . .	AR-6

**CORONADO**

35RA2-43-5101A (Universal) . . . . .	AR-5
--------------------------------------	------

**CORVAIR (See Chevrolet)**

**DESOTO (See Mopar)**

**DODGE (See Mopar)**

**EDSEL**

04BE (COKF-18805, COKF-18806) . . . . .	AR-12
85SE (1958) . . . . .	AR-8
87SE (1958) . . . . .	AR-8
94BE (B9KF-18805-D, B9KF-18806-C) (1959) . . . . .	AR-10

For other custom equipment for use in Edsel cars, see Automatic listing.

**F85 ( See Oldsmobile)**

**FALCON ( See Ford)**

**FIRESTONE**

4-B-69 (Tractor Installations) . . . . .	AR-5
4-B-71 (1953 Plymouth) . . . . .	AR-4
4-B-72 (1953 Chevrolet) . . . . .	AR-4
4-B-74 (1954 Ford) . . . . .	AR-5
4-B-75 (Universal) . . . . .	AR-5
4-B-76 (1955 Ford) . . . . .	AR-6
4-B-77 (1955 Chevrolet) . . . . .	AR-5
4-B-78 (1955 Plymouth) . . . . .	AR-6

**FORD**

04BF (COAZ-18805, COAF-18806), (1960) (Early version only) . . . . .	AR-12
04BT (COTF-18805-F) (1960 Truck) . . . . .	AR-12
04MD (CODF-18805-D) (1960 Falcon) . . . . .	AR-12
04MF (COAF-18805-U) (1960) . . . . .	AR-12
04MFM (COAF-18805-T) (1960) . . . . .	AR-12
1TMC (C1VV-18810-C) (1961 Continental) . . . . .	AR-15
1TMS (C1SF-18810-B) (1961 Thunderbird) . . . . .	AR-15
4BF (FDA-18805-C) (1954) (See Model M-4B) . . . . .	AR-4
3MF (FAD-18805-C) (1953) . . . . .	AR-4
3MFT (FAE-18805-A) (1953 Truck) . . . . .	AR-4
3SF755 (FAD-18805-D) (1953) . . . . .	AR-4
4BF (FDA-18805-C) (1954) (See Model-4B) . . . . .	AR-4
4MF (FDA-18805-B-2) (1954) . . . . .	AR-4
4SF765 (FDA-18805-A) (1954) . . . . .	AR-5
5BF (FDH-18805-B1) (1955) . . . . .	AR-5
5MF (FDH-18805-B2) (1955) . . . . .	AR-5
5MFS, 5MFS8 (FDH-18805-B) (1955 Thunderbird) . . . . .	AR-5
5MF8 (FDH-18805-A2) (1955) . . . . .	AR-5
6BF (FDR-18805-B) (1956) . . . . .	AR-6
6BFT (FDV-18805-A) (1956 Truck) . . . . .	AR-6

• Signifies coverage in this volume.

Trade Name and Model No.	Vol. No.
<b>FORD (Cont'd)</b>	
12BD (CODF-18805E2, CODF-18806D) (1961 Falcon) . . . . .	AR-14
12BF (C1AF-18805C2, C1AF-18806K) (1961) . . . . .	AR-14
12BT (C1TF-18805) (1961 Truck) . . . . .	AR-14
12BU (C1UF-18805) (1961 Econoline Truck) . . . . .	AR-14
66MF (FDR-18805-B1) (1956) . . . . .	AR-6
66MFP (FDR-18805-B1) (1956) . . . . .	AR-6
69MF (FDR-18806-F) (1956) . . . . .	AR-6
69MS (FEF-18805-B) (1956) . . . . .	AR-6
74BF (FEG-18805) (1957) . . . . .	AR-8
74BT (FEM-18805-A) (1957 Truck) . . . . .	AR-9
74MF (B7A-18805-A1) (1957) . . . . .	AR-8
75BF (FEG-18805-B) (1957) . . . . .	AR-7
75MF (FEG-18806-H) (1957) . . . . .	AR-7
76MF (SR) (B7A-18805-B1) (1957) . . . . .	AR-8
78MF (FEG-18805-G) (1957) . . . . .	AR-7
79MS (FEJ-18806-C) (1957 Thunderbird) . . . . .	AR-7
84BF (B8A-18805-B) (1958) . . . . .	AR-8
84BT (FEM-18805-B) (1958 Truck) . . . . .	AR-9
84MF (B8A-18805-B) (1958) . . . . .	AR-8
84MS (FEV-18805-F) (1958 Thunderbird) . . . . .	AR-9
86MF (B8A-18805-A) (1958) . . . . .	AR-8
94BF (B9A-18805-A, B9A-18806-D) (1959) . . . . .	AR-10
94BT (B9C-18805-A1) (1959 Truck) . . . . .	AR-11
94MF (B9FA-18806-C) (1959) . . . . .	AR-10
94MFM (B9FA-18805-E) (1959) . . . . .	AR-10
95MF (B9FA-18806-B) (1959) . . . . .	AR-10
94MS (B9SF-18805-B) (1959 Thunderbird) . . . . .	AR-11

For other custom equipment for use in Ford cars, see Aircastle, Airline, Automatic, Firestone, Nordic, and Stromberg-Carlson listings.

### GMC

2233398 (12V Truck) . . . . .	AR-9
2233850 (1960 G.M.C. Trucks) . . . . .	AR-13

### GONSET

3239 (Universal) . . . . .	AR-9
----------------------------	------

### GRANCO

ARC-60 . . . . .	AR-15•
------------------	--------

### HUDSON (Also See American Motors)

236476 (SH759) (1953) . . . . .	AR-4
236486, 238060 (SH758) . . . . .	AR-4
4389027 (HN5AC-8) (1955) . . . . .	AR-6

For other custom equipment for use in Hudson cars, see Aircastle, Automatic, and Motorola listings.

### INTERNATIONAL

IL5TCA, IL5TCA-12 (88065-R96) (1955 "R" Line Truck) . . . . .	AR-6
IL7TC, IL7TC-12 (1957 "R" Line Truck) . . . . .	AR-7
86M1 (1958 "A" Line Truck) . . . . .	AR-8

### INTERNATIONAL (Cont'd)

94MI (1959 "R" and "V" Line Truck) . . . . .	AR-11
94MIM (1959 "A" Line Truck) . . . . .	AR-10

### KARADIO

M80B . . . . .	AR-4
----------------	------

### KARMANN GHIA

OBG . . . . .	AR-13
---------------	-------

### LAFAYETTE

SP-172 (FM-100) . . . . .	AR-14
---------------------------	-------

### LANCER (See Mopar)

### LARK ( See Studebaker)

### LINCOLN

05BH (COLF-18810, COLY-18805) (1960) . . . . .	AR-12
3SH756 (FAG-18805-A) (1953) . . . . .	AR-4
4SH764 (FDD-18805-B) (1954) . . . . .	AR-4
4SH766 (FDD-18805-A) (1954) . . . . .	AR-4
5BH (FDL-18805-C, -D) (1955) . . . . .	AR-5
6BH (FDU-18805-C) (1956) . . . . .	AR-6
78BL (HHD-18805-A) (1957) . . . . .	AR-7
85BH (FFC-18805-C, -D) (1958) . . . . .	AR-9
85BHP (FFC-18805-C, -D) Above Serial #50000) (1958) . . . . .	AR-9
88BH (FFC-15491-B) (1958) . . . . .	AR-8
95BH (B9FL-15801-A, -B, FFC-19061-B) (1959) . . . . .	AR-9

### MERCURY

04BM-1 (COMF-18805) (1960) . . . . .	AR-13
04BM-2 (COMF-18806) (1960) . . . . .	AR-13
M-5841 (1958) . . . . .	AR-9
3SM757 (FAF-18805-A) (1953) (See Lincoln Model 3SH756) . . . . .	AR-4
4SM767 (FDC-18805-A) (1954) (See Lincoln Model 4SH764) . . . . .	AR-4
5BM (1955) (See Lincoln Model 5BH) . . . . .	AR-5
6BM (FDT-18805-C) (1956) . . . . .	AR-6
6BMS (FDT-18805-D) (1956) . . . . .	AR-6
77BM (FEK-18805-C) (1957) . . . . .	AR-7
78BM (FEK-18805-D) (1957) . . . . .	AR-7
84BM (FEW-18805-U) (1958) . . . . .	AR-8
85BM (FEW-18805-T) (1958) . . . . .	AR-9
94PM (B9MF-18805-B) (1959) . . . . .	AR-12
95PM (B9FM-18805-A) (1959) . . . . .	AR-11

For other custom equipment for use in Mercury cars, see Airline and Automatic listings.

### MONITORADIO

M-40 . . . . .	AR-12
M-160 . . . . .	AR-12
MC-40 . . . . .	AR-12
MC-160 . . . . .	AR-12

• Signifies coverage in this volume.



Trade Name and Model No.	Vol. No.	Trade Name and Model No.	Vol. No.
<b>MOPAR</b>		<b>MOPAR (Cont'd)</b>	
101 (PP1, PP2 1960 Plymouth) . . . . .	AR-13	845 (1957 Dodge Models D-66, D-67, D-70, D-71, and D-72) . . . . .	AR-8
102 (PD1, PD2, PD3, PD4 1960 Dodge) . . . . .	AR-13	846 (1957 DeSoto Models S-25, S-26, and S-27) . . . . .	AR-8
104 (1960 Valiant) . . . . .	AR-13	847 (1957 Chrysler) . . . . .	AR-8
106 (1960 Dodge) . . . . .	AR-14	848 (1957 Plymouth) . . . . .	AR-8
107 (12B) (1961 Dodge Dart) . . . . .	AR-15•	848 (1958 Plymouth Models LP-1 and LP-2) . . . . .	AR-8
109 (1961 RP1, RP2 Plymouth) . . . . .	AR-15•	849 (1957 Plymouth Models P-30 and P-31) . . . . .	AR-8
110 (export version of Model 101) . . . . .	AR-13	851 (84BC) (1958 Chrysler) . . . . .	AR-8
111 (1961 RP1, RP2 Plymouth) . . . . .	AR-15•	852 (1958 Dodge Models LD-1, LD-2, and LD-3) . . . . .	AR-8
112 (1960 DeSoto) . . . . .	AR-14	854 (1958 Plymouth Models LP-1 and LP-2) . . . . .	AR-9
113 (1961 RV1 Valiant) . . . . .	AR-15•	855 (P-5901) (1959 Plymouth) . . . . .	AR-11
114 (1961 RW1 Lancer) . . . . .	AR-15•	856 (1959 Dodge Models MD1, MD2, and MD3) . . . . .	AR-10
301 (PP1, PP2 1960 Plymouth) . . . . .	AR-14	857 (1959 DeSoto Models MS1, MS2, and MS3) . . . . .	AR-10
302 (PD1, PD2, PD3, PD4 1960 Dodge) . . . . .	AR-13	858 (94BC) (1959 Chrysler) . . . . .	AR-10
303 (03BC) (1960 Chrysler) . . . . .	AR-13	860 (1959 MP1 and MP2 Plymouth) . . . . .	AR-12
304 (03BS) (1960 DeSotos) . . . . .	AR-13	861 (1959 Chrysler Export) . . . . .	AR-12
305 (03BD) (1960 Dodge) . . . . .	AR-13	900 (1955 Dodge Models D-55 and D-56) . . . . .	AR-5
310 (export version of Model 301) . . . . .	AR-14	901 (1955 DeSoto Models S-21 and S-22) . . . . .	AR-5
313 (1960 Valiant) . . . . .	AR-14	902, 903 (1955 Chrysler) . . . . .	AR-5
317 (13BC) (1961 Chrysler) . . . . .	AR-15•	910, 910HR (1956 Dodge Models D-62 and D-63) . . . . .	AR-6
402 (04BC) (1960 Chrysler) . . . . .	AR-13	911 (1956) DeSoto Models S-23 and S-24) . . . . .	AR-6
403 (04B1) (1960 Imperial) . . . . .	AR-13	912, 912HR (1956 Chrysler) . . . . .	AR-7
404 (14B1) (1961 Imperial) . . . . .	AR-15•	916, 916HR (1956 Plymouth Models P-28 and P-29) . . . . .	AR-7
407 (14BC) (1961 Chrysler) . . . . .	AR-15•	917HR (1957 Plymouth) . . . . .	AR-8
608 (1953 Plymouth Model P-24) . . . . .	AR-4	918 (1957 Dodge Models D-66, D-67, D-70, D-71, and D-72) . . . . .	AR-7
609 (1953 Dodge Model D-44, D-46, D-47, and D-48) . . . . .	AR-4	919, 919HR (1957 DeSoto Models S-25, S-26, and S-27) . . . . .	AR-7
610T (1953 Dodge Truck, Series B-3 and B-4) . . . . .	AR-4	920HR (1957 Chrysler) . . . . .	AR-8
611T (1954 Dodge Truck, Series C) (See Model 610T) . . . . .	AR-4	921HR (1957 Imperial) . . . . .	AR-8
612 (1954 Dodge Model D-40, D-51, D-52, and D-53) (See Model 609) . . . . .	AR-4	922 (85BC) (1958 Chrysler) . . . . .	AR-9
613 (1955 Plymouth Models P-26 and P-27) . . . . .	AR-5	923 (1958 DeSoto Models L-51, L-52, L-53) . . . . .	AR-9
614 (1955 Dodge Models D-55 and D-56) . . . . .	AR-5	924HR . . . . .	AR-9
620 (1956 Plymouth Models P-28 and P-29) . . . . .	AR-7	925 (1958 Plymouth Models LP-1 and LP-2) . . . . .	AR-9
621 (1956 Dodge Models D-62 and D-63) . . . . .	AR-7	927 (1959 DeSoto Models MS1, MS2, and MS3) . . . . .	AR-11
624 (1957 Dodge Models D-66, D-67, D-70, D-71, and D-72) . . . . .	AR-8	928 (R95BC-S) (1959 Chrysler) . . . . .	AR-10
700 (1958 Dodge Truck) . . . . .	AR-8	929 (C-5909) (1959 Imperial Model MY1) . . . . .	AR-11
700 (revised) (1960 Dodge Truck) . . . . .	AR-14		
701 (1959 Simca) . . . . .	AR-12		
819 (1953 Plymouth) . . . . .	AR-4		
820 (1953 Dodge) . . . . .	AR-4		
821 (DeSoto Models S-16 and S-18) . . . . .	AR-4		
824 (1953 Chrysler) (See Model 819) . . . . .	AR-4		
828 (1954 Dodge Models D-50, D-51, D-52 and D-53) (See Model 820) . . . . .	AR-4		
829 (DeSoto Models S-19 and S-20) . . . . .	AR-4		
830 (1954 Chrysler Models C-62, C-63, and C-64) . . . . .	AR-4		
831 (See Model 830) . . . . .	AR-4		
832 (1955 Plymouth) . . . . .	AR-5		
833 (1955 Dodge Models D-55 and D-56) . . . . .	AR-5		
834 (1955 DeSoto Models S-21 and S-22) . . . . .	AR-5		
835 (1955 Chrysler) . . . . .	AR-5		
836 (1955 Plymouth Models P-26 and P-27) . . . . .	AR-5		
840 (1956 Plymouth) . . . . .	AR-6		
841 (1956 Plymouth Models P-28 and P-29) . . . . .	AR-6		
842, 842HR (1956 Dodge Models D-62 and D-63) . . . . .	AR-6		
843 (1956 DeSoto Models S-23 and S-24) . . . . .	AR-6		
844, 844HR (1956 Chrysler) . . . . .	AR-6		
		For other custom equipment for use in Chrysler pro- duct cars, see Aircastle, Airline, Automatic, Fire- stone, Motorola, Riverside, and Stromberg-Carlson listings.	
		<b>MOTOROLA</b>	
		BK3A6 (1949 thru 1953 Buick Special, 1942, 1946 thru 1952 Buick Super & Roadmaster) . . . . .	AR-5
		BK53A6 (1949 thru 1953 Buick Special & 1942, 1946 thru 1952 Buick Super & Roadmaster) . . . . .	AR-5
		BKA6T (1956 Buick) . . . . .	AR-7
		BKA6X (1956 Buick) . . . . .	AR-7
		BKA7X (1957 Buick) . . . . .	AR-7
		BKA9X (1959 Buick) . . . . .	AR-10
		BKA60X (1960 Buick) . . . . .	AR-15•

• Signifies coverage in this volume.

Trade Name and Model No.	Vol. No.
<b>MOTOROLA (Cont'd)</b>	
BKA61 (1961 Buick) . . . . .	AR-15•
CRA60X (1960 Corvair) . . . . .	AR-15•
CRM60X (1960 Corvair) . . . . .	AR-14
CT2A6 (1951-52 Chevrolet) . . . . .	AR-5
CT52M6 (1951-52 Chevrolet) . . . . .	AR-5
CTA3 (1953 Chevrolet) . . . . .	AR-4
CTA4 (1954 Chevrolet) . . . . .	AR-6
CTA5 (1955 Chevrolet) . . . . .	AR-6
CTA6T (1955, -56 Chevrolet) . . . . .	AR-6
CTA6X (1955-56 Chevrolet) . . . . .	AR-7
CTA61 (1961 Chevrolet) . . . . .	AR-15•
CTA7X (1957 Chevrolet) . . . . .	AR-7
CTA8X (1958 Chevrolet) . . . . .	AR-9
CTA9X (1959 Chevrolet) . . . . .	AR-10
CTM3 (1953 Chevrolet) . . . . .	AR-5
CTM4, CTM4A (1954 Chevrolet) . . . . .	AR-6
CTM6 (1955, -56 Chevrolet) . . . . .	AR-6
CTM7X (1957 Chevrolet) . . . . .	AR-7
CTM8X (1958 Chevrolet) . . . . .	AR-9
CTM9X (1959 Chevrolet) . . . . .	AR-10
CTM57X (1957 Chevrolet) . . . . .	AR-9
FM-900 (Universal) . . . . .	AR-14
GMT3A6 (1948 thru 1953 GMC and Chevrolet Truck) . . . . .	AR-5
GV-701 (Universal) . . . . .	AR-11
GV-800 (Universal) . . . . .	AR-9
HF3A6 (1951 thru 1953 Henry J) . . . . .	AR-5
HN2A6 (1951-52 Hudson) . . . . .	AR-5
HN3A6 (1951 thru 1953 Hudson except Hudson Jet) . . . . .	AR-5
HN4A6 (1954 Hudson) . . . . .	AR-5
HN4M6 (1954 Hudson) . . . . .	AR-5
HN53M6 (1951 thru 1953 Hudson) . . . . .	AR-5
HT3A6 (1953 Hudson Jet) . . . . .	AR-5
IL5TCA, -12 (1955 International) (See International IL5TCA) . . . . .	AR-6
KR3A6 (1951 thru 1953 Kaiser) . . . . .	AR-5
NH3C (1953 Nash Rambler) (See Nash Model NH3C) . . . . .	AR-4
NH4AC (1954 Nash)(See Nash Model AC-154) . . . . .	AR-5
NH5AC (1955 Nash)(See Nash Model AC-154) . . . . .	AR-5
OE2A6 (1951-52 Oldsmobile "Super 88" and "98") . . . . .	AR-5
OEA7X (1957 Oldsmobile) . . . . .	AR-7
OEA9X (1959 Oldsmobile) . . . . .	AR-12
OEA60X (1960 Oldsmobile) . . . . .	AR-14
PC2A6 (1949 thru 1952 Pontiac) . . . . .	AR-5
PCA7X (1957 Pontiac) . . . . .	AR-7
PCA9X (1959 Pontiac) . . . . .	AR-10
PCA60X (1960 Pontiac) . . . . .	AR-15
PD3A6 (1951 thru 1953 Packard) . . . . .	AR-5
SR2A6 (1950 thru 1952 Studebaker) . . . . .	AR-5
SR3A6 (1952 Studebaker) . . . . .	AR-5
SR52A6 (1950 thru 1952 Studebaker) . . . . .	AR-5
SR52M6 (1950 thru 1952 Studebaker) . . . . .	AR-5
VWA7 (1953-54-55-56-57 Volkswagen) . . . . .	AR-7
VWA8 (1958 Volkswagen) . . . . .	AR-12
VWA60 (1960 Volkswagen) . . . . .	AR-13
VWM60 (1960 Volkswagen) . . . . .	AR-13
03AR (See American Motors Model 8990811) . . . . .	AR-12
04MA (1960 Rambler) (See American Motors Model 8990706) . . . . .	AR-11

Trade Name and Model No.	Vol. No.
<b>MOTOROLA (Cont'd)</b>	
04MD, 04MF, 04MFM (See Ford Model 04MD) . . . . .	AR-12
5M, 5M-12 (Universal) . . . . .	AR-5
6M (Universal) . . . . .	AR-6
6M-12 (Universal) . . . . .	AR-6
6MA (1956 Hudson & Nash) (See American Motors Model 8990378) . . . . .	AR-6
6MR (1956 Rambler) (See American Motors Model 8990377) . . . . .	AR-6
6TAS8 (Universal) . . . . .	AR-6
7M (Universal) (See Model 6M) . . . . .	AR-6
7MR (1957 Rambler) (See American Motors Model 8990455) . . . . .	AR-6
7MX (Universal) . . . . .	AR-7
8M (Universal) . . . . .	AR-8
8MX (Universal) . . . . .	AR-9
9AX (Universal) . . . . .	AR-10
10AX (Universal) . . . . .	AR-15•
10M (Universal) . . . . .	AR-13
10MX (Universal) . . . . .	AR-12
13MA (1960 Rambler American) (See American Motors Model 8990832) . . . . .	AR-14
13MAM (1960 Rambler American) (See American Motors Model 8990831) . . . . .	AR-14
14MR (1961 Rambler ) (See American Motors Model 8990833) . . . . .	AR-15•
76MA (1957 Hudson & Nash) (See American Motors Model 8990378) . . . . .	AR-6
93MR (1959 Rambler) (See American Motors Model 8990582) . . . . .	AR-10
94MIM (1959 International) (See International Model 94MIM) . . . . .	AR-10
94MF (See Ford Model 94MF) . . . . .	AR-10
94MFM (See Ford Model 94MFM) . . . . .	AR-10
94MI (1959 "R" and "V" Line International Truck) (See International Model 94MI) . . . . .	AR-11
95MF (See Ford Model 95MF) . . . . .	AR-10
94MS (1959 Thunderbird) (See Ford Model 94MS) . . . . .	AR-11
101 (See Mopar Model 101) . . . . .	AR-13
102 (See Mopar Model 102) . . . . .	AR-13
104 (See Mopar Model 104) . . . . .	AR-13
110 (See Mopar Model 110) . . . . .	AR-13
300X (Universal) . . . . .	AR-11
301X (Universal) . . . . .	AR-11
302 (See Mopar Model 302) . . . . .	AR-13
310X (Negative ground) . . . . .	AR-13
311X (Positive ground) . . . . .	AR-13
395, 395-12 (Universal) . . . . .	AR-5
396, 396-12 (Universal) . . . . .	AR-6
397 (Universal) . . . . .	AR-7
397X (Universal) . . . . .	AR-7
398X (Universal) . . . . .	AR-9
403 (Universal) . . . . .	AR-4
404 (Universal) . . . . .	AR-5
406 (Universal) . . . . .	AR-11
412 (Universal) . . . . .	AR-4
500X (Universal) . . . . .	AR-13
503 (Universal) . . . . .	AR-4
504 (Universal) . . . . .	AR-5
506, 506-12 (Universal) . . . . .	AR-7
553 (Universal) . . . . .	AR-4

• Signifies coverage in this volume.

Trade Name and Model No.	Vol. No.
<b>MOTOROLA (Cont'd)</b>	
555, 555-12 (Universal) . . . . .	AR-6
556 (Universal) . . . . .	AR-6
595, 595-12 (Universal) . . . . .	AR-6
596, 596-12 (Universal) . . . . .	AR-6
597X (Universal) . . . . .	AR-7
601X (Universal) . . . . .	AR-13
611T (See Mopar Model 610T) . . . . .	AR-4
612 (See Mopar Model 609) . . . . .	AR-4
624 (See Mopar Model 624) . . . . .	AR-8
701 (See Mopar Model 701) . . . . .	AR-12
829 (See Mopar Model 829) . . . . .	AR-4
845 (See Mopar Model 845) . . . . .	AR-8
846 (See Mopar Model 846) . . . . .	AR-8
849 (See Mopar Model 849) . . . . .	AR-8
852 (See Mopar Model 852) . . . . .	AR-8
853 (See Mopar Model 853) . . . . .	AR-8
854 (See Mopar Model 854) . . . . .	AR-9
856 (See Mopar Model 856) . . . . .	AR-10
857 (See Mopar Model 857) . . . . .	AR-10
860 (See Mopar Model 860) . . . . .	AR-12
861 (See Mopar Model 861) . . . . .	AR-12
923 (See Mopar Model 923) . . . . .	AR-9
927 (See Mopar Model 927) . . . . .	AR-11

**Chassis**

R15A6 . . . . .	AR-5
R16M6 . . . . .	AR-5
R17A6 . . . . .	AR-5

**NASH (Also See American Motors)**

AC-154 (1954, 1955) . . . . .	AR-5
NH3C (1953 Nash Rambler) . . . . .	AR-4
NH5AC (1955) (See Model AC-154) . . . . .	AR-5

For other custom equipment for use in Nash cars, see Motorola listings.

**NORDIC**

501F55 (1955 Ford) . . . . .	AR-5
------------------------------	------

**OLDSMOBILE**

982990 (1953) . . . . .	AR-4
983004 (1953) . . . . .	AR-4
983090 (1954) . . . . .	AR-5
983091 (1954) . . . . .	AR-5
983204 (1955) . . . . .	AR-5
983205 (1955) . . . . .	AR-5
983334 (1956) . . . . .	AR-6
983336 (1956) . . . . .	AR-6
989001 (1957) . . . . .	AR-7
989002 (1957) . . . . .	AR-7
989127 (1958) . . . . .	AR-8
989129 (1958) . . . . .	AR-8
989131 (1958) . . . . .	AR-8
989170 (1959) . . . . .	AR-10
989171 (1959) . . . . .	AR-11
989172 (1959) . . . . .	AR-11
989276 (1960) . . . . .	AR-13

Trade Name and Model No.	Vol. No.
<b>OLDSMOBILE (Cont'd)</b>	

989277 (1960) . . . . .	AR-12
989387 (1961 F85) . . . . .	AR-15 •
989392 (1961) . . . . .	AR-15 •
989393 . . . . .	AR-14

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

**OPEL-REKORD**

981946 (1958) . . . . .	AR-14
981981 (1959, 1960) . . . . .	AR-14

**PACKARD**

AC-2906 (1958) . . . . .	AR-8
AC-2907 (1958) . . . . .	AR-8
439338, 439339 (1953 Series 26) . . . . .	AR-4
439663 (1954) (See Model 439338) . . . . .	AR-4
439666 (1954) (See Model 439338) . . . . .	AR-4
472046 (1955) . . . . .	AR-5
472047, 472048 (1955) . . . . .	AR-5
480487 (1956 Packard Clipper) . . . . .	AR-6
484649 (1957) . . . . .	AR-7
484652 (1957) (See Model 7267427) . . . . .	AR-6
7267427 (480487) (1956 Packard Clipper) . . . . .	AR-6

**PHILCO**

C-5209 (See Mopar Model 824) . . . . .	AR-4
C-5409 (See Mopar Model 830) . . . . .	AR-4
C-5509 (See Mopar Model 835) . . . . .	AR-5
C-5595 (See Mopar Model 902) . . . . .	AR-5
C-5596 (See Mopar Model 903) . . . . .	AR-5
C-5609 (See Mopar Model 844) . . . . .	AR-6
C-5609HR (See Mopar Model 844HR) . . . . .	AR-6
C-5705 (See Mopar Model 847) . . . . .	AR-8
C-5707 (See Mopar Model 920HR) . . . . .	AR-8
C-5709 (See Mopar Model 921HR) . . . . .	AR-8
C-5809 (See Mopar Model 924HR) . . . . .	AR-9
D-5207 (See Mopar Model 819) . . . . .	AR-4
D-5407 (See Mopar Model 820) . . . . .	AR-4
P-5206 (See Mopar Model 819) . . . . .	AR-4
P-5506 (See Mopar Model 832) . . . . .	AR-5
P-5606 (See Mopar Model 840) . . . . .	AR-6
P-5701 (See Mopar Model 848) . . . . .	AR-8
P-5703 (See Mopar Model 917HR) . . . . .	AR-8
P-5801 (See Mopar Model 848) . . . . .	AR-8
P-5803 (See Mopar Model 925) . . . . .	AR-9
P-5901 (See Mopar Model 855) . . . . .	AR-11
S-5323 (See Studebaker Model AC-2301) . . . . .	AR-4
S-5327 (See Studebaker Model AC-2300) . . . . .	AR-4
S-5524 (See Studebaker Model AC-2301) . . . . .	AR-4
S-5528 (See Studebaker Model AC-2300) . . . . .	AR-4
S-5529 (See Studebaker Model AC-2300) . . . . .	AR-4
TAR-58 (See Mopar Model 700) . . . . .	AR-8
94PM (See Mercury Model 94PM) . . . . .	AR-12
929 (See Mopar Model 929) . . . . .	AR-11

**PLYMOUTH (See Mopar)**

• Signifies coverage in this volume.

Trade Name and Model No.	Vol. No.
<b>PONTIAC</b>	
984817 (1953-54) . . . . .	AR-4
984961 (1955). . . . .	AR-5
988568 (1956) (See Model 984961) . . . . .	AR-5
988569 (1956). . . . .	AR-6
988671 (1957). . . . .	AR-7
988672 (1957). . . . .	AR-7
988822 (1958). . . . .	AR-8
988823 (1958). . . . .	AR-8
988837 (1958). . . . .	AR-8
988976 (1959). . . . .	AR-10
988977 (1959). . . . .	AR-11
988978 (1959). . . . .	AR-11
989614 (1960). . . . .	AR-12
989615 (1960). . . . .	AR-13
989692 (1961). . . . .	AR-14
989693 (1961). . . . .	AR-15•
989792 (1961 Tempest) . . . . .	AR-15•
989831 (1961 Tempest) . . . . .	AR-15•

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

**RAMBLER (See American Motors)**

**REGAL**

CR-871 (Universal). . . . .	AR-4
-----------------------------	------

**RIVERSIDE**

FJB-6537A (1958-59 Volkswagen) . . . . .	AR-14
FJB-6538A (1958-59 Volkswagen) . . . . .	AR-14
FJB-6567, M (1959 Plymouth). . . . .	AR-13
FJB-6679A . . . . .	AR-10
FJB-6681A (1958 Plymouth). . . . .	AR-10
FJB-6682A, B (Universal) . . . . .	AR-10
FJB-6684 (1959 Ford). . . . .	AR-11
FJB-6686-A (1959 Plymouth) . . . . .	AR-12
FJB-6687 (1959 Ford). . . . .	AR-11
FJB-6688 (1959 Chevrolet). . . . .	AR-11
FJB-6689A (1959 Plymouth). . . . .	AR-12
FJB-6690A (1959 Buick) . . . . .	AR-13
FJB-6691B (Renault Dauphine) . . . . .	AR-12
FJB-6693B (Renault Dauphine) . . . . .	AR-12

**SPECIAL (See Buick)**

**STROMBERG-CARLSON**

C.A.R. 7 (Universal). . . . .	AR-11
C.A.R. 9 (1959 Ford and Edsel). . . . .	AR-11
CH-60-M (1960 Chevrolet). . . . .	AR-14
CH-60-PB (1960 Chevrolet) . . . . .	AR-14
DA-60-PB (1960 Dodge Dart) . . . . .	AR-14
DE-60-PB (1960 DeSoto) . . . . .	AR-14
DO-60-PB (1960 Dodge). . . . .	AR-14
FA-60-M (1960 Falcon). . . . .	AR-14
FA-60-PB (1960 Falcon) . . . . .	AR-14
FO-60-M (1960 Ford) . . . . .	AR-14
FO-60-PB (1960 Ford) . . . . .	AR-14

Trade Name and Model No.	Vol. No.
<b>STROMBERG-CARLSON (Cont'd)</b>	
IM-60-M (Universal) . . . . .	AR-15•
PL-60-M (1960 Plymouth) . . . . .	AR-14
VA-60-M (1960 Valiant). . . . .	AR-14

**STUDEBAKER**

AC-2300 (S-5327) (1953) . . . . .	AR-4
AC-2301 (S-5323) (1953) . . . . .	AR-4
AC-2686 (S-5528) (1955) (See Model AC-2300) . . . . .	AR-4
AC-2687 (S-5524) (1955) (See Model AC-2301) . . . . .	AR-4
AC-2721 (S-5529) (1955) (See Model AC-2300) . . . . .	AR-4
AC-2745 (1956) . . . . .	AR-6
AC-2746 (1956) . . . . .	AR-6
AC-2747 (1956) . . . . .	AR-6
AC-2748 (1956) . . . . .	AR-6
AC-2905 (1958) . . . . .	AR-9
AC-2906 (1958) . . . . .	AR-8
AC-2907 (1958) . . . . .	AR-8
AC-2977 (1960) . . . . .	AR-12
AC-2978 (1960) . . . . .	AR-13
AC-3085 (1961) . . . . .	AR-15•
AC-3087 (1961) . . . . .	AR-15•

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

**TEMPEST (See Pontiac)**

**TRUETONE**

D4118, B (Universal) . . . . .	AR-4
D4320 (Universal). . . . .	AR-4
D4320B (Universal). . . . .	AR-4
D4321, A (Universal). . . . .	AR-4
D4425B, D4426 A (Universal). . . . .	AR-5
D4623A, D4624A (Universal). . . . .	AR-7
D4625A, D4626 A (Universal). . . . .	AR-7
D4826A (Universal). . . . .	AR-7

**VALIANT (See Mopar)**

**VAUXHALL**

988946 (1958). . . . .	AR-10
------------------------	-------

**VOLKSWAGEN**

OBT (Sapphire 1) . . . . .	AR-13
OBV (Sapphire 1) . . . . .	AR-13

For other custom equipment for use in Volkswagen cars, see Automatic and Riverside listings.

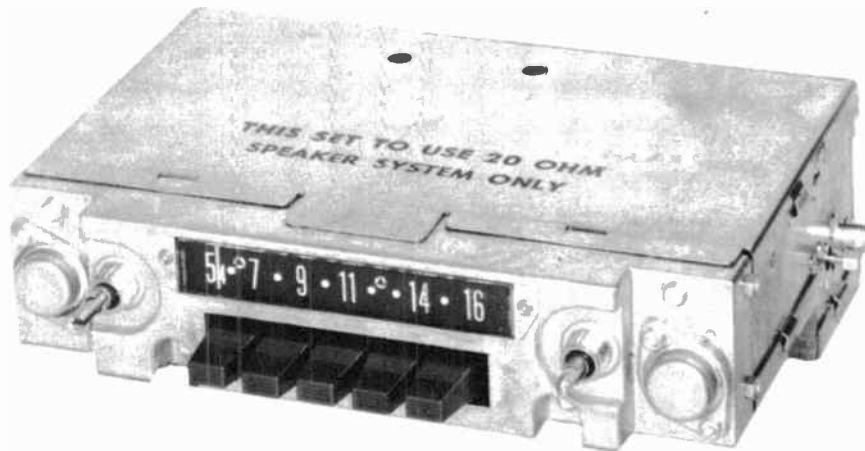
**VOXSON**

"Vanguard" 736 . . . . .	AR-15
--------------------------	-------

**WILLYS**

815395 . . . . .	AR-9
------------------	------

• Signifies coverage in this volume.



TRADE NAME American Motors Model 8990833 (14MR) For 1961 Rambler  
 MANUFACTURER Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois  
 TYPE SET Battery Operated 4 Tube, 3 Transistor Custom Built Automobile AM Receiver  
 POWER SUPPLY 12 Volt Storage Battery RATING 1.1 Amp. @12.6 Volts DC  
 TUNING RANGE—BROADCAST 540 — 1610KC

## ALIGNMENT INSTRUCTIONS

### ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

Suggested Alignment Tools:

- A1 thru A4..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440  
 WALSCO #2526, 2543, 2544, 2545
- A5, A6..... GENERAL CEMENT #5000, 5003, 8276, 8290  
 WALSCO #2512, 2515, 2522, 2523, 2525, 2537
- A8, A9, A10..... Fig. 2.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mf to antenna receptacle. Low side to chassis.	262.5KC (400% Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1610KC	"	"	A5, A6, A7	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, A10) out of tuning coils. Repeat step 2.						
3.	Thru dummy to antenna receptacle.	1020KC	Tuner carriage 9/16" from high end stop.	Across voice coil.	A8, A9, A10	Adjust for maximum output. Repeat steps 2 and 3.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1200KC and adjust A7 for maximum output.					

### PUSHBUTTON ADJUSTMENT

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

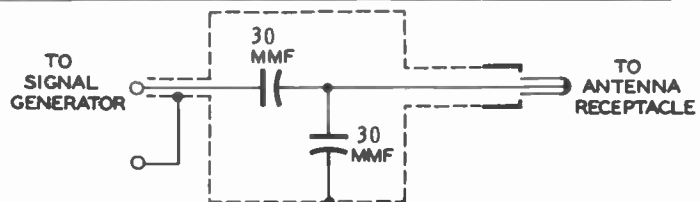


FIG. 1

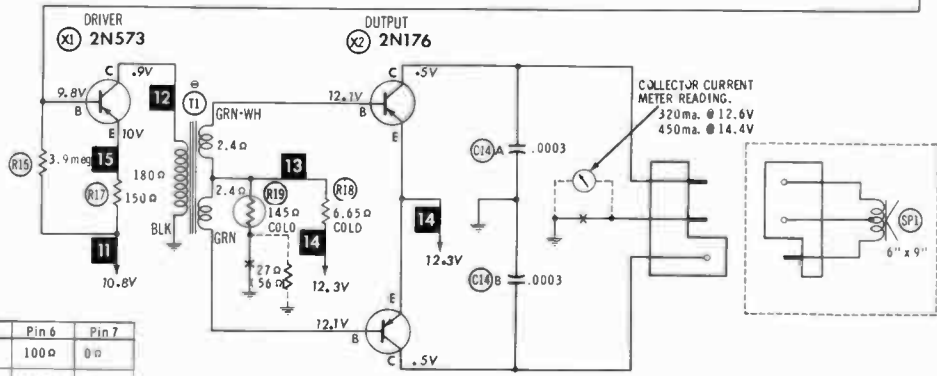
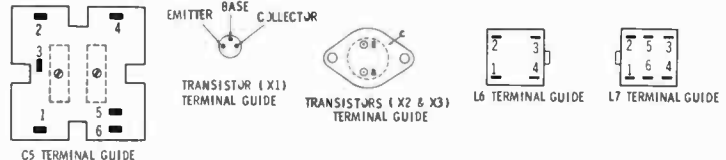
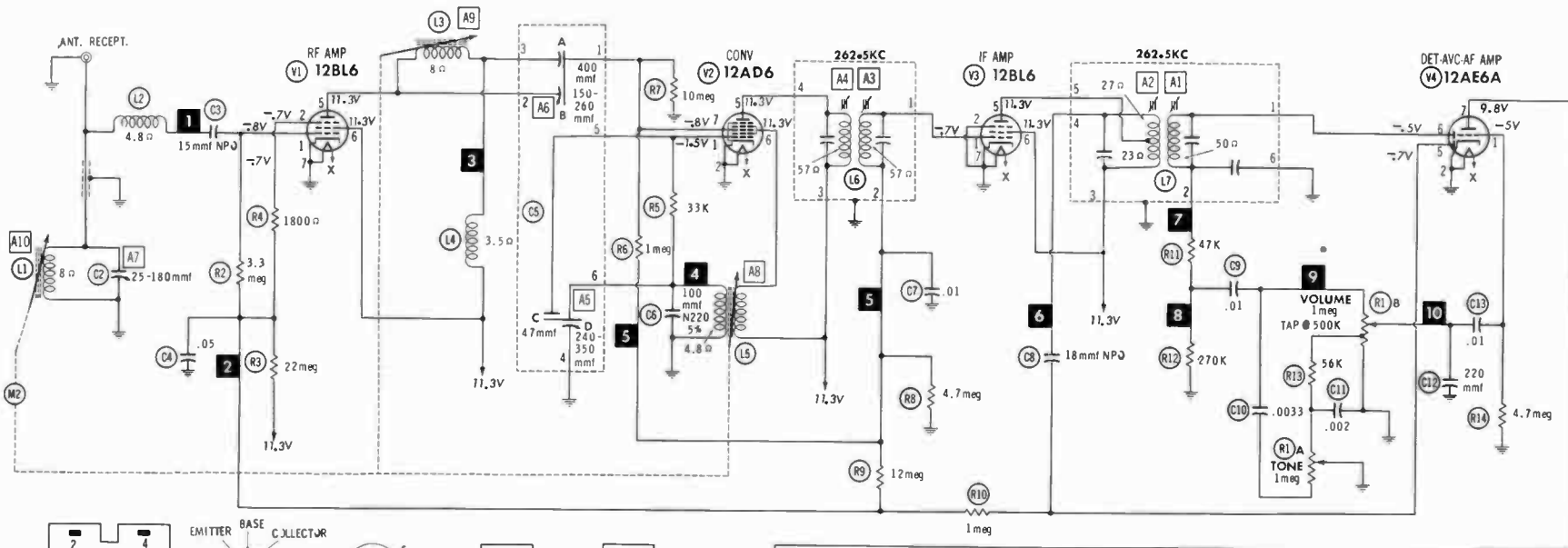
## HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD9S7

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

AMERICAN MOTORS  
MODEL 8990833 (14MR)



SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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

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.

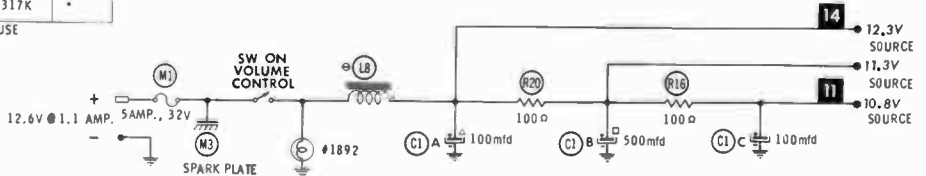
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BL6	12 meg	9 meg	0 ohm	4 ohm	115 ohm	100 ohm	0 ohm
V2	12AD6	33K	0 ohm	0 ohm	4 ohm	160 ohm	100 ohm	3.8 meg
V3	12BL6	3.5 meg	0 ohm	0 ohm	4 ohm	130 ohm	100 ohm	0 ohm
V4	12AE6A	4.7 meg	0 ohm	4 ohm	0 ohm	10 meg	317K	*

\* TRANSISTOR CIRCUIT RESISTANCE FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

- 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**  
© Howard W. Sams & Co., Inc. 1962



AMERICAN MOTORS  
MODEL 8990833 (14MR)

# PARTS LIST AND DESCRIPTIONS

## TUBES

• GENERAL ELECTRIC •			• RAYTHEON •			• SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12BL6	V3	IF Amplifier	12BL6			
V2	Converter	12AD6	V4	Det. -AVC-AF Amp.	12AE6A			

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	2N573	Driver	2N591	2N573	PNP
X2	2N176	Output	2N176		PNP
X3	2N176	Output	2N176		PNP Note 1

Note 1. When replacing, apply DC-4 grease (Part #11M490487) 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.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A B C	100 500 100		23E663336	PWH3-00-90			WP300.8 †		PCL5-3026.3*

\* Not normally in distributor's stock. Available thru distributor on order to manufacturer.  
† Use printed circuit adapter kit FPA.

## 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.	
C2	25-180	#20K539683	NPO-DI 15	DTZ-15	C10Q15C	463	CNO-415	10TCC-V15	
C3	15 NPO		BPD-05	DD-503	H-0885	CCTO-150	GP150	5HK-850	
C4	.05		#20K563443	NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C5A	400								
B	150-360								
C	47								
D	240-360								
C6	100 N220 6%							10TCR-T10	
C7	.01		BPD-01	DD-103	BYA106L	CCTO-103	B-110	5HK-810	
C8	.18 NPO			TCZ-18	C10Q18C	CCTO-180	CNO-418	10TCC-Q18	
C9	.01		BPD-01	DD-103	BYA106L	CCTO-103	B-110	5HK-810	
C10	.0033		BPD-0033	DD-332	BYA10D33	CCTO-332	B-233	5HK-D33	
C11	.002		BPD-002	DD-202	BYA10D2	CCTO-202	B-220	5HK-D20	
C12	220		DI-220	DD-221	L10T22	CCTO-221	B-322	10TS-T22	
C13	.01		BPD-01	DD-103	BYA106L	CCTO-103	B-110	5HK-810	
C14A	.0003		1468-0003	TCZ-300	5W5T3	CM-19B-301M	MC241	1FM-33	
B	.0003		1468-0003	TCZ-300	5W5T3	CM-19B-301M	MC241	1FM-33	

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

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES	
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CYS-IRC PART No.		MALLORY PART No.
R1A B C	1meg 1meg 500K Tap Switch		18K563154	RM-60-B		† QJ-1257A	UB4108-8	Tone Volume Power Off-On

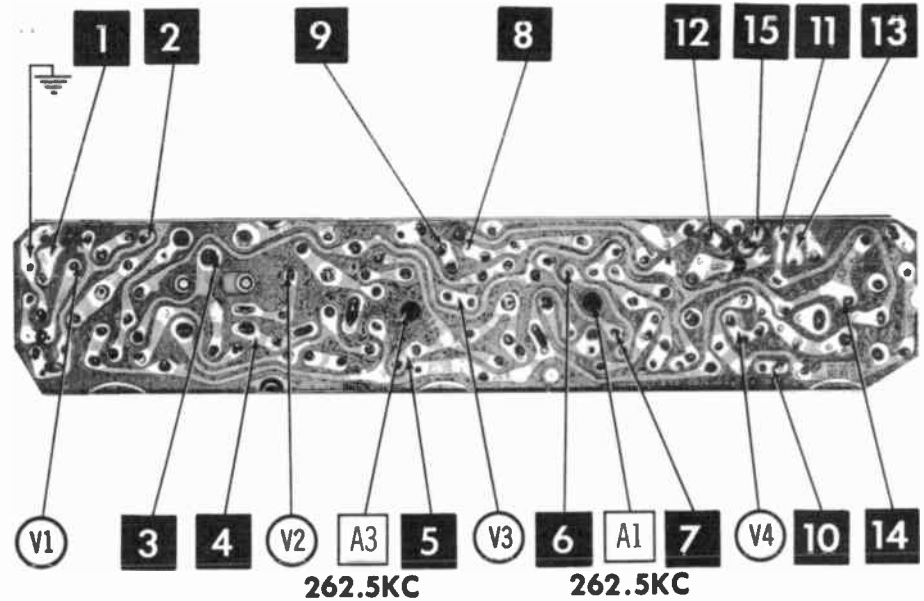
† "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts:  
B11-137, P13-116 (Panel)  
B19-137X, R1-136 (Rear)  
R-5 (Retainer)  
76-1 (Switch)

‡ "BTA-LOC" Equivalent: FB16L, RU18T55, OR1500A, IB1875, UB-4L.

# PRINTED BOARD

A Howard W. Sams **CIRCUITRACE** Photo

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



## RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	3.3meg			
R3	22meg			
R4	1800Q			
R5	33K			
R6	1meg			
R7	10meg			
R8	4.7meg			
R9	12meg			
R10	1meg			
R11	47K			
R12	270K			
R13	56K			
R14	4.7meg			
R15	3.0meg			
R16	100Q			
R17	150Q			
R18	6.65Q Cold			
R19	145Q Cold			
R20	100Q			

Pt. #0K564854  
Pt. #17C564759

# PARTS LIST AND DESCRIPTIONS (Continued)

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Ant.	24B663217 ①					① Part of M2
L2	RF Choke(31uh)	24K563490	TV-180	6176	RTC-8693	T301	
L3	RF	24B663217 ①					
L4	RF Choke(44uh)	24K563788		4628	RTC-8667	T864	
L5	Osc.	24B663214 ①					
L6	Input IF	24K563462	BC-344	13-PH1	RTC-8644	T655	
L7	Output IF	24D663300	BC-424				

## 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.		Triod PART No.
L8	1A	.3Ω	1.1MH	25B663156D ①					① Alt. #25B663156

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA				NOTES	
	PR1	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.		Triod PART No.
T1	6	1	25C563335-B ①					① Alternate #25C563335

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
	6"x 9"	PM	18-20Ω CT	50C562412		

## 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	9K564858	301005 (LAG 5A 32V)	155004	AGA 5	HHF

## MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Tuner	77D40323A01	(AT-340) Complete
M3	Spark Plate Printed Board	64K535152 84C563466	Less All Components

## CABINETS & CABINET PARTS

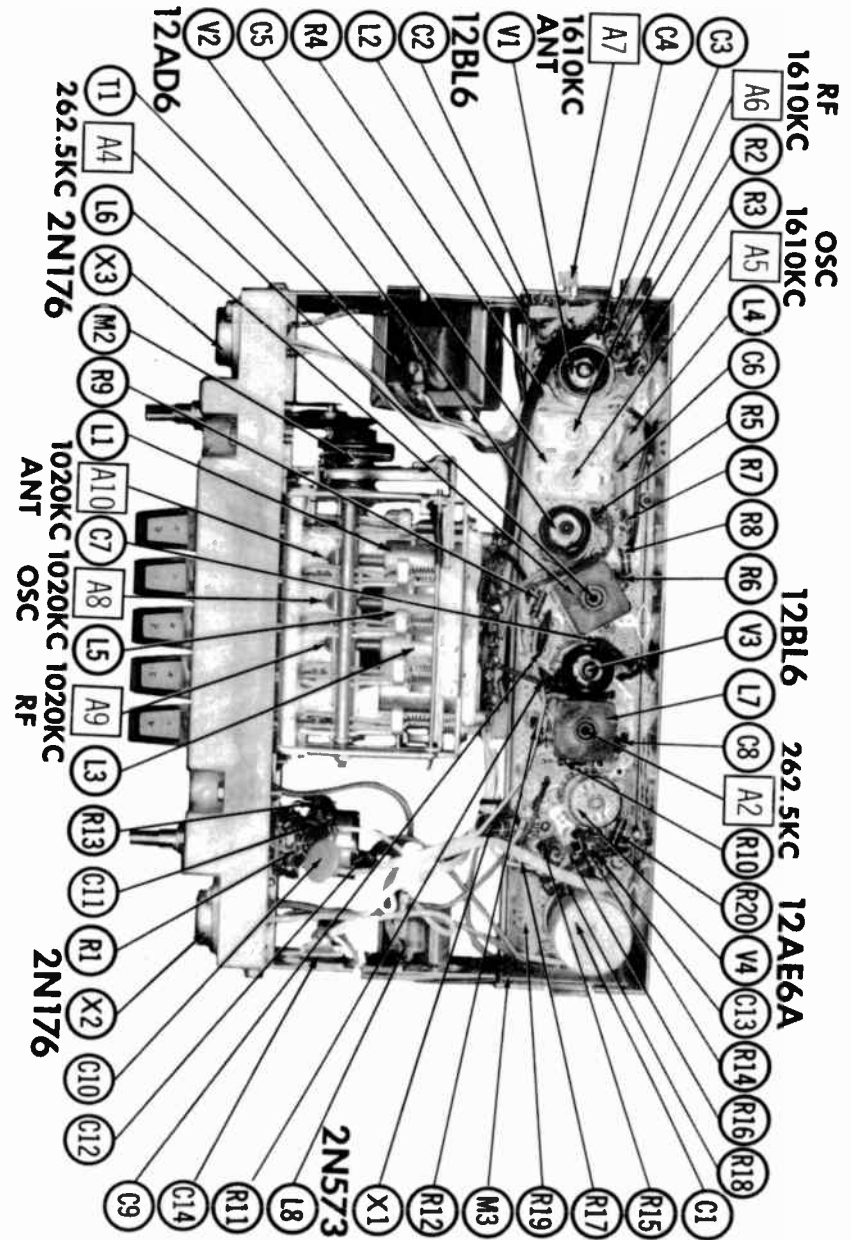
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Scale	34C562544	Tuning, Volume Tone, Dummy
Dial Pointer	1B662710	
Knob	1A563869	
Knob	3K564823	
Pushbutton	38K564822	

## WIRING DATA

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

## CHASSIS—TOP VIEW





PHOTOFACT® Folder



**AUTOMATIC MODEL  
ATC-60**



TRADE NAME Automatic Model ATC-60 (For 1959-1960 Chevrolets)  
 MANUFACTURER Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston 15, Mass.  
 TYPE SET Battery Operated Custom Built Transistorized Automobile AM Receiver  
 POWER SUPPLY 12 Volt Storage Battery (Negative Ground) RATING .6 Amp. @12.6 Volts DC  
 TUNING RANGE—BROADCAST 538 - 1610KC

## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

Suggested Alignment Tools: A1 Thru A4... GENERAL CEMENT #5097, 8727  
 WALSCO #2515

A5, A6..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089  
 WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mf to Base of Converter transistor. Low side to chassis.	285KC (400% Mod.)	High end stop.	Across voice coll.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1610KC	"	"	A5	"
3.	Thru dummy (Fig. 1) to antenna receptacle.	"	"	"	A6, A7	Adjust for maximum output.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.					

### PUSHBUTTON ADJUSTMENT

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

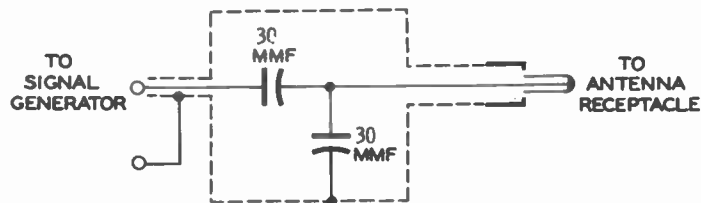


FIG. 1

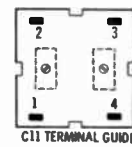
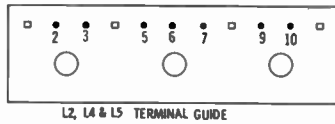
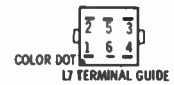
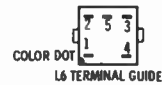
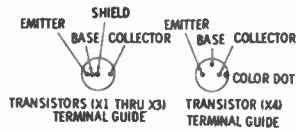
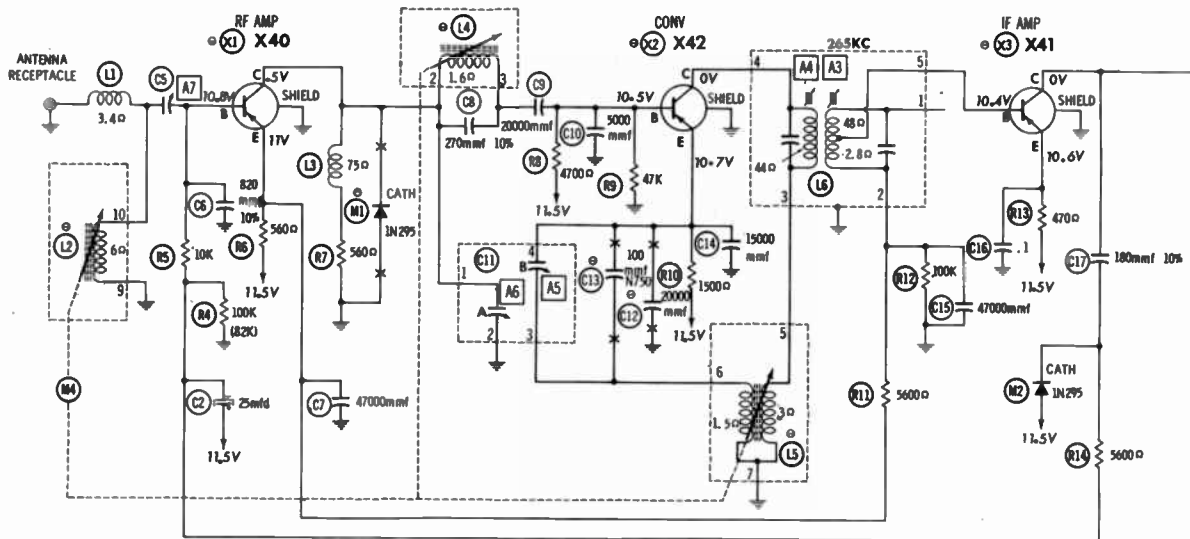
**HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana**



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KL358

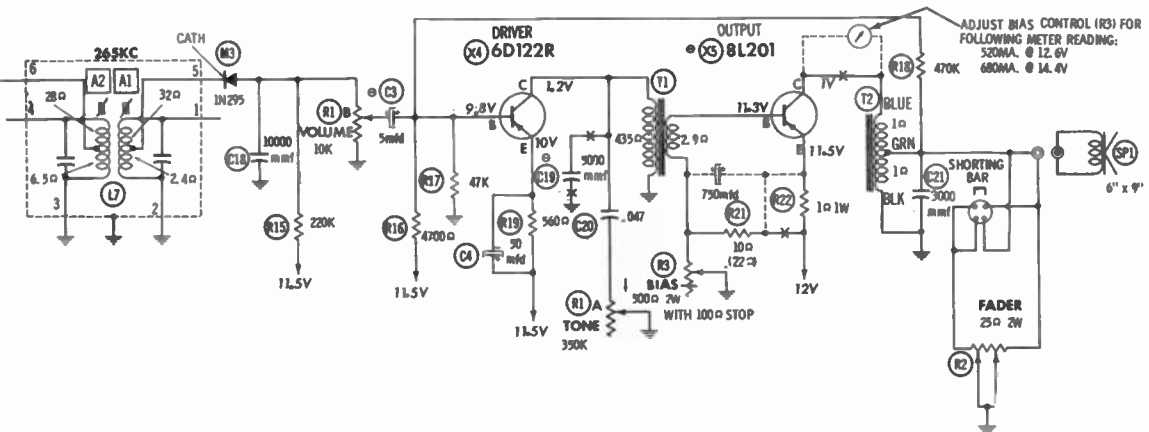
the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

AUTOMATIC MODEL  
ATC-60



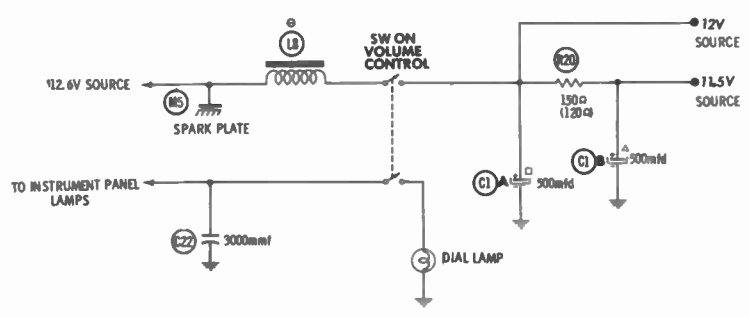
RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

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.

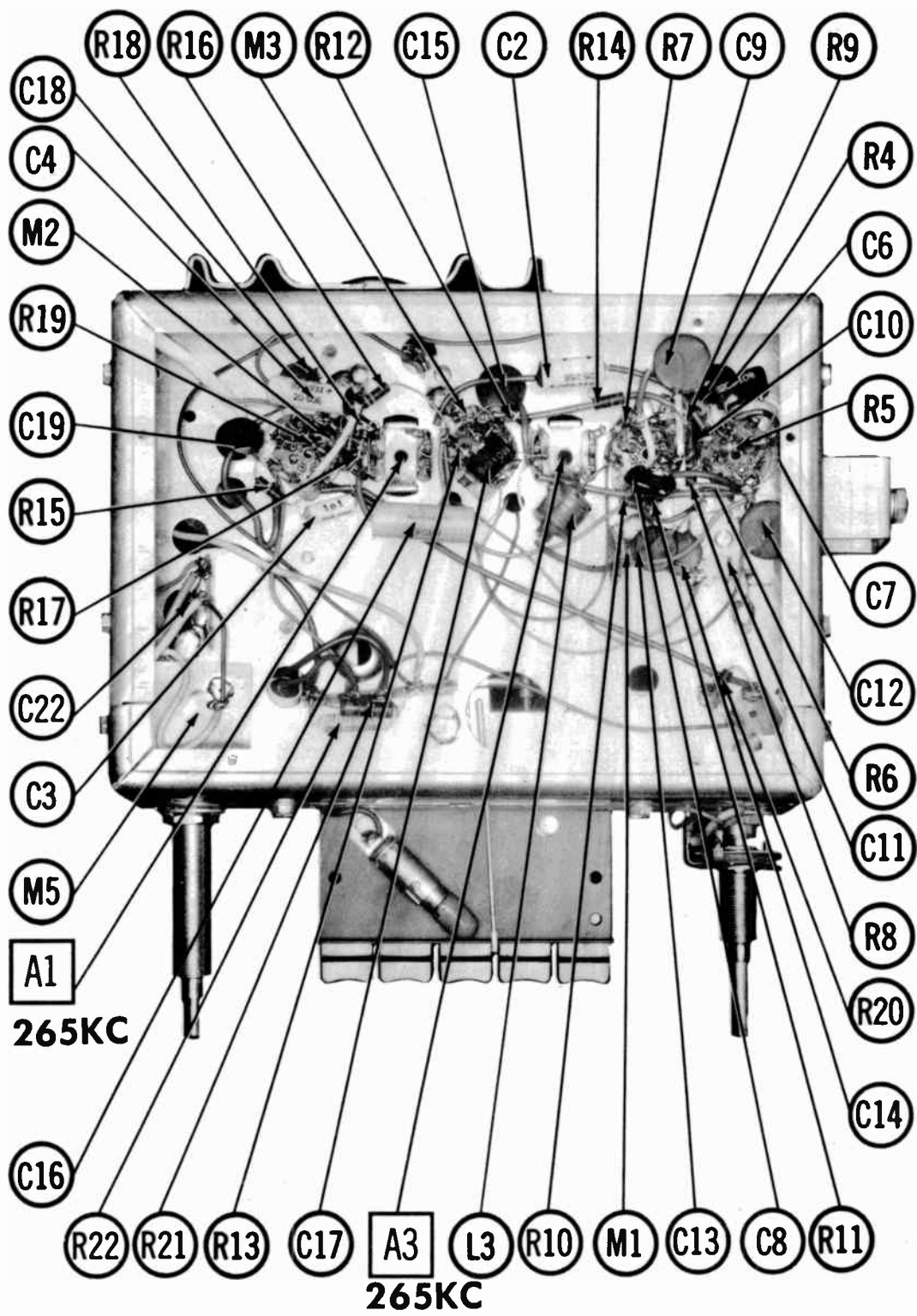


● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION  
 DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM  
 ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

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



**AUTOMATIC MODEL  
 ATC-60**



CHASSIS-BOTTOM VIEW

## PARTS LIST AND DESCRIPTIONS

### WIRING DATA

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

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	X40 ①	RF Amplifier				PNP
X2	X42 ②	Converter				PNP
X3	X41 ③	IF Amplifier				PNP
X4	6D122R	Driver		2N362		PNP
X5	8L201	Output				PNP Note 1

Note 1. When replacing, apply silicon grease General Cement Part #8101 or equivalent between transistor and chassis. Tighten mounting screws securely and check bias adjustment.

① Alternate Type 2N640. ② Alternate Type 2N642. ③ Alternate Type 2N641.

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	500	15	20-317	AFH3-00-95	B0040	WP200.6	ML25-15	TE-1157.1	①
B	500	15							
C2	25	15	25-256	PTT15025	NLW25-15	TC26	ML25-15	TE-1157.1	
C3	5	15	20-505	PTT15005	NLW5-15	TT25X5	ML5-15	TE-1152	
C4	50	15	20-506	PTT25050	NLW50-15	TT15X50	ML50-15	TE-1160	

① Some versions may use 10mfd@15V in this application.

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

### FIXED CAPACITORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5		#28-800L	1469-00082		5R5T82	CM-19B-820K	MCB251	MS-382
C6	820 10%		BPD-05	DD-503	CUB2647	4DP-3-473	GP150	5HK-850
C7	47000		1469-00037	TCZ-270	5R5T27	CM-19B-271K	CNO-327	MS-327
C8	270 10%		BPD-02	DD-203	BYB682	CCD-203	B-120	5HK-820
C9	20000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C10	5000	#28A1332						
C11A								
B								
C12	20000	Note 1	BPD-02	DD-203	BYB682	CCD-203	B-120	5HK-820

### 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.
C13	100 N750	Note 1	N750-D1 100	DTN-100	C10T10	CCTN-101	CNT-310	10TCU-T10
C14	15000		BPD-015	DD-153	BYA10815	CCD-153	B-110	5HK-810
C15	47000		BPD-05	DD-503	CUB2647	4DP-3-473	GP150	5HK-850
C16	.1 300V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C17	180 10%		1469-00018	TCZ-180	22R5T18	CM-19B-181K	CNO-318	MS-318
C18	10000		BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-810
C19	5000	Note 1	BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C20	.047 200V		P288N-047	DD-503	CUB2647	4DP-3-473	GEM-4147	4TM-847
C21	3000		D1-3000	DD-302	BYA10D3	CCD-302	GP250	10TS-D30
C22	3000		D1-3000	DD-302	BYA10D3	CCD-302	GP250	10TS-D30

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

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AUTOMATIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA	350K	1/2	80A1330	F1-39	R2-23	KR-7	‡ QJ-1521A	Tone Volume Power Off-On
B	10K							
C	Switch							
D	Bushing							
R2	250	2(WW)	80A1086					Fader Bias
R3	5000	2(WW)	62-501		39-500-100	112-500-100	FL-6008	

‡ "CONCENTRIKIT" equivalent: K-8 Kit with base elements & shafts: B13-132, P14-214 (Panel)  
B11-116, R1-228 (Rear)  
78-2 (Switch)  
832 (Bushing)

### RESISTORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA			ITEM No.	RATING	REMARKS	REPLACEMENT DATA		
			IRC PART No.	WORKMAN TV PART No.					IRC PART No.	WORKMAN TV PART No.	
R4	100K	(82K) *				R14	56000				
R5	10K					R15	220K				
R6	5600					R16	47000				
R7	5600					R17	47K				
R8	47000					R18	470K				
R9	47K					R19	5600				
R10	15000					R20	1500			(1300) *	
R11	56000					R21	100			(220) *	
R12	100K					R22	10 1W				
R13	4700										

\* Alternate Value.

# PARTS LIST AND DESCRIPTIONS (Continued)

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		AUTOMATIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	RF Choke (6.2uh)	①	BC-565	4610	RTC-8520	① IRC Part #CL-1 ② Part of M4
L2	Ant.	②				
L3	RF Choke (10MH)		BC-553	4672	RTC-8534	
L4	RF	③				
L5	Osc.	④				
L6	Input IF	14-270				
L7	Output IF	14-271				

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 Hz)	AUTOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L8	.6A	.9Ω	.009 HY	75A601 ①					① Alternate Part # 75A6001

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	13	1	75A1303					

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	20Ω Tap @ 3-4Ω		75A1306					

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AUTOMATIC PART No.	QUAM PART No.	
SP1	6"x 9"	PM	3-4Ω	73B1063	69A3	

## SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		AUTOMATIC PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M1	1N295	Note 1		1N295	1N295	1st Detector-Overload (Pigtall) 2nd Detector (Pigtall) AVC (Pigtall)
M2	1N295			1N295	1N295	
M3	1N295			1N295	1N295	

Note 1. Not used in some versions.

## MISCELLANEOUS

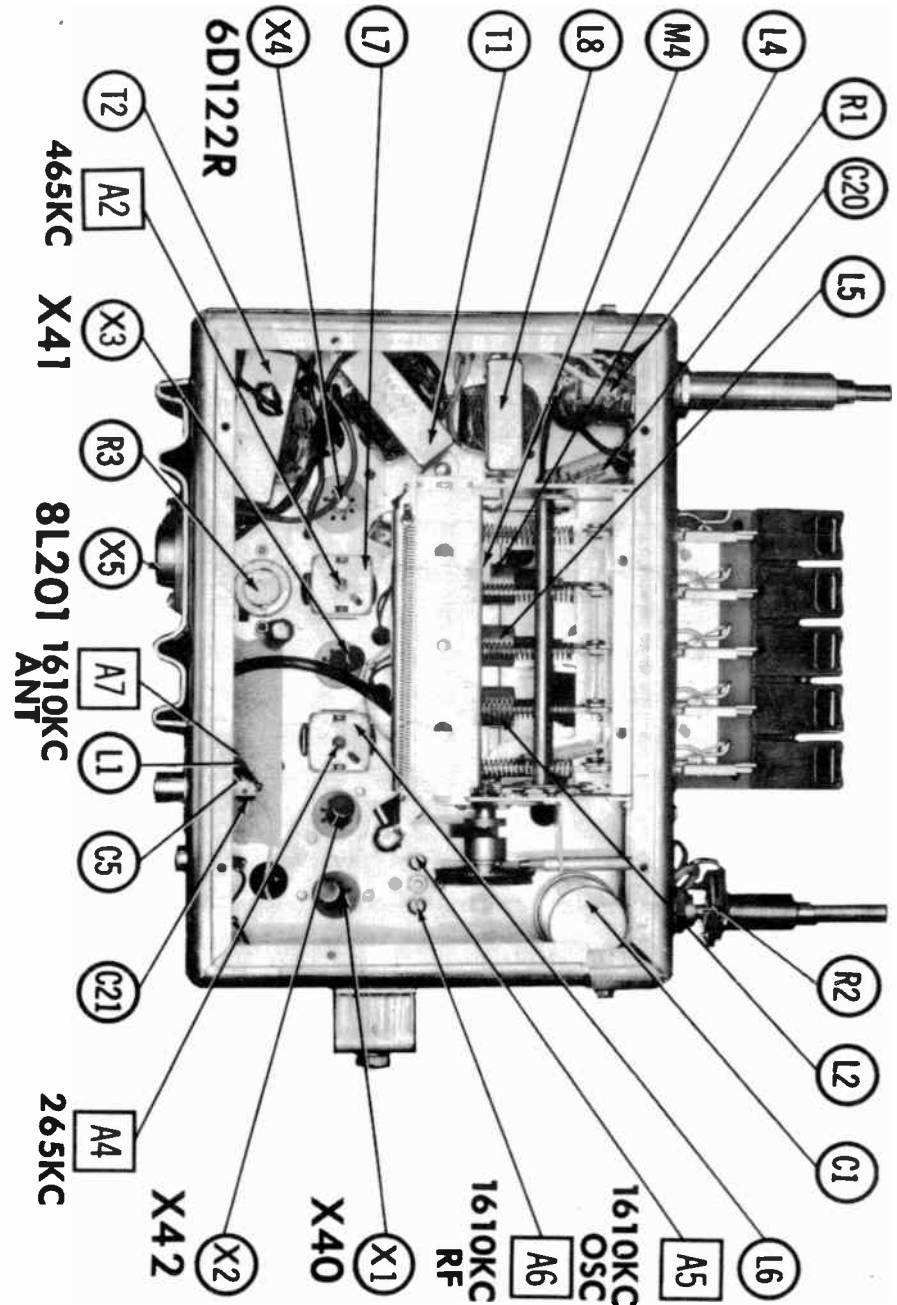
ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M4	Tuner Spark Plate	78B1331	
M5	Spark Plate	43-215	

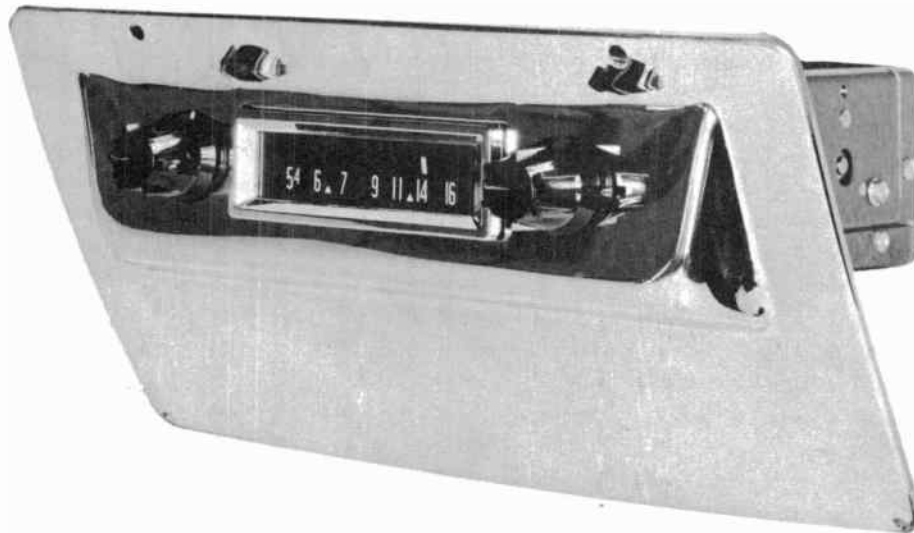
## CABINETS & CABINET PARTS

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

NAME	PART NO.	DESCRIPTION
Knob	48A1069	Tuning, Volume, Dummy
Knob	48A1063	Tone, Fader

# CHASSIS—TOP VIEW





**AUTOMATIC  
MODEL CEF-119**

**TRADE NAME** Automatic Model CEF-119 (For English Ford Consuls)  
**MANUFACTURER** Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston 15, Mass.  
**TYPE SET** Battery Operated Custom Built 4 Tube - 1 Transistor Automobile AM Receiver  
**POWER SUPPLY** 12 Volt Storage Battery (Positive Ground) **RATING** 1.6 Amp. @12.6 Volts DC  
**TUNING RANGE—BROADCAST** 538 - 1610KC

## ALIGNMENT INSTRUCTIONS

### ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

**Suggested Alignment Tools:** A1 Thru A4. . GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440  
 WALSCO #2526, 2543, 2544, 2545  
 A5, A6, A7. . GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089  
 WALSCO #2512, 2525, 2528

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. High side thru .1mf to pin 7 (grid) of Converter. Low side to chassis.	265KC (400v Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2. "	1610KC	"	"	A5	"
3. Thru dummy (Fig. 1) to antenna receptacle.	"	"	"	A6, A7	"
4. With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.					

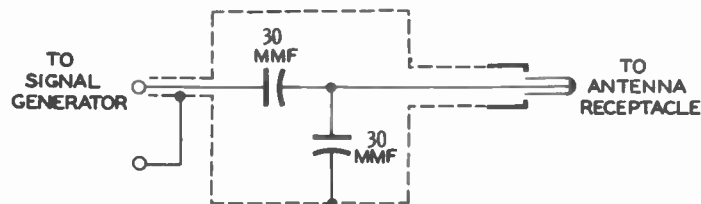


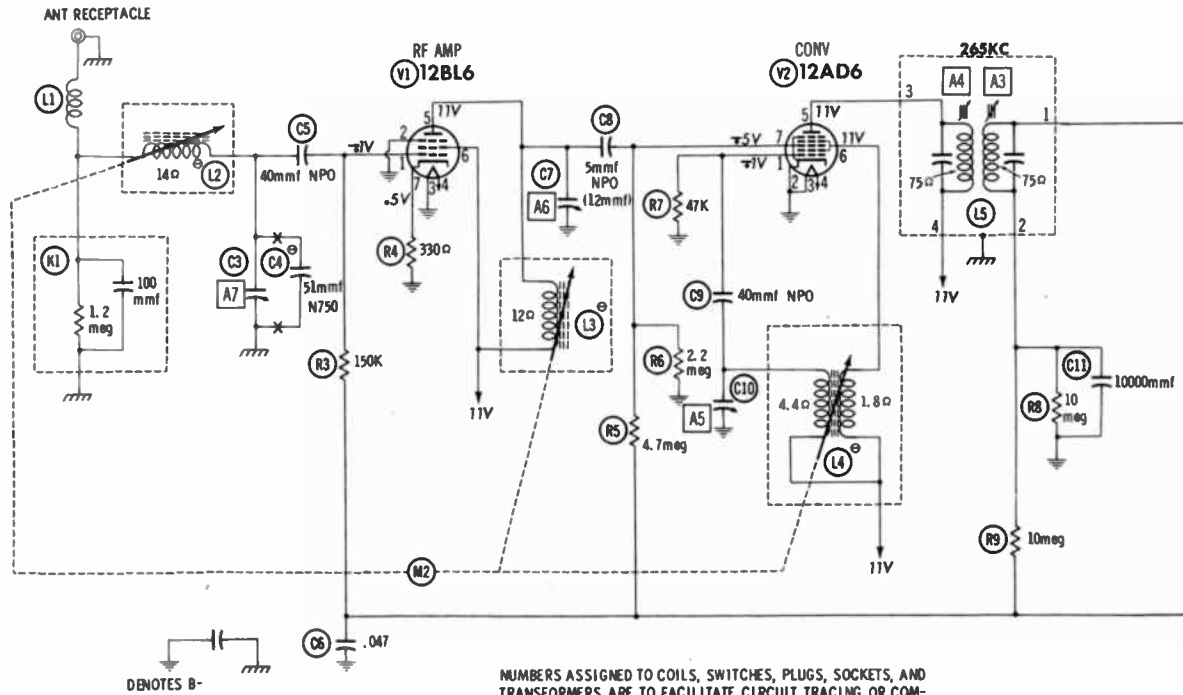
FIG. 1

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



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD360

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



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.

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

#### RESISTANCE READINGS

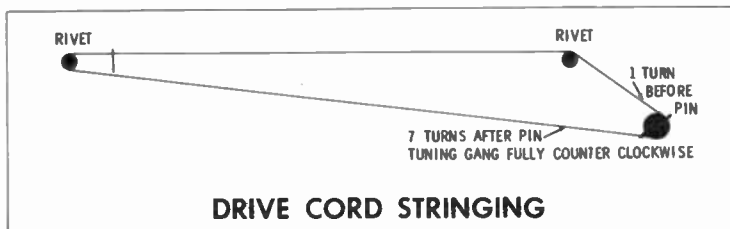
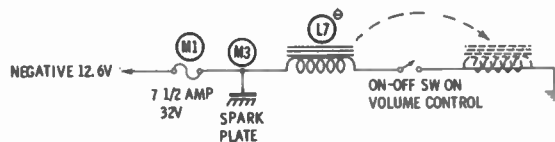
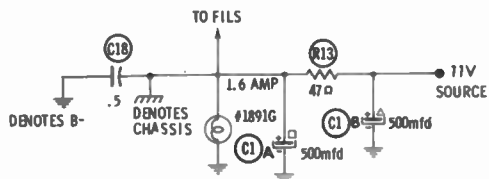
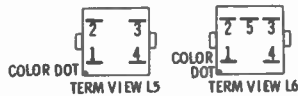
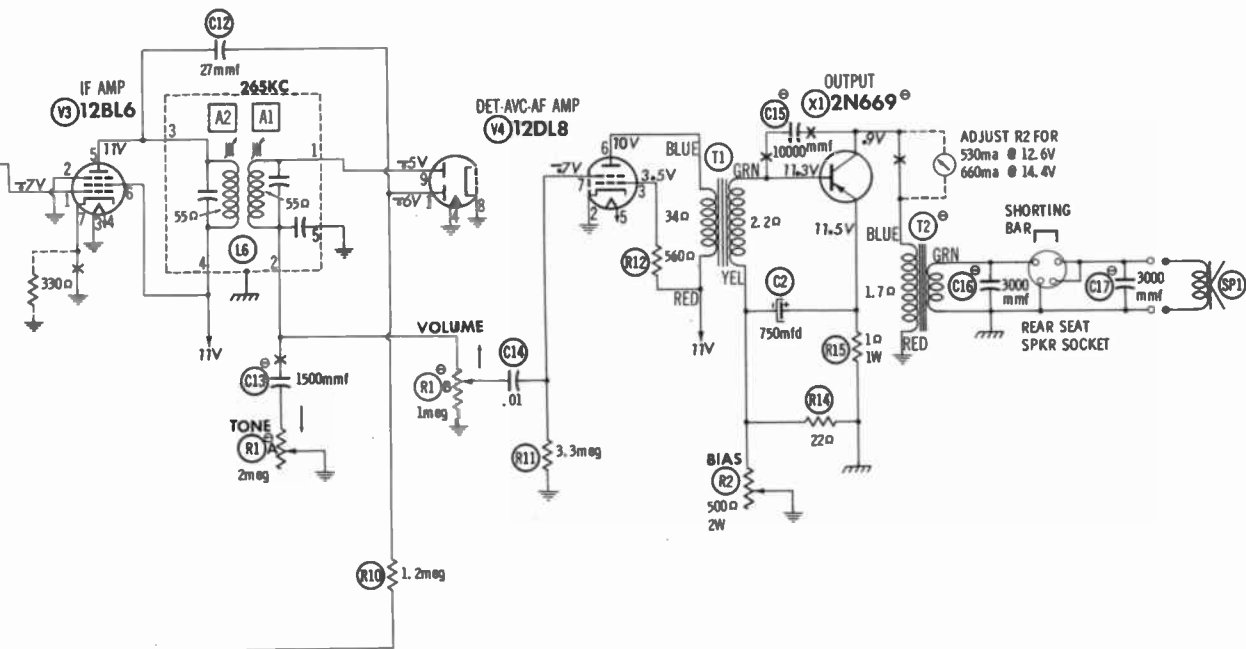
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	6 meg	0Ω	0Ω	2Ω	60Ω	50Ω	330Ω		
V2	12AD6	47K	0Ω	0Ω	2Ω	120Ω	50Ω	2 meg		
V3	12BL6	6.8 meg	0Ω	0Ω	2Ω	100Ω	50Ω	0Ω		
V4	12DL8	7 meg	0Ω	600Ω	0Ω	2Ω	80Ω	3.3 meg	0Ω	1 meg

⊗ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

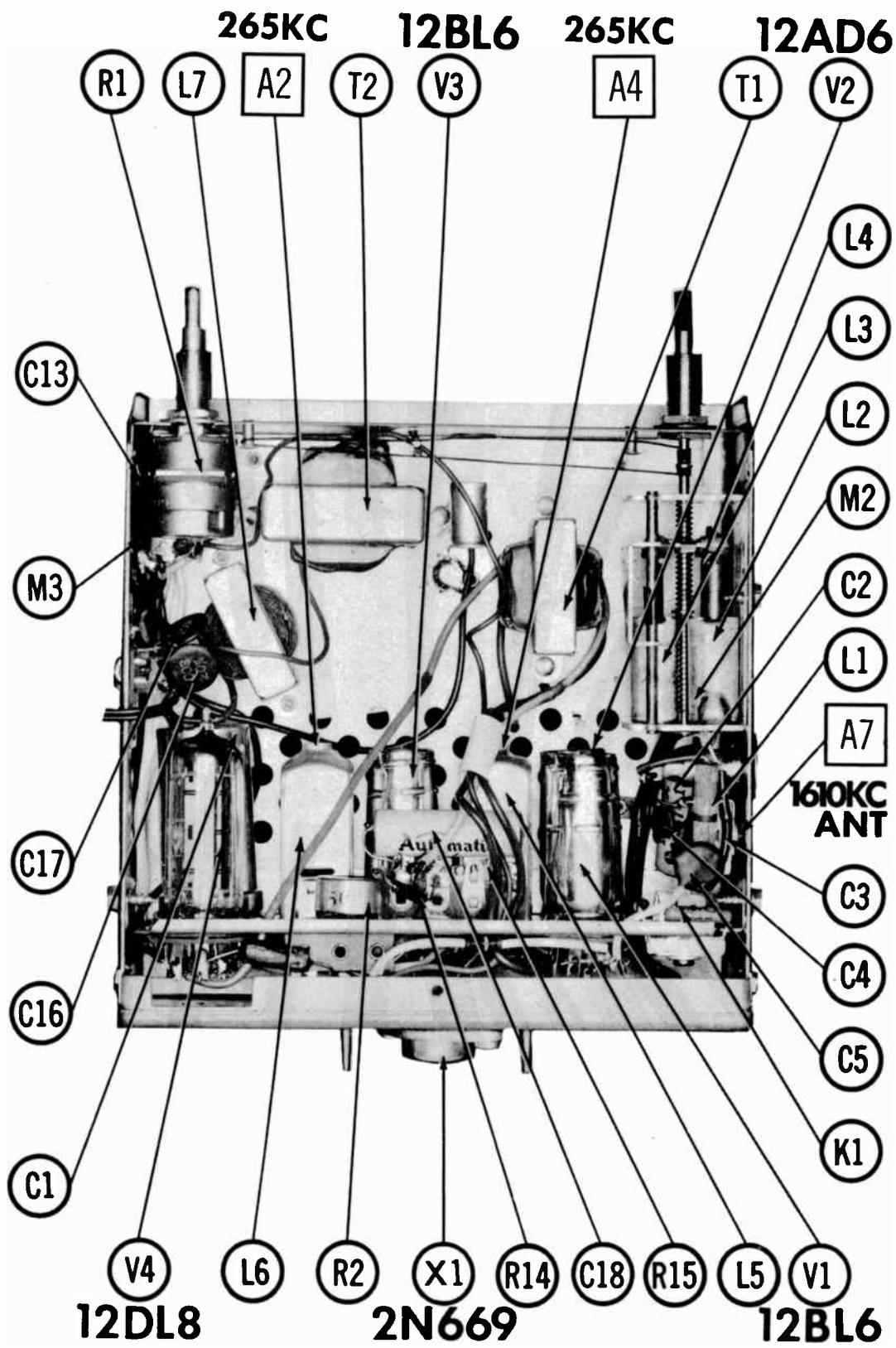
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

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





**AUTOMATIC  
MODEL CEF-119**



CHASSIS TOP VIEW

# PARTS LIST AND DESCRIPTIONS

## TUBES

GENERAL ELECTRIC			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
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N889 *	Output				PNP Note 1

\* Alternate Type 4347 or equivalent.

Note 1. When replacing, apply silicone grease (General Cement Part #8101 or equivalent) between transistor and chassis. Tighten mounting screws securely and check bias adjustment.

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
CLA	500	15	20-317	AFH3-00-95	B0045	WP200.6		TVLB-2157 *	
B	500	15							
C2	750	3	20-767	SRE3V500	BR1000-6	PETA190	TD-1000-6	TVAS-1097 *	

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

## FIXED CAPACITORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	51 N750	#28-800-2 Note 1		TCN-51	C10Q51U	CCTO-390	CNO-439	10TCC-Q39
C4	40 NPO		NPO-DI 39	TCZ-39	C10Q39C	4DP-3-473	GEM-4147	2TM-547
C5	.047 200V		P288N-047	DD-503	CUB2847			
C7		#28-400-2 (12) †						
C8	5 NPO		NPO-DI 5	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C9	40 NPO		NPO-DI 39	TCZ-39	C10Q39C	CCTO-390		10TCC-Q39
C10		#28-461						
C11	10000		BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-810
C12	27		DI-27	DD-270	L10Q27	CCD-270	GP427	10TS-Q27
C13	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C14	.01 200V	Note 1	P288N-01	D6-103	CUB481	4DP-1-103	GEM-411	4TM-810
C15	10000	Note 1	BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-810
C16	3000	Note 2	DI-3000	DD-302	BYA10D3	CCD-302	GP230	10TS-D30

## 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.
C17	3000	Note 2	D1-3000	DD-302	BYA10D3	CCD-302	GP230	10TS-D30
C18	.5 100V		P288N-5		CUB2P5	10P-5-504	GEM-305	2TM-P5

‡ Automatic Part Number.  
† Alternate Value.

Note 1. Not used in some versions.  
Note 2. C18 and C17 may be a dual unit in some versions.

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AUTOMATIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA	2meg	‡	80A1310					Tone Note 1 Volume Note 1 Power Off-On Bias
B	1meg	‡						
C	Switch							
R2	500Ω	2(W/W)	62-503			110-600 *	PFL-600 *	

Note 1. Some versions may use 1meg Volume with switch (Part #80A1240).  
\* Use 100Ω Resistor in series with terminal.

## RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	150K				R10	1.2meg			
R4	330Ω				R11	3.3meg			
R5	4.7meg				R12	560Ω			
R6	2.2meg				R13	47Ω			
R7	47K				R14	22Ω			
R8	10meg				R15	1Ω 1W			
R9	10meg								

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		AUTOMATIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	RF Choke(6.2uh)		BC-565	4610	RTC-8520	① IRC Part #CL-1 ② Part of M2
L2	Ant.					
L3	RF					
L4	Osc.					
L5	Input IF	14-268X	BC-350	12-H1	RTC-8638	
L6	Output IF	14-269X	BC-354	12-H6	RTC-8640	

# PARTS LIST AND DESCRIPTIONS (Continued)

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (D CURRENT 1000 C)	AUTOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L7	1.8A	.5Ω	.0014 HY	75A1269 ①					① Alternate Part # 75A801.

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5.5	1	75A1264					

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	16Ω	3-4Ω	75A1272 ①					① Alternate Part # 75A1270

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AUTOMATIC PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	73A1275	5A07R	

## COMPONENT COMBINATIONS

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

## FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AUTOMATIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	8FE	7½A 32V			30707.5 (7½A 32V 8FE)	155009	8FE 7½	HDH

## MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M2	Tuner	78A1232	
M3	Spark Plate		

## CABINETS & CABINET PARTS

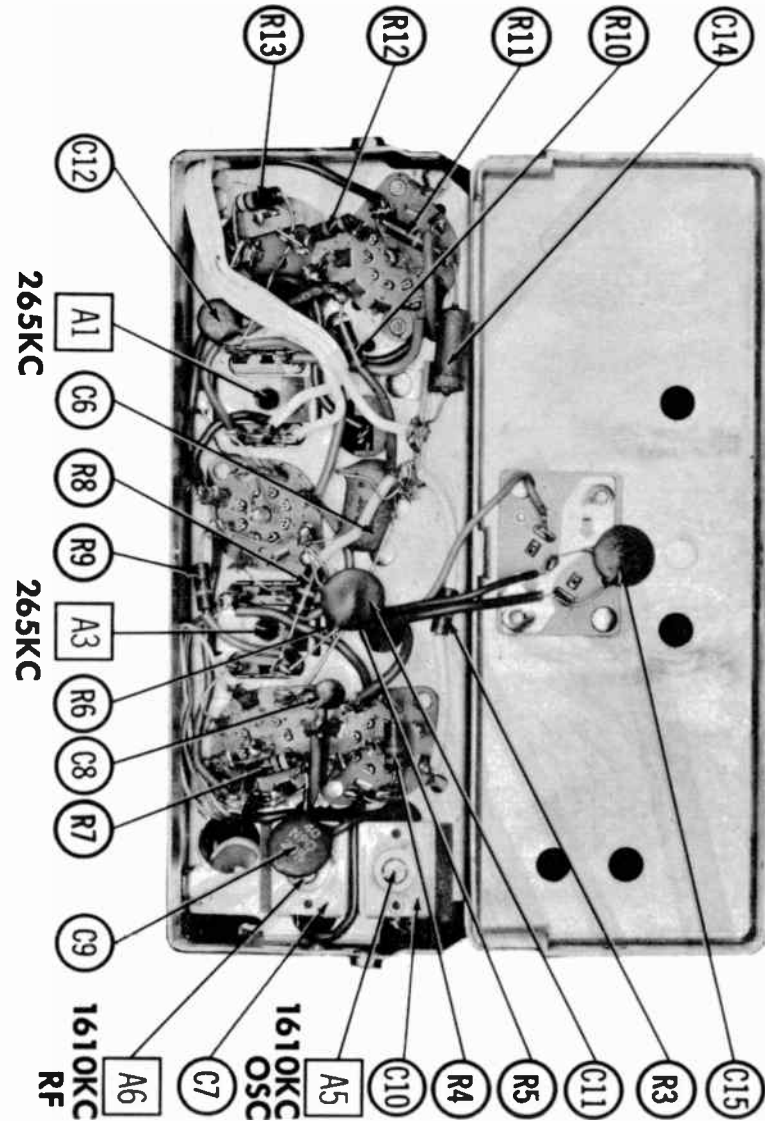
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

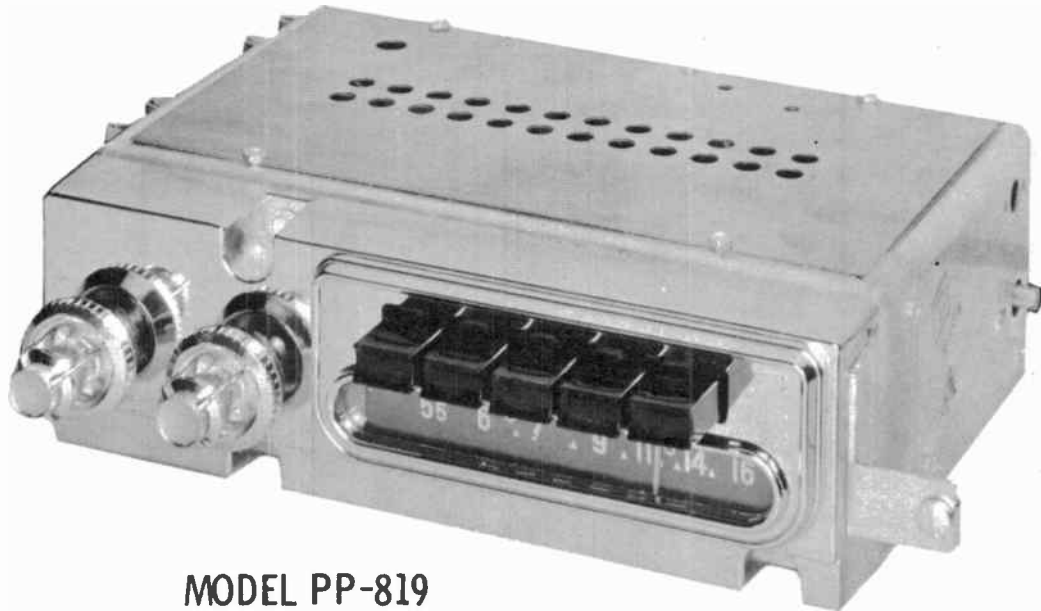
NAME	PART NO.	DESCRIPTION
Knob	47A1235	Tuning, Volume
Knob	47A1249	Dummy

## WIRING DATA

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

## CHASSIS-END VIEW





**MODEL PP-819**

**AUTOMATIC MODELS  
PAP-69, PP-819**

TRADE NAME Automatic Models PAP-69, PP-819 (For 1959 Plymouth Automobiles)  
 MANUFACTURER Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston 15, Mass.  
 TYPE SET Battery Operated 4 Tube, 2 Transistor Custom Built Automobile AM Receiver  
 POWER SUPPLY 12 Volt Storage Battery  
 TUNING RANGE—BROADCAST 538 — 1610KC RATING 1.5 Amp. @12.6 Volts DC

**ALIGNMENT INSTRUCTIONS**

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

Suggested alignment tools: A1 thru A4...GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440  
 WALSCO #2526, 2543, 2544, 2545  
 A5, A6.....GENERAL CEMENT #5000, 5003, 8276, 8290  
 WALSCO #2512, 2515, 2522, 2523, 2525, 2537

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. High side thru .1mf to pin 7 (grid) of Converter. Low side to chassis.	265KC (400v Mod.)	High end stop.	Across voice coll.	A1, A2, A3, A4	Adjust for maximum output.
2. "	1610KC	"	"	A5	"
3. Antenna receptacle thru dummy (Fig. 1).	"	"	"	A6, A7	"
4. With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

**PUSHBUTTON ADJUSTMENT**

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

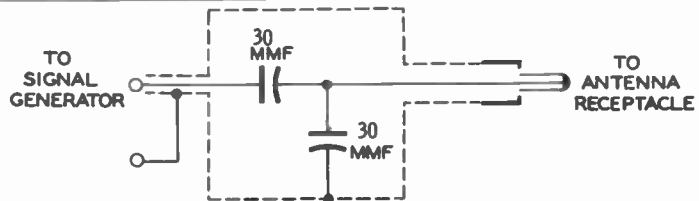


FIG. 1

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



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JD838

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

# PARTS LIST AND DESCRIPTIONS WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8524 (Stranded) Available in Ten Colors
Bonding Strap .....	Use BELDEN No. 8685
	Use BELDEN No. 8661

## TUBES

CBS		GENERAL ELECTRIC		RAYTHEON		SYLVANIA	
ITEM No.	USE	TYPE		ITEM No.	USE	TYPE	
V1	RF Amplifier	12BL6 (12AF6)*		V3	IF Amplifier	12BL6 (12AF6)*	
V2	Converter	12AD6		V4	Det. -AVC-AF Amp.	12AE6 (12FT6)*	

\* Alternate

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N363	Driver		2N406	2N363	2N406	PNP
X2	CT1124	Output	2N36B			2N242	PNP

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		AUTOMATIC PART No.	REPLACEMENT DATA				NOTES
	CAP.	VOLT.		AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	
C1	750	3	20-757	SRE3V500	BR1000-6	PETA190	TD-1000-6	TVAS-1097*
C2A	500	15	20-317	AFH3-00-95		WP200.6		TVLS-2157*
C2B	500	15						

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

## FIXED CAPACITORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCOR PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	40 NPO	#28-800K	NPO-DI 39	TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C4	12		DI-12	DD-120	L10Q12	CCD-120	GP412	10T8-Q12
C8A	40	#28-4046	NPO-DI 39	TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C8B								
C7	100 N750	(3000) †	N750-DI 100	DTN-100	C10TIU	CCTN-101	CNT-310	10TCU-T10
C8	27		DI-27	DD-270	L10Q27	CCD-270	GP427	10T8-Q27
C9	3000	(10000) †	BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	3000	Note 1	BPD-003	DD-302	BYA10D3	CCD-302	B-230	5HK-D30
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	3000		BPD-003	DD-302	BYA10D3	CCD-302	B-230	5HK-D30

† Automatic Part Number.

† Alternate Value.

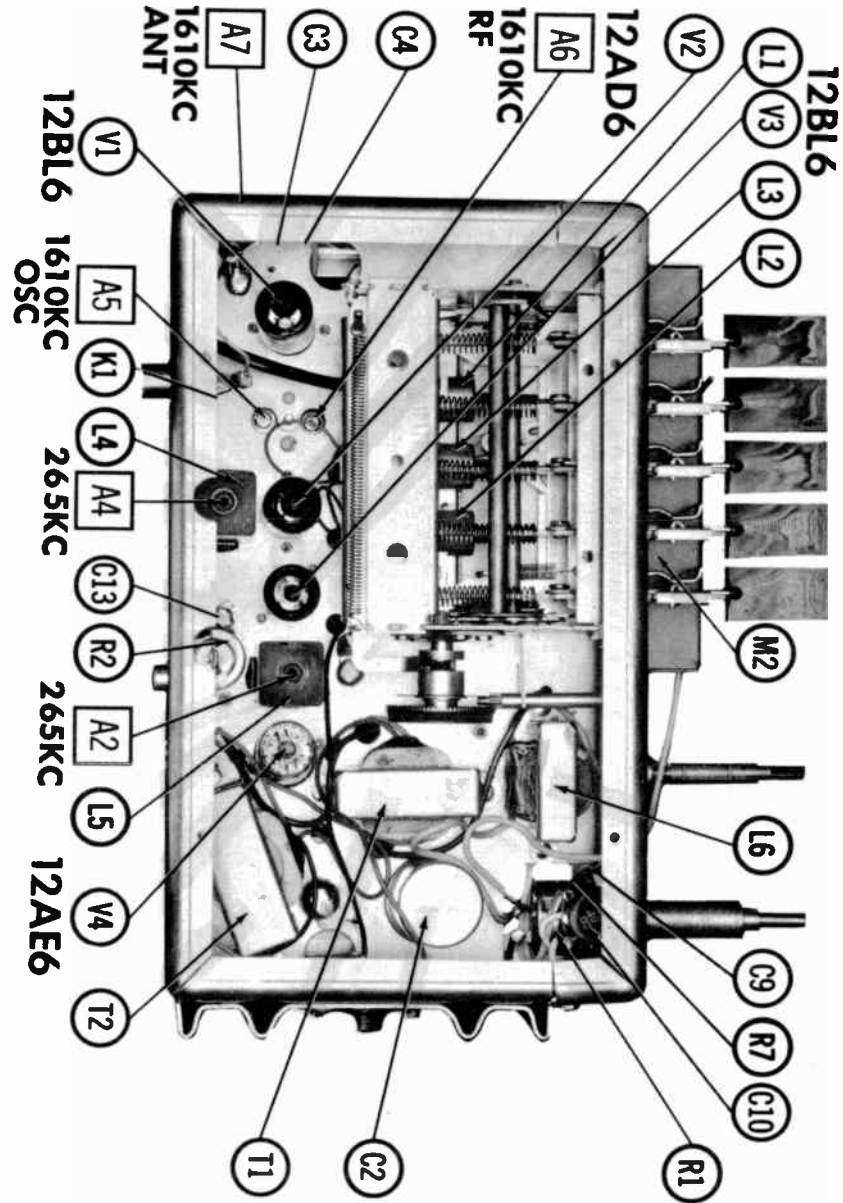
Note 1. Not used in some versions.

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AUTOMATIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA	2meg	1/2	80A1020	F1-68	RTV-689C	† QJ-1131A		Tone Volume
B	1meg		R2-60					
C	Bushing	2(W/W)	62-501	AK-28	XB-1	112-500-100	FL-600S	Power Off-On Bias
D	Switch		KR-4					
R2	500Ω				39-500-100			

† "Concentrikit" equivalent: K-8 Kit with base elements & shafts:  
 B13-139, P14-121 (Panel)  
 B19-137X, R1-205 (Rear)  
 S24 (Bushings)  
 76-1 (Switch)

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS

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

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R3	1meg	Note 1	R8	120Ω		R13	1Ω 1W	(330Ω) *
R4	47K		R9	2.2meg		R14	22Ω	
R5	150Ω		R10	6800Ω		R15	470K	
R6	47K		R11	10K		R16	150Ω	
R7	100K			R12	220Ω			

\* Alternate Value.

Note 1. Not used in some versions.

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		AUTOMATIC PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil	†						† Part of M2
L2	RF Coil	†						
L3	Osc. Coil	†						
L4	1st IF Trans.	14-265X	16-6752	16-6752	BC-350	12-H1	RF-3	
L5	2nd IF Trans.	14-267X	16-6754	16-6754	BC-354	12-H6		

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 Hz)	AUTOMATIC PART No.	Haldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L6	1.35A	.7Ω	.008 HY	75A601						

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Haldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	13	1	75A1303						

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Haldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	
T2	20Ω	3-4Ω	75A1306						

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AUTOMATIC PART No.	QUAM PART No.	
SP1	5"x 7"	PM	3-4Ω	73-656	57A15	

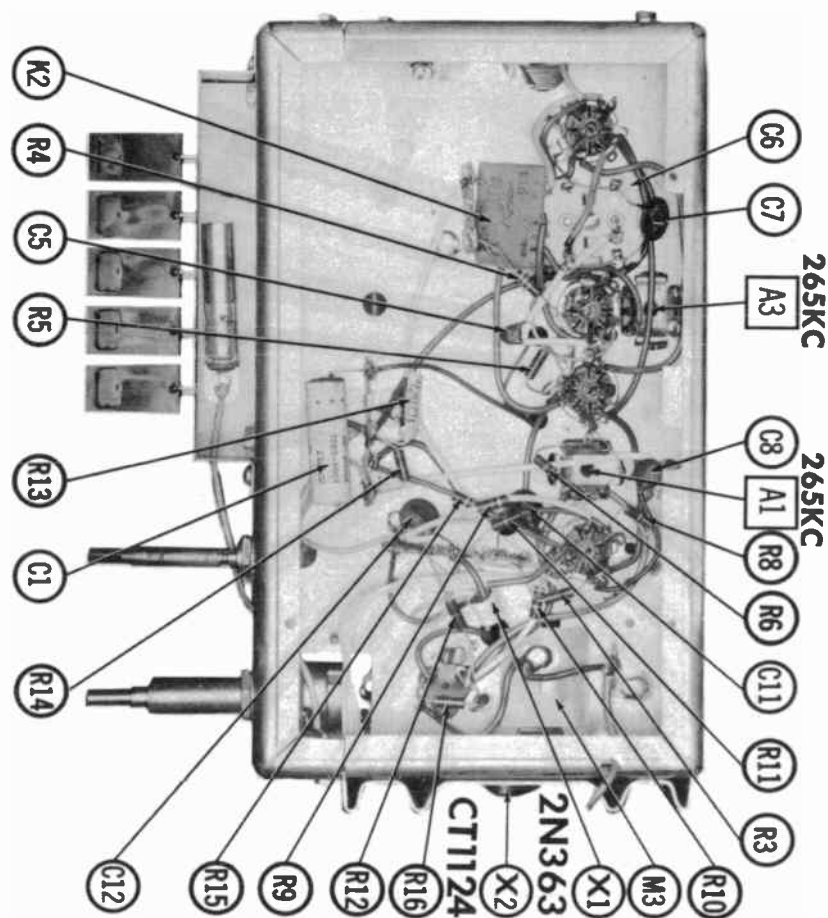
## COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AUTOMATIC PART No.	REPLACEMENT DATA
K1	Antenna Filter	100mmf, 1.2meg	89-4204	Sprague PRC-9
K2	RF, Conv. & IF Coupling	3000mmf, 5000mmf, .047mfd, 1500Ω, 150K, 2.2meg, 4.7meg, 10meg, 10meg	89-591	Sprague DT-14

## FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AUTOMATIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	8FE	7½A 32V			30707.5	155009	8FE 7½	HHH

# CHASSIS—BOTTOM VIEW



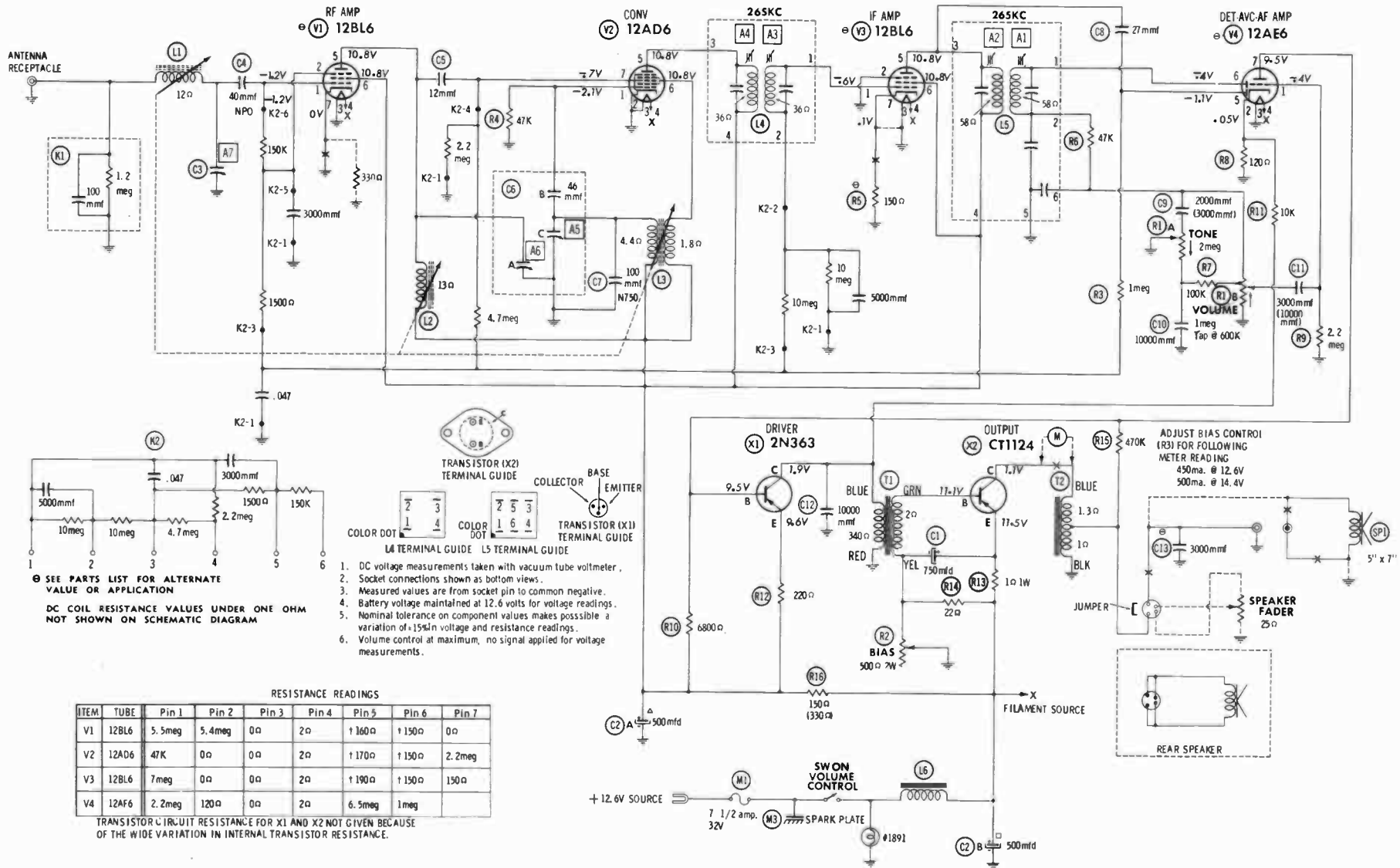
## MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M2	Tuner	78B1017 (or) 78B1028	Complete
M3	Spark Plate		

## CABINETS & CABINET PARTS

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

NAME	PART NO.	DESCRIPTION
Knob	48A1013	Tuning, Volume
Knob	48A1012	Tone, Dummy



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

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

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BL6	5.5meg	5.4meg	0Ω	2Ω	†160Ω	†150Ω	0Ω
V2	12AD6	47K	0Ω	0Ω	2Ω	†170Ω	†150Ω	2.2meg
V3	12BL6	7meg	0Ω	0Ω	2Ω	†190Ω	†150Ω	150Ω
V4	12AE6	2.2meg	120Ω	0Ω	2Ω	6.5meg	1meg	

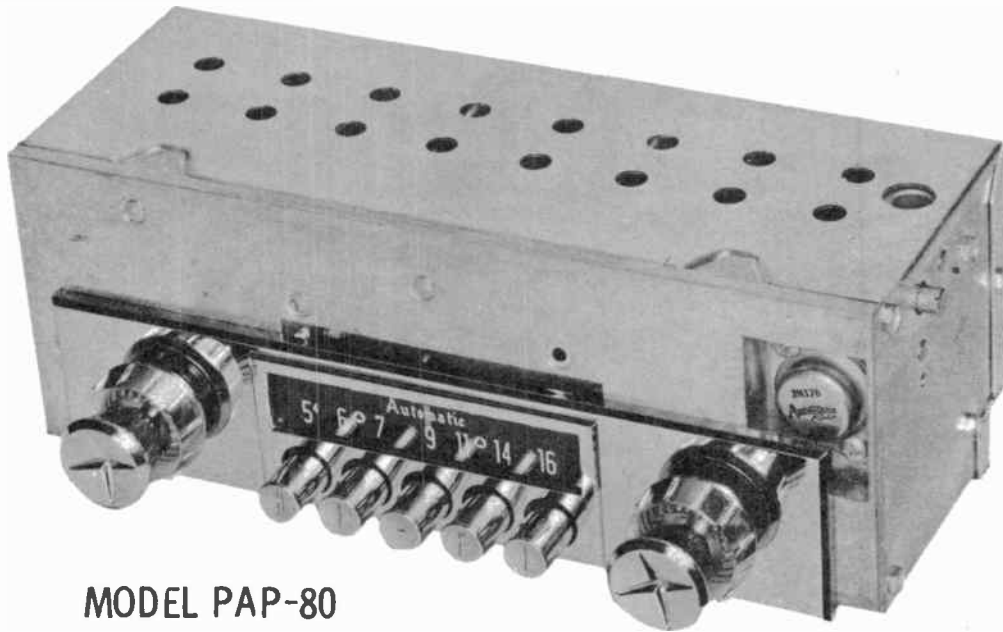
TRANSISTOR CIRCUIT RESISTANCE FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
© Howard W. Sims & Co., Inc. 1960

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.

AUTOMATIC MODELS  
PAP-69, PP-819





**MODEL PAP-80**

**AUTOMATIC MODELS PAP-80,  
PP-330, VPA-280, VTP-440**

TRADE NAME Automatic Models PAP-80, PP-330(For 1960 Plymouths);VPA-280, VTP-440 (For 1960 Valliants)  
 MANUFACTURER Automatic Radio Mfg.Co., Inc., 122 Brookline Ave., Boston 15, Mass.  
 TYPE SET Battery Operated 3 Tube - 2 Transistor Custom Built Automobile AM Receiver  
 POWER SUPPLY 12 Volt Storage Battery RATING 1.4 Amp. @12.6 Volts DC  
 TUNING RANGE—BROADCAST 538 - 1610KC

**ALIGNMENT INSTRUCTIONS**

**ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT**

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

Suggested Alignment Tools: A1 Thru A4... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440  
 WALSCO #2526, 2543, 2544, 2545  
 A5, A6.....GENERAL CEMENT #8721, 8722  
 WALSCO #2519

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. High side thru .1mf to pin 7 (grid) of Converter. Low side to chassis.	265KC (400 Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2. Thru dummy (Fig. 1) to antenna receptacle.	1610KC	"	"	A5, A6, A7	"
3. With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.					

**PUSHBUTTON ADJUSTMENT**

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

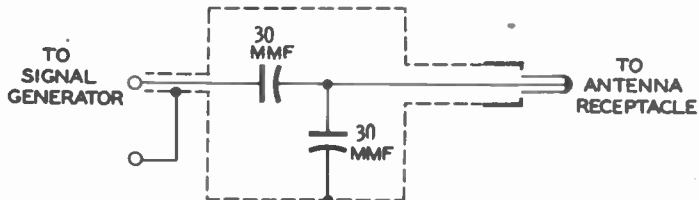


FIG.1

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



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KL315

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

# PARTS LIST AND DESCRIPTIONS

## WIRING DATA

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

## TUBES

GENERAL ELECTRIC			RAYTHEON			SYLVANIA		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12BL6	V3	IF Amp. -Det. -AVC-	12FR8			
V2	Converter	12AD6		AF Amp.				

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	6D122R	Driver		2N362		PNP Note 1
X2	2N176 *	Output			2N176	PNP Note 1

\* Some versions may use types 8L201C, 8YL1127 or equivalent.  
 Note 1. When replacing, apply silicone grease between transistor and chassis. Tighten mounting screws securely.

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	500	15	20-322	AFH3-00-95		WP300.85		TVLS-3026.8*	
B	400	15							
C	100	15							

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

## FIXED CAPACITORS

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

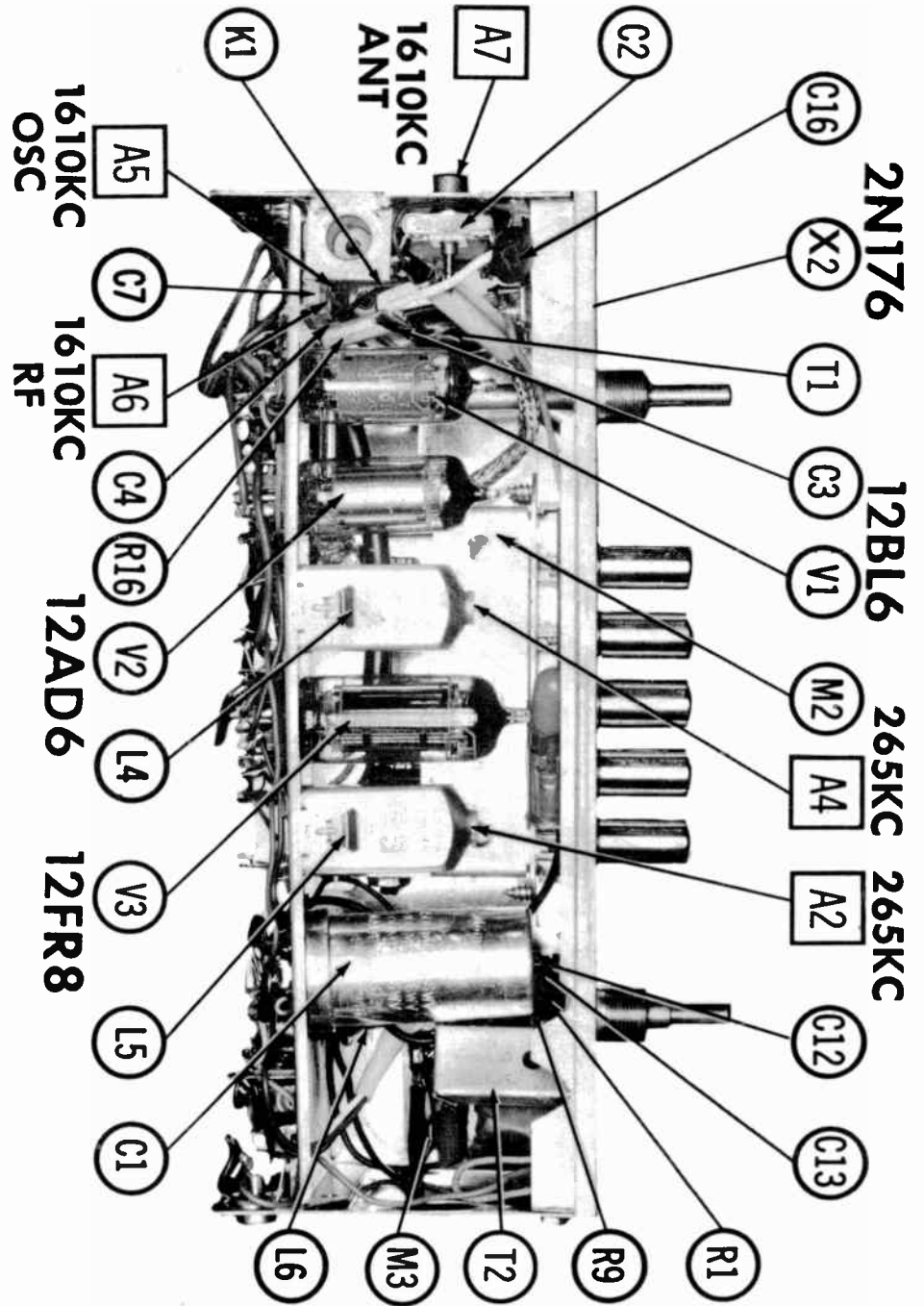
ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMenco PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	40	#28-800L	DI-39	DD-390	L10Q39	CCD-390	GP439	10TS-Q39
C3	40	#28-400-4	DI-5	DD-050	L10V5	CCD-050	GP550	10TS-V50
C4	5		DI-39	DD-390	L10Q39	CCD-390	GP439	10TS-Q39
C5	40	#28-431						
C6	100 N750		N750-D1 100	DTN-100	C10T1U	CCTN-100	CN7-310	10TCU-T10
C7	10000		BPD-01	DD-103	BYA1081	CCD-103	GP110	5HK-810
C8	100 N750		N750-D1 100	DTN-100	C10T1U	CCTN-100	CN7-310	10TCU-T10
C9	50000		BPD-05	DD-503			GP150	5HK-850
C10	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C11	10000		BPD-01	DD-103	BYA1081	CCD-103	GP110	5HK-810
C12	10000		BPD-01	DD-103	BYA1081	CCD-103	GP110	5HK-810
C13	10000		BPD-01	DD-103	BYA1081	CCD-103	GP110	5HK-810
C14	10000		BPD-01	DD-103	BYA1081	CCD-103	GP110	5HK-810
C15	10000		BPD-01	DD-103	BYA1081	CCD-103	GP110	5HK-810
C16	5000	Note 1	BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C17	3000		BPD-003	DD-302	BYA10D3	CCD-302	GP230	5GA-D30

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

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AUTOMATIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg		80A1540					Tone Volume
B	1meg							
C	200K Tap Switch							Switch

## CHASSIS—TOP VIEW



## PARTS LIST AND DESCRIPTIONS (Continued)

### RESISTORS (IRC or EQUIVALENT)

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

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R2	220K		R8	1.2meg		R14	10Ω 1W	
R3	4.7meg		R9	220K		R15	150Ω 1W	
R4	2.2meg		R10	2.2meg	(10meg) *	R16	1Ω 1W	
R5	47K		R11	1500Ω	(2200Ω) *	R17	150Ω	
R6	10meg		R12	220Ω				
R7	10meg		R13	470K	Note 1			

\* Alternate Value.  
Note 1. Not used in all models.

### COMPONENT COMBINATIONS

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

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		AUTOMATIC PART No.	Merit PART No.	Miller PART No.	Stoncor PART No.	
L1	Ant. Coil	Ⓛ				
L2	RF Coil	Ⓛ				
L3	Osc. Coil	Ⓛ				
L4	Input IF Trans.	14-272	BC-350	12-H1	RTC-8638	
L5	Output IF Trans.	14-273	BC-424		RTC-8640	

Ⓛ Part of Tuner Assembly M2.

### FILTER CHOKE

ITEM No.	RATINGS		REPLACEMENT DATA				NOTES	
	CURRENT (Measured)	DC RES.	AUTOMATIC PART No.	Merit PART No.	Stoncor PART No.	Thordorson PART No.		Triod PART No.
L6		.6Ω	.009 HY	75A6001				

### TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA				NOTES
			AUTOMATIC PART No.	Merit PART No.	Stoncor PART No.	Thordorson PART No.	
	PRI.	SEC.					
T1	7	1	75A1538 Ⓛ				Ⓛ Manual Tuners use Part #75A1436.

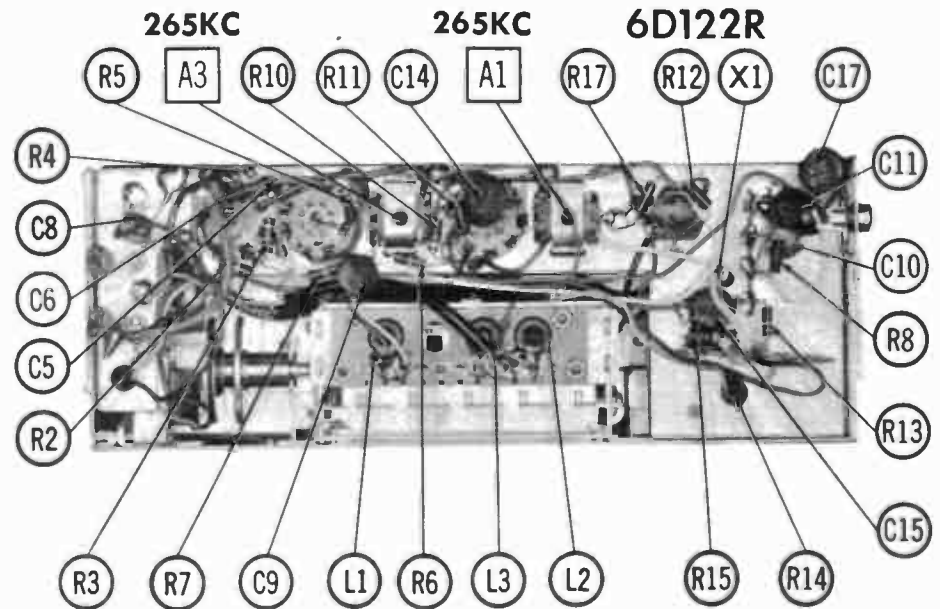
### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE			REPLACEMENT DATA				NOTES
	PRI.	SEC.		AUTOMATIC PART No.	Merit PART No.	Stoncor PART No.	Thordorson PART No.	
T2	12Ω Tap	3-4Ω		75A1539 Ⓛ				Ⓛ Manual Tuners Use Part #75A1437.

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
				AUTOMATIC PART No.	QUAM PART No.	
	SIZE	FIELD	V. C. IMP.			
SP1	4"x 8"	PM	3-4Ω	73B1170M *	48A2	* Used in Model VPA-280 † May be used in some versions of VPA-280 ‡ Used in Model PAP-80, PP-330 † May be used in some versions of PAP-80, PP-330
	6"x 9"	PM	3-4Ω	73A1545 †		
	6"x 9"	PM	3-4Ω	73-908 ‡		
	6"x 9"	PM	3-4Ω	73-905 †		

## CHASSIS—END VIEW



### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AUTOMATIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER		
M1	SFE	7½A 32V			30707.5 (SFE 7½A 32V)	155009	SFE 7½	HDB

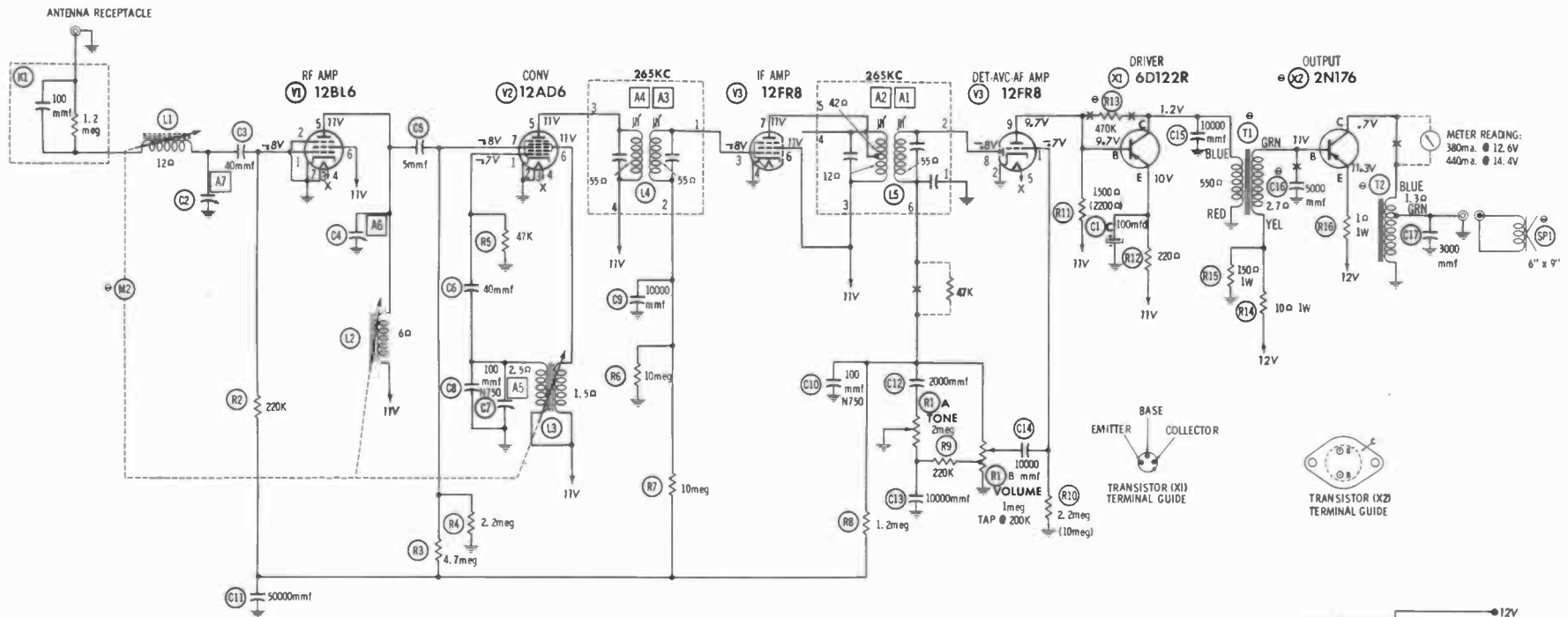
### MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M2	Tuner	78B1532	Pushbutton Type Manual Type
M3	Tuner Spark Plate	78A1641	

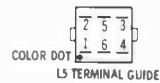
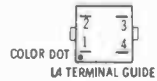
### CABINETS & CABINET PARTS

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

NAME	PART NO.	DESCRIPTION
Knob	48A1411	Tuning, Volume, Models PAP-80, PP-330
Knob	47-52	Tuning, Volume, Models VPA-280, VTP-440
Knob	48A1038	Tone, Models PAP-80, PP-330
Knob	48A393	Tone, Models VPA-280, VTP-440
Knob	48A1038-1	Dummy, Models PAP-80, PP-330
Knob	48A393-1	Dummy, Models VPA-280, VTP-440



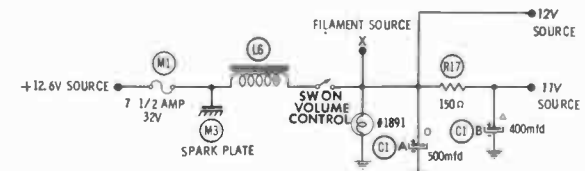
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION  
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	2meg	0Ω	2Ω	0Ω	155Ω	150Ω	0Ω		
V2	12AD6	47K	0Ω	0Ω	2Ω	205Ω	150Ω	1.8meg		
V3	12FR8	2.2meg	0Ω	6.3meg	2Ω	0Ω	150Ω	180Ω	1meg	1300Ω

TRANSISTOR CIRCUIT RESISTANCE FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

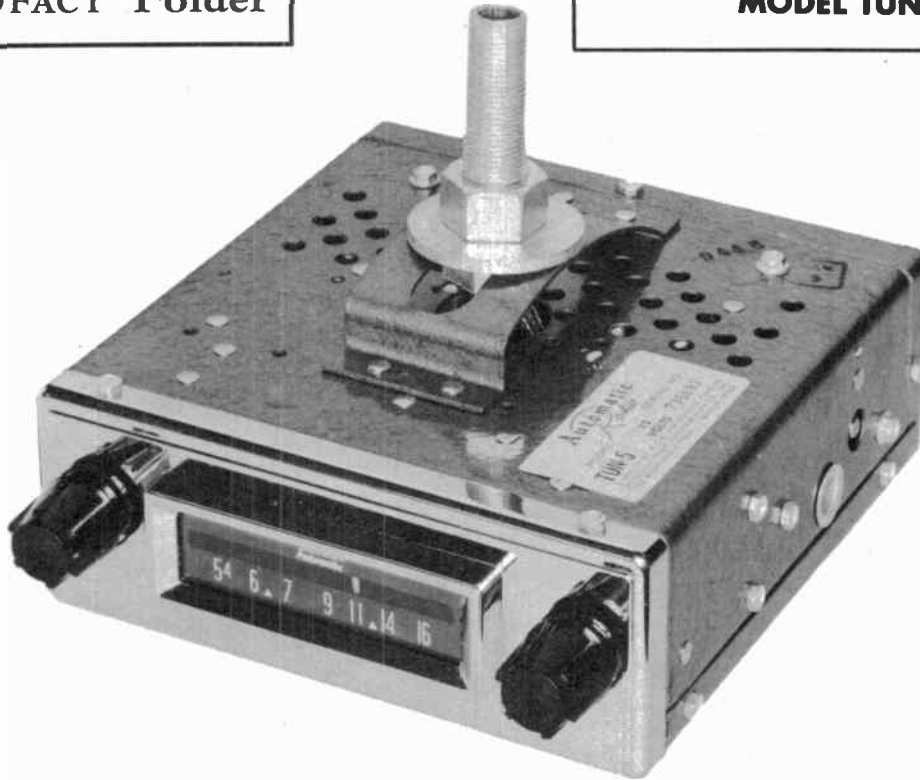


- DC voltage measurements taken with vacuum tube voltmeter.
- Socket connections shown as bottom views.
- Measured values are from socket pin to common ground.
- Battery voltage maintained at 12.6 volts for voltage readings.
- Nominal tolerance on component values makes possible a variation of 15% in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

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.

PHOTOFACT® Folder

**AUTOMATIC  
MODEL TUN-5**



TRADE NAME Automatic Model TUN-5  
 MANUFACTURER Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston 15, Mass.  
 TYPE SET Battery Operated 4 Tube - 1 Transistor Universal Type Automobile AM Receiver  
 POWER SUPPLY 12 Volt Storage Battery  
 TUNING RANGE—BROADCAST 538 — 1610KC RATING 1.6 Amp. @12.6 Volts DC

**AUTOMATIC  
MODEL TUN-5**

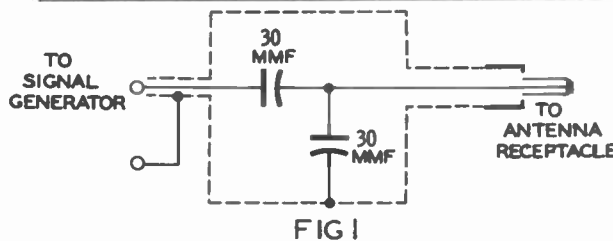
## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

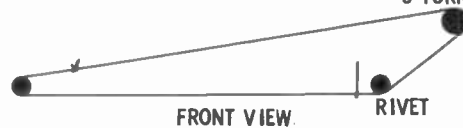
Suggested Alignment Tools: A1 thru A4...GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440  
 WALSCO #2526, 2543, 2544, 2545  
 A5, A6.....GENERAL CEMENT #5000, 5003, 8276, 8290  
 WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mf to pin 7 (grid) of Converter. Low side to chassis.	265KC (400v Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1610KC	"	"	A5	"
3.	Thru dummy (Fig. 1) to antenna receptacle.	"	1610KC Signal.	"	A6, A7	"
4.	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

TUNING SHAFT FULLY CLOCKWISE  
8 TURNS



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



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KL257

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

# PARTS LIST AND DESCRIPTIONS

## TUBES

GENERAL ELECTRIC			RAYTHEON		SYLVANIA	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	
V1	RF Amplifier	12BL6 (12AF6) *	V3	IF Amplifier	12BL6 (12AF6) *	
V2	Converter	12AD6	V4	Det. -AVC-AF Amp.	12DL8	

\* Alternate

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
XI	2N669 *	Output				PNP Note 1

\* Alternate Type 4347 or equivalent.

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

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		AUTOMATIC PART No.	REPLACEMENT DATA				NOTES
	CAP.	VOLT.		AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	
C1A	500	15	20-317	AFH3-00-95	B0040	WP200.6		TVLS-2157 *
B	500	15						
C2	750	3	20-757	SRE3V500	BRI000-6	PETA190	TD-1000-6	TVAS-1097 *

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

## FIXED CAPACITORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENC0 PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	51	#28-800-2 Note 1	DI-50	DD-510	L10Q51	CCTO-510	GP450	10TS-Q50
C4	40 NPO		NPO-DI 39	TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C5	.047 200V		P288N-047	DD-503	CUB2847	4DP-3-473	GEM-4147	2TM-847
C6		#28-400-2 † (12)	NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C7	5		NPO-DI 39	TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C8	40							
C9		#28-461	BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-810
C10	10000		DI-27	DD-270	L10Q27	CCD-270	GP427	10TS-Q27
C11	27		P288N-01	D6-103	CUB481	4DP-1-103	GEM-411	4TM-810
C12	.01 200V		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C13	3300	Note 1						
C14								

Note 1. Not used in some versions.

† Alternate Value.

## CONTROLS

ITEM No.	RATING		AUTOMATIC PART No.	REPLACEMENT DATA			INSTALLATION NOTES
	RESIST-ANCE	WATTS		CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	
RIA	1meg		80A1240	AB-70			Volume
B	Shaft			AK-8			
C	Bushing			AK-31			
D	Switch			KR-4			Power Off-On

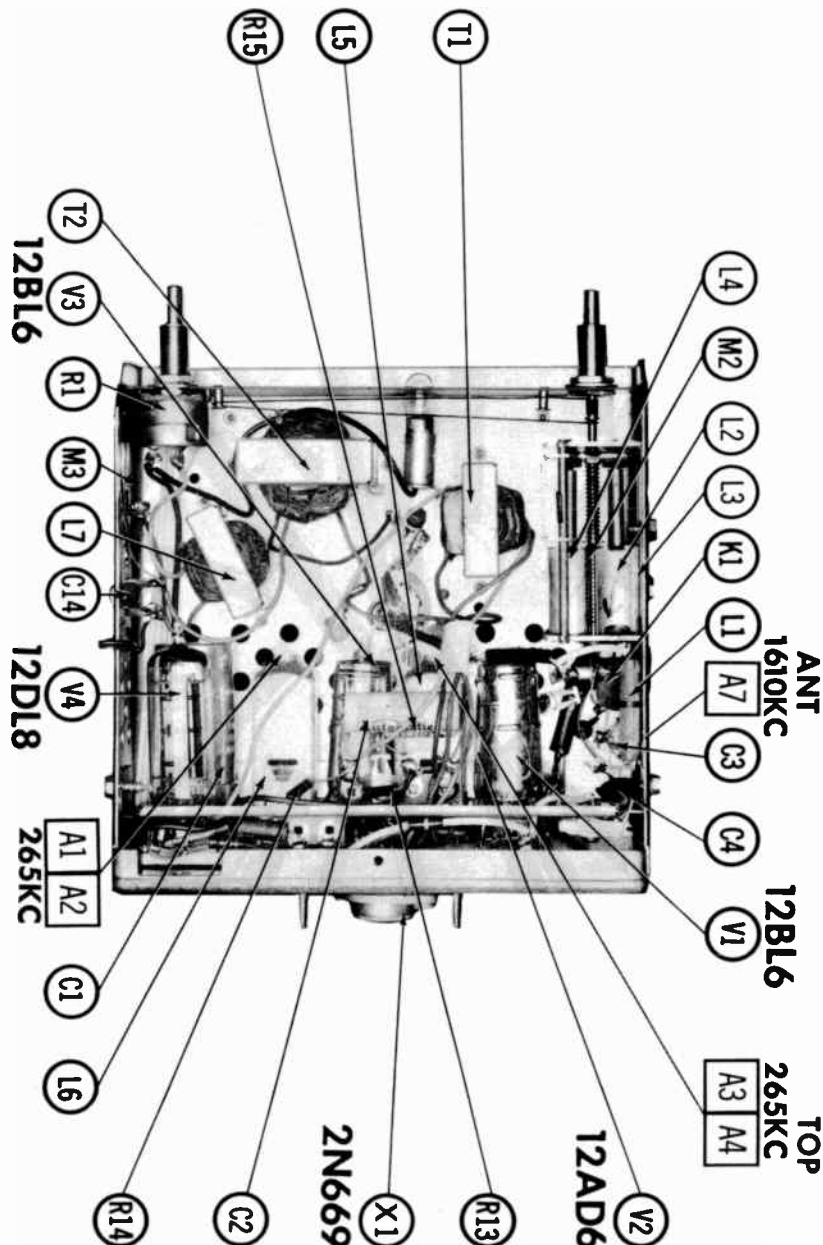
## RESISTORS (IRC or EQUIVALENT)

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

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R2	330Ω		R7	10meg		R12	47Ω	
R3	4.7meg		R8	10meg		R13	22Ω	
R4	1.2meg		R9	330Ω		R14	330Ω	Note 1
R5	2.2meg		R10	3.3meg		R15	1.0Ω 1W	
R6	47K		R11	560Ω		R16	150K	

Note 1. Some versions may use a 500Ω control in this application (Part #62-501).

# CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## COMPONENT COMBINATIONS

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

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		AUTOMATIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	RF Choke	75A601 ①	BC-565	4610	RTC-8520	6.2uh
L2	Ant. Coil	②	BC-350	12-H1	RTC-8638	
L3	RF Coil					
L4	Osc. Coil					
L5	Input IF Trans.	14-268X	BC-354	18-H6	RTC-8640	
L6	Output IF Trans.	14-269X				

① IRC Part #CL-1 .  
② Part of Tuner assembly M2.

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	AUTOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	
L7	1.8A	.5Ω	.0014 HY	75A1269				

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA				NOTES	
	PRI.	SEC.	AUTOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.		Triad PART No.
T1	5.5	1	75A1264					

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA				NOTES
	PRI.		AUTOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	
T2	20Ω Tap @ 3-4Ω		75A1270A				

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AUTOMATIC PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	73A1275	5A07R	

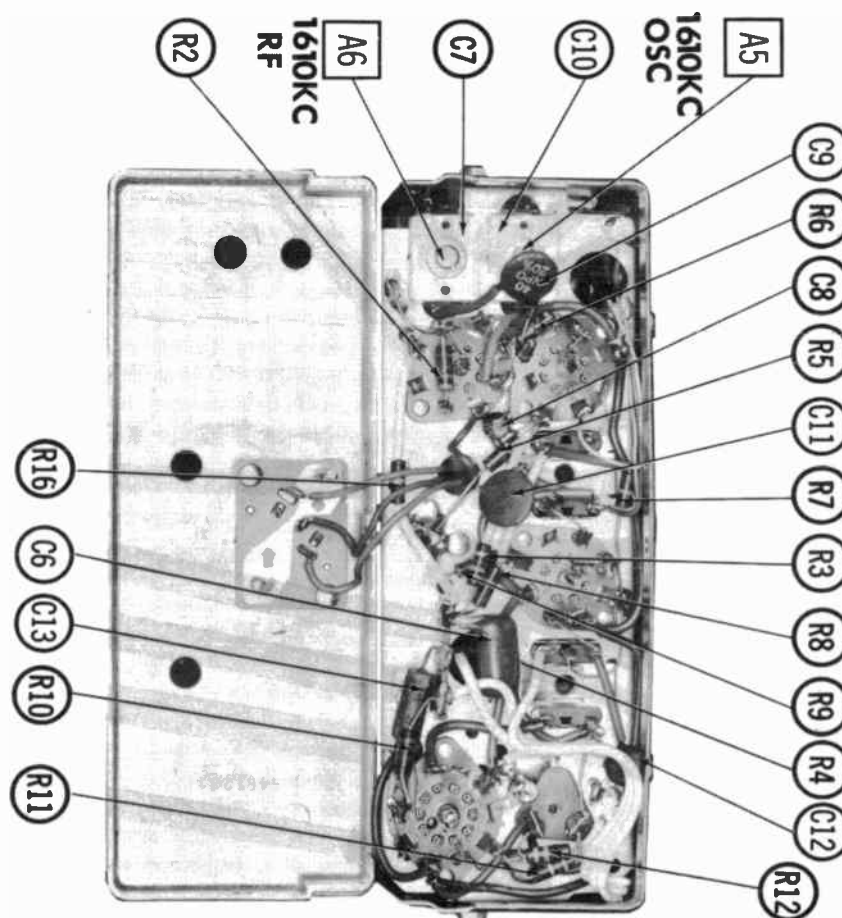
## FUSES

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

## MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M2	Tuner	76A1232	Complete (Manual)
M3	Spark Plate		

## CHASSIS—END VIEW



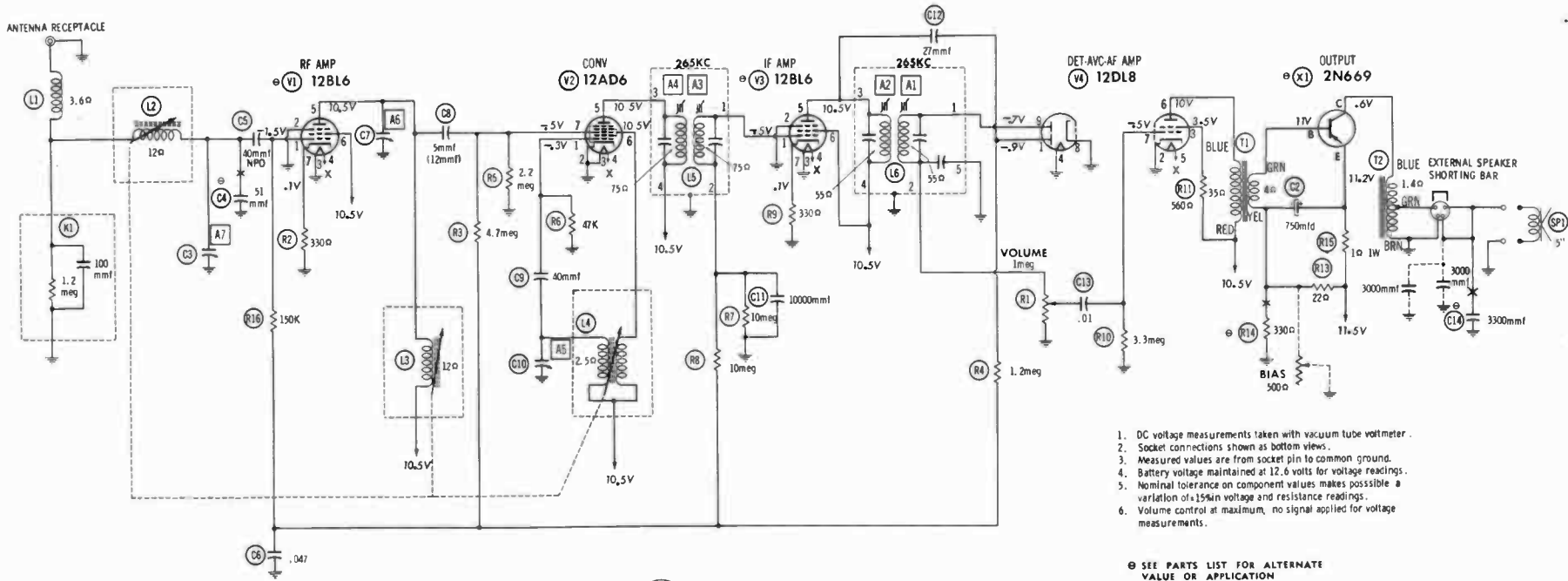
## CABINETS & CABINET PARTS

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

NAME	PART NO.	DESCRIPTION
Knob	47A1235	Tuning, Volume Spacer
Knob	47A1249	

## WIRING DATA

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



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

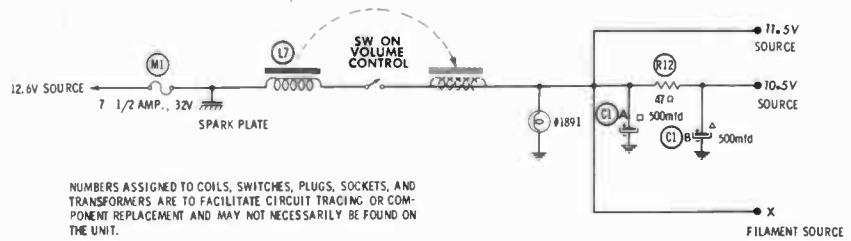
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION  
 DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM



RESISTANCE READINGS

TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1 12BL6	6.1meg	0Ω	0Ω	.1Ω	60Ω	47Ω	380Ω		
V2 12AD6	47K	0Ω	0Ω	.1Ω	120Ω	47Ω	2meg		
V3 12BL6	8meg	0Ω	0Ω	.1Ω	100Ω	47Ω	330Ω		
V4 12DL8	7.2meg	0Ω	600Ω	0Ω	.1Ω	80Ω	3.3meg	0Ω	1meg

TRANSISTOR CIRCUIT RESISTANCE FOR X1 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.





**AUTOMATIC  
MODEL WP-167**

**TRADE NAME** Automatic Model WP-167  
**MANUFACTURER** Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston 15, Mass.  
**TYPE SET** Battery Operated 6 Tube Universal Type Automobile AM Receiver  
**POWER SUPPLY** 6 Volt Storage Battery  
**TUNING RANGE—BROADCAST** 538 — 1610KC **RATING** 5.6 Amp. @ 6.3 Volts DC

### ALIGNMENT INSTRUCTIONS

**ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT**

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

**Suggested alignment tools:** A1 thru A4.... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440  
 WALSCO #2526, 2543, 2544, 2545  
 A5, A6, A7.... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089  
 WALSCO #2512, 2525, 2528

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. High side thru .1mf to pin 7 (grid) of Converter. Low side to chassis.	265KC (400v Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2. "	1610KC	"	"	A5	"
3. Antenna receptacle thru dummy (Fig. 1).	"	"	"	A6, A7	"
4. With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

**PUSHBUTTON ADJUSTMENTS**

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

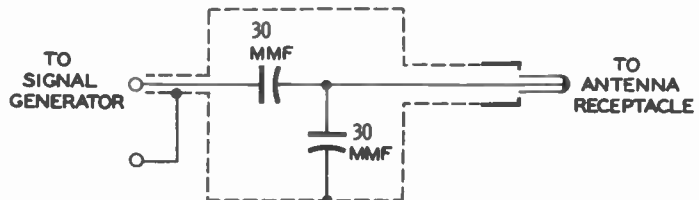


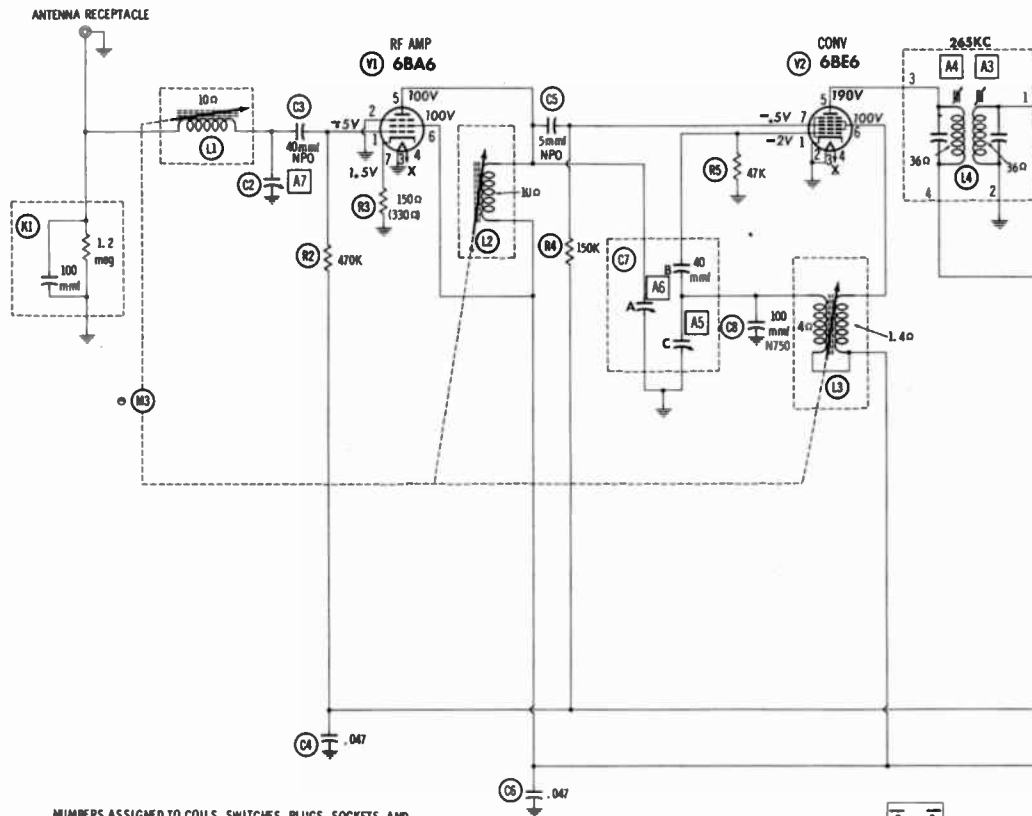
FIG. 1

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

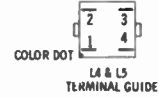


The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JD853

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



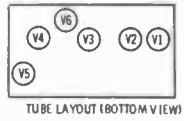
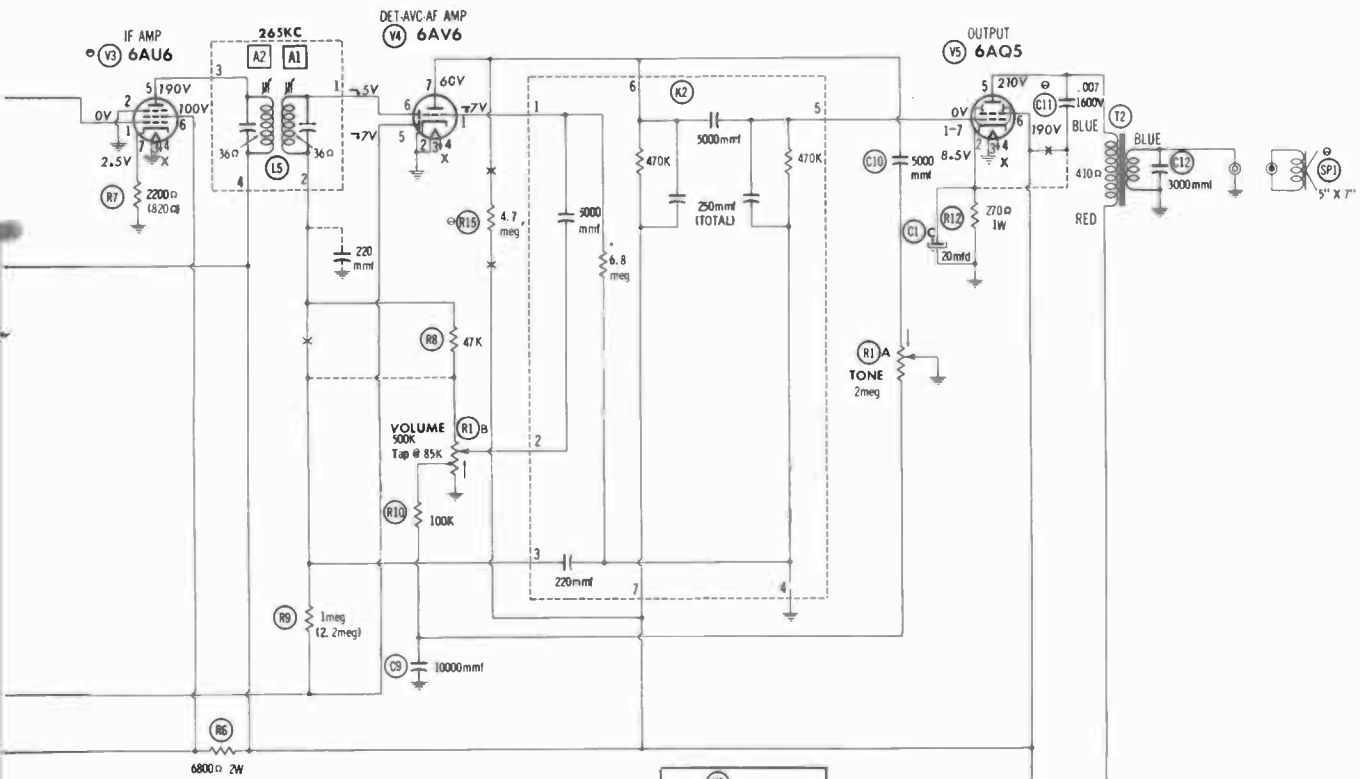
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.



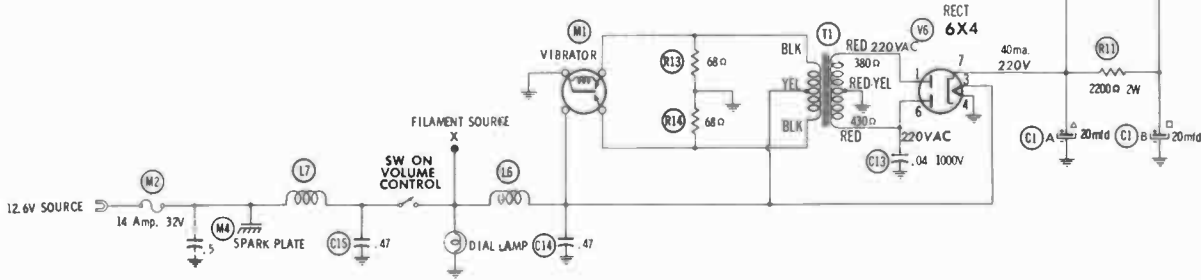
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	6BA6	2meg	0Ω	0Ω	.5Ω	†9000Ω	†9000Ω	150Ω
V2	6BE6	47K	0Ω	0Ω	.5Ω	†2200Ω	†9000Ω	1.7meg
V3	6AU6	36Ω	0Ω	0Ω	.5Ω	†2200Ω	†9000Ω	2200Ω
V4	6AV6	6.8meg	0Ω	0Ω	.5Ω	1.6meg	550K	†470K
V5	6AQ5	470K	270Ω	0Ω	.5Ω	†430Ω	†2200Ω	470K
V6	6X4	380Ω	NC	.5Ω	0Ω	TP	430Ω	†

† THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.  
 † MEASURED FROM PIN 7 OF V6.  
 NC NO CONNECTION TP TIE POINT



SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION  
 DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM  
 ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

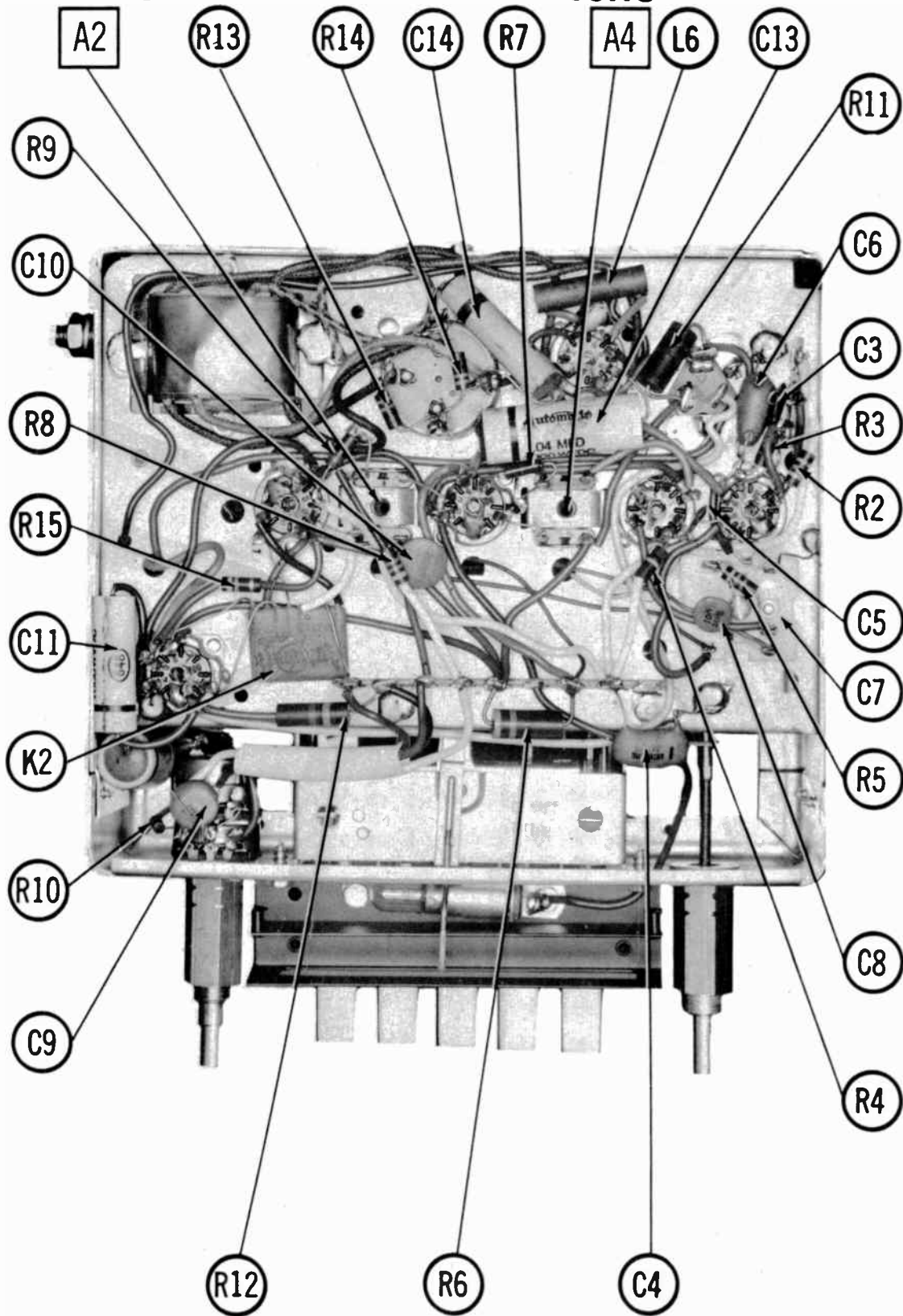


1. DC-voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of 15%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

**AUTOMATIC  
 MODEL WP-167**

265KC

265KC



CHASSIS BOTTOM VIEW

## PARTS LIST AND DESCRIPTIONS

### WIRING DATA

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

### TUBES

CBS		GENERAL ELECTRIC		RAYTHEON		SYLVANIA	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE
V1	RF Amplifier	6BA6	V4	Det. -AVC-AF Amp.	6AV6	V5	Output
V2	Converter	6BE6	V6	Rectifier	6AQ5	V6	Rectifier
V3	IF Amplifier	6AU6 (6BA6)*			6X4		

\* Alternate

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲ 30	350	30-86-8	AFH3-107	C0800	FP329.5	TMT-92	TVL-3635	
B	■ 30	350							
C	□ 30	25							

### FIXED CAPACITORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENC0 PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	40 NPO	} #28-4046  Note 1	NPO-DI 39	TCZ-39	C10Q39C	CCT0-390	CNO-439	10TCC-Q39	
C4	.047 200V		P288N-047	DD-503	CUB2847	4DP-3-473	GEM-4147	2TM-847	
C5	5 NPO		NPO-DI 5.0	DTZ-4R7	C10V5C	CCT0-050	CNO-547	10TCC-V50	
C6	.047 200V		P288N-047	DD-503	CUB2847	4DP-3-473	GEM-4147	2TM-847	
C7A	40		}	NPO-DI 39	TCZ-39	C10Q39C	CCT0-390	CNO-439	10TCC-Q39
B									
C									
C8	100 N750			N750-DI 100	DTN-100	C10T1U	CCTN-101	CNT-310	10TCU-T10
C9	10000			BPD-01	DD-103	BYA108L	CCD-103	B-110	5HK-810
C10	5000			BPD-005	DD-502	BYA10D6	CCD-502	B-250	5HK-D50
C11	.007 1600V			P1684CM-007	DD-302	CUB16D7	16DP-3-702	GEM-1627	MB-D7
C12	3000			BPD-002		BYA10D3	CCD-302	B-230	5HK-D30
C13	.04 1000V			P1068N-04		CUB1064	16DP-5-403	GEM-1014	MB-84
C14	.47 100V			P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C15	.47 100V			P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47

‡ Automatic Part Number.

Note 1. Some versions may use 500mmf in this application.

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	AUTOMATIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	
RLA	2meg		80A1190	F1-87	RTV-696C*		■ UE4100-8 } Tone Volume Power Off-On
B	500K			R2-45			
C	85K Tap				AK-26		
D	Switch				KR-4		

\* "STA-LOC" equivalent: FE26L, RU55T15, O81687, IS2125, U841.

• Use Bushing XB-2.

### RESISTORS

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

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R2	470K	(330Ω)*	R7	2200Ω	(820Ω)*	R12	270Ω 1W	Note 1
R3	150Ω		R8	47K		R13	68Ω	
R4	150K		R9	1meg	(2.2meg)*	R14	68Ω	
R5	47K		R10	100K		R15	4.7meg	
R6	680Ω 2W	R11	2200Ω 2W					

\* Alternate value.

Note 1. Not used in some versions.

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		AUTOMATIC PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	Ant. Coil							
L2	RF Coil							
L3	Osc. Coil							
L4	1st IF Trans.	14-265	16-6752	16-6752	BC-350	12-HI	RF-3	
L5	2nd IF Trans.	14-265	16-6752	16-6752	BC-350	12-HI	RF-3	
L6	Hash Choke	14-205					10uh	
L7	"A" Lead Hash Choke	14-205					10uh	

### TRANSFORMER (VIBRATOR)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	AUTOMATIC PART No.	Halldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
				T1	6.3V Ⓟ 3.2A	440VCT Ⓟ .040A		76A1204-6	22R63	

## PARTS LIST AND DESCRIPTIONS (Continued)

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
			AUTOMATIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
	PRI.	SEC.								
T2	5900Ω	3-4Ω	75A1203	24851	A-2930	AU-601	A-3877	24851	8-3X	

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
				AUTOMATIC PART No.	QUAM PART No.	
	SIZE	FIELD	V. C. IMP.			
8P1	5"x 7" 4"x 8"	PM PM	3-4Ω 3-4Ω	73-855 73BLU70 *	89A3	* Alternate

### COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AUTOMATIC PART No.	REPLACEMENT DATA
K1 K2	Antenna Filter Audio Coupling	100mmf, 1.2meg 220mmf, 250mmf, (2) 5000mmf, 470K, 470K, 0.8meg	89-4204 89-151	Sprague PCR-9 Aerovox PA-119-2 Centralab PC-151 Cornell-Dubilier L6TM2 Mallory MS-107 Sprague DT-2

### VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA			NOTES
				AUTOMATIC PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	
M1	Interruptor	6V	115%	113-83	5715	1501	5715

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AUTOMATIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	8FE	14A 32V			307014 (8FE 14A 32V)	155014	8FE 14	HHH

### MISCELLANEOUS

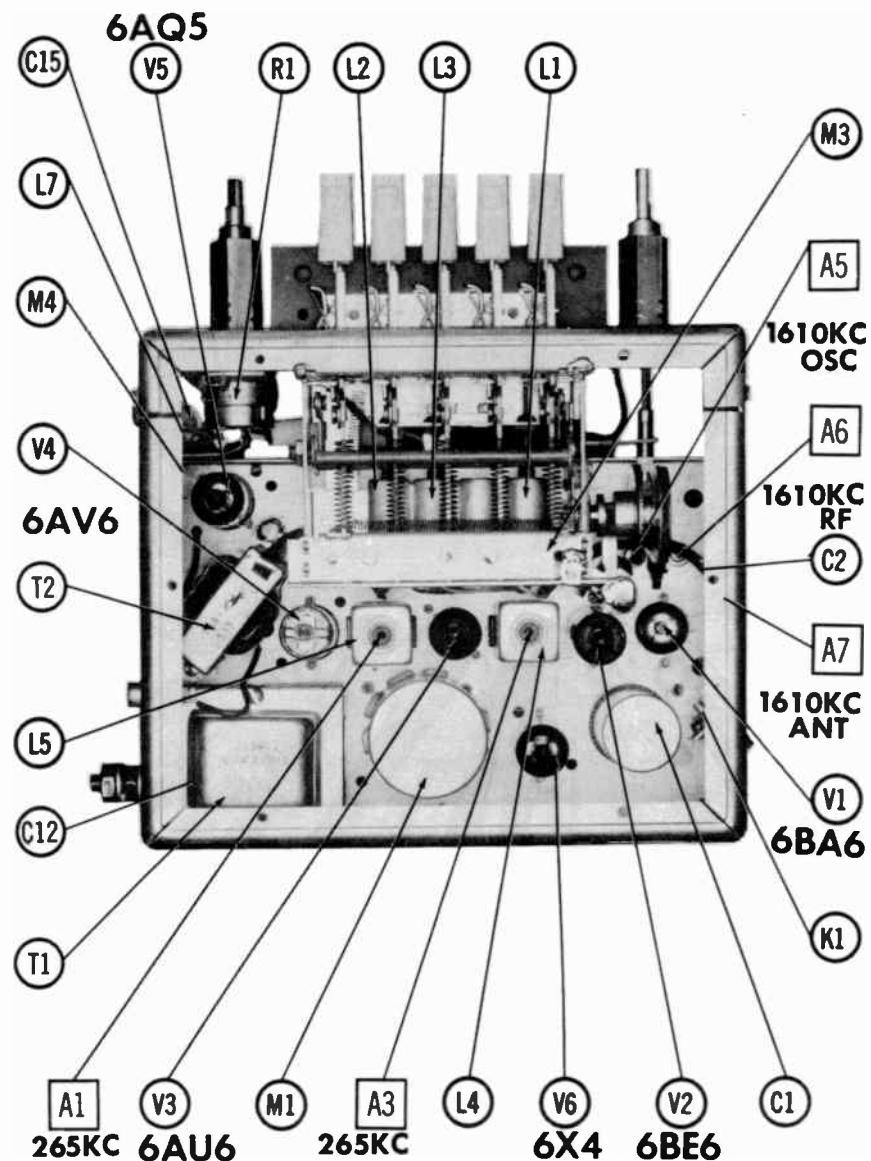
ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M3	Tuner	78BU91	Pushbutton Manual
M4	Spark Plate	78A1205	

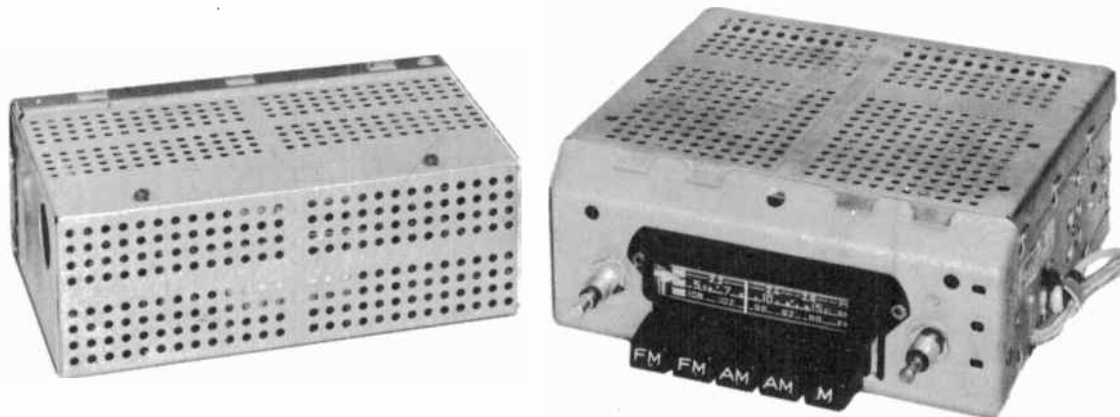
### CABINETS & CABINET PARTS

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

NAME	PART NO.	DESCRIPTION
Knob	47B319-2W	Tuning, Volume
Knob	47B393	Tone
Knob	47B393-1	Dummy

## CHASSIS—TOP VIEW





**BLAUPUNKT MODEL  
Frankfurt Type 9798**

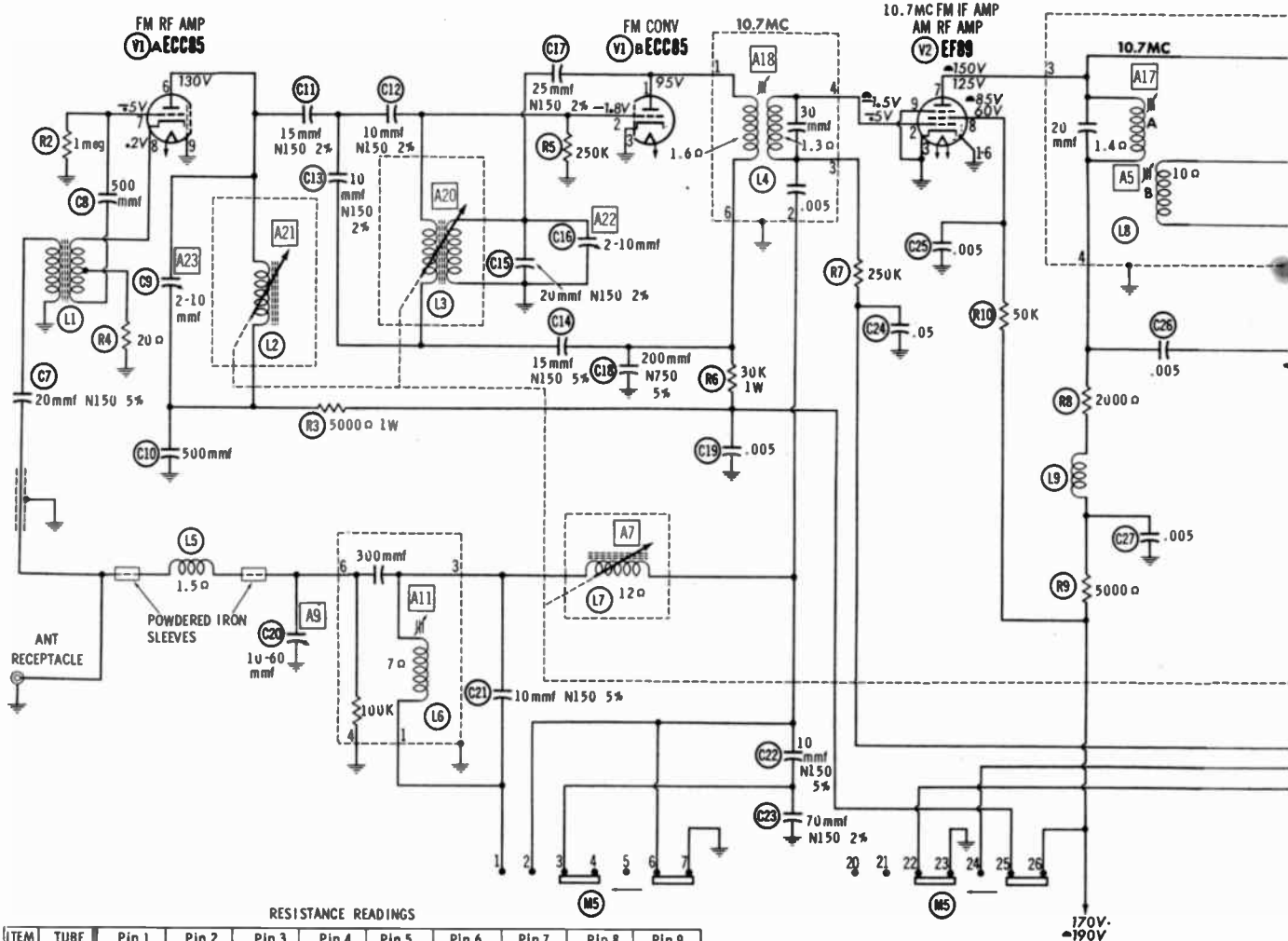
TRADE NAME	Blaupunkt Model Frankfurt Type 9798 (From Serial #890001)				
IMPORTER	Robert Bosch Corp., 40-25 Crescent Street, Long Island City 1, N. Y.				
TYPE SET	Battery Operated 6 Tube FM-BC-Marine Band Automobile Receiver				
POWER SUPPLY	12 Volt Storage Battery	RATING	3.2 Amp. @12.6 Volts DC		
	6 Volt Storage Battery		6.4 Amp. @6.3 Volts DC		
TUNING RANGE	FREQ. MOD.	88 - 108MC	BROADCAST	519-1640KC	MARINE 2.15 - 2.75MC

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



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD867

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. ©1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85	†30K	250K	0Ω	FIL	FIL	†5500Ω	1meg	20Ω	0Ω
V2	EF89	0Ω	250K	0Ω	FIL	FIL	0Ω	†7500Ω	†50K	0Ω
V3	ECH81	†16K	100K	0Ω	FIL	FIL	†5500Ω	50K	†30K	50K
V4	EF89	0Ω	10Ω	0Ω	FIL	FIL	0Ω	†9500Ω	†80K	0Ω
V5	EABC8	INF	50K	INF	FIL	FIL	320K	0Ω	13meg	†300K
V6	EL84	NC	†500K	†200Ω	FIL	FIL	NC	†450Ω	NC	†5000Ω

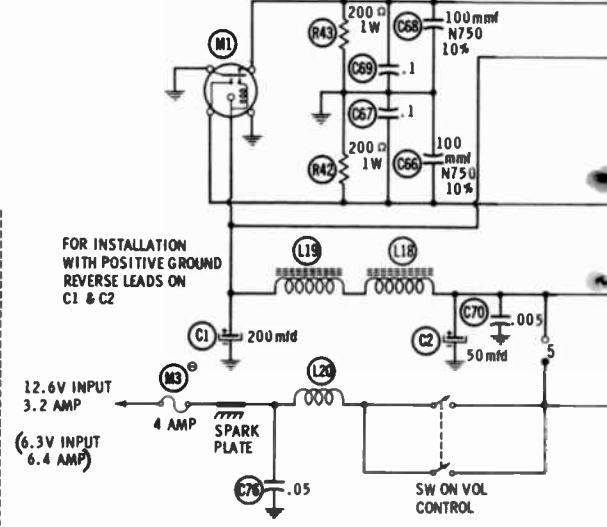
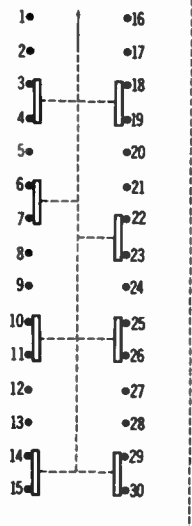
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE INDICATED  
 † MEASURED IN "AM" POSITION  
 ‡ MEASURED FROM OUTPUT OF M2  
 † MEASURED FROM JUNCTION OF C3A AND C62. NC NO CONNECTION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM  
 ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

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.

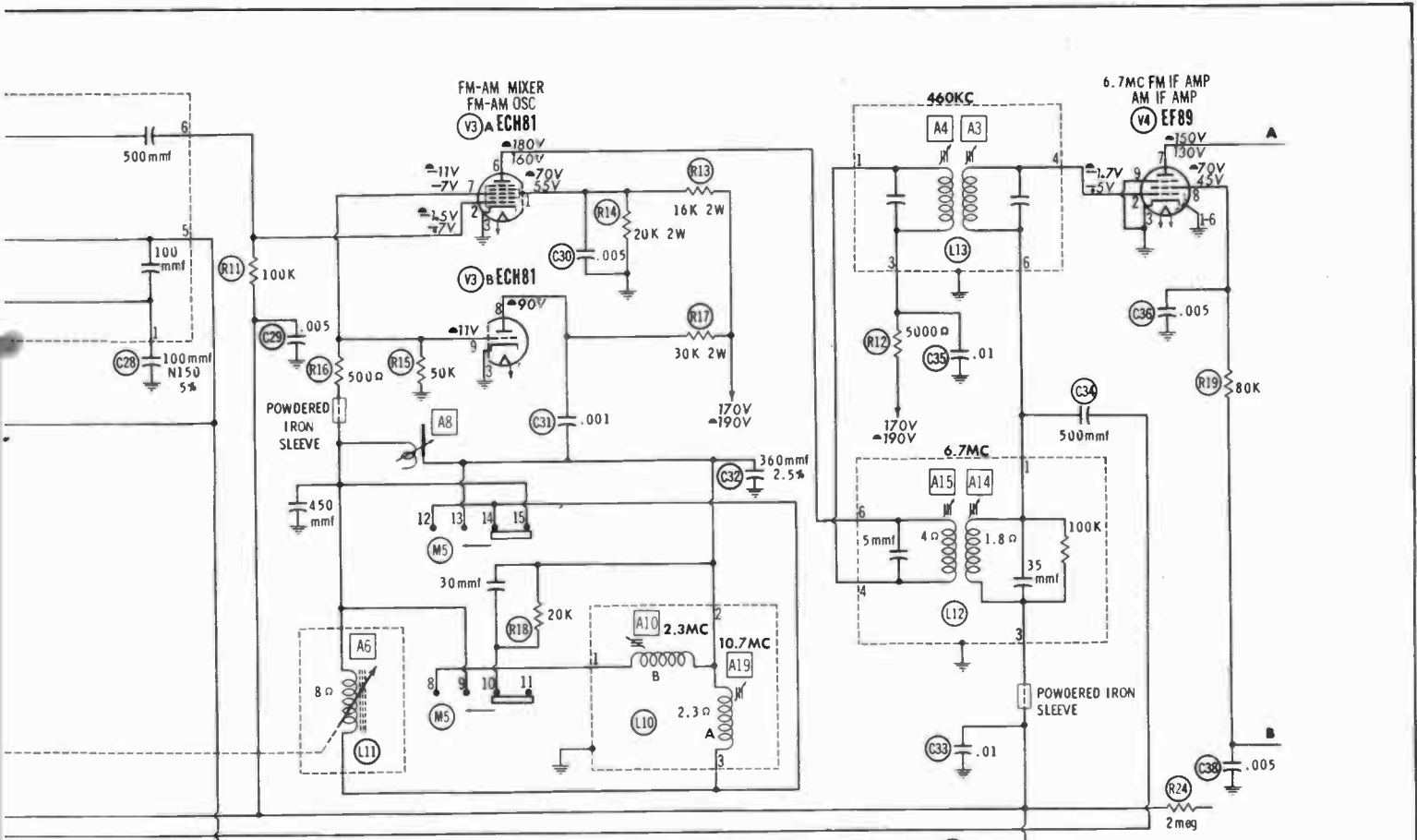
- DC voltage measurements taken with vacuum tube voltmeter.
- Socket connections shown as bottom views.
- Measured values are from socket pin to common ground.
- Battery voltage maintained at 12.6 volts for voltage readings.
- Nominal tolerance on component values makes possible a variation of ±15% in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

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
 © Howard W. Sams & Co., Inc. 1962

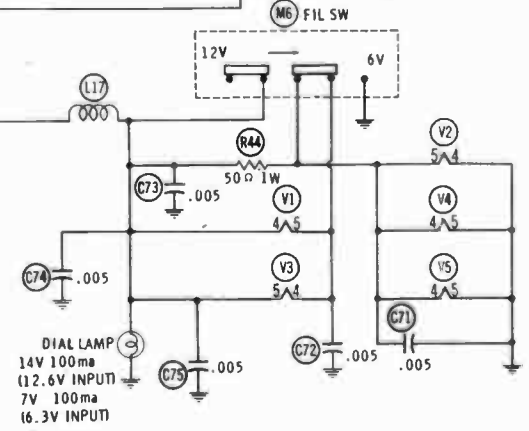
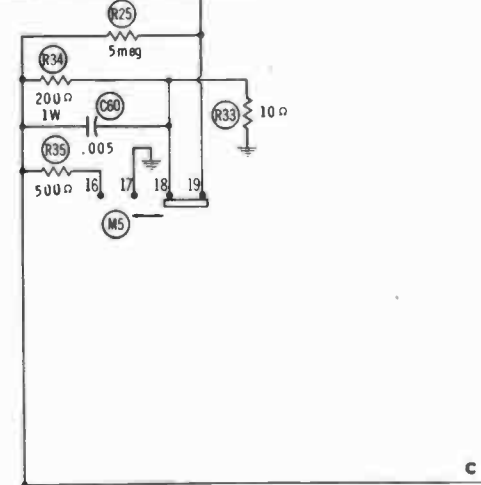
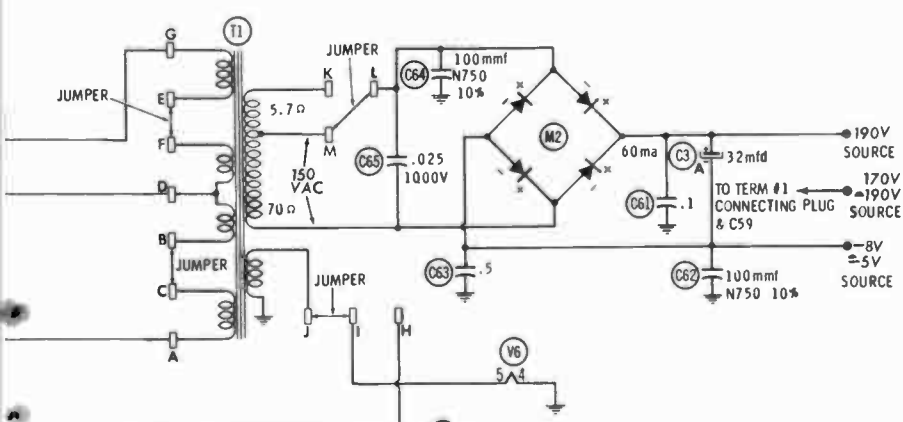


TERM VIEW BAND SELECTOR SW (M5) SHOWN IN "FM" POSITION. DEPRESSING EITHER "AM" PUSHBUTTON MOVES SW CONTACTS ONE POSITION. DEPRESSING "FM" PUSHBUTTON MOVES SW CONTACTS TWO POSITIONS

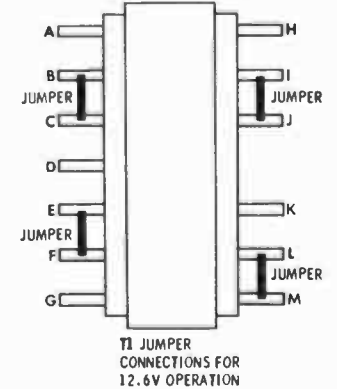


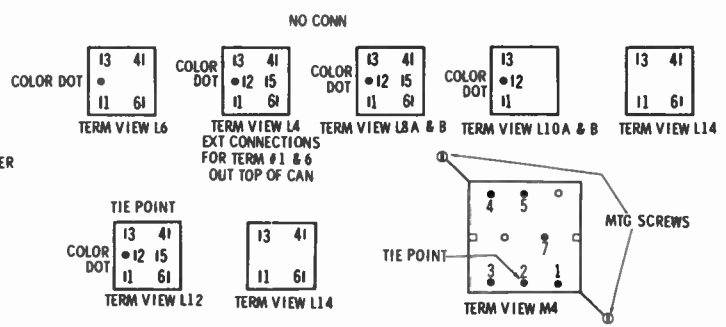
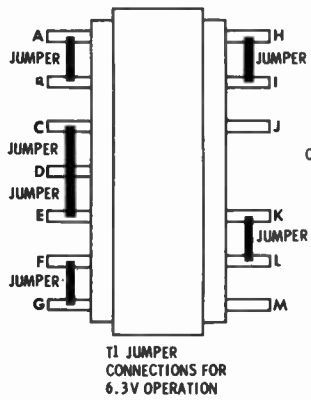
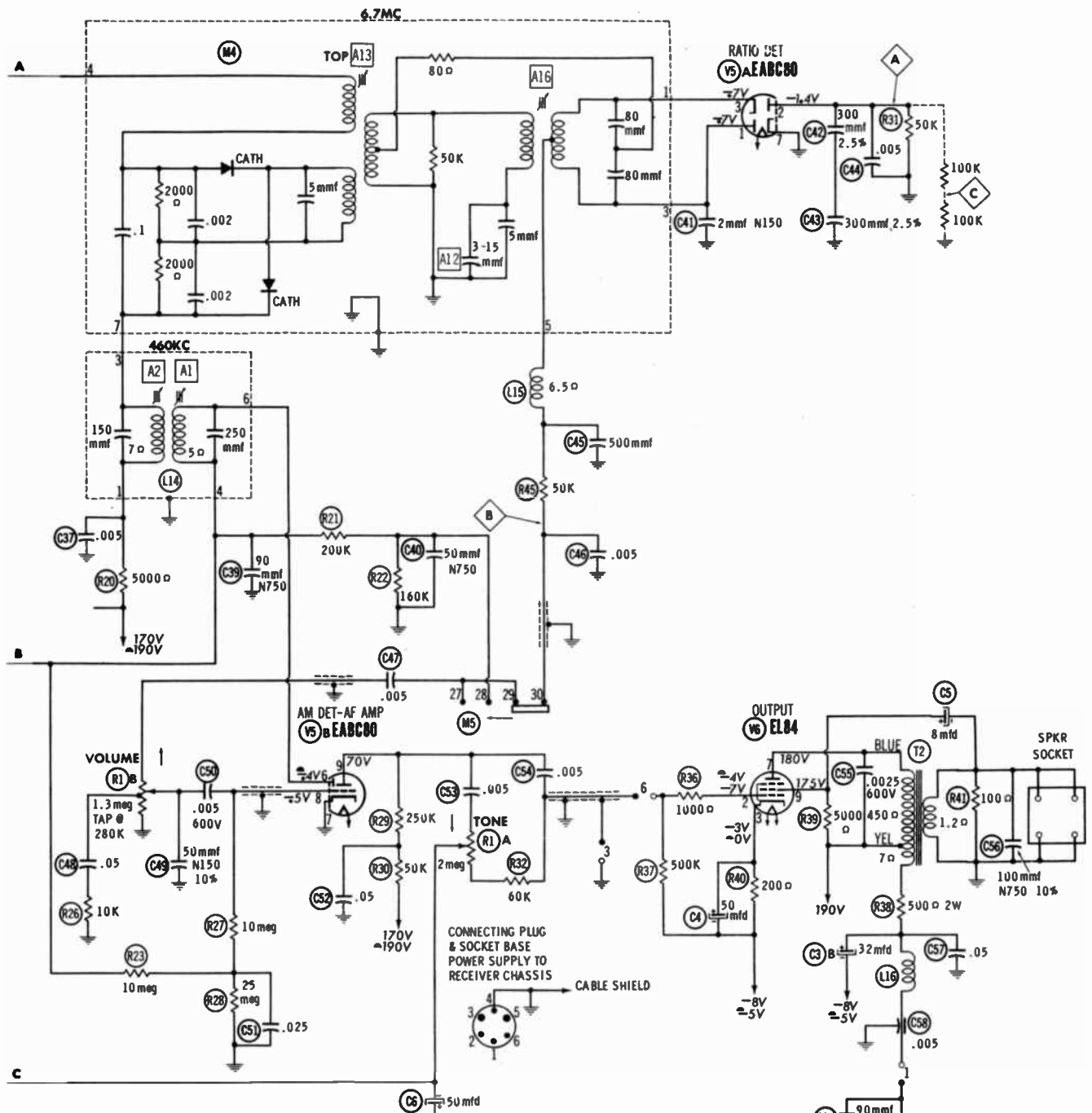


PLUG AND SOCKET CONNECTIONS

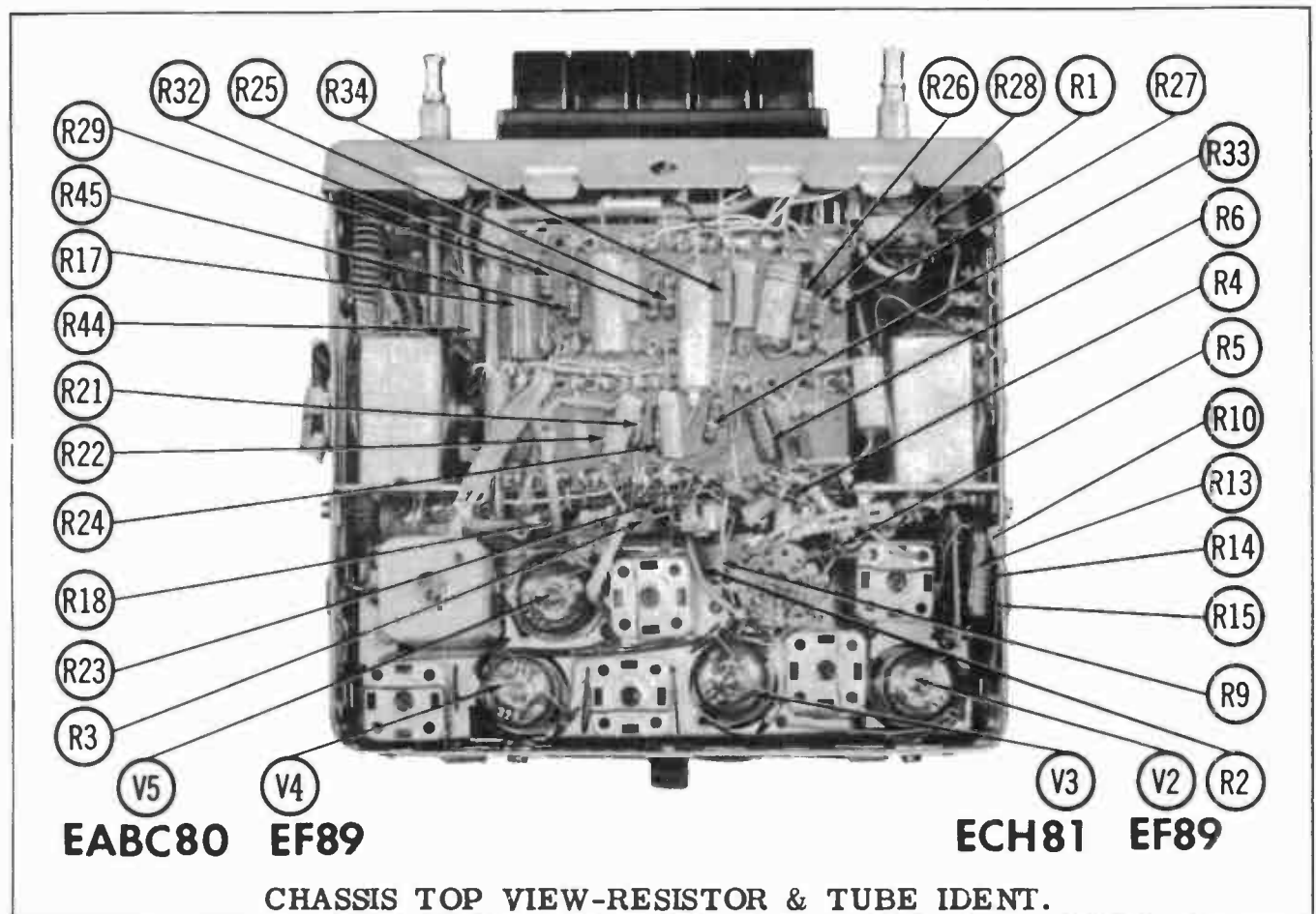
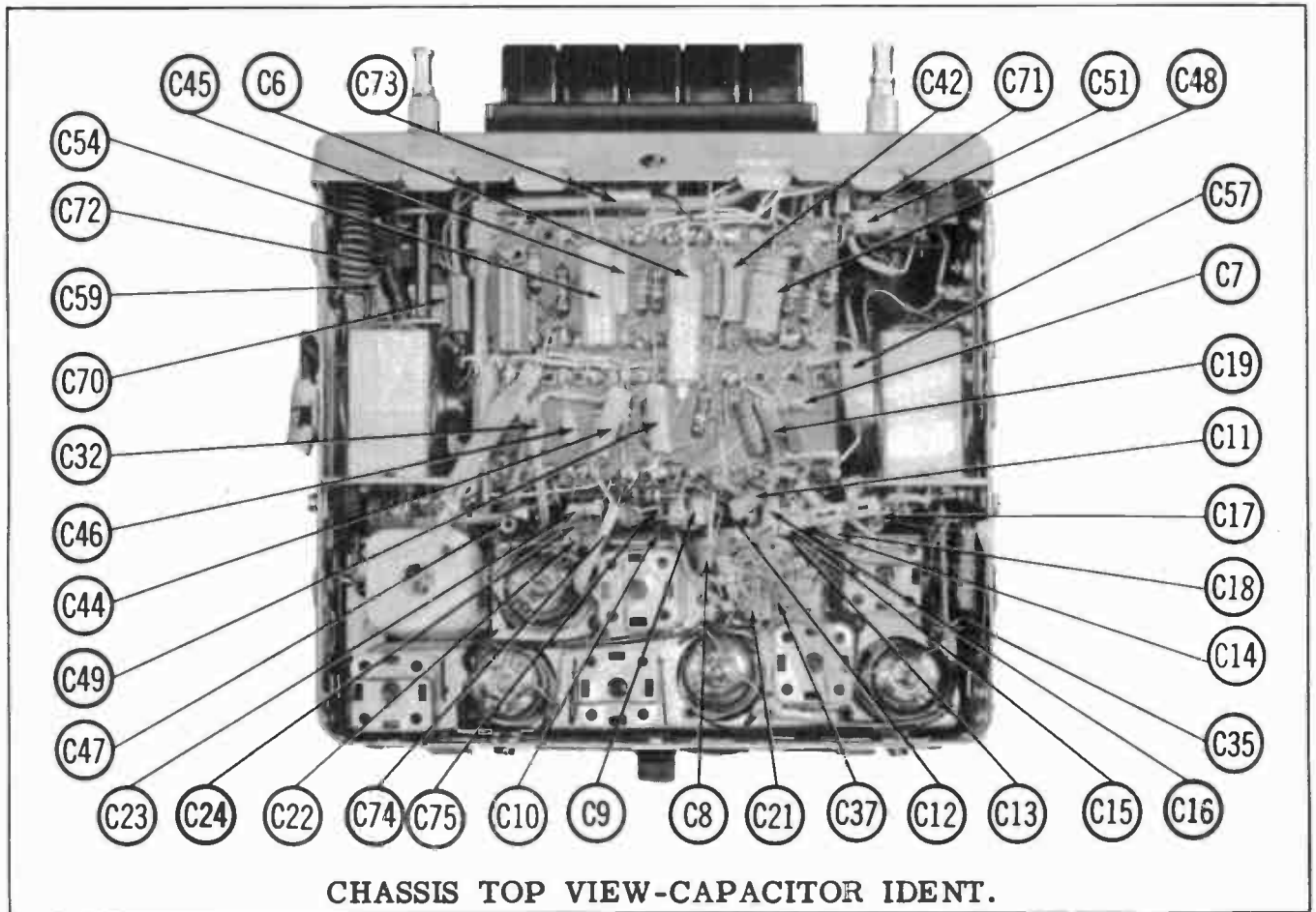


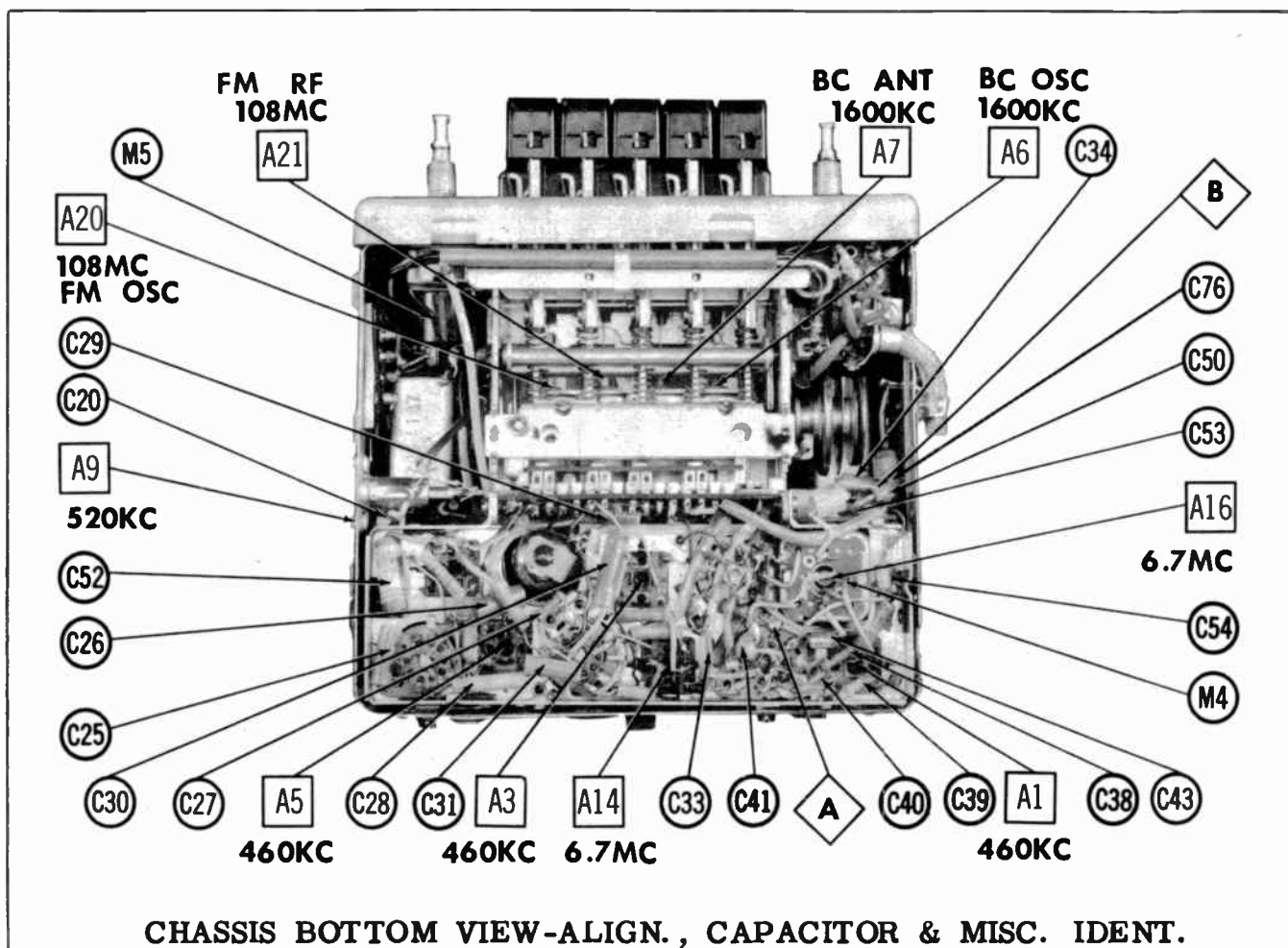
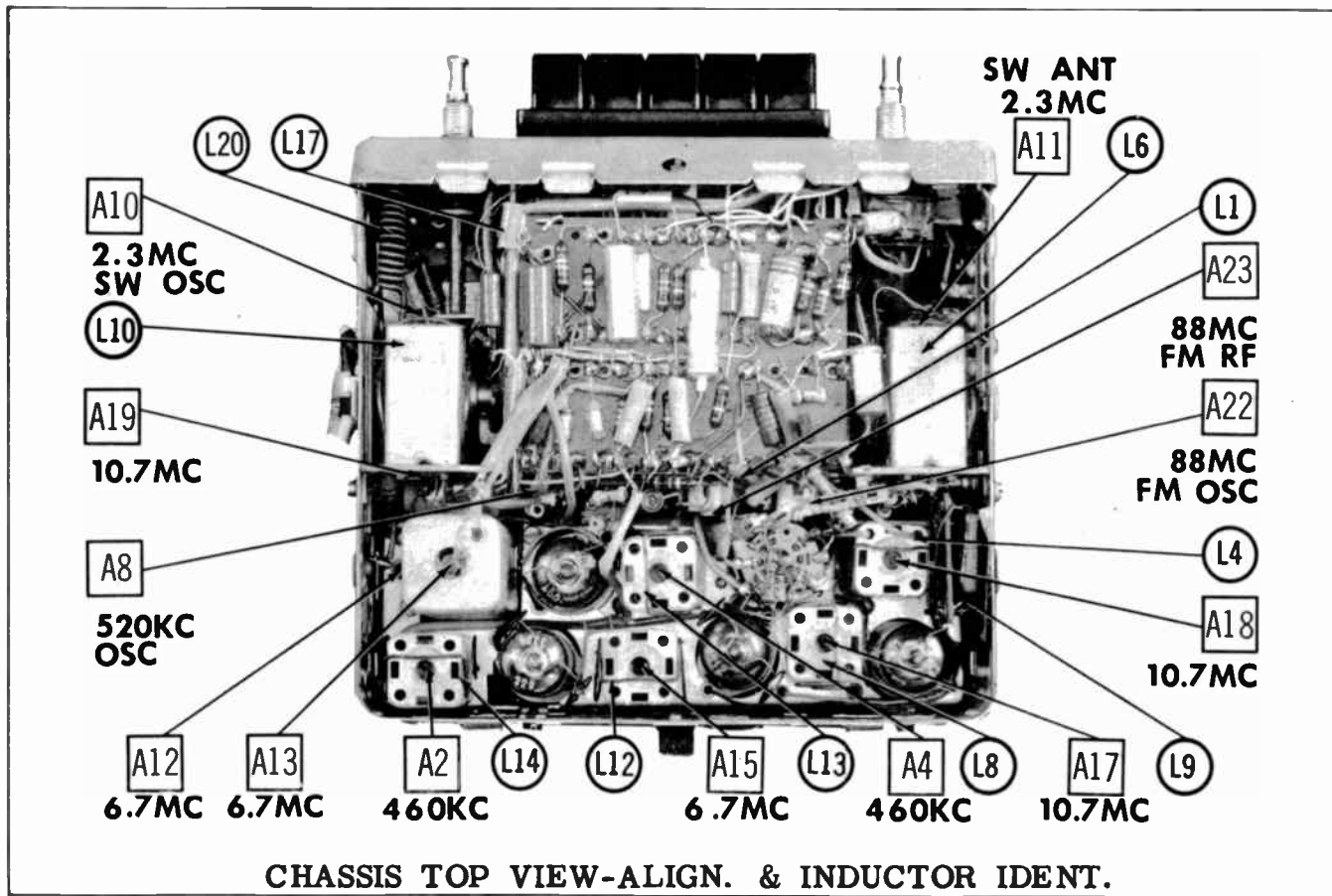
DIAL LAMP  
 14V 100 ma  
 (12.6V INPUT)  
 7V 100 ma  
 (16.3V INPUT)

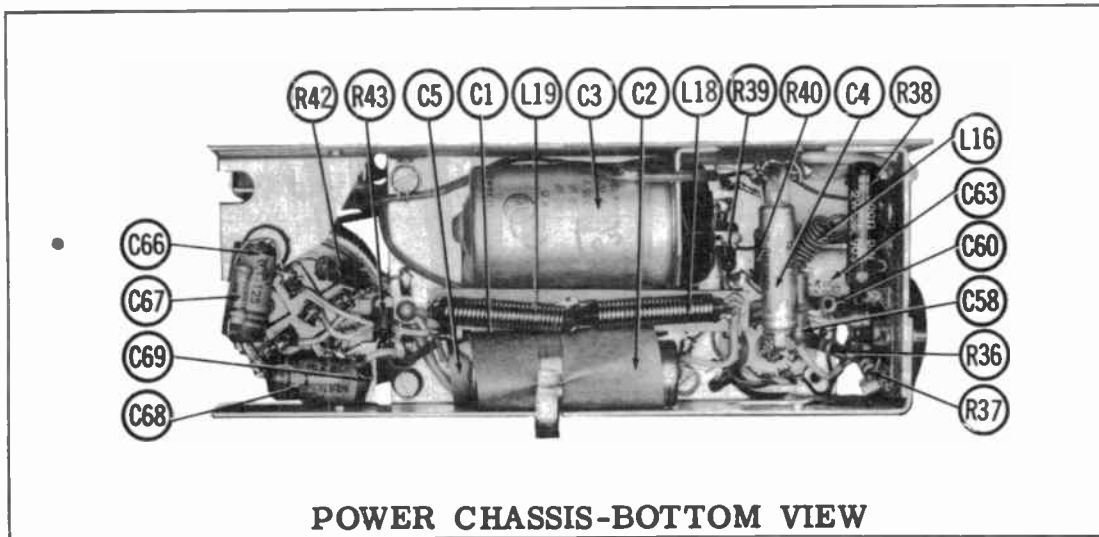




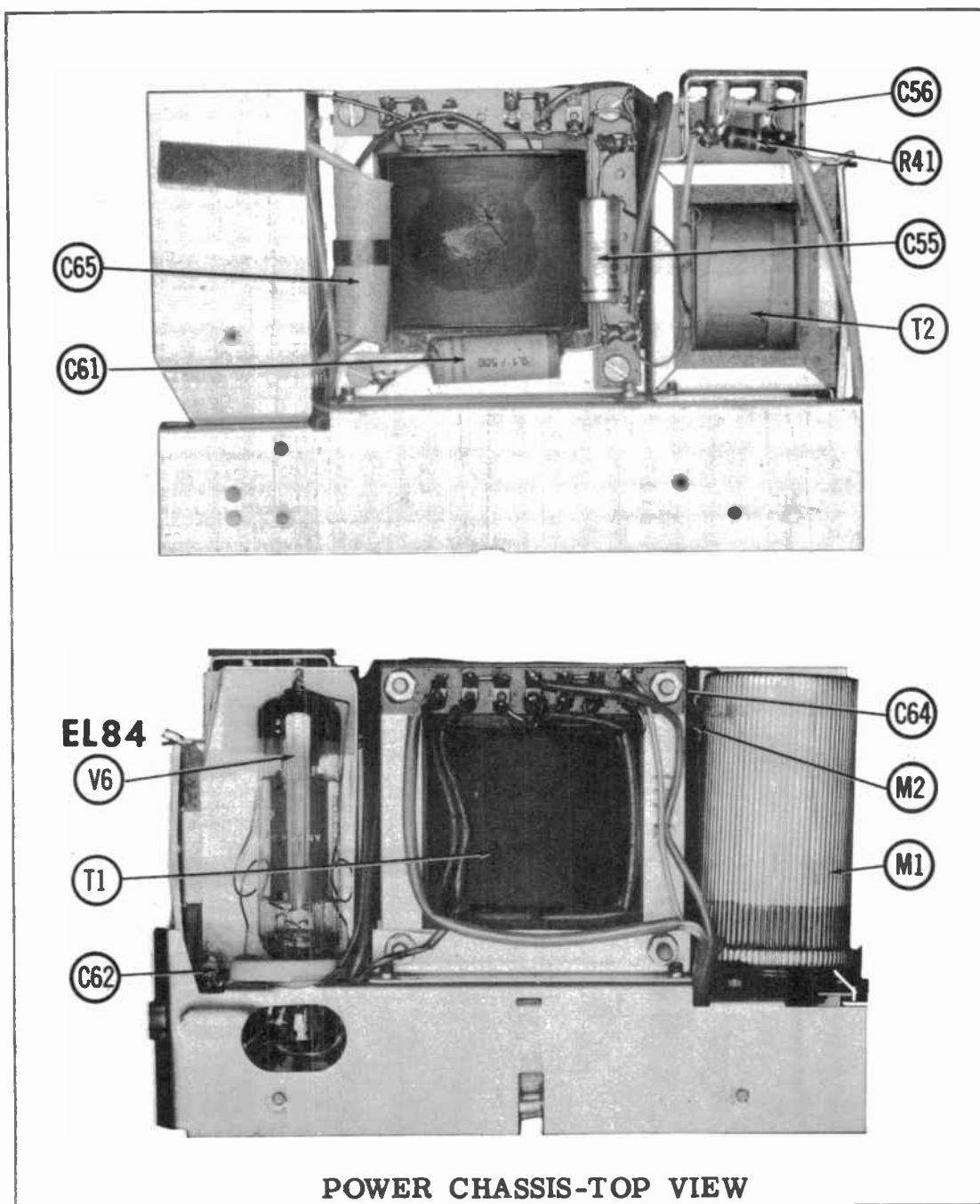
**BLAUPUNKT MODEL  
Frankfurt Type 9798**







POWER CHASSIS-BOTTOM VIEW



POWER CHASSIS-TOP VIEW

# ALIGNMENT INSTRUCTIONS

## ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication. Set Volume Control at maximum position.  
Suggested Alignment Tools:

A1 thru A4, A9, A12, A21, A22... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291  
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538  
A5, A13, A16, A10..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989  
WALSCO #2515, 2531, 2532

### AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to pin 2 (grid) of AM Mixer. Low side to chassis.	480KC (400% 30% AM)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Antenna receptacle thru dummy (Fig. 1).	"	"	"	A5	Adjust for MINIMUM output.
3.	"	1600KC	1600KC	"	A6, A7	Adjust for maximum output.
4.	"	520KC	520KC	"	A8, A9	"
5.	"	2.3MC	(M) 2.3MC	"	A10, A11	"

### FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	High side thru .001mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	6.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point $\diamond$ . Common to chassis.	A12, A13, A14, A15	Adjust for maximum deflection.
7.	"	"	"	DC probe to point $\oplus$ . Common to point $\diamond$ .	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
8.	High side thru .001mfd to pin 2 (grid) of FM Converter. Low side to chassis.	10.7MC	"	DC probe to point $\diamond$ . Common to chassis.	A17, A18, A19	Adjust for maximum deflection.

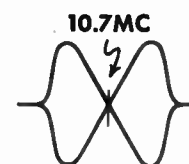
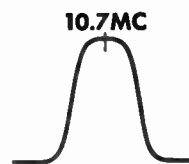
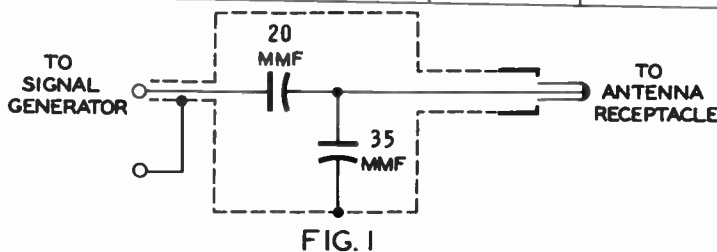
### FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120V sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	High side thru .001mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	6.7MC (450KC Swp)	FM Point of non-interference.	Vert. amp. to point $\diamond$ . Low side to chassis.	A12, A13, A14, A15	Disconnect stabilizing capacitor C44. Adjust for maximum gain and symmetry of response similar to Fig. 2. with markers as shown. Reconnect C44.
7.	"	"	"	Vert. amp. to point $\oplus$ . Low side to chassis.	A16	Adjust to place marker at the center of crossover lines similar to Fig. 3. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.
8.	High side thru .001mfd to pin 2 (grid) of FM Converter. Low side to chassis.	10.7MC	"	Vert. amp. to point $\diamond$ . Low side to chassis.	A17, A18, A19	Disconnect C44. Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. Reconnect C44.

### FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	Antenna receptacle thru dummy (Fig. 1)	108MC (Unmod.)	(FM) 108MC	DC probe to point $\diamond$ . Common to chassis.	A20, A21	Adjust for maximum deflection.
10.	"	88MC	88MC	"	A22, A23	"





# PARTS LIST AND DESCRIPTIONS (Continued)

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	BLAUPUNKT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	
RIA B C	2meg 1.3meg 280K Tap Switch		W12185/4x				Tone Volume  Power Off-On

## RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	1meg				R24	2meg			
R3	5000Ω 1W				R25	5meg			
R4	20Ω				R26	10K			
R5	250K				R27	10meg			
R6	30K 1W				R28	25meg			
R7	250K				R29	250K			
R8	2000Ω				R30	50K			
R9	5000Ω				R31	50K			
R10	50K				R32	60K			
R11	100K				R33	10Ω			
R12	5000Ω				R34	200Ω 1W			
R13	16K 2W				R35	500Ω			
R14	20K 2W				R36	1000Ω			
R15	50K				R37	500K			
R16	500Ω				R38	500Ω 2W			
R17	30K 2W				R39	5000Ω			
R18	20K				R40	200Ω			
R19	80K				R41	100Ω			
R20	5000Ω				R42	200Ω 1W			
R21	200K				R43	200Ω 1W			
R22	160K				R44	50Ω 1W			
R23	10meg				R45	50K			

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BLAUPUNKT PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	FM Ant.	WC2277/2x					
L2	FM RF	WC2278/8x					
L3	1st FM Osc.	WC2372/6x					
L4	1st 10.7MC FM IF	ZF722/1x					
L5	RF Choke	WC2199/2x					
L6	LW Ant.	ZF723/16x					
L7	BC Ant.	WC2204/2x					
L8A	2nd 10.7MC FM IF	ZF723/18x					
B	460KC 1F Trap						
L9	RF Choke	WC2272/1x					
L10A	2nd FM Osc.	ZF723/17x					
B	LW Osc.						
L11	BC Osc.	WC2205/2x					
L12	6.7MC FM IF	ZF722/8x					
L13	1st AM IF	ZF721/9x					
L14	2nd AM IF	ZF721/1x					
L15	RF Choke	WC2036/3x					
L16	RF Choke	WC2036/3x					
L17	Fl. Choke	WC2115/1x					
L18	Haah Choke	ED706/1x					
L19	Haah Choke	ED706/1x					
L20	"A" Lead Choke	WC2334/1x					

## TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	BLAUPUNKT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triod PART No.	
T1	12.8VCT ① 2.8A or 6.3 VCT② 5.6A	150V④ .100A AC	6.3V④ .75A (12V only)	TF722/11x					

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BLAUPUNKT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triod PART No.	
T2	4500Ω Tap ① L 5%	3-4Ω	TF27/56x					

## VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA			NOTES
				BLAUPUNKT PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	
M1	Interrupter	12.6 6.3	115% 115%	SM702/2x SM702/1x			

## POWER RECTIFIERS

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	CURRENT (Measured)	BLAUPUNKT PART No.	RCA PART No.	SARKES TARZIAN PART No.		
M2	.060A	XZ761/1x ①	1N1764 ②	F4 ③		① Bridge Type Selenium ② Silicon, 4 Required

## FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			BLAUPUNKT PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
M3	Cartridge	4A	8G704-3n ①					AGW4	

① Part #8G704/1n used for 6 volt versions.

## MISCELLANEOUS

ITEM No.	PART NAME	BLAUPUNKT PART No.	NOTES
M4 M5	Ratio Detector Ass'y. Switch	G8716/10x EV756/15x	Includes Diodes Part #XZ778/2n, and Associated Components.

## CABINETS & CABINET PARTS

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

NAME	PART NO.	DESCRIPTION
Dial Pointer	SZ2186/3x	AM, Brown M, Brown
Band Pointer	SZ2157/4x	
Pushbutton	KF813/33x	
Pushbutton	KF813/31x	

## WIRING DATA

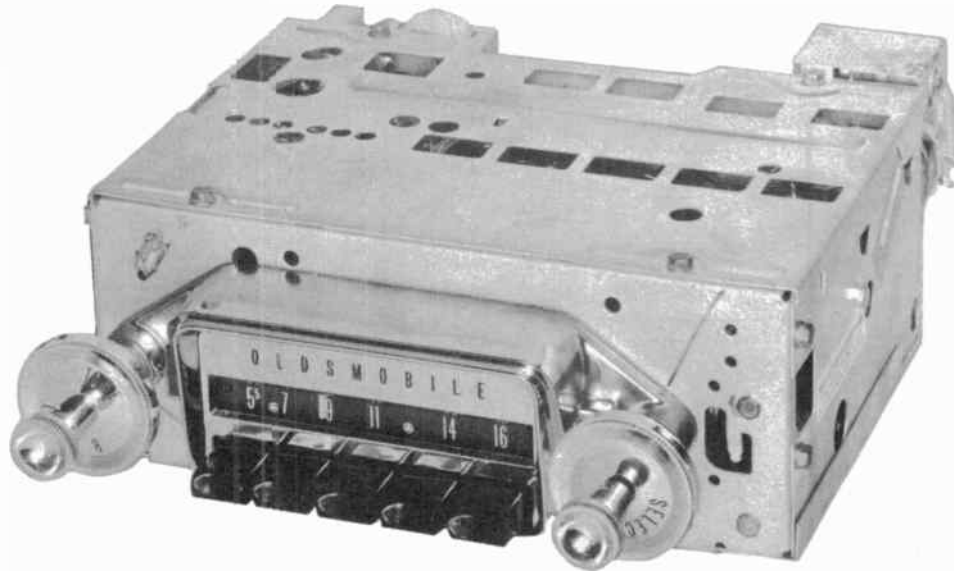
General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8885
Bonding Strap .....	Use BELDEN No. 8661



PHOTOFACT® Folder

with CIRCUITRACE™

BUICK MODEL 980132  
 OLDSMOBILE MODEL 989387  
 PONTIAC MODEL 989831



TRADE NAME	Buick Model 980132 (For 1961 Buick Specials) Oldsmobile Model 989387 (For 1961 Oldsmobile F85) Pontiac Model 989831 (For 1961 Pontiac Tempests)
MANUFACTURER	Delco Radio Div., General Motors Corp., Kokomo, Indiana
TYPE SET	Battery Operated 4 Tube - 1 Transistor Custom-Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery
TUNING RANGE	RATING L 8 Amp. @12.6 Volts DC 540 - 1600KC

## ALIGNMENT INSTRUCTIONS

### ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

Suggested Alignment Tools:

- A1 thru A5, A9, A10. . . . . GENERAL CEMENT #8282, 8606, 8606-L, 9091  
 WALSCO #2526, 2541, 2542, 2543, 2544  
 A6, A7, A8. . . . . GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291  
 WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mf to pin 7 (grid) of Converter. Low side to chassis.	282KC (400% Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
Check setting of Oscillator core (A5). Rear of core should be 1 5/8" from mounting end of coil forms.						
2.	High side thru 82mmf to antenna receptacle. Low side to chassis.	1615KC	"	"	A6, A7, A8	"
3.	"	600KC	600KC Signal.	"	A9, A10	"
4.	"	1615KC	High end stop.	"	A7, A8	"
5.	"	900KC	900KC Signal.	"		Adjust pointer adjustment until pointer coincides with 1100 on dial.
6.	With radio installed in car and antenna fully extended, tune in a weak station and adjust A8 for maximum output.					

#### PUSHBUTTON ADJUSTMENT

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

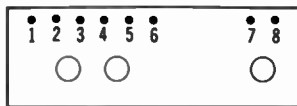
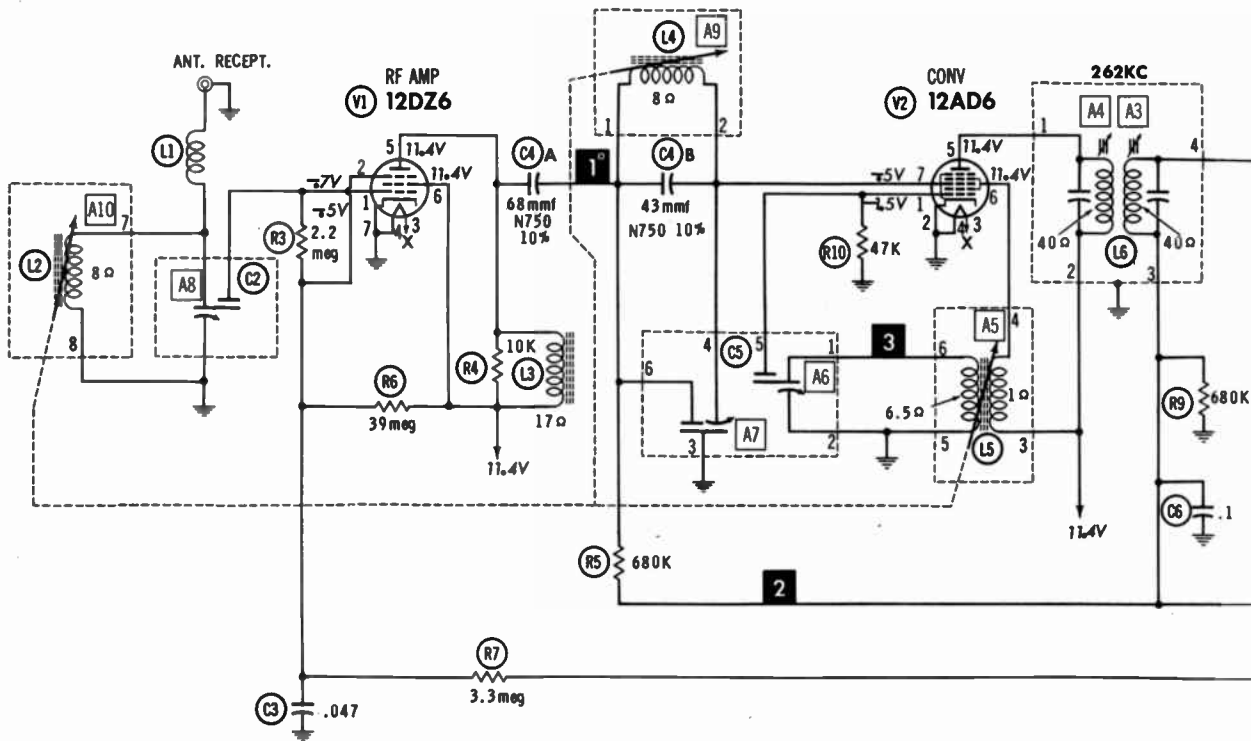
**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana



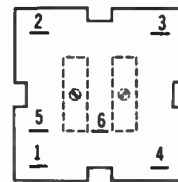
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD949

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

BUICK MODEL 980132  
 OLDSMOBILE MODEL 989387  
 PONTIAC MODEL 989831



L2, L4 & L5 TERMINAL GUIDE



C5 TERMINAL GUIDE



L6 TERMINAL GUIDE



L7 TERMINAL GUIDE



TRANSISTOR TERMINAL GUIDE

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.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	9 meg	7 meg	FIL	FIL	70 $\Omega$	60 $\Omega$	0 $\Omega$		
V2	12AD6	47K	0 $\Omega$	FIL	FIL	100 $\Omega$	60 $\Omega$	1.3 meg		
V3	12EK6	680K	0 $\Omega$	FIL	FIL	85 $\Omega$	60 $\Omega$	100 $\Omega$		
V4	12DS7	5 meg	TP	4 $\Omega$	FIL	FIL	240 $\Omega$	0 $\Omega$	18 $\Omega$	470K

TRANSISTOR CIRCUIT RESISTANCE FOR X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

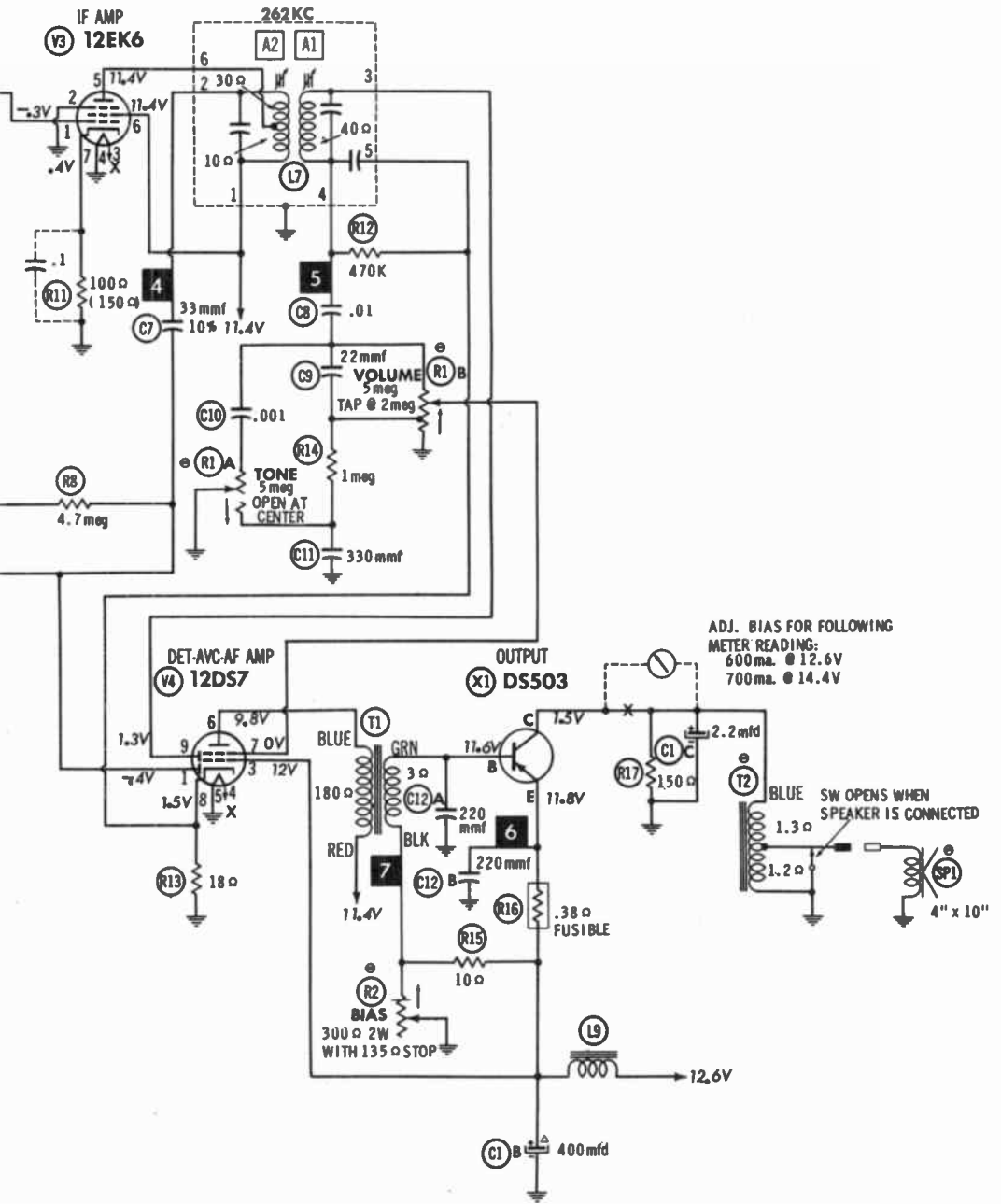
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

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

- 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  $\pm 15\%$  in voltage and resistance readings.
- Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACIT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

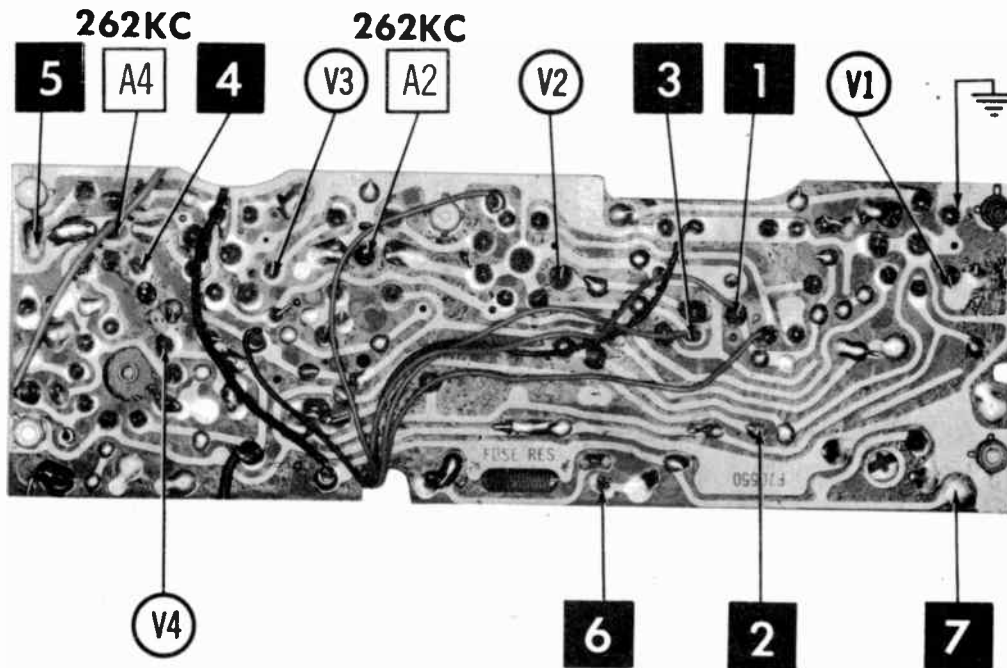
© Howard W. Sams & Co., Inc. 1962



ADJ. BIAS FOR FOLLOWING  
METER READING:  
600 ma. @ 12.6V  
700 ma. @ 14.4V

BLUE SW OPENS WHEN  
SPEAKER IS CONNECTED

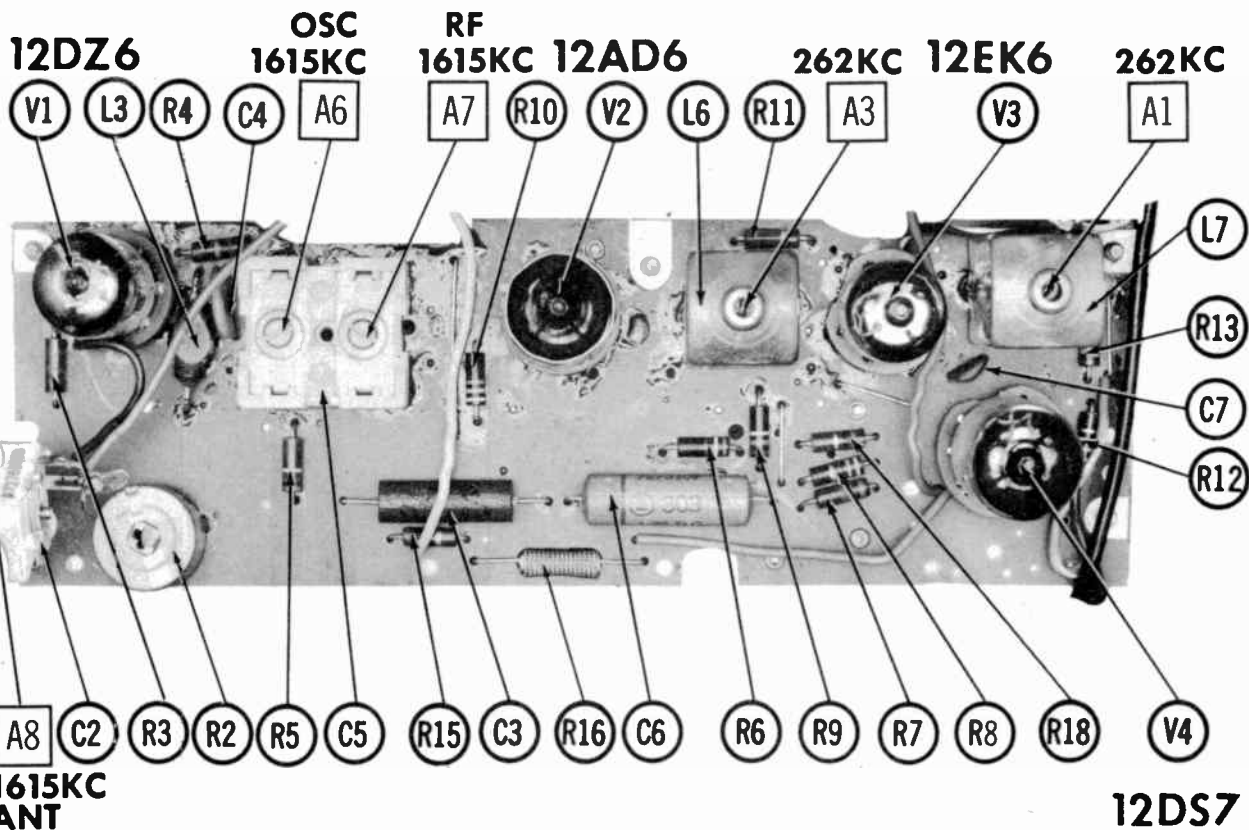
**BUICK MODEL 980132  
OLDSMOBILE MODEL 989387  
PONTIAC MODEL 98983T**



A Howard W. Sams **CIRCUITRACE** Photo

**PRINTED BOARD**

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



**PRINTED BOARD-TOP VIEW**

## PARTS LIST AND DESCRIPTIONS

### TUBES

GENERAL ELECTRIC			RAYTHEON			SYLVANIA		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12D28	V3	IF Amplifier	12BK6			
V2	Converter	12AD6	V4	Det. -AVC-AF Amp.	12D87			

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	D8503	Output	2N176		PNP

Note 1. When replacing, apply silicone grease between transistor and heat sink. 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.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	850	16	7273730	AFH3-54-30					TVL6-3021*
B	400	16					WP300.6		
C	2.2	11.5AC							

\* 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.
C2	.047 75V	#7276866	P288N-047	DD-603	CUB2P47	IDP-2-473	GEM-2147	2TM-847
C3	.01 10%		N750-DI 88	TCN-58	C10Q68U	CCTN-680	CNT-468	10TCU-68
C4A	.01 400V		N750-DI 39	TCN-43	C10Q43U	CCTN-390	CNT-439	10TCU-Q39
B	43 N750 10%							
C5	.1 75V	#7276498	P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-201	2TM-P10
C6	.33 10%		DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C7	.01 400V		P488N-01	D6-103	CUB481	4DP-1-103	GEM-411	4TM-810
C8	.22		DI-22	DD-220	L10Q22	CCD-221	GP422	10TS-Q22
C9	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C10	.330		DI-330	DD-331	L10T33	CCD-331	B-333	10TS-T33
C11	.220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C12A	.220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
B	.47 100V		P288N-47	DD-221	CUB2P47	IDP-4-474	GEM-2047	2TM-P47
C13	.47 100V							

# Delco Part Number.

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA	5meg*	↑ ↓	7276521 ①					Tone Volume Power Off-On Bias
B	5meg						UE4244-8	
C	2meg							
R2	Switch	2(WW)	7275474 ②					
	300Ω							
	135Ω Stop							

\* Open at Center of Rotation. Low end 1meg, high end 4meg.

① Model 989831 uses Part #7276930.

Model 980132 uses Part #7276561.

② Temperature Compensated.

• "BTA-LOC" Equivalent: FL56X, RU56T26, O81375, 182000, U941.

### RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	2.2meg				R11	100Ω			(150Ω)*
R4	10K				R12	470K			
R5	680K				R13	18Ω			
R6	39meg				R14	1meg			
R7	3.3meg				R15	10Ω			
R8	4.7meg				R16	.33Ω			Pt. #7276499
R9	680K				R17	150Ω			
R10	47K				R18	5Ω			

\* Alternate Value.

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Merit PART No.	Miller PART No.	Stancox PART No.	Workman TV PART No.	
L1	RF Choke (0.5uh)	7256738	BC-565	4610	RTC-8530	T868	
L2	Ant.	1221138					
L3	RF Choke (1.8MHz)	7269884	BC-514	4664	RTC-8533	T875	
L4	RF	122136					
L5	Osc.	1221151					
L6	Input IF	1221257	BC-344	13-PH1	RTC-8644	T855	
L7	Output IF	1221256	BC-424				
L8	Hash Choke (1.4uh)	7241708					

# PARTS LIST AND DESCRIPTIONS (Continued)

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 C)	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	
L9		.7Ω	.011 HY	7274342		TC-2		

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA				NOTES
	PRI.	SEC.	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	
T1	6.8	1	1221590		TA-48		

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA				NOTES
	PRI.	SEC.	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	
T2	10Ω Tap @	3-4Ω	1221499		TA-50		① Part #1221535 used in Model 989831

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	4"x 10"	PM	3-4Ω	7276481 *	410A2	* Model 989387
	4"x 10"	PM	3-4Ω	7276434 †		† Model 980132 and some versions of 989387
	4"x 10"	PM		7276547 *		* Model 989831

## MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Spark Plate	7271564	

## CABINETS & CABINET PARTS

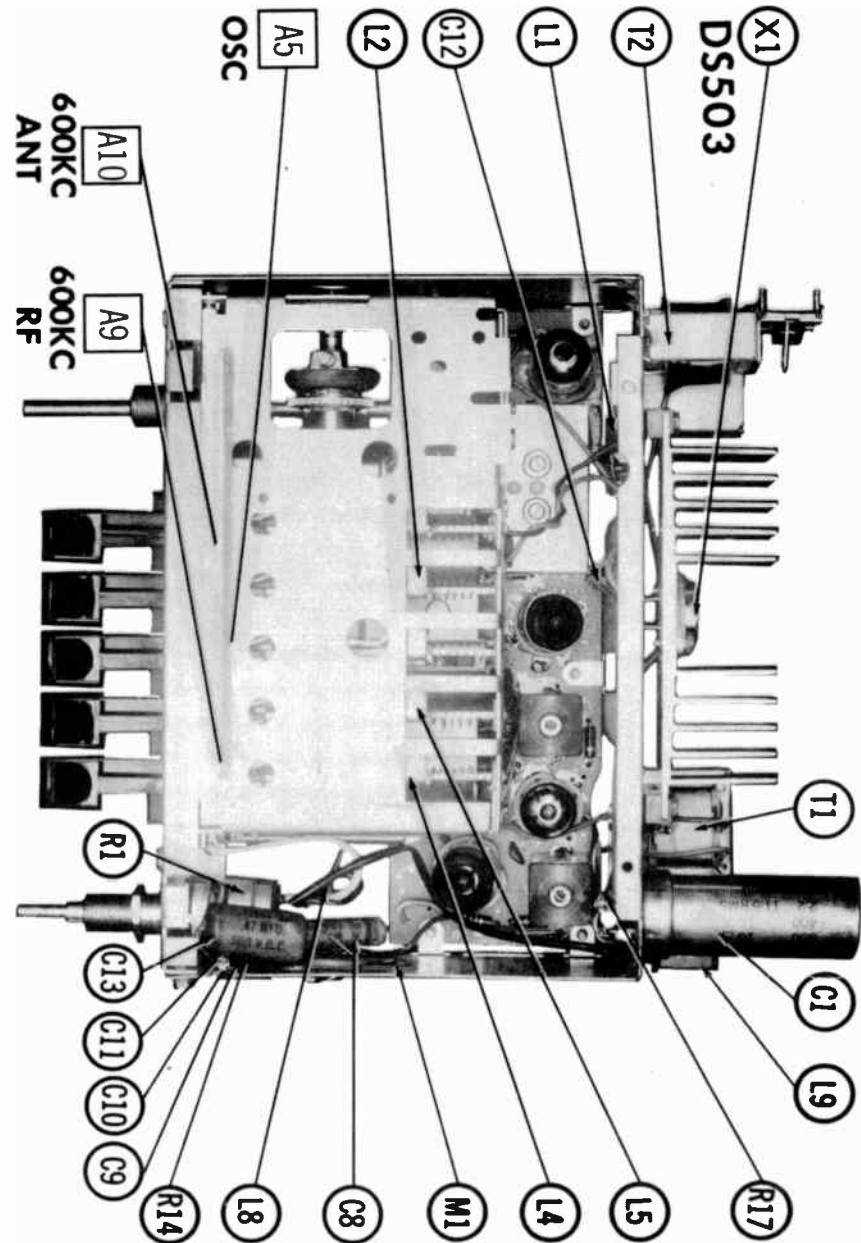
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Pointer	1221067	Models 989387, 989831
Dial Pointer	1221506	Model 980132
Pushbutton	7276507	
Knob	1192976	Tuning, Volume, Model 980132
Knob	1192589	Tone, Model 980132
Knob	1192588	Dummy, Model 980132
Knob	535908	Tuning, Volume, Model 989831
Knob	579159	Tuning, Volume, Model 989387
Knob	539611	Tone, Model 989831
Knob	579156	Tone, Model 989387
Knob	579157	Dummy, Model 989387
Knob	539610	Dummy, Model 989831

## WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors
	8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8886
Bonding Strap	Use BELDEN No. 8661

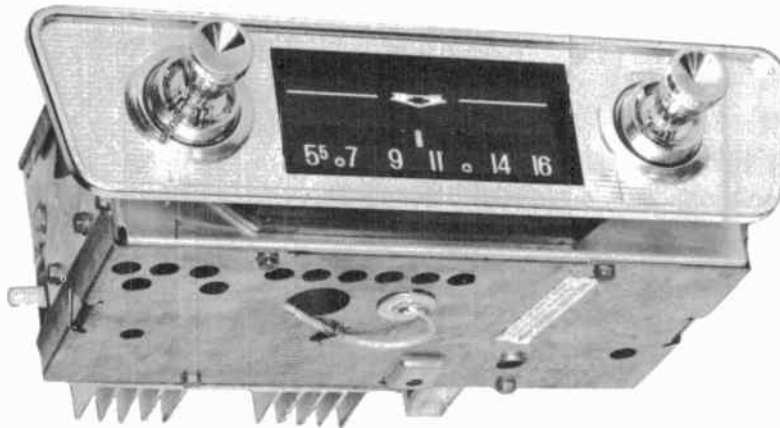
## CHASSIS—TOP VIEW



PHOTOFACT® Folder

with CIRCUITRACE™

CHEVROLET MODEL 988336  
CORVAIR MODEL 988460  
PONTIAC TEMPEST MODEL 989792



CHEVROLET MODEL 988336  
CORVAIR MODEL 988460  
PONTIAC TEMPEST MODEL 989792

TRADE NAME	Chevrolet Truck Model 988336 (For 1961 Chevrolet Truck Series 95) Corvaire Model 988460 (For 1961 Corvairs) Pontiac Tempest Model 989792 (For 1961 Pontiac Tempests)
MANUFACTURER	Delco Radio Div., General Motors Corp., Kokomo, Indiana
TYPE SET	Battery Operated 4 Tube - 1 Transistor Custom Built AM Receiver
POWER SUPPLY	12 Volt Storage Battery
TUNING RANGE	RATING 1.8 Amp. @12.8 Volts DC 540 - 1600KC

## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

Suggested Alignment Tools: A1, thru A5, A9, A10.....GENERAL CEMENT #8282, 8606, 8606-L, 9091  
WALSCO #2526, 2541, 2542, 2543, 2544  
A8, A7, A8.....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987,  
8988, 8989, 9291  
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

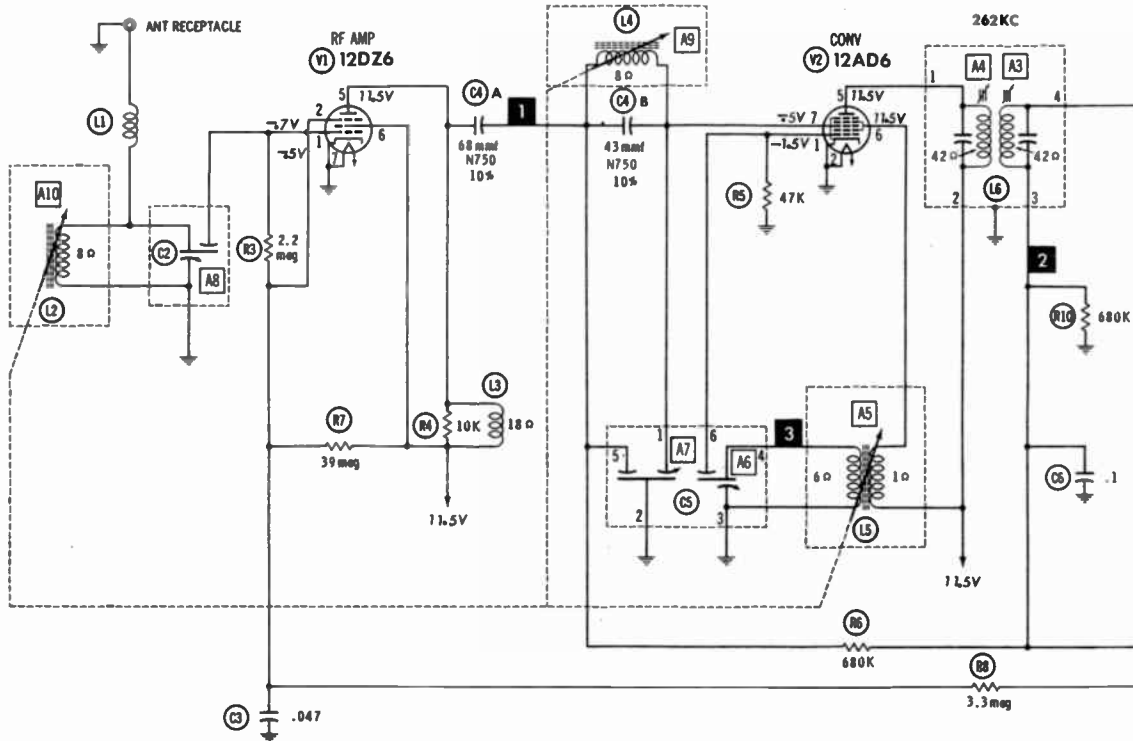
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mf to pin 7 (grid) of Converter. Low side to chassis.	262KC (400v Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
Check setting of Oscillator core (A5). Rear of core should be 1/8" from mounting end of coil form.						
2.	High side thru 82mmf to pin 7 (grid) of Converter. Low side to chassis.	1615KC	"	"	A6, A7, A8	"
3.	"	600KC	600KC Signal.	"	A9, A10	"
4.	"	1615KC	High end stop.	"	A7, A8	"
5.	With radio installed in car and antenna fully extended, tune in a weak station and adjust A8 for maximum output.					

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



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD969

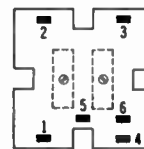
the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	9 meg	7 meg	FIL	FIL	70 $\Omega$	60 $\Omega$	0 $\Omega$		
V2	12AD6	47K	0 $\Omega$	FIL	FIL	100 $\Omega$	60 $\Omega$	1.3 meg		
V3	12EX6	680K	0 $\Omega$	FIL	FIL	85 $\Omega$	60 $\Omega$	100 $\Omega$		
V4	12DS7	5 meg	TP	4 $\Omega$	FIL	FIL	240 $\Omega$	0 $\Omega$	18 $\Omega$	470K

TRANSISTOR CIRCUIT RESISTANCE FOR X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.



TERM GUIDE  
RF & OSC TRIMMERS

- 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  $\pm 15\%$  in voltage and resistance readings.
- Volume control at maximum, no signal applied for voltage measurements.

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

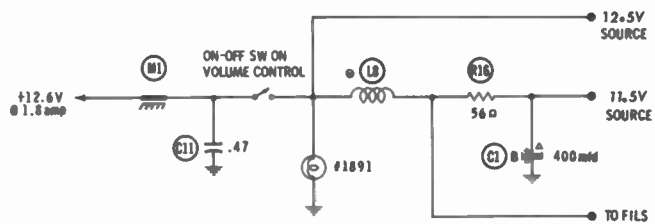
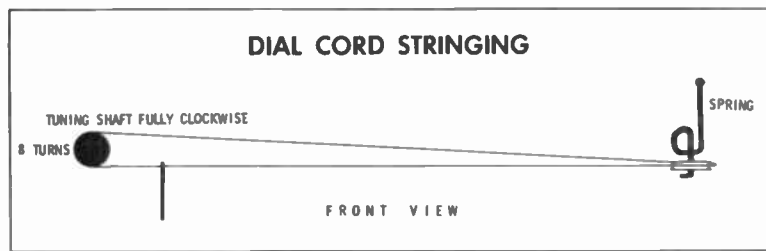
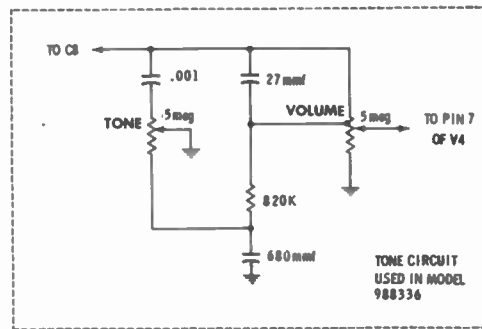
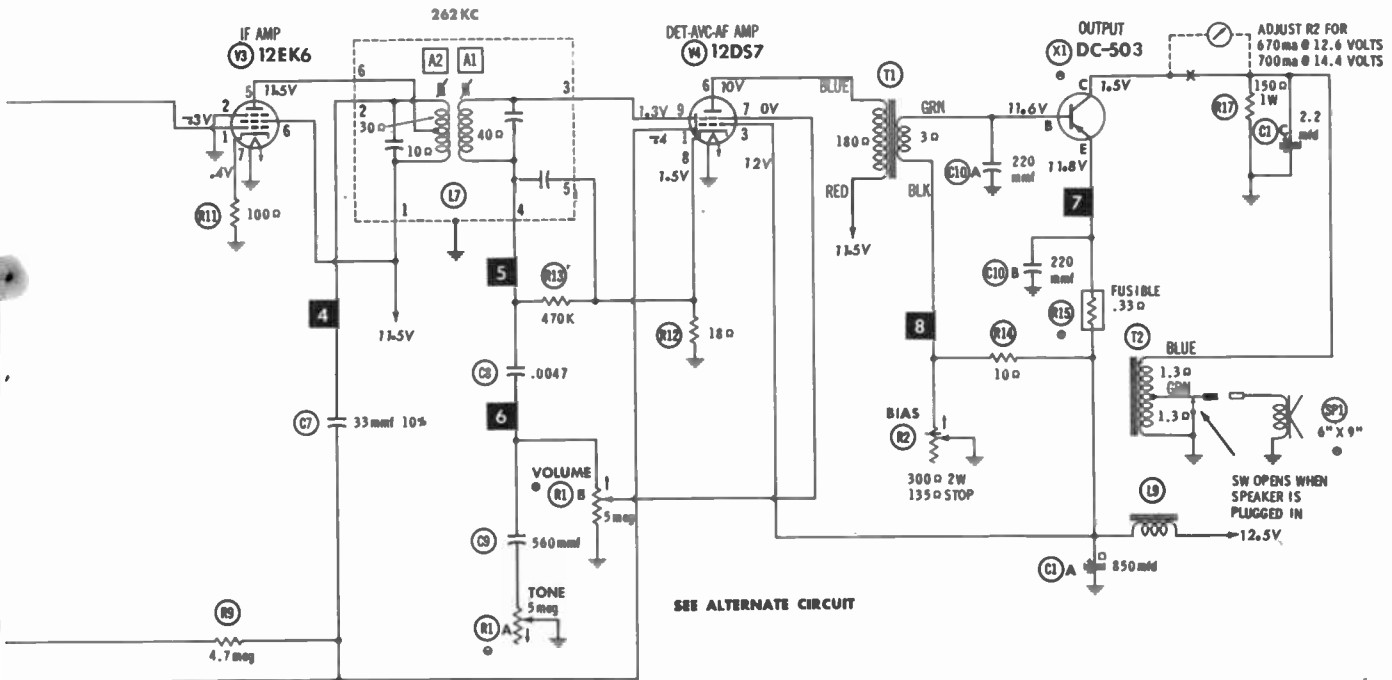
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

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

A PHOTOFACIT STANDARD NOTATION SCHEMATIC  
with CIRCUITRACE

© Howard W. Sams & Co., Inc. 1961





CHEVROLET MODEL 988336  
 CORVAIR MODEL 988460  
 PONTIAC TEMPEST MODEL 989792

# PARTS LIST AND DESCRIPTIONS

## TUBES

GENERAL ELECTRIC			RAYTHEON		SYLVANIA	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	
V1	RF Amplifier	12DZ6	V3	IF Amplifier	12EK6	
V2	Converter	12AD6	V4	Det. -AVC-AF Amp.	12DS7	

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	D8503	Output	2N176		PNP Note 1

Note 1. When replacing, apply silicone grease between transistor and heat sink. 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.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	850	16	7273730	AFH3-54-30			WP300.6		TVLB-3201 *
B	400	16							
C	2.2	11.5AC							

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

## FIXED CAPACITORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 75V	#7275120	P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	2TM-847
C3	68 N750 10%		N750-DI 68	TCN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C4A	43	#7273697	N750-DI 39	TCN-43	C10Q43U	CCTN-390	CN7-339	10TCU-Q39
C5								
C6	.1 75V		P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-201	2TM-P10
C7	33 10%		DI-330	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C8	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C9	560		DI-560	DD-561	L10T56	CCD-561	B-356	10TS-T56
C10A	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
B	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C11	.47 100V		P288N-47	DD-221	CUB2P47	IDP-4-474	GEM-2047	2TM-P47

# Delco Part Number.

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA	5meg	1/2	7278058 ①					Tone Volume Power Off-On Bias
B	5meg							
C	Switch							
R2	300Ω	2(WW)	7275474 *					
	135ΩStop							

① Model 989792 uses Part #7277112.

Model 988336 uses Part #7277288 (Tapped volume)

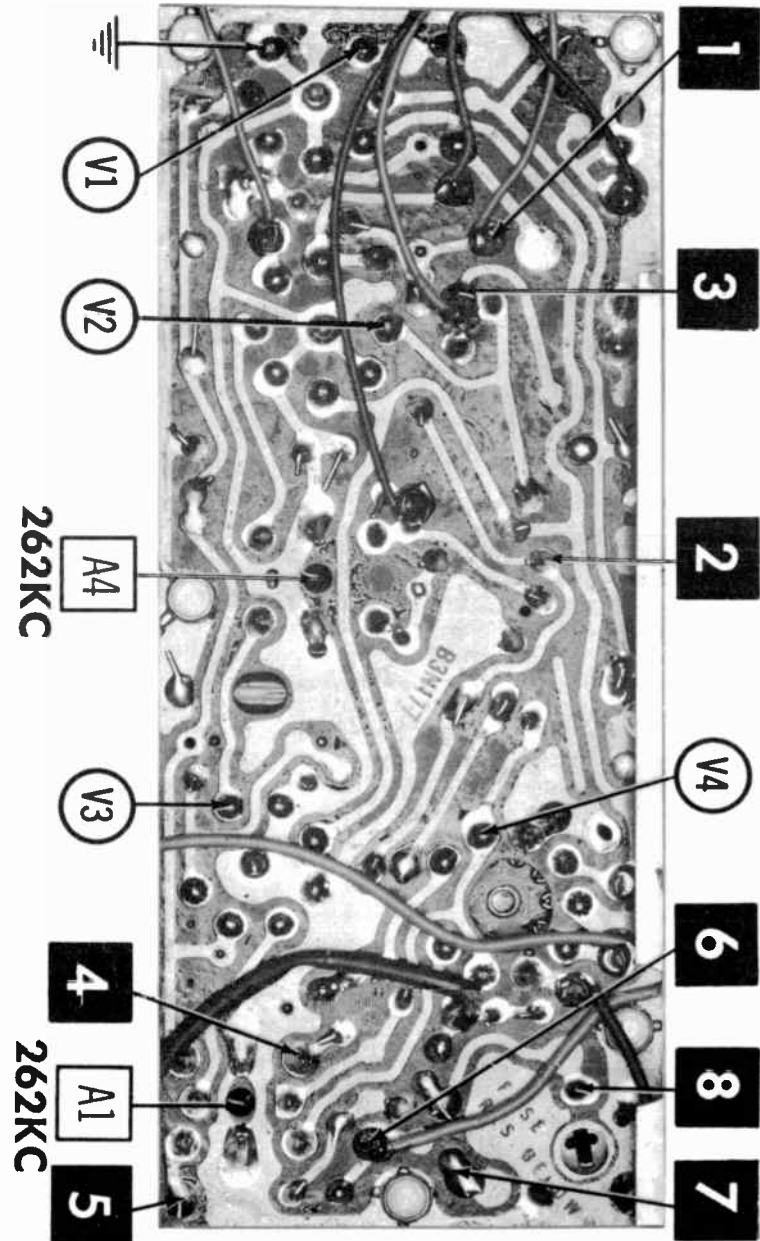
\* "BTA-LOC" equivalent: FR56L, RU56A, OS1250A, IS1812, US41.

• Temperature Compensated.

A Howard W. Sams  
CIRCUITRACE™ Photo

PRINTED BOARD

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



## PARTS LIST AND DESCRIPTIONS (Continued)

### RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	2.2meg				R11	100Ω			
R4	10K				R12	10Ω			
R5	47K				R13	470K			
R6	680K				R14	10Ω			
R7	39meg				R15	.33Ω			Not e 1
R8	3.3meg				R16	56Ω			
R9	4.7meg				R17	150Ω 1W			
R10	680K								

Note 1. Fuse type. Part #7274151 used in Models 988460 and 989792.  
Part #7274329 used in Model 988336.

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke(6.5uh)	7255738	BC-565	4610	RTC-8520	T859	Ⓛ Part #7241708 used in Model 988792
L2	Ant.	1221138					
L3	RF Choke(1.8MB)	7269684	BC-514	4664	RTC-8533	T875	
L4	RF	1221138					
L5	Osc.	1221263					
L6	Input IF	1221257	BC-344	12-PH1	RTC-8644	T855	
L7	Output IF	1221255	BC-424				
L8	Beam Choke(1.4uh)	1217846 Ⓛ					

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 C.)	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	
L9	.700A	.7Ω	.011 HY	7274342		TC-2			

### TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	
	T1	6.8	1	1221590		TA-48		

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	
T2	8Ω Tap Ⓛ 3-4Ω	1221535		TA-50			

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	8"x 9"	PM	3-4Ω	7275558	69A2	Model 988460
	4"x 10"	PM	3-4Ω	7276547		Model 989792
	8"x 9"	PM	3-4Ω	7277515		Model 988336

### MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Spark Plate Spark Plate	1221509 7271564	Model 988460, 988336 Model 989792

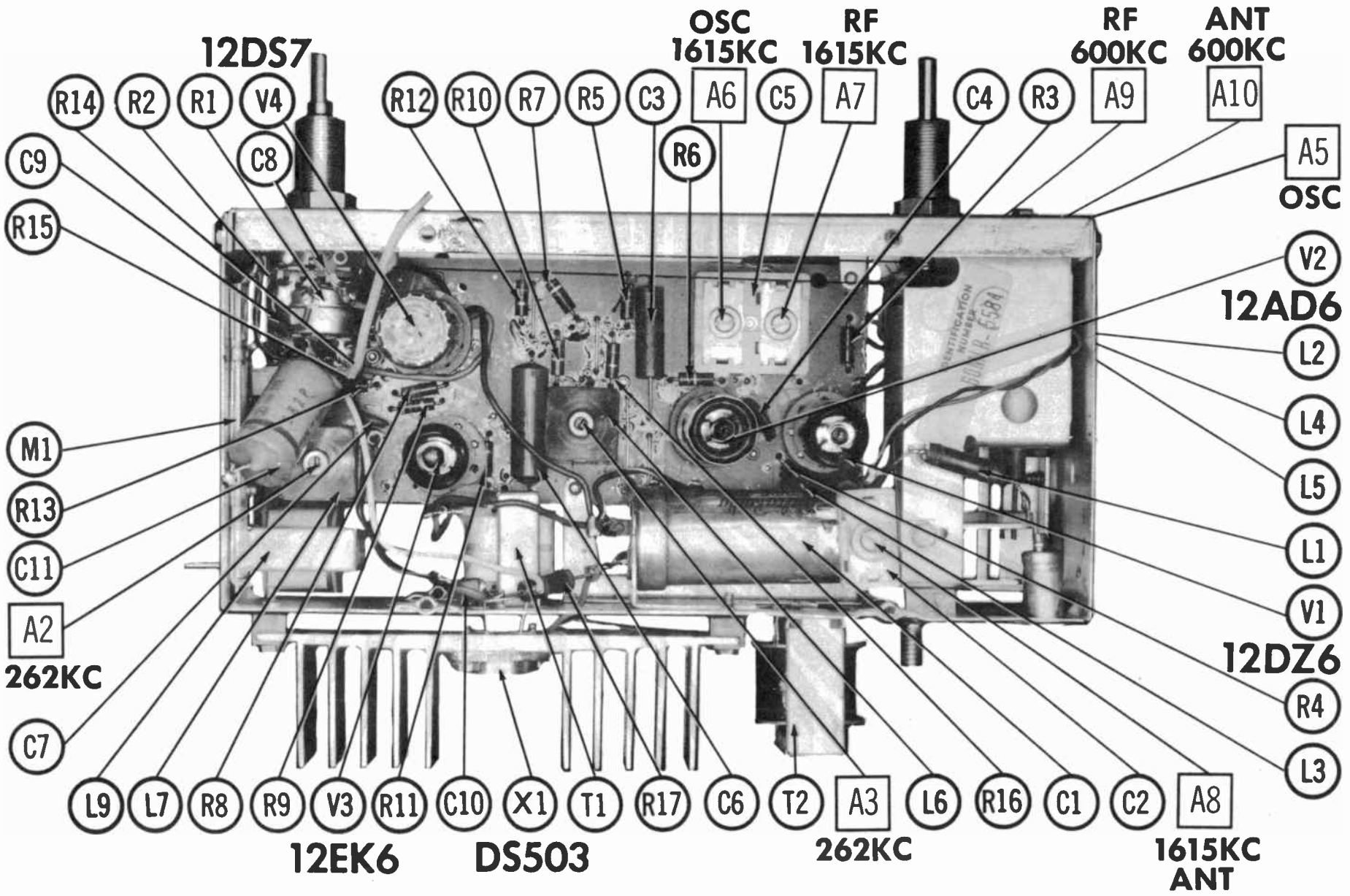
### CABINETS & CABINET PARTS

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

NAME	PART NO.	DESCRIPTION
Dial Pointer	7270446	Models 988336, 988460
Dial Pointer	7272125	Model 989792
Knob	7277055	Tuning, Volume, Models 988336, 988460
Knob	535908	Tuning, Volume, Model 989792
Knob	7272970	Tone, Models 988336, 988460
Knob	539611	Tone, Model 989792
Knob	7274782	Dummy, Models 988336, 988460
Knob	539610	Dummy, Model 989792

### WIRING DATA

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



CHASSIS TOP VIEW



CHEVROLET MODEL  
988413

TRADE NAME Chevrolet Model 988413 (For 1961 Chevrolets)  
 MANUFACTURER Delco Radio Div., General Motors Corp., Kokomo, Indiana  
 TYPE SET Battery Operated 4 Tube - 1 Transistor Custom Built Automobile AM Receiver  
 POWER SUPPLY 12 Volt Storage Battery RATING 1.8 Amp. @12.6 Volts DC  
 TUNING RANGE-BROADCAST 540 - 1600KC

## ALIGNMENT INSTRUCTIONS

### ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

Suggested Alignment Tools:

A1 thru A5, A9, A10.....GENERAL CEMENT #8282, 8606, 8606-L, 9091  
 WALSCO #2526, 2541, 2542, 2543, 2544  
 A6, A7, A8..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291  
 WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

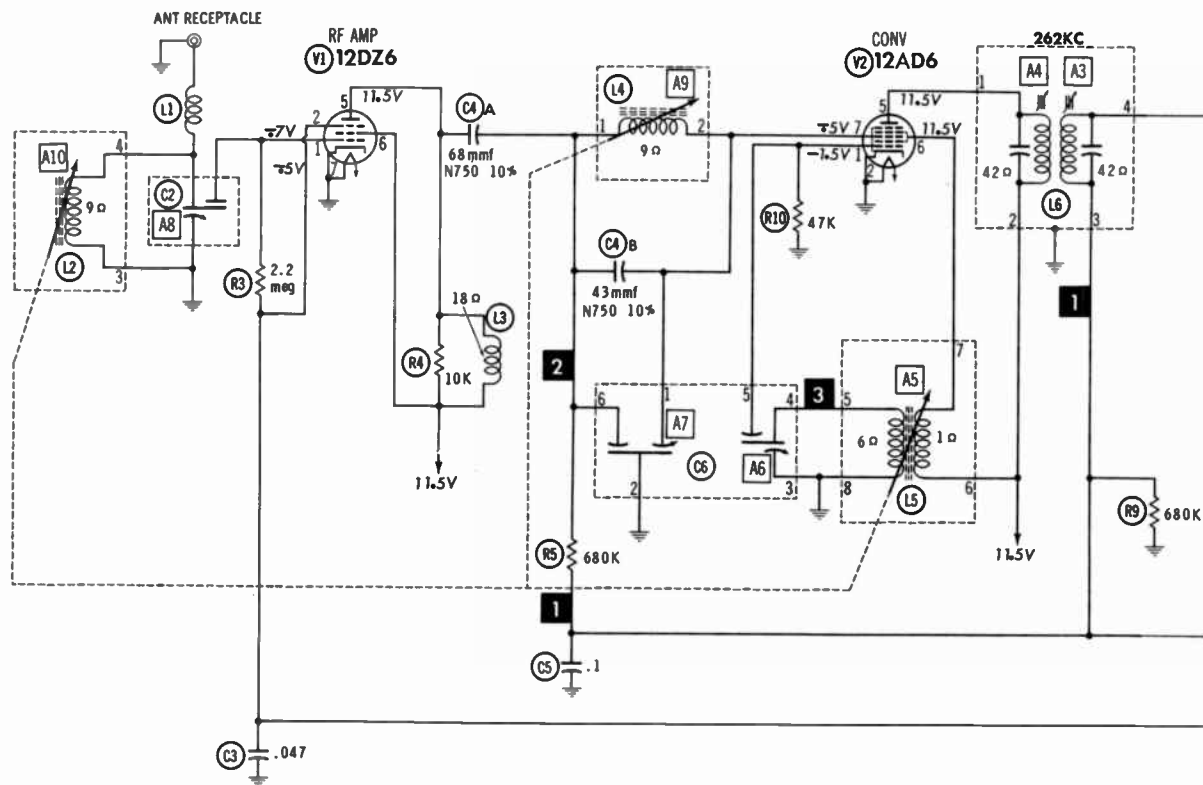
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	282KC (400% Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
Check setting of Oscillator core (A5). Rear of core should be 1 5/8" from mounting end of coil form.					
2. High side thru 82mmf to pin 7 (grid) of Converter. Low side to chassis.	1615KC	"	"	A6, A7, A8	"
3. "	600KC	600KC Signal.	"	A9, A10	"
4. "	1615KC	High end stop.	"	A7, A8	"
5. With radio installed in car and antenna fully extended, tune in a weak station and adjust A8 for maximum output.					

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

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD946

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

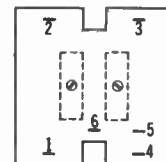




RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	9 meg	7 meg	FIL	FIL	70 $\Omega$	60 $\Omega$	0 $\Omega$		
V2	12AD6	47K	0 $\Omega$	FIL	FIL	100 $\Omega$	60 $\Omega$	1.3 meg		
V3	12EK6	680K	0 $\Omega$	FIL	FIL	85 $\Omega$	60 $\Omega$	100 $\Omega$		
V4	12DS7	5 meg	TP	4 $\Omega$	FIL	FIL	240 $\Omega$	0 $\Omega$	18 $\Omega$	470K

TRANSISTOR CIRCUIT RESISTANCE FOR X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.



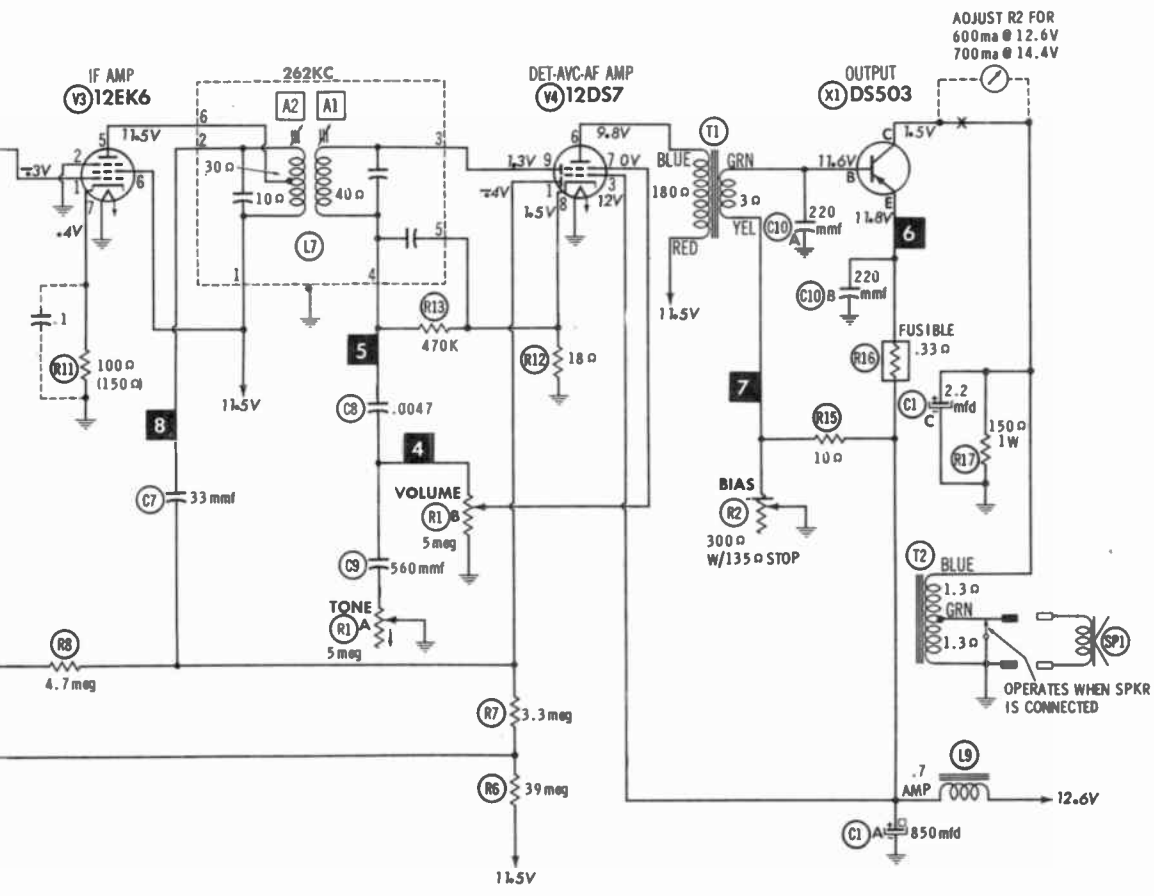
TERM VIEW RF & OSC TRIMMERS

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.

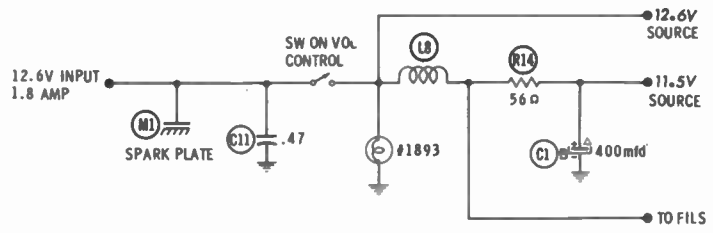
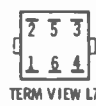
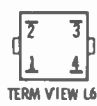
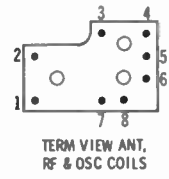
1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of 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

A PHOTOFACIT STANDARD NOTATION SCHEMATIC  
with **CIRCUITRACE**

© Howard W. Sams & Co., Inc. 1961



ADJUST R2 FOR  
600 ma @ 12.6V  
700 ma @ 14.4V



CHEVROLET MODEL  
988413

# PARTS LIST AND DESCRIPTIONS

## WIRING DATA

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

### TUBES

GENERAL ELECTRIC			RAYTHEON		SYLVANIA	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	
V1	RF Amplifier	12DZ6	V3	IF Amplifier	12EK6	
V2	Converter	12AD6	V4	Det. -AVC-AF Amp.	12D87	

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	D8503	Output	2N176		PNP Note 1

Note 1. When replacing, apply silicone grease between transistor and heat sink. Tighten mounting screw 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.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
ClA	850	16	7273730	AFH3-54-30			WP300.6		TVL8-3021*
B	400	16							
C	2.2	11.5AC							

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

### FIXED CAPACITORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 75V	#7277422	P488N-047	DD-503	CUB2847	IDP-2-473	GEM-2047	2TM-847
C3	68 N750 10%		N750-DI 68	TCN-68	C10Q68U	CCTN-680	CNO-447	10TCC-Q68
C4A	43 N750 10%		N750-DI 39	TCN-43	C10Q39U	CCTN-390	CNO-439	10TCC-Q39
B	.1 75V	#7273697	P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-201	2TM-P10
C5	.1 75V							
C6								
C7	33		DI-33	DD-330	L10T33	CCD-330	GP433	10T8-Q33
C8	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C9	560		DI-560	DD-560	L10T56	CCD-561	B-356	10T8-T56
C10A	220		DI-220	DD-221	L10T22	CCD-221	B-322	10T8-T22
B	220		DX-220	DD-221	L10T22	CCD-221	B-322	10T8-T22
C11	.47 100V		P288N-47	DD-221	CUB2P47	IDP-4-474	GEM-2047	2TM-P47

# Delco Part Number.

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES	
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.		MALLORY PART No.
RIA	5meg		7277329					Tone Volume Power Off-On Bias
B	5meg							
C	Switch						UE4247-B	
R2	300Ω	3(WW)	7275474*					
	135Ω Stop							

\* Temperature Compensated.

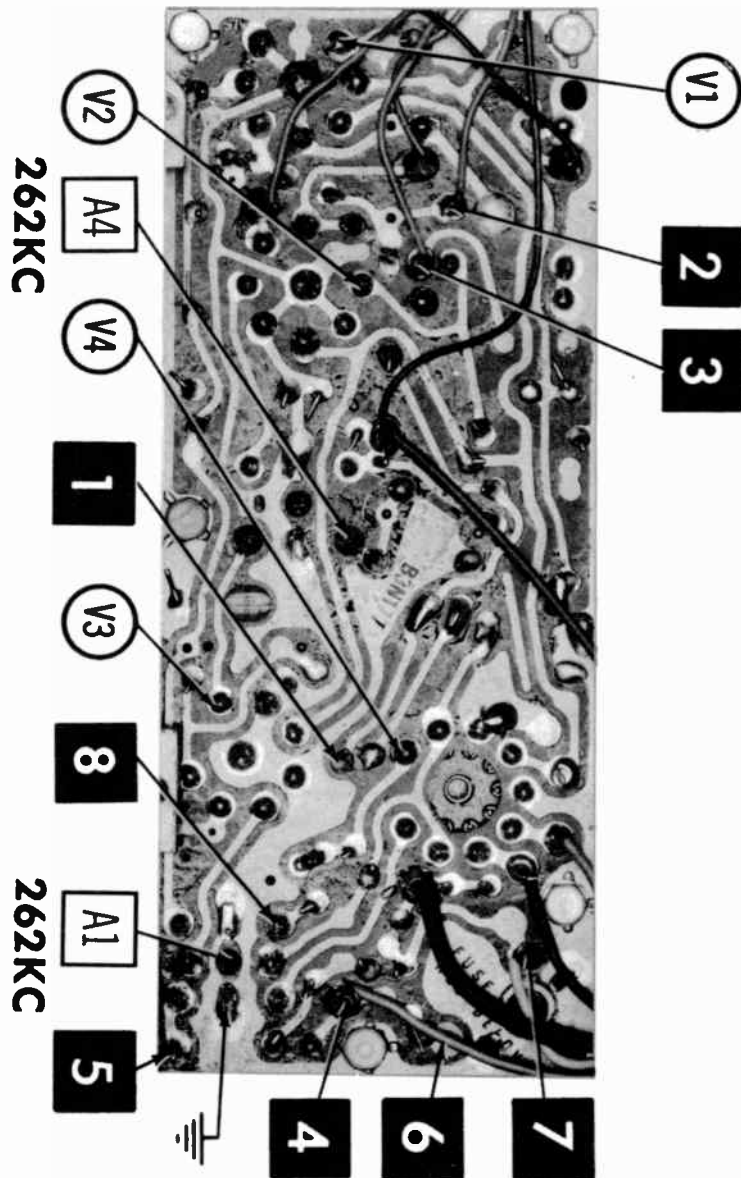
# "STA-LOC" Equivalent: FO56A, RU56A, O8687, IS1375, US41.

(CONTINUED ON REAR PAGE)

A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

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





## PARTS LIST AND DESCRIPTIONS (Continued)

### RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	2.2meg				R11	100Ω			(150Ω) *
R4	10K				R12	18Ω			
R5	680K				R13	470K			
R6	39meg				R14	56Ω			
R7	3.3meg				R15	10Ω			
R8	4.7meg				R16	.33Ω			Pt. #7274151
R9	680K				R17	150Ω 1W			
R10	47K								

\* Alternate Value.

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Merit PART No.	Miller PART No.	Stancoor PART No.	Workman TV PART No.	
L1	RF Choke (6.5uh)	7255738	BC-565	4610	RTC-0620	T859	
L2	Ant.	1221138					
L3	RF Choke (1.8MHz)	7269684	BC-514	4644	RTC-0533	T875	
L4	RF	1221138					
L5	Osc.	1221263					
L6	Input IF	1221257	BC-344	13-PH1	RTC-0644	T855	
L7	Output IF	1221255					
L8	Hash Choke (1.4uh)	7261708					

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT (1000 Hz)	DELCO PART No.	Merit PART No.	Stancoor PART No.	Thordanson PART No.	Triad PART No.	
L9	.7A	.7Ω	.011 HY	7274342		TC-2			

### TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	Merit PART No.	Stancoor PART No.	Thordanson PART No.	Triad PART No.	
	T1	6.8	1	1221590		TA-48		

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	Merit PART No.	Stancoor PART No.	Thordanson PART No.	Triad PART No.	
	T2	8Ω Tap @	3-4Ω	1221535		TA-50		

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	4"x 10"	PM	3-4Ω	7277075	410A2	

### MISCELLANEOUS

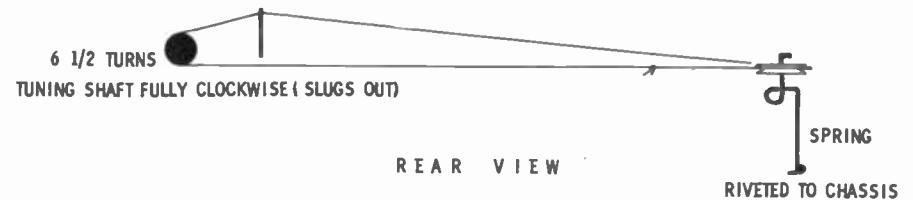
ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Spark Plate	7271564	

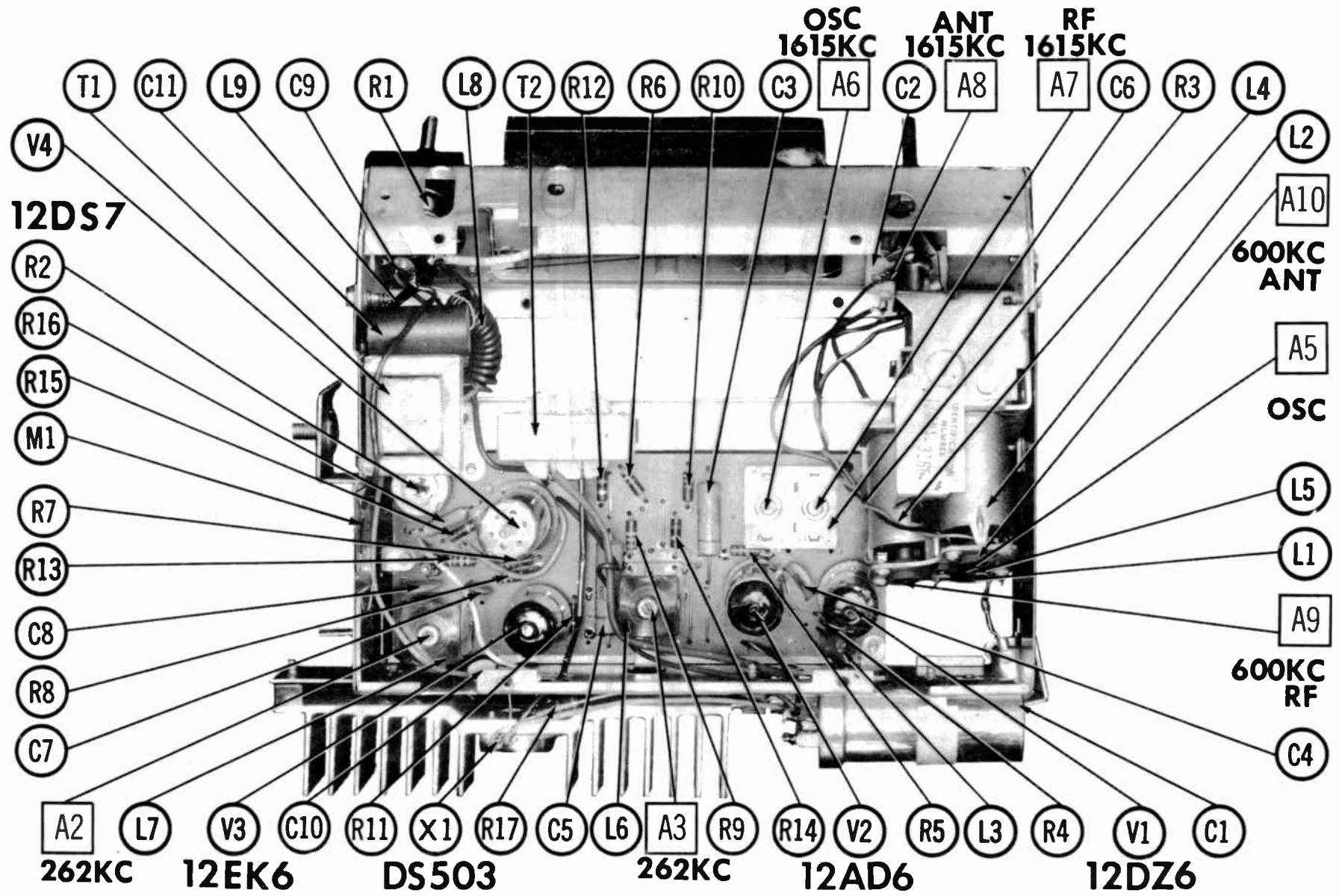
### CABINETS & CABINET PARTS

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

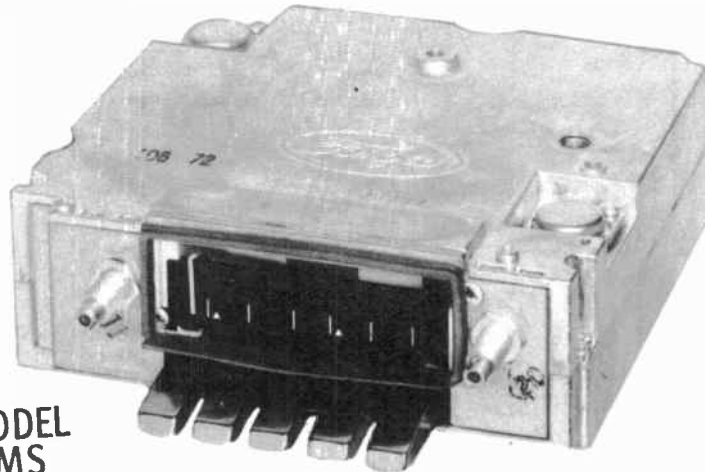
NAME	PART NO.	DESCRIPTION
Dial Pointer	7278907	
Knob	7277056	Tuning, Volume
Knob	3785716	Tone
Knob	3786717	Dummy

## DIAL CORD STRINGING





CHASSIS TOP VIEW



MODEL  
ITMS

TRADE NAME	Ford Models ITMC (CIVV-18810-C) For 1961 Continental, ITMS (CISF18810-B) For 1961 Thunderbird		
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois		
TYPE SET	Battery Operated Transistorized Custom Built Automobile AM Receiver		
POWER SUPPLY	12 Volt Storage Battery	RATING	1.1 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	540 — 1610KC		

### ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT						
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.						
Suggested Alignment Tools:						
A1 thru A4.....		GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440				
		WALSCO #2526, 2543, 2544, 2545				
A5, A6, A7.....		GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291				
		WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538				
A9, A10, A11, A12.....		GENERAL CEMENT #9050-L, 9150				
		WALSCO #2521, 2524				
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mf to collector of RF Amp. Low side to chassis.	262.5KC (400v Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Thru dummy (Fig. 1) to antenna receptacles.	1610KC	"	"	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. Repeat step 2.						
3.	Thru dummy to antenna receptacle.	1020KC	Tuner carriage 9/16" from high end stop.	Across voice coil.	A9, A10, A11, A12	Adjust for maximum output. Repeat Steps 2 and 3.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and adjust A8 for maximum output.					

FORD MODEL  
ITMC, ITMS

#### PUSHBUTTON ADJUSTMENT

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

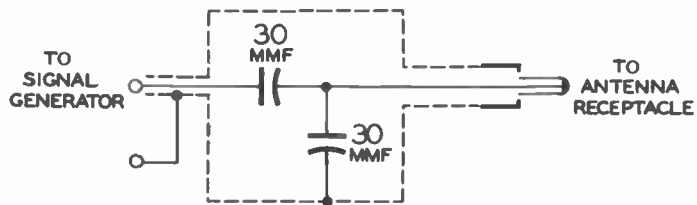


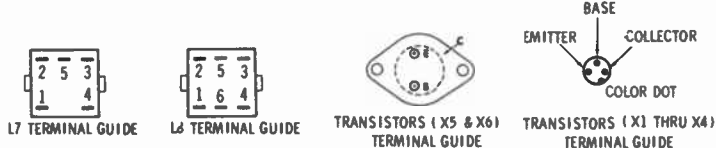
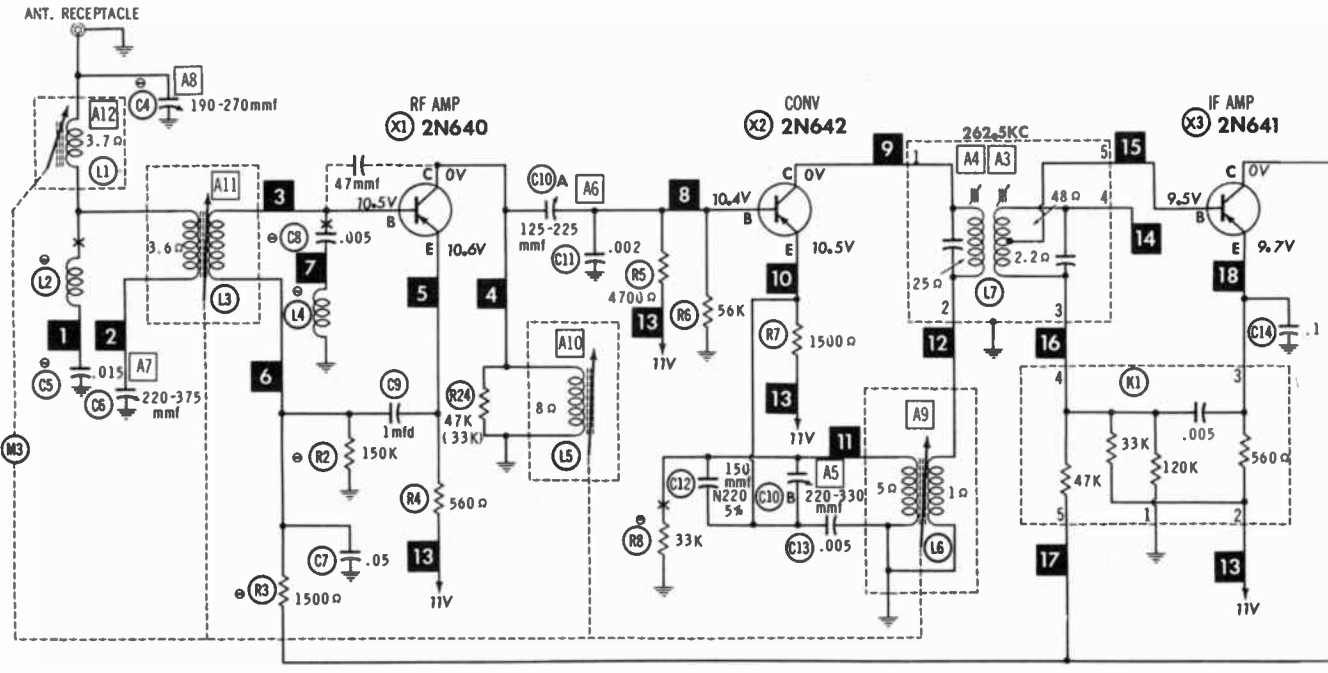
FIG. 1

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

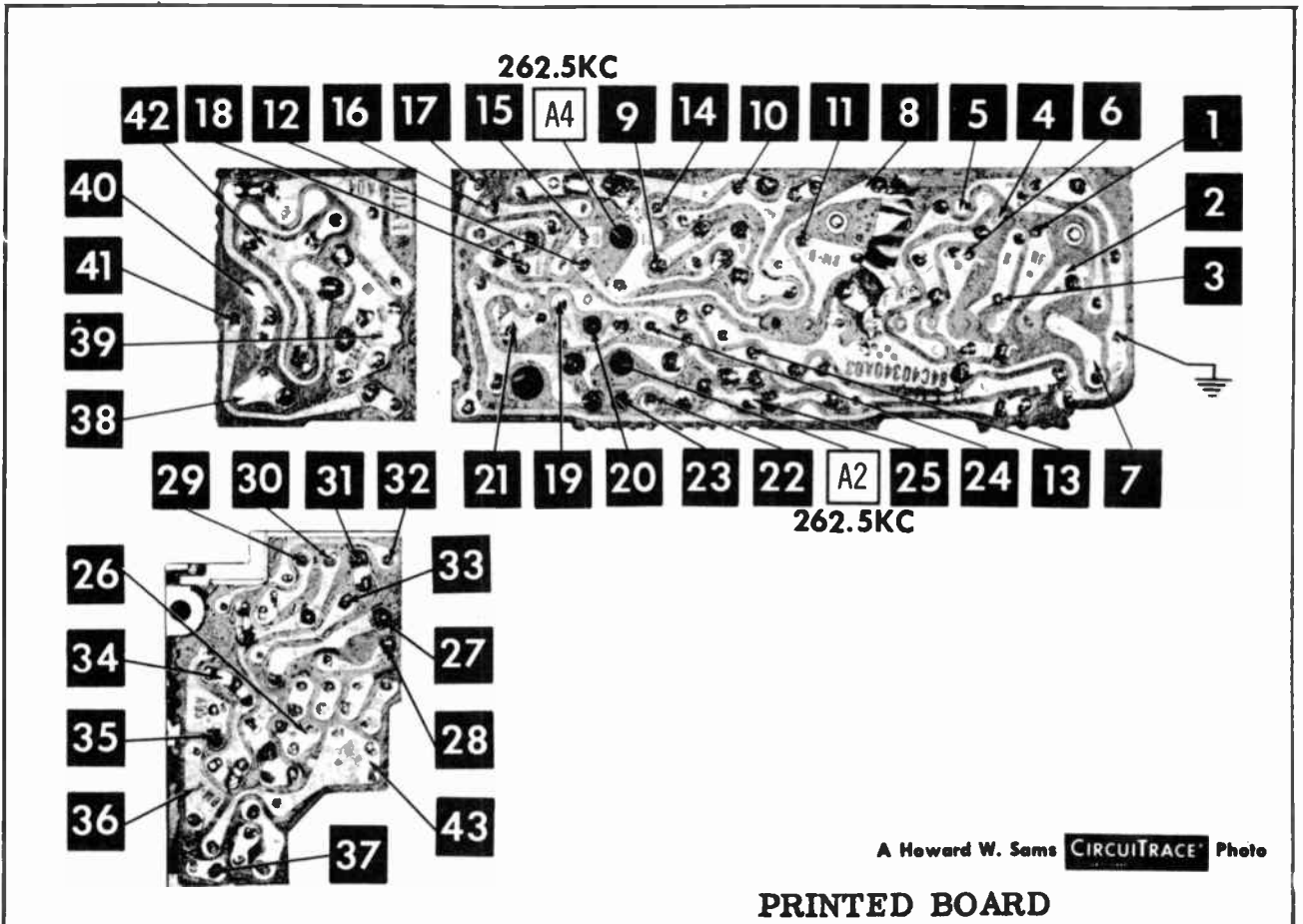
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD936

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



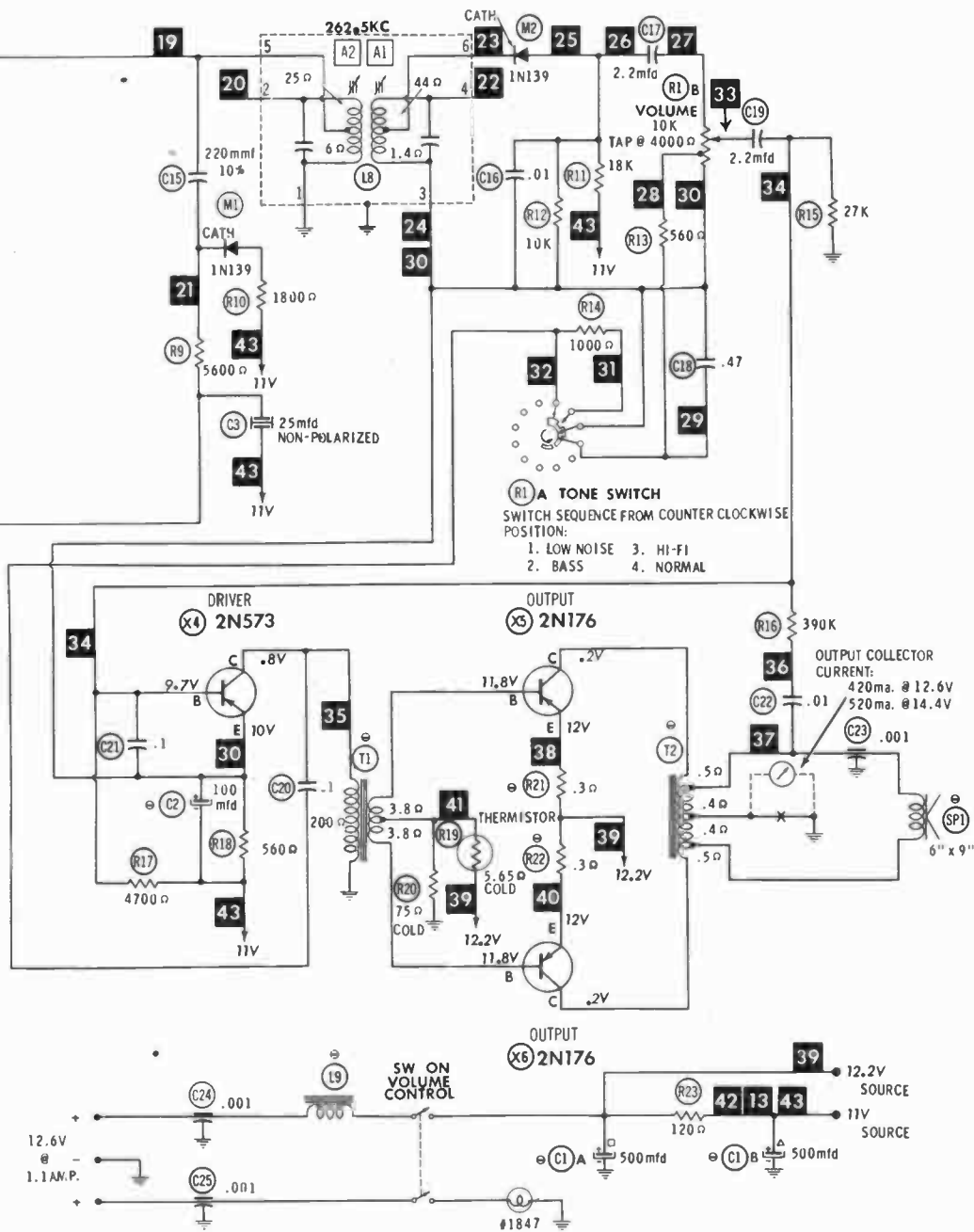


A PHOTOFAC STANDARD NOTATION SCHEMATIC  
with **CIRCUITRACE**  
© Howard W. Sams & Co., Inc. 1962



A Howard W. Sams **CIRCUITRACE** Photo

**PRINTED BOARD**



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

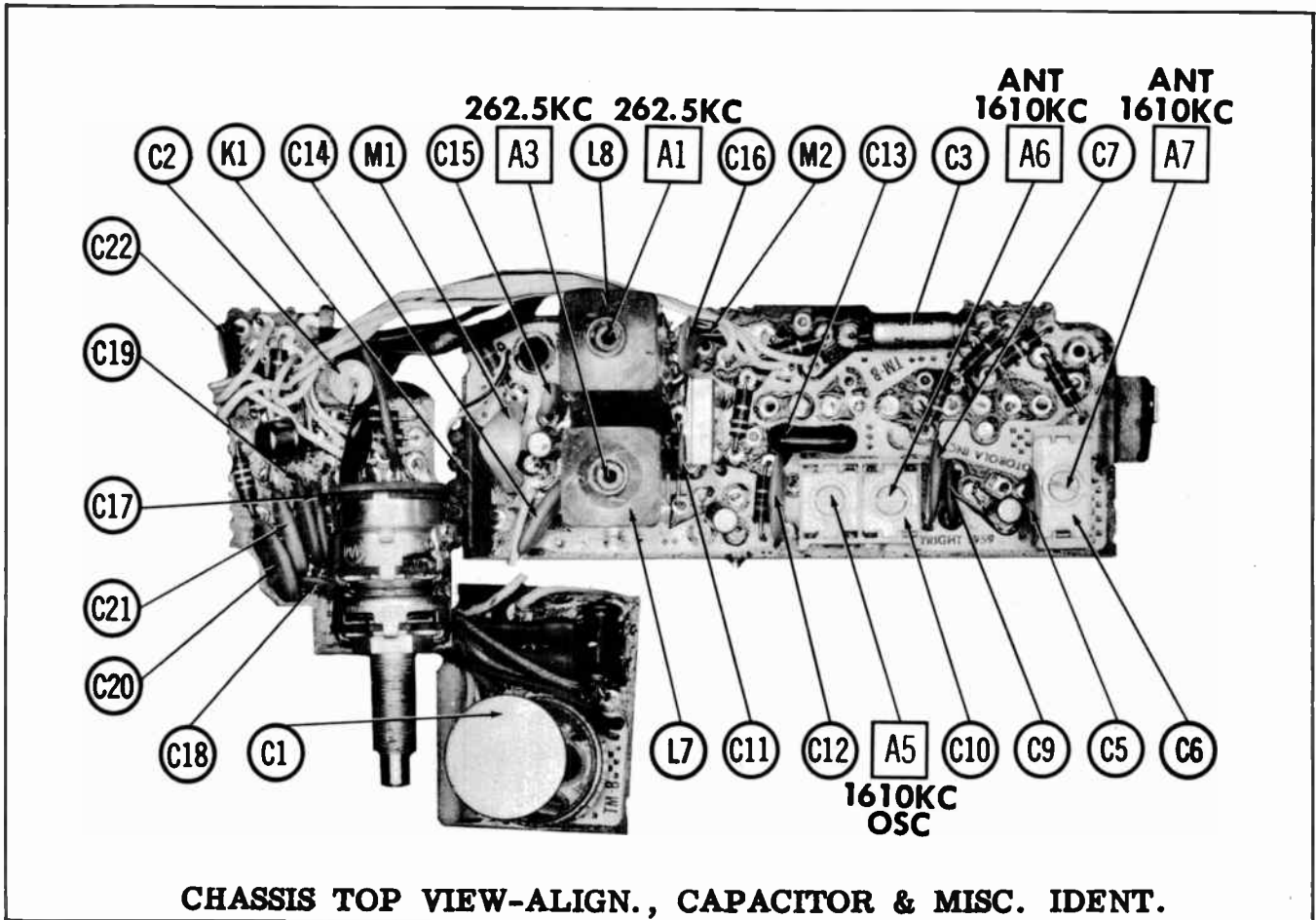
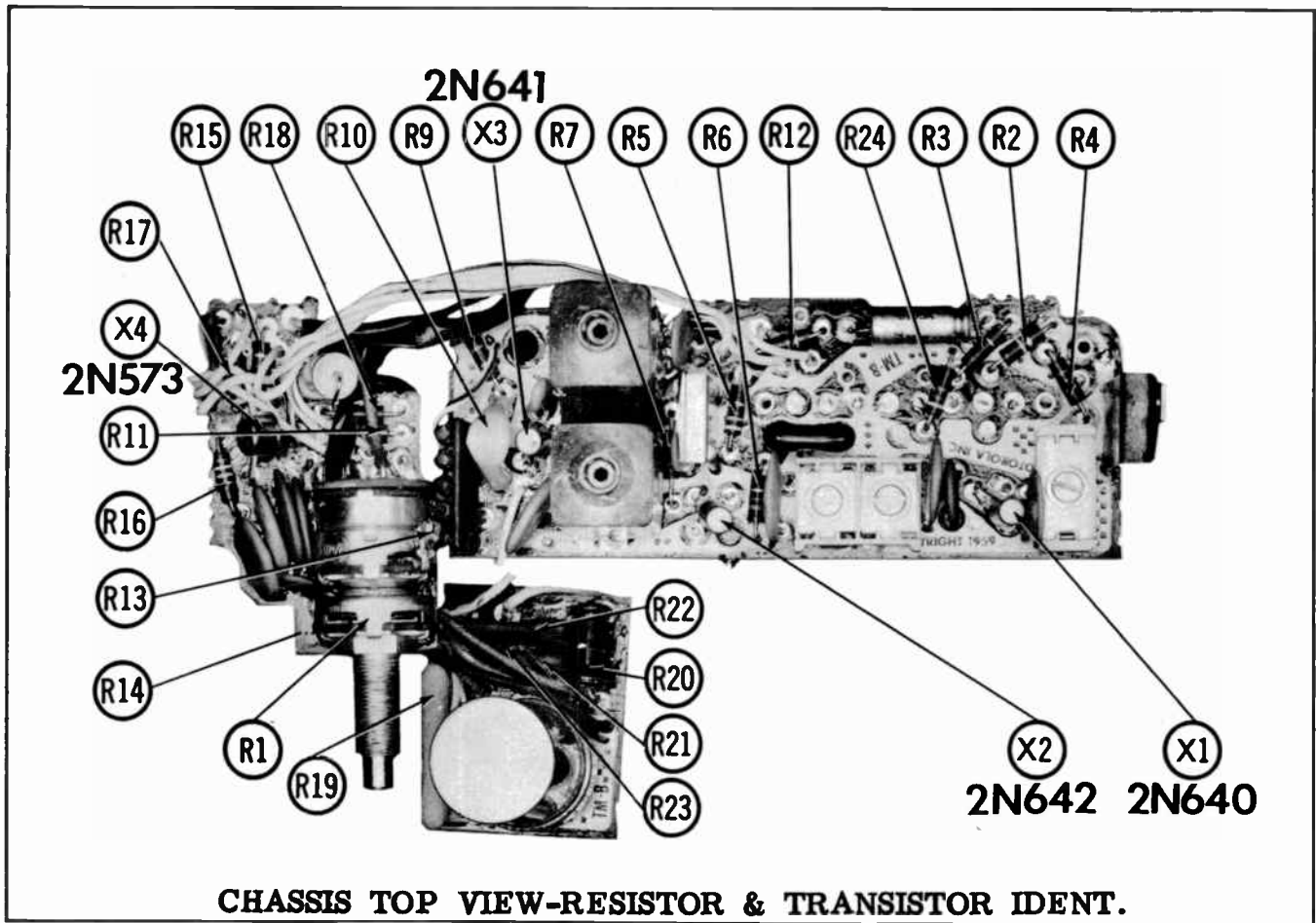
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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

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

FORD MODEL  
ITMC, ITMS



## PARTS LIST AND DESCRIPTIONS

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	2N640	RF Amplifier	2N1634		PNP
X2	2N642	Converter	2N1639		PNP
X3	2N641	IF Amplifier	2N1638		PNP
X4	2N573	Driver	2N591	2N573	PNP
X5	2N176	Output	2N176		PNP Note 1
X6	2N176	Output	2N176		PNP Note 1

Note 1. When replacing, apply DC-4 grease (Part #11M490487) to both sides of insulator. Tighten mounting screws securely.

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
CLA	500	16	23C40402A01 ①	PWB2-02-40					
B	500	16							
C2	100	3	23C664730 ①	FTT18	NLW100-3	MT1-18	TT6X100	MLV100-3	TE-1059,5
C3	25NP	6	23C40071A01	FRS7200	BER10-150		TCN1025		TVANS-1204,1*

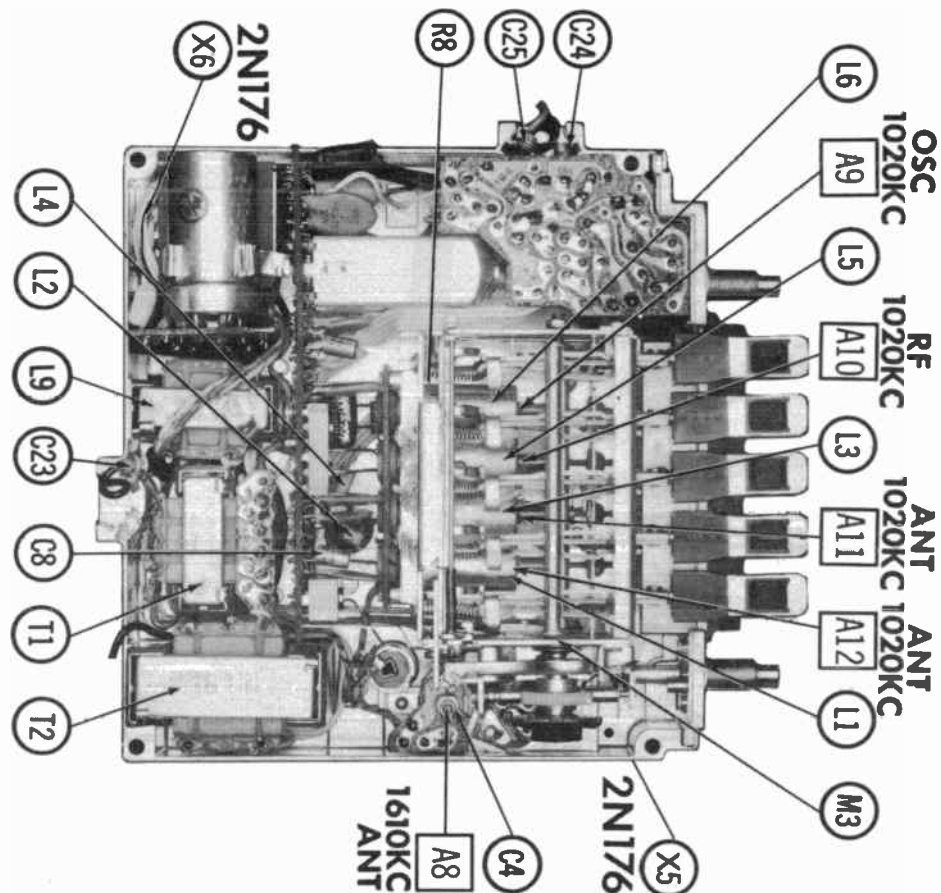
① In some versions C1 and C2 are combined in one 3 section unit (Part #24C40297A01).

\* 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.	ELMENC0 PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	190-270	#20C40112A03 ①				425		
C5	.015		BPD-015	DD-153	BYA10615	CCD-153	B-215	5HK-815
C6	230-375	#20B40111A04 ②						
C7	.05		BPD-05	DD-503	CUB285	IDP-3-503	GP150	5HK-850
C8	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C9	1.0mfd 3V			UK-105				HY-135
C10A	125-225	#20C40254A01 ③						
B	220-330							
C11	.002		BPD-002		BYA10D2	CCD-202	B-220	5HK-D20
C12	150 N220 5%	#21D40536A01 ④						10TCR-T15
C13	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C14	.1						BT-010	TH-P10
C15	220 10%		DI-220	DD-221	LA0T22	CCD-221	GP322	10T8-T22
C16	.01		BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-810
C17	2.2mfd 3V			UK-225				HY-150
C18	.47mfd 3V			UK-474				HY-130
C19	2.2mfd 3V			UK-225				HY-150
C20	.1						BT-010	TH-P10

## CHASSIS—TOP VIEW



## PARTS LIST AND DESCRIPTIONS (Continued)

### 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.
C21	.1							
C22	.01		BPD-01	DD-103	BYA1081	CCD-103	BT-010	TH-P10
C23	.001		EF-001	MFT-1000		CCF-102	B-110	5HK-810
C24	.001		EF-001	MFT-1000		CCF-102	CT280A	
C25	.001		EF-001	MFT-1000		CCF-102	CT280A	

- ① Model ITMC uses 25-150mmf in this application (Part #20C40112A01).
- ② Value varies from .01-.025mfd. Replace with original value.
- ③ Model ITMC uses .5mfd in this application. Not used when L4 is omitted.
- \* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

### CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
RIA B	Tone Volume & Switch (Off-On)	Switch 10K 4000Ω Tap	18C40182A01				

### RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	150K			Note 1	R18	1000Ω			
R3	1500Ω			Note 2	R15	27K			
R4	560Ω				R16	390K			
R5	4700Ω				R17	4700Ω			
R6	56K				R18	560Ω			
R7	1500Ω			Note 4	R19	5.65Ω Cold			#6B563621
R8	33K				R20	75Ω Cold			#17C40259A01
R9	5600Ω				R21	.3Ω			Note 3
R10	1800Ω				R22	.3Ω			Note 3
R11	18K				R23	120Ω			
R12	10K				R24	47K			(33K)*
R13	560Ω								

- Note 1. Value may vary from 82K to 180K. Replace with original value.
- Note 2. Value may vary from 1000Ω to 2200Ω. Replace with original value.
- Note 3. Value will vary to .3Ω. Replace with original value.
- \* Alternate Value.
- Note 4. 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 TV PART No.	
L1	Ant.	24B40287A01 ①					① Part of M3 ② Not used in some versions.
L2	Image Trap	24B40532A01 ②					
L3	Ant.	24B40270A01 ①					
L4	RF Choke	24B40532A02 ②					
L5	RF	24B563217 ①					
L6	Osc.	24K564644 ①					
L7	Input IF	24D40074A01					
L8	Output IF	24D40075A01					

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 Hz)	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L9	1.1A	.4Ω	6MH	25C40107A01-D ①					① Alternate #25C40107A01

### 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	8,5	1	25C40105A01-B ①					① Alternate Part #25C40105A01

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	Tap	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	40Ω CT	6-8Ω CT	25C40106A01-B ①					① Alternate Part #25C40106A01

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	6"x 9"	PM	6-8Ω	1D40378A01*		* Used in Model ITMS (Obtain Speaker for Model ITMC from Ford Dealer)

### COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	1st IF Amp. Bias	.005mfd, 560Ω, 33K, 47K, 120K	51B40185A01	

### SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		MOTOROLA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M1	1N139	48K134498		1N295	AVC Detector
M2	1N139	48K134498		1N295	

### MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Tuner Tuner Printed Board	77D40244A01 77D40298A01 84C40340A02	(AT-310) Complete Model ITMS (TA-325) Complete Model ITMC Less all Components, Consists of 8 Sections (Specify Letter Following Part Number)

### CABINETS & CABINET PARTS

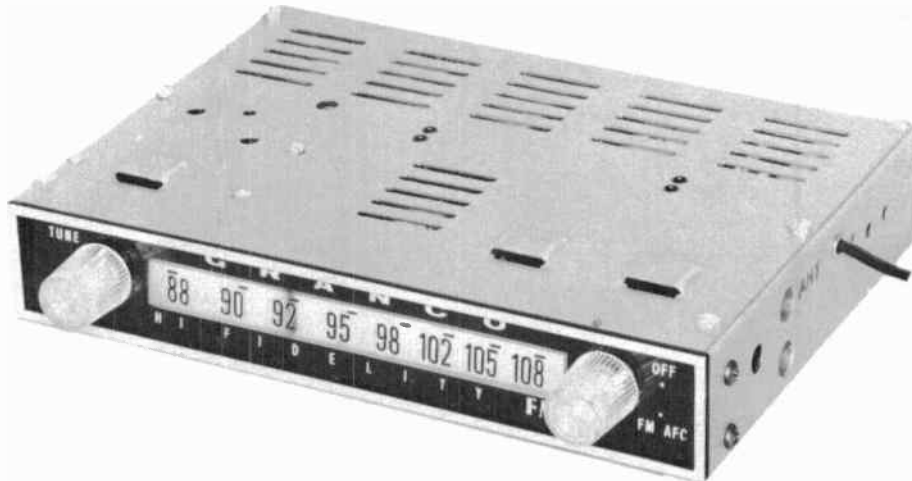
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART No.	DESCRIPTION
Dial Scale	34B40027A01	Model ITMC
Dial Pointer	1B40398A01	
Pushbutton	38B40271A01	Model ITMC
Pushbutton	38B40025A01	Model ITMS
Knob	1B40255A01	Tuning, Volume, Model ITMS
Knob	36B40375A01	Tone Dummy, Model ITMS
Knob	1B40248A01	Wood Grain, Tuning, Volume, Model ITMC
Knob	1B40248A02	Blue, Tuning, Volume, Model ITMC
Knob	1B40248A03	Beige, Tuning, Volume, Model ITMC
Knob	1B40248A04	Green, Tuning, Volume, Model ITMC
Knob	1B40248A05	Red, Tuning, Volume, Model ITMC
Knob	1B40248A06	Turquoise, Tuning, Volume, Model ITMC
Knob	1B40248A07	Black, Tuning, Volume, Model ITMC

### WIRING DATA

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

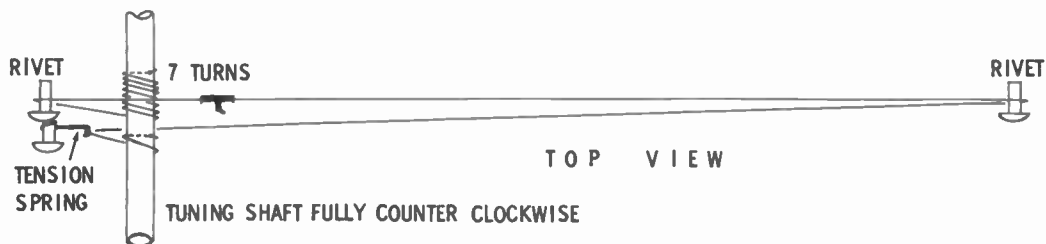




GRANCO MODEL  
ARC-60

TRADE NAME	Granco Model ARC-60		
MANUFACTURER	Granco Products, Inc., 83-30 Kew Gardens Road, Kew Gardens, N. Y.		
TYPE SET	Battery Operated 5 Tube Universal Type Automobile FM Converter		
POWER SUPPLY	12 Volt Storage Battery	RATING	.85 Amp. @12.6 Volts DC
TUNING RANGE - FREQ. MOD.	88 - 108MC		

### DIAL CORD STRINGING

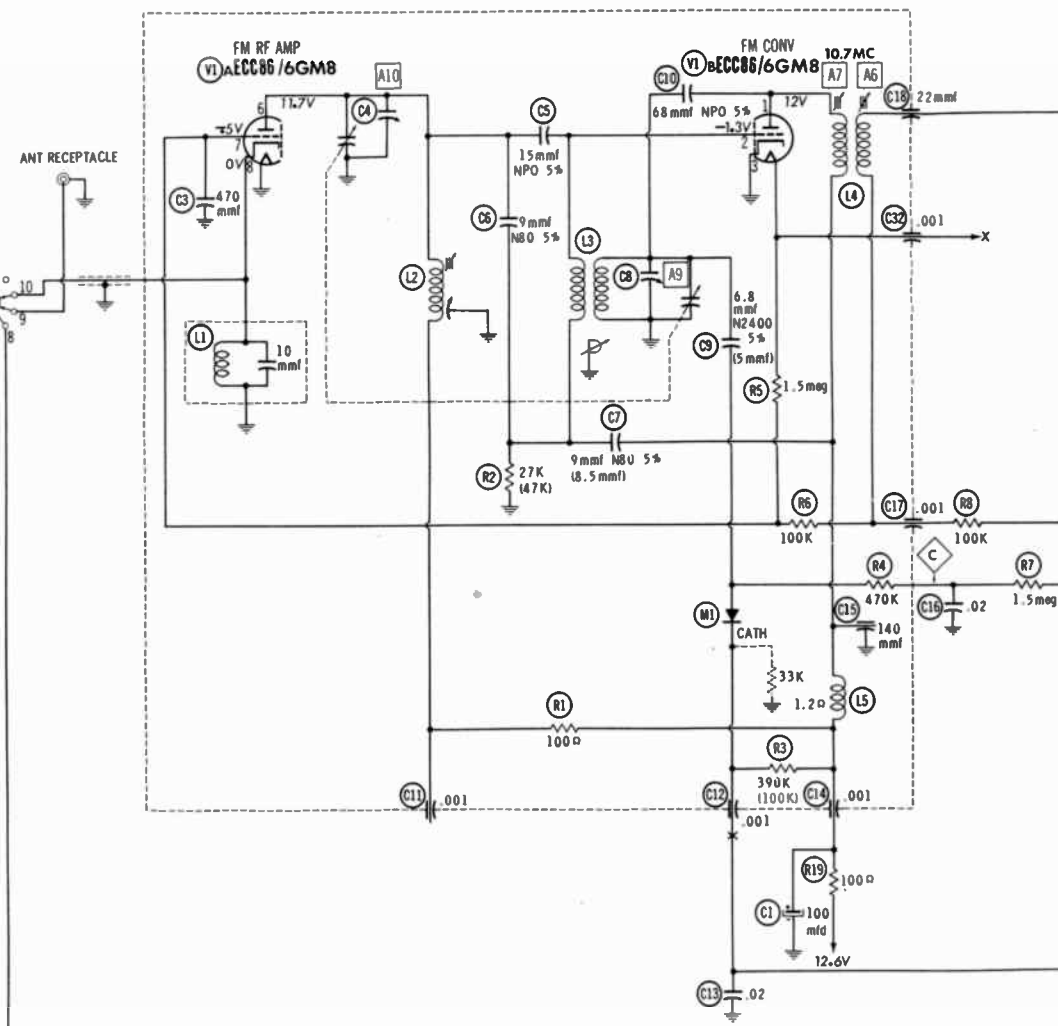


### HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of LZ015

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC86 6GM8	100Ω	27K	0Ω	FIL	FIL	200Ω	680K	.1Ω	0Ω
V2	6FD6	650K	0Ω	FIL	FIL	100Ω	100Ω	0Ω		
V3	12EK6	630K	0Ω	FIL	FIL	100Ω	100Ω	0Ω		
V4	12BL6	620K	0Ω	FIL	FIL	100Ω	100Ω	0Ω		
V5	12AD6	500K	.1Ω	FIL	FIL	1000Ω	1000Ω	1 meg		

SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

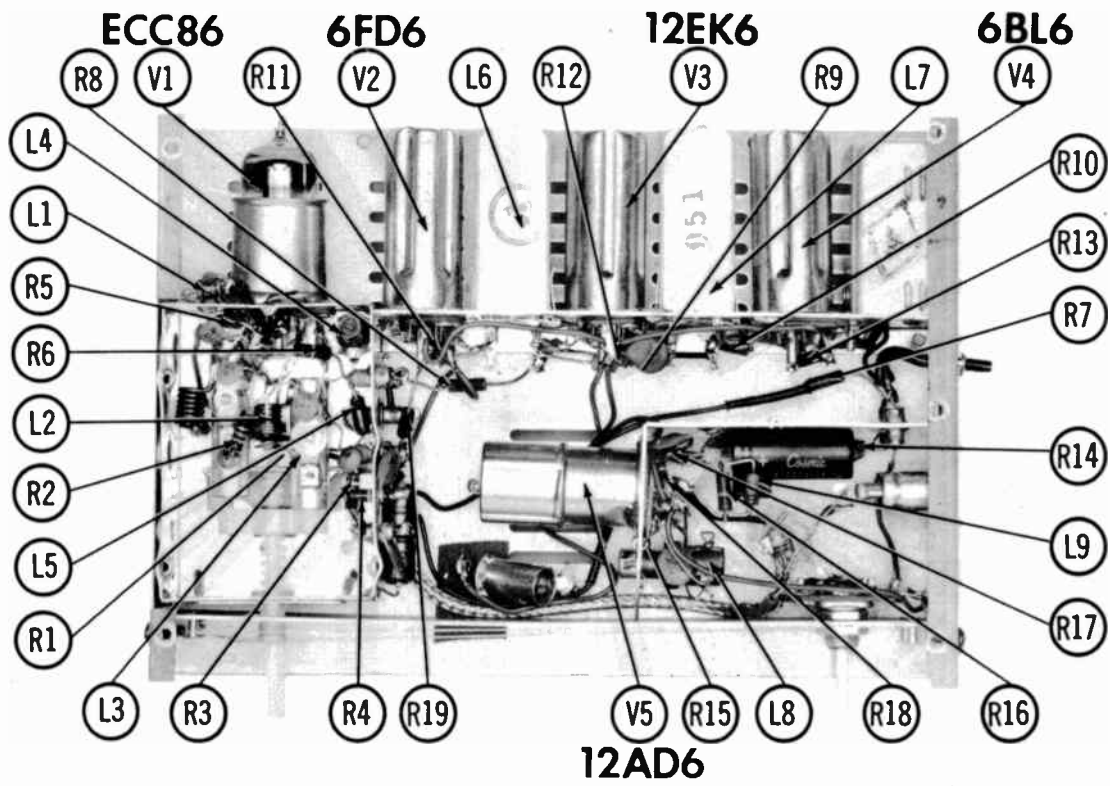
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

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.

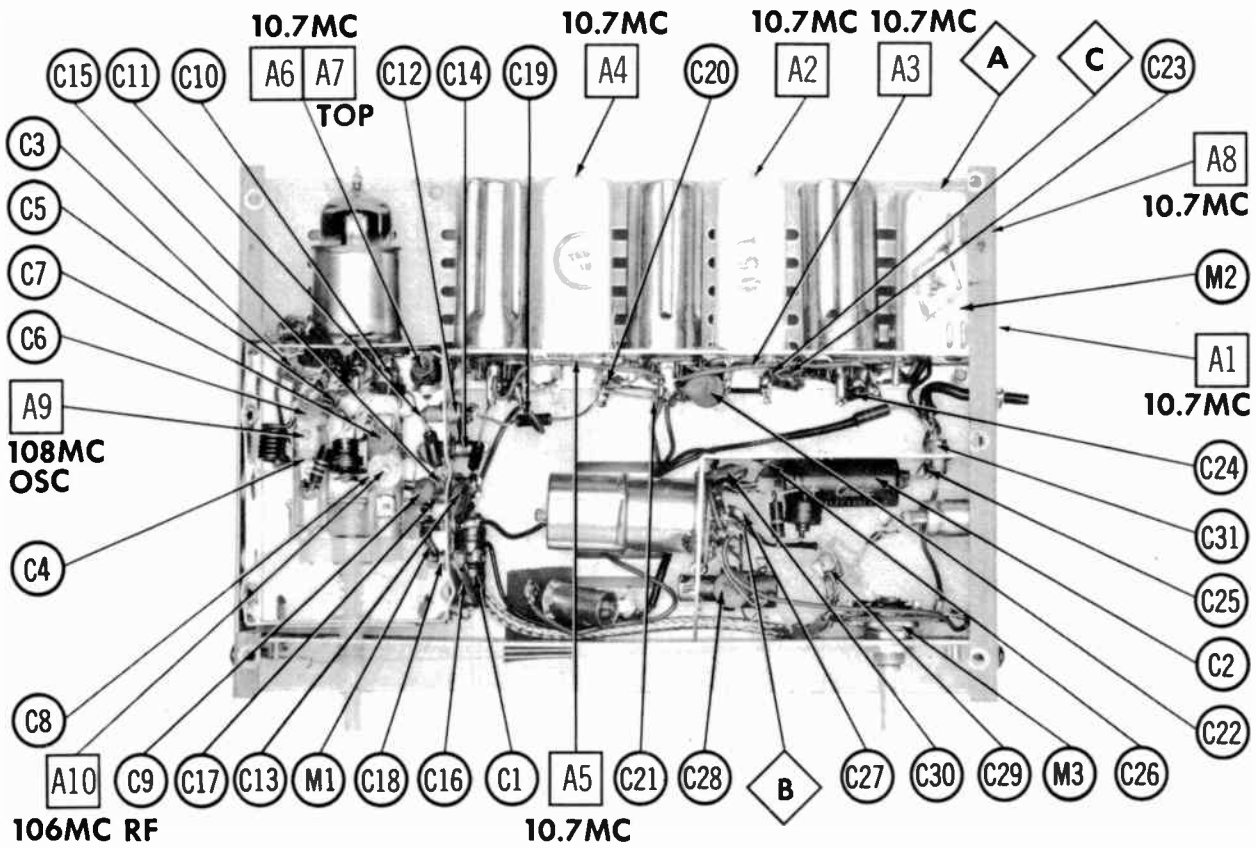
1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15%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

A PHOTOFACIT STANDARD NOTATION SCHEMATIC  
© Howard W. Sams & Co., Inc. 1962





**CHASSIS SIDE VIEW-INDUCTOR, RESISTOR & TUBE IDENT.**



**CHASSIS SIDE VIEW-ALIGN., CAPACITOR & MISC. IDENT.**

# ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT	
Use only enough generator output to provide a usable indication.	
Suggested Alignment Tools:	
A1, A6, A9, A10. . . . .	GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
A2 thru A5, All. . . . .	WALSICO #2515, 2531, 2532
A6, A7. . . . .	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
	WALSICO #2526, 2543, 2544, 2545
	GENERAL CEMENT #8282, 8606, 8606-L, 9091
	WALSICO #2526, 2541, 2542, 2543, 2544

**IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM— SELECTOR IN FM POSITION**

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .001mf to pin 2 (grid) of FM Converter. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point  . Common to chassis.	A1, A2, A3, A4, A5, A6, A7	Adjust for maximum deflection.
2.	"	"	"	DC probe to point  . Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

**IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION**

Use frequency modulated signal with 80% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.						
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .001mf to pin 2 (grid) of FM Converter. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point  . Low side to chassis.	A1, A2, A3, A4, A5, A6, A7, A8	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Adjust A1 thru A7 for maximum gain and symmetry. Adjust A8 for marker at center of crossover.

**RF ALIGNMENT — SELECTOR IN FM POSITION**

Short point  to chassis.						
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
3.	Antenna receptacle.	108MC (Unmod.)	(FM) 108MC	DC probe to point  . Common to chassis.	A9	Adjust for maximum deflection.
4.	"	108MC	108MC	"	A10	"

**AM OSCILLATOR ADJUSTMENT**

5. All is adjusted for maximum output of signal to a point of non-interference on the AM dial.

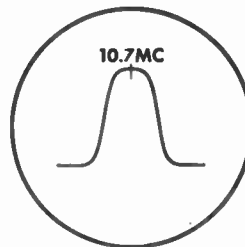


FIG. 1

# PARTS LIST AND DESCRIPTIONS

## TUBES

GENERAL ELECTRIC			RAYTHEON		SYLVANIA	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	
V1	FM RF Amp. -FM Conv.	ECC86/6GM8	V4	3rd FM IF Amplifier	12BL6	
V2	1st FM IF Amplifier	6FD6 (QM956)*	V5	AM Converter	12AD6	
V3	2nd FM IF Amplifier	12EK6 (12BL6)*				

\* Alternate

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	GRANCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	100	15		PRB1200	BBR100-15	QT1-22	TC2501	TD-100-15	TVA-1160
C2	100	15		PRB1200	BBR100-15	QT1-22	TC2501	TD-100-15	TVA-1160

## 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.
C3	470		DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C4	15 NPO 5%			DTZ-15	C10Q15C		CNO-415	10TCC-Q15
C5	9 N80 5%	(8.5) †						
C6	9 N80 5%							
C7								
C8								
C9	6.8 N2400 5%	(5) †		DTZ-88	C10Q68C		CNO-468	10TCC-Q68
C10	68 NPO 5%							
C11	.001		EF-001	MFT-1000		CCF-102	CT280A	
C12	.001		EF-001	MFT-1000		CCF-102	CT280A	
C13	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-820
C14	.001		EF-001	MFT-1000		CCF-102	CT280A	
C15	140							
C16	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-820
C17	.001		EF-001	MFT-1000		CCF-102	CT280A	
C18	22							
C19	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-820
C20	220		DI-220	DD-221	LJ0T22	CCD-221	B-322	10TS-T22
C21	.47 10%	Note 1						
C22	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-820
C23	220		DI-220	DD-221	LJ0T22	CCD-221	B-322	10TS-T22
C24	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-820
C25	.0015		EF-0015	MFT-1000		CCF-152		
C26	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-820
C27	100 N1500		TCL-100					
C28	50 NPO 10%	(180) †	NPO-DI 50	DTZ-50	C10Q5C	CCTO-510	CNO-450	10TCC-Q50
C29	1 10%		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C30	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-820
C31	.001		EF-001	MFT-1000		CCF-102	CT280A	
C32	.001		EF-001	MFT-1000		CCF-102	CT280A	

Note 1. Not used in some versions.

† Alternate Value.

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

## RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R1	100Ω				R4	470K			
R2	27K			(47K)*	R5	1.5meg			
R3	390K			(100K)*	R6	100K			

## RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R7	1.5meg				R14	100K			
R8	100K				R15	330K			(100K)*
R9	100K				R16	10K			
R10	1meg				R17	1meg			
R11	100Ω				R18	1000Ω			
R12	100Ω				R19	100Ω			
R13	100Ω								

\* Alternate Value.

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		GRANCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke	①					① Wound on 10mmf
L2	RF						
L3	Osc.						
L4	1st IF						
L5	RF Choke (1.5uh)		BC-582	4604	RTC-8516	T856	
L6	2nd IF		FM-254	1463	RTC-8599	T633	
L7	3rd IF		FM-254	1463	RTC-8599	T633	
L8	Osc. (1350KC)						
L9	RF Choke (1MH)		BC-513	4652	RTC-8532	T841	

## SIGNAL DIODES

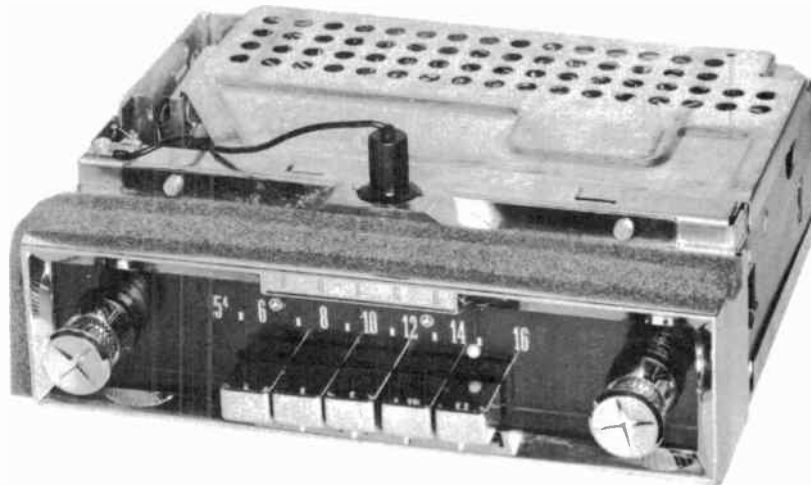
ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		GRANCO PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M1					AFC

## MISCELLANEOUS

ITEM No.	PART NAME	GRANCO PART No.	NOTES
M2	Detector Ass'y.		
M3	Switch		FM-AM Selector (Rotary Type)

## WIRING DATA

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



TRADE NAME Mopar Model 107 (12B) For 1961 Dodge Dart  
 MANUFACTURER The Bendix Corp., Bendix Radio Div., Baltimore 4, Maryland  
 TYPE SET Battery Operated 2 Tube - 2 Transistor Custom Built Automobile AM Receiver  
 POWER SUPPLY 12 Volt Storage Battery RATING 1.1 Amp. @12 Volts DC  
 TUNING RANGE—BROADCAST 530 — 1605KC

### ALIGNMENT INSTRUCTIONS

**ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT**

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

Suggested Alignment Tools: A1 thru A4.... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440  
 WALSCO #2528, 2543, 2544, 2545  
 A5, A6..... GENERAL CEMENT #5000, 5003, 8276, 8290  
 WALSCO #2512, 2515, 2522, 2523, 2525, 2537  
 A8, A9, A10.... GENERAL CEMENT #8271, 8279, 8897  
 WALSCO #2521, 2524

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. High side thru .1mf to pin 7 (grid) of Converter. Low side to chassis.	282.5KC (400% Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2. Antenna receptacle thru dummy (Fig. 1).	1605KC	"	"	A5, A6, A7	"
Step 3 is not necessary unless tuner has been tampered with or components replaced. If necessary, back tuning cores out of coils. Repeat Step 2.					
3. Antenna receptacle thru dummy (Fig. 1).	1000KC	Tuner carriage 1/4" from high end stop.	Across voice coil.	A8, A9, A10	Adjust for maximum output. Repeat Steps 2 and 3.
4. With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and adjust A7 for maximum output.					

**PUSHBUTTON ADJUSTMENT**

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

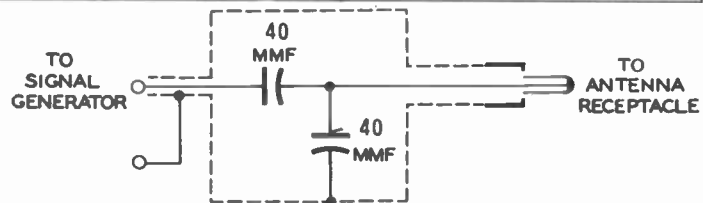


FIG. 1

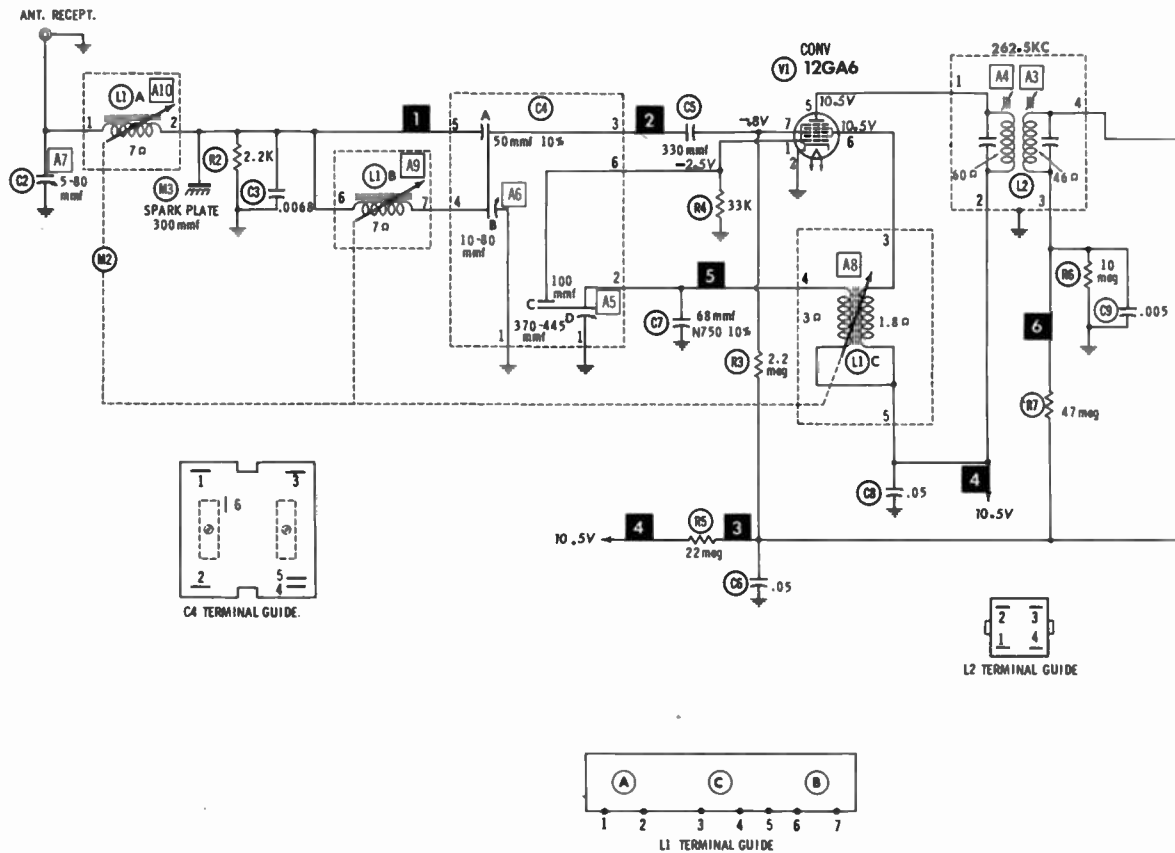
**HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana**

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD810

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



MOPAR  
MODEL 107



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12GA6	33K	0 Ω	5 Ω	0 Ω	950 Ω	900 Ω	5.5 meg		
V2	12FR8	10 meg	6 Ω	8 meg	5 Ω	0 Ω	220 Ω	250 Ω	1.6 meg	

TRANSISTOR CIRCUIT RESISTANCE FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

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

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

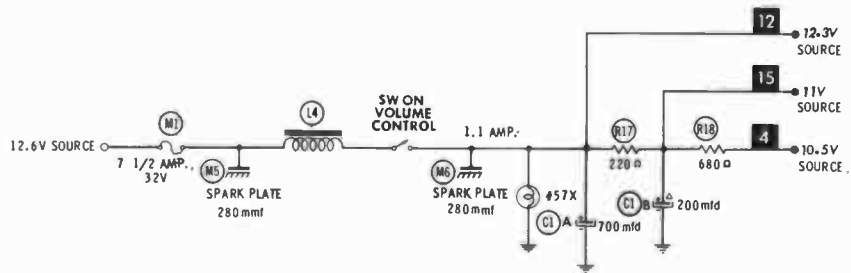
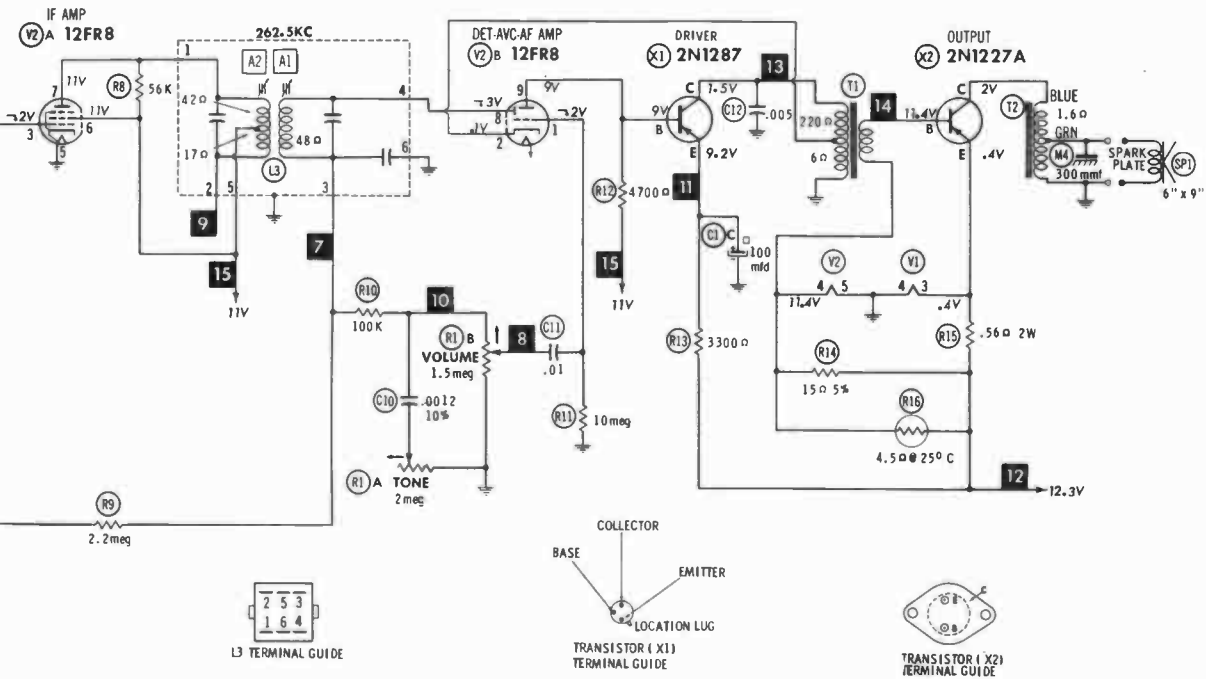
- DC voltage measurements taken with vacuum tube voltmeter.
- Socket connections shown as bottom views.
- Measured values are from socket pin to common ground.
- Battery voltage maintained at 12.6 volts for voltage readings.
- Nominal tolerance on component values makes possible a variation of ±15% in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

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.

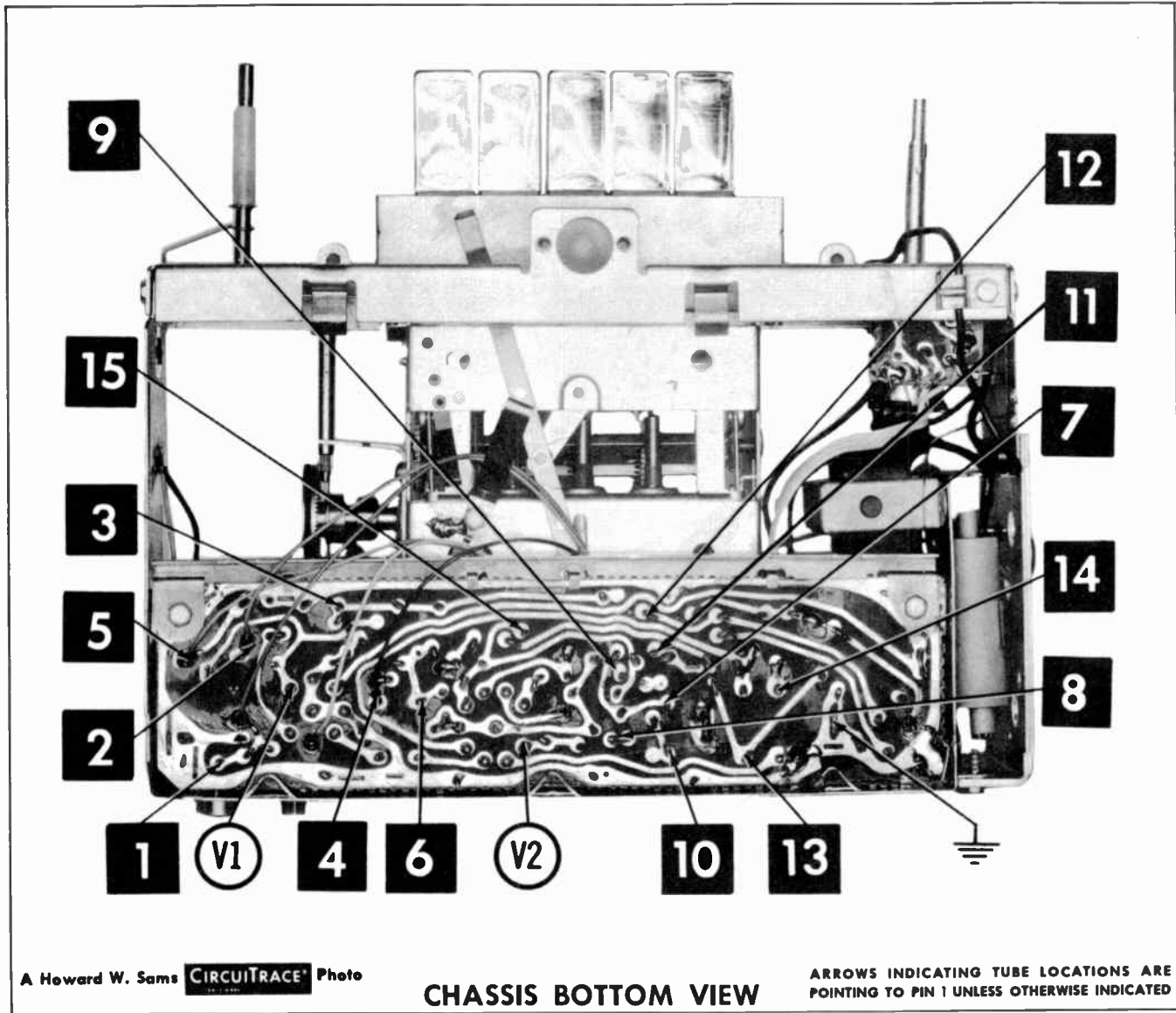
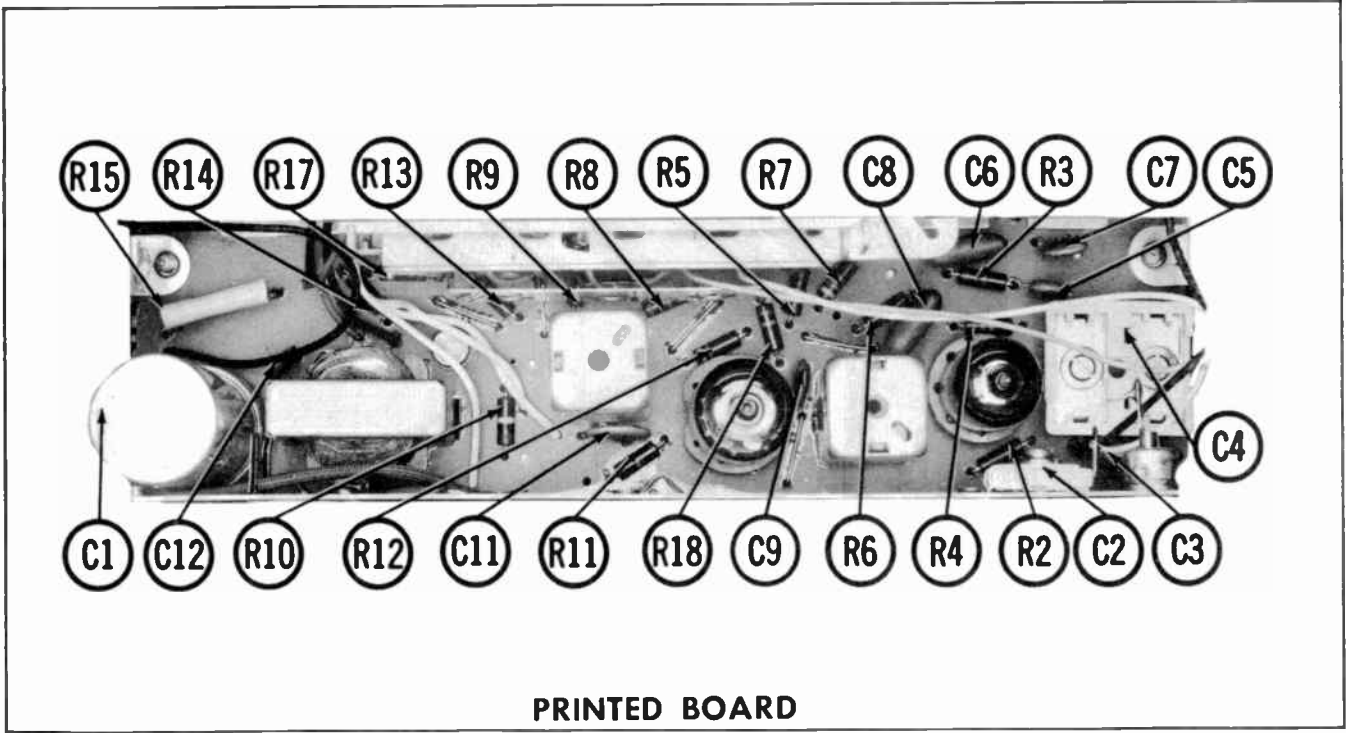
A PHOTOFACIT STANDARD NOTATION SCHEMATIC with **CIRCUITRACE**

© Howard W. Sams & Co., Inc. 1961





MOPAR  
MODEL 107



A Howard W. Sams CIRCUITRACE<sup>®</sup> Photo

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

# PARTS LIST AND DESCRIPTIONS

## TUBES

• GENERAL ELECTRIC •			RAYTHEON •			SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12GA6	V3	IF Amp. -Det. -AVC- AF Amp.	12FR8			

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N1287	Driver	2N591	2N362		PNP
X2	2N1227A	Output	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						NOTES
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
CLA	700	16	220553-21	PWH3-00-95.8				PCL8-3021,8*	
B	200	16							
C	100	16							

\* 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.	
C2	5-80	#219083-3				462			
C3	.0068 100V								
C4A	50 10%		#219092-15	P288N-0068	D6-682	BYA10D68	IDP-1-682	GEM-6268	STM-D68
B	10-80			NPO-DI 50	DTZ-50	C10Q50C	CCTO-510	CNO-450	10TCC-Q50
C	100								
D	370-445			NPO-DI 100	DTZ-100	C10TIC	CCTO-101	CNO-310	10TCC-T10
C5	330								
C6	.05 100V			DI-330	DD-331	L10T33	CCD-331	B-333	10TS-T33
C7	68 N750 10%		P288N-06	DD-503	CUB285	IDP-2-503	GEM-415	2TM-850	
C8	.05 100V		N750-DI 68	DTZ-68	C10Q68U	CCTN-680	CNT-468	10TCU-Q68	
C9	.005		P288N-06	DD-503	CUB285	IDP-2-503	GEM-415	2TM-850	
C10	.0012 10%		BFD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50	
C11	.01	DI-1200	DD-122	5R5D12	CCD-122	GP212	10TS-D12		
C12	.005	BFD-01	DD-103	BYA1081	CCD-103	B-110	5HK-810		
		RPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50		

# Bendix Part Number.

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA B C	2meg 1.5meg 8w/itch	1 1 1	2091339-4					Tone Volume Power Off-On

## RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	2200Ω				R11	10meg			
R3	2.2meg				R12	4700Ω			
R4	33K				R13	330Ω			
R5	22meg				R14	15Ω 5%			
R6	10meg				R15	.56Ω 2W			Pl. #2090948-15 Pl. #220629-11
R7	47meg				R16	4.8Ω @ 25°C			
R8	56K				R17	220Ω			
R9	2.2meg				R18	680Ω			
R10	100K								

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES	
		BENDIX PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.		
L1A B C	Ant. RF Osc.	2090131-27 ①					① Part of M2.	
L2	Input IF		2090907-9	BC-344	13-PH1	RTC-8644		T655
L3	Output IF		2090908-7					

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 $\sim$ )	BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L4	L1A	.26Ω	1200 $\mu$ H	2091107-2					

# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BENDIX	Merit	Stancor	Thordarson	Triad	
			PART No.	PART No.	PART No.	PART No.	PART No.	
T1	7	1	2090433-4					

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
		BENDIX	Merit	Stancor	Thordarson	Triad	
		PART No.	PART No.	PART No.	PART No.	PART No.	
T2	200Ω Tap @ 3-4Ω	2090449-9					

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BENDIX	QUAM	
				PART No.	PART No.	
BP1	6" x 9"	PM	3-4Ω	2091289-1	69A3	

## FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BENDIX		LITTELFUSE		BUSS	
			PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
M1	8FE	7½A 32V		221833-12 * 221833-3 †	30707.5 (8FE 7½A 32V)	155009	8FE 7½ HRH	

\* Includes Connector Assembly.  
† Cap.

## MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES	
M2	Tuner	2091576-4	Includes Pushbuttons, Less Pointer	
M3	Spark Plate	220287-12		300mmf
M4	Spark Plate	220287-12		300mmf
M5	Spark Plate	220287-1B		280mmf
M6	Spark Plate	220287-1B		280mmf

## CABINETS & CABINET PARTS

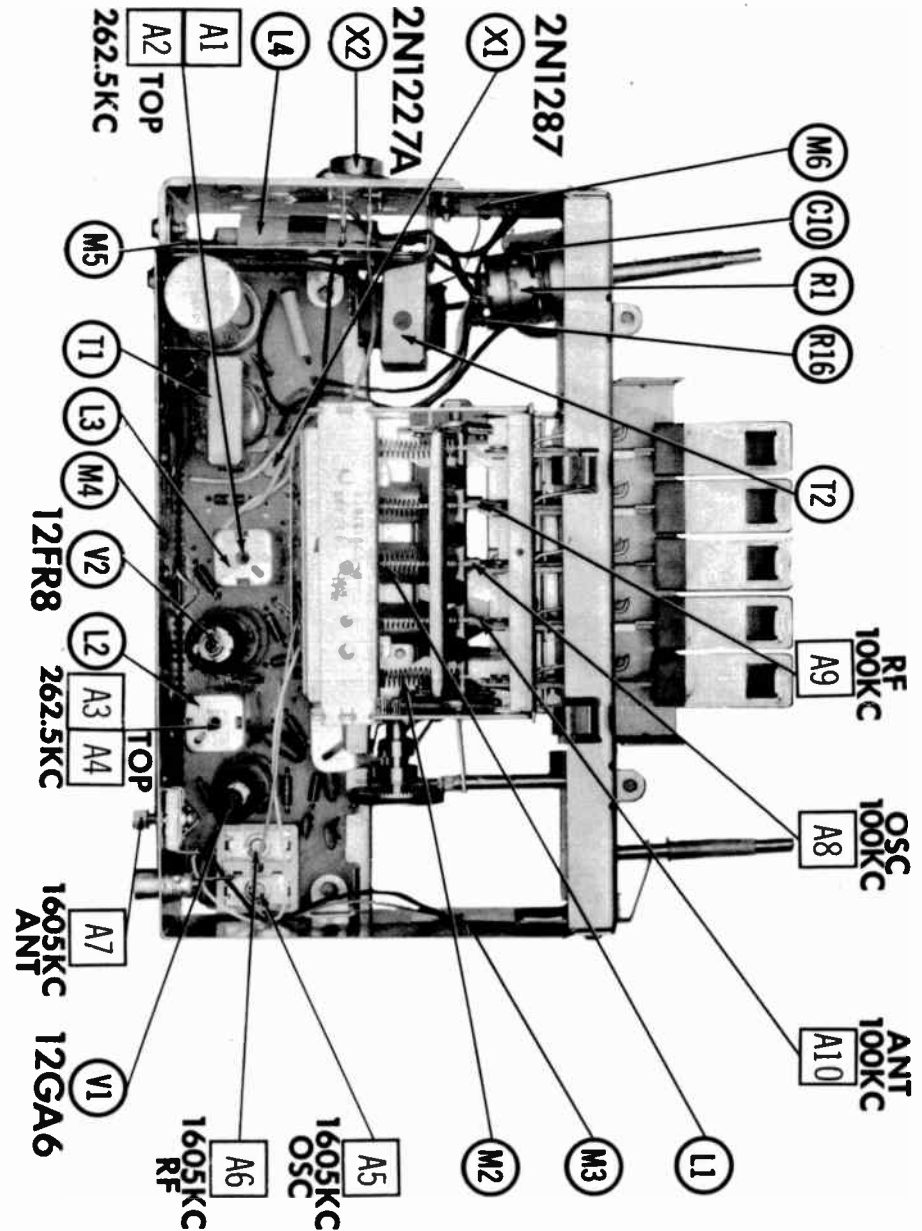
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

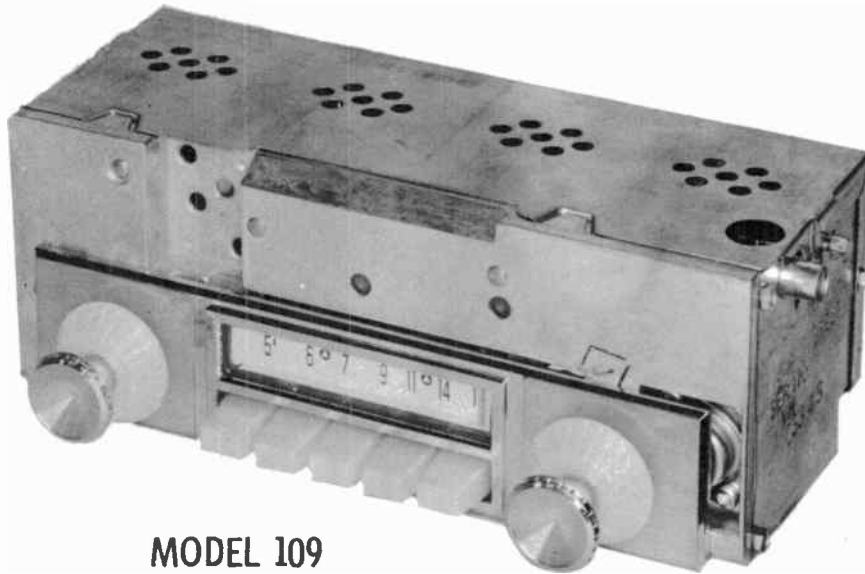
NAME	PART NO.	DESCRIPTION
Dial Glass	2091716-1	Tuning, Volume Tone, Dummy
Dial Pointer	2091077-1	
Pushbutton	2091204-1	
Knob	2091134-2	
Knob	2091135-3	

## WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8630 (Solid) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8524 (Stranded) Available in Ten Colors
Bonding Strap	Use BELDEN No. 8661

## CHASSIS—TOP VIEW





MODEL 109

TRADE NAME	Mopar Models 109 (For 1961 Plymouth RP1, RP2) 111 (For 1961 Plymouth RP1, RP2 Export Versions) 113 (For 1961 Valiant RV1) 114 (For 1961 Lancer RW1)		
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois		
TYPE SET	Battery Operated 3 Tube - 2 Transistor Custom Built Automobile AM Receiver		
POWER SUPPLY	12 Volt Storage Battery	RATING	1 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540 - 1610KC		

### ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

Suggested Alignment Tools: A1, A2, A3..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440  
WALSCO #2526, 2543, 2544, 2545  
A4, A5..... GENERAL CEMENT #8271, 8279, 8897, 9050-L, 9150  
WALSCO #2521, 2524  
A7, A8, A9..... GENERAL CEMENT #8271, 8279, 8897  
WALSCO #2521, 2524

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Antenna receptacle thru .1mf. Low side to chassis.	262.5KC (400% Mod.)	High end stop.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	Antenna receptacle thru dummy (Fig. 1).	1610KC	"	"	A4, A5, A6	"
Step 3 is not necessary unless the tuner has been tampered with or components replaced. If necessary, back tuning cores (A7, A8, A9) out of the coils. Repeat Step 2.						
3.	Antenna receptacle thru dummy (Fig. 1).	1020KC	Tuner carriage 3/8" from high end stop.	Across voice coil.	A7, A8, A9	Adjust for maximum output. Repeat Steps 2 and 3. Recement cores.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A6 for maximum output.					

#### PUSHBUTTON ADJUSTMENT

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

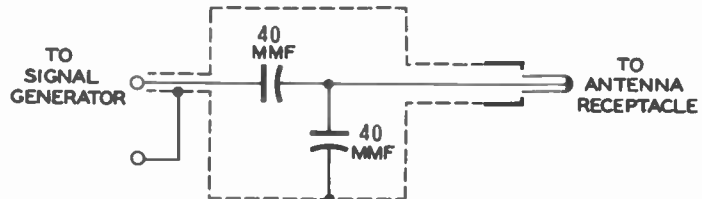


FIG.1

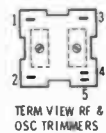
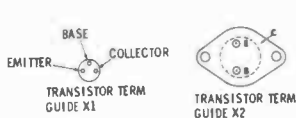
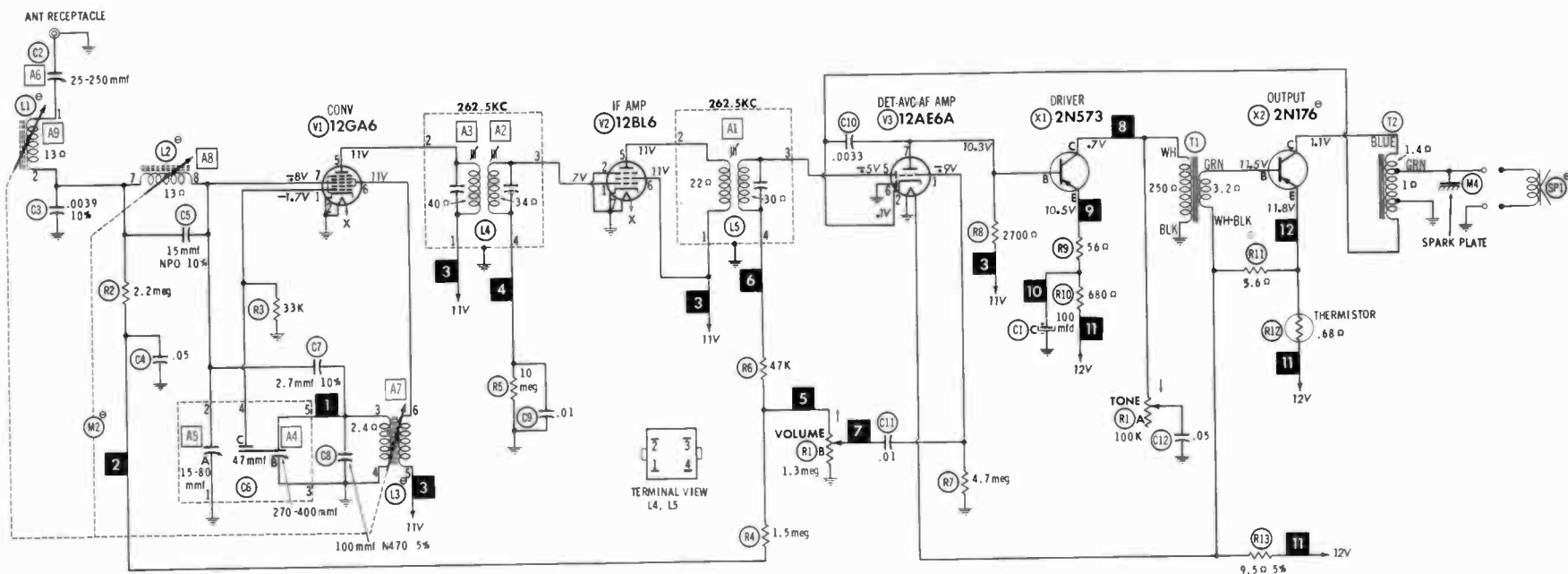
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD792

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

MOPAR MODELS  
109, 111, 113, 114





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 COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

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

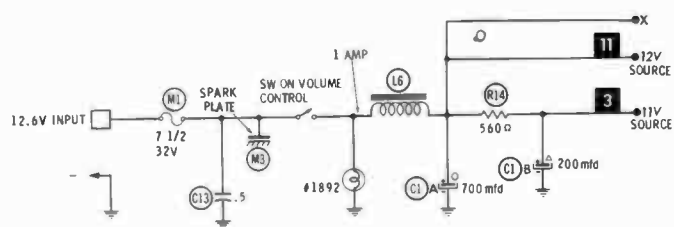
- DC voltage measurements taken with vacuum tube voltmeter
- Socket connections shown as bottom views
- Measured values are from socket pin to common ground.
- Battery voltage maintained at 12.6 volts for voltage readings.
- Nominal tolerance on component values makes possible a variation of 15% in voltage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



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12GA6	33K	0 Ω	5 Ω	0 Ω	610 Ω	560 Ω	5 meg
V2	12BL6	10 meg	0 Ω	0 Ω	5 Ω	580 Ω	560 Ω	0 Ω
V3	12AE6A	4.7 meg	.1 Ω	0 Ω	6 Ω	1.3 meg	0 Ω	

TRANSISTOR CIRCUIT RESISTANCE FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.



A PHOTOFAC STANDARD NOTATION SCHEMATIC with CIRCUITRACE

© Howard W. Sams & Co., Inc. 1961

MOPAR MODELS 109, 111, 113, 114

# PARTS LIST AND DESCRIPTIONS

## TUBES

GENERAL ELECTRIC			RAYTHEON			SYLVANIA		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1 V2	Converter IF Amplifier	12QA6 12BL6	V3	Det. -AVC-AF Amplifier	12AE6A			

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1 X2	2N573 2N176 MN-29*	Driver Output Output	2N591 2N176 2N176	2N573	2N573 2N176	PNP PNP Note 1 PNP Note 1

Note 1. When replacing, apply DC-4 grease (Part #11M490487) or equivalent to both sides of insulator. Tighten mounting screws securely. \* Alternate

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A B C	700 800 100	16 16 16	23C563447	PWH3-00-95.5		WP300, 87 †		PCL8-3027.5*	

\* Not normally in distributor's stock. Available thru distributor on order to manufacturer.  
† Use printed circuit adapter kit FPA.

## FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBIER PART No.	ELMENC0 PART No.	MALLORY PART No.	SPRAGUE PART No.
C2 C3 C4 C5 C6A B C C7 C8 C9 C10 C11 C12 C13	25-250 .0039 10% .05 15 NPO 10% 15-80 47 270-400 2.7 10% 100 N470 8% .01 .0033 .01 .05 .5 100V	#20B663246  #20B663378	DI-4000 BPD-05 NPO-D1 15	DD-502 DTZ-15	DPMS6D39 M-0585 C10Q15C	464 CCD-392 IDP-9-803 CCTO-150	JL-239 GP150 CNO-415	10T8-D39 5HK-850 10TCC-Q15
			NPO-D1 47	TCE-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
			NPO-SI 3.0		C10V3C			10TCC-V27
			BPD-01 BPD-0033 BPD-01 BPD-05 P288N-5	DD-103 DD-332 DD-103 DD-503	BYA1081 BYA10D33 BYA1081 H-0585 CUB2P5	CCD-103 CCD-332 CCD-103 IDP-3-503 IDP-4-504	B-110 B-333 B-110 GP150 GEM-205	5HK-810 5HK-D33 5HK-810 5HK-850 2TM-P50

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

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA B C	100K 1.3 meg Switch		18K564706					Tone Volume Power Off-On

## RESISTORS

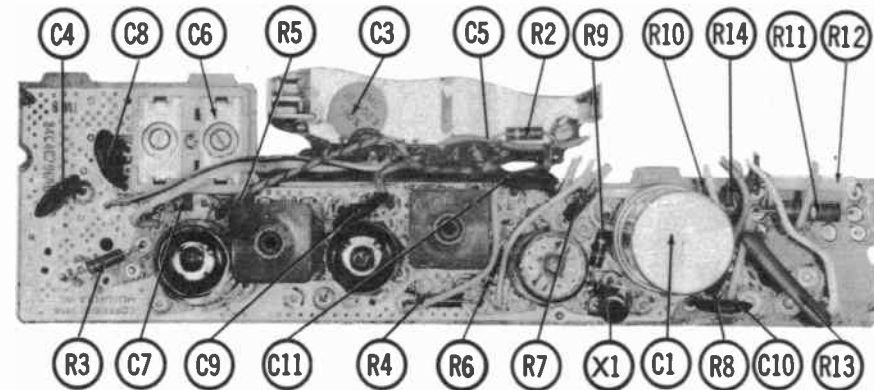
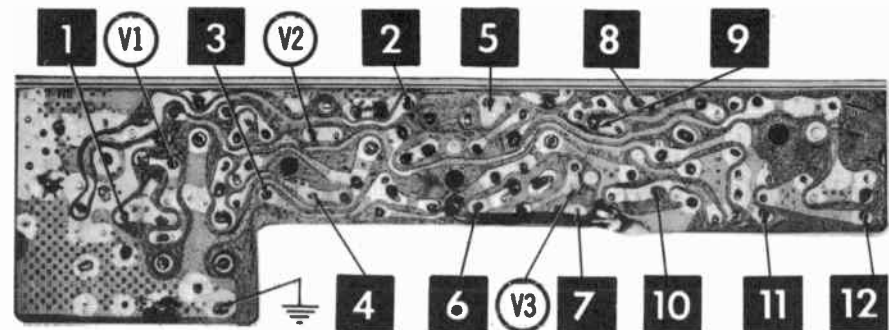
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2 R3 R4 R5 R6 R7 R8	2.2 meg 33K 1.5 meg 10 meg 47K 4.7 meg 2700Ω				R9 R10 R11 R12 R13 R14	56Ω 680Ω 5.6Ω .68Ω 9.5Ω 5% 560Ω			

# PRINTED BOARD

A Howard W. Sams **CIRCUITRACE** Photo

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



**2N573**

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1 L2 L3 L4 L5	Ant. RF Osc. Input IF Output IF	24B663390 24B663390 24B663393 24K564989 24K40276A03			BC-344 13-PHI RTC-0844	T655	Note 1 Note 1 Note 1

Note 1. Part of coil and mounting plate assembly Part #1V40300A48.

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 Hz)	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordanson PART No.	
L6	.9A	.2Ω	.0048HY	25C563445				

# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRL.	SEC.	MOTOROLA	Merit	Stancor	Thordarson	Triad	
			PART No.	PART No.	PART No.	PART No.	PART No.	
T1	10	1	25C563444					

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
		MOTOROLA	Merit	Stancor	Thordarson	Triad	
		PART No.	PART No.	PART No.	PART No.	PART No.	
T2	6Ω Tap @ 3-4Ω Tap @ .1Ω DC Res.	25K563399					

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA	QUAM	
				PART No.	PART No.	
SP1	6"x 9" 6"x 9"	PM PM	3-4Ω 3-4Ω	50K563103 * 50D563102 †	69A3 69A3	* Models 109, 111 † Models 113, 114

## FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA		LITTELFUSE		BUSS	
			PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
M1	SFE	7½ 32V	65R122346	9K563327 ① 9K564778 ②	30707.5 (SFE 7½A 32V)	155009	SFE 7½	HRH

① Models 109, 111  
② Models 113, 114

## MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Tuner	77D40242A.01	(AT326) Complete, Models 109, 111
	Tuner	77D40242A.03	(AT335) Complete, Model 113
	Tuner	77D40242A.04	(AT336) Complete, Model 114
M3	Spark Plate	64K530177	
M4	Spark Plate	64K530177	

## CABINETS & CABINET PARTS

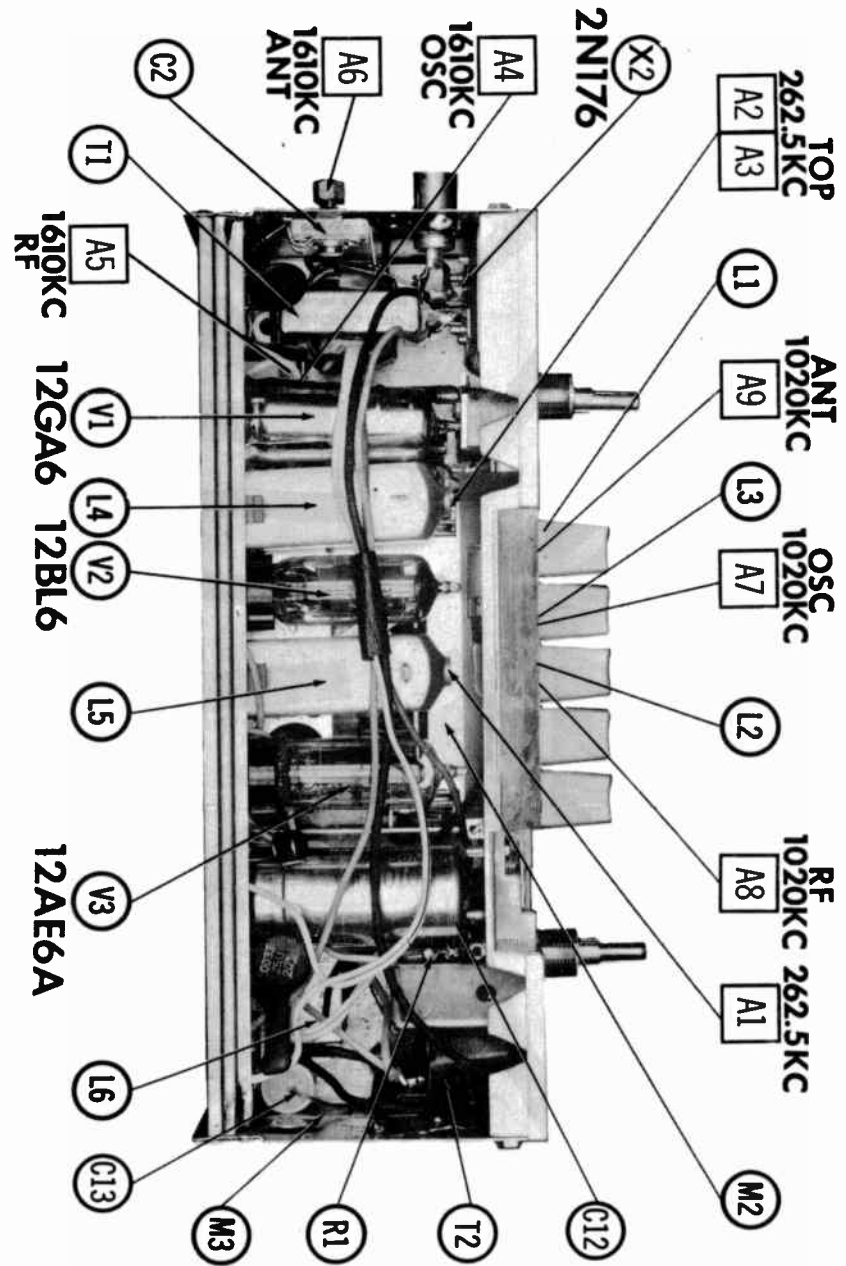
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Crystal	61A563192	
Dial Scale	34K564634	Model 109
Dial Scale	34K564636	Model 111
Dial Scale	34K564770	Model 113
Dial Scale	34K564776	Model 114
Pointer	1K563183	
Pushbutton	38E40047A05	Model 109, 111
Pushbutton	38K564779	Model 113
Pushbutton	38K564780	Model 114
Knob	36B562625	Tuning, Volume, Model 109, 111
Knob	36C40272A.01	Tuning, Volume, Model 113
Knob	36B40261A.01	Tuning, Volume, Model 114
Knob	36B40063A.01	Tone, Dummy, Model 109, 111
Knob	36E564787	Tone, Dummy, Model 113
Knob	36K564788	Tone, Dummy, Model 114

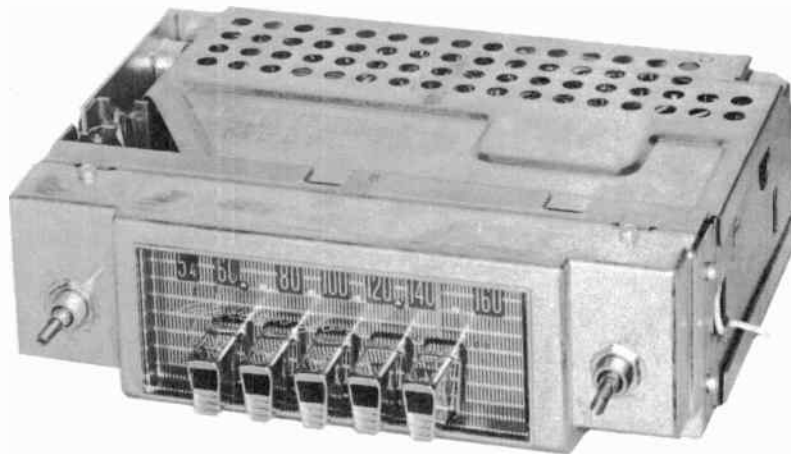
## WIRING DATA

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

## CHASSIS—TOP VIEW







TRADE NAME Mopar Model 317 (13BC) For 1961 Chrysler  
 MANUFACTURER The Bendix Corp.; Bendix Radio Div., Baltimore 4, Maryland  
 TYPE SET Battery Operated 3 Tube-3 Transistor Custom Built Automobile AM Receiver  
 POWER SUPPLY 12 Volt Storage Battery RATING .8 Amp. @12.6 Volts DC  
 TUNING RANGE—BROADCAST 530 — 1605KC

### ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

Suggested Alignment Tools: A1 thru A4... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440  
 WALSCO #2526, 2543, 2544, 2545  
 A5, A6..... GENERAL CEMENT #5000, 5003, 8276, 8290  
 WALSCO #2512, 2515, 2522, 2523, 2525, 2537

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. High side thru .1mf to pin 9 (grid) of Converter. Low side to chassis.	262.5KC (400% Mod.)	High end stop.	Across voice coll.	A1, A2, A3, A4	Adjust for maximum output.
2. To antenna terminal thru dummy (Fig. 1).	1605KC	"	"	A5, A6, A7	"
Step 3 is not necessary unless tuner has been tampered with or components replaced. If necessary, back tuning cores (A8, A9, and A10) out of coils. Repeat Step 2.					
3. To antenna terminal thru dummy (Fig. 1).	1000KC	Tuner carriage 1/2" from high end stop.	Across voice coll.	A8, A9, A10	Adjust for maximum output. Repeat Steps 2 and 3.
4. With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and adjust A7 for maximum output.					

**PUSHBUTTON ADJUSTMENT**

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

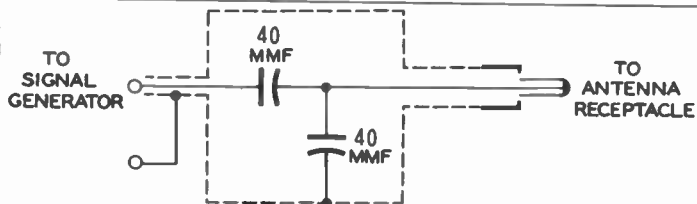


FIG. 1

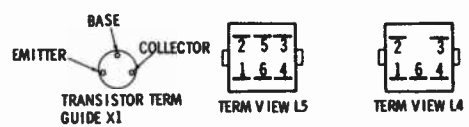
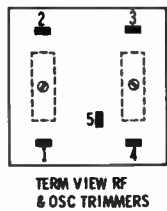
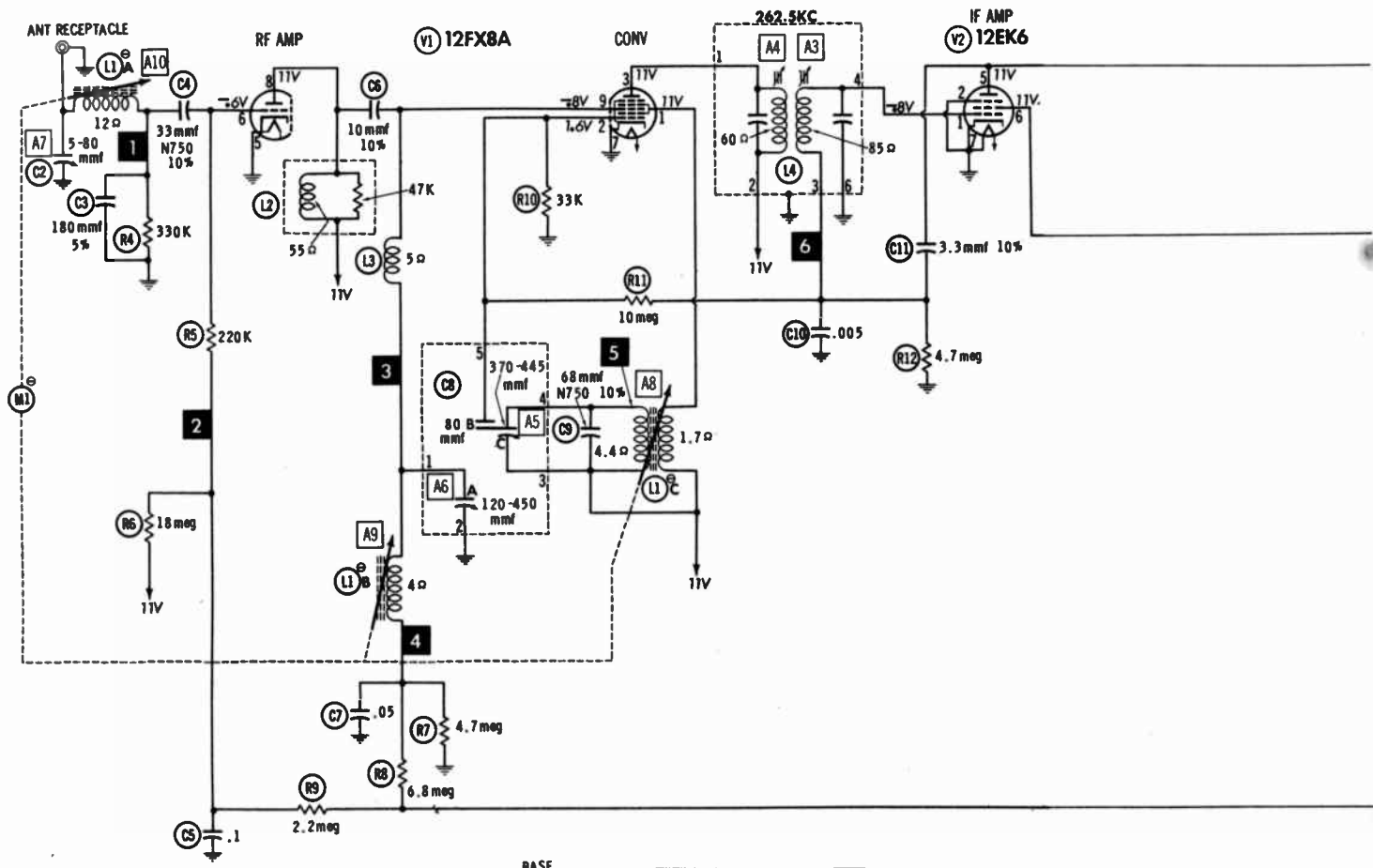
**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD811

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

MOPAR MODEL 317



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.

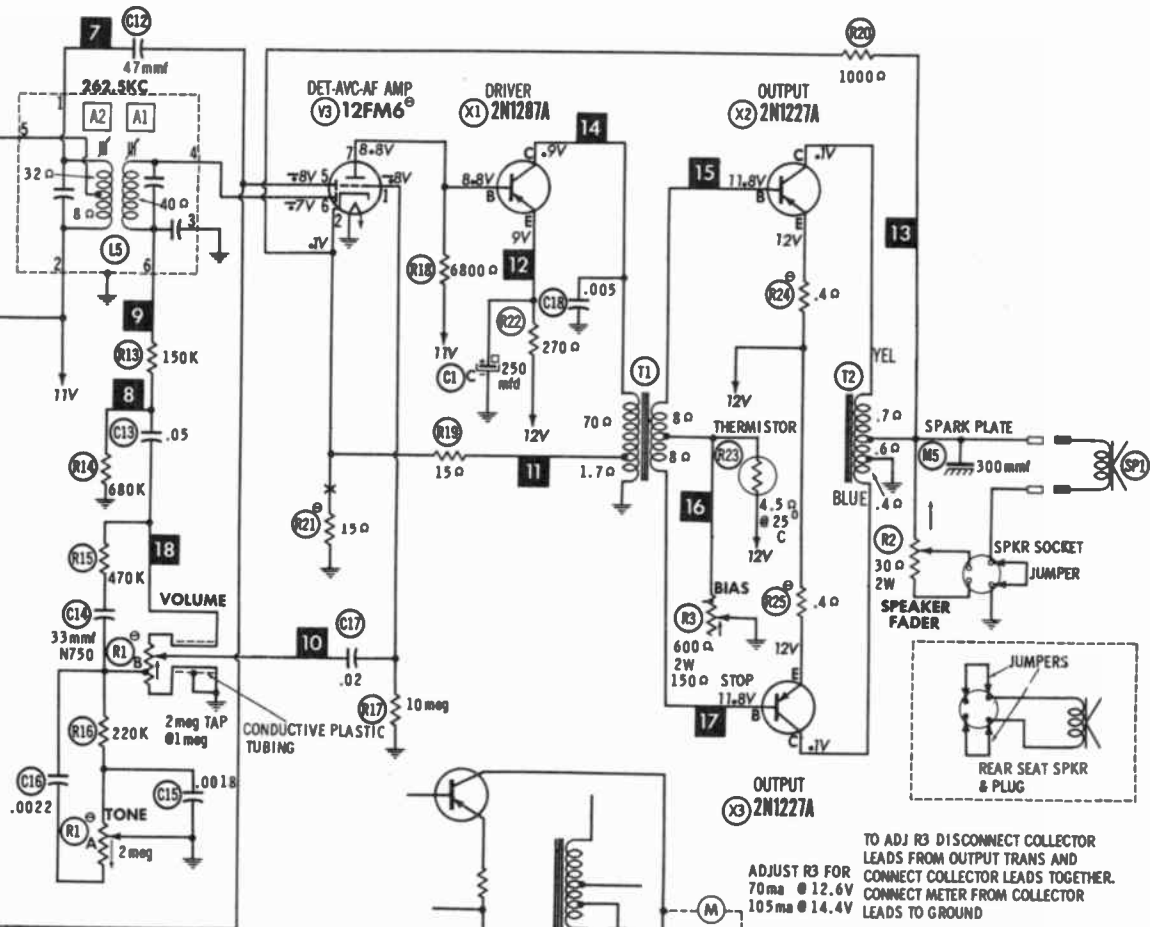
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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

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

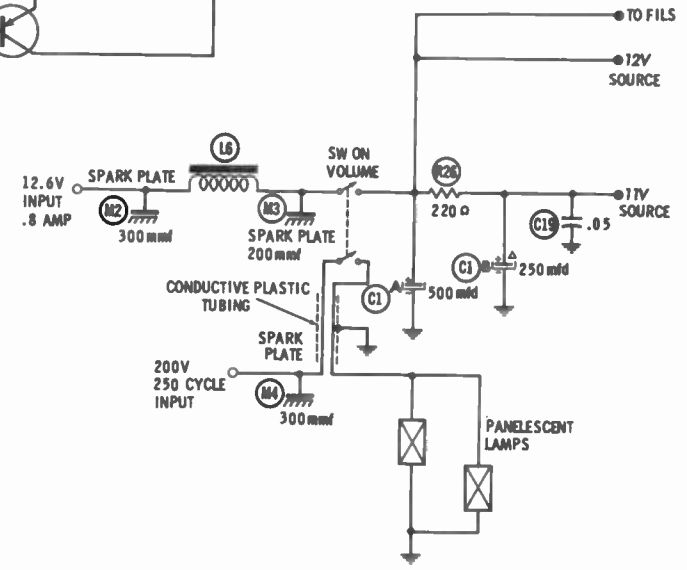
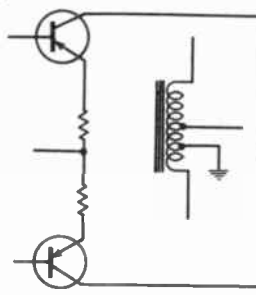
A PHOTOFACIT STANDARD NOTATION SCHEMATIC with **CIRCUITRACE**

© Howard W. Sams & Co., Inc. 1961



TO ADJ R3 DISCONNECT COLLECTOR LEADS FROM OUTPUT TRANS AND CONNECT COLLECTOR LEADS TOGETHER. CONNECT METER FROM COLLECTOR LEADS TO GROUND

ADJUST R3 FOR  
70 ma @ 12.6V  
105 ma @ 14.4V

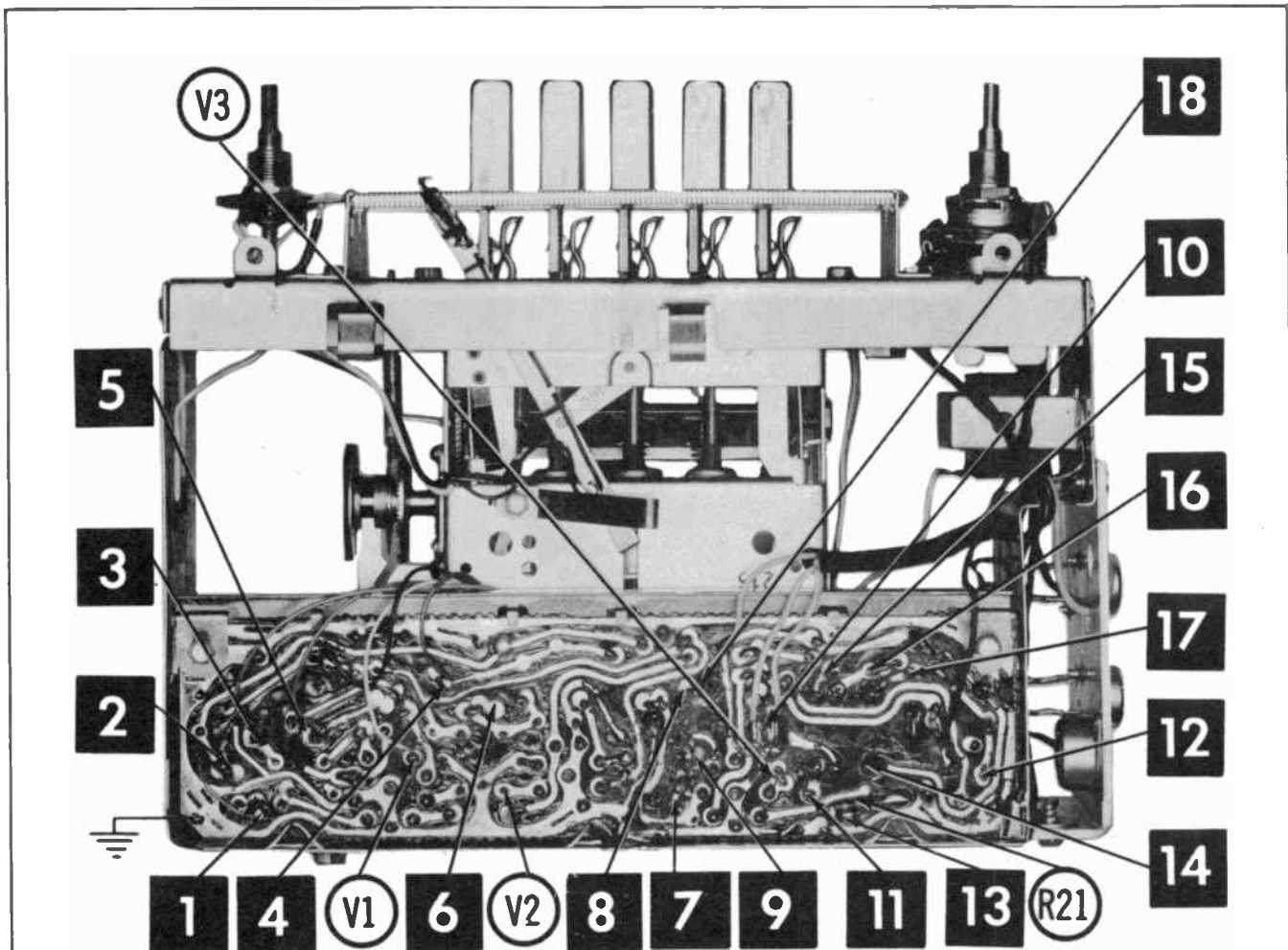
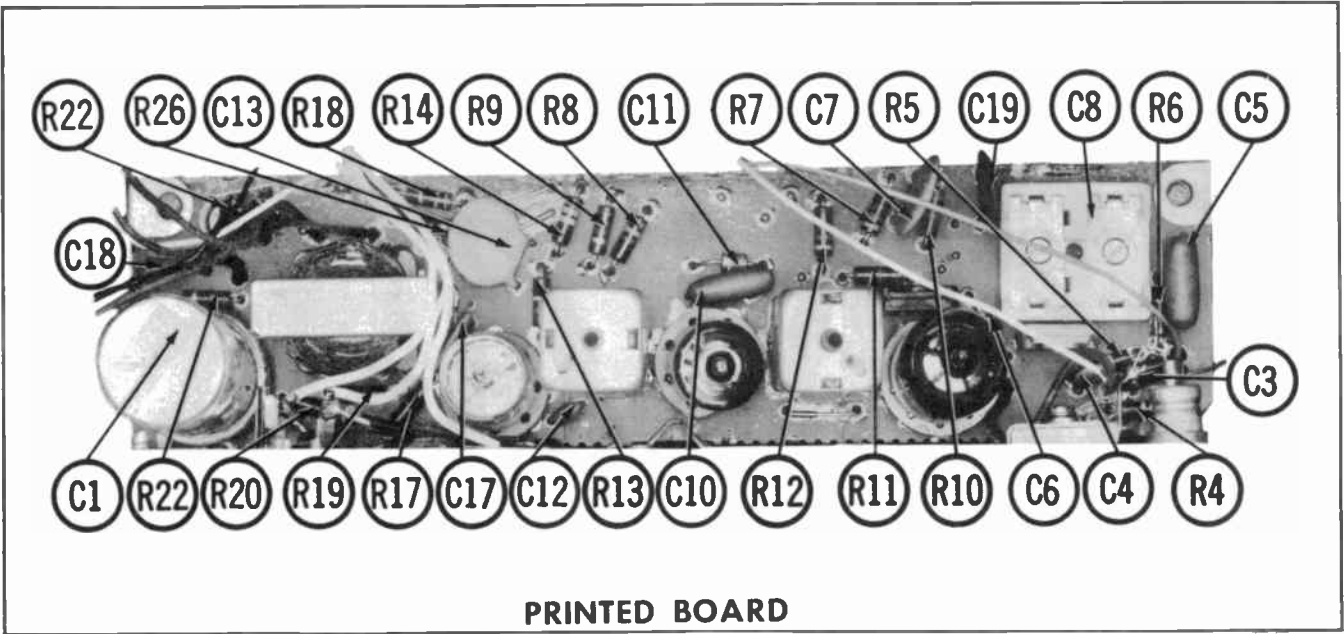


RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12FX8	225 ohm	33K	280 ohm	3 ohm	0 ohm	8 meg	0 ohm	270 ohm	4 meg
V2	12EK6	3.2 meg	0 ohm	3 ohm	0 ohm	230 ohm	220 ohm	0 ohm		
V3	12FM6	10 meg	8 ohm	0 ohm	3 ohm	7.5 meg	820K			

TRANSISTOR CIRCUIT RESISTANCE FOR X1, X2 AND X3 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

MOPAR MODEL 317





# PARTS LIST AND DESCRIPTIONS (Continued)

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BENDIX PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1A L1B L1C	Ant. RF Osc.	2090131-25 ①					① Part of M1 ② Includes 47K
L2	RF Choke (2MH)	2090088-12 ②					
L3	RF Choke (65uh)	2090088-11	TV-193	6110	RTC-8573	T338	
L4	Input IF	2090876-5					
L5	Output IF	2090877-6					

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	
L6	.8A	.5Ω	2MH	2090620-8				

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
			T1	2.5	1	2090433-8		

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
			T2	25Ω Tap @ 3-4Ω		2090266-6		

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BENDIX PART No.	QUAM PART No.	
				SP1	6"x 9"	

## MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M1	Tuner	2091577-2	Includes Pushbuttons, Less Pointer
M2	Spark Plate	220287-12	300mmf
M3	Spark Plate	220287-17	200mmf
M4	Spark Plate	220287-12	300mmf
M5	Spark Plate	220287-12	300mmf

## CABINETS & CABINET PARTS

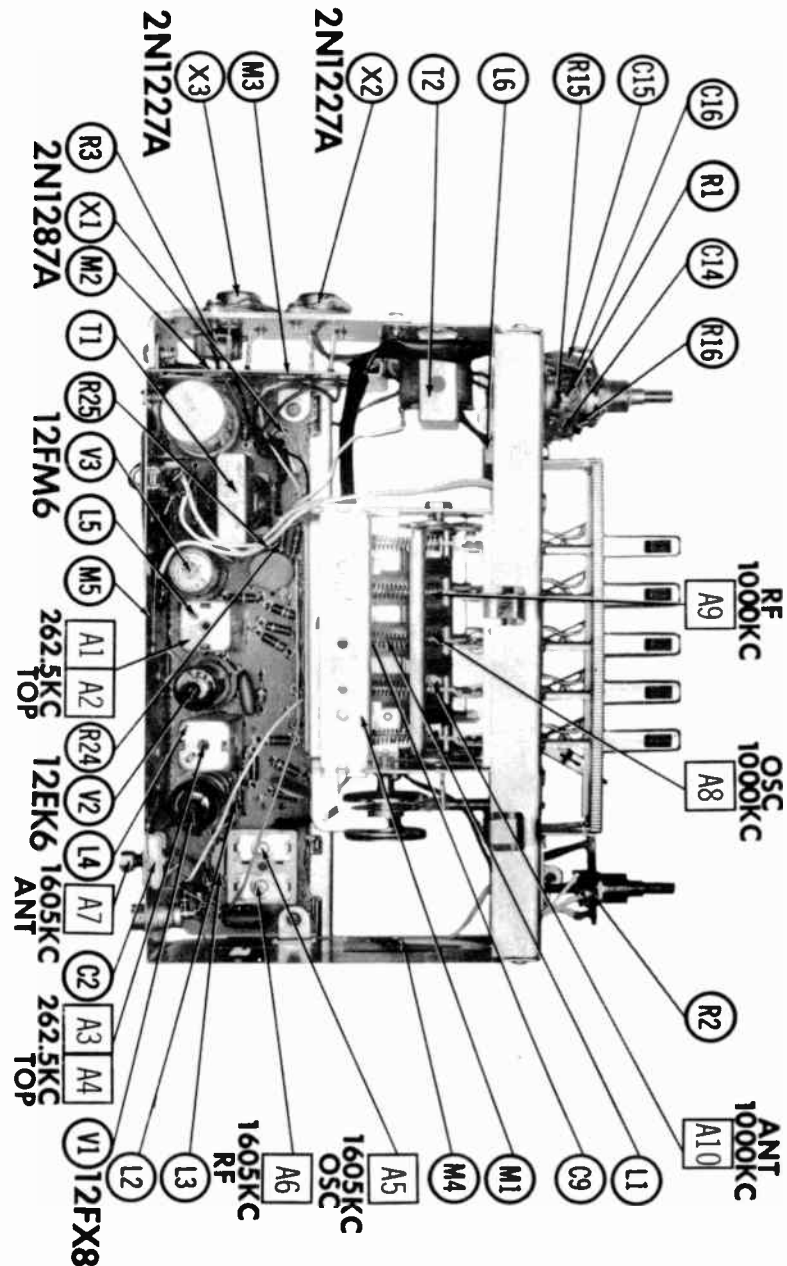
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

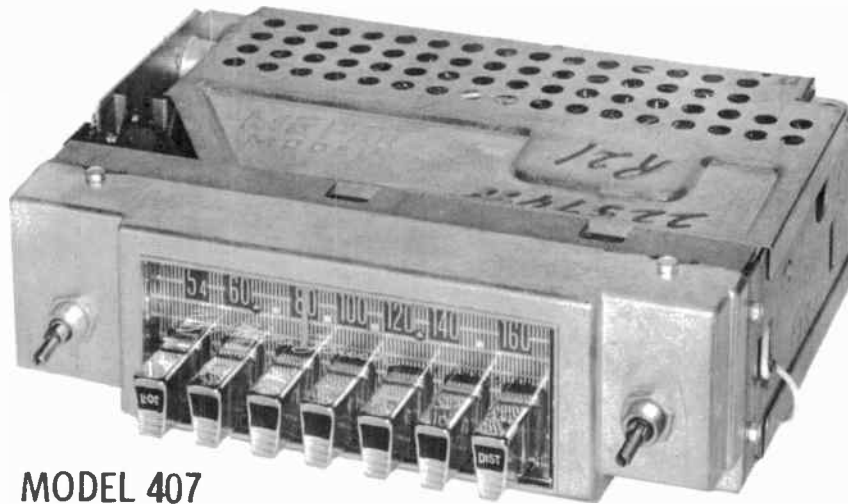
NAME	PART NO.	DESCRIPTION
Lens	2091629-2	Clear, Dial
Pointer	2090966-1	Dial, Panelescent
Pushbutton	2091189-1	
Knob	2091142-1	Tuning, Volume
Knob	2091143-1	Tone, Fader or Disc

## WIRING DATA

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

# CHASSIS—TOP VIEW





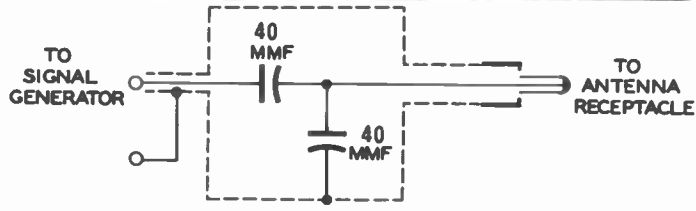
MODEL 407

TRADE NAME	Mopar Models 404 (14BI) For 1961 Imperial, 407 (14BC) For 1961 Chrysler		
MANUFACTURER	Bendix Radio Div., The Bendix Corp., Baltimore 4, Maryland		
TYPE SET	Battery Operated 4 Tube - 3 Transistor Custom Built Automobile AM Receiver		
POWER SUPPLY	12 Volt Storage Battery	RATING	1.1 Amp. @12.6 Volts DC (1.4 Amp. When Tuning)
TUNING RANGE—BROADCAST	530 - 1605KC		

### ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT					
Set Volume Control fully counterclockwise. Set Tone Control fully clockwise. Use only enough generator output to provide a usable indication. Suggested Alignment Tools: A1 thru A4... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545 A5, A6, ..... GENERAL CEMENT #5000, 5003, 8276, 8290 WALSCO #2512, 2515, 2522, 2523, 2525, 2537					
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1. High side thru .1mf to pin 9 (grid) of Converter. Low side to chassis.	262.5KC (Unmod.)	High end stop.	DC probe to point $\diamond$ . Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2. Antenna receptacle thru dummy (Fig. 1).	1605KC	"	"	A5, A6, A7	"
Step 3 is necessary only if tuner has been tampered with or components changed. If necessary back tuning cores out of coils. Repeat Step 2.					
3. Antenna receptacle thru dummy (Fig. 1).	1000KC	Tuner Carriage exactly $\frac{1}{2}$ " from high end stop.	DC probe to point $\diamond$ . Common to chassis.	A8, A9, A10	Adjust for maximum deflection.
4. " "	1000KC at 250uv.			R2	Preset R2 fully counterclockwise. Press LOC button to start set searching. Turn R2 clockwise slowly until tuner stops at 250uv. signal.
5. " "	1000KC at 125uv.				See that tuner does not stop on 125uv. signal.
6. With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.					

- PUSHBUTTON ADJUSTMENT**
1. Pull Pushbutton out.
  2. Tune manually to desired station.
  3. Press Pushbutton in firmly.
  4. Repeat for remaining Pushbuttons.



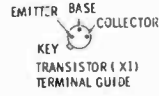
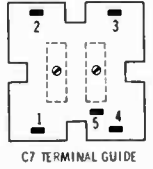
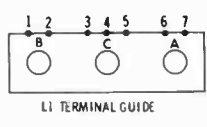
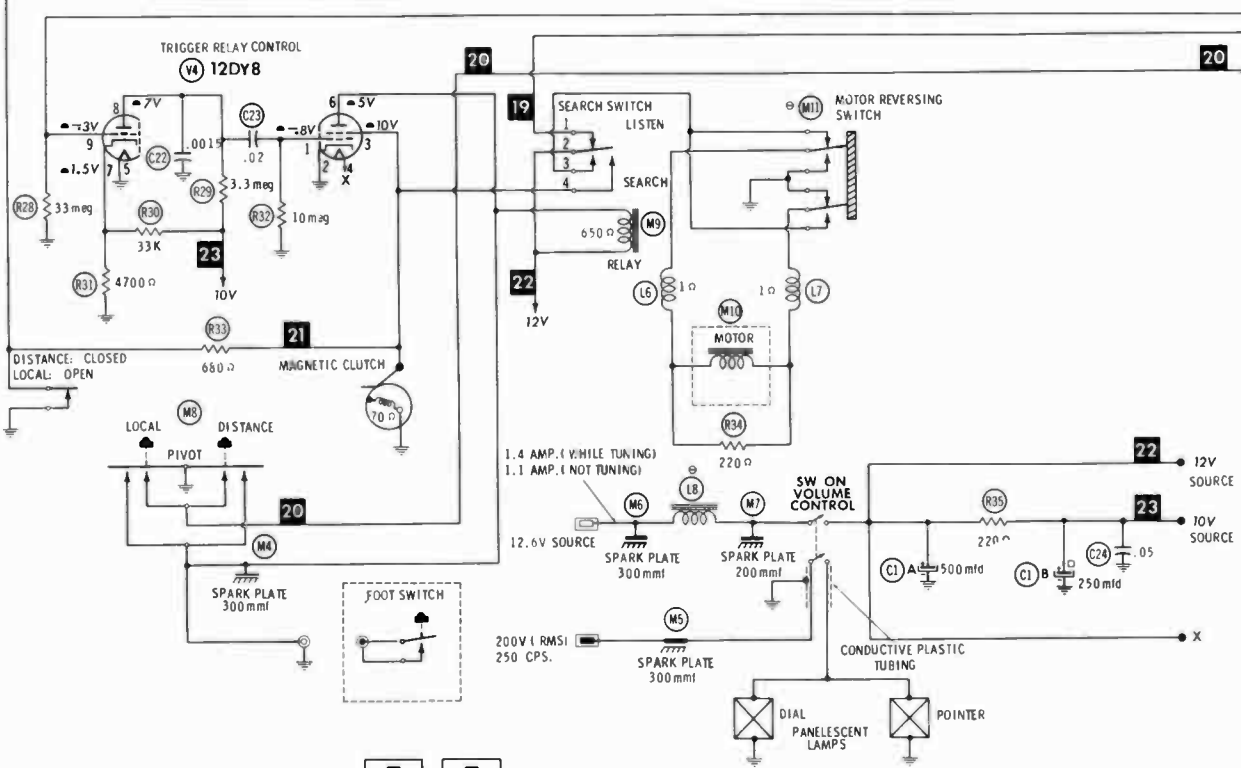
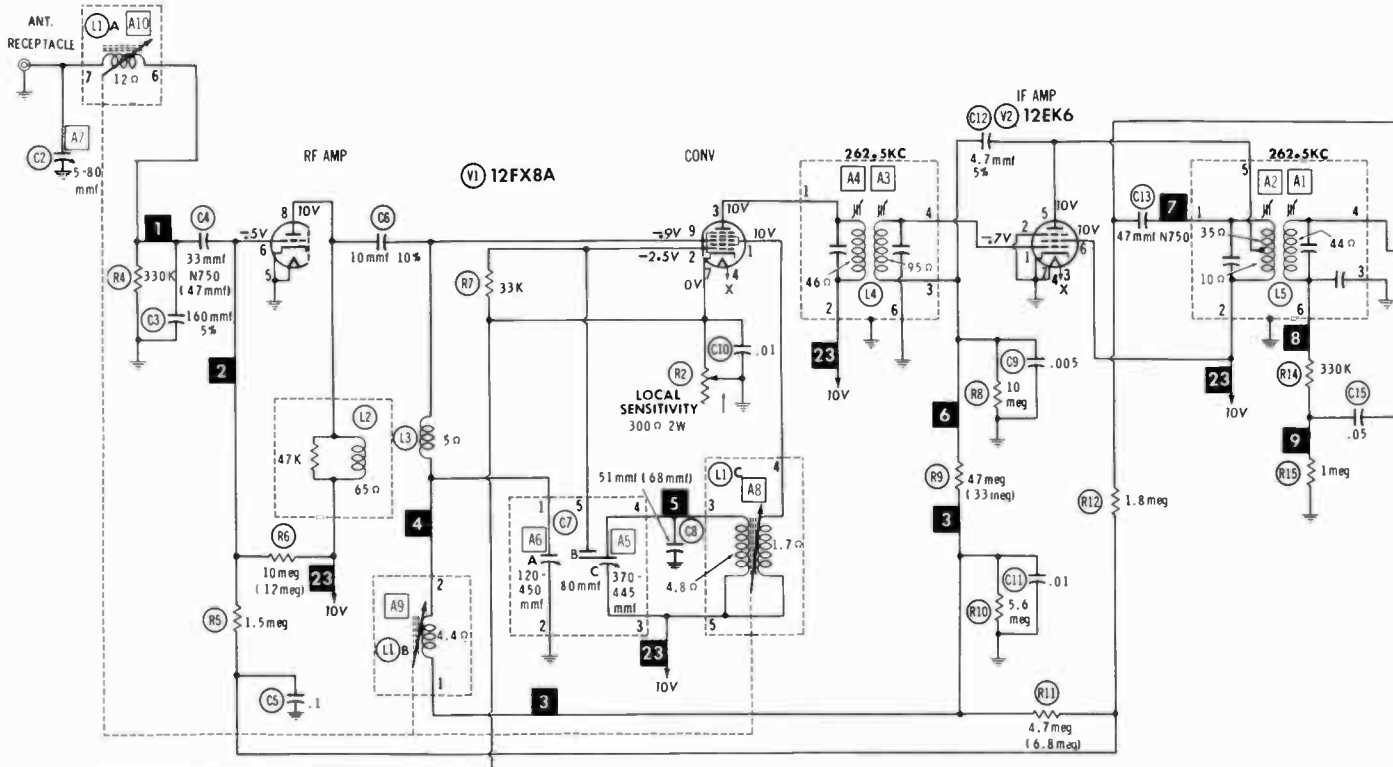
**HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana**



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD794

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

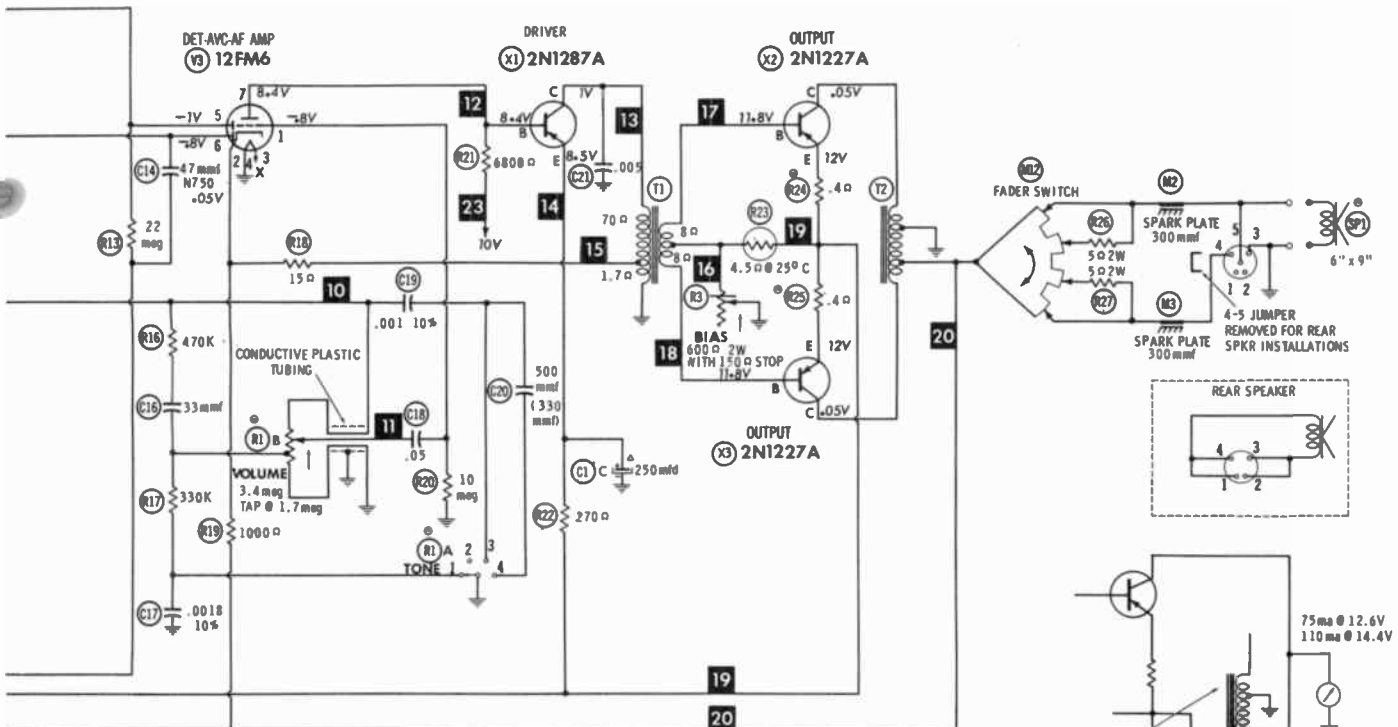
MOPAR MODELS  
404, 407



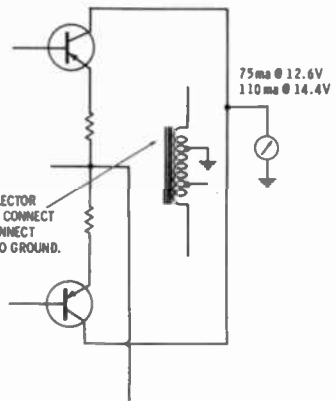
A PHOTOFAC STANDARD NOTATION SCHEMATIC  
with CIRCUITRACE

© Howard W. Sams & Co., Inc. 1961





TO ADJUST R3 DISCONNECT COLLECTOR LEADS FROM OUTPUT TRANS AND CONNECT COLLECTOR LEADS TOGETHER. CONNECT METER FROM COLLECTOR LEADS TO GROUND.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12FX8A	230 Ω	33K	280 Ω	5 Ω	0 Ω	5.2 meg	50 Ω	300 Ω	3.8 meg
V2	12EK6	9 meg	0 Ω	5 Ω	0 Ω	235 Ω	225 Ω	0 Ω		
V3	12FM6	10 meg	18 Ω	5 Ω	0 Ω	6.5 meg	1.3 meg			
V4	12DY8	10 meg	0 Ω	70 Ω	0 Ω	5 Ω	650 Ω	4700 Ω	3.3 meg	16 meg

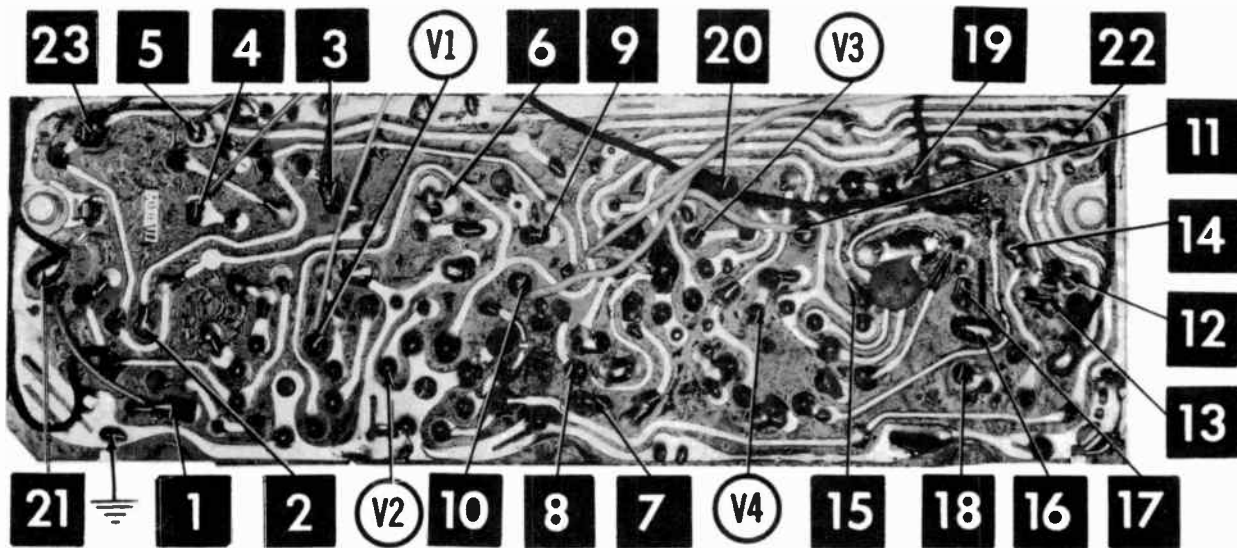
TRANSISTOR CIRCUIT RESISTANCE FOR X1, X2 AND X3 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.  
 ALL MEASUREMENTS MADE IN "LISTEN DISTANT" POSITION UNLESS OTHERWISE DESIGNATED.  
 Ω MEASURED IN SEARCH POSITION.

- 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.

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 COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
- ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

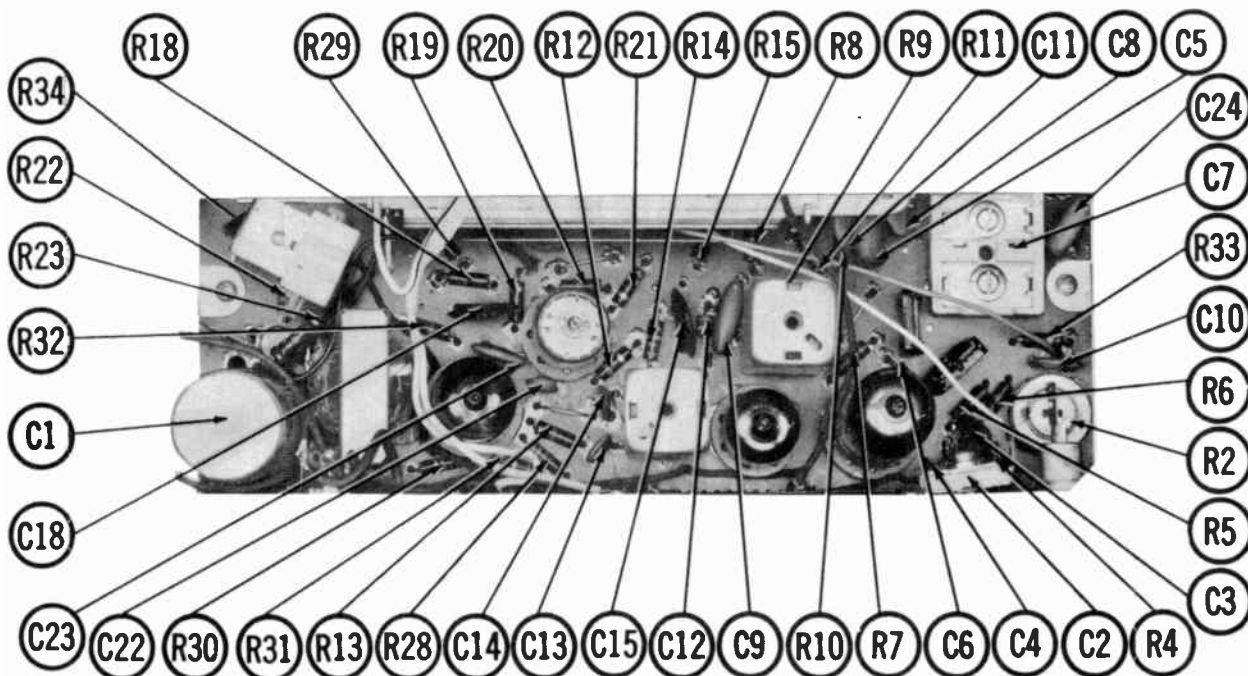
MOPAR MODELS  
404, 407



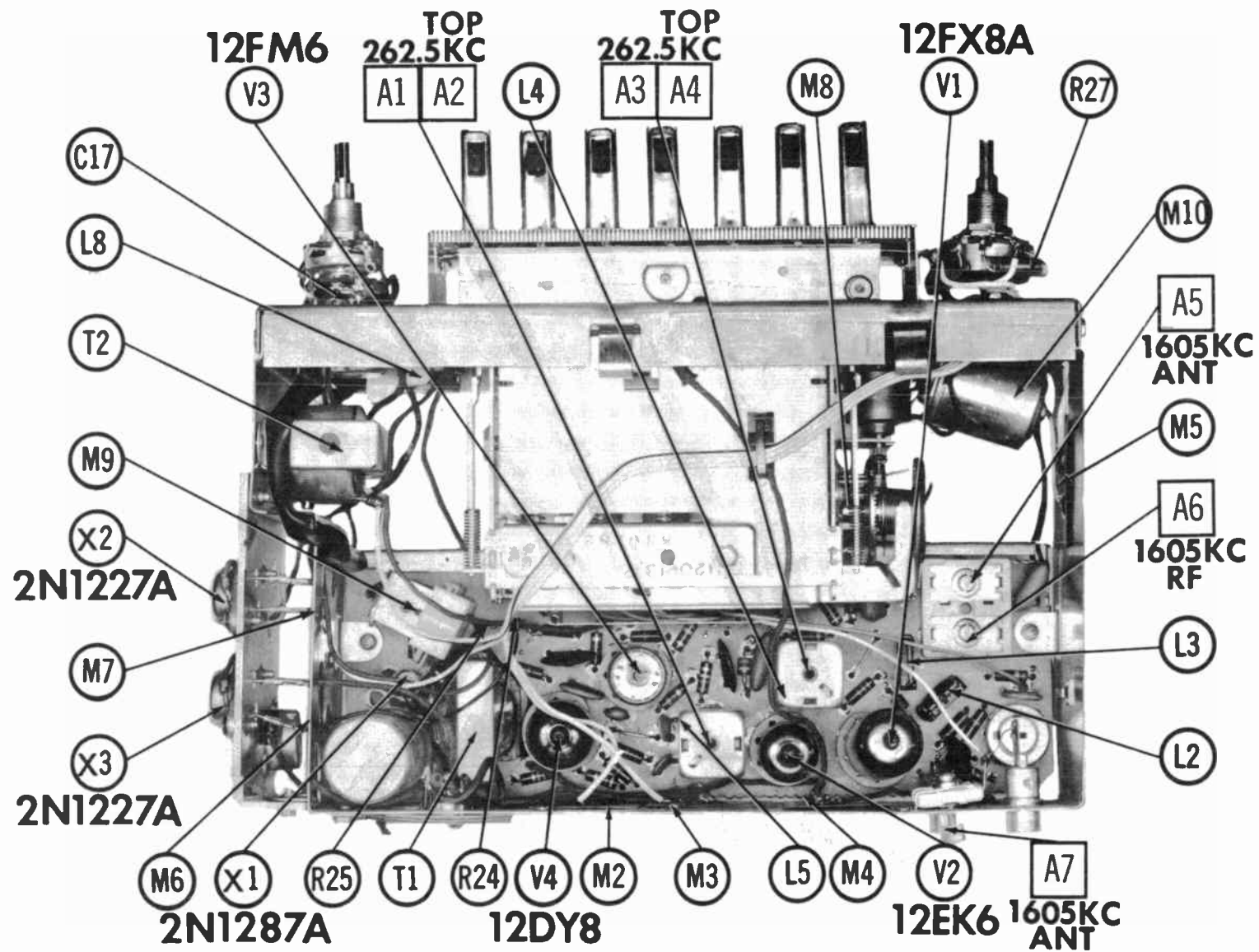
A Howard W. Sams **CIRCUITRACE** Photo

**PRINTED BOARD**

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



**PRINTED BOARD**



CHASSIS TOP VIEW

# PARTS LIST AND DESCRIPTIONS

## TUBES

GENERAL ELECTRIC			RAYTHEON			SYLVANIA		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amp. -Converter	12FX8A	V3	Det. -AVC-AF Amp.	12FM6 (12FK6) *			
V2	IF Amplifier	12XK6	V4	Trigger Relay Control	12DY8			

\* Alternate

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N1287A	Driver	2N591	2N362		PNP
X2	2N1227A	Output	2N301	2N633		PNP Note 1
X3	2N1227A	Output	2N301	2N633		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.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	
C1A	.500	16	220353-13	PWH3-00-94		PWP300.4		PCL6-3026.6*
B	.250	16						
C	.250	16						

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

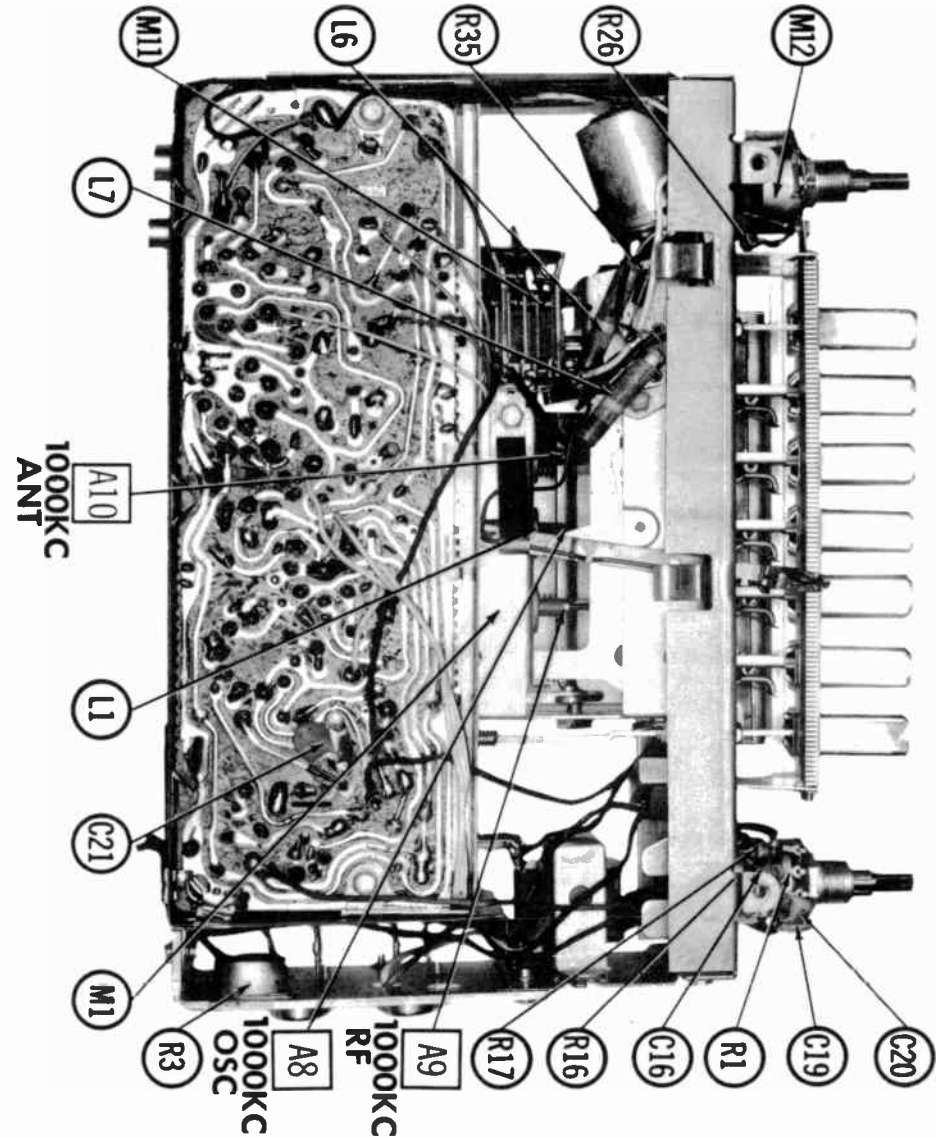
## FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALLAB PART No.	CORNELL-DUBILIER PART No.	ELAMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	5-80	#219083-3				462		
C3	160 5%		1469-00016	TCZ-160	22RT16	CM-19B-161J		MS-316
C4	33 N750	(47) †	N750-D1 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C5	.1 100V		P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-201	2TM-P10
C6	10 10%		NPO-8E 10	D6-100	L10Q1	CCD-100	GP410	10TS-Q10
C7A	120-450	#219092-16						
B	80		NPO-8I 82	TCZ-82	C10Q82C	CCTO-820	CNO-482	10TCC-Q82
C	870-445							
C8	51	(68) †	NPO-D1 50	TCZ-51	C10Q51C	CCTO-510	CNO-450	10TCC-Q50
C9	.005 100V		P288N-005	D6-502	CUB6D5	IDP-1-502	GEM-625	8TM-D50
C10	.01		BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-810
C11	.01		BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-810
C12	4.7 5%		NPO-8I 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C13	47 N750		N750-D1 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C14	47 N750		N750-D1 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C15	.05		BPD-05	DD-503	CUB285	IDP-2-503	GP150	5HK-850
C16	33		D1-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C17	.0018 10%		D1-1800	DD-182	5R5D1	CCD-182	GP218	10TS-D18
C18	.05		BPD-05	DD-503	CUB285	IDP-2-503	GP150	5HK-850
C19	.001 10%		D1-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C20	500	(330) †	D1-500	DD-501	BYA10T5	CCD-501	B-350	10TS-T50
C21	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C22	.0015		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C23	.02		BPD-02	DD-203	BYB682	CCD-203	B-120	5HK-820
C24	.05 100V		P288N-05	DD-503	CUB285	IDP-2-503	GEM-415	2TM-850

‡ Bendix Part Number

† Alternate Value

# CHASSIS-BOTTOM VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RLA B	Switch 3.4meg	1/2	2091110-1 ①					Tone Volume
C	1.7meg Tap Switch							
R2 R3	300Ω 600Ω 150Ω Stop	2(WW) 2(WW)	2090181-4 219555-14		39-700-200	110-300 112-500 *	FL-600B	Power Off-On Local Sensitivity Bias

① Some versions of Model 407 may use Part #2091110-3. Model 404 may use Part #2091110-4.  
\* Use 150Ω 2W series resistor.

## RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			REMARKS	ITEM No.	RATING	REPLACEMENT DATA			REMARKS
		IRC PART No.	WORKMAN TV PART No.					IRC PART No.	WORKMAN TV PART No.		
R4	330K					R20	10meg				
R5	1.5meg					R21	6800Ω				
R6	10meg				(13meg) †	R22	270Ω				
R7	33K					R23	4.5Ω @ 25°C				Pt. #220269-U
R8	10meg					R24	.4Ω				Pt. #2091295-2
R9	47meg				(33meg) †	R25	.4Ω				Pt. #2091295-4
R10	5.8meg					R26	5Ω 2W				
R11	4.7meg				(6.8meg) †	R27	5Ω 2W				
R12	1.8meg					R28	33meg				
R13	22meg					R29	3.3meg				
R14	330K					R30	33K				
R15	1meg					R31	4700Ω				
R16	470K					R32	10meg				
R17	330K					R33	680Ω				
R18	15Ω					R34	220Ω				
R19	1000Ω					R35	220Ω				

† Alternate Value.

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BENDIX PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
LLA B C	Ant. RF Osc.	2090131-24 ①					① Part of M1 ② Includes 47K ③ IBC Part #CL-1
L2	RF Choke (2MHz)	2090088-12 ②					
L3	RF Choke (62uh)	2090088-11	TV-193	6110	RTC-8573	T338	
L4	Input IF	2090876-6					
L5	Output IF	2090877-7					
L6	RF Choke (2.7uh)	2090871-3 ③	SW-630	4604	RTC-8517	T857	
L7	RF Choke (2.7uh)	2090871-3 ③	SW-630	4604	RTC-8517	T857	

## FILTER CHOKE

ITEM No.	RATINGS		REPLACEMENT DATA					NOTES	
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.		Triad PART No.
L8	1.4A	.5Ω	.002 HY	2090620-8 ①					① Alternate Part # 2090620-8

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PR1	SEC.	BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.5	1	2090433-8					

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
		BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	25Ω Tap @ 3-4Ω	2090266-6					

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BENDIX PART No.	QUAM PART No.	
SP1	6" x 9"	PM	3-4Ω	2091269-2 *	69A3	* Model 407
	7"	PM	3-4Ω	2091269-3 †	7A31	† Model 404

## MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M1	Tuner	2091312-2	Complete, Less Pointer, Model 407
	Tuner	2091312-3	Complete, Less Pointer, Model 404
M2	Spark Plate	220267-16	300mmf
M3	Spark Plate	220267-16	300mmf
M4	Spark Plate	220267-16	300mmf
M5	Spark Plate	220267-12	300mmf
M6	Spark Plate	220267-12	300mmf
M7	Spark Plate	220267-17	300mmf
M8	Switch	2091315-2	Distant-Local Search (With Mounting Plate)
M9	Relay	2091297-2	With Cover Assembly
M10	Motor (DC)	2091222-1	Motor Reversing (With Mounting Bracket and Cover)
M11	Switch	2091061-1	Motor Reversing (Without Mounting Bracket)
	Switch	2090061-1	Fader, Model 407
M12	Switch	2090886-4	Fader, Model 404
	Switch	2090886-5	Fader, Model 404

## CABINETS & CABINET PARTS

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

NAME	PART NO.	DESCRIPTION
Dial Lens	2091629-1	Clear, Model 407
Dial Lens	2090999-1	Clear, Model 404
Dial Pointer	2090986-1	
Pushbutton	2091189-1	Tuning, Model 407
Pushbutton	2091683-1	Tuning, Model 404
Pushbutton	2091674-1	Local, Model 407
Pushbutton	2091683-2	Local, Model 404
Pushbutton	2091683-3	Distant, Model 404
Pushbutton	2091674-2	Distant, Model 407
Knob	2091142-1	Tuning, Volume, Model 407
Knob	2091122-1	Tuning, Volume, Model 404
Knob	2091121-1	Tone, Fader, Model 404
Knob	2091143-1	Tone, Fader, Model 407

## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8830 (Solid) Available in Ten Colors  
8824 (Stranded) Available in Ten Colors  
Shielded Hook-up Wire ..... Use BELDEN No. 8885  
Bonding Strap ..... Use BELDEN No. 8861





MODEL BKA60X

TRADE NAME Motorola Models BKA60X (For 1960 Buicks), CRA60X (For 1960 Corvairs), PCA60X (For 1960 Pontiacs)  
 MANUFACTURER Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois  
 TYPE SET Battery Operated 4 Tube, 2 Transistor Custom Built Automobile AM Receiver  
 POWER SUPPLY 12 Volt Storage Battery  
 TUNING RANGE—BROADCAST 540 - 1610KC RATING 1.3 Amp. @12.6 Volts DC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

Suggested Alignment Tools: A1 thru A4.... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440  
 WALSCO #2526, 2543, 2544, 2545  
 A5, A6, A7... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089  
 WALSCO #2512, 2525, 2528  
 A8, A9, A10... GENERAL CEMENT #9050-L, 9150  
 WALSCO #2521, 2524

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mf to pin 7 (grid) of Converter. Low side to chassis.	262.5KC (400v Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1610KC	"	"	A5, A6, A7	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, and A10) out of coils. Repeat Step 2.						
3.	Thru dummy to antenna receptacle.	1200KC	Tuner carriage 9/32" from high end stop.	Across voice coil.	A8, A9, A10	Adjust for maximum output. Repeat Step 2.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENT

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

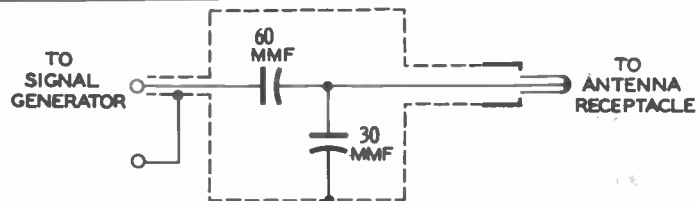


FIG. 1

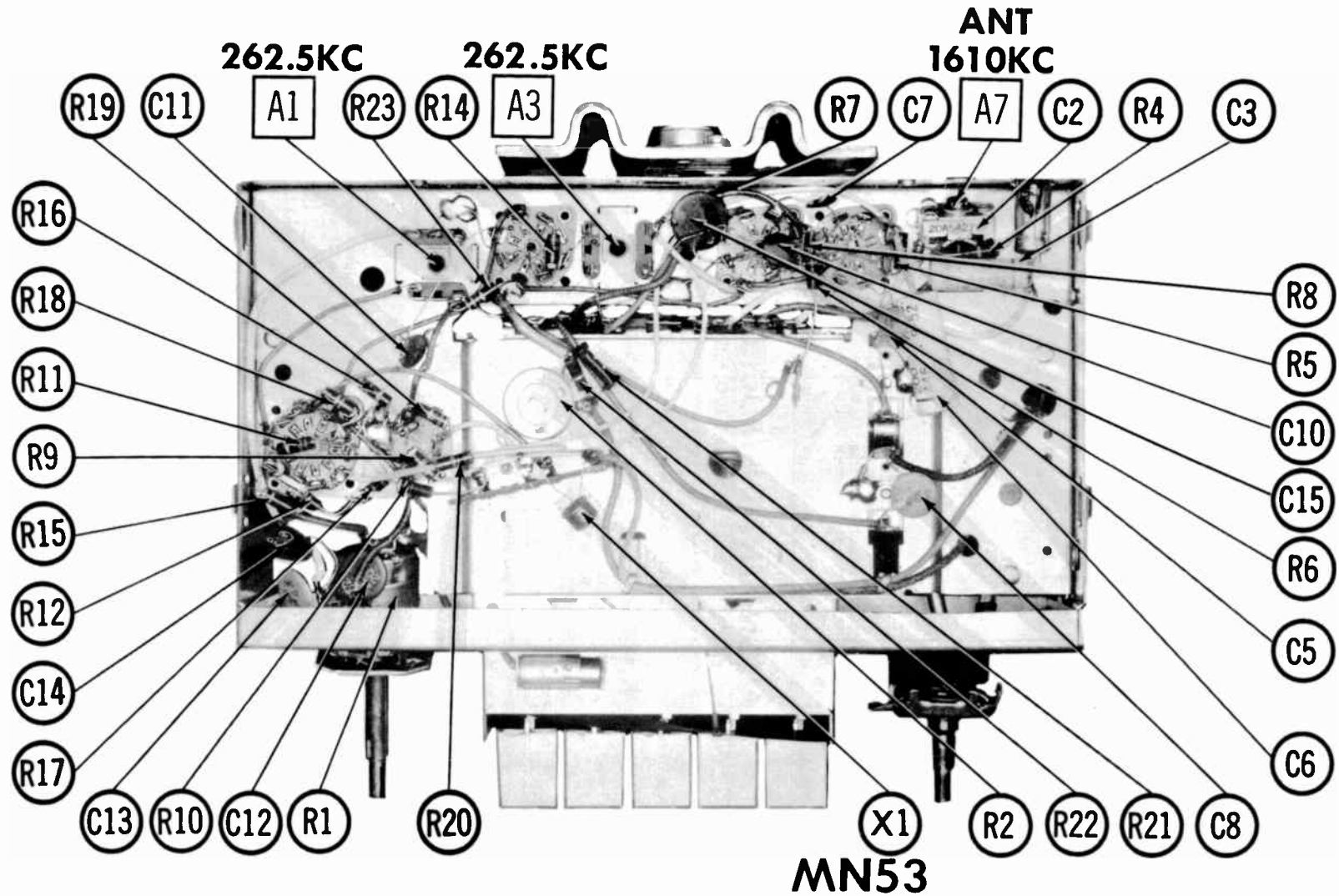
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD239, KL240

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

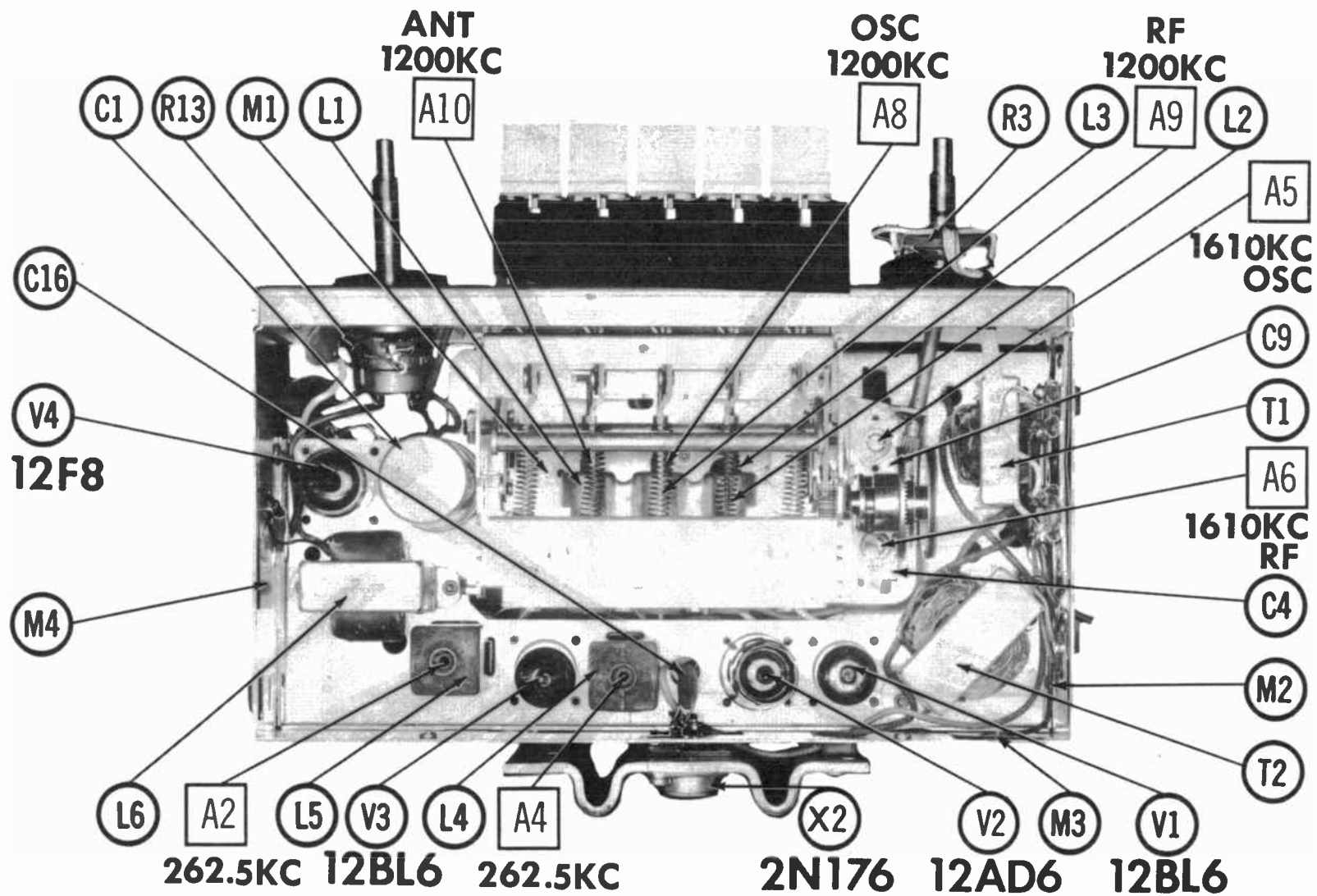


MOTOROLA MODELS  
BKA60X, CRA60X, PCA60X

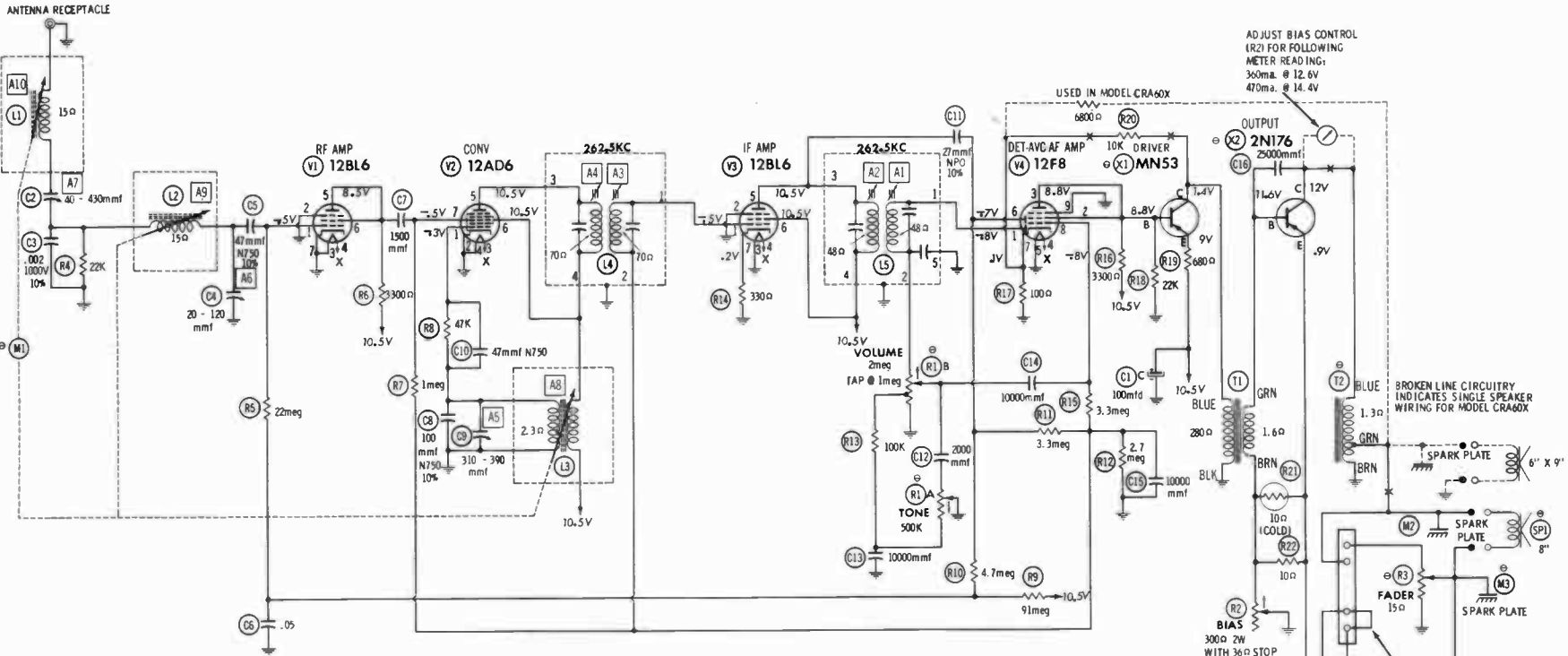


CHASSIS-BOTTOM VIEW

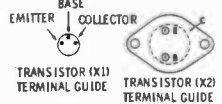
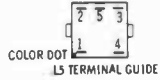




CHASSIS TOP VIEW



SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION  
 DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM  
 ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	33meg	0Ω	0Ω	.1Ω	3600Ω	3600Ω	0Ω		
V2	12AD6	47K	0Ω	.1Ω	0Ω	400Ω	330Ω	3.7meg		
V3	12BL6	2.7meg	0Ω	.1Ω	0Ω	380Ω	330Ω	330Ω		
V4	12F8	1.4meg	2300Ω	2300Ω	.1Ω	0Ω	2.1meg	100Ω	6meg	0Ω

TRANSISTOR CIRCUIT RESISTANCE FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

- 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.

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.

A PHOTOFAC STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1960

MOTOROLA MODELS  
 BKA60X, CRA60X, PCA60X

# PARTS LIST AND DESCRIPTIONS

## WIRING DATA

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

## TUBES

• GENERAL ELECTRIC •			• RAYTHEON •			• SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12BL6	V3	IF Amplifier	12BL6			
V2	Converter	12AD6	V4	Det. -AVC-AF Amp.	12F8			

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	MN-53 *	Driver	2N591	MN-53	2N591	PNP Note 1
X2	2N176	Output	2N176		2N176	

\* Alternate Type 2N652  
 Note 1. When replacing, apply DC-4 grease (Part #1M490487), or equivalent, to both sides of insulator. Tighten mounting screws securely. Check bias adjustment.

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA					NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	
C1A	500 $\Delta$	16	23B543279	AFH3-00-95		WP300. 85		TVLS-3026.8*
B	500 $\square$	16						
C	100	16						

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

## FIXED CAPACITORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	40-430	#20A542758						
C3	.002 1000V 10%	#20K541014						
C4	30-130							
C5	47 N750 10%		N750-47	DTN-47	C10Q47U	16DP-2-202	GP220	10TB-D20
C6	.05 200V		P288N-05	DD-503	CUB285	424		
C7	1500		BPD-0015	DD-152	BYA10D15	CCTN-470	CNT-447	10TCU-Q47
C8	100 N750 10%		N750-DI 100	DTN-100	C10T1U	4DP-3-503	GEM-415	2TM-850
C9	310-390	#20K541700				CCD-152	B-215	5HK-D15
C10	47 N750					CCTN-101	CNT-310	10TCU-T10
C11	27 NPO 10%		N750-DI 47	DTN-47	C10Q47U			
C12	2000		NPO-DI 25	DTZ-27	C10Q27C	CCTN-470	CNT-447	10TCU-Q47
C13	10000		BPD-002	DD-202	BYA10D2	CNO-270	CNO-427	10TCC-Q27
C14	10000		BPD-01	DD-103	BYA10B1	CCD-202	B-220	5HK-D22
C15	10000		BPD-01	DD-103	BYA10B1	CCD-103	B-110	5HK-810
C16	25000		BPD-01	DD-103	BYA10B1	CCD-103	B-110	5HK-810
						CCD-103	B-110	5HK-810
						4DP-2-253	GEM-4125	4TM-825

# Motorola Part Number.

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA	500K	}	18K544234	F1-41 R2-75	RTV-717C	QJ-1294A	UE4168-8	Tone Note 1
B	2meg							
C	1meg Tap	2(W/W)	18K543493	KR-1	39-300 *	112-300 *	FL500 *	Power Off-On
R2	300 $\Omega$ Switch							
R3	30 $\Omega$ Stop	2(W/W)	18K544296					Fader Note 2

† "CONCENTRIKT" equivalent: K-16 Kit with base elements & shafts: B13-133, P17-108 (Panel)  
 B18-139X, R1-118 (Rear)  
 76-1 (Switch)

\* "STA-LOC" equivalent: FB55A, RU26T16, O81250A, B8697, U841.  
 \* Use 33 $\Omega$  series resistor.

Note 1. Model CRA60X uses Part #18K544234  
 Model PCA60X uses Part #18K544237

Note 2. Model PCA60X uses Part #18B544256. Not used in Model CRA60X.

## PARTS LIST AND DESCRIPTIONS (Continued)

### RESISTORS (IRC or EQUIVALENT)

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

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R5	22meg		R12	2.7meg		R19	680Ω	
R6	3300Ω		R13	100K		R20	10K	(6800Ω) *
R7	1meg		R14	330Ω		R21	10Ω Cold	Pt#6K543800
R8	47K		R15	3.3meg		R22	10Ω	
R9	91meg		R16	3300Ω		R23	330Ω	
R10	4.7meg		R17	100Ω				

\* Used in Model CRA60X.

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Ant. Coll	24C535458				
L2	RF Coll	24C535458				
L3	Osc. Coll	24C535456				
L4	Input IF Trans.	24B543286	BC-350	I2-H1	RTC-8638	
L5	Output IF Trans.	24K543287	BC-354	I2-H6	RTC-8640	

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 Ω)	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L6	1.3A 1.3A	.3Ω .6Ω	.010 HY .001 HY	25B543338 ① 25K542487 ②					① Models BKA60X, PCA60X ② Model CRA60X

### 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.	

### 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	30Ω Tap	3-4Ω	25K543444A ①				

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	8" 5"x 7" 6"x 9"	PM PM PM	3-4Ω 3-4Ω 3-4Ω	50C544380 * 50C544270 † 50C544396 *	8A21	* Used in Model BKA60X † Used in Model PCA60X * Used in Model CRA60X

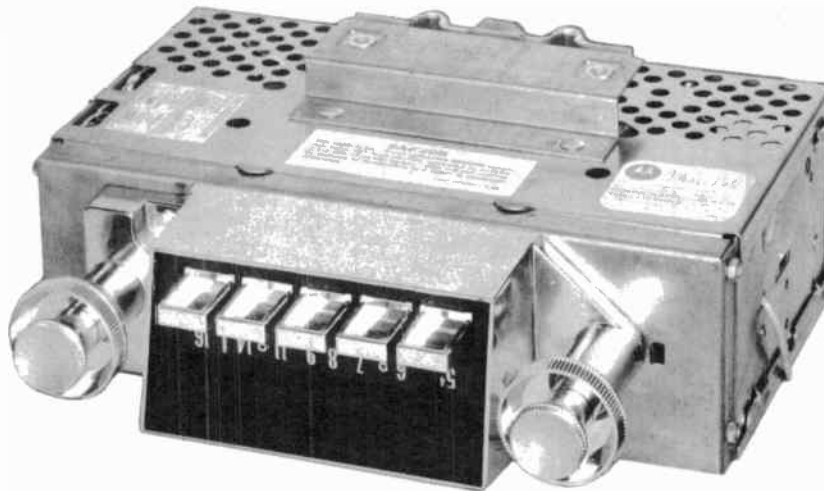
### MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	Tuner Tuner Tuner	77K564443 77K562843 77D562548	(AT-318) Complete, Model BKA60X (AT-290), Model PCA60X (Less Pushbuttons and Pointer) (AT-281), Model CRA60X (Less Pushbuttons and pointer)
M2	Spark Plate	64K561877	Not used in Model CRA60X
M3	Spark Plate	64K561877	
M4	Spark Plate	64K530177	

### CABINETS & CABINET PARTS

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

NAME	PART NO.	DESCRIPTION
Dial Scale	34B544305	Model CRA60X
Dial Scale	34K544272	Model PCA60X
Dial Scale	34B544348	Model BKA60X
Dial Pointer	1V543735	Model PCA60X
Dial Pointer	1V544448	Model BKA60X
Dial Pointer	1V538739	Model CRA60X
Knob	36B542650	Tuning, Volume, Model CRA60X
Knob	36B544225	Tuning, Volume, Model PCA60X
Knob	36B544221	Tuning, Volume, Model BKA60X
Knob	36B544260	Tone, Model PCA60X
Knob	36B543330	Tone, Model CRA60X
Knob	36B544219	Tone & Speaker, Model BKA60X
Knob	36K544262	Speaker, Model PCA60X
Knob	36B543332	Dummy, Model CRA60X



TRADE NAME Motorola Model BKA61 (For 1961 Buick)  
 MANUFACTURER Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois  
 TYPE SET Battery Operated Transistorized Custom Built Automobile AM Receiver  
 POWER SUPPLY 12 Volt Storage Battery RATING .6 Amp. @12.6 Volts DC  
 TUNING RANGE—BROADCAST 540 — 1610KC

### ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

Suggested Alignment Tools:

A1 thru A4	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
	WALSCO #2526, 2543, 2544, 2545
A5, A6, A7	GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
	WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A8, A10, A11, A12	GENERAL CEMENT #9050-L, 9150
	WALSCO #2521, 2524

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to collector of RF Amp. Low side to chassis.	262.5KC (400% Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1610KC	"	"	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 and A12) out of tuning coils. Repeat Step 2.						
3.	Thru dummy to antenna receptacle.	1200KC	Tuner carriage 9/32" from high end stop.	Across voice coil.	A9, A10, A11, A12	Adjust for maximum output. Repeat Steps 2 and 3.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A8 for maximum output.					

#### PUSHBUTTON ADJUSTMENT

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

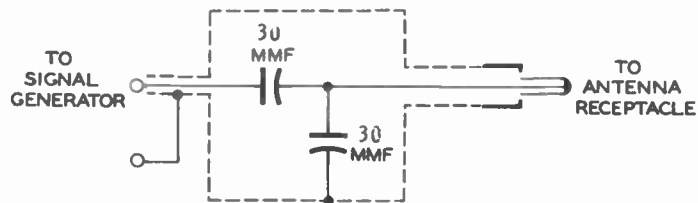


FIG. 1

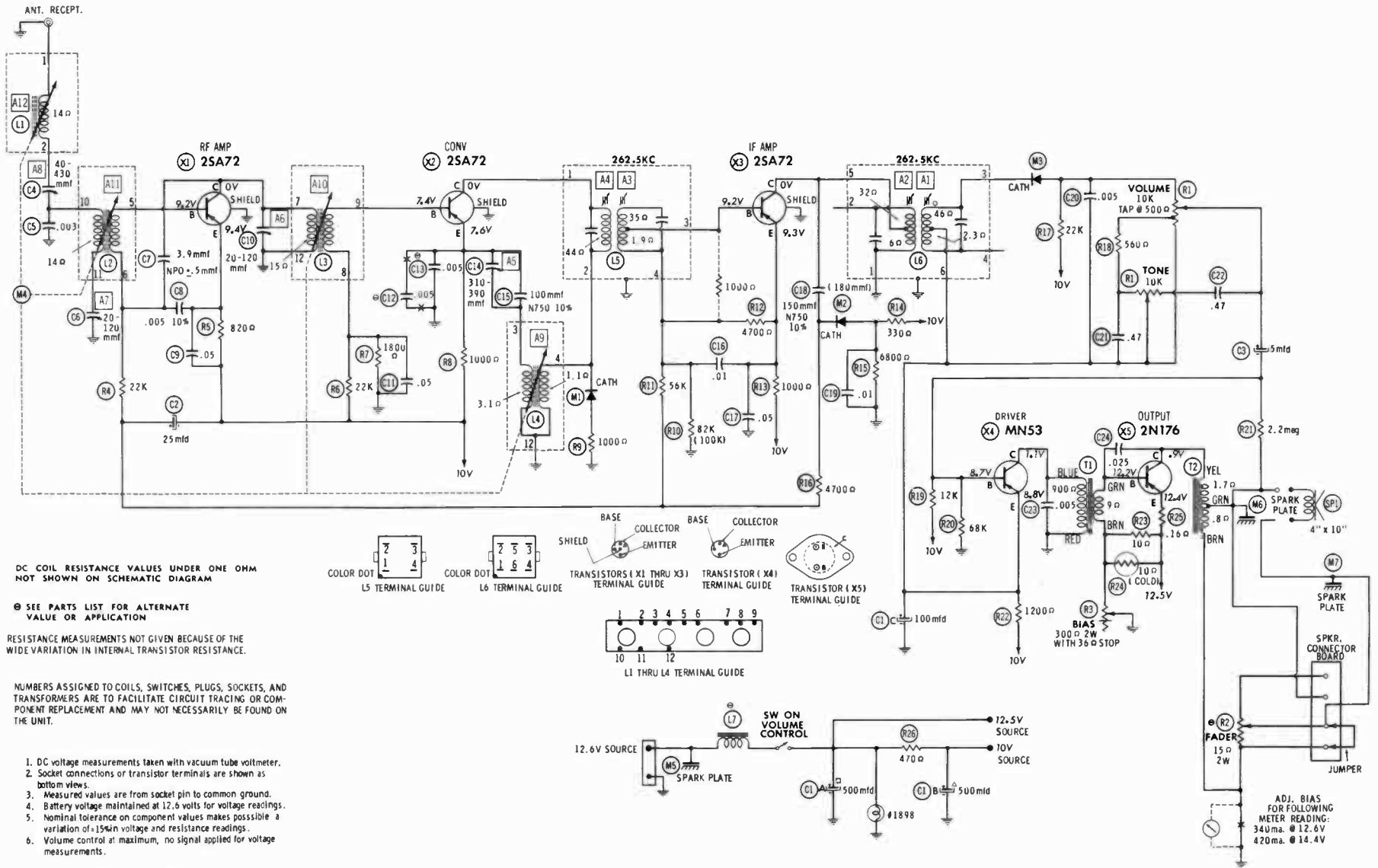
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD956

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

MOTOROLA  
MODEL BKA61



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

SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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

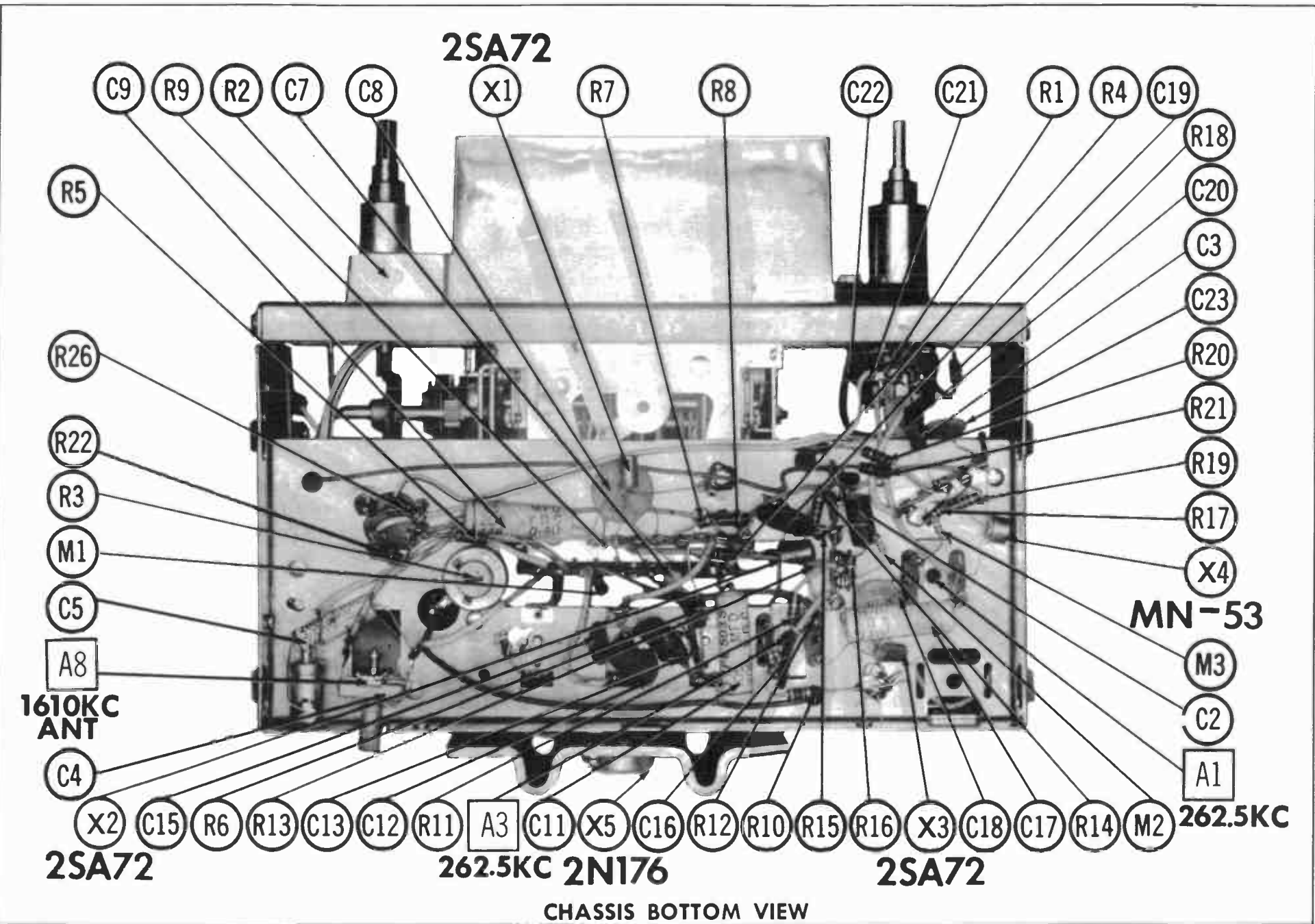
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

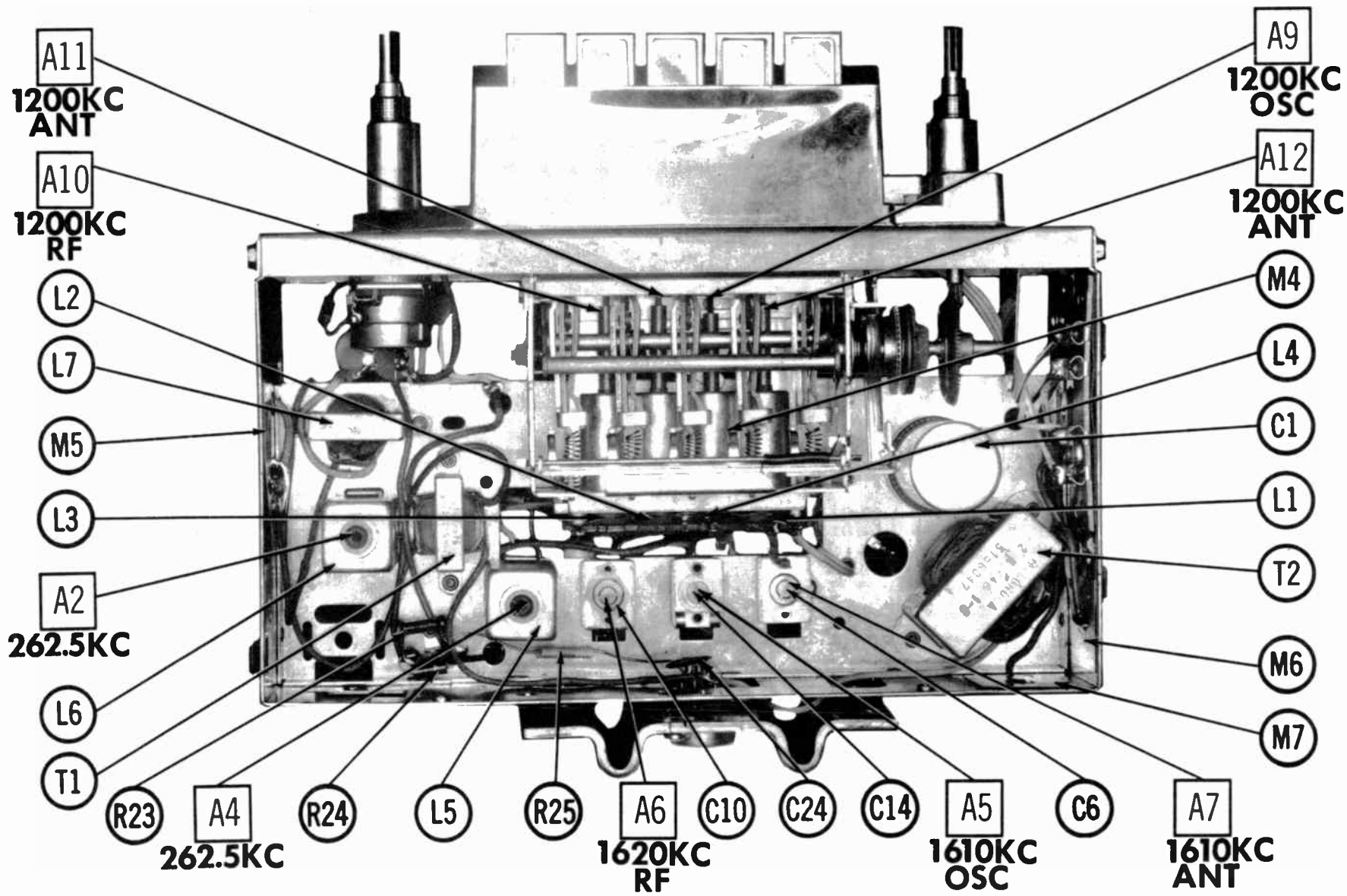
1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes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

A PHOTOFACIT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1961

**MOTOROLA  
MODEL BKA61**





CHASSIS TOP VIEW



## PARTS LIST AND DESCRIPTIONS

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			BCA PART No.	RAYTHEON PART No.	
X1	28A72	RF Amplifier	2N1637		PNP
X2	28A72	Converter	2N1639		PNP
X3	28A72	IF Amplifier	2N1638		PNP
X4	MN-53*	Driver	2N591	2N362	PNP
X5	2N176	Output	2N176		PNP

\* Alternate Type 4450.

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	500	16	23B543279	AFH3-00-96	C0005	XC3-48	WP300, 85		TVL8-3026. 0†
B	500	16							
C	100	16							
C2	25	3	23K544640	PTT9	NLW25-3	MT1-10	TT3X25	MLV25-3	TE-1065
C3	5	3	23K544541	PTT4	NLW5-6	MT1-3	TT6X5	MLV5-3	TE-1062. 3

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

### FIXED CAPACITORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	40-430	#20B64871A01							
C5	.003 200V		P288N-003	D6-302	CUB6D3	6DP-1-302 424			6P8-D30
C6	20-120	#20K541014							
C7	3.9 NPO ± .5mmf								
C8	.005 10%		DI-5000		C10V4C				10TCC-V39
C9	.05 200V		P288N-05	DD-503	PM6D6	CCD-502	JL-250		
C10	20-120	#20K541014				4DP-3-503 424	GEM-415		2TM-850
C11	.05 200V		P288N-05	DD-503	CUB285	4DP-3-503	GEM-415		2TM-850
C12	.005 200V	Note 1	P288N-005	D6-502	CUB6D5	6DP-1-502	GEM-625		6TM-D50
C13	.005 200V	Note 1	P288N-005	D6-502	CUB6D5	6DP-1-502	GEM-625		6TM-D50
C14	310-390	#20K541700							
C15	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310		10TCU-T10
C16	.01		BPD-01	DD-103	BYA1081	CCD-103	B-110		5HK-810
C17	.05 200V		P288N-05	DD-503	CUB285	4DP-3-503	GEM-415		2TM-850
C18	150 N750 10%	(180)†	N750-DI 150	DTN-150	C10T1B1U	CCTN-151	CN7-315		10TCU-T15
C19	.01		BPD-01	DD-103	BYA1081	CCD-103	B-110		5HK-810
C20	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250		5HK-D50

### 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.	
C21	.47 3V								
C22	.47 3V								
C23	.005		BPD-006	DD-502	BYA10D5	CCD-502		B-250	HY-130 HY-130 5HK-D50
C24	.025		BPD-025		DPM86825	4DP-2-253		GEM-4125	4TM-825

Note 1. When C13 is .01mfd, C12 is not used.

# Motorola Part Number.

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

† Alternate.

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	10K	1/2	18C64876A01					Tone Volume
B	10K	1/2						
C	5000Ω Tap Switch							Power Off-On
R2	15Ω	2(WW)	18K544532①					Fader
R3	300Ω	2(WW)	18K543493		39-300	112-300	FL-500	Bias
	36Ω Stop							

① Some versions may use Part #18B544256.

\* Use 39Ω 2W series resistor.

### RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	22K				R16	4700Ω			
R5	820Ω				R17	22K			
R6	22K				R18	560Ω			
R7	1800Ω				R19	12K			
R8	1000Ω				R20	68K			
R9	1000Ω				R21	2.2meg			
R10	82K			(100K) *	R22	1800Ω			
R11	56K				R23	10Ω			
R12	4700Ω				R24	10Ω Cold			Pt. #6K343800
R13	1000Ω				R25	.18Ω			Pt. #17A64856A01
R14	330Ω				R26	470Ω			
R15	6800Ω								

\* Alternate Value.

## PARTS LIST AND DESCRIPTIONS (Continued)

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Ant.	24K563896 ①					① Part of M4
L2	Ant.	24B40431A02 ①					
L3	R.F.	24B40431A01 ①					
L4	Osc.	24B40430A01 ①					
L5	Input IF	24B64861A03					
L6	Output IF	24B64861A02					

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES	
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 $\Omega$ )	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.		Triad PART No.
L7	.8A	.4 $\Omega$	.001 HY	25B64889A01 ①					① Alt. #25B64839A01

### 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	2.5	1	25K543941					

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	400 Tap ①	3-4 $\Omega$	25K544271					

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	4"x 10"	PM	3-4 $\Omega$	50C64850A01	410A2	

### SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		MOTOROLA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M1		48K544539		1N296	Limiter (Pigtail) AVC Detector
M2		48K544539		1N296	
M3		48K544539		1N296	

### MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M4	Tuner	77D40428A01	(AT-349) Complete
M5	Spark Plate	64K530177	
M6	Spark Plate	64K561877	
M7	Spark Plate	64K561877	

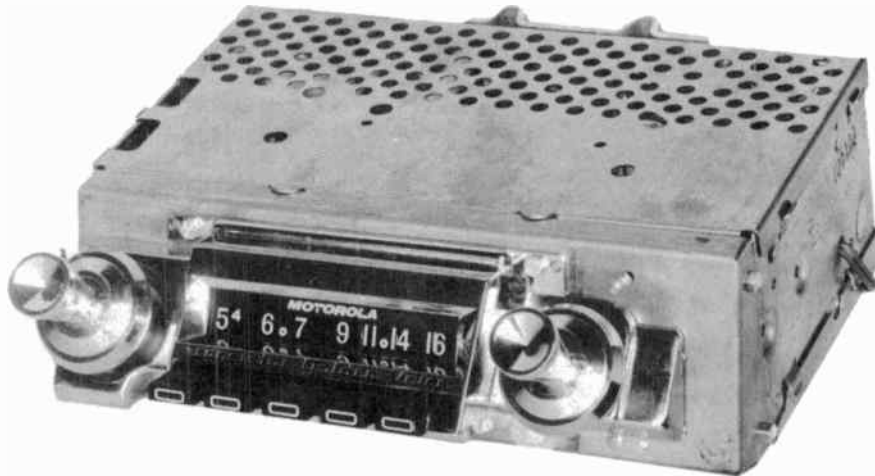
### CABINETS & CABINET PARTS

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

NAME	PART NO.	DESCRIPTION
Dial Scale	34B64868A01	Tuning, Volume Tone, Speaker (1st, 3rd, and 5th ) (2nd, 4th)
Dial Pointer	1K564916	
Knob	36B544225	
Knob	36B64862A01	
Pushbutton	38C40416A04	
Pushbutton	38C40416A03	

### WIRING DATA

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



TRADE NAME Motorola Model CTA61 (For 1961 Chevrolet)  
 MANUFACTURER Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois  
 TYPE SET Battery Operated Custom Built Transistorized Automobile AM Receiver  
 POWER SUPPLY 12 Volt Storage Battery  
 TUNING RANGE—BROADCAST 540 — 1610KC RATING .6 Amp. @12.6 Volts DC

### ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

Suggested Alignment Tools: A1 thru A4..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440  
 WALSCO #2526, 2543, 2544, 2545  
 A5, A6, A7..... GENERAL CEMENT #5000, 5003, 8276, 8290  
 WALSCO #2512, 2515, 2522, 2523, 2525, 2537  
 A9, A10, A11, A12... GENERAL CEMENT #9050-L, 9150  
 WALSCO #2521, 2524

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. High side thru .1mfd to antenna receptacle. Low side to chassis.	262.5KC (400% Mod.)	High end stop.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2. Thru dummy (Fig. 1) to antenna receptacle.	1610KC	"	"	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. Repeat Step 2.					
3. Thru dummy to antenna receptacle.	1200KC	Tuner carriage 9/32" from high end stop.	Across voice coil	A9, A10, A11, A12	Adjust for maximum output. Repeat Steps 2 and 3.
4. With radio installed in car and antenna fully extended, tune in a weak station near 1200KC and adjust A8 for maximum output.					

#### PUSHBUTTON ADJUSTMENT

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

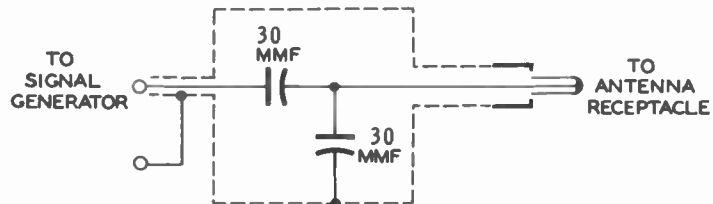


FIG. 1

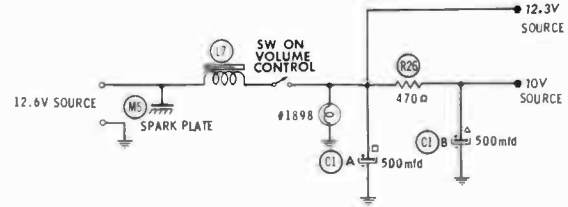
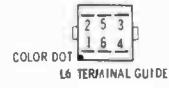
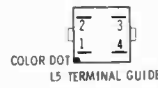
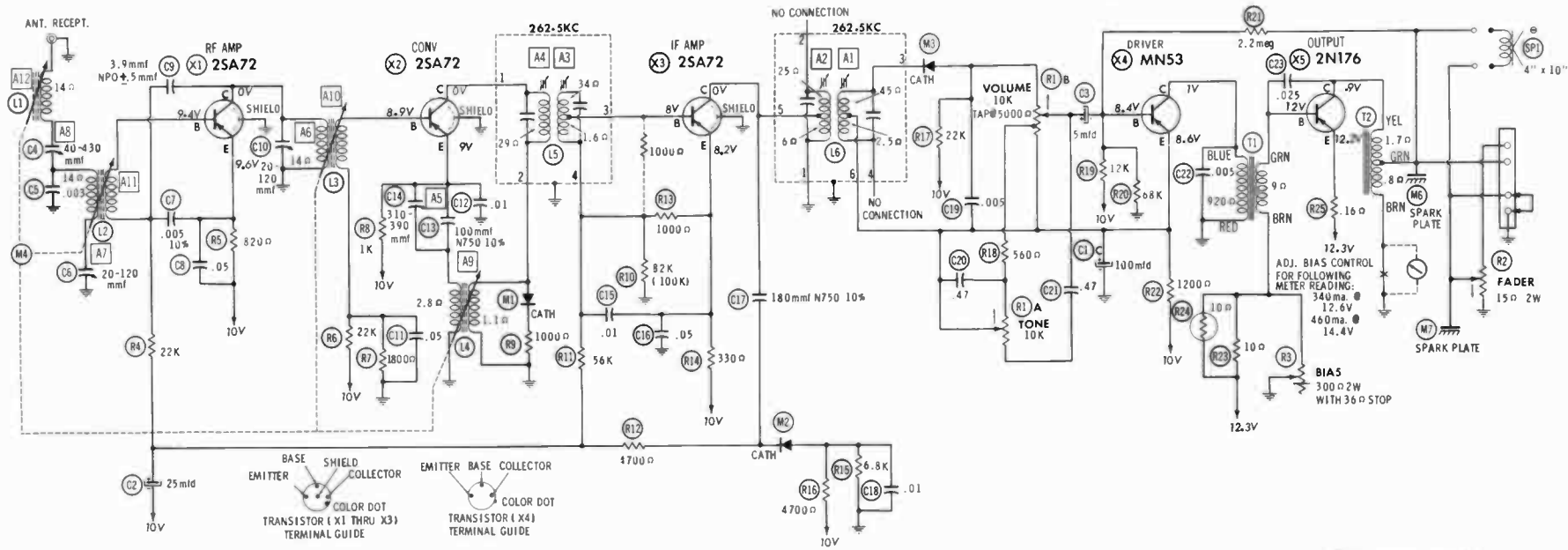
### HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD915

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

MOTOROLA MODEL  
CTA61





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

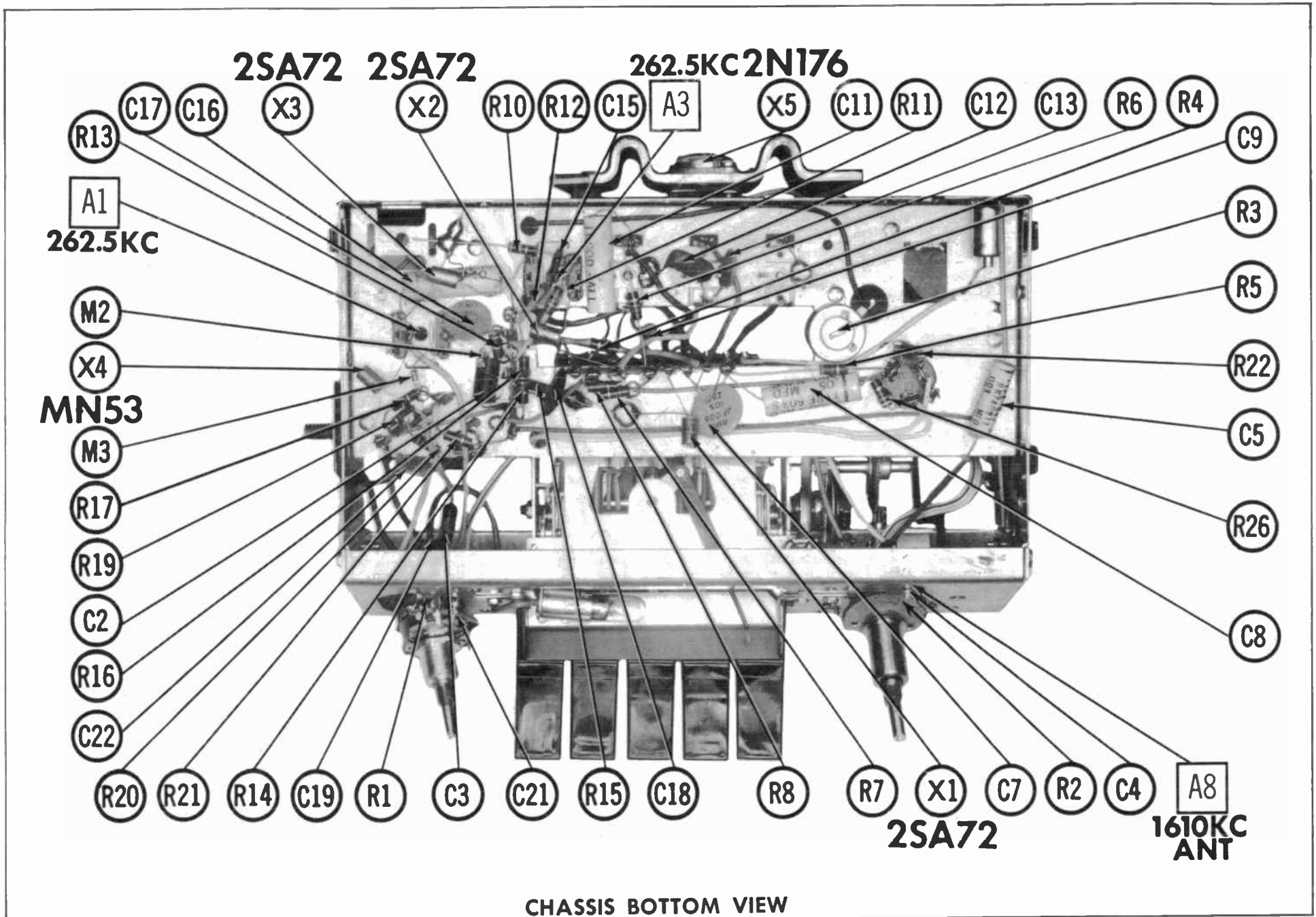
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

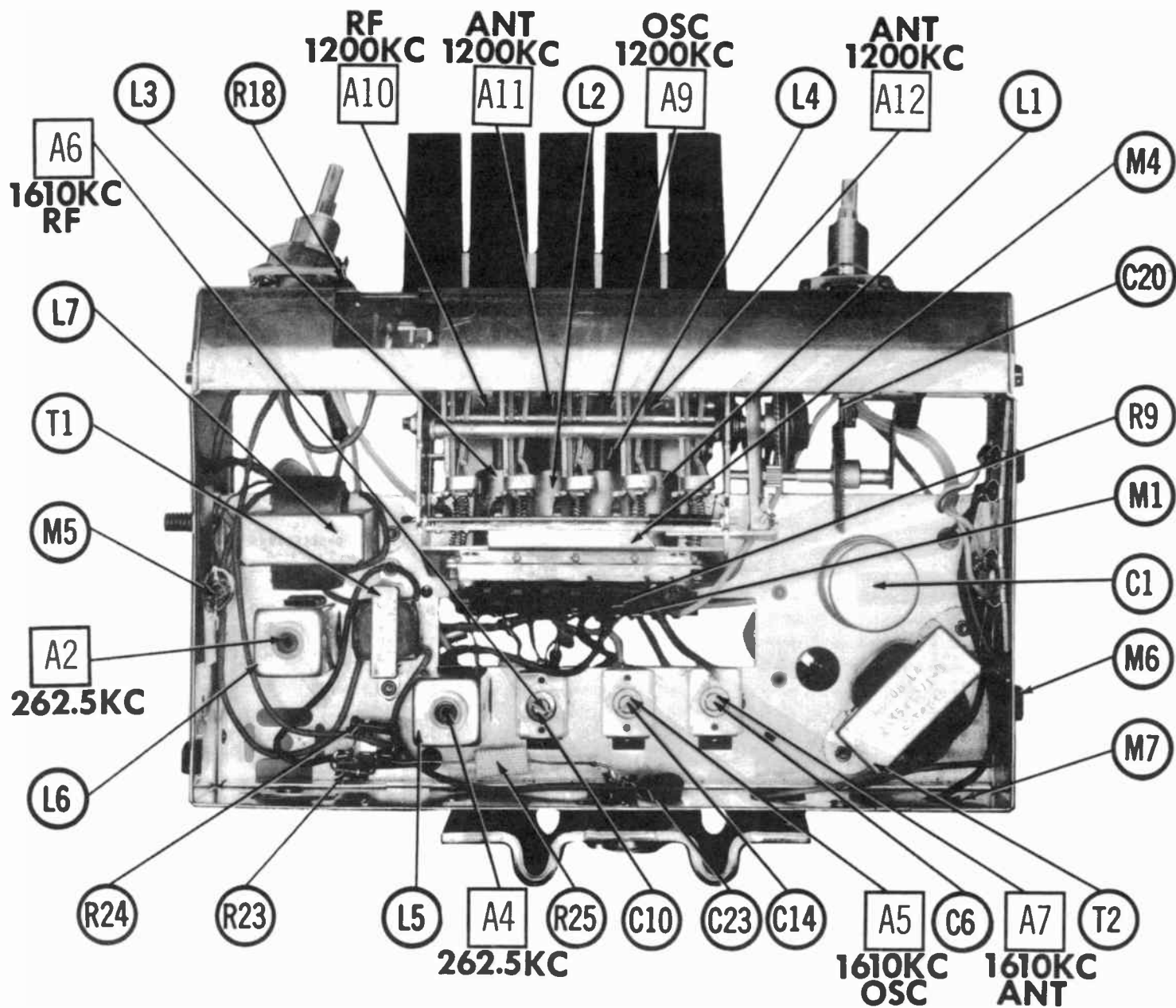
1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of +15% in voltage and resistance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

A PHOTOFACIT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1961

MOTOROLA MODEL CTA61





CHASSIS TOP VIEW

## PARTS LIST AND DESCRIPTIONS

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	28A72	RF Amplifier	2N1637		PNP PNP PNP PNP PNP Note 1
X2	28A72	Converter	2N1639		
X3	28A72	IF Amplifier	2N1638		
X4	MN53	Driver	2N591	2N362	
X5	4450*	Driver			
	2N176	Output	2N176		

Note 1. When replacing, apply DC-4 grease (Part #11M490487) to both sides of insulator. ghten mounting screws securely. Check bias adjustment.

\* Alternate.

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	500	16	23B643279	AH3-00-95	C006	XC3-48	WPS00.85		TVLS-3026.8*
C1B	500	16							
C1C	100	16							
C2	25	3	23K544540	PTT9	NLW25-3	MT1-10	TTSX25	MLV25-3	TE-1055
C3	5	3	23K544541	PTT4	NLW5-15	MT1-3	TT6X5	MLV5-3	TE-1052.2

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

### FIXED CAPACITORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	40-430	#20A64855A0						
C5	.003 200V		P288N-003	D6-302	CUB6D3	6DP-1-302	GEM-633	6TM-D30
C6	20-120	#20K541014				424		
C7	.005 10%		DI-5000		PM6D5	CCD-502	JL-250	10TS-D60
C8	.05 200V		P288N-06	DD-503	CUB285	4DP-3-503	GEM-415	2TM-850
C9	3.9 NPO ±.5mmf				C10V4C			10TCC-V39
C10	20-120	#20K541014				424		
C11	.05 200V		P288N-06	DD-503	CUB285	4DP-3-503	GEM-415	2TM-850
C12	.01 100V		P288N-01	D6-103	CUB481	IDP-1-103	GEM-411	4TM-810
C13	100 N750 10%		N750-DK 100	DTN-100	C10T1U	CCTN-101	CNT-310	10TCU-T10
C14	310-390	#20K541700						
C15	.01		BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-810
C16	.05 200V		P288N-06	DD-503	CUB285	4DP-3-503	GEM-415	2TM-850
C17	180 N750 10%				C10T18U		CNT-318	10TCU-T18
C18	.01		BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-810

### 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.
C19	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D60
C20	.47mfd 3V			UK-474				HY-130
C21	.47mfd 3V			UK-474				HY-130
C22	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D60
C23	.025				BPM86S25	4DP-2-253	GEM-4125	5HK-825

# Motorola Part Number.

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	10K	1/2	18B64870A01					Tone Volume Power Off-On Fader Bias
R1B	10K						UE42605	
R1C	5000Ω Tap							
R2	Switch	2(WW)	18B64869A01					
R3	15Ω	2(WW)	18K543493		39-300	112-300	FL-500	
	36Ω Stop							

\* Use 39Ω, 2W Resistor in series with terminal.

# "STA-LOC" equivalent: FE14L, RU14T53, O8812, 181312, U841.

### RESISTORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA		ITEM No.	RATING	REMARKS	REPLACEMENT DATA	
			IRC PART No.	WORKMAN TV PART No.				IRC PART No.	WORKMAN TV PART No.
R4	22K				R16	4700Ω			
R5	820Ω				R17	22K			
R6	22K				R18	560Ω			
R7	1800Ω				R19	12K			
R8	1000Ω				R20	68K			
R9	1000Ω				R21	2.2meg			
R10	82K	(100K) *			R22	1200Ω			
R11	56K				R23	10Ω			
R12	4700Ω				R24	10Ω			
R13	1000Ω				R25	.16Ω			
R14	330Ω				R26	470Ω			
R15	6800Ω								

\* Alternate Value.

Pt. #0K543800  
Pt. #17A64866A01

## PARTS LIST AND DESCRIPTIONS (Continued)

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Amt.	24K543896 ①					① Part of M4
L2	Amt.	24B40431A02 ①					
L3	RF	24B40431A01 ①					
L4	Osc.	24B40430A01 ①					
L5	Input IF	24B64861A01					
L6	Output IF	24B64861A02					

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE TO CURRENT 1000 $\sim$	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	
L7	.6A	.4 $\Omega$	.010HY	25B543338				

### TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
			MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
	.PRI.	SEC.						
T1	2.5	1	25K543841					

### 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	40 $\Omega$ Tap @ 3-4 $\Omega$	25K544271					

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
				MOTOROLA PART No.	QUAM PART No.	
SP1	4"x 10"	PM	3-4 $\Omega$	50C64850A03*	410A2	* Alternate Part #50C64860A01

### SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		MOTOROLA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M1		48K544539		IN295	Limiter (Pigtail) AGC (Pigtail) Detector (Pigtail)
M2		48K544539		IN295	
M3		48K544539		IN295	

### MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M4	Tuner	77D40442A01	(AT-348) Complete
M5	Spark Plate	64K530177	
M6	Spark Plate	64K561877	
M7	Spark Plate	64K561877	

### CABINETS & CABINET PARTS

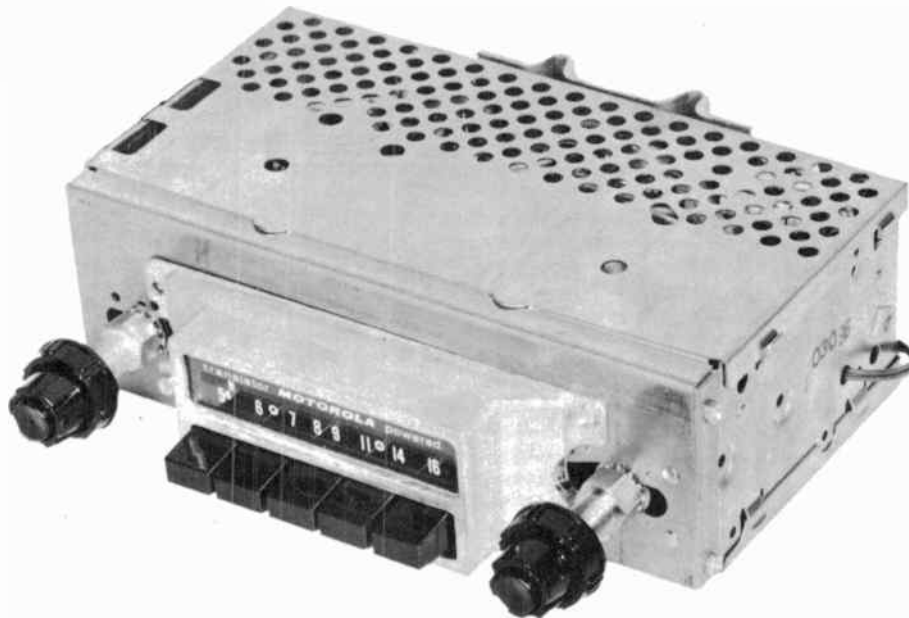
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART No.	DESCRIPTION
Dial Scale	34B64857A01	Tuning, Volume Tone, Speaker Numbers 1, 3, 5 Numbers 2, 4
Dial Pointer	1B40460A01	
Knob	36B64859A01	
Knob	36B64866A01	
Pushbutton	38C40438A02	
Pushbutton	38C40438A01	

### WIRING DATA

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





TRADE NAME Motorola Model 10AX  
 MANUFACTURER Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois  
 TYPE SET Battery Operated 3 Tube 2 Transistor Universal Type Automobile AM Receiver  
 POWER SUPPLY 12 Volt Storage Battery RATING 1.2 Amp. @12.6 Volts DC  
 TUNING RANGE—BROADCAST 540 — 1610KC

**ALIGNMENT INSTRUCTIONS**

**ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT**

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

Suggested Alignment Tools: A1 thru A4.....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440  
 WALSCO #2526, 2543, 2544, 2545  
 A5, A6, A7.....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291  
 WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538  
 A8, A9, A10.....GENERAL CEMENT #8271, 8279, 8897, 9050-L, 9150  
 WALSCO #2521, 2524

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. High side thru .1mf to pin 7 (grid) of Converter. Low side to chassis.	262.5KC (400v Mod.)	High end stop.	Across voice coll.	A1, A2, A3, A4	Adjust for maximum output.
2. Thru dummy (Fig. 1) to antenna receptacle.	1610KC	"	"	A5, A6, A7	"
Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, A10) 7/16" out of coils. Repeat Step 2.					
3. Thru dummy (Fig. 1) to antenna receptacle.	1200KC	Tuner Carriage 9/32" from high end stop.	Across voice coll.	A8, A9, A10	Adjust for maximum output. Repeat Steps 2 and 3.
With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

**PUSHBUTTON ADJUSTMENT**

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

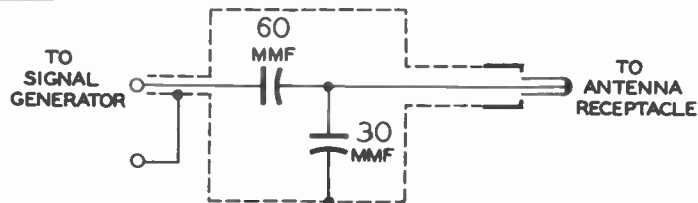


FIG.1

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



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD480

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

MOTOROLA  
MODEL 10AX

# PARTS LIST AND DESCRIPTIONS

## TUBES

• GENERAL ELECTRIC •			• RAYTHEON •			• SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE			
V1	Converter	12AD6	V3	Det. -AVC-AF Amp.	12F8			
V2	IF Amplifier	12BL6						

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	4450 MN 53*	Driver	2N591	MN53	2N591	PNP
X2	2N652 *	Driver	2N176		2N176	PNP
	2N176	Output				PNP

\* Alternate Type.

Note 1. When replacing, apply DC-4 grease (Part #11M490487) or equivalent to both sides of insulator. Tighten mounting screws securely. Check bias adjustment.

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA					NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	
C1A	500	16	23B543279	AFH3-00-95		WP300. 85		TVLS-3026.8*
B	500	16						
C	100	16						

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

## FIXED CAPACITORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCOR PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	40-430	#20A542758						
C3	.002 1000V		P1088N-002	DD-202	CUB00D2	16DP-2-202	GEM-1022	10TM-D20
C4	20-120	#20K541014				463		
C5	82 N750 10%		TCN-82	DD-503	C10Q82U	CCTN-820	CN7-482	10TCU-Q82
C6	.05 200V		P288N-05	DTN-47	CUB285	4DP-3-503	GEM-415	2TM-850
C7	47 N750		N750-47	DTN-100	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C8	100 N750		N750-100		C10T1U	CCTN-101	CN7-310	10TCU-T10
C9	310-390	#20K541700						
C10	10000		BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-810
C11	50000		BPD-05	DD-503	H-0585	IDP-2-503	GP150	5HK-850
C12	27 NPO 10%		NPO-D1 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-C27
C13	10000		BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-810
C14	2000		BPD-002	DD-202	BYA1002	CCD-202	B-220	5HK-D20
C15	10000		BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-810
C16	25000				DPM96825	4DP-2-253	GEM-4125	5HK-825

## CONTROLS

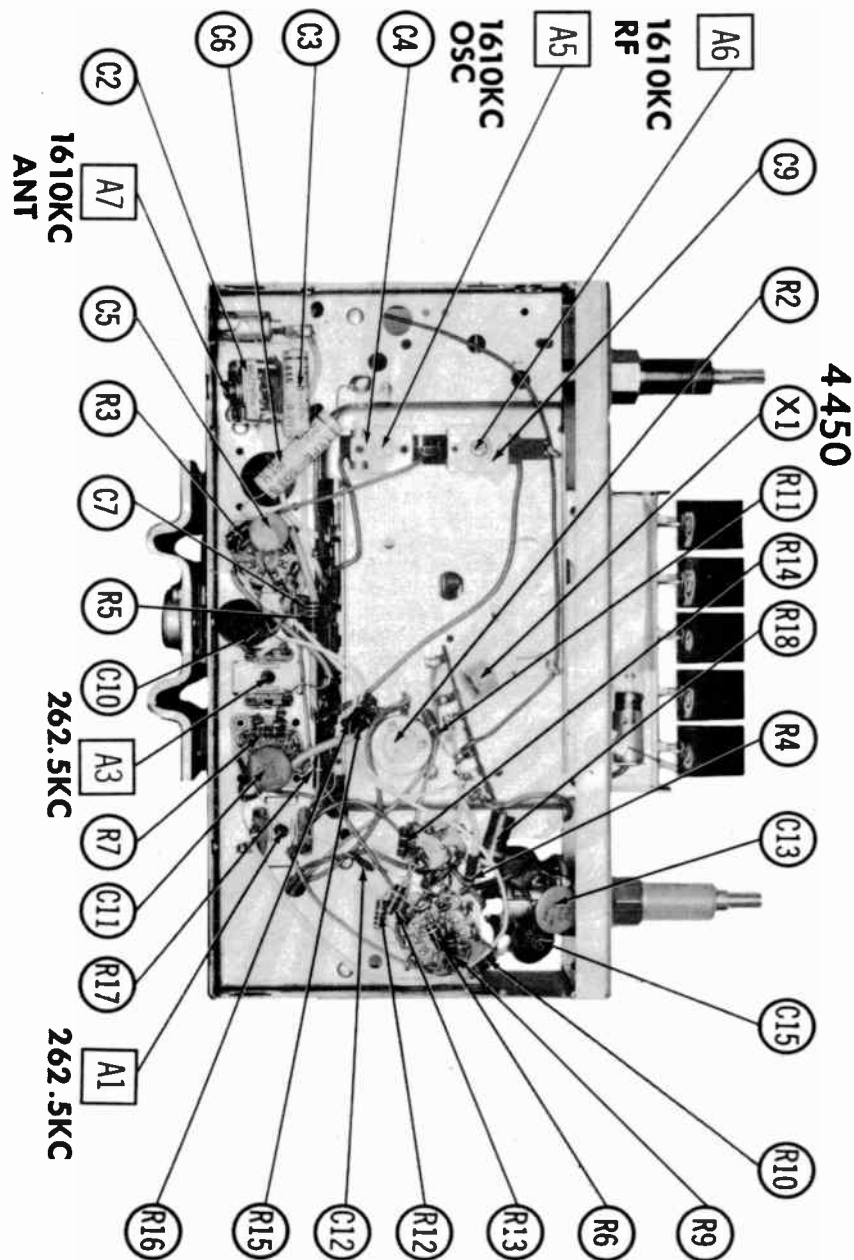
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES	
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.		MALLORY PART No.
R1A	2meg	1(WW)	18K544507	F1-68	RTV-713C		UE4205-8	Tone Volume
B	2meg			R2-75	Not Req.			
C	1meg Tap							
R2	300Ω Switch		18K543493	KR-4	Not Req. 39-300	112-300	FL-500	Power Off-On Bias
	36Ω Stop							

⊙ File flat on bushing.

■ "STA-LOC" equivalent: FA26A, RU26T15, O81687, E2125, U841

\* Use 39Ω series resistor.

# CHASSIS—BOTTOM VIEW



## PARTS LIST AND DESCRIPTIONS (Continued)

### RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	1meg				R11	2.2meg			
R4	3.3meg				R12	68K			
R5	47K				R13	12K			
R6	3.9meg				R14	2700Ω			
R7	330Ω				R15	10Ω			
R8	100K				R16	20Ω Cold			
R9	10meg				R17	220Ω			Pt. #6K543800
R10	3.3meg				R18	47Ω 2W			

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Merit PART No.	Milker PART No.	Stancor PART No.	Workman TV PART No.	
L1	Ant.	24C535458					①Part of M2
L2	RF	24C535458					
L3	Osc.	24C535458					
L4	Input IF	24B543286	BC-350	12-H1	RTC-8638	T804	
L5	Output IF	24K543287	BC-354	12-H6	RTC-8640	T806	

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 $\mu$ V)	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L6	1.2A	.2Ω	1MH	25B64889A01					

### 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	10	1	25K544508					

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	30Ω Tap	3-4Ω	25K543444A					① Alternate Part #25K543444

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
BP1	6"x 9"	PM	3-4Ω	50C541101	69A3	

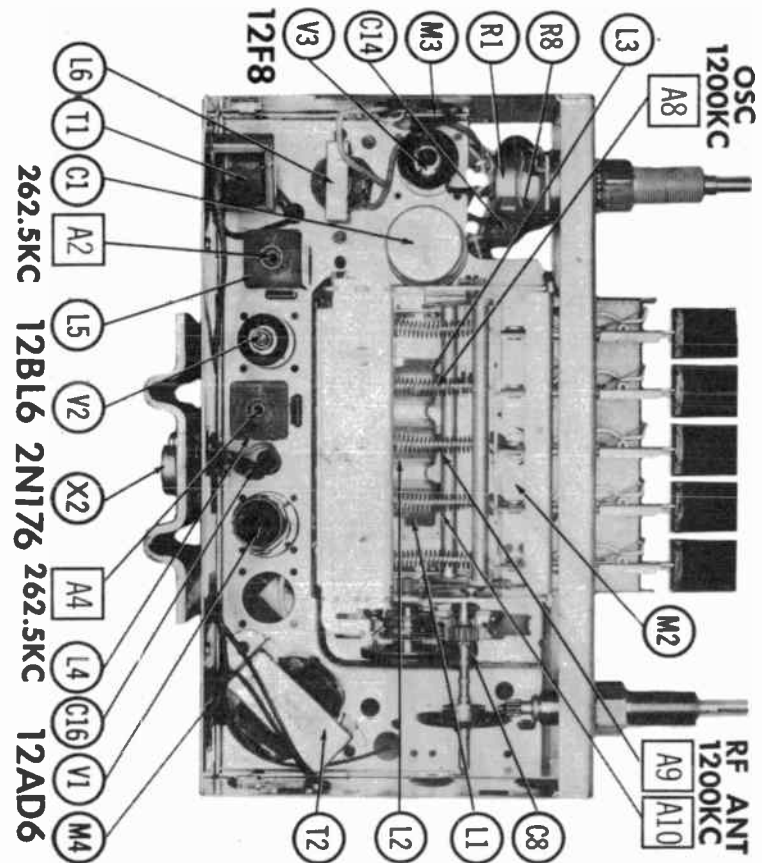
### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	9A 32V	65K16248	1V541706	307009 (SFE 9A 32V)	155008	SFE 9	HRH

### MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Tuner	77D40301A01	(AT-331) Complete
M3	Spark Plate	64K530177	
M4	Spark Plate	64K561877	

## CHASSIS—TOP VIEW



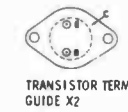
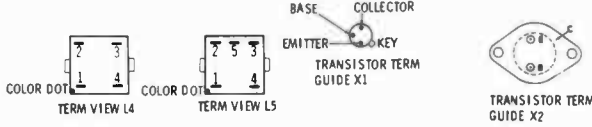
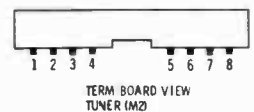
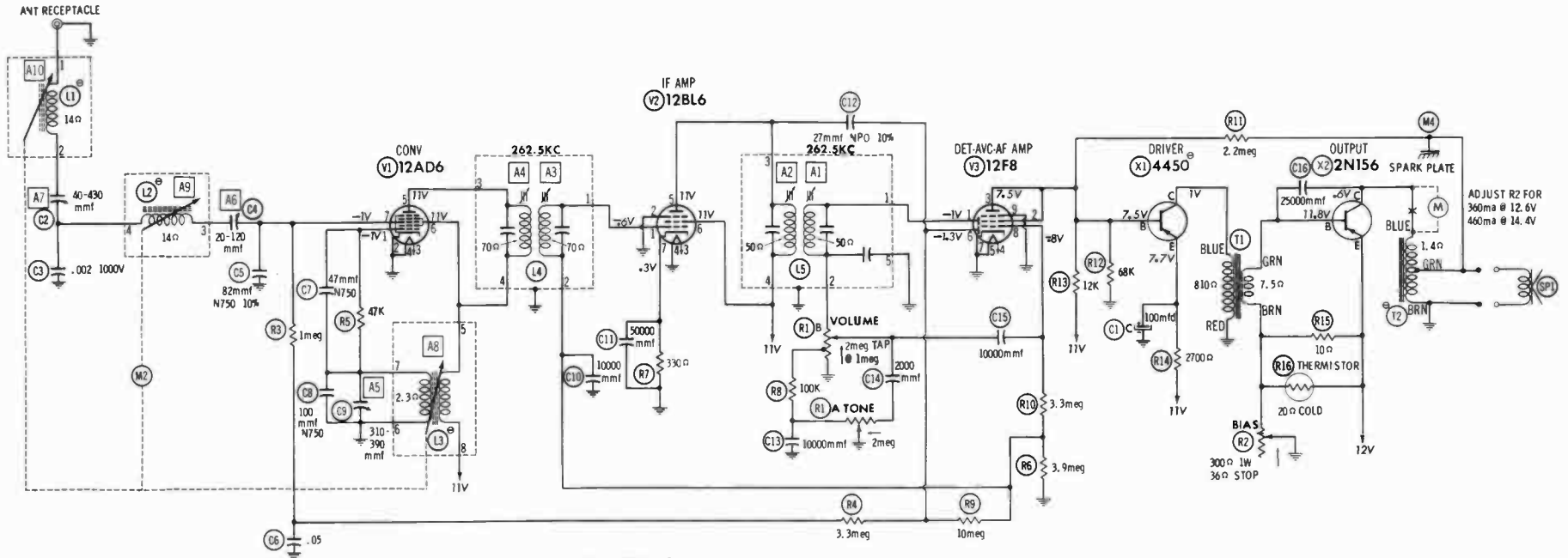
## CABINETS & CABINET PARTS

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

NAME	PART NO.	DESCRIPTION
Dial Pointer	1V543492	
Dial Scale	34B541013	
Knob	36B543382	Tuning, Volume
Knob	36B543398	Tone
Knob	36K543399	Dummy
Pushbutton	1V543489	

## WIRING DATA

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



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

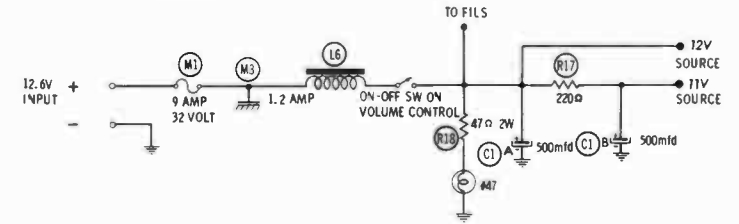
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION  
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM  
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

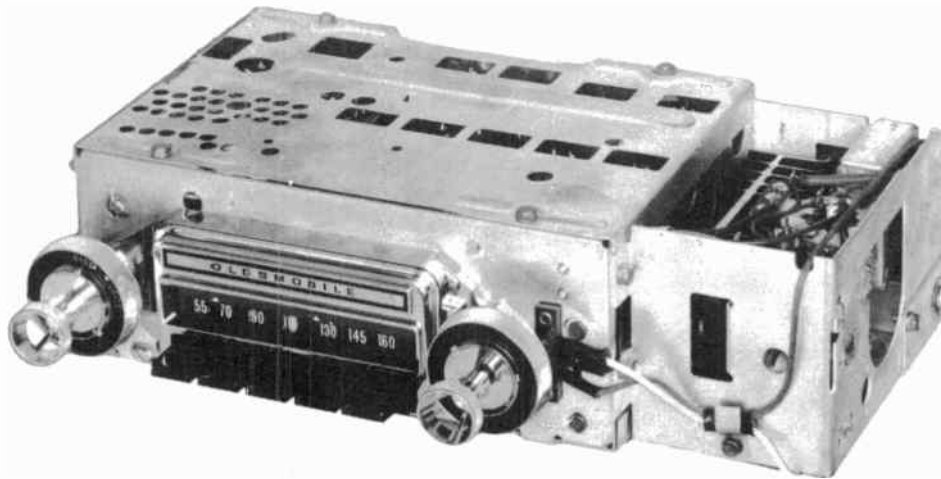
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AD6	47K	0Ω	5Ω	0Ω	315Ω	225Ω	18meg		
V2	12BL6	3.9meg	0Ω	5Ω	0Ω	275Ω	225Ω	330Ω		
V3	12F8	1.8meg	1000Ω	1000Ω	5Ω	0Ω	14meg	0Ω	7.2meg	0Ω

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



A PHOTOFAC STANDARD NOTATION SCHEMATIC  
©Howard W. Sams & Co., Inc. 1961

MOTOROLA  
MODEL 10AX



TRADE NAME Oldsmobile Model 989392 (For 1961 Oldsmobiles)  
 MANUFACTURER Delco Radio Div., General Motors Corp., Kokomo, Indiana  
 TYPE SET Battery Operated 4 Tube - 1 Transistor Custom Built Automobile AM Receiver  
 POWER SUPPLY 12 Volt Storage Battery RATING 2 Amp. @12.6 Volts DC  
 TUNING RANGE—BROADCAST 540 - 1600KC

### ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

Suggested Alignment Tools:

- A1 thru A5, A9, A10..... GENERAL CEMENT #8282, 8606, 8606-L, 9091  
 WALSCO #2526, 2541, 2542, 2543, 2544
- A6, A7, A8..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291  
 WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	262KC (400% Mod.)	High end stop.	DC probe to point $\diamond$ . Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
Check setting of Oscillator core. 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 chassis.	1615KC	"	"	A6, A7, A8	Adjust for maximum deflection.
3. " " "	600KC	600KC Signal.	"	A9, A10	"
4. " " "	1615KC	1615KC Signal.	"	A7, A8	"
5. " " "	1100KC	1100KC Signal.	"		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 1000K and retouch A8 for maximum output.					

PUSHBUTTON ADJUSTMENT

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

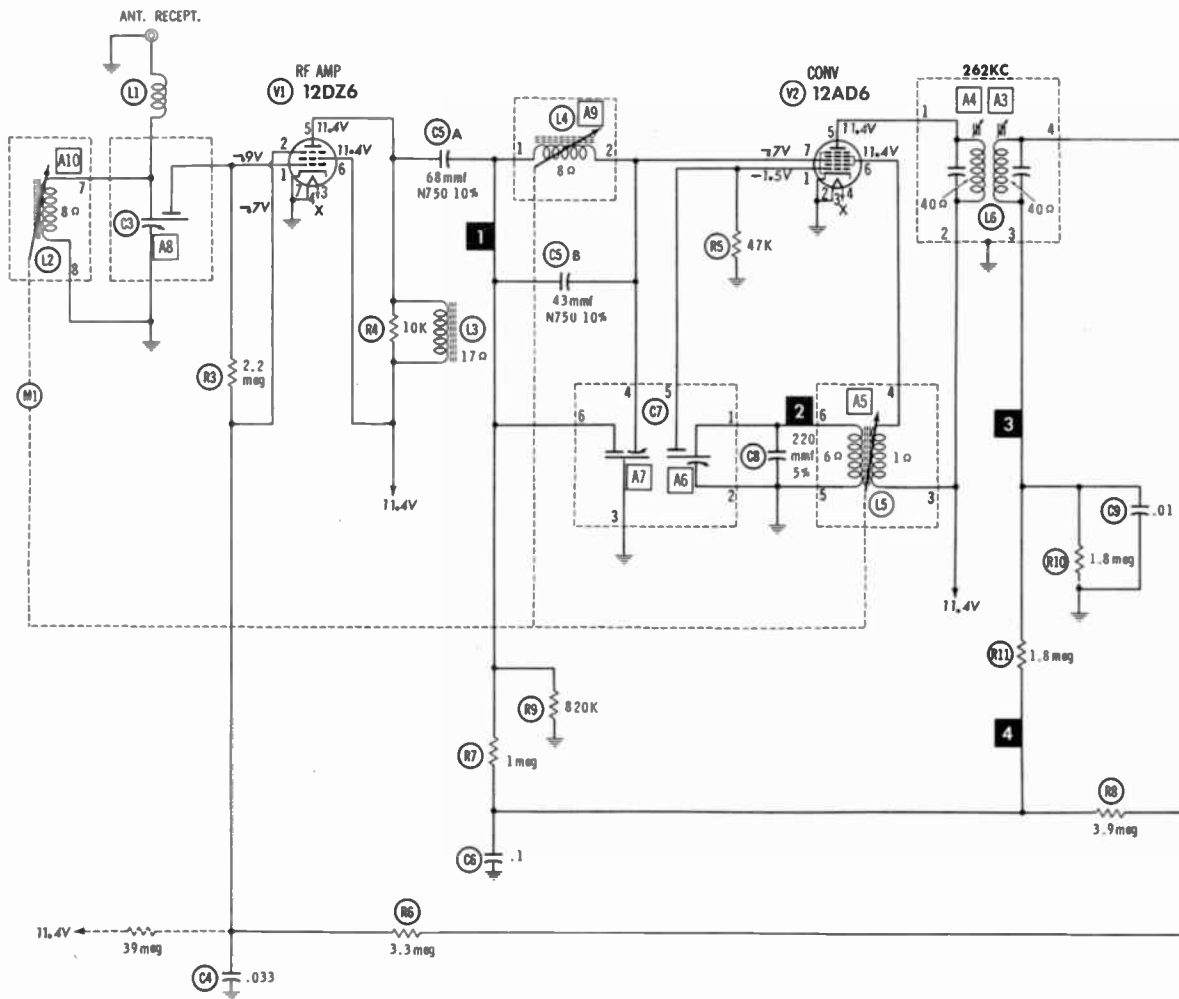
**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana



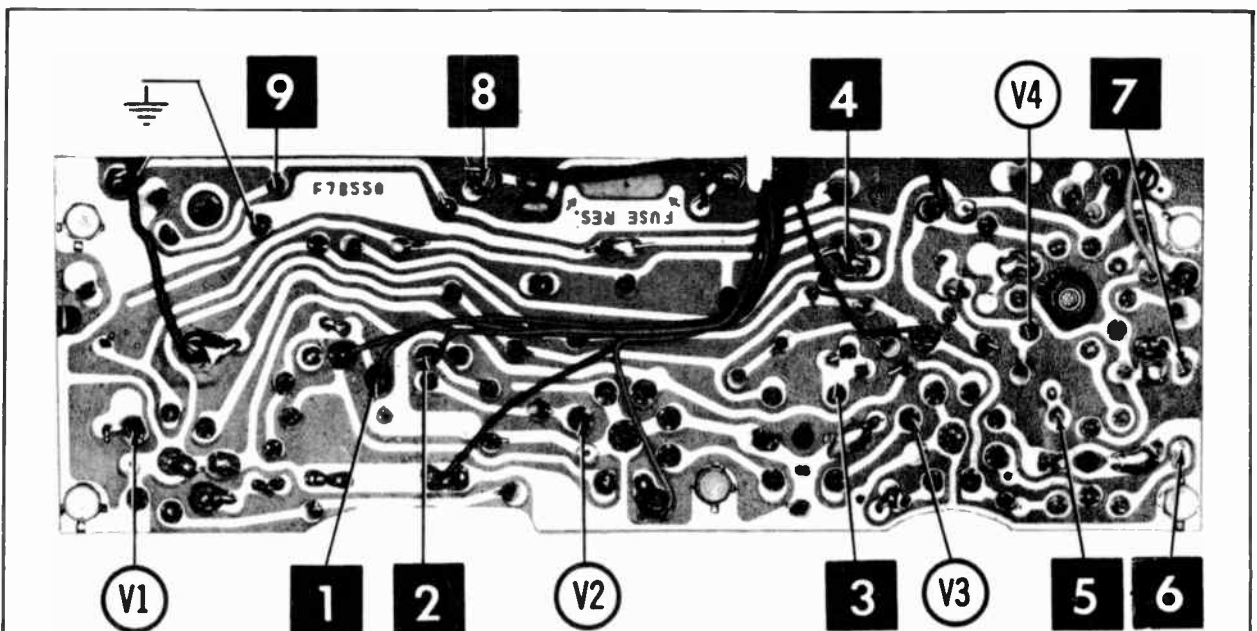
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD972

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. ©1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

OLDSMOBILE MODEL  
989392



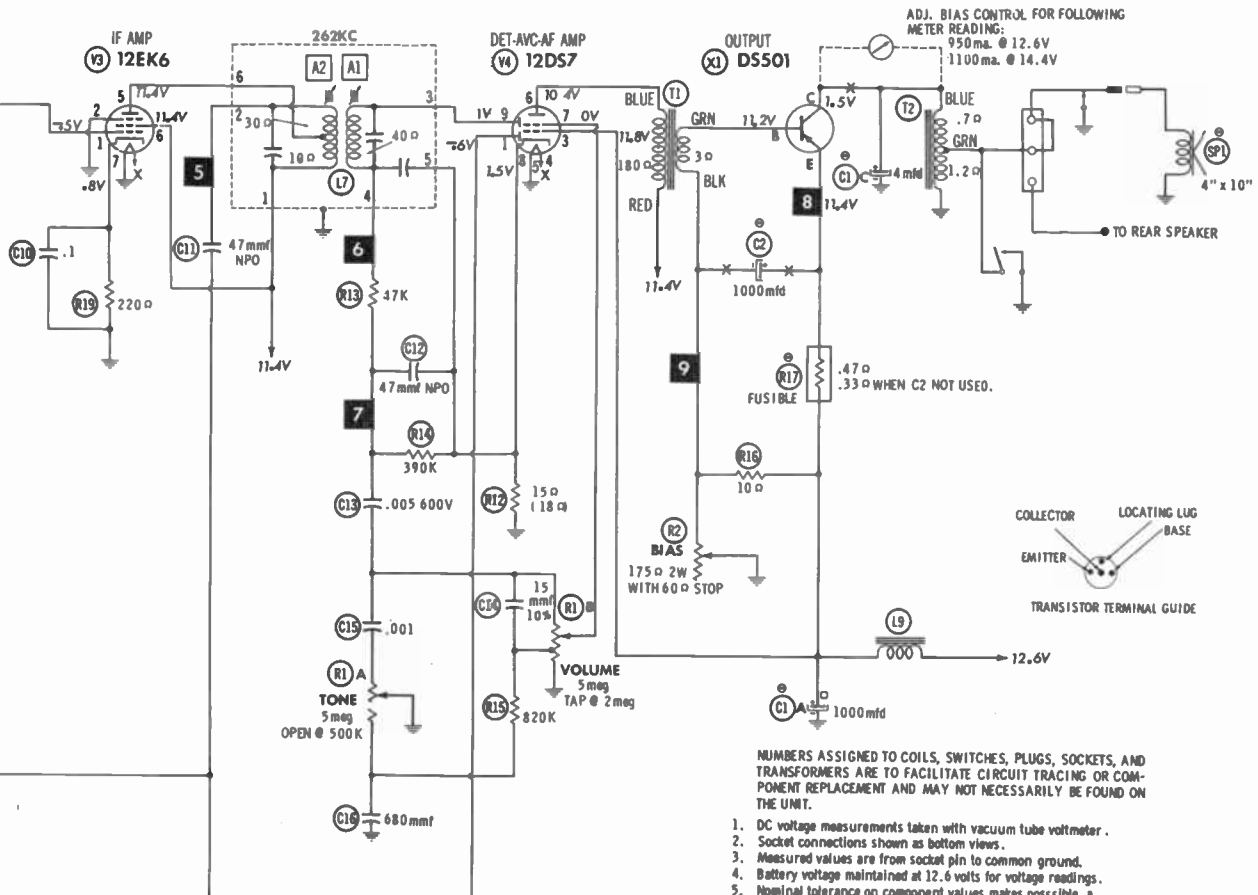
A PHOTOFACIT STANDARD NOTATION SCHEMATIC  
with **CIRCUITRACE**  
©Howard W. Sams & Co., Inc. 1962



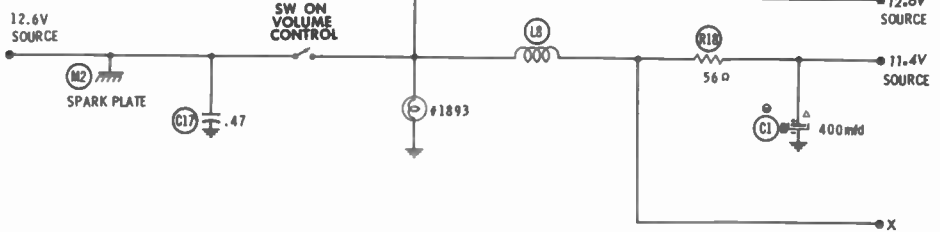
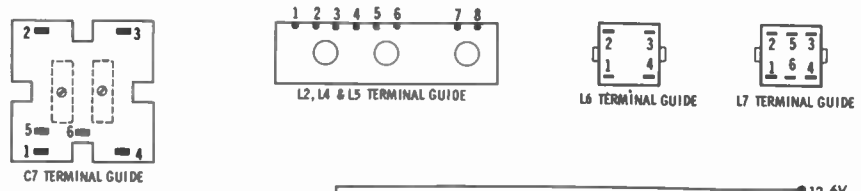
A Howard W. Sams **CIRCUITRACE** Photo

**PRINTED BOARD**

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



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



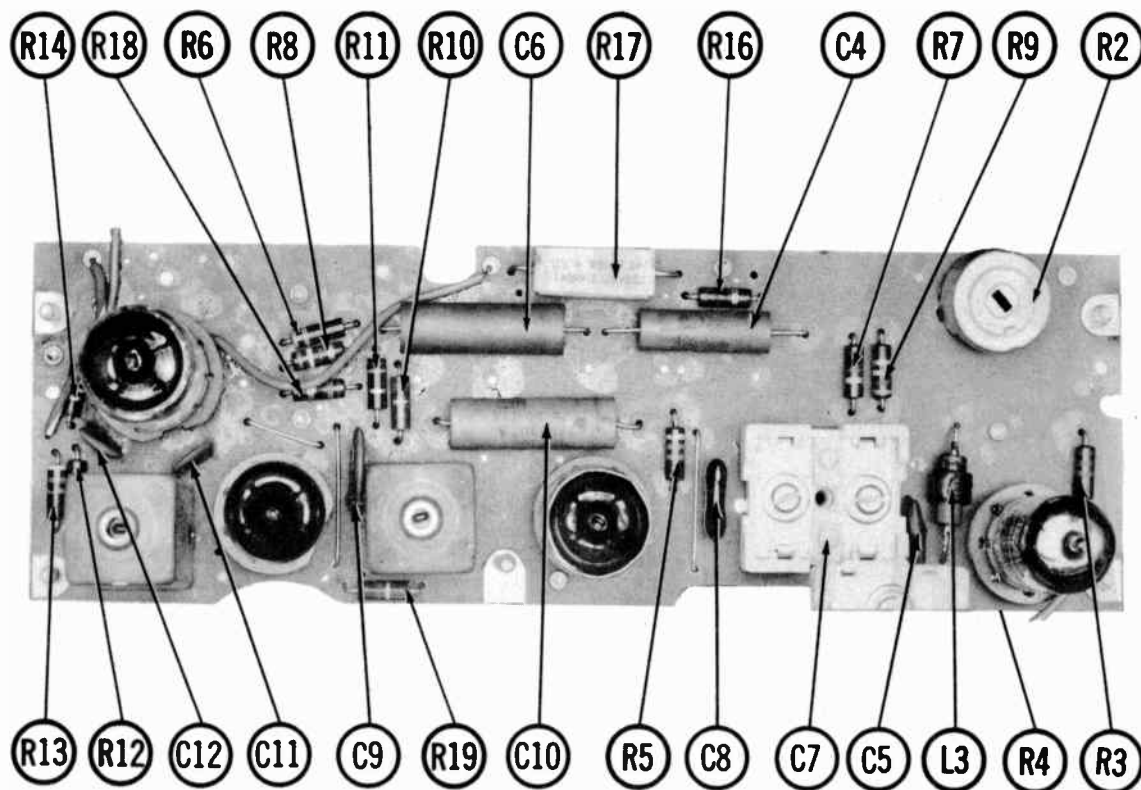
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	120Z6	10 meg	7.8 meg	FIL	FIL	70 $\Omega$	60 $\Omega$	0 $\Omega$		
V2	12AD6	47K	0 $\Omega$	FIL	FIL	90 $\Omega$	60 $\Omega$	800K		
V3	12EK6	1.3 meg	0 $\Omega$	FIL	FIL	70 $\Omega$	60 $\Omega$	220 $\Omega$		
V4	12DS7	4.8 meg	7P	3.5 $\Omega$	FIL	FIL	180 $\Omega$	100 $\Omega$	19 $\Omega$	435K

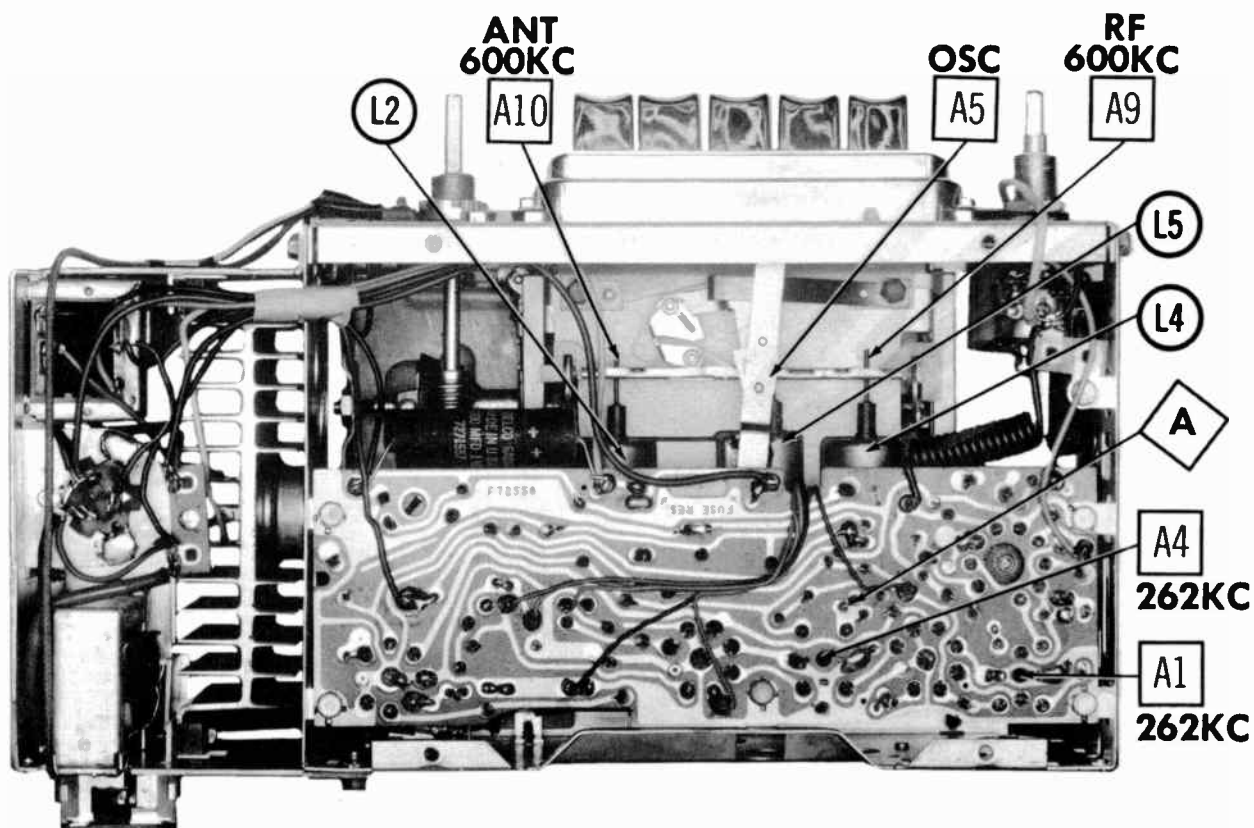
TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

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

**OLDSMOBILE MODEL 989392**



PRINTED BOARD-CAPACITOR & RESISTOR IDENT.



CHASSIS-BOTTOM VIEW



# PARTS LIST AND DESCRIPTIONS

## TUBES

GENERAL ELECTRIC			RAYTHEON			SYLVANIA		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12DZ6	V3	IF Amplifier	12EK6			
V2	Converter	12AD6	V4	Det. -AVC-AF Amp.	12D67			

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	D8501	Output	2N176		PNP Note 1.

Note 1. When replacing, apply silicone grease between transistor and heat sink. 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.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	1000	16	7274931 ①	AFH3-54-30			WP300.88		TVLS-3021.5*
C1B	400	16							
C1C	4	11.5AC							
C2	1000	1	7271557 ②	PR81130	BR1000-8	QT1-32	PETA120	TD-1000-6	TVA-1104

① Some versions may use Part #7273810.

② Not used in some versions.

\* 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.
C3	.033 75V	#7268811	P288N-033	DD-303	DFM94533	IDP-1-333	GEM-4133	4P8-633
C4	68 N750 10%		N750-D1 68	TCN-68	C10Q6 6U	CCTN-680	CN7-468	10TCU-Q68
C5A	43 N750 10%		N750-D1 39	TCN-43	C10Q43U	CCTN-390	CN7-439	10TCU-Q39
C6	.1 75V	#7273693	P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-201	2TM-P10
C7								
C8	220 5%		1469-00022	TCZ-220	22R5 T22	CM-19B-221J	CNO-322	MS-322
C9	.01		BPD-01	DD-103	BYA108I	CCD-103	B-110	5HK-810
C10	.1 75V		P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-201	2TM-P10

## 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.
C11	47 NPO		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C12	47 NPO		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C13	.005 600V		P688N-005	D6-502	CUB6D5	6DF-1-502	GEM-625	6TM-D50
C14	15 10%		1469-00015	TCZ-15	22R6Q15	CM-19B-150K	CNO-415	MS-415
C15	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C16	680		DI-680	DD-681	BYA10T68	CCD-681	B-368	10T8-T68
C17	.47 100V		P288N-47		CUB2P47	IDP-4-474	GEM-2047	2TM-P47

# Delco Part Number.

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CYS-IRC PART No.	MALLORY PART No.	
RIA	5meg*	1	7276997				UE4245-B	Tone Volume
R2	175Ω	2(wv)	1221422 ①					Power Off-On Bias

\* Open at 500K.

① Temperature Compensated.

# "STA-LOC" Equivalent: FM56X, RU56T56, O61000A, IS1500, U841

## RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	2.2meg				R12	15Ω			(18Ω)*
R4	10K				R13	47K			
R5	47K				R14	390K			
R6	3.3meg				R15	820K			
R7	1meg				R16	10Ω			
R8	3.9meg				R17	.47Ω			Note 1
R9	820K				R18	56Ω			
R10	1.8meg				R19	220Ω			
R11	1.8meg								

\* Alternate Value

Note 1. When C2 is not used, R17 is .33Ω.

# PARTS LIST AND DESCRIPTIONS (Continued)

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke(6.5uh)	7255738	BC-565	4610	RTC-8520	T858	
L2	Ant.	1221138					
L3	RF Choke (1.8uh)	7269684	BC-514	4664	RTC-8533	T875	
L4	RF	1221138					
L5	Osc.	1221151					
L6	Input IF	1221257	BC-344	13-PH1	RTC-8644	T655	
L7	Output IF	1221253	BC-424				
L8	Hash Choke(1.4uh)	7241708					

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 Hz)	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	
L9	LA	.7Ω	.011 HZ	7274342		TC-2		

## 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	6.8	1	1221590		TA-48			

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.		DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	100 Tap @	3-4Ω	1221428		TA-50			

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
BP1	4"x 10"	PM	3-4Ω	7277090 *	410A3	* Alternate Part #4125

## MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner		Pushbutton Type (Series P2)
M2	Spark Plate	7271564	

## CABINETS & CABINET PARTS

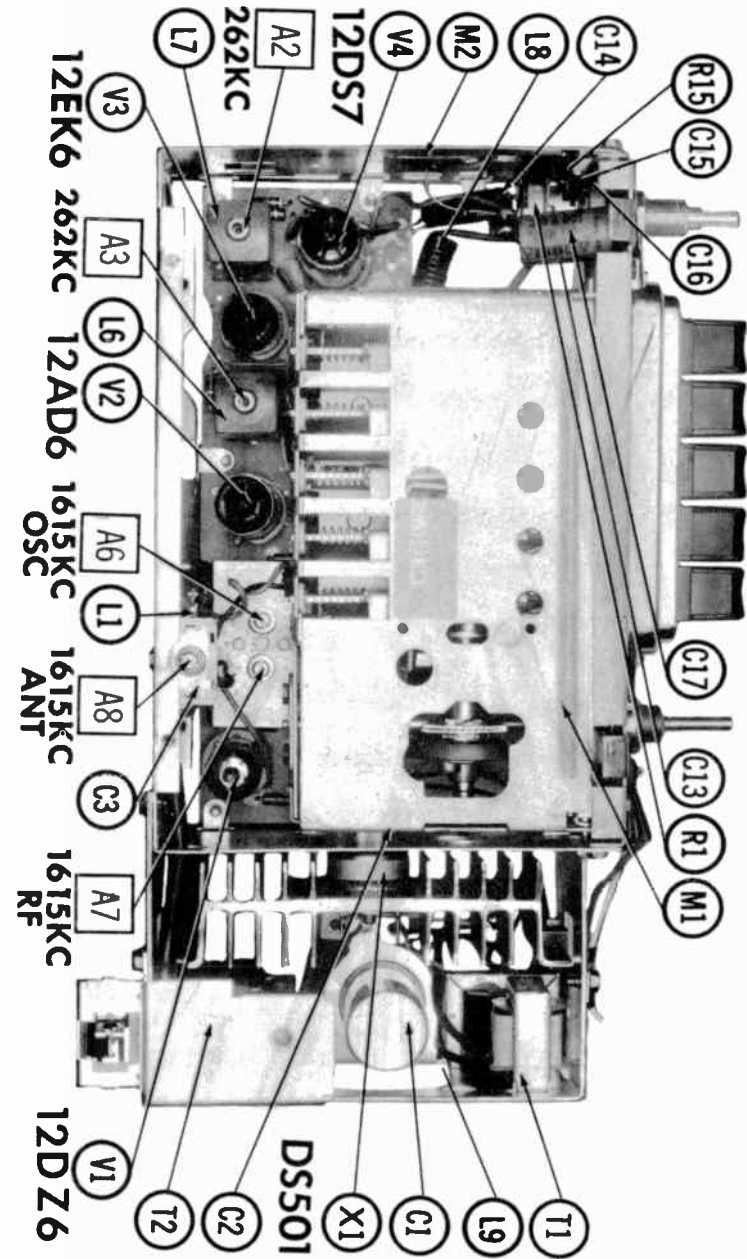
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

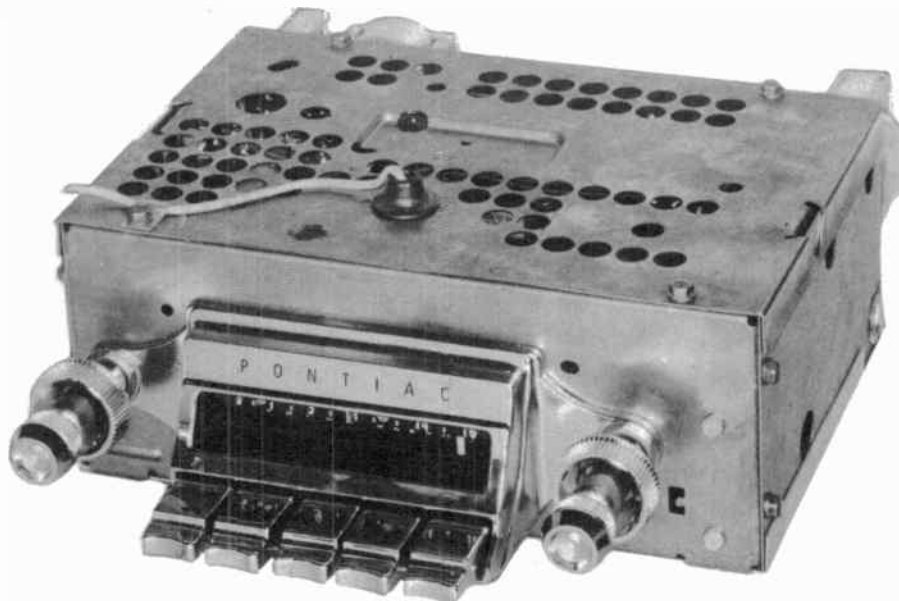
NAME	PART NO.	DESCRIPTION
Dial Pointer	1221519	
Pushbutton	7276979	
Knob	580486	Tuning, Volume
Knob	580484	Tone
Knob	580485	Dummy

## WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors
	8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 5885
Bonding Strap	Use BELDEN No. 8661

## CHASSIS—TOP VIEW





TRADE NAME Pontiac Model 989693 (For 1961 Pontiacs)  
 MANUFACTURER Delco Radio Div., General Motors Corp., Kokomo, Indiana  
 TYPE SET Battery Operated 4 Tube - 1 Transistor Custom Built Automobile AM Receiver  
 POWER SUPPLY 12 Volts DC  
 TUNING RANGE—BROADCAST 540 - 1600KC RATING 2.1 Amp. @12.6 Volts DC

### ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT					
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Suggested Alignment Tools: A1 thru A5, A9, A10.... GENERAL CEMENT # 8282, 8606, 8606-L, 9091 WALSCO #2526, 2541, 2542, 2543, 2544 A6, A7, A8..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291 WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538					
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1. High side thru .1mf to pin 7 (grid) of Converter. Low side to chassis.	262KC (400% Mod.)	High end stop.	DC probe to point $\diamond$ . Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
Check setting of Oscillator core. 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 chassis.	1615KC	"	"	A6, A7, A8	Adjust for maximum deflection.
3. " " " " " "	600KC	600KC Signal.	"	A9, A10	"
4. " " " " " "	1615KC	1615KC Signal.	"	A7, A8	"
5. " " " " " "	900KC	900KC Signal.	"		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 retouch A8 for maximum output.					

#### PUSHBUTTON ADJUSTMENT

1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.

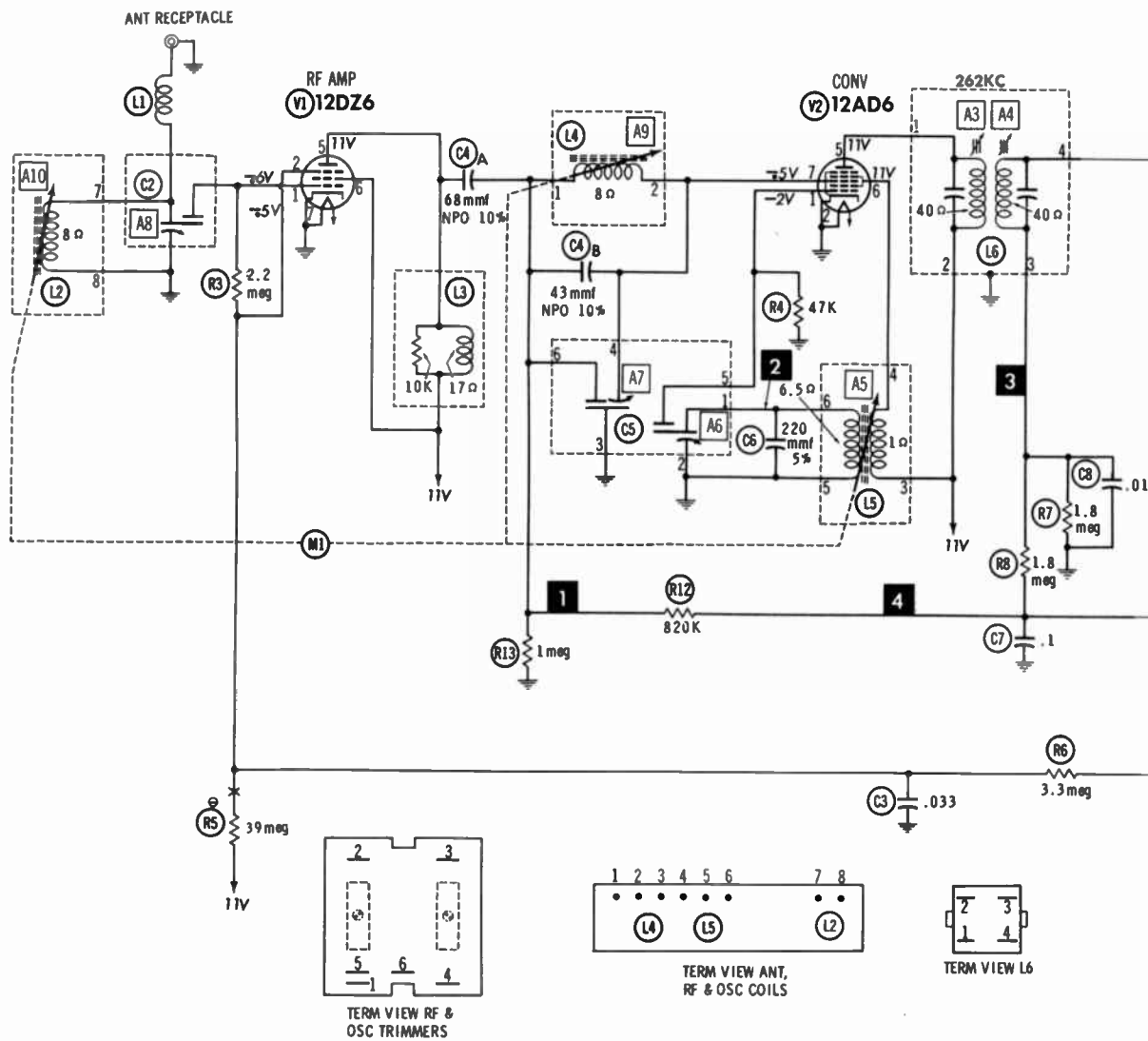
**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD947

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

PONTIAC  
MODEL 989693



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 COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

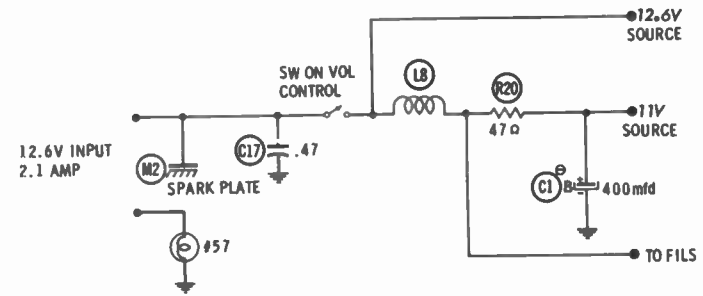
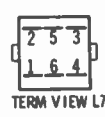
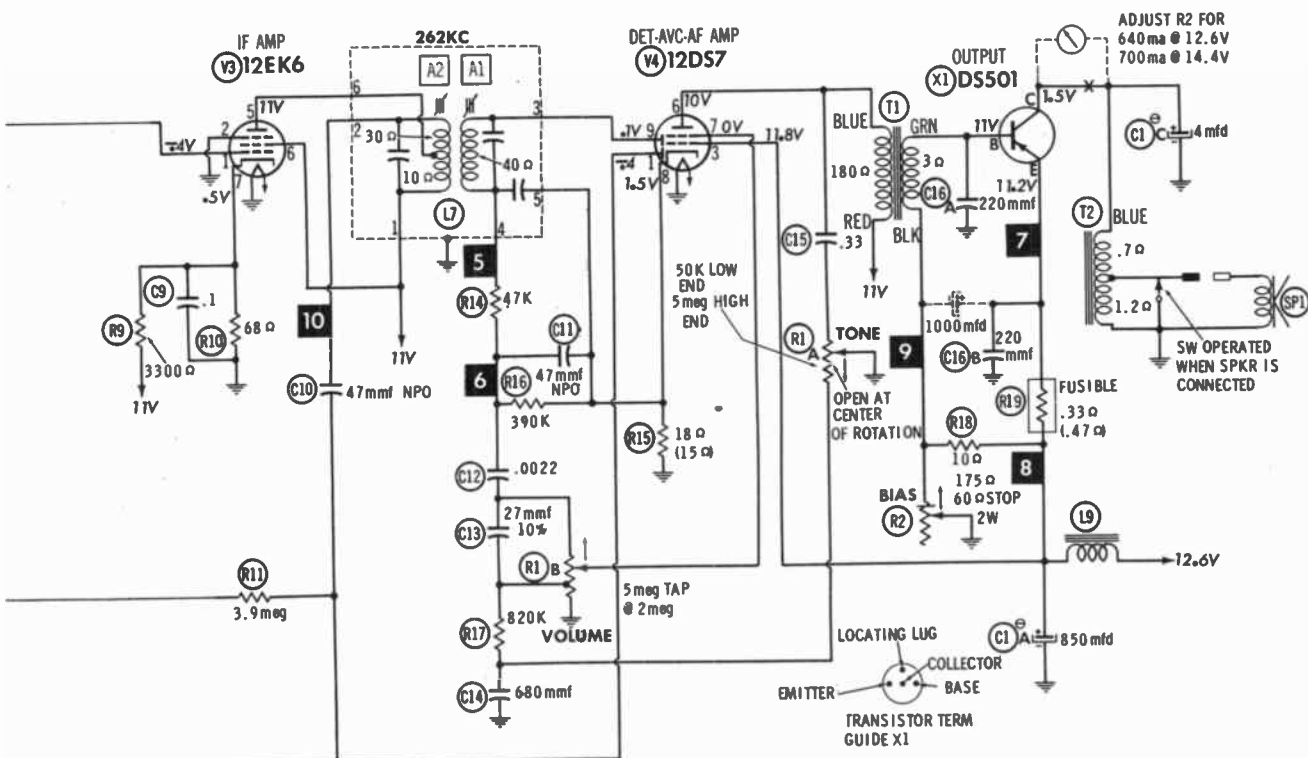
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

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

A PHOTOFAC STANDARD NOTATION SCHEMATIC

with **CIRCUITRACE**

© Howard W. Sams & Co., Inc. 1961

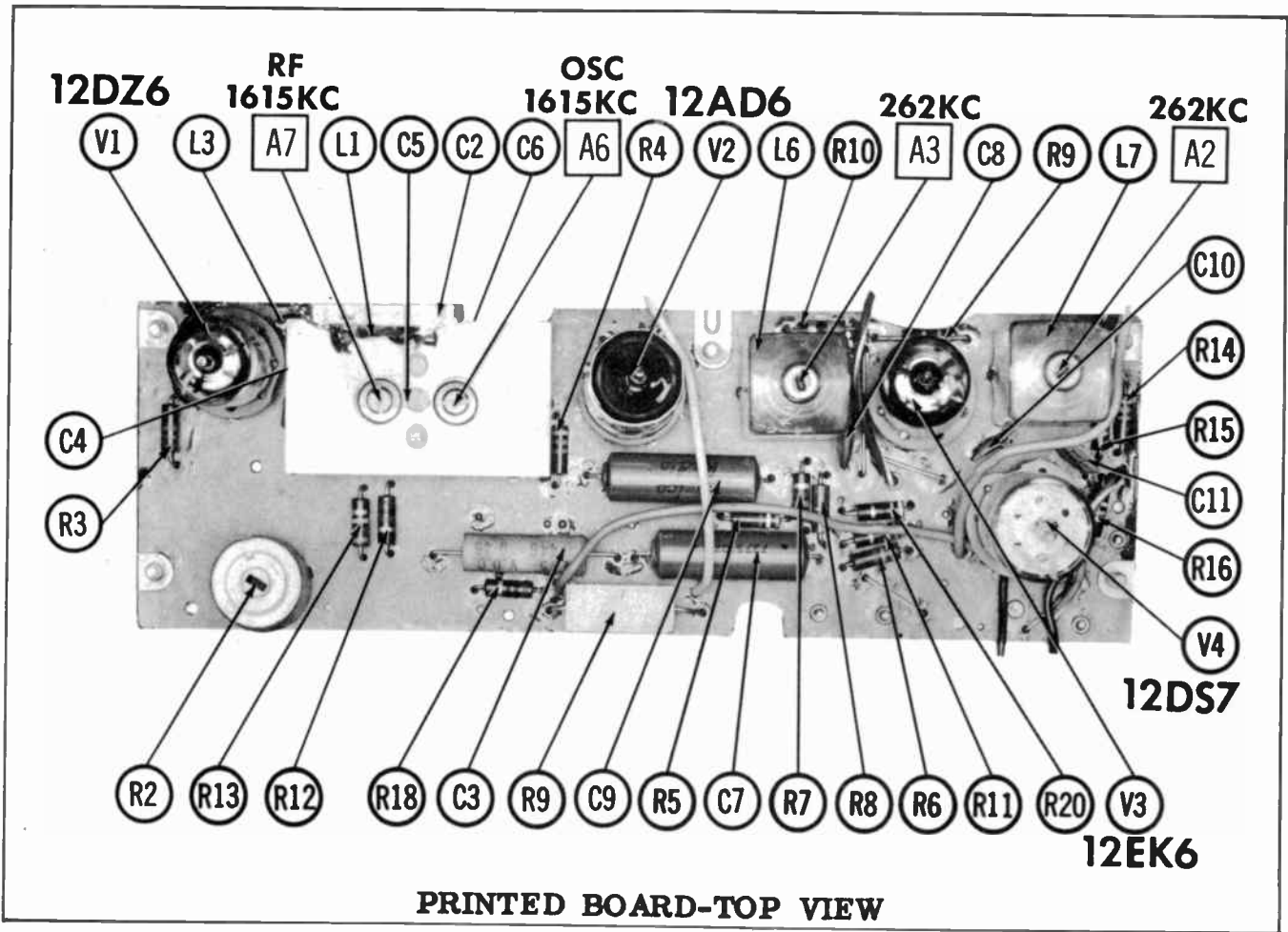
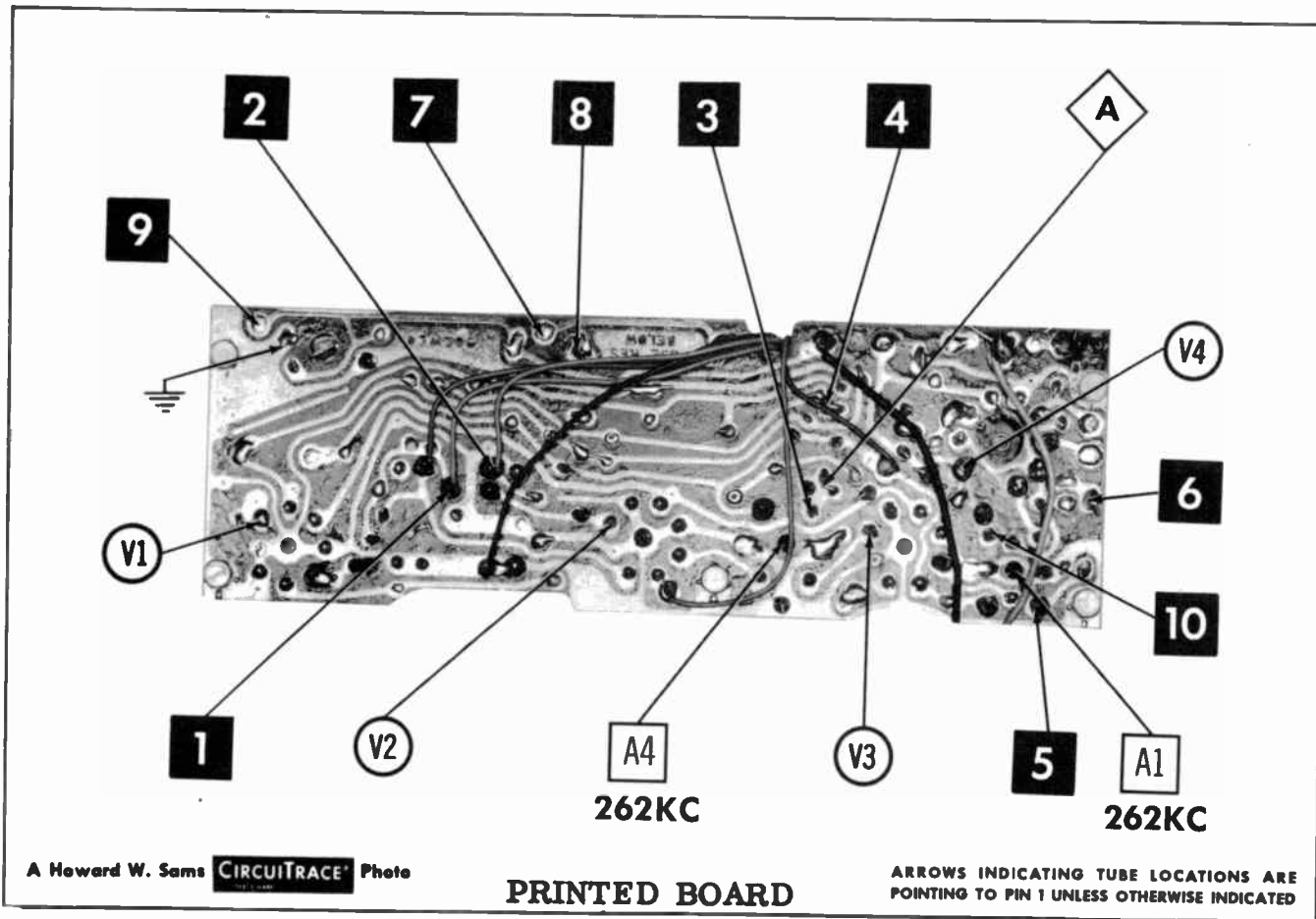


RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	10 meg	7.8 meg	FIL	FIL	75 ohm	50 ohm	0 ohm		
V2	12AD6	47K	0 ohm	FIL	FIL	100 ohm	50 ohm	800K		
V3	12EK6	1.2 meg	0 ohm	FIL	FIL	60 ohm	50 ohm	68 ohm		
V4	12DS7	4.5 meg	TP	3 ohm	FIL	FIL	230 ohm	0 ohm	18 ohm	437K

TRANSISTOR CIRCUIT RESISTANCE FOR X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

PONTIAC  
MODEL 989693



# PARTS LIST AND DESCRIPTIONS

## TUBES

GENERAL ELECTRIC			RAYTHEON		SYLVANIA	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	
V1	RF Amplifier	12DZ6	V3	IF Amplifier	12EK6	
V2	Converter	12AD6	V4	Det. -AVC-AF Amp.	12D67	

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
XI	D8501	Output	2N176		PNP Note 1

Note 1. When replacing, apply silicone grease between transistor and heat sink. 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.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
ClA	850	16	7273729 ①	AFH3-54-30				WP300.7	TVLS-3021 *
B	400	16							
C	4	11.5AC							

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

① Alternate Part #7273810.

## FIXED CAPACITORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.033 75V	#7274175	P288N-033	DD-303	CUB6633	IDP-4-333	GEM-4133	4P8-833
C3	88 NPO 10%		NPO-DI 68	TCZ-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68
C4A	43 NPO 10%		NPO-DI 39	TCZ-43	C10Q43C	CCTO-390	CNO-439	10TCC-Q39
B		#7273693						
C5	220 5%		1469-00022	TCZ-220	22R5T22	CM-19B-221J	CNO-322	MS-322
C6	.1 75V		P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-201	2TM-P10
C7	.01		BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-810
C8	.1 75V		P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-201	2TM-P10
C9	47 NPO		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C10	47 NPO		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C11	.0022 75V		P288N-0022	D6-222	CUB6D22	8DP-1-222	GEM-6222	8TM-D22
C12	27 10%		DI-27	DD-270	LIQ27	CCD-270	GP427	10T8-Q27
C13	680		DI-680	DD-681	BYA10T68	CCD-681	B-368	10T8-T68

## 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.
C15	.33 100V		P288N-33		DPM84P33	10P-4-334	GEM-4033	2P8-P33
C16A	220		DI-220	DD-221	LI0T22	CCD-221	B-322	10T8-T22
B	220		DI-220	DD-221	LI0T22	CCD-221	B-322	10T8-T22
C17	.47 100V		P288N-47		CUB2P47	IDP-3-474	GEM-2047	2TM-D47

† Delco Part Number.

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA	5meg*	1	7277542					Tone Volume Power Off-On Bias
B	5meg	1				† QJ-1391A	■ UE4246-B	
C	2meg Tap							
R2	175Ω	2(WW)	1221422 ①					
	80Ω Stop							

\* Open @ Center of rotation (Low end - 50K, High end 5meg).

① Temperature Compensated.

■ "STA-LOC" equivalent: FN56X, RU56T26, OS937A, 181625, U841.

† "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts:

B12-341, P17-031 (Panel)  
B18-141X, R9-115 (Rear)  
76-1 (Switch)  
840 (Bushing)

## RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	2.2meg			Note 1	R12	820K			(15Ω) *
R4	47K				R13	1meg			
R5	39meg				R14	47K			
R6	3.3meg				R15	18Ω			
R7	1.8meg				R16	390K			
R8	1.8meg				R17	820K			
R9	330Ω				R18	10Ω			
R10	68Ω				R19	.33Ω			
R11	3.9meg				R20	47Ω			

Note 1. Not used in some versions.

\* Value used when R5 is not used.

# PARTS LIST AND DESCRIPTIONS (Continued)

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke(6.5uh)	7255738	BC-565	4610	RTC-8520	T858	
L2	Ant.	1221138					
L3	RF Choke (1.8MH)	7289684	BC-514	4664	RTC-8533	T875	
L4	RF	1221138					
L5	Osc.	1221151					
L6	Input IF	1221257	BC-344	13-PHI	RTC-8644	T855	
L7	Output IF	1221253	BC-424				
L8	Heat Choke (1.4uh)	1217846					

## FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE TO CURRENT 1000 $\sim$	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	
L9	.750A	.70	.011A	7274342		TC-2		

## TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	
			T1	6.8	1	1221590		

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	
T2	100 Tap @	3-40	1221428		TA-50			

## SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	4"x 10"	PM	3-40	7276482	410A2	

## MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner		Pushbutton Type, Series P2
M2	Spark Plate	7271584	

## CABINETS & CABINET PARTS

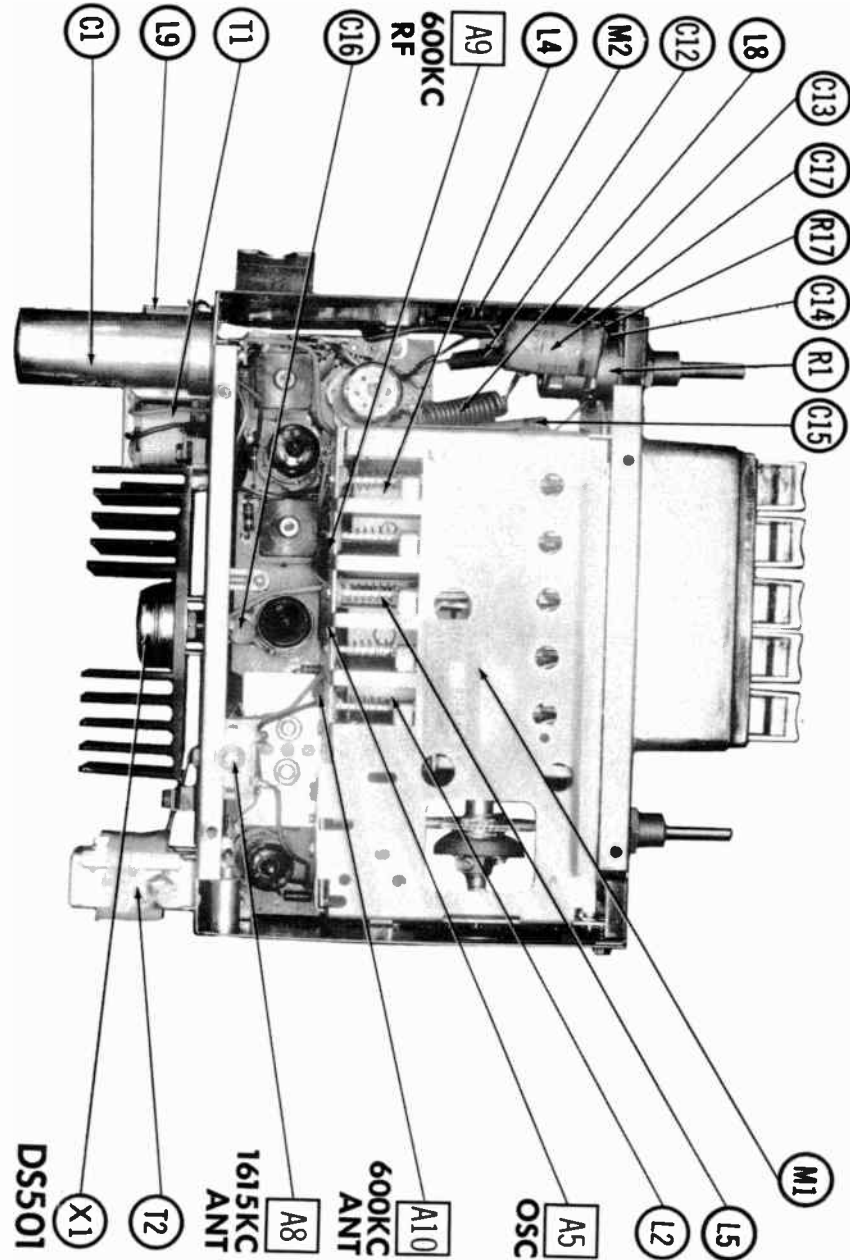
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Pointer	1221513	
Pushbutton	7273345	
Knob	535908	Tuning, Volume
Knob	538621	Tone
Knob	538718	Dummy

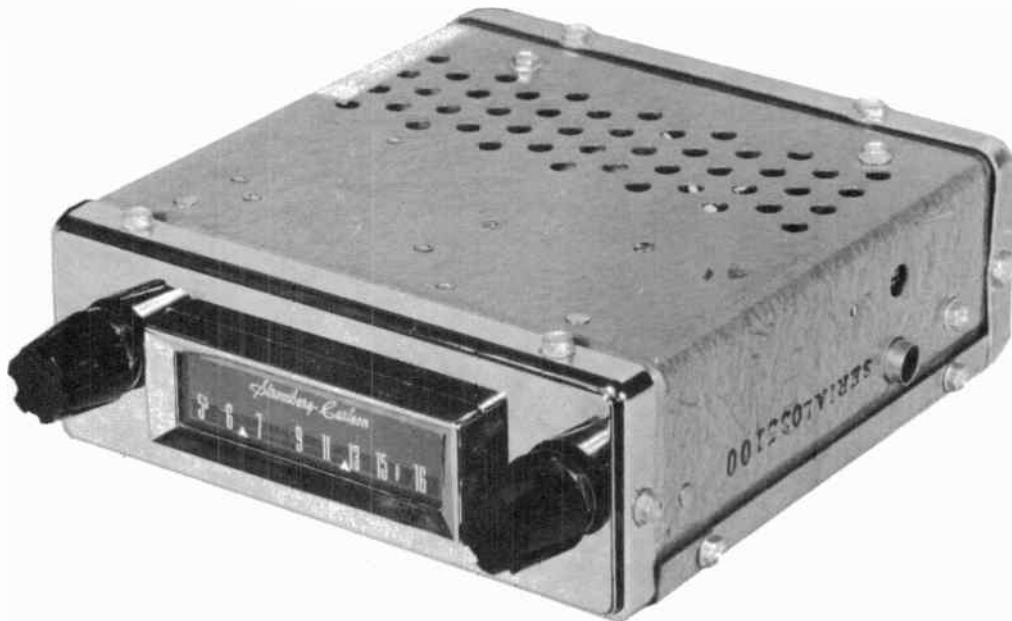
## WIRING DATA

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

## CHASSIS—TOP VIEW







TRADE NAME Stromberg-Carlson Model IM-60-M  
 MANUFACTURER Stromberg-Carlson Co., A Div. of General Dynamics Corp., Commercial Products Div.,  
 1400 N. Goodman Street, Rochester 9, N. Y.  
 TYPE SET Battery Operated 2 Tube, 2 Transistor Universal Type Automobile AM Receiver  
 POWER SUPPLY 12 Volt Storage Battery  
 TUNING RANGE—BROADCAST 540 - 1600KC RATING 1.4 Amp. @12.6 Volts DC

STROMBERG-CARLSON  
MODEL IM-60-M

### ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

Suggested Alignment Tools: A1 thru A4.....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440  
 WALSCO #2526, 2543, 2544, 2545  
 A5, A6, A7.....GENERAL CEMENT #5000, 5003, 8276, 8290  
 WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mf to pin 9 (grid) of Converter. Low side to chassis.	262.5KC (400 $\mu$ Mod.)	High end stop.	Across voice coll.	A1, A2, A3, A4	Adjust for maximum output.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1610KC	"	"	A5	"
3.	"	1200KC	1200KC Signal.	"	A6, A7	"
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.					

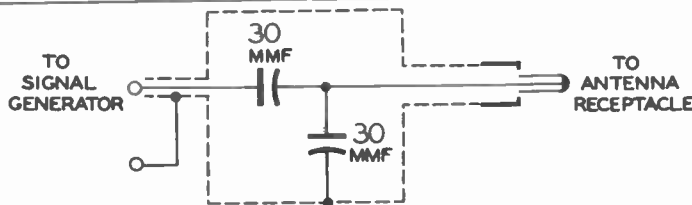


FIG. 1

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



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD579

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

# PARTS LIST AND DESCRIPTIONS

## WIRING DATA

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

### TUBES

GENERAL ELECTRIC			RAYTHEON			SYLVANIA		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amp. -Converter	12FX8	V3	IF Amp. -Det. -AF Amp.	12FR8			

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N591	Driver Output	2N591	2N573	2N591	PNP PNP Note 1
X2	2N257				2N155	

Note 1. When replacing, apply silicone grease (General Cement #8101 or equivalent) to both sides of insulator. Tighten mounting screws securely. Check bias adjustment.

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		Stromberg-Carlson PART No.	REPLACEMENT DATA				NOTES
	CAP.	VOLT.		AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	
CLA	500	16	111000-080	AFH3-00-98	B0043	WP200, 6	TMS-1110	TVLS-2157 *
B	500	16						

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

### FIXED CAPACITORS

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

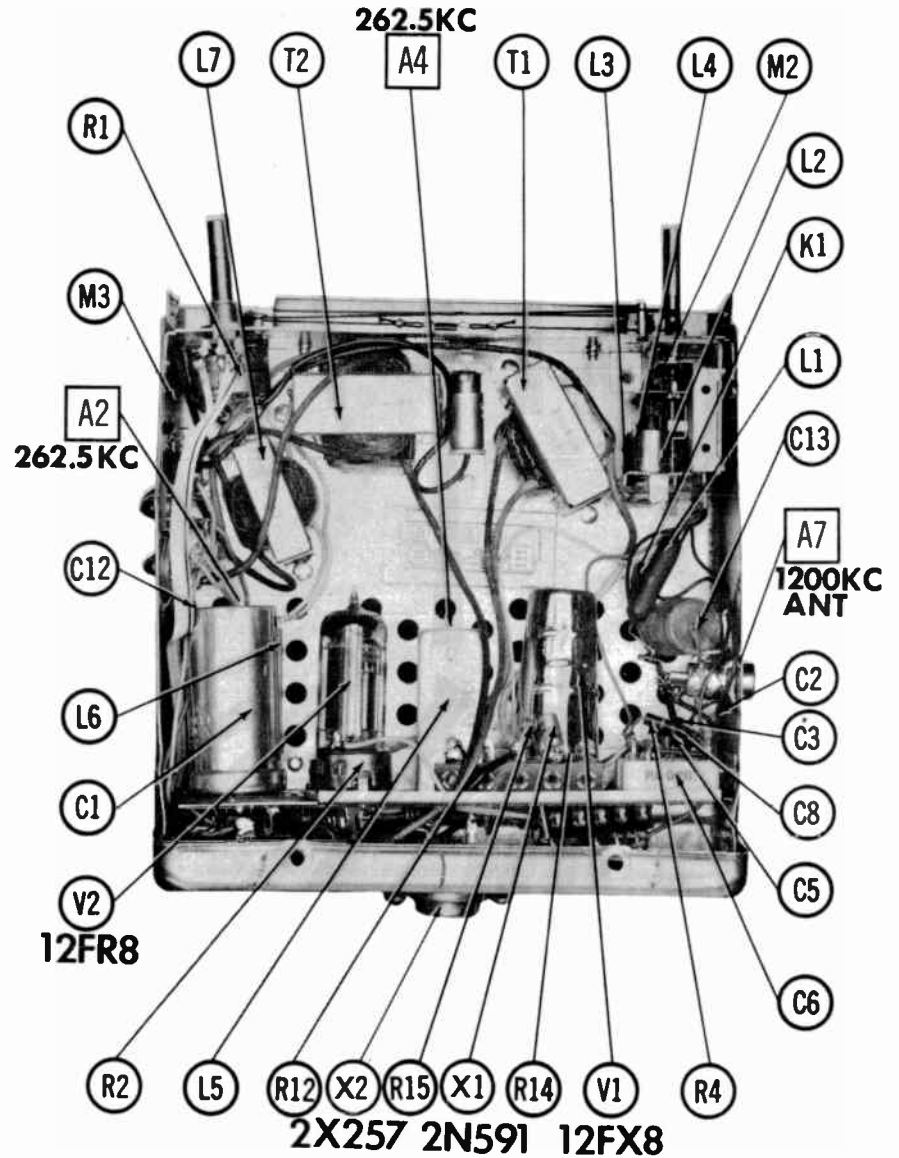
ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	25-180	#110000-005	DI-47 P288N-05 DI-390	DD-470 DD-503 DD-391	L10Q47 CUB295 L10T39	463 CCD-470 4DP-3-503 CCD-391	GP447 GEM-415 GP339	10T8-Q47 5TM-850 10T8-T39
C3	47							
C4	.05 200V							
C5	390 10%							
C6A	7.5-80							
B	100							
C	375-445							
C7	5 NPO							
C8	100							
C9	47							
C10	150							
C11	.01 200V							
C12	3000							
C13	.5 50V							

# Stromberg-Carlson Part Number.

### CONTROLS

ITEM No.	RATING		Stromberg-Carlson PART No.	REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS		CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA	1meg	1	145000-093	AB-70 AK-33 KR-4	A47-1meg-Z RS-3/16 SWE-13	B13-137 SK9 76-1 110-600	U53 D8-37 UB-26 PFL-600	Volume
B	Shaft							
C	Switch							
R2	500Ω	2(W/W)	145000-094					Power Off-On Bias

## CHASSIS—TOP VIEW



## PARTS LIST AND DESCRIPTIONS (Continued)

### RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	220K				R12	2700Ω			
R4	10K				R13	150Ω			
R5	3.3meg				R14	220Ω			
R6	47K				R15	470K			
R7	10meg				R16	10Ω			
R8	47K				R17	1Ω 2W			
R9	1.5meg				R18	100Ω			
R10	220Ω				R19	33K			
R11	3.3meg								

### COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Stromberg-Carlson PART No.	REPLACEMENT DATA
K1	Antenna Filter	47mmf, 1meg	179000-035	

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Stromberg-Carlson PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke (32uh)	114000-002	TV-180	9330-36	RTC-8693	T301	① Part of Tuner M2
L2	Ant.	⊙					
L3	RF	⊙					
L4	Osc.	⊙					
L5	Input IF	114000-203	BC-350	12-HI	RTC-8638	T604	* Solder Mtg. Lugs into Chassis.
L6	Output IF	114000-206	BC-318 *				

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (D CURRENT 1000 ~)	Stromberg-Carlson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L7	1.4A	.7Ω	.008HY	161000-001					

### TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Stromberg-Carlson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	6.8	1	161000-171					

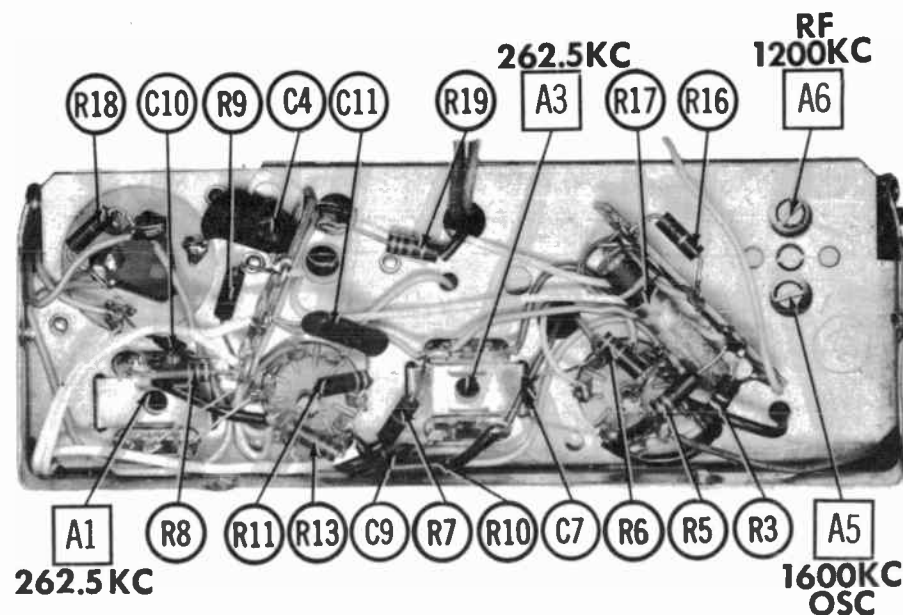
### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Stromberg-Carlson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	30Ω	3-4Ω	161000-173					

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Stromberg-Carlson PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	155000-048	5A1	

## CHASSIS-END VIEW



### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Stromberg-Carlson PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	5FE	5A 32V	128000-011	128000-042	307005	155004	AGA 5	HHF

\* Fuse Cap.

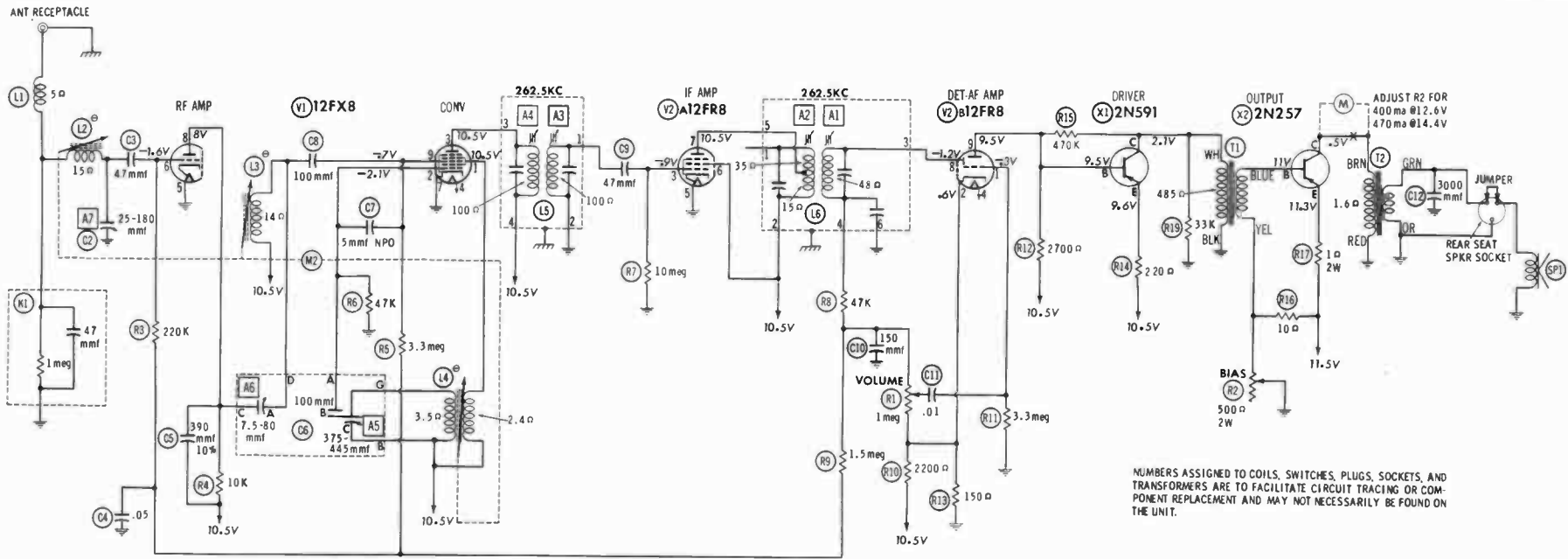
### MISCELLANEOUS

ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M2	Tuner Spark Plate	164000-027	Manual, Complete
M3		110000-020	

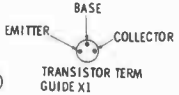
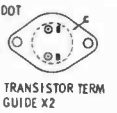
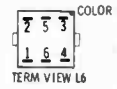
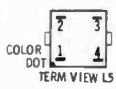
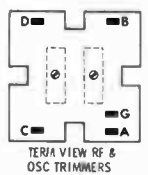
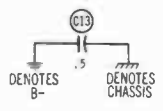
### CABINETS & CABINET PARTS

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

NAME	PART No.	DESCRIPTION
Dial Glass	122000-048	
Dial Pointer	144000-007	
Knob	134000-086	



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.



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

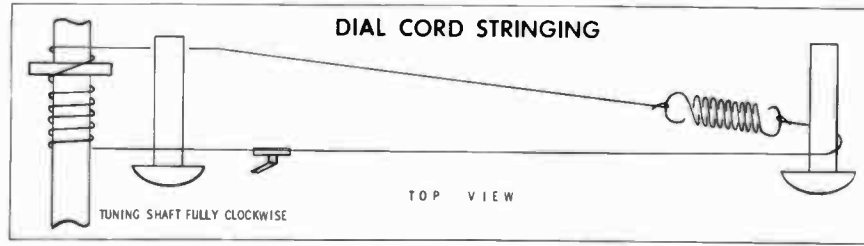
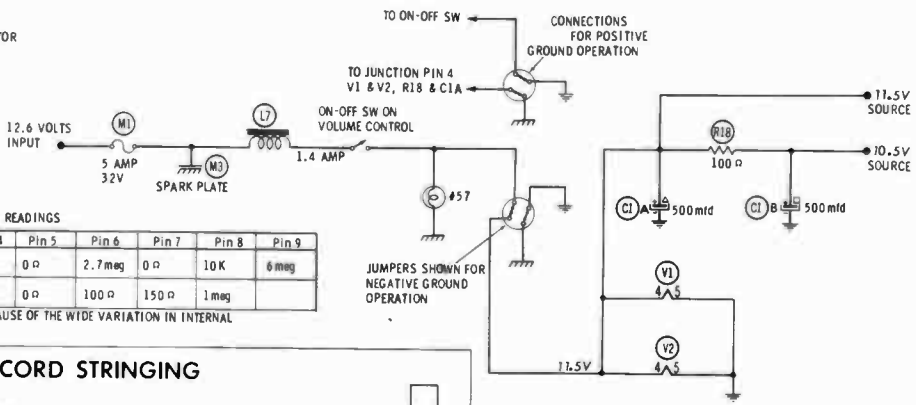
⊙ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12FX8	100 Ω	47K	200 Ω	.1 Ω	0 Ω	2.7 meg	0 Ω	10K	6 meg
V2	12FR8	3.3 meg	150 Ω	10 meg	.1 Ω	0 Ω	100 Ω	150 Ω	1 meg	

RESISTANCE MEASUREMENTS ON X1, X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCES.



A PHOTOFAC STANDARD NOTATION SCHEMATIC  
© Howard W. Sams & Co., Inc. 1961

STROMBERG-CARLSON  
MODEL IM-60-M



MODEL  
AC-3085

TRADE NAME	Studebaker Models AC-3085, AC-3087 (For 1961 Studebakers)		
MANUFACTURER	Delco Radio Div., General Motors Corp., Kokomo, Indiana		
TYPE SET	Battery Operated 4 Tube - 1 Transistor Custom Built Automobile AM Receiver		
POWER SUPPLY	12 Volt Storage Battery	RATING	2.1 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	540 - 1600KC		

### ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT					
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.					
Suggested Alignment Tools:					
A1 thru A5, A9, A10... GENERAL CEMENT #8282, 8606, 8606-L, 9091 WALSCO #2526, 2541, 2542, 2543, 2544					
A6, A7, A8..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8726, 8987, 8988, 8989, 9291 WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538					
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. High side thru .1mf to pin 7 (grid) of Converter. Low side to chassis.	262KC (400% Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
Check setting of Oscillator core (A5). Rear of core should be 1 5/8" from mounting end of coil form.					
2. High side thru 82mmf antenna receptacle. Low side to chassis.	1615KC	"	"	A6, A7, A8	"
3. " " " " " "	600KC	600KC Signal.	"	A9, A10	"
4. " " " " " "	1615KC	High end stop.	"	A7, A8	"
5. " " " " " "	1100KC	1100KC Signal.	"		Adjust pointer adjustment until pointer coincides with 1100 on dial.
6.	With radio installed in car and antenna fully extended, tune in a weak station and adjust A8 for maximum output.				

#### PUSHBUTTON ADJUSTMENT

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

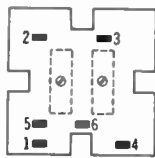
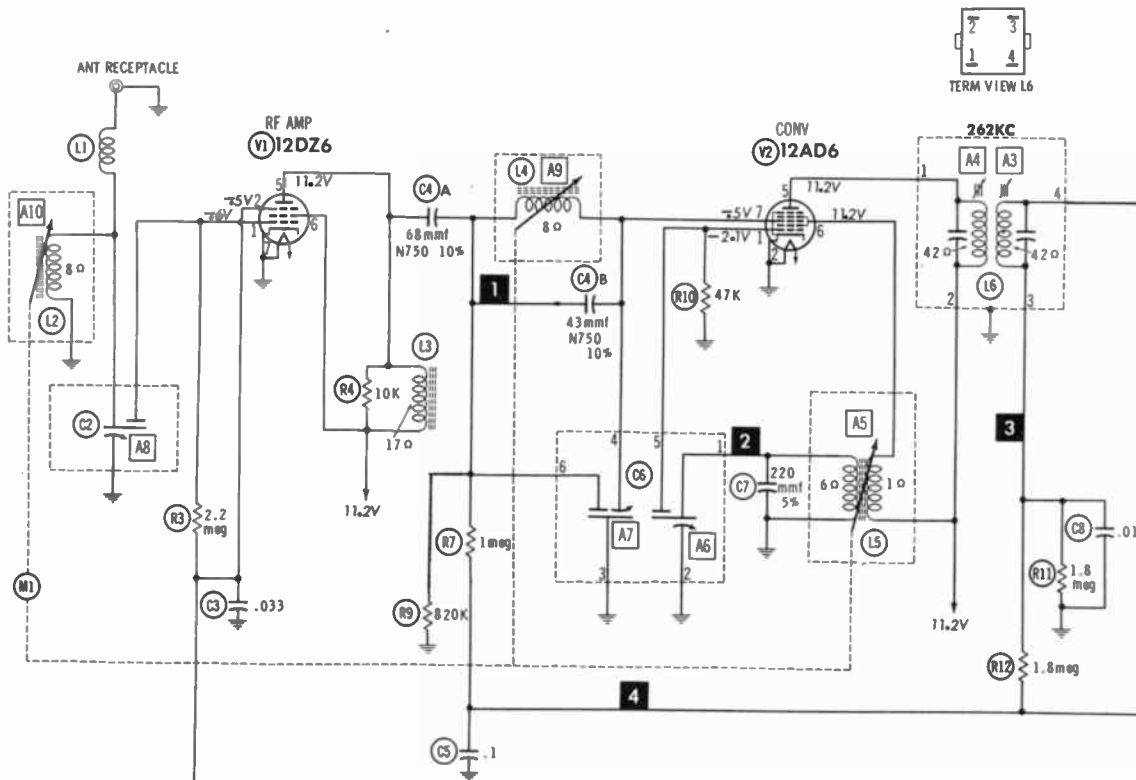
**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD971

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

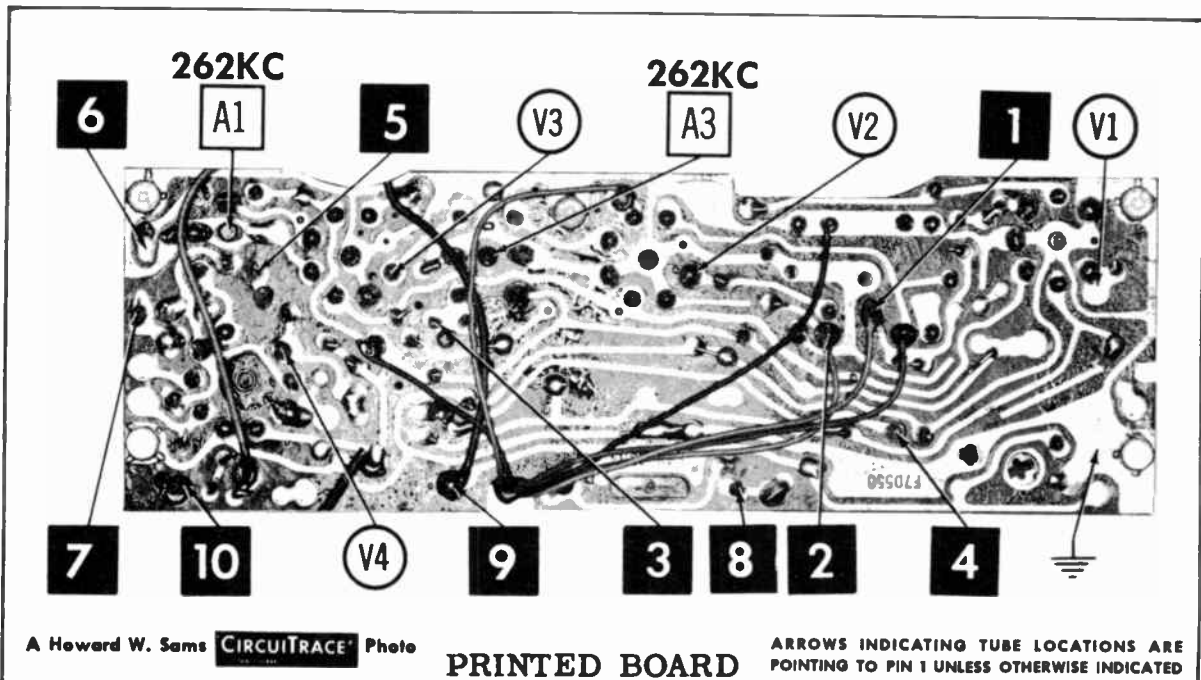
STUDEBAKER MODELS  
AC-3085, AC-3087



TERM VIEW RF & OSC TRIMMERS

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
with **CIRCUITRACE**

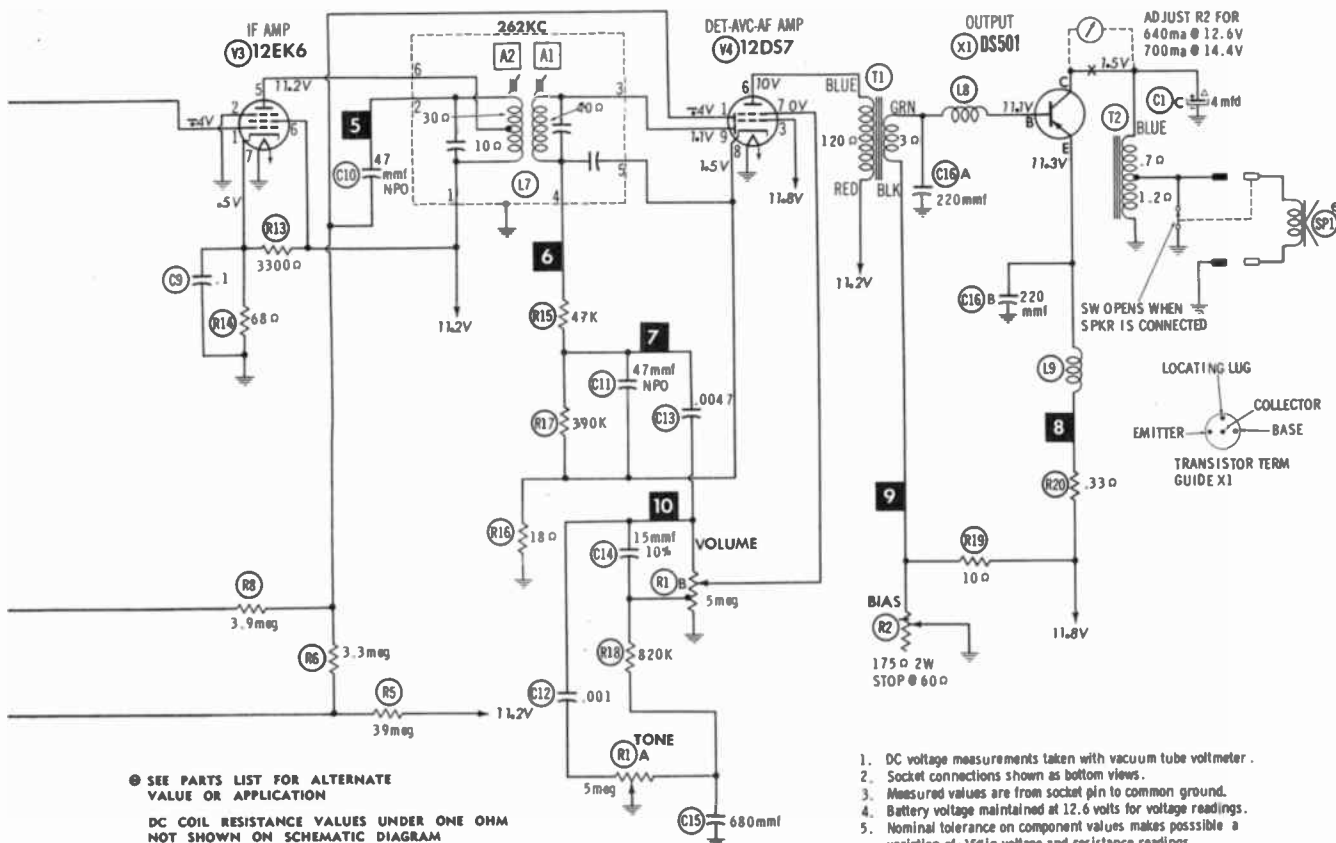
© Howard W. Sams & Co., Inc. 1962



A Howard W. Sams **CIRCUITRACE** Photo

**PRINTED BOARD**

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

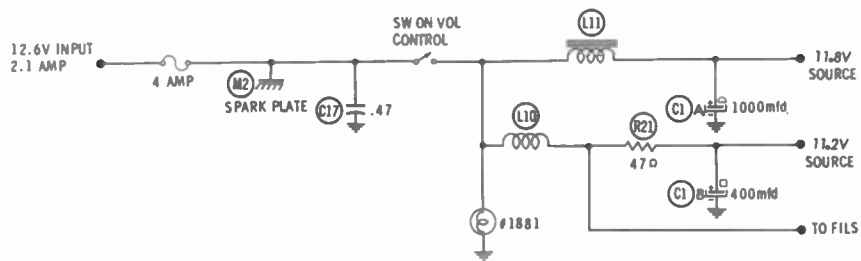


SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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

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.

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

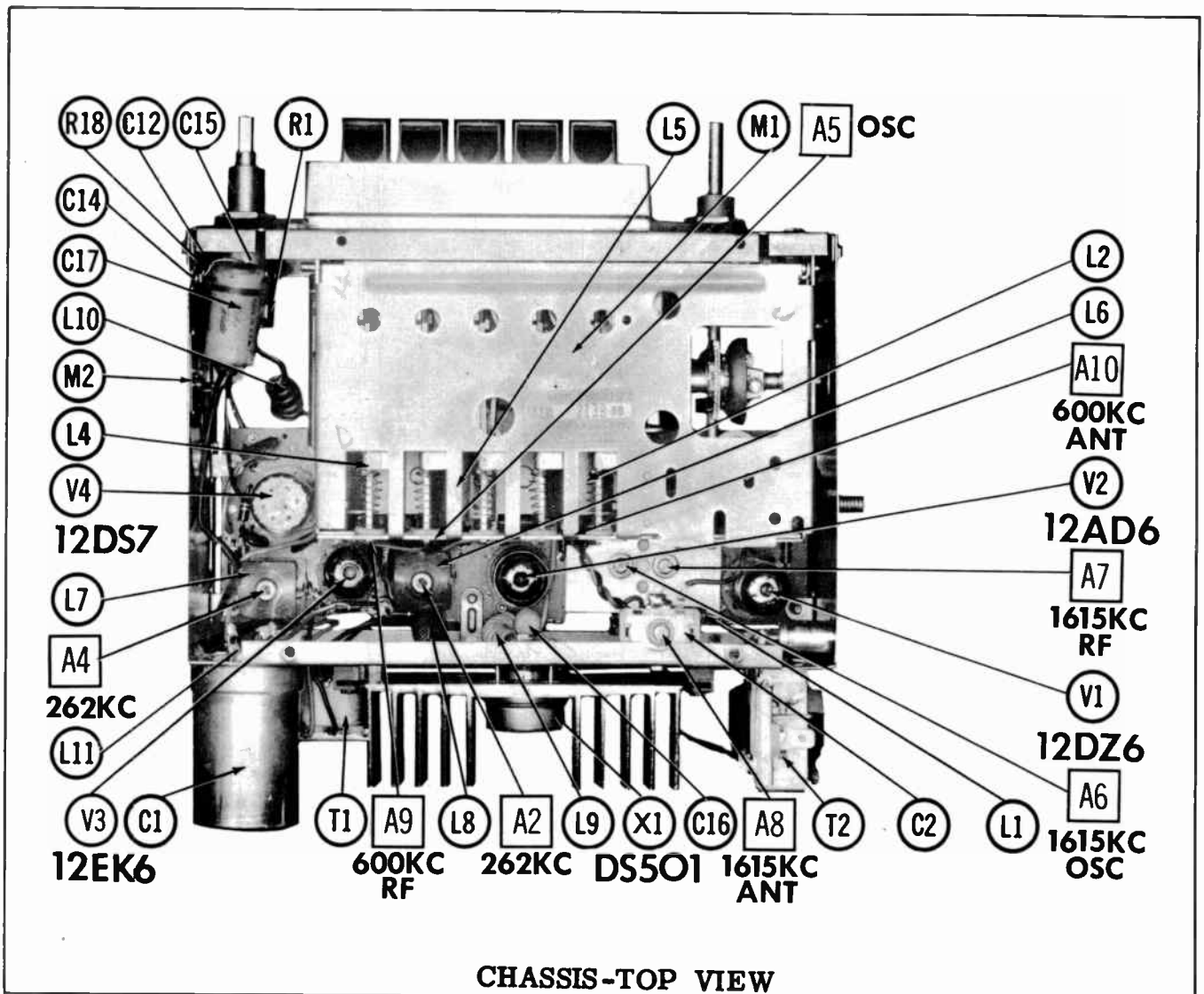
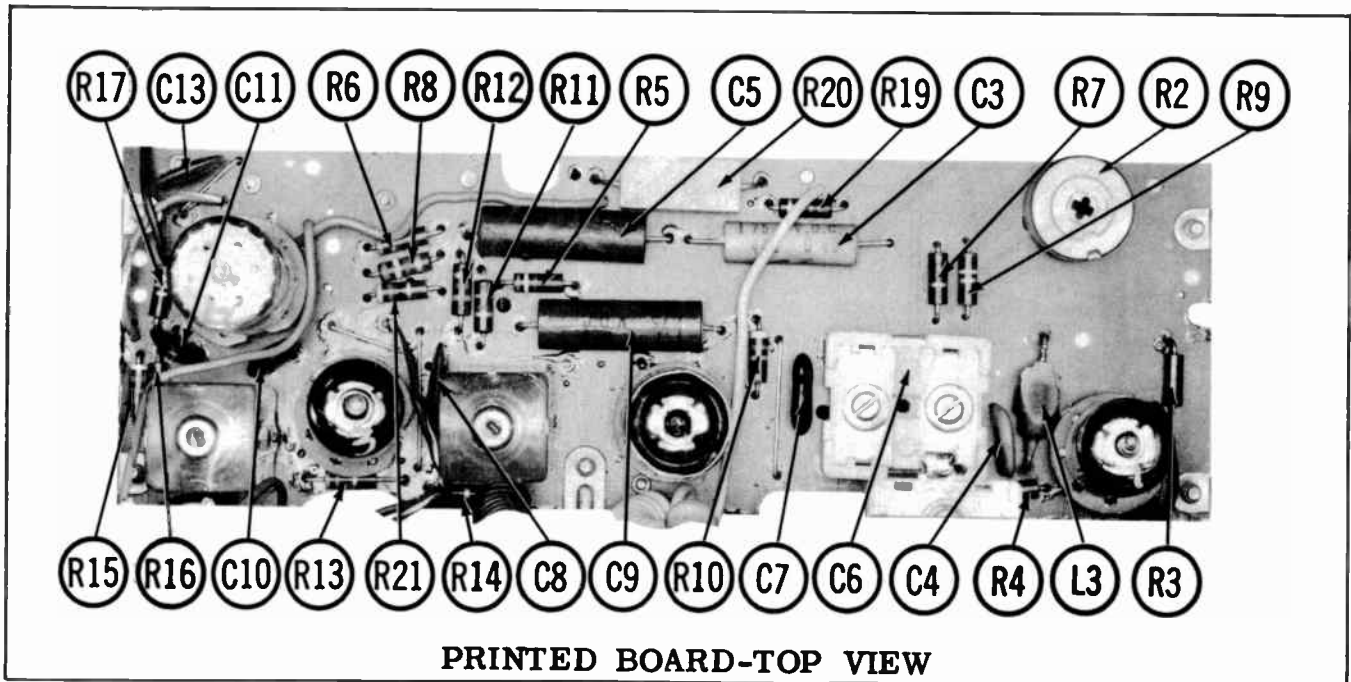


#### RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	10 meg	7.8 meg	FIL	FIL	75 $\Omega$	50 $\Omega$	0 $\Omega$		
V2	12AD6	47K	0 $\Omega$	FIL	FIL	90 $\Omega$	50 $\Omega$	900K		
V3	12EK6	1.2 meg	0 $\Omega$	FIL	FIL	60 $\Omega$	50 $\Omega$	68 $\Omega$		
V4	12DS7	4.5 meg	TP	3 $\Omega$	FIL	FIL	330 $\Omega$	0 $\Omega$	18 $\Omega$	437K

TRANSISTOR CIRCUIT RESISTANCE FOR X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

**STUDEBAKER MODELS  
AC-3085, AC-3087**





# PARTS LIST AND DESCRIPTIONS

## TUBES

• GENERAL ELECTRIC •			RAYTHEON •			SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12DZ6	V3	IF Amplifier	12EK5			
V2	Converter	12AD6	V4	Det. -AVC-AF Amp.	12D87			

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
XI	D8501	Output		2N176	PNP Note 1

Note 1. When replacing, apply silicone grease between transistor and heat sink. Tighten mounting screw 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.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	1000	16	7275315	AFH3-54-40			WP300.89		TVLS-3021.5*
B	400	16							
C	4	11.5AC							

\* 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.
C2	.033 75V	#7275275	P288N-033	DD-303	DPMS4833	IDP-2-333	GEM-4133	4P8-833
C3	68 N750 10%		N750-DE 68	TCN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C4A	43 N750 10%	#7273693	N750-DI 39	TCN-43	C10Q43U	CCTN-390	CN7-439	10TCU-Q39
B			P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-201	2TM-P10
C5	.1 75V							
C6	220 8%		1469-00022	TCZ-220	22R5T22	CM-19B-221J	CNO-322	M8-322
C7	.01		BPD-01	DD-103	BYA108L	CCD-103	B-110	5HK-810
C8	.01		P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-201	2TM-P10
C9	.1 75V							

## 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.
C10	47 NPO		NPO-DI 47	TCZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C11	47 NPO		NPO-DI 47	TCZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C12	.001		BPD-001	DD-103	BYA10D1	CCD-102	B-210	5HK-D10
C13	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C14	15 10%		1469-000015	TCZ-15	22R5Q15	CM-19B-150K	CNO-415	M8-415
C15	680		DI-680	DD-681	BYA10T68	CCD-681	B-368	10T8-T68
C16A	220		DI-220	DD-221	L10T22	CCD-221	B-322	10T8-T22
B	220		DI-220	DD-221	L10T22	CCD-221	B-322	10T8-T22
C17	.47 100V		P288N-47		CUB2P47	IDP-4-474	GEM-2047	2TM-D47

# 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	5meg	7278128					
B	Volume, with Switch (Off-On)	5meg						
R2	Bias	175Ω(2W) (80Ω Stop)	1221422Ⓢ					UB4242-8

# "BTA-LOC" Equivalent: FH56L, RU56T20, O8187, I81687, U841  
Ⓢ Temperature Compensated.

## RESISTORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA		
			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	2.2meg				
R4	10K				
R5	39meg				
R6	3.3meg				
R7	1meg				
R8	3.9meg				
R9	820K				
R10	47K				
R11	1.8meg				
R12	1.8meg				
R13	3300Ω				
R14	68Ω				
R15	47K				
R16	18Ω				
R17	390K				
R18	820K				
R19	10Ω				
R20	.33Ω				
R21	47Ω				Pt. #7271375

## PARTS LIST AND DESCRIPTIONS (Continued)

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke(6.5uh)	7255738	BC-565	4610	RTC-8520	T859	
L2	Ant.	1221138					
L3	RF Choke(1.8MH)	7269684	BC-514	4664	RTC-8533	T875	
L4	RF	1221138					
L5	Osc.	1221151					
L6	Input IF	1221257	BC-344	13-PH1	RTC-8644	T855	
L7	Output IF	1221253	BC-424				
L8	RF Choke(1.4uh)	7241708					
L9	RF Choke(1.4uh)	7241708					
L10	Hash Choke(1.4uh)	7241708					

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 Hz)	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	
L11	.750A	.7Ω	.011 HY	7274342		TC-2		

### 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	6.8	1	1221590		TA-48			

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA				NOTES	
	PRI.		DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.		Triad PART No.
T2	10Ω Tap	3-4Ω	1221428		TA-50			

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	4"x 10"	PM	3-4Ω	7278208 *	410A2	* Used in Model AC-3085
	4"x 8"	PM	3-4Ω	7275979 †	48A2	† Used in Model AC-3087

### MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner		
M2	Spark Plate	7271564	Pushbutton Type (Series P2)

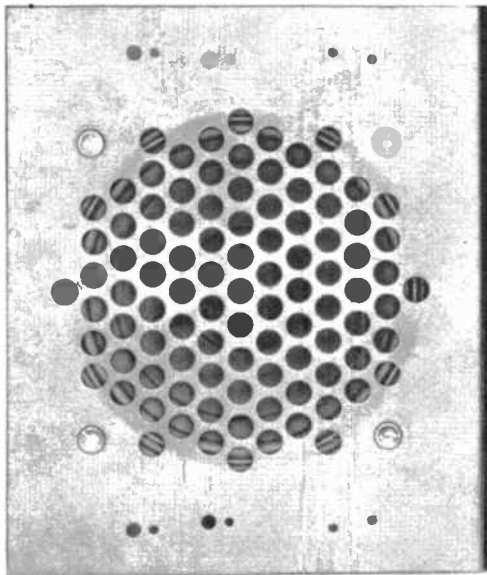
### CABINETS & CABINET PARTS

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

NAME	PART NO.	DESCRIPTION
Dial Pointer	7272127	
Pushbutton	7276507	5 Required
Knob	7267414	Tuning, Volume
Knob	7278228	Tone
Knob	569555	Dummy

### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8524 (Stranded) Available in Ten Colors
Bonding Strap .....	Use BELDEN No. 8685
	Use BELDEN No. 8661



VOXSON MODEL  
VANGUARD 736

TRADE NAME	Voxson Model Vanguard 736		
IMPORTER	Delmonico International, A Div. of Thompson-Starrett Co., Inc., 120-20 Roosevelt Ave., Corona 68, N. Y.		
TYPE SET	Battery Operated Transistorized Automobile AM Receiver (Rear view mirror mounted)		
POWER SUPPLY	12 Volt Storage Battery	RATING	.5 Amp. @12.6 Volts DC (Less Lamp)
TUNING RANGE—BROADCAST	520 — 1600KC		

## ALIGNMENT INSTRUCTIONS

### ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

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

Suggested Alignment Tools: A1, A2, A3, A5... GENERAL CEMENT #9440  
A4, A6..... GENERAL CEMENT #5000, 5003, 8276, 8290  
WALSICO #2512, 2515, 2522, 2523, 2525, 2537

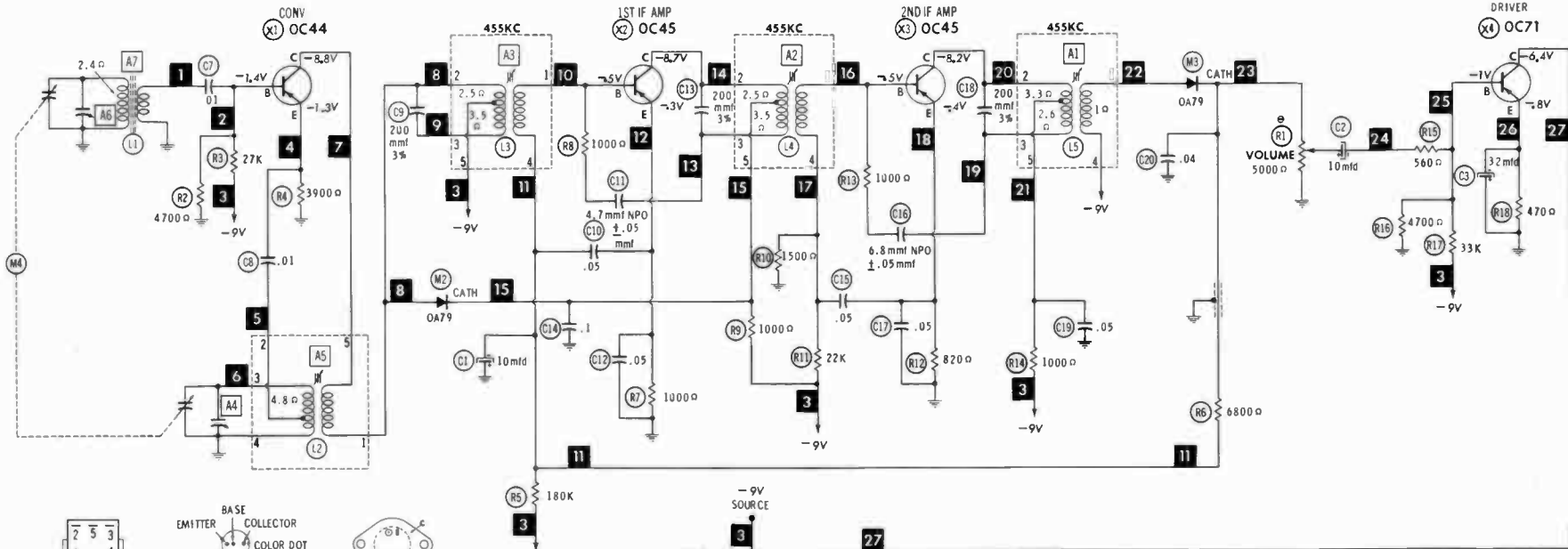
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mf to antenna stator lug of tuning gang. Low side to chassis.	455KC (400% Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1600KC	"	"	A4	"
3.	"	520KC	Tuning gang fully closed.	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	"
5.	"	600KC	600KC Signal.	"	A7	Adjust for maximum output by moving coil turns along ferrite core. Repeat steps 2 thru 5.

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



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD833

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. ©1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



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.

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

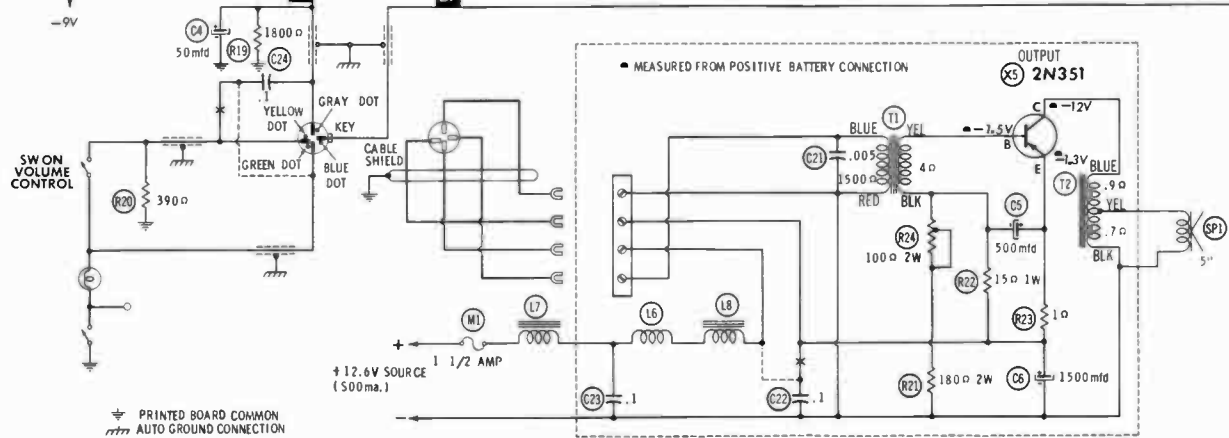
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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

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

A PHOTOFAC STANDARD NOTATION SCHEMATIC with **CircuitTrace**

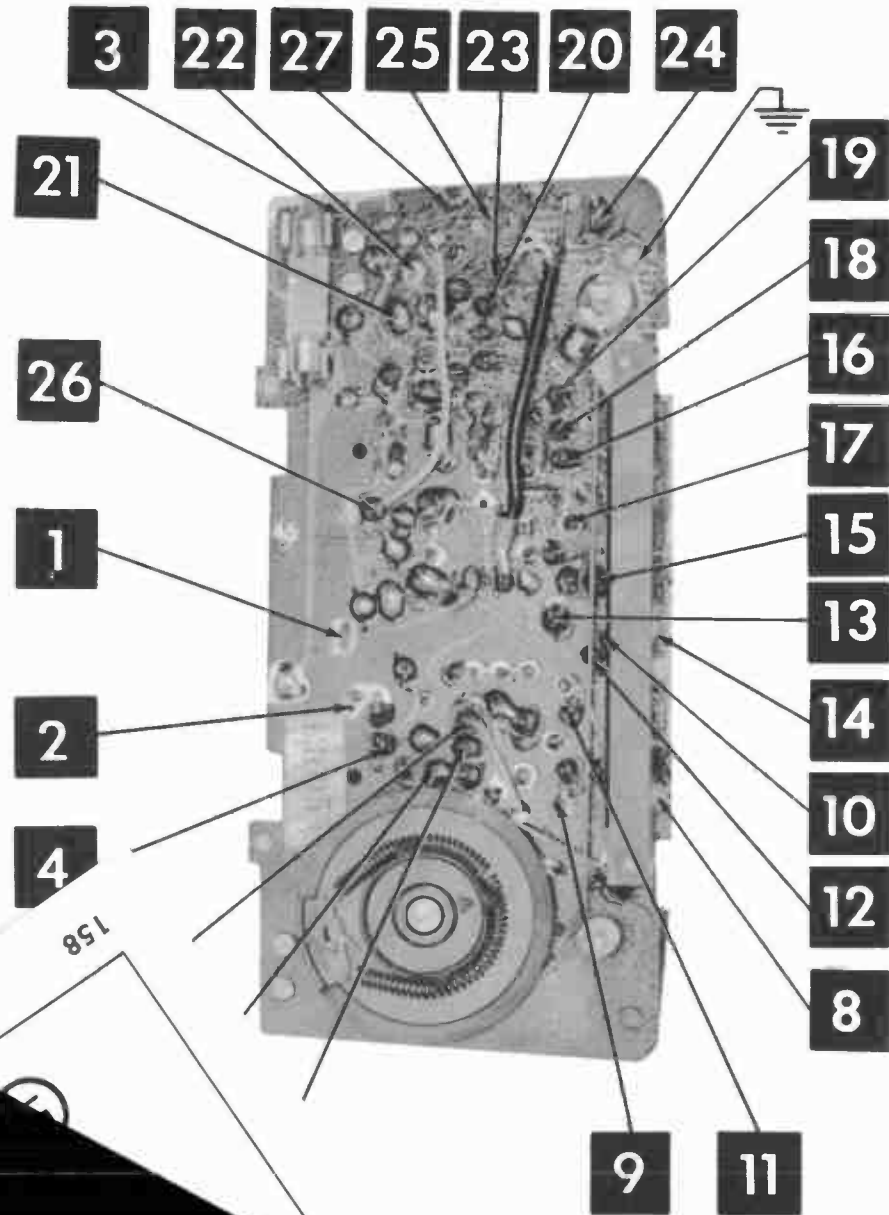
© Howard W. Sams & Co., Inc. 1962



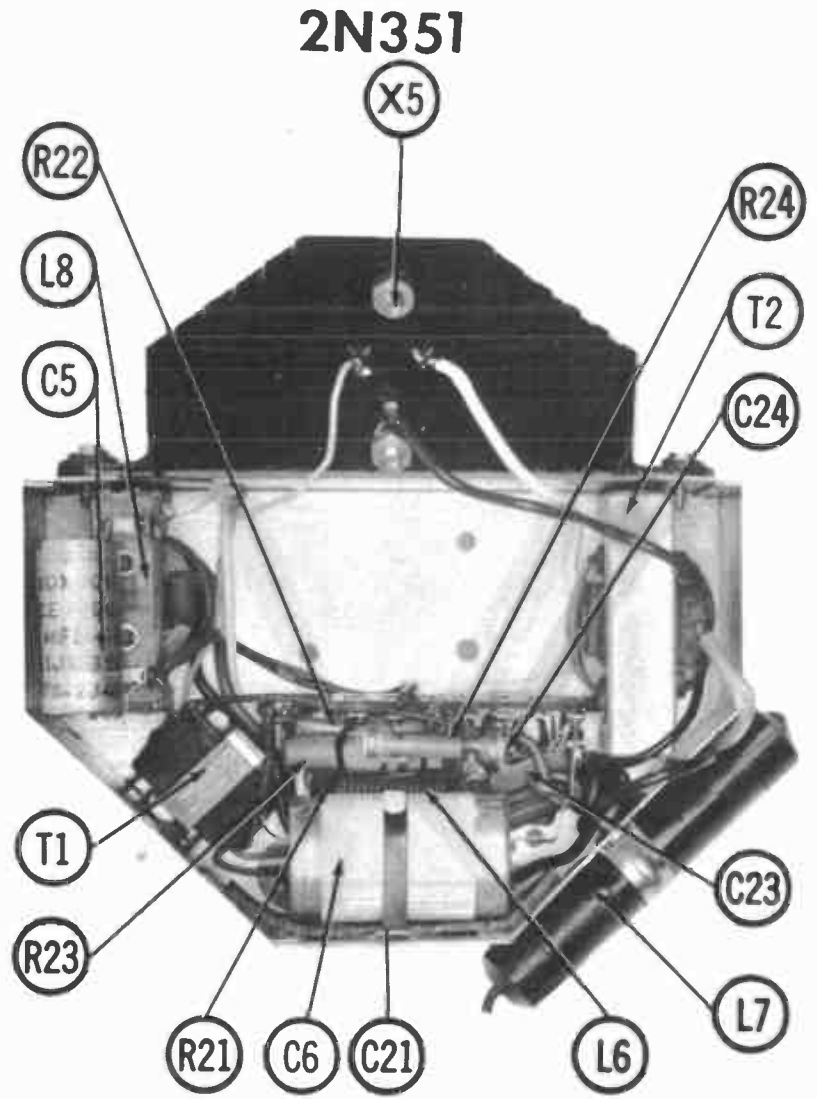
PRINTED BOARD COMMON  
AUTO GROUND CONNECTION

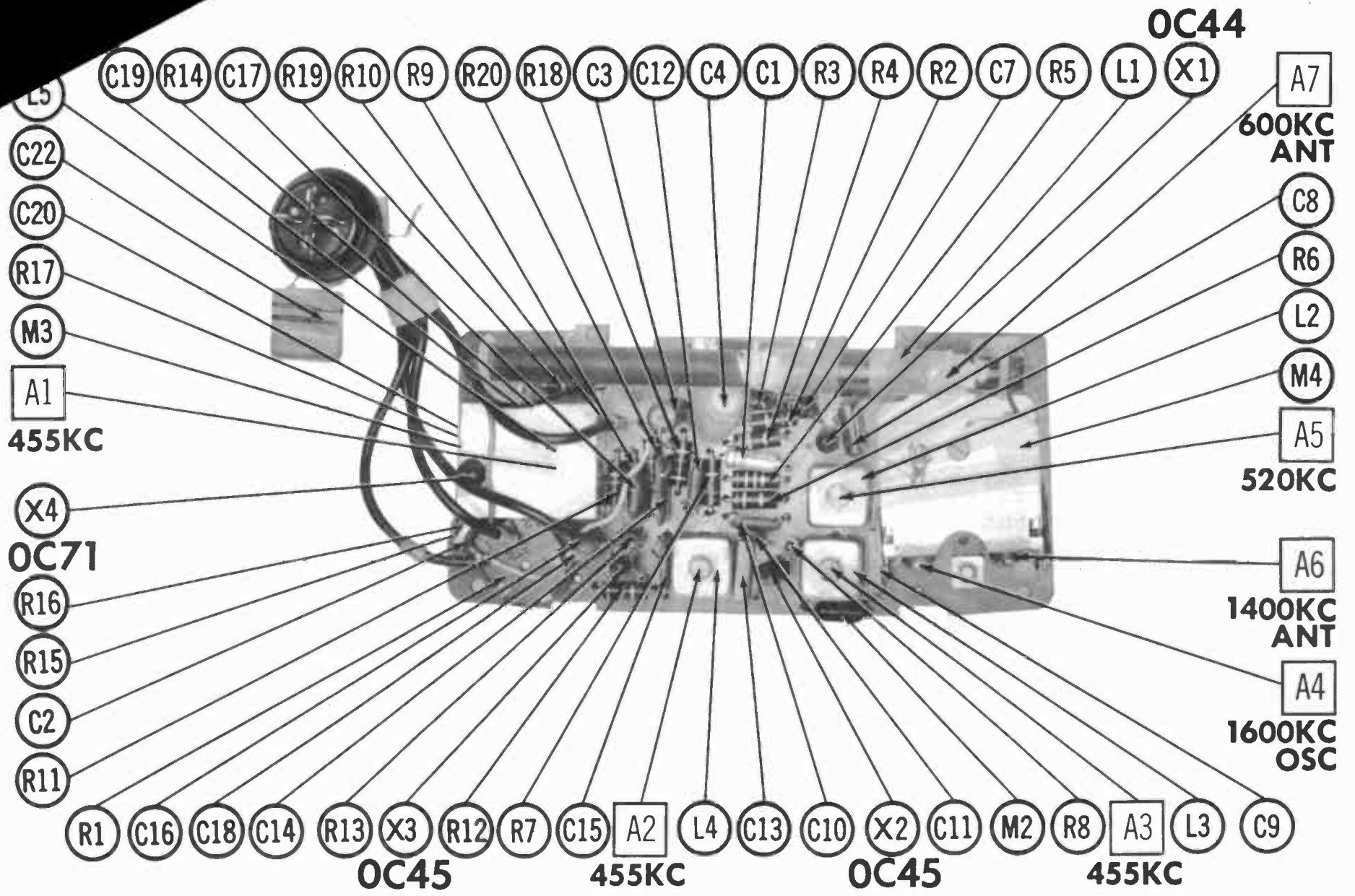
VOXSON MODEL  
VANGUARD 736

### PRINTED BOARD



### OUTPUT CHASSIS





CHASSIS TOP VIEW

## PARTS LIST AND DESCRIPTIONS

### TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	OC44	Converter 1st IF Amplifier	2N410	2N486	PNP
X2	OC45		2N410	2N483	
X3	OC45	2nd IF Amplifier	2N410	2N483	PNP
X4	OC71		2N691	2N362	
X5	2N351	Output	2N176		PNP Note 1

Note 1. When replacing, apply silicone grease between transistor and mounting surface. Tighten mounting screws securely. Check bias adjustment.

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	VOXSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	10	3	CE1741	PTT6	NLW10-6	MT1-5	TT3X10	MLV10-3	TE-1063
C2	10	3	CE1893	PTT6	NLW10-6	MT1-5	TT3X10	MLV10-3	TE-1063
C3	32	3	CE1896	PTT10	NLW35-3	MT1-13	TT6X30	MLV30-6	TE-1066
C4	50	12.5	CE1894	PTT72	NLW50-15	MT1-16	TT15X50	MLV50-15	TE-1160
C5	500	6	CE1896						
C6	1500	15	CE1897						

### 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.
C7	.01		SI 10000	D6-103	BYA1081	CCD-103	B-110	5HK-810
C8	.01		SI 10000	D6-103	BYA1081	CCD-103	B-110	5HK-810
C9	200 %					CM-15E-201G		
C10	.06		BPD-06	DD-503	CUB285	4DP-3-503	GP150	5HK-850
C11	4.7 NPO ±.05mmf		NPO-D1 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C12	.06		BPD-06	DD-503	CUB285	4DP-3-503	GP150	5HK-850
C13	200 %					CM-15E-201G	MCE241	
C14	.1			DF-104	CUB2P1	4DP-3-104	GEM-401	4TM-P10
C15	.06		BPD-06	DD-503	CUB485	4DP-3-503	GP150	5HK-850
C16	6.8 NPO ±.06mmf		NPO-D1 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C17	.06		BPD-06	DD-503	CUB285	4DP-3-503	GP150	5HK-850
C18	200 %					CM-15E-201G	MCE241	
C19	.06		BPD-06	DD-503	CUB285	4DP-3-503	GP150	5HK-850
C20	.04			DD-403	BYB684	4DP-3-403	GP140	4TM-840
C21	.0005		BPD-005	D6-502	BYA10D5	CCD-502	B-250	5HK-D50
C22	.1			DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C23	.1			DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C24	.1			DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	VOXSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA B	5000Ω	1/4	4-4991 ①					Volume

① Alternata Part #4-5829.

### RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	4700Ω				R13	1000Ω			
R3	27K				R14	1000Ω			
R4	3900Ω				R15	56Ω			
R5	180Ω				R16	4700Ω			
R6	6800Ω				R17	33K			
R7	1000Ω				R18	470Ω			
R8	1000Ω				R19	1800Ω			
R9	1000Ω				R20	390Ω			
R10	1500Ω				R21	180Ω 2W			
R11	22K				R22	15Ω 1W			
R12	630Ω				R23	1Ω			
					R24	100Ω 2W			(Variable)

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		VOXSON PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	3-5083					
L2	Osc.	2-5094					
L3	1st IF	2-5215					
L4	2nd IF	2-4129					
L5	3rd IF	2-5214					
L6	RF Choke	5-5209					
L7	Hash Choke	4-5306					

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 Hz)	VOXSON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triod PART No.	
L8	.5A	.50	7MH	3-5096					

## PARTS LIST AND DESCRIPTIONS (Continued)

### TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
			VOXSON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
	PRI.	SEC.						
T1	10	1	4-5110					

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
			VOXSON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
	PRI.	SEC.						
T2	30Ω Tap @	3-4Ω	3-5097					

### SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
				VOXSON PART No.	QUAM PART No.	
	SIZE	FIELD	V. C. IMP.			
SP1	5"	PM	3-4Ω	3-4946	5AJR *	* Drill and Tap holes in Magnet.

### FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			VOXSON PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SAG	1½A 125V	V1932	3-5306	31301.5 (3AG 1½A 125V)	155020	MDX 1½	MDJ

### SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		VOXSON PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M2	OA79			1N60	Overload (Pigtail) Detector (Pigtail)
M3	OA79			1N60	

### MISCELLANEOUS

ITEM No.	PART NAME	VOXSON PART No.	NOTES
M4	Tuning Cap.	4-4984	2 Gang

### CABINETS & CABINET PARTS

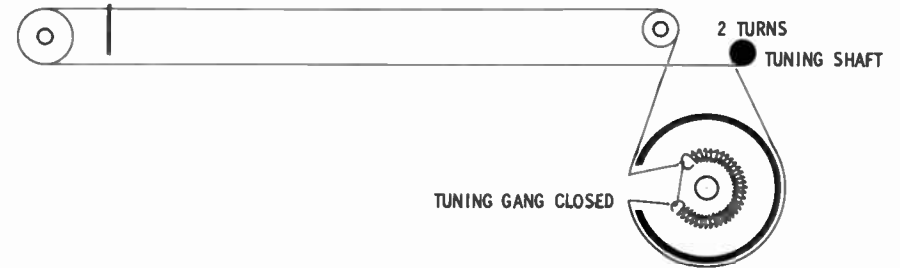
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Index	5-4987	
Knob	4-5127	Tuning
Knob	4-5126	Volume

### WIRING DATA

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

## DIAL CORD STRINGING



FRONT VIEW





**HOWARD W. SAMS & CO., INC.**  
**THE BOBBS-MERRILL COMPANY, INC.**

**\$2.95**  
**AR-15**