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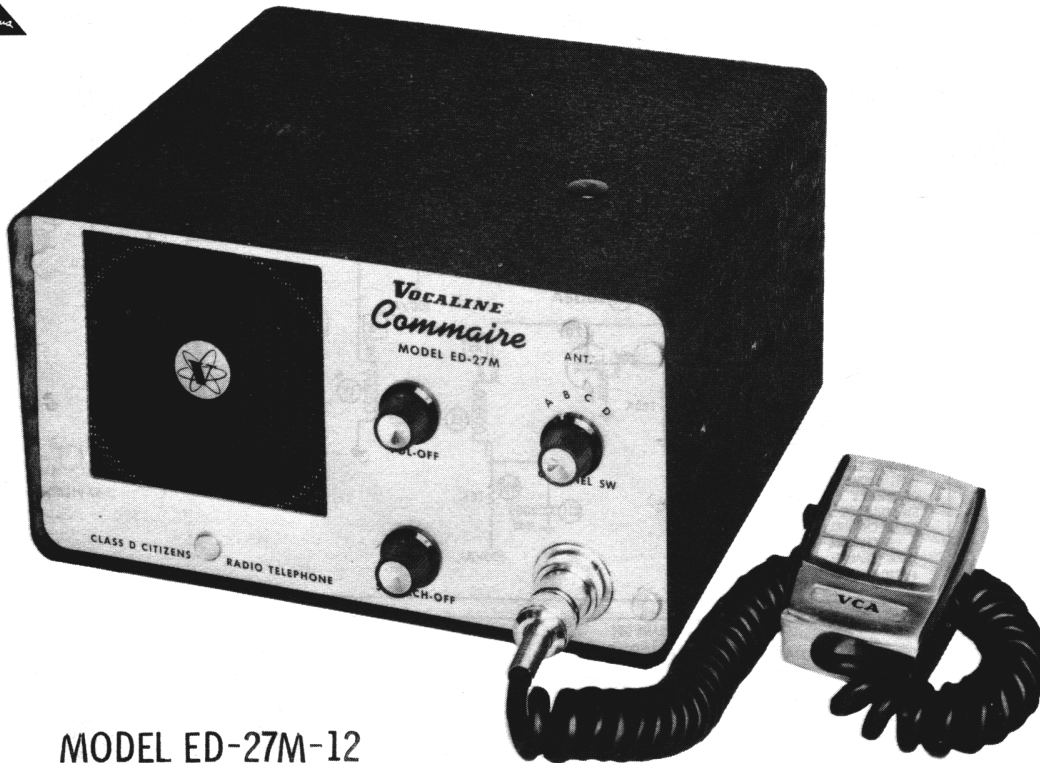
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PHOTOFACT® Folder



VOCALINE MODELS ED-27-6,  
ED-27-12, ED-27M-6, ED-27M-12



MODEL ED-27M-12

VOCALINE MODELS ED-27-6,  
ED-27-12, ED-27M-6, ED-27M-12

TRADE NAME	Vocaline Models ED-27-6, ED-27-12, ED-27M-6, ED-27M-12 (Commaire)
MANUFACTURER	Vocaline Company of America, Inc., Old Saybrook, Connecticut
TYPE SET	AC-Battery Operated Crystal Controlled 10 Tube Citizens Band Transmitter-Receiver
POWER SUPPLY	110-120 Volts AC, 60 Cycles (or) 12 Volt Storage Battery (-12 Versions) 110-120 Volts AC, 60 Cycles (or) 6 Volt Storage Battery (-6 Versions)
RATING	48 Watts, .5 Amp. @117 Volts AC (Receive); 58 Watts, .58 Amp. @117 Volts AC (Transmit) 7.4 Amp @6.3 Volts DC (Receive); 8.2 Amp @6.3 Volts DC (Transmit) 4.3 Amp @12.6 Volts DC (Receive-Transmit)
TUNING RANGE	Any 4 of Citizens Band Channels 1 thru 22.

NOTICE

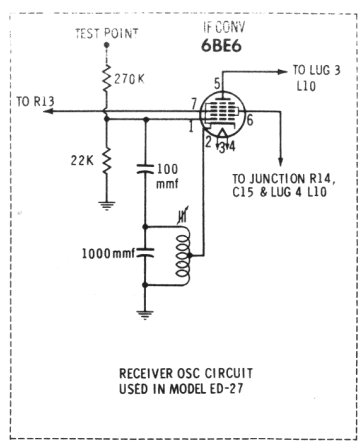
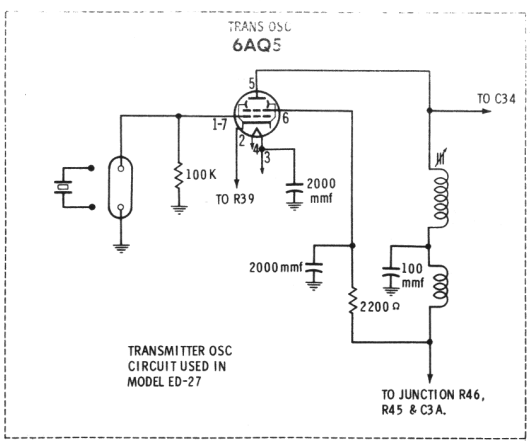
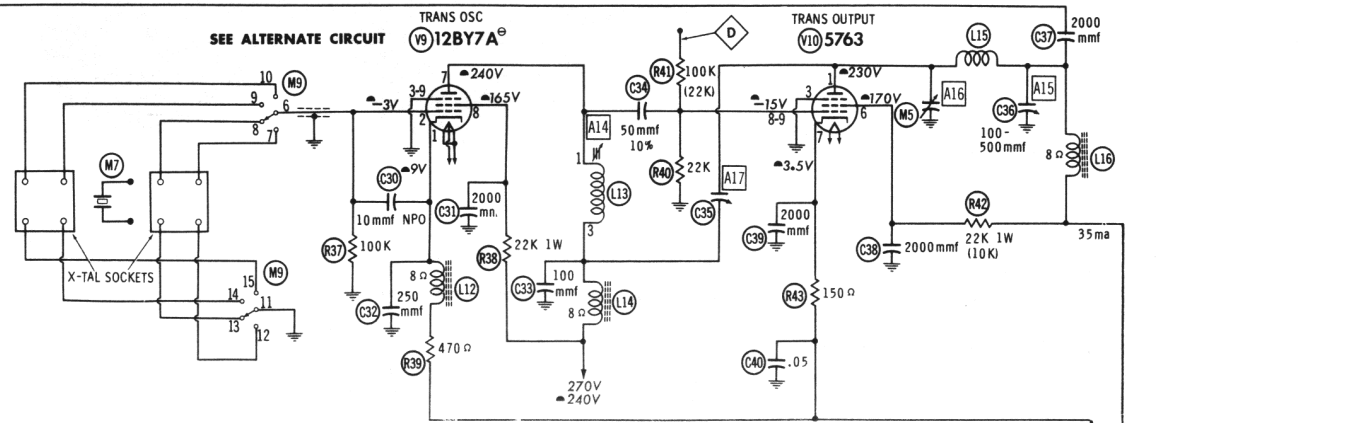
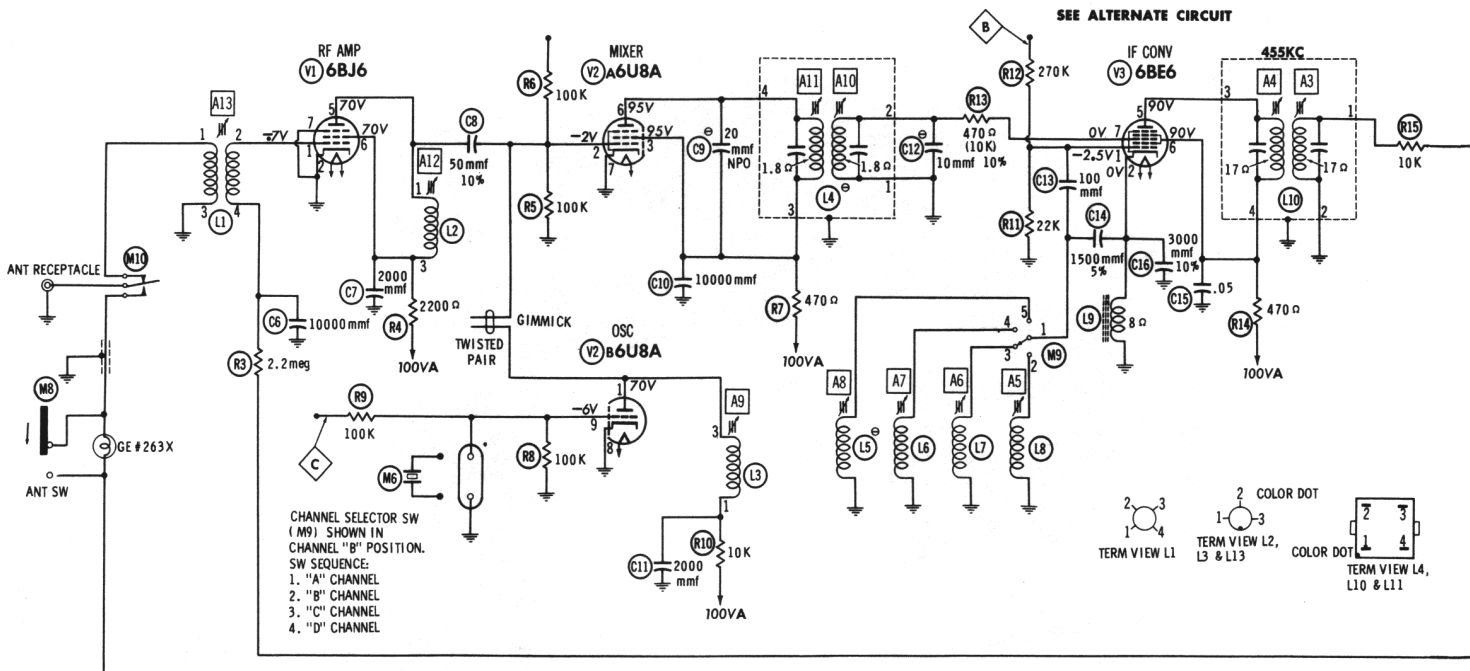
ONLY THOSE PERSONS PROPERLY LICENSED BY FCC ARE PERMITTED TO MAKE CRYSTAL SUBSTITUTION OR EFFECT REPAIRS ON THE TRANSMITTER PORTION OF THIS UNIT.

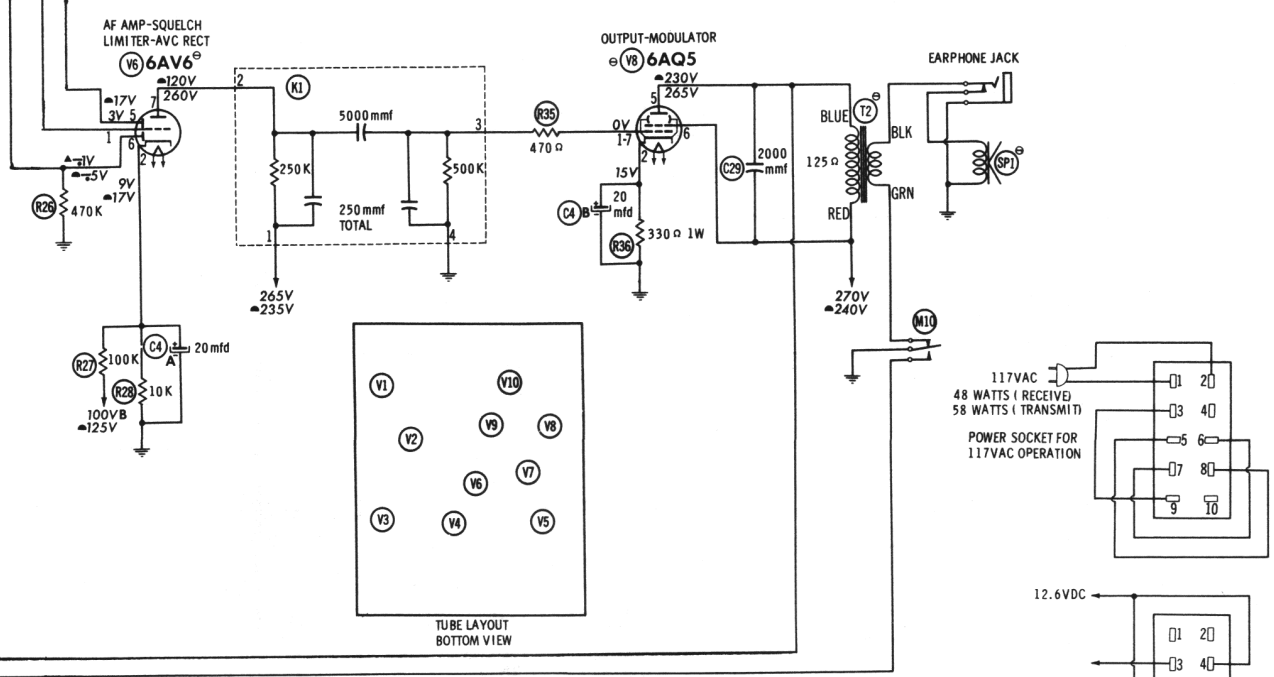
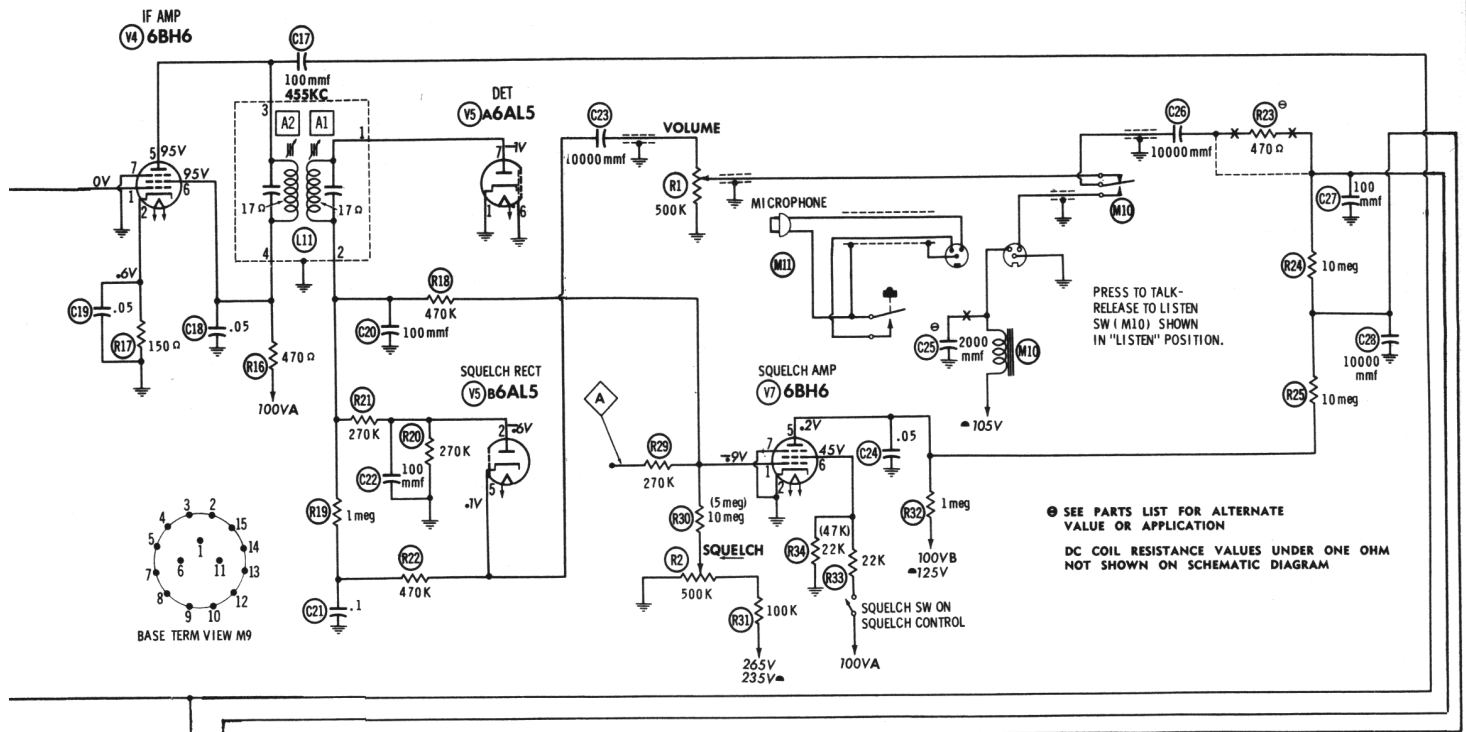
**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana



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 KZ431

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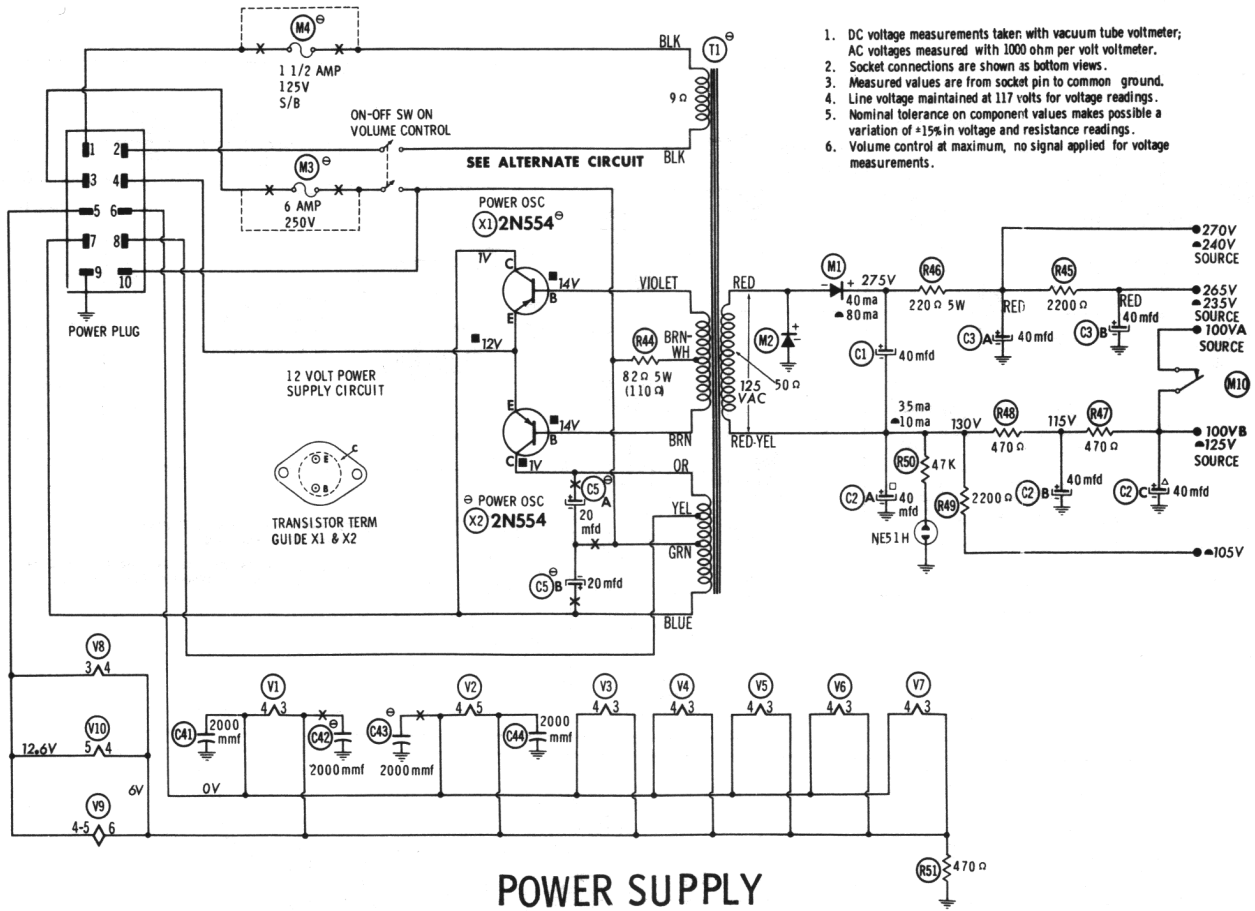
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BJ6	2.7 meg	0 $\Omega$	.1 $\Omega$	.1 $\Omega$	$\pm$ 3200 $\Omega$	$\pm$ 3200 $\Omega$	0 $\Omega$		
V2	6U8A	$\pm$ 11K	100K	$\pm$ 1500 $\Omega$	.1 $\Omega$	.1 $\Omega$	$\pm$ 1500 $\Omega$	0 $\Omega$	0 $\Omega$	100K
V3	6BE6	22K	8 $\Omega$	.1 $\Omega$	.1 $\Omega$	$\pm$ 1500 $\Omega$	$\pm$ 1500 $\Omega$	470 $\Omega$		
V4	6BH6	10K	150 $\Omega$	.1 $\Omega$	.1 $\Omega$	$\pm$ 1500 $\Omega$	$\pm$ 1500 $\Omega$	0 $\Omega$		
V5	6AL5	0 $\Omega$	270K	.1 $\Omega$	.1 $\Omega$	2 meg	0 $\Omega$	540K		
V6	6AV6	$\pm$ 21 meg	10K	.1 $\Omega$	.1 $\Omega$	$\pm$ 11 meg	470K	$\pm$ 200K		
V7	6BH5	1 meg	0 $\Omega$	.1 $\Omega$	.1 $\Omega$	$\pm$ 1 meg	$\pm$ 15K	0 $\Omega$		
V8	6AQ5A	500K	330 $\Omega$	.1 $\Omega$	.1 $\Omega$	$\pm$ 345 $\Omega$	$\pm$ 220 $\Omega$	NC	NC	NC
V9	12BY7A	.470 $\Omega$	100K	0 $\Omega$	.1 $\Omega$	.1 $\Omega$	.1 $\Omega$	$\pm$ 230 $\Omega$	$\pm$ 22K	0 $\Omega$
V10	5763	$\pm$ 345 $\Omega$	NC	0 $\Omega$	.1 $\Omega$	.1 $\Omega$	$\pm$ 22K	.150 $\Omega$	22K	22K

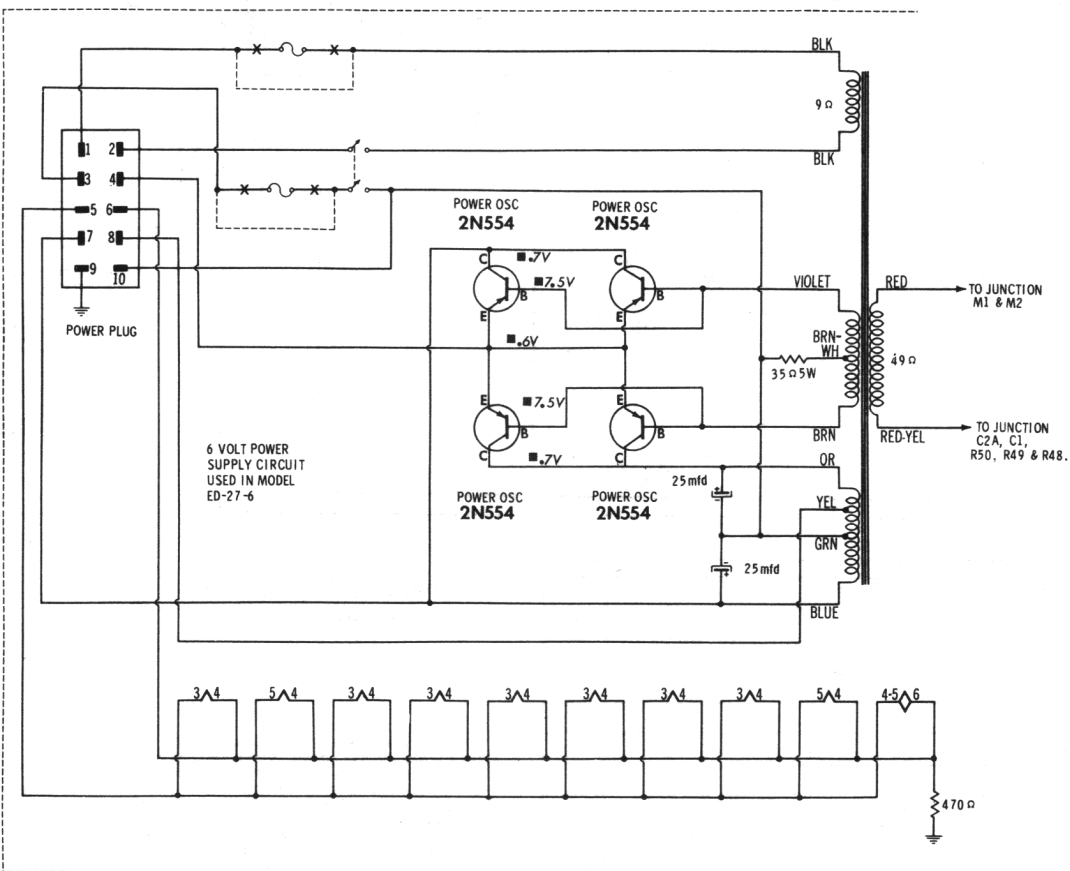
SEE POWER-SUPPLY SCHEMATIC  
ON PAGE 156

RESISTANCE MEASUREMENTS FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.  
ALL MEASUREMENTS MADE IN "RECEIVE" POSITION, WITH SQUELCH ON, UNLESS OTHERWISE DESIGNATED.  
▲ MEASURED IN "TRANSMIT" POSITION. ▲ MEASURED FROM CATHODE  
† MEASURED FROM OUTPUT OF M1. † MEASURED FROM NEGATIVE BATTERY CONNECTOR.  
‡ MEASURED FROM JUNCTION OF C1 & C2A. NC NO CONNECTION  
ALL RESISTANCE MEASUREMENTS MADE USING 117VAC POWER CORD.  
ALL TRANSISTOR MEASUREMENTS MADE IN DC OPERATION.

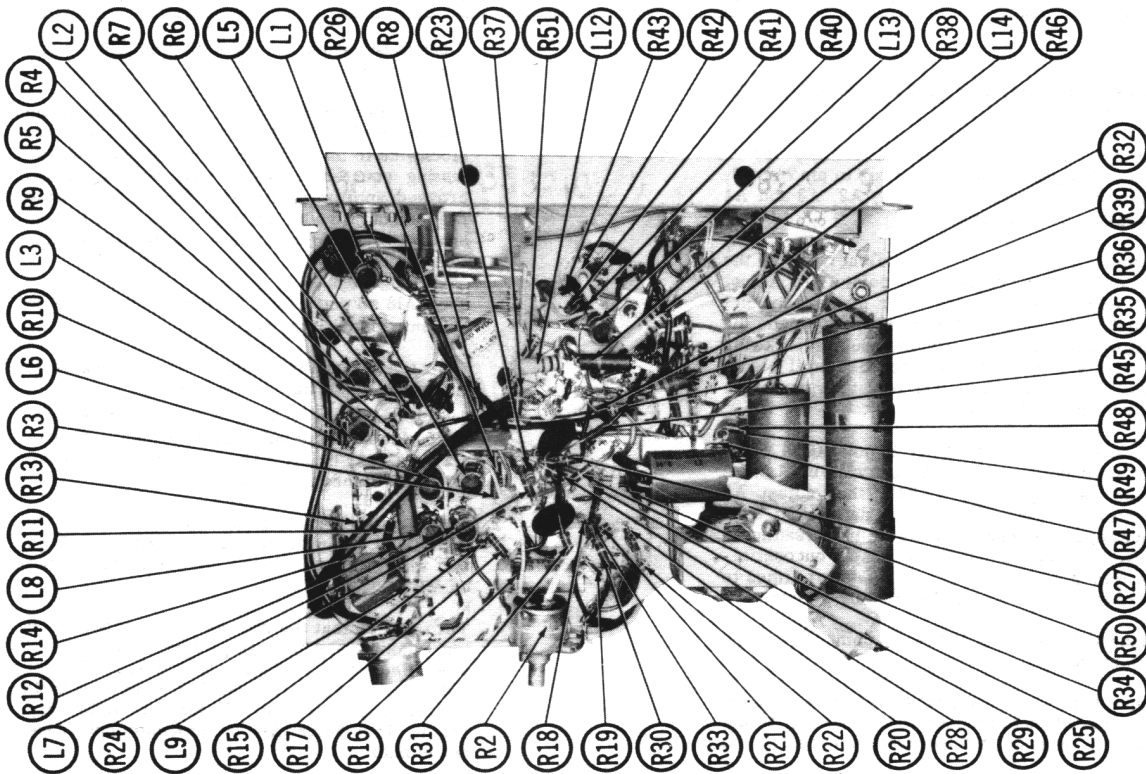
VOCALINE MODELS ED-27-6,  
ED-27-12, ED-27M-6, ED-27M-12



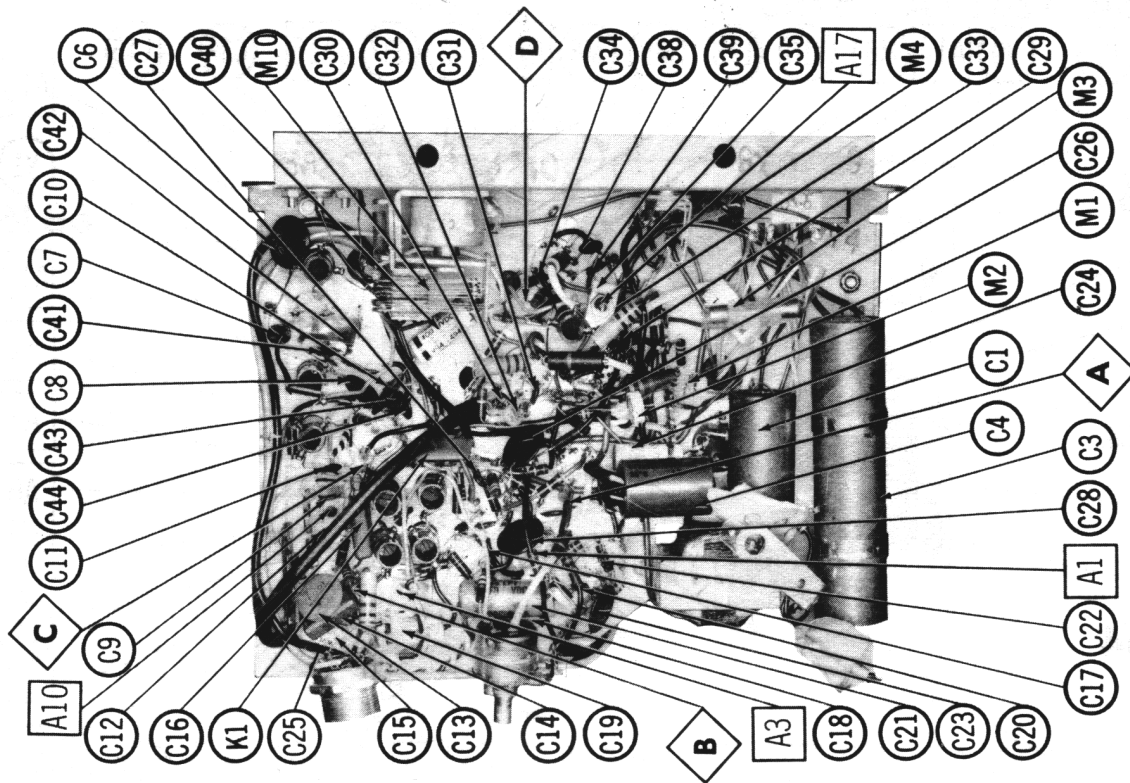
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance 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.



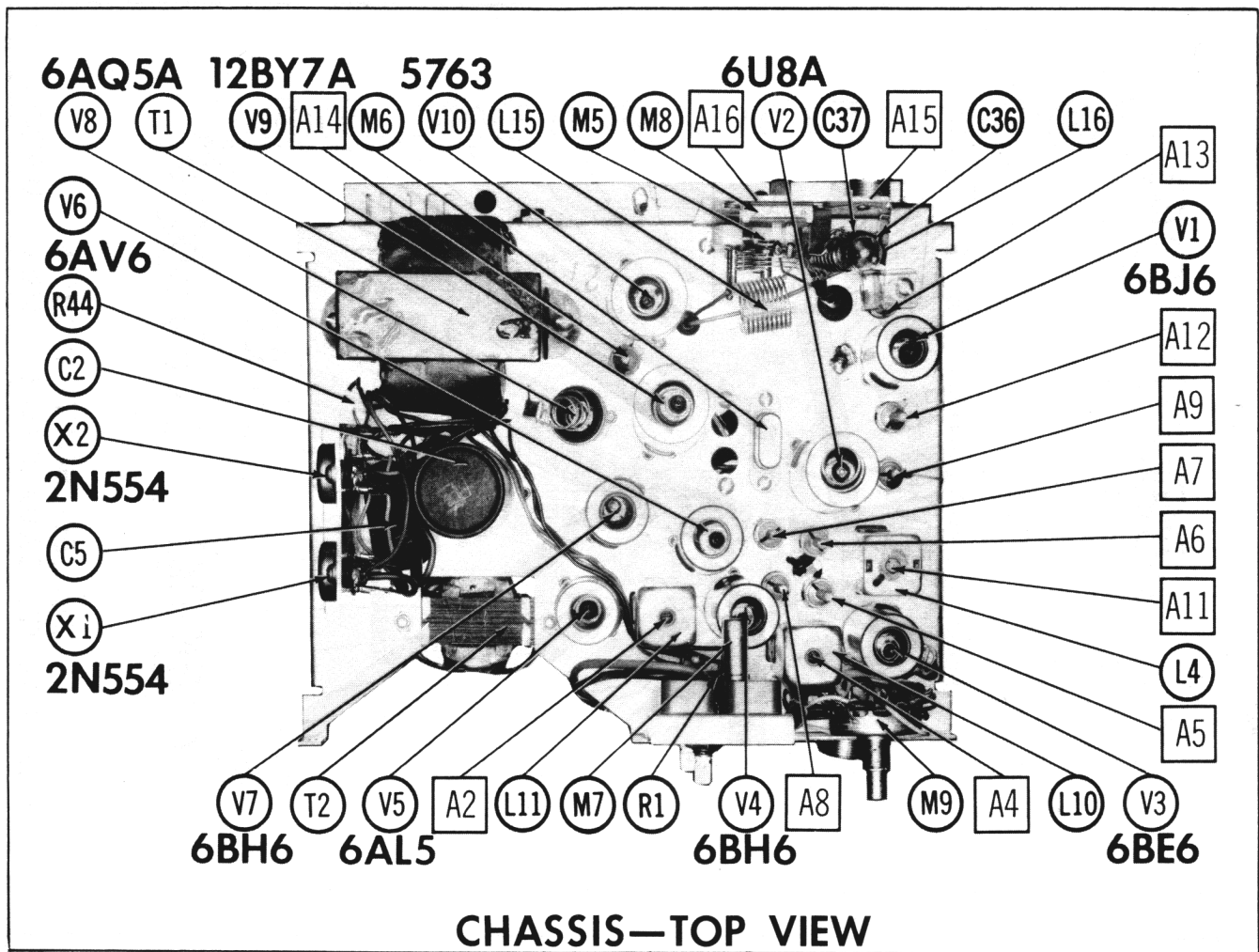
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.



CHASSIS BOTTOM VIEW  
RESISTOR & INDUCTOR IDENT.



CHASSIS BOTTOM VIEW  
ALIGNMENT, CAPACITOR & MISC. IDENT.



## ALIGNMENT INSTRUCTIONS

### Receiver

1. Connect DC probe of VTVM to point  $\diamond A$ , common to chassis.

Connect high side of Signal Generator, 455KC (400 $\mu$  Mod.) thru .1mfd capacitor to pin 7 of V3, common to chassis. Adjust A1, A2, A3 and A4 for maximum deflection.

2. Connect high side of Signal Generator at the proper channel frequency to point  $\diamond B$ . Adjust A5, A6, A7 and A8 for their proper channel frequency. These adjustments are made by turning the slug to maximum counterclockwise position and then turning clockwise until signal is heard from speaker, then adjust for maximum deflection of VTVM at point  $\diamond A$ .

3. Connect DC probe of VTVM to point  $\diamond C$ , common to chassis. Adjust A9 clockwise until there is no reading on the VTVM; then adjust A9 counterclockwise to maximum deflection; continue adjusting counterclockwise until reading is decreased approximately 10%. Short out oscillator (pin 9 of V2B to ground) several times to make sure oscillator is functioning properly.

4. Connect DC probe of VTVM to point  $\diamond A$ , common to chassis.

Connect High side of Signal Generator modulated at proper channel frequency, to antenna. Adjust A10, A11, A12 and A13 for maximum deflection.

### Transmitter

Connect a 50 ohm dummy load to antenna jack.

1. Connect DC probe of VTVM to point  $\diamond D$ , common to chassis.

Adjust A14 clockwise until there is little or no reading on the VTVM; then adjust A14 counterclockwise to maximum deflection. Continue adjusting counterclockwise until reading is decreased approximately 10%. Grid drive should read about 35 volts. Short pin 2 of V9 to ground several times to make sure oscillator is functioning properly.

Turn A16 so that the red dot on the screw is on top (maximum capacity).

Adjust A15 counterclockwise until it begins to tighten. Do not tighten too much.

Switch on tuning indicator lamp. Adjust A16 clockwise until the bulb begins to light. It may not light very bright. Then adjust A15 for maximum brilliance of the bulb.

2. To adjust A17, connect DC probe of VTVM to point  $\diamond E$ , common to chassis. Adjust A17 so that when rocking A16 no deflection is noticed on VTVM.

Turn A16 so that the red dot on the screw is on top (maximum capacity). Adjust A15 counterclockwise until it begins to tighten. Do not tighten too much. Adjust A16 clockwise until the bulb begins to light. It may not light very bright. Then adjust A15 for maximum brilliance of the bulb.

Make certain that the tuning indicator lamp is switched out of the circuit as soon as adjustments are completed.



# PARTS LIST AND DESCRIPTIONS

## TUBES

GENERAL ELECTRIC		RAYTHEON		SYLVANIA	
ITEM No.	USE	ITEM No.	USE	ITEM No.	TYPE
V1	RF Amplifier	6B3B	AF Amp.-Squelch Limiter	6AV6 ①	
V2	Mixer-Osc.	6U8A	AVC Rectifier	6B86	
V3	IF Converter	6BE6	Squelch Amplifier	6A95A ②	
V4	IF Amplifier	6BE6	Output-Modulator	12B7TA ③	
V5	Det.-Squelch Rect.	6AL5	Trans. Oscillator	5763	
			Trans. Output		

① Some versions may use 6A95 in this application.  
 ② Model ED-27M Serial #6551 (2V) and #02550 (8V) use 6B95 or 7189.  
 ③ Some versions may use 6A95 in this application.

## TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	SYLVANIA PART No.	
X1	2N554*	Power Oscillator			PNP
X2	2N554*	Power Oscillator			PNP

\* Alternate Type 2N234A or 2N1540.

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	VOCALINE PART No.	REPLACEMENT DATA			NOTES
			AEROVOX PART No.	CORNELL-DUBIERL PART No.	MALLORY PART No.	
C1	40	77-38	PRS1580	BR4025	TC58	
C2A	40	77-25	AFH3-10	FP311.5	TVL-3442	
C B	40	150				
C C	40	150				
C3A	40	450	PRS2420	BBRD4445	TCDD78	
C B	40	450				
C4A	20	25	PRS2075	BBRD2202	TCDA5	
C B	20	25				
C5A	20	25	PRS2075	BBRD2202	TCDA5	
C B	20	25				

Note 1. Not used in some versions.

## 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.	CORNELL-DUBIERL PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	10000		BPD-01	DD-103	BYA1051	CCD-103	B-110	5HK-S10
C7	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C8	50 10%		DL-50	DD-500	L10Q3	CCD-500	GP450	10TS-050
C9	20 NFO	Note 1	NFO-SI 20	DTZ-20	C10Q2C	CCO-200	CNO-422	10TCC-Q20
C10	10000		BPD-01	DD-103	BYA1051	CCD-103	B-110	5HK-S10
C11	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C12	10 10%	Note 1	DI-10	DD-100	L10T1	CCD-100	GP410	10TS-T10
C13	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C14	1500 5%		1469-0015	5RS5015	CM-19B-152J	MCE456	MS-215	
C15	.05 400V		V84C485	CUB485	4DP-3-503	GEM-415	GEM-415	4TM-S50
C16	3000 10%		1469-003	1469-003	CM-20B-302K	MCE461	MS-23	
C17	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C18	.05 400V		V84C485	CUB485	4DP-3-503	GEM-415	GEM-415	4TM-S50
C19	.05 400V		V84C485	CUB485	4DP-3-503	GEM-415	GEM-415	4TM-S50
C20	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C21	1 400V		BPD-0001	DD-101	L10T1	CCD-101	GEM-401	4TM-P10
C22	100		BPD-01	DD-103	BYA1051	CCD-103	GP310	5HK-S10
C23	10000		V84C485	CUB485	4DP-3-503	GEM-415	GEM-415	4TM-S50
C24	.05 400V		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C25	2000	Note 2	BPD-01	DD-103	BYA1051	CCD-103	B-110	5HK-S10
C26	10000		BPD-01	DD-103	BYA1051	CCD-103	B-110	5HK-S10
C27	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10

## FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CORNELL-DUBIERL PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C28	10000		BPD-01	DD-103	BYA1051	CCD-103	B-110	5HK-S10
C29	10 NFO		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C30	100		NFO-DI 10	DTZ-10	C10Q1C	CCO-100	CNO-410	10TCC-Q10
C31	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C32	250		DI-250	DD-251	L10T25	CCD-251	GP325	10TS-T25
C33	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C34	50 10%		DI-50	DD-500	L10Q30	CCD-500	GP450	10TS-Q50
C35	100-500	#77-19						
C36	2000	#77-36						
C37	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C38	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C39	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C40	.05 400V		V84C485	DD-503	CUB485	4DP-3-503	GEM-415	4TM-S5
C41	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C42	2000	Note 2	BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C43	2000	Note 2	BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C44	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20

# Vocaline Part Number.  
 Note 1. Not used when LA is Part #86-72.  
 Note 2. Not used in some versions.

## CONTROLS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					INSTALLATION NOTES
			VOCALINE PART No.	CORNELL-DUBIERL PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA	500K		B-60-S	A47-500K-Z	Q13-133	U48	Volume	
B	Switch		Not Req.	FS-3	Not Req.	Not Req.	Power Off-On	
C	Shaft		Not Req.	SWB-20	76-2	US-27	Squelch	
R2A	500K		B-59	A47-500K-S	Q1-133	U50	Squelch	
B	Shaft		Not Req.	FS-3	Not Req.	Not Req.	Squelch Off-On	
C	Switch		KR-1	SWB-12	76-1	US-26	Squelch Off-On	

## RESISTORS

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

ITEM No.	RATING	REMARKS	REPLACEMENT DATA			RATING	ITEM No.	REMARKS
			IRC PART No.	WORKMAN TV PART No.	WORKMAN TV PART No.			
R3	2.2meg					R28	10K	
R4	2200Ω					R29	270K	
R5	100K					R30	10meg	
R6	100K					R31	100K	
R7	470Ω					R32	1meg	
R8	100K					R33	22K	
R9	100K					R34	22K	
R10	10K					R35	470Ω	
R11	22K					R36	330Ω 1W	
R12	270K					R37	22K 1W	
R13	470Ω					R38	22K 1W	
R14	470Ω					R39	470Ω	
R15	10K					R40	22K	
R16	470Ω					R41	100K	
R17	150Ω					R42	22K 1W	
R18	470K					R43	150Ω	
R19	1meg					R44	82Ω 5W	
R20	270K					R45	2200Ω 5W	
R21	270K					R46	470Ω	
R22	470K					R47	470Ω	
R23	470Ω					R48	2200Ω	
R24	10meg					R49	47K	
R25	470K					R50	220K	
R26	100K					R51	470Ω	
R27	100K							

\* Alternate Value.  
 Note 1. Not used in some versions.  
 Note 2. 270Ω used when V8 is 6BQ5 or 7189.



# PARTS LIST AND DESCRIPTIONS (Continued)

## COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	VOCALINE		REPLACEMENT DATA	
			PART No.	PART No.	Part No.	Part No.
K1	Audio Coupling	250mmf, 5000mmf, 250K, 500K	105-8		Aerovox Centralab Sprague	PA-112-2 PC-71 T-4

## SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		VOCALINE PART No.	QUAM PART No.	
SP1	4" PM 3-4Q	98-2	4A07	

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		VOCALINE PART No.	Merit PART No.	Miller PART No.	Stencor PART No.	Workman TV PART No.		
L1	Ant.	88-14		6250	RTC-8568	T232A		① Some versions use Part #86-72 (4MC). Delete C9, L2. ② Model ED-27M and late versions of ED-27 use Part #86-68.
L2	RF Osc. Plate	88-15	TV-118	6171-A	RTC-8609	T216		
L3	1st IF (4.5MC)	88-16 ①	TV-118	6171-A	RTC-8609	T216		
L4	1st IF (4.5MC)	88-16 ②	TV-113	6203	RTC-8545	T235		
L5	Osc.	88-16						
L6	Osc.	88-16						
L7	Osc.	88-16						
L8	Osc.	88-16						
L9	RF Choke (1MH)	88-13	BC-513	4652	RTC-8532	T874		
L10	1st IF (455KC)	88-12	BC-352	12-C1	RTC-8632	T607		
L11	2nd IF (455KC)	88-12	BC-353	12-C2	RTC-8633	T608		
L12	RF Choke (1MH)	88-13	BC-513	4652	RTC-8532	T874		
L13	Osc. Plate	88-17	TV-118	6171-A	RTC-8609	T216		
L14	RF Choke (1MH)	88-13	BC-513	4652	RTC-8532	T874		
L15	Final Plate	88-18						
L16	RF Choke (1MH)	88-13	BC-513	4652	RTC-8532	T874		

## POWER RECTIFIERS

ITEM No.	CURRENT (Measured)	REPLACEMENT DATA			NOTES
		VOCALINE PART No.	RCA PART No.	SARKES FAZIAN PART No.	
M1	.080A	85-5 *	1N1763 *	SR200 *	* Silicon
M2	.080A	85-5 *	1N1763 *	SR200 *	

## FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA		
			VOCALINE PART No.	LITTELFUSE PART No.	RUSS PART No.
M3	3AG	6A 250V P/T	Note 1	318006 (3AG 6A 250V)	GJV6
M4	3AG	1/2A 125V P/T S/B	Note 1	31501.5 (3AG 1/2A 125V S/B)	MDV 1 1/2

## TRANSFORMER (POWER)

ITEM No.	AC OPERATION	REPLACEMENT DATA				NOTES
		VOCALINE PART No.	Merit PART No.	Stencor PART No.	Thordarson PART No.	
T1	117V @ .58A 120V @ .30A AC 12.6V @ 1.8A	99-14-1 ①				① Model ED-27-12, ED-27M-12 ② Used in Model ED-27-6, ED-27M-6
	DC OPERATION					
	INPUT					
	OUTPUT					
	8V DC OPERATION					
	INPUT					
	OUTPUT					
	6.3V @ 7.4A 120V @ .30A AC	99-14-2 ②				

Note 1. Not used in some versions.

## MISCELLANEOUS

ITEM No.	PART NAME	REPLACEMENT DATA		NOTES
		VOCALINE PART No.	Part No.	
M5	Tuning Cap.	77-37		One Section (Requires Extra Ground Wire) One Section (Grounds thru Mounting) Receiver (31MC) Transmitter (27.105MC) Antenna, SPST Slide Type Channel Selector (Rotary Type) Switching
M6	Crystal	77-73		
M7	Crystal	112-1-31		
M8	Switch	112-1-27.105		
M9	Switch	64-41		
M10	Relay	93-2		
	Microphone	102-3		

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA				NOTES
		VOCALINE PART No.	Merit PART No.	Stencor PART No.	Thordarson PART No.	
T2	5300Ω	99-4 ①				① Part #99-40 used if V8 is 6BQ5 or 7189.

## 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
Power Cord	Use BELDEN No. 8681
	Use BELDEN No. 1765-B (6 Ft. Length)
	1725-K (1/2 Ft. Length)