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LAFAYETTE MODELS HE-20AWX  
(Series 3, 4, 5), HE-20WX (Series 3)



LAFAYETTE MODELS HE-20AWX  
(Series 3, 4, 5), HE-20WX (Series 3)

TRADE NAME	Lafayette Models HE-20 AWX Series 3, 4, 5; HE-20 WX Series 3
SUPPLIER	Lafayette Radio, 165-08 Liberty Ave., Jamaica 33, N. Y.
TYPE SET	AC-Battery Operated 7 Tube Citizens Band Transmitter-Receiver
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles (or) 12 Volt Storage Battery
RATING	51 Watts, .5 Amp. @117 Volts AC (or) 4.3 Amp. @12.6 Volts DC
TUNING RANGE	Any 4 of Citizens Band Channels 1 thru 23 (Receiver may be crystal controlled or manually tuned)

NOTICE

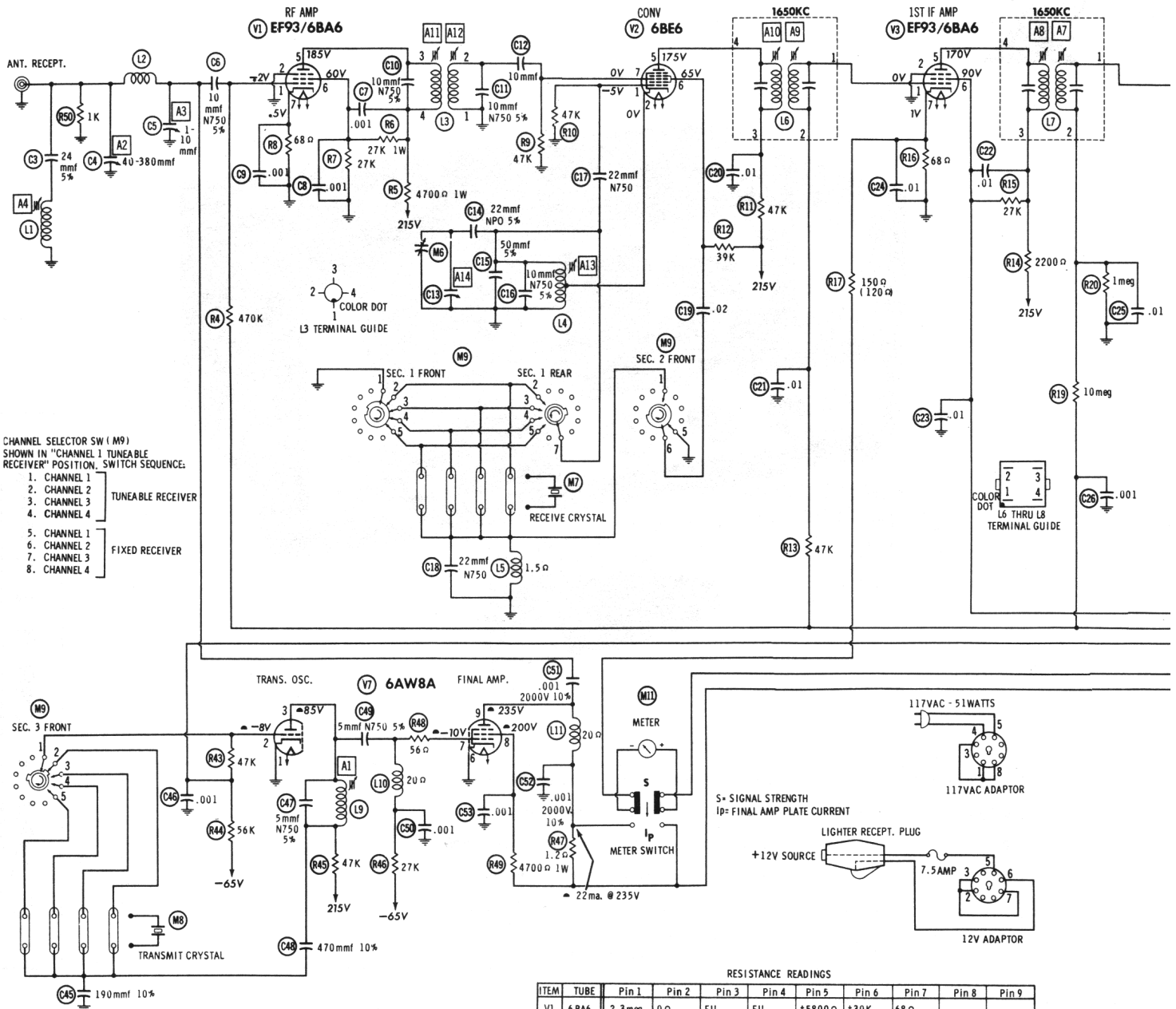
ONLY THOSE PERSONS PROPERLY LICENSED ARE PERMITTED TO MAKE REPAIRS OR ADJUSTMENTS WHICH MAY RESULT IN ILLEGAL OPERATION. (REFER TO FCC RULES & REGULATIONS PART 19, SUBPART D, SECTION 19.71).

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



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CHANNEL SELECTOR SW (M9)  
SHOWN IN "CHANNEL 1 TUNEABLE  
RECEIVER" POSITION. SWITCH SEQUENCE:

1. CHANNEL 1	TUNEABLE RECEIVER
2. CHANNEL 2	
3. CHANNEL 3	
4. CHANNEL 4	
5. CHANNEL 1	FIXED RECEIVER
6. CHANNEL 2	
7. CHANNEL 3	
8. CHANNEL 4	

**NOTICE**

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- DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
- Socket connections are shown as bottom views.
- Measured values are from socket pin to common ground.
- Line voltage maintained at 117 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.

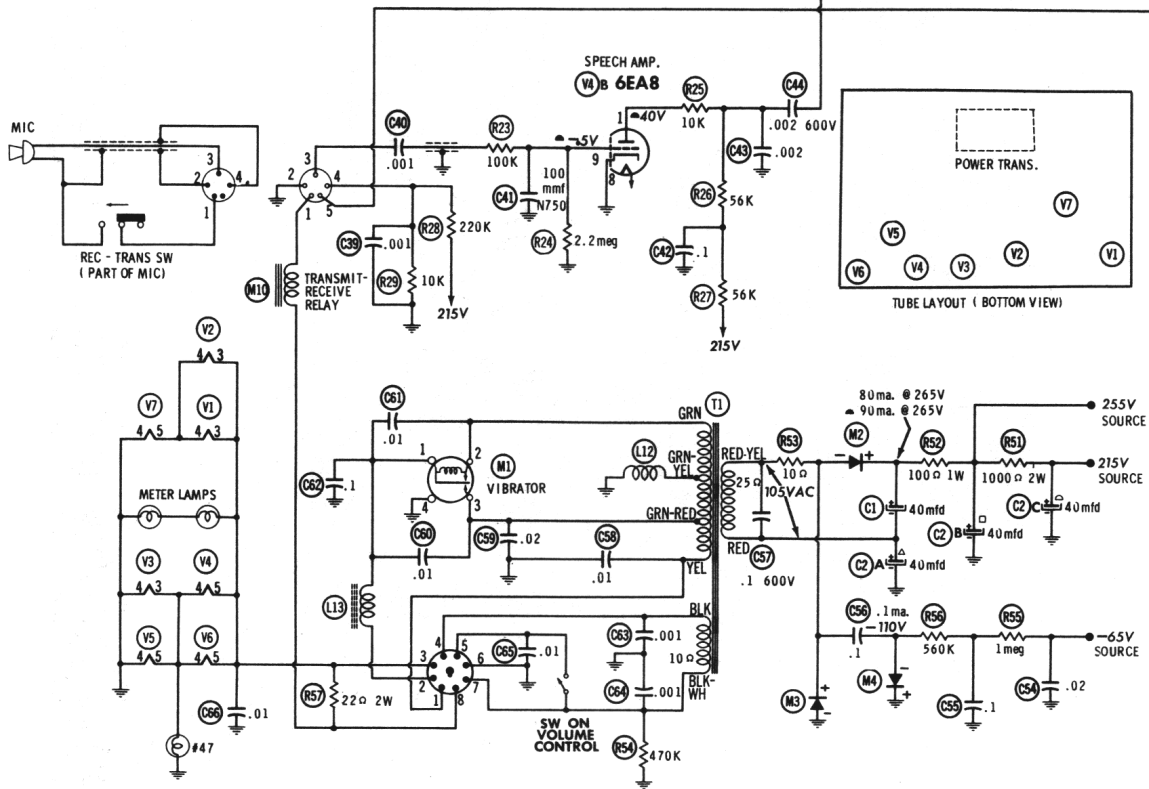
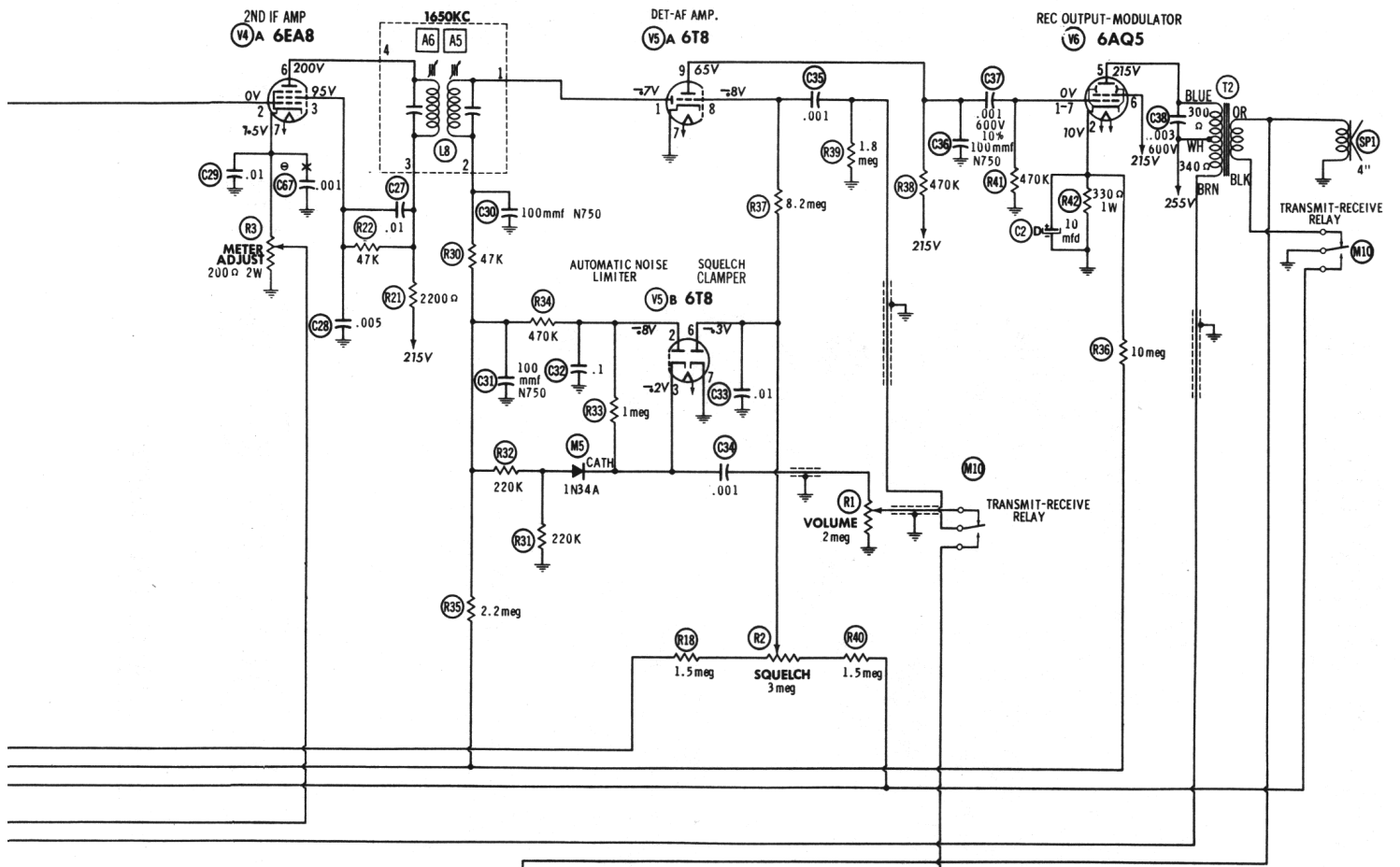
A PHOTOFAC STANDARD NOTATION SCHEMATIC

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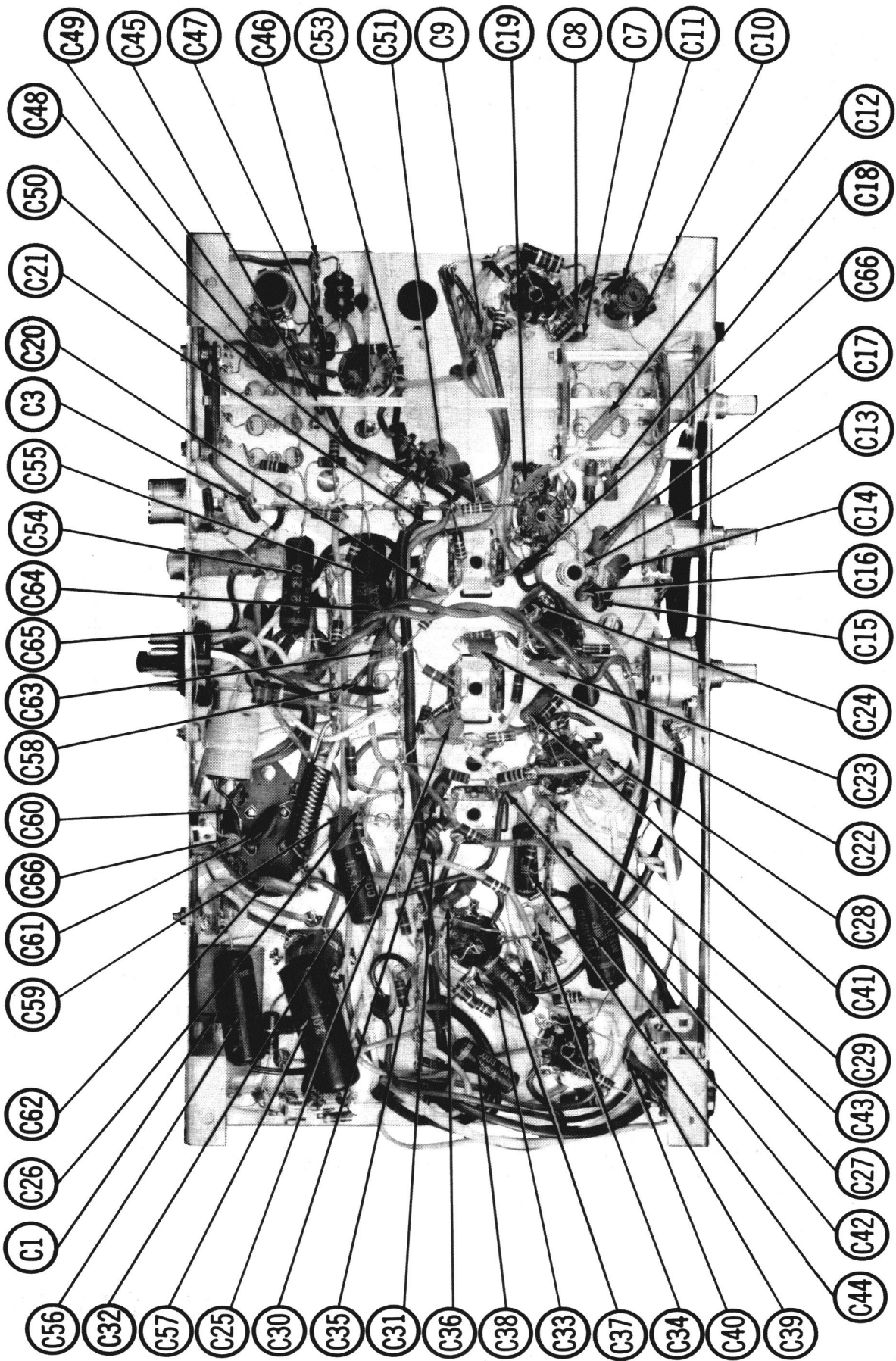
**RESISTANCE READINGS**

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BA6	2.3 meg	0 Ω	FIL	FIL	†5800 Ω	†30K	68 Ω		
V2	6BE6	47K	.2 Ω	FIL	FIL	†48K	†40K	47K		
V3	EF93 6BA6	1.9 meg	0 Ω	FIL	FIL	†3300 Ω	†30K	68 Ω		
V4	6E8	†123K	1 meg	†50K	FIL	FIL	†3300 Ω	200 Ω	0 Ω	2.2 meg
V5	6T8	400K	600K	240K	FIL	FIL	2 meg	0 Ω	10 meg	†470K
V6	6AQ5	NC	330 Ω	FIL	FIL	†400 Ω	†1100 Ω	470K		
V7	6AW8A	0 Ω	-.47K	-.†48K	FIL	FIL	0 Ω	-.82K	-.†5100 Ω	-.†440 Ω

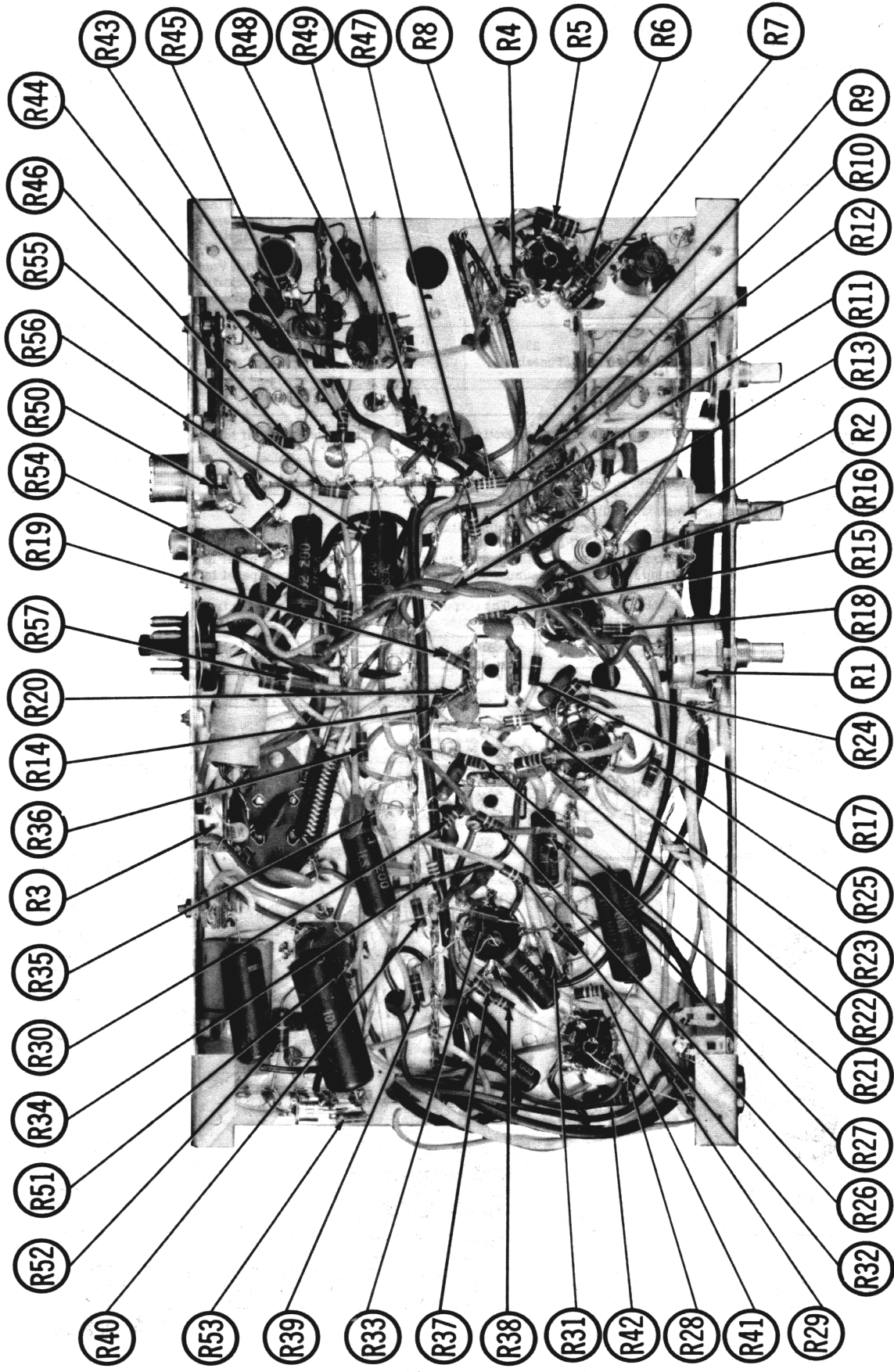
ALL MEASUREMENTS MADE IN "RECEIVE" POSITION WITH METER DISCONNECTED UNLESS OTHERWISE DESIGNATED.  
 † MEASURED IN "TRANSMIT" POSITION WITH MICROPHONE DISCONNECTED.  
 NC NO CONNECTED



LAFAYETTE MODELS HE-20AWX (Series 3, 4, 5), HE-20WX (Series 3)



CHASSIS BOTTOM VIEW-CAPACITOR IDENT.



CHASSIS BOTTOM VIEW-RESISTOR IDENT.

# ALIGNMENT INSTRUCTIONS

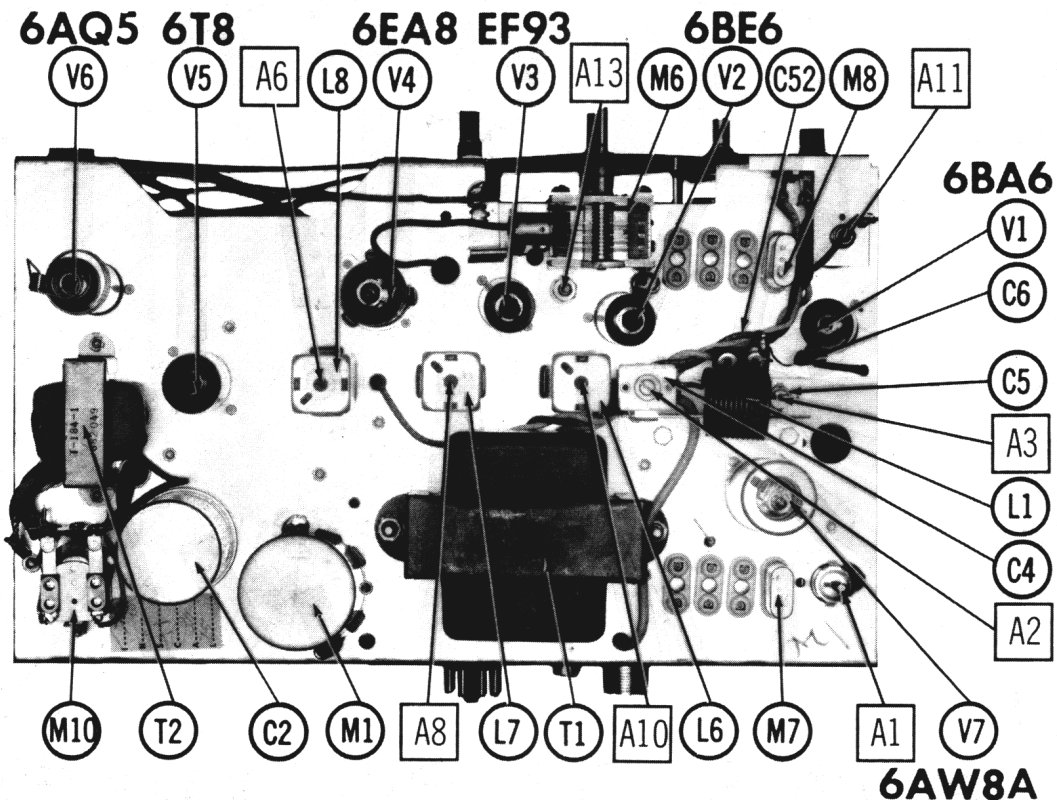
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

## RECEIVER ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mf to pin 7 (grid) of Converter. Low side to chassis.	1650KC (400v 30% AM)	9 (Fixed)	Across voice coil.	A5, A6, A7, A8, A9, A10	Turn Volume and Squelch controls fully clockwise. Adjust for maximum output.
2.	Across antenna receptacle.	27.065MC	"	"	All	Connect a 100Ω resistor in series with a .005mfd capacitor across the secondary of L3. Adjust All for maximum output.
3.	"	27.065MC	9	"	A12	Move the capacitor and resistor to the primary and adjust A12 for maximum output.
4.	"	26.965MC	1 (Tuneable)	"	A13	With Volume and Squelch controls fully clockwise, adjust A13 for maximum output. Two peaks will be found. Use the higher of the two.
5.	"	27.255MC	23 (Tuneable)	"	A14	Adjust for maximum output. Repeat Steps 4 and 5 until proper calibration is obtained.

## TRANSMITTER ALIGNMENT

1. Insert a dummy antenna (47 lamp or 52Ω 5W non-inductive load) into antenna receptacle. If load is used, parallel with RF voltmeter.
2. Set selector to the Fixed Channel position having Channel 9 crystal.
3. Hold transmit button and make the following adjustments:
  - a. A1 for maximum lamp brilliance or maximum voltage.
  - b. Turn A2 fully tight, then back off 1/2 turn.
  - c. A3 for maximum lamp brilliance, maximum voltage, or minimum dip on front panel Ip meter.
  - d. A2 for maximum lamp brilliance, maximum voltage, or minimum dip on front panel Ip meter.
4. Press and release transmit button several times. The output indicator should show that the transmitter is operating each time. If not, back out A1 1/4 turn at a time until transmitter operates each time the button is pressed.
5. A4 is adjusted for minimum interference to TV receivers on the 3 lower TV channels of the area.



CHASSIS—TOP VIEW

# PARTS LIST AND DESCRIPTIONS

## TUBES

ITEM No.	USE	TYPE	RAYTHEON		SYLVANIA	
			ITEM No.	USE	ITEM No.	TYPE
V1	RF Amplifier	EF93/6BA6	V5	Det. -ANI. -Squelch Clamper - AF Amplifier	6T8	
V2	Converter	6B6	V6	Rec. Output - Modulator	6AQ5	
V3	1st IF Amplifier	EF93/6BA6	V7	Trans. Osc. - Final Amp.	6AW6A	
V4	2nd IF Amp. - Speech Amp.	6EA8 (6U9A)*				

\* Alternate

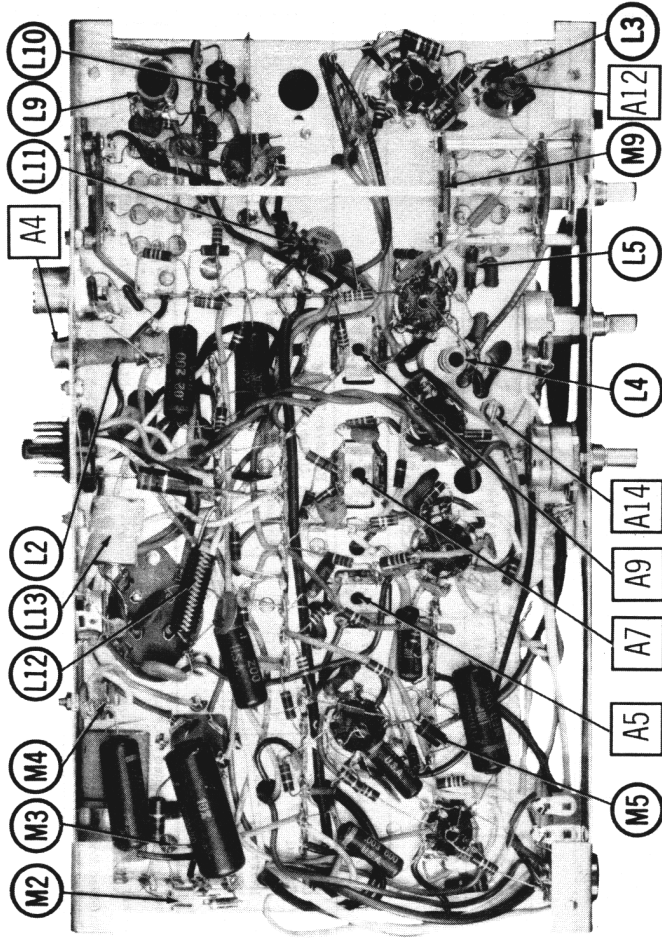
## ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	VOLTS	REPLACEMENT DATA						
			LAFAYETTE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLOY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	40	200		PRS1580	BR4025	Q71-14	TC58	TD-40-250	TVA-1511
C2	40	200		AF43-43	C0340	XC4-22	FP420, 36	TMT-3700	TVL-3765
C3	40	350		PRS1580	BR4035			TD-40-350	TVA-1611
C4	10	50							

## FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLOY PART No.	SPRAGUE PART No.	
C3	24 5%		1469-000024	TCZ-24	CM-19B-240Q	CNO-425	MS-424	
C4	40-380			829-10				
C5	1-10			TCN-10				
C6	10 N750 5%			N750-SI 10				
C7	.001			BPD-001				
C8	.001			BPD-001				
C9	.001			BPD-001				
C10	10 N750 5%			N750-SI 10				
C11	10 N750 5%			N750-SI 10				
C12	10			1469-000001				
C13	22 NPO 5%			DTZ-22				
C14	50 5%			1469-000005				
C15	10 N750 5%			TCZ-50				
C16	22 N750 5%			C10Q1U				
C17	22 N750			C10Q22U				
C18	22 N750			TCN-22				
C19	.02			BPD-002				
C20	.01			BPD-01				
C21	.01			BPD-01				
C22	.01			BPD-01				
C23	.01			BPD-01				
C24	.01			BPD-01				
C25	.01			BPD-01				
C26	.001			BPD-001				
C27	.001			BPD-001				
C28	.005			BPD-005				
C29	100 N750			N750-SI 100				
C30	100 N750			N750-SI 100				
C31	1.1 200V			P288N-1				
C32	.01			BPD-01				
C33	.001			BPD-001				
C34	.001			BPD-001				
C35	.001			BPD-001				
C36	100 N750			N750-SI 100				
C37	.001 600V 10%			V84C6D1-10%				
C38	.003 600V			P688N-003				
C39	.001			BPD-001				
C40	.001			BPD-001				
C41	100 N750			N750-SI 100				
C42	.1 400V			P488N-1				
C43	.002			BPD-002				
C44	.002 600V			P688N-002				
C45	190 10%			1469-00002				
C46	.001			BPD-001				
C47	5 N750 5%			N750-SI 5				
C48	470 10%			1469-000047				
C49	5 N750 5%			N750-SI 5				
C50	.001			BPD-001				
C51	.001 2000V 10%							

# CHASSIS - BOTTOM VIEW



## FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLOY PART No.	SPRAGUE PART No.	
C52	.001 2000V 10%		BPD-001	DD-102	CCD-102	B-210	5HK-D10	
C53	.02 200V		P288N-02	DD-203	4DP-2-203	GEM-412	2TM-S20	
C54	.1 200V		P488N-1	DF-104	2DP-3-104	GEM-201	2TM-P10	
C55	.1 400V		P688N-1	DF-104	4DP-3-104	GEM-401	4TM-P10	
C56	.1 600V		BPD-01	DD-103	CCD-103	B-110	5HK-S10	
C57	.1 600V		BPD-02	DD-203	CCD-203	B-120	5HK-S20	
C58	.01		BPD-01	DD-103	CCD-103	B-110	5HK-S10	
C59	.02		BPD-02	DD-203	CCD-203	B-110	5HK-S10	
C60	.01		BPD-01	DD-103	CCD-103	B-110	5HK-S10	
C61	.01		BPD-01	DDA-104	IDP-2-104	TA-010	TG-P10	
C62	.1 50V		BPD-001	DD-102	CCD-102	B-210	5HK-D10	
C63	.001		BPD-001	DD-102	CCD-102	B-210	5HK-D10	
C64	.001		BPD-001	DD-102	CCD-102	B-210	5HK-D10	
C65	.01		BPD-01	DD-103	CCD-103	B-110	5HK-S10	
C66	.01		BPD-01	DD-103	CCD-103	B-110	5HK-S10	
C67	.001	Note 1	BPD-001	DD-102	CCD-102	B-210	5HK-D10	

Note 1. Not used in some versions.

## CONTROLS

ITEM No.	RATING	REPLACEMENT DATA						INSTALLATION NOTES
		LAFAYETTE PART No.	CENTRALAB PART No.	CTS-IRC PART No.	MALLOY PART No.			
RIA	2meg	V-332A-2	B-76	A47-1meg-Z	Q13-139	U55	Volume	
B	Shaft		KR-1	SWE-12	76-1	US-26	Power Off-On	
C	Switch							



# PARTS LIST AND DESCRIPTIONS (Continued)

## CONTROLS (cont)

ITEM No.	RATING	REPLACEMENT DATA				INSTALLATION NOTES
		LAFAYETTE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	
R2A	3meg Bushing	V-331A-2	B-84	A43-200	W1-100	Squelch Meter Adjust
R2B	2000 Shaft		AK-31	WN-101	SK5	
R3A						
R3B						

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA				NOTES
		LAFAYETTE PART No.	Meritt PART No.	Stancor PART No.	Thordarson PART No.	
T2	10.7K Tap @ 4600Ω	T-184-1				

## RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN PART No.			IRC PART No.	WORKMAN TV PART No.	
R4	470K			R31	220K			
R5	47000Ω 1W			R32	220K			
R6	27K 1W			R33	1meg			
R7	27K			R34	470K			
R8	68Ω			R35	2.2meg			
R9	47K			R36	10meg			
R10	47K			R37	8.2meg			
R11	47K			R38	470K			
R12	39K			R39	1.8meg			
R13	47K			R40	1.5meg			
R14	22000Ω			R41	470K			
R15	27K			R42	3300Ω 1W			
R16	68Ω			R43	47K			
R17	1500			R44	56K			
R18	1.3meg			R45	47K			
R19	10meg			R46	27K			
R20	2200Ω			R47	1.2Ω			
R21	47K			R48	56Ω			
R22	100K			R49	47000Ω 1W			
R23	2.2meg			R50	1000Ω			
R24	10K			R51	1000Ω 2W			
R25	56K			R52	100Ω 1W			
R26	56K			R53	100			
R27	56K			R54	470K			
R28	220K			R55	1meg			
R29	10K			R56	560K			
R30	47K			R57	22Ω 2W			

\* Alternate Value.

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		LAFAYETTE PART No.	Meritt PART No.	Stancor PART No.	Workman TV PART No.	
L1	Ant.					
L2	TV Trap					
L3	RF					
L4	Osc.					
L5	RF Choke (7.2uh)					
L6	1st IF	BC-565	4611	RTC-8521	T821	
L7	2nd IF					
L8	3rd IF					
L9	Osc. Plate					
L10	RF Choke(500uh)					
L11	RF Choke(500uh)					
L12	RF Choke(56uh)					
L13	Hash Choke (30uh)					

## TRANSFORMER (POWER)

ITEM No.	RATING	REPLACEMENT DATA				NOTES
		LAFAYETTE PART No.	Meritt PART No.	Stancor PART No.	Thordarson PART No.	
T1	117V @ .5A or 12.6VCT @ 2.5A	PTV-183-2				

## SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		LAFAYETTE PART No.	QUAM PART No.	
SP1	4" PM 3-4Ω	S717-1	4A07	

## VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			NOTES
				LAFAYETTE PART No.	CORNELL-DUBIER PART No.	MALLORY PART No.	
M1	Interrupter	12.3V	115%	6301	G-1601	6301	

## POWER RECTIFIERS

ITEM No.	RATING	CURRENT (Measured)	REPLACEMENT DATA		NOTE*
			LAFAYETTE PART No.	RCA PART No.	
M2	.080A		INI763	40H	
M3	.080A		INI763	40H	
M4	.0001			Model.12	

## SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		LAFAYETTE PART No.	GENERAL ELECTRIC PART No.	
M5	1N34A		1N34A	Noise Limiter

## MISCELLANEOUS

ITEM No.	PART NAME	REPLACEMENT DATA		NOTES
		LAFAYETTE PART No.	RAYTHEON PART No.	
M6	Variable Cap.			
M7	Crystal			
M8	Crystal			
M9	Relay			
M10	Relay			
M11	Meter			

## WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1785-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661