

SAMS PHOTOFACT[®] CB RADIO SERIES



CB-15
15
SEPTEMBER 1967

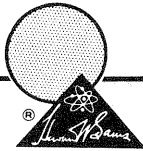


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HOWARD W. SAMS & CO., INC.

Indianapolis, Indiana



PHOTOFACT[®] with

CIRCUITRACE[®]

TRADE NAME : Realistic Model TRC-X23A (21-1136)

SUPPLIER : For Current Address, See Annual Index

TYPE SET : 10-Tube, 2-Transistor Transceiver

POWER SUPPLY : 110 - 120 Volts AC, 60 Cycles (or)
12-Volt Storage Battery

RATING : 62 Watts, .58 Amp. @ 117VAC (Receive)
68 Watts, .64 Amp. @ 117VAC (Transmit)
5.3 Amp. @ 12.6VDC (Receive)
6.3 Amp. @ 12.6VDC (Transmit)

TUNING RANGE : All 23 CB Channels



ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools:

A1 thru A11, A13, A14..... GENERAL CEMENT #8606, 8606L, 8669.....WALSCO #2543, 2544, 2588
A12, A15, A16..... GENERAL CEMENT #8968, 8987, 9089.....WALSCO #2531-X, 2541, 2587

RECEIVER ALIGNMENT

Transmitter Alignment should be performed before attempting Receiver Alignment. Connect an AC VTVM across Speaker Voice Coil Terminals. Set Band Spread to mid-range position. Set Volume Control fully clockwise; set Squelch Control fully counterclockwise.

SIGNAL GENERATOR	CHANNEL	ADJUST	REMARKS
High side thru .01mfd to Pin 1 (grid) of V4 (1st IF Amp.), low side to chassis. Tune to 455KC (Unmod.)	Any	A1 thru A6	Adjust for maximum.
High side thru .01mfd to Pin 9 (grid) of V1 (1st Rec. Mixer), low side to chassis. Tune to 6MC (Unmod.)	Any	A7, A8	Adjust for maximum.
High side thru .01mfd to Antenna Receptacle, low side to chassis. Tune to 27.115MC (Channel 13). (unmod.)	13	A9	Adjust for maximum.
High side thru .01mfd to Antenna Receptacle, low side to chassis. Tune to 27.115MC (Channel 13). (Unmod.). (100uV input.)	13	R3	Adjust for "S9" Meter Reading. With Generator and Antenna disconnected, "S" Meter should indicate Zero deflection.

TRANSMITTER ALIGNMENT

ONLY THOSE PERSONS PROPERLY LICENSED ARE PERMITTED TO MAKE REPAIRS OR ADJUSTMENTS WHICH MAY RESULT IN ILLEGAL OPERATION. (REFER TO FCC RULES AND REGULATIONS PART 95, SUBPART D, SECTION 95.95).

The frequency of the transmitter should be checked periodically with a secondary frequency standard to insure proper and legal operation.

Best results will be obtained when adjusting the final RF output circuit if the antenna normally used is connected and the chassis is as nearly in the cabinet as possible.

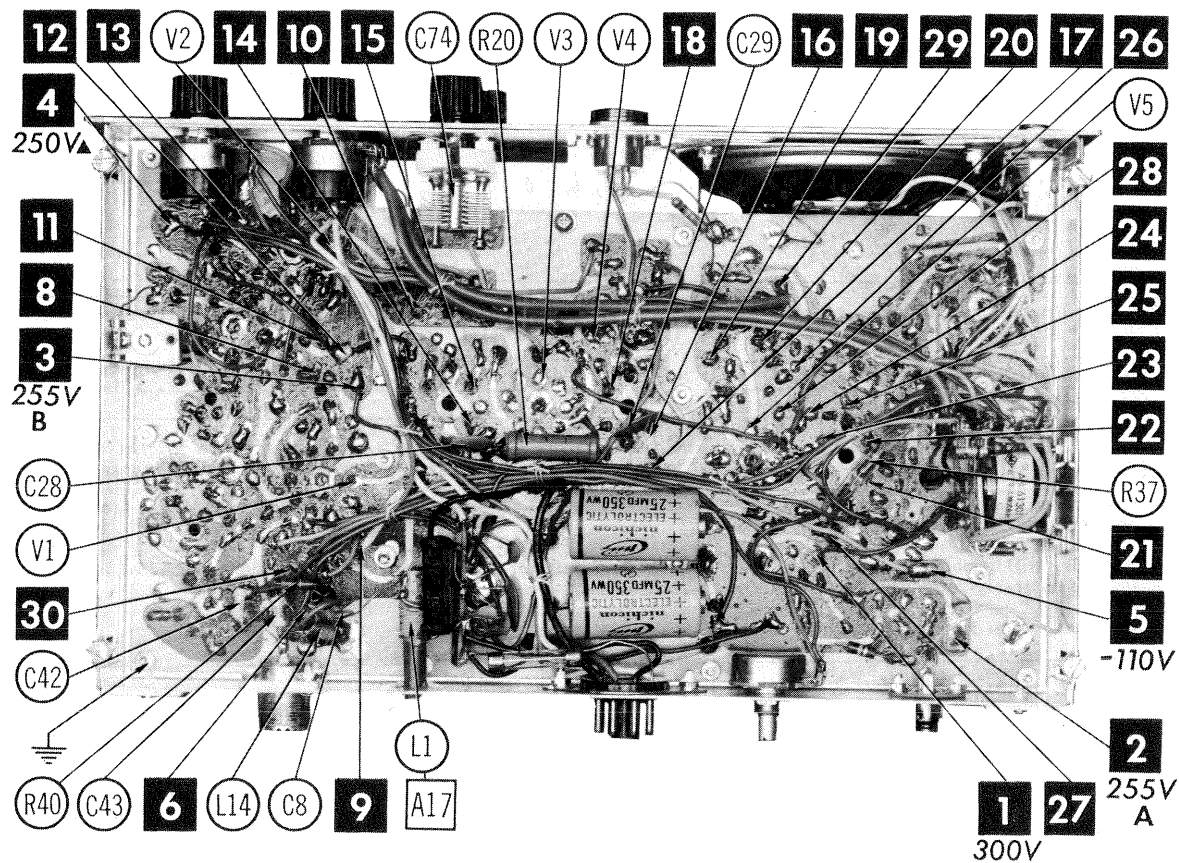
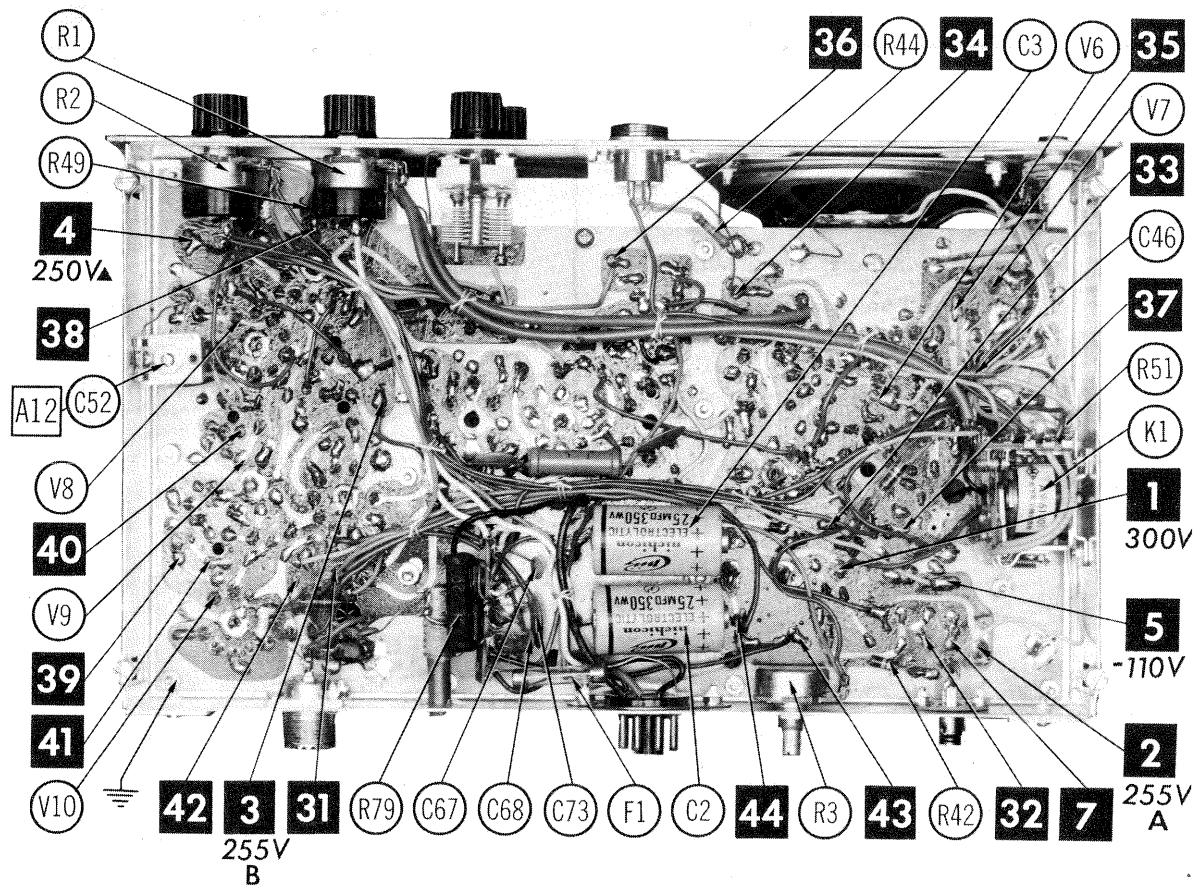
Connect either 50Ω dummy load or the normally used antenna system.

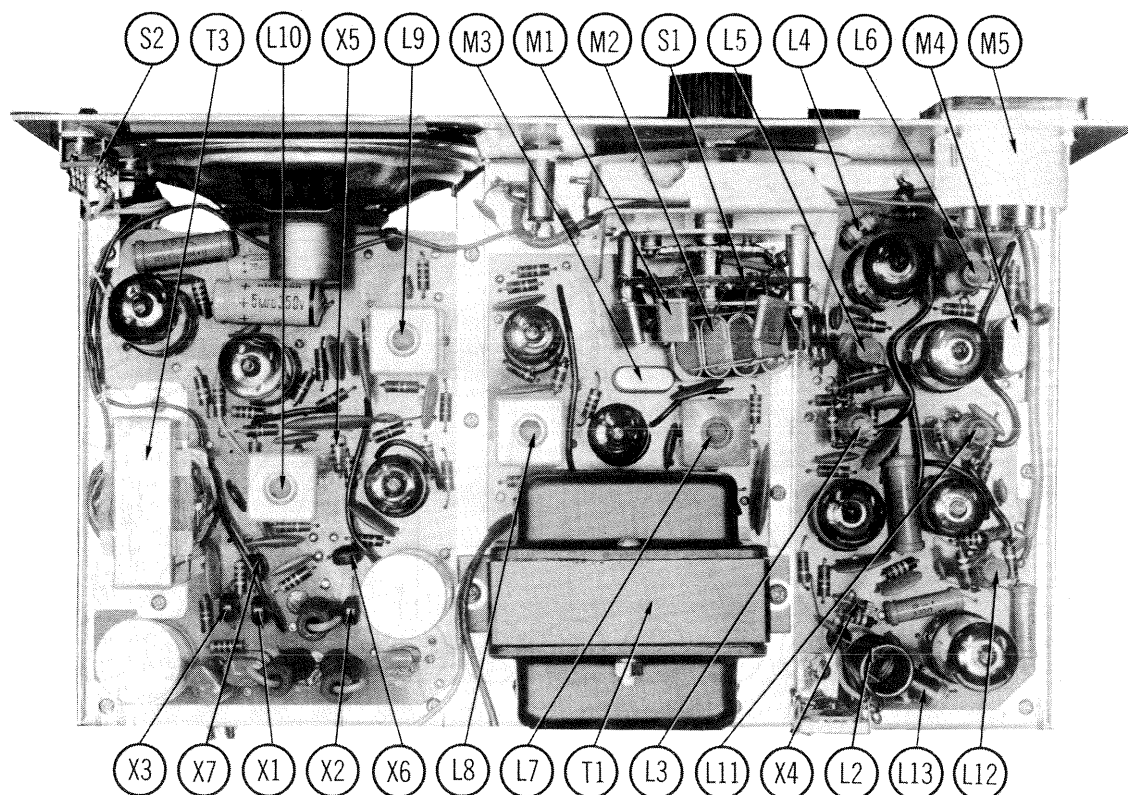
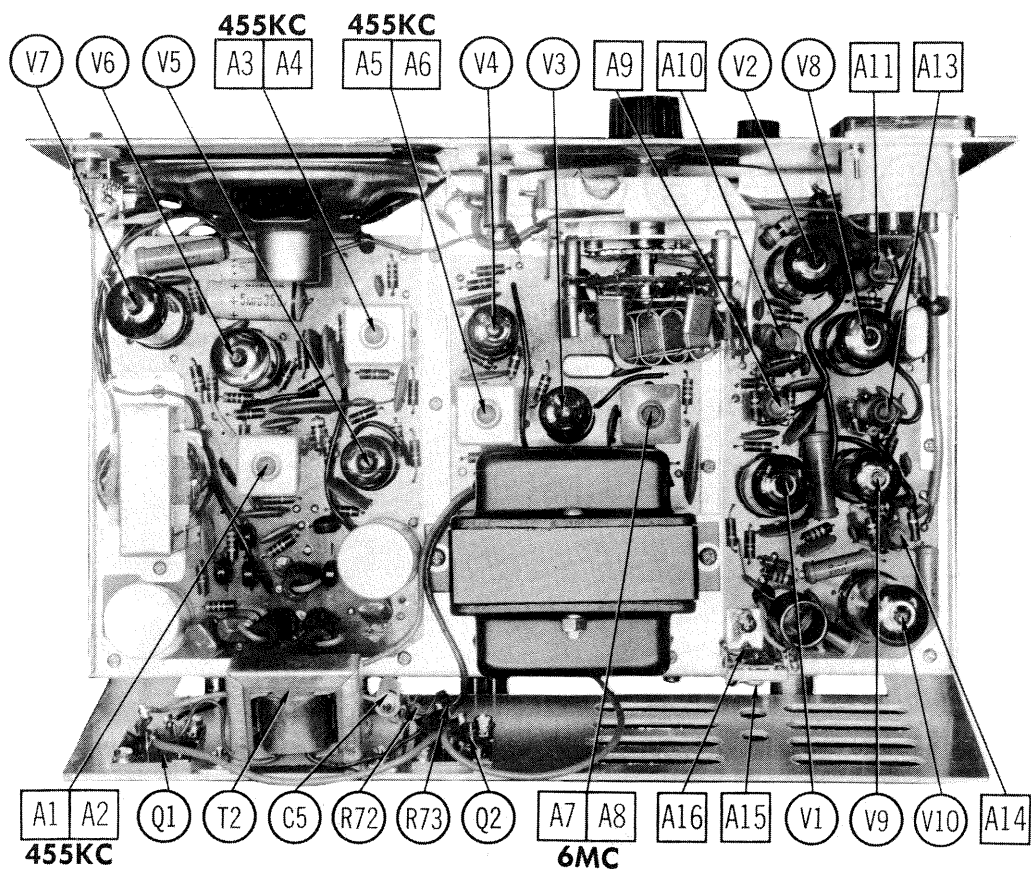
INDICATOR	ADJUST	REMARKS
Accurate Frequency Meter	A10, A11	Adjust for 33MC Output.
RF Wattmeter or Field Strength Meter.	A12 thru A16	Key Transmitter and adjust for maximum. Check all channels for equal output and correct frequency. Readjust A12, A13 and A14 if necessary.
Nearby TV Receiver	A17	Key Transmitter and adjust for MINIMUM interference.

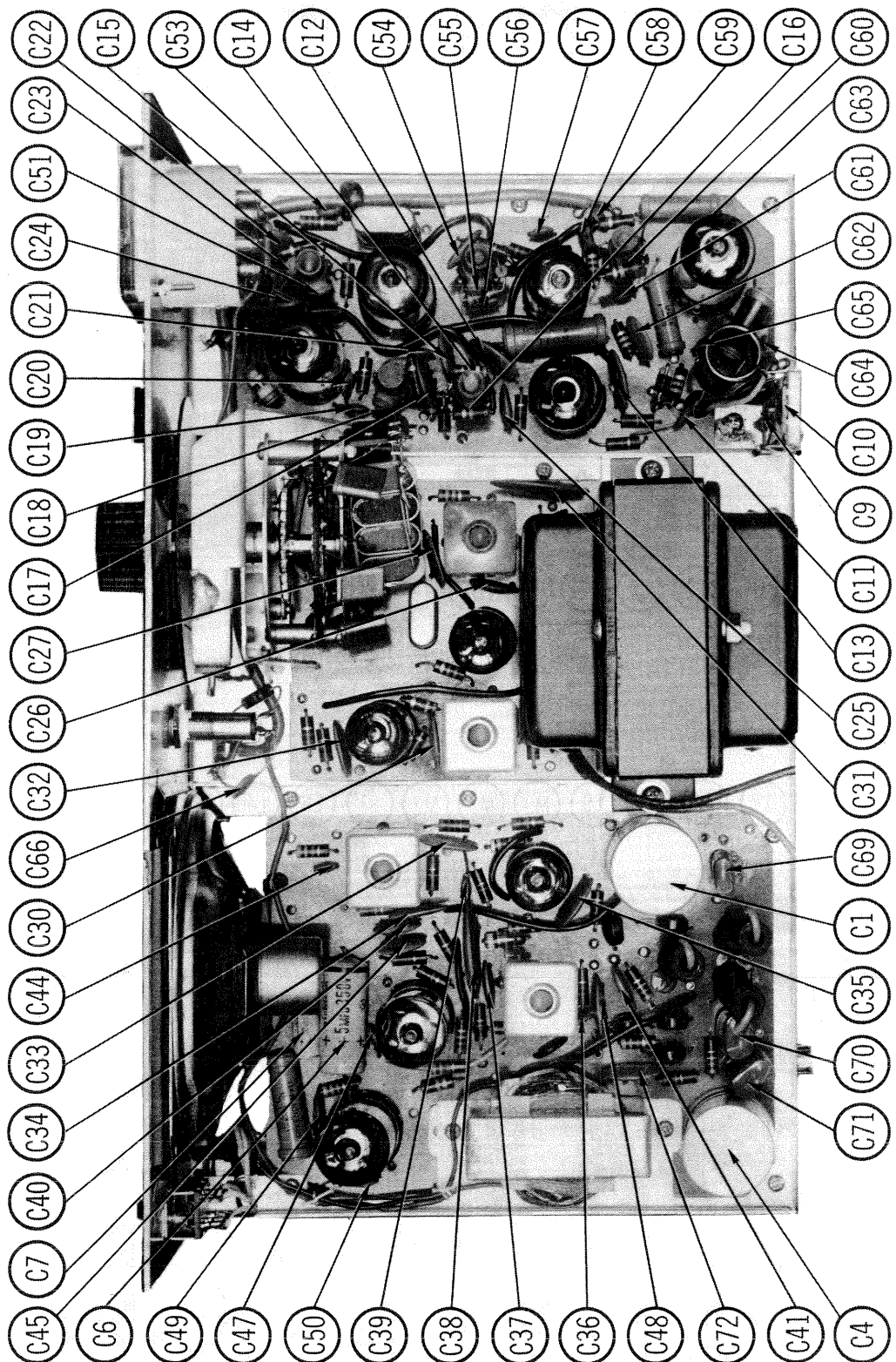
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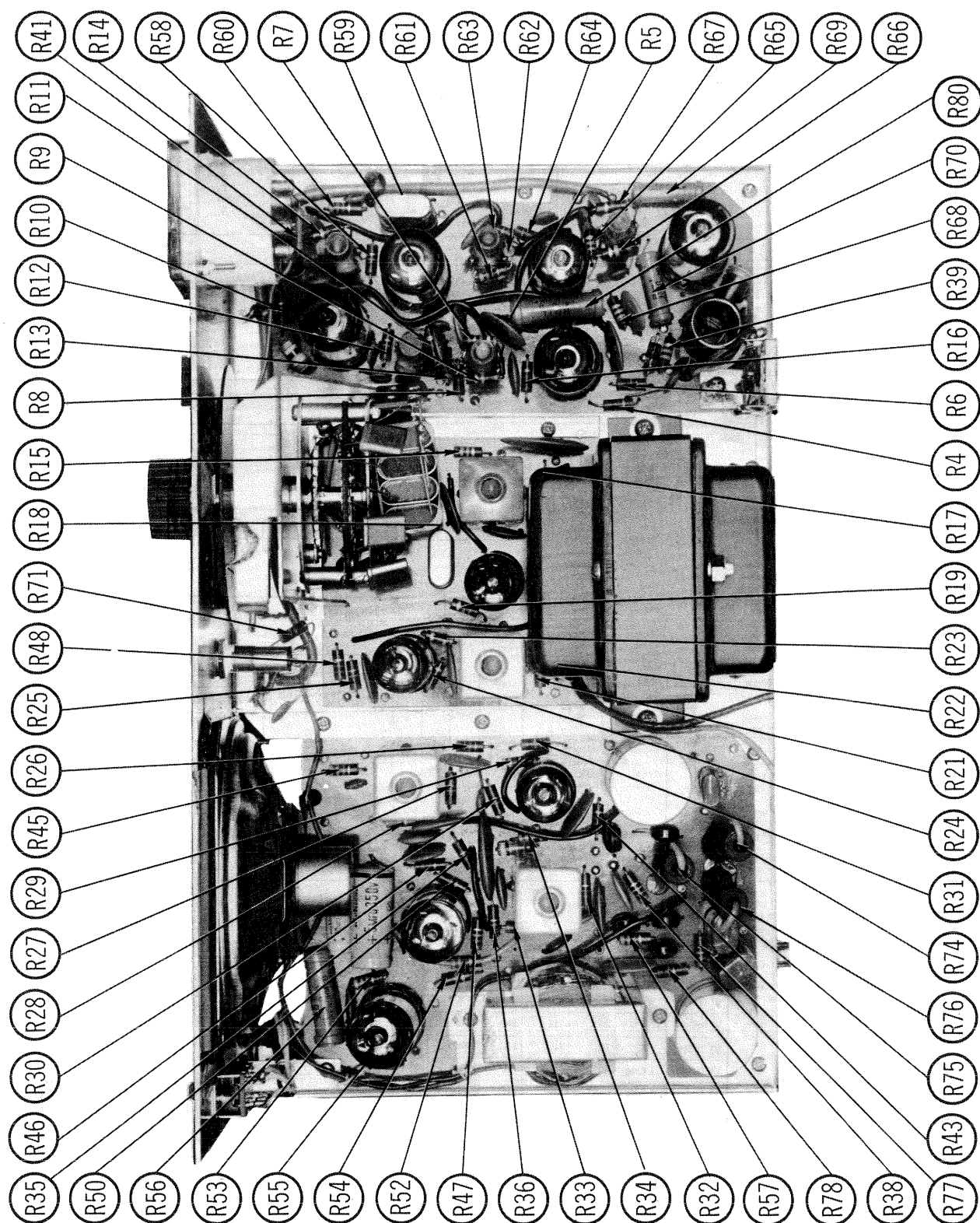
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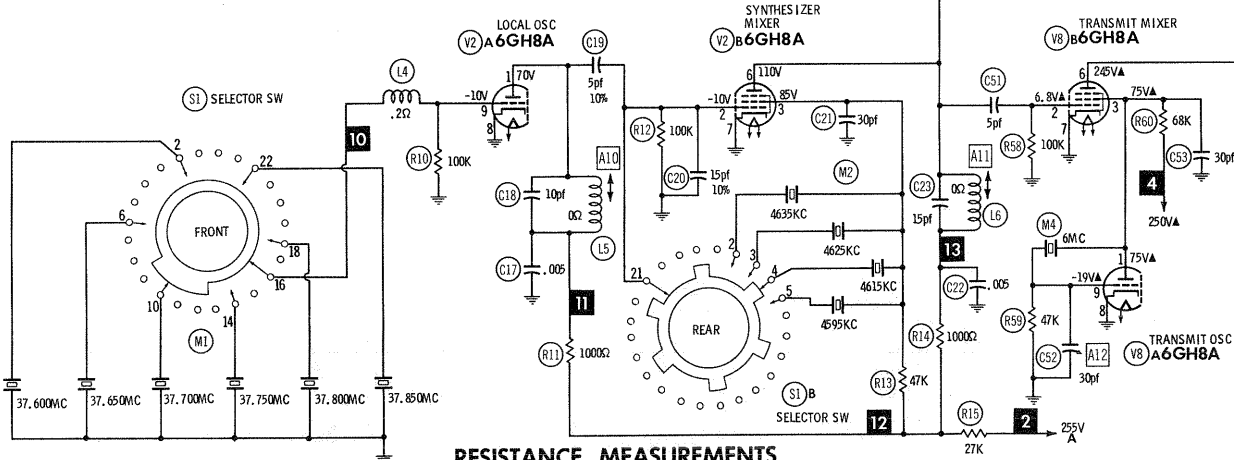
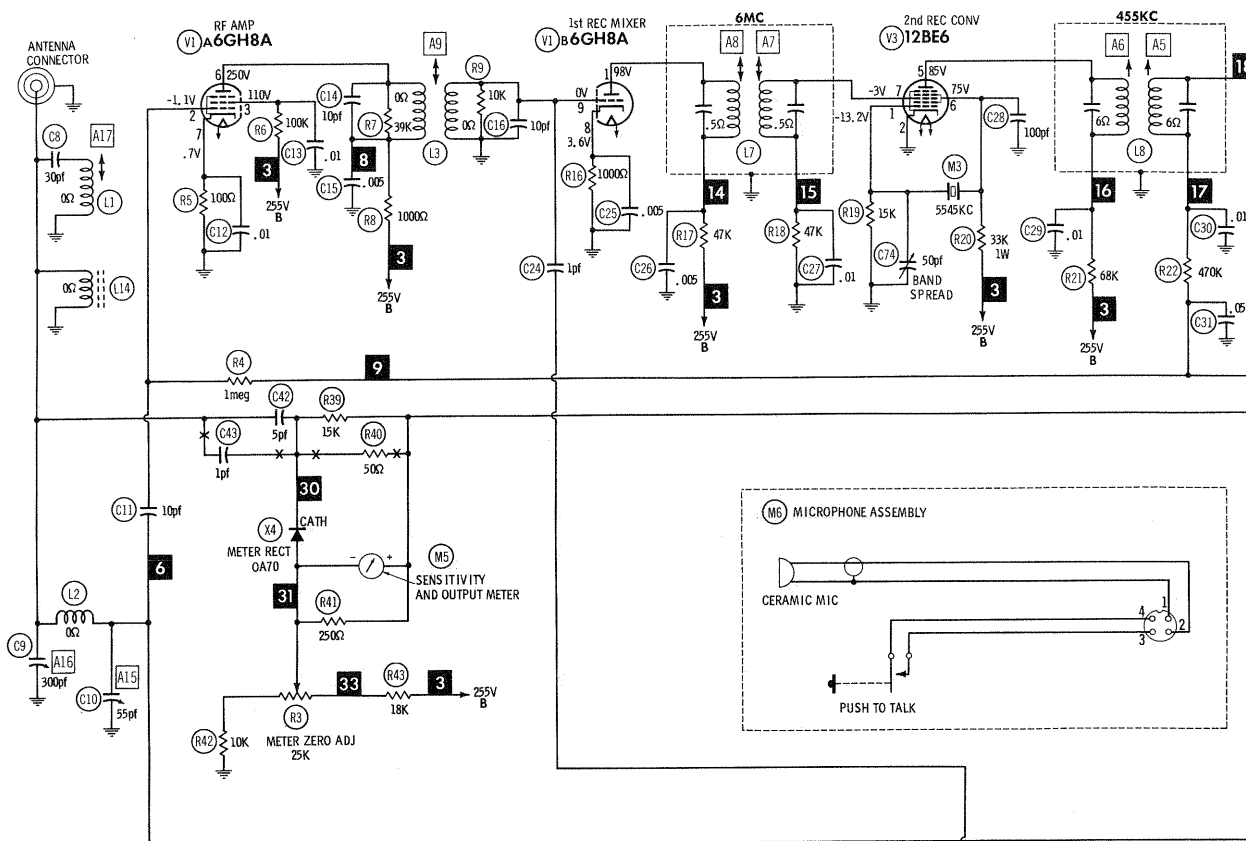
REALISTIC MODEL TRC-X23A (21-1136)











RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6GH8A	48K ↑	2.2meg	100K ↑	FIL	FIL	2100Ω ↑	1000Ω	1000Ω	0Ω
V2	6GH8A	29K ↑	100K	75K ↑	FIL	FIL	29K ↑	0Ω	0Ω	100K
V3	12BE6	15K	0Ω	FIL	FIL	69K ↑	34K ↑	47K		
V4	12BA6	1.6meg	1000Ω	FIL	FIL	3300Ω ↑	21K ↑	1000Ω		
V5	12BA6	1.5meg	470Ω	FIL	FIL	3300Ω ↑	100K ↑	470Ω		
V6	12AX7	75K	2.2meg	0Ω	FIL	FIL	480K ↑	6meg	0Ω	FIL
V7	6BQ5	NC	470K	130Ω	FIL	FIL	NC	1000Ω ↑	NC	1100Ω ↑
V8	6GH8A	69K ↑	100K	69K ↑	FIL	FIL	49K ↑	0Ω	0Ω	47K
V9	6AU6	68K	150Ω	FIL	FIL	12K ↑	28K ↑	150Ω		
V10	6BQ5	NC	1.4meg↑	0Ω	FIL	FIL	NC	1430Ω ↑	NC	11K ↑

Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.

All measurements taken in RECEIVE position unless otherwise designated.

▲ Measured in TRANSMIT position.

↑ Measured from output of meter.

● Reading will vary depending on polarity of meter.

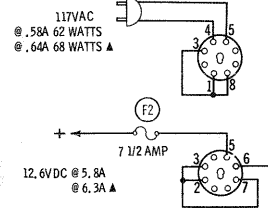
↑↑ Measured from junction of C70 and X3.

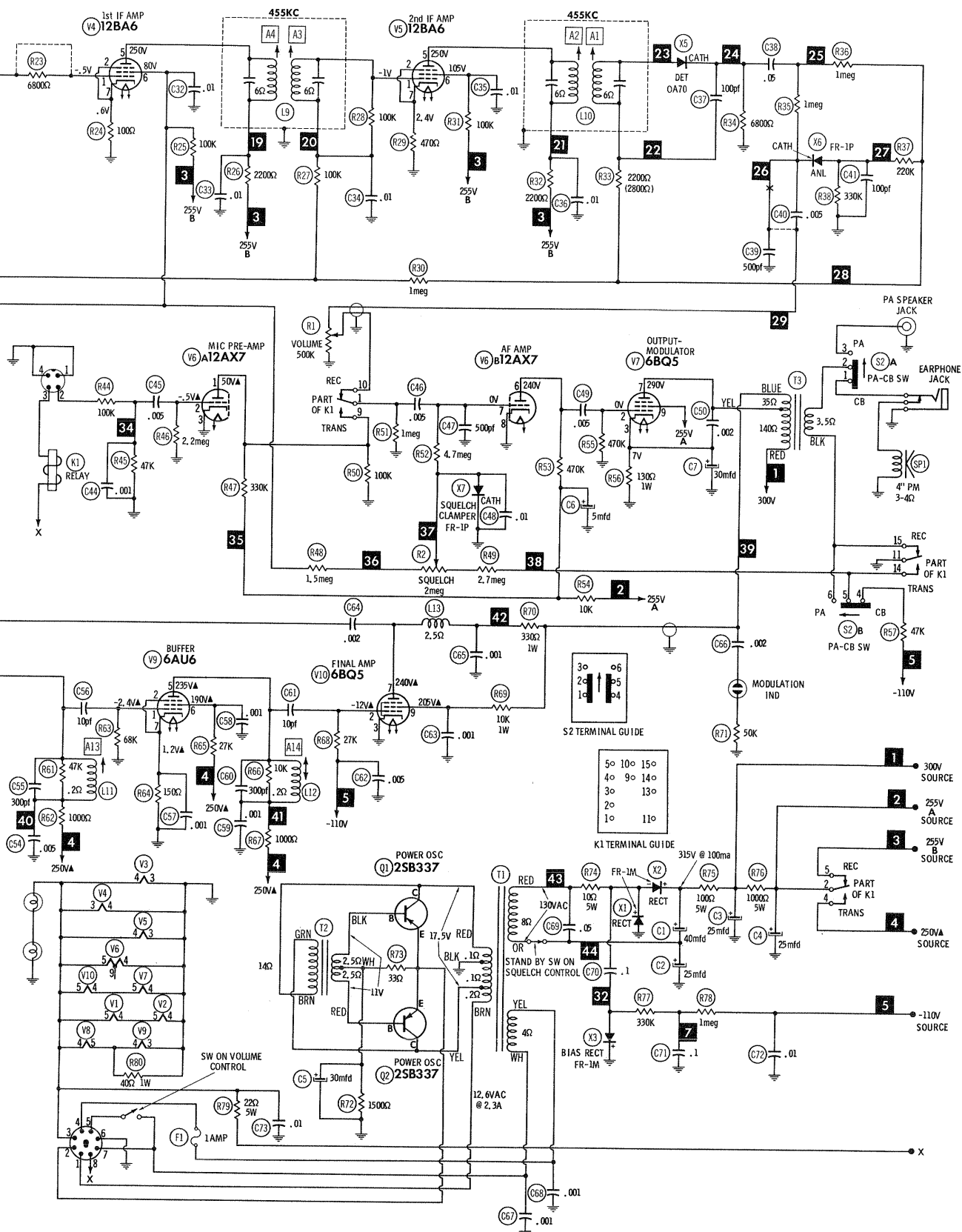
NC No Connection

A PHOTOFAC STANDARD NOTATION SCHEMATIC with **CIRCUITRACE**

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





REALISTIC MODEL TRC-X23A (21-1136)

PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

TUBES

* AMPEREX *			* GENERAL ELECTRIC *			* RCA *			* SYLVANIA *		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amp. -1st Rec. Mixer	6GH8A	V6	Mic. Preamp.-AF Amp.	12AX7	V7	Output - Modulator	6BQ5	V8	Trans. Osc. -Trans. Mixer	6GH8A
V2	Local Osc. -Synthesizer Mixer	6GH8A	V8	Trans. Osc. -Trans. Mixer	6GH8A	V9	Buffer	6AU6	V10	Final Amp.	6BQ5
V3	2nd Rec. Converter	12BE6									
V4	1st IF Amp.	12BA6									
V5	2nd IF Amp.	12BA6									

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	
Q1	2SB337	Power Osc.	DS-520①	GE-3 ①	TR-02 ①	SK-3009 ①	PNP
Q2	2SB337	Power Osc.	DS-520 ①	GE-3 ①	TR-02 ①	SK-3009 ①	PNP

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

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS & DIODES		RECTIFIERS		
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	RCA PART No.	SARKES TARZIAN PART No.
X1	100ma	FR-1M		8D6 or 5A6-D	1N1096	SK-3016 or SK-3017A	F-6 or 60C
X2	100ma	FR-1M		8D6 or 5A6-D	1N1096	SK-3016 or SK-3017A	F-6 or 60C
X3		FR-1M		8D6 or 5A6-D	1N1096	SK-3016 or SK-3017A	F-6 or 60C
X4		OA70	1N34AS	1N34A			
X5		OA70	1N34AS	1N34A			
X6		FR-1P					
X7		FR-1P					

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REALISTIC PART No.	REPLACEMENT DATA				
	CAP.	VOLT.		AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	40	350		AFH1-40				
C2	25	350		PRS1650	AA0390	CX1-5	FP135A	TVL-1617
C3	25	350		PRS1650	BR30-350	Q11-12	TC65A	TVA-1810
C4	25	350		PRS-1660	BR30-350	Q11-12	TC65A	TVA-1810
C5	30	15		CRE463A	NLW30-15	MT1-14	TT15X30	TE-1158
C6	5	350		PRS-1600	BR8-350	Q11-4	TC60	TVA-1603
C7	30	15		NLW30-15	BBR25-25	MT1-14	TT15X30	TE-158

① Some versions may use 20mfd @ 450V

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.
C8	30		NPO-DI 33	DTZ-33	CS601CG330K	CCTO-330	CNO433	10TCC-Q33
C9	300							
C10	55							
C11	10		NPO-DI 10	DTZ-10	CZ601CG100J	CCTO-100	CNO410	10TCC-Q10
C12	.01		DI-10000	DD-103	BYX601ZU103M	CCD-103	GP110	10TS-S10
C13	.01		DI-10000	DD-103	BYX601ZU103M	CCD-103	GP110	10TS-S10
C14	10		NPO-DI 10	DTZ-10	CZ601CG100J	CCTO-100	CNO410	10TCC-Q10
C15	.005		DI-5000	DD-502	JBZ601YP502K	CCD-502	GP250	10TS-D50
C16	10		NPO-DI 10	DTZ-10	CZ601CG100J	CCTO-100	CNO410	10TCC-Q10
C17	.005		DI-5000	DD-502	JBZ601YP502K	CCD-502	GP250	10TS-D50
C18	10		NPO-DI 10	DTZ-10	CZ601CG100J	CCTO-100	CNO410	10TCC-Q10
C19	5 10%		NPO-DI 5.0	DTZ-4R7	CZ601CH5R0D	CCTO-050	CNO547	10TCC-V50
C20	15		NPO-DI 15	DTZ-15	CZ601CG150J	CCTO-150	CNO415	10TCC-Q15
C21	30		NPO-DI 33	DTZ-33	CS601CG330K	CCTO-330	CNO433	10TCC-Q33
C22	.005		DI-5000	DD-502	JBZ601YP502K	CCD-502	GP250	10TS-D50
C23	15		NPO-DI 15	DTZ-15	CZ601CG150J	CCTO-150	CNO415	10TCC-Q15
C24	1		NPO-DI 1.0	TCZ-1			CNO510	10TCC-V10
C25	.005		DI-5000	DD-502	JBZ601YP502K	CCD-502	GP250	10TS-D50
C26	.005		DI-5000	DD-502	JBZ601YP502K	CCD-502	GP250	10TS-D50
C27	.01		DI-10000	DD-103	BYX601ZU103M	CCD-103	GP110	10TS-S10
C28	100		DI-100	DD-101	JBZ601YP101K	CCD-101	GP310	10TS-T10
C29	.01		DI-10000	DD-103	BYX601ZU103M	CCD-103	GP110	10TS-S10
C30	.01		DI-10000	DD-103	BYX601ZU103M	CCD-103	GP110	10TS-S10
C31	.05		DI-10000	DD-103	BYX601ZU103M	CCD-103	GP110	10TS-S10
C32	.01		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C33	.01		DI-10000	DD-103	BYX601ZU103M	CCD-103	GP110	10TS-S10
C34	.01		DI-10000	DD-103	BYX601ZU103M	CCD-103	GP110	10TS-S10
C35	.01		DI-10000	DD-103	BYX601ZU103M	CCD-103	GP110	10TS-S10
C36	.01		DI-10000	DD-103	BYX601ZU103M	CCD-103	GP110	10TS-S10
C37	100		DI-100	DD-101	JBZ601YP101K	CCD-101	GP310	10TS-T10
C38	.05		TTD-05	CK-503	HOV101ZV503Z		TA150	TG-S50
C39	500		DI-500	DD-501	JBZ601YP501K	CCD-501	GP350	10TS-T50
C40	.005		TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C41	100		DI-100	DD-101	JBZ601YP101K	CCD-101	GP310	10TS-T10
C42	5pf ±.5		DTZ-4R7		CZ601CH5R0D	CCTO-050	CNO547	10TCC-V50
C43	1pf ±.5		TCZ-1				CNO510	10TCC-V10
C44	.001		DI-1000	DM-102	JBS601YP102K	CCD-102	SM210	5GAB-D10
C45	.005		TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C46	.005		TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C47	500		DI-500	DD-501	JBZ601YP501K	CCD-501	GP350	10TS-T50
C48	.01		DI-10000	DD-103	BYX601ZU103M	CCD-103	GP110	10TS-S10

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

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.
C49	.005		TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C50	.002		DI-2200	DD-222	JBX601YP222K	CCD-222	GP222	10TS-D22
C51	5		NPO-DI 5, 0	DTZ-4R7	CZ601CH5R0D	CCTO-050	CNO547	10TCC-V50
C52	30							
C53	30		NPO-DI 33	DTZ-33	CS601CG330K	CCTO-330	CNO433	10TCC-Q33
C54	.005		DI-5000	DD-502	JBT601YP502K	CCD-502	GP250	10TS-D50
C55	300		DI-300	DM-301		CCD-301	GP330	10TS-T30
C56	10		NPO-DI 10	DTZ-10	CZ601CG100J	CCTO-100	CNO410	10TCC-Q10
C57	.001		DI-1000	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C58	.001		DI-1000	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C59	.001		DI-1000	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C60	300		DI-300	DM-301		CCD-301	GP330	10TS-T30
C61	10		NPO-DI 10	DTZ-10	CZ601CG100J	CCTO-100	CNO410	10TCC-Q10
C62	.005		TTD-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C63	.001		DI-1000	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C64	.002		DI-2200	DD-222	JBX601YP222K	CCD-222	GP222	10TS-D22
C65	.001		DI-1000	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C66	.002		DI-2200	DD-222	JBX601YP222K	CCD-222	GP222	10TS-D22
C67	.001		DAC-2	DD30-102	HVX162XP102M			30GA-D10
C68	.001		DAC-2	DD30-102	HVX162XP102M			30GA-D10
C69	.05 400V		DBE6S5		DPM56S5	6DP-3-503	PVC615	6PS-S50
C70	.1 400V		DBE4P1		DMF4P1	4DP-3-104	PVC601	4PS-P10
C71	.1 400V		DBE4P1		DMF4P1	4DP-3-104	PVC601	4PS-P10
C72	.01		DI-10000	DD-103	BYX601ZU103M	CCD-103	GP110	10TS-S10
C73	.01		TTD-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C74	50 max.							

CONTROLS

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

ITEM No.	USE	RESIST- ANCE	REPLACEMENT DATA				
			REALISTIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume & Power Switch	500K		F2-500K ①, SSK012, KR-1	A47-500K-Z ①, KSS-3, SWE-12 or (NP-500K-Z ①) UP-C-400, NWE-12	Q13-133 ①, 76-1 or (BU1 ①, CF25, SS6, GC)*	RU55A, SL36, SL3250, US41 or (UA55A ①, SK750, US41) or (U48 ①, US26)
R2	Squelch & Standby Switch	2meg		F2-2meg ①, SSK012, KR-1	A47-2meg-Z ①, KSS-3, SWE-12 or (NP-2meg-Z ①) UP-C-400, NWE-12	Q13-139 ①, 76-1 or (BU1 ①, CF27, SS6, GC)*	RU26A, SL36, SL3250, US41 or (UA26A ①, SK750, US41) or (U55 ①, US26)
R3	Meter Zero Adjust	25K		F1-25K ①, SSK012	A47-25K-S ①, KSS-3 or (NP-25K-S ①, UP-C-400)	Q11-120 ① or (BU1 ①, CF11, SS6)*	RU253L, SL36, SL3250 or (UA253L ①, SK750) or (U29 ①)

① Enlarge Mtg. Hole
* "SNAPTROL"

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	REALISTIC PART No.			IRC PART No.	WORKMAN PART No.	REALISTIC PART No.
R74	10Ω, 5W	PW5-10	5W-SQ-10		R76	1000Ω, 5W	PW5-1000	5W-SQ-1K	
R75	100Ω, 5W	PW5-100	5W-SQ-100		R79	22Ω, 5W	PW5-20	5W-SQ-22.5	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				
		REALISTIC PART No.	MEISSNER Part No.	MERIT PART No.	MILLER PART No.	WORKMAN PART No.
L1	TVI Trap					
L2	Pi Network					
L3	RF Amp.					
L4	37MC Osc. Coupling					
L5	Osc. Plate			74F106AP		
L6	Synthesizer Mixer					
L7	6MC IF					
L8	1st 455KC IF			BC-356	16-PC1	
L9	2nd 455KC IF			BC-356	16-PC2	
L10	455KC IF Output			BC-357	16-PC2	
L11	Trans. Mixer Plate					
L12	Buffer Plate					
L13	Final Amp. Plate					
L14	RFC				72F275AP 4610	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI. 1	SEC. 1	SEC. 2	REALISTIC PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	117VAC @ .64A @ 68W	130VAC @ .075A DC ▲	12.6V @ 2.3A						▲ Transmit
	PRI. 2	SEC. 4	SEC. 5						
	17.5VCT @ 1.2A DC								

REALISTIC MODEL TRC-X23A (21-1136)

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

TRANSFORMER (POWER OSC)

ITEM No.	TURNS RATIO			REPLACEMENT DATA					NOTES
				REALISTIC PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	2	1CT							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
			REALISTIC PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T3	1800Ω Tap @ 1500Ω	4Ω						

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA			NOTES
		REALISTIC PART No.	JENSEN PART No.	QUAM PART No.	
SPI	4" PM 3-4Ω			4A05	

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	1 Amp.			GJV-1		318001		
F2	7 Amp.			AGC-71/2	HHJ	31107.5	155020	

MISCELLANEOUS

ITEM No.	PART NAME	REALISTIC PART No.	NOTES
K1 M1	Relay Transmit & Receive Crystals		37,600MC (Channels 1 thru 4) 37,650MC (Channels 5 thru 8) 37,700MC (Channels 9 thru 12) 37,750MC (Channels 13 thru 16) 37,800MC (Channels 17 thru 20) 37,850MC (Channels 21 thru 23)
M2	Transmit - Receive Crystals		4635KC (Channels 1, 5, 9, 13, 17, 21) 4625KC (Channels 2, 6, 10, 14, 18, 22) 4715KC (Channels 3, 7, 11, 15, 19) 4595KC (Channels 4, 8, 12, 16, 20, 23)
M3 M4 M5	Receive Crystal Transmit Crystal Sensitivity & Power Output Meter		5545KC 6MC
M6 S1 S2	Microphone Ass'y. Switch - Selector Switch, PA-CB		Ceramic 24-Position Wafer DPDT Slide

WIRING DATA

General-use Hook-up Wire Use BELDEN No. 8530 (Solid) Available in 12 Colors
8524 (Stranded) Available in 12 Colors
Shielded Antenna Lead Use BELDEN No. 8214 Lowest Loss (RG-8/U Type)
8237 Low Loss (RG-8/U)
8240 (Solid) Miniature (RG-58/U)
8259 (Stranded) Miniature (RG-58A/U)
Coiled Microphone Cable Use BELDEN No. 8497 3 Conductor - 1 Shielded for Press-to-Talk (Neoprene)
8496 3 Conductor - 1 Shielded for Press-to-Talk (Vinyl)
Ignition Noise Suppression Use BELDEN No. 7300-Series Spark-Plug Sets
Bonding Strap Use BELDEN No. 8661 (3/8 in.)