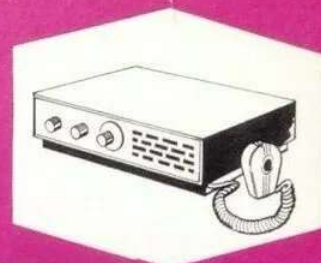


SAMS PHOTOFACT[®]

CB RADIO SERIES

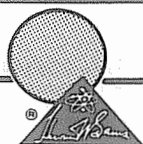


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PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index

NOTE

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, SUBPARTS C & D.)

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 50-ohm dummy load or the normally used antenna system.



MODEL Contact CB-23CH

ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools:	GC ELECTRONICS
L1, L2, L3	.9440
L4, L5, L6, L7, L8, C97	.8290
L14, L15, L16, L19, L20	.9089

RECEIVER

Connect an AC VTVM across speaker voice coil. Set LCL/Dist to Dist, CB/PA to CB; squelch maximum CCW. Adjust volume control for suitable reading.

SIGNAL GENERATOR	CHANNEL	ADJUST	REMARKS
Connect high side thru a .01 uF to base of Q4 (2nd mixer), low side to ground. Set to 455 kHz (1000 Hz @ 30% mod.)	Any	L6, L7, L8	Adjust for maximum.
Connect high side thru a .01 uF to base of Q2 (1st mixer), low side to ground. Set to 10.6 MHz (1000 Hz @ 30% mod.)		L4, L5, C97	Adjust for maximum.
Connect high side thru a .01 uF to antenna connector, low side to ground. Set to 27.115 MHz (1000 Hz @ 30% mod.)	13	L3, L2, L1	Adjust for maximum.
Connect high side thru a .01 uF to antenna connector, low side to ground. Set to 10,000 uV output.	13	VR3	Set squelch control fully CW. Adjust so that squelch just breaks.

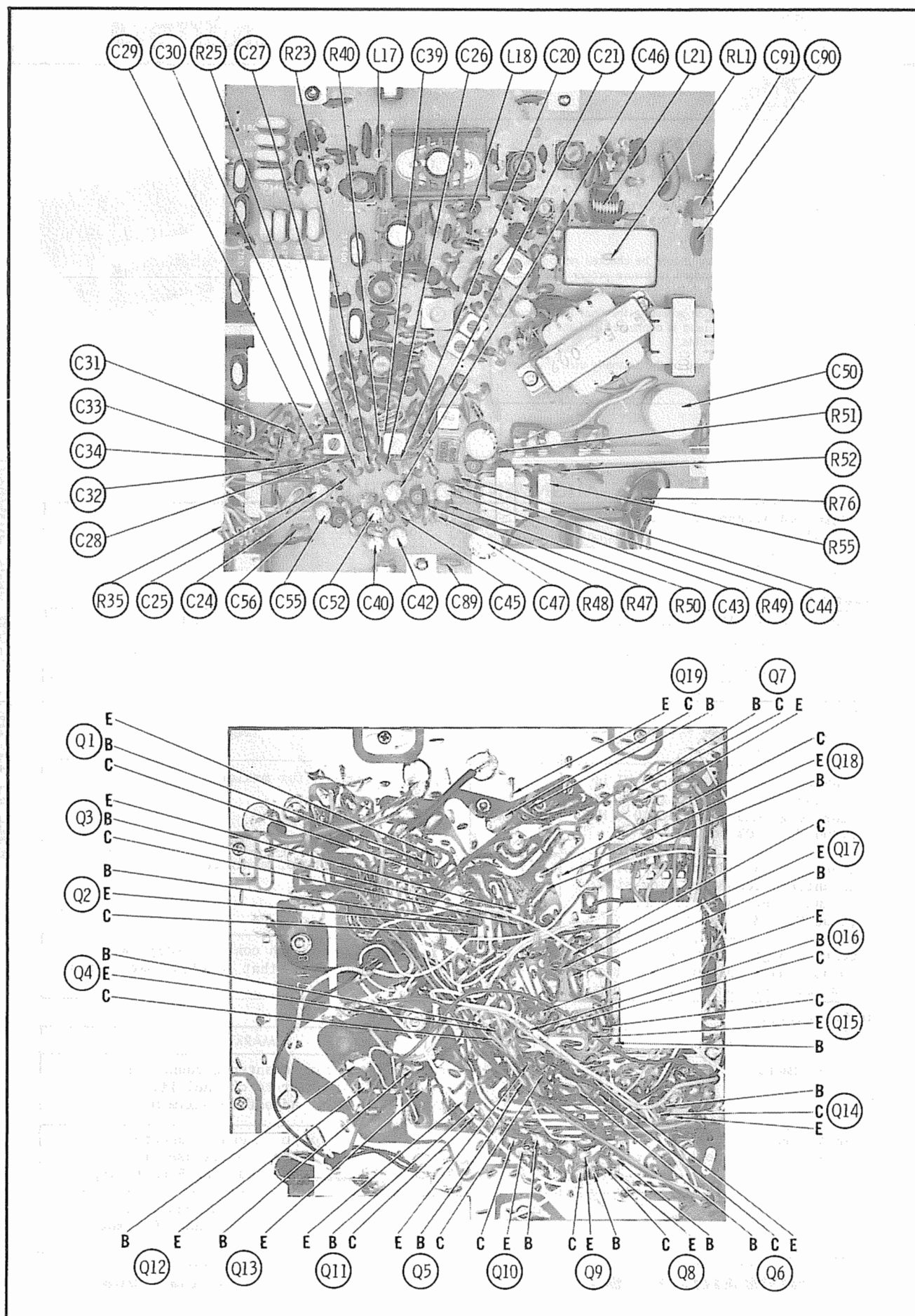
TRANSMITTER

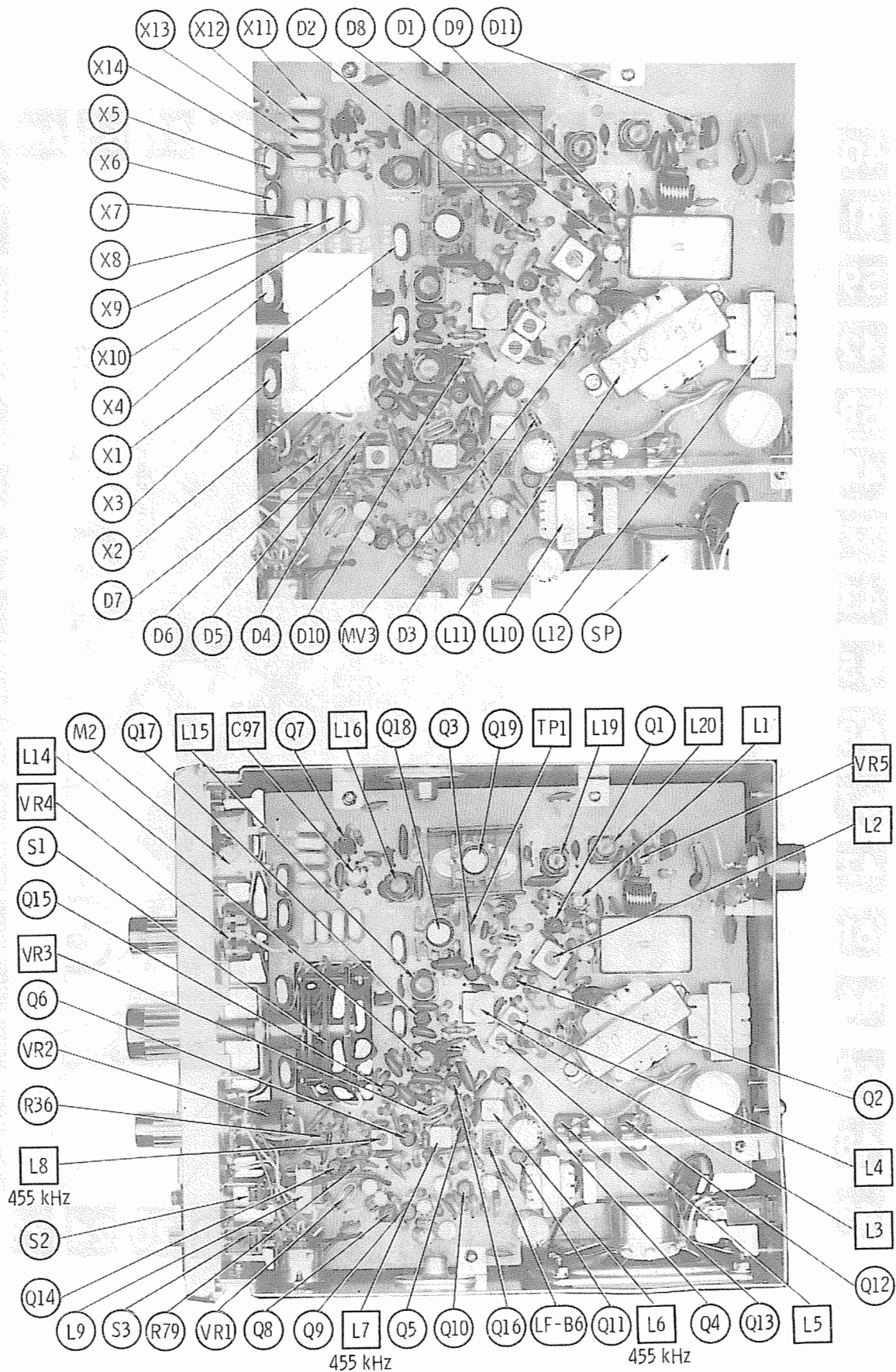
INDICATOR	ADJUST	REMARKS
RF Wattmeter	L14, L15, L16, L19, L20	Connect wattmeter to antenna connector. Set channel selector to channel 11. Key transmitter. Adjust to maximum.
RF Wattmeter 0-1A DC Milliammeter	L19	Connect wattmeter to antenna connector. Unsolder TP1 and insert milliammeter. Key transmitter and adjust for 5 watts input.
RF Wattmeter	VR5	Connect wattmeter to antenna connector. Key transmitter. Adjust so that "RF" meter agrees with RF Wattmeter.

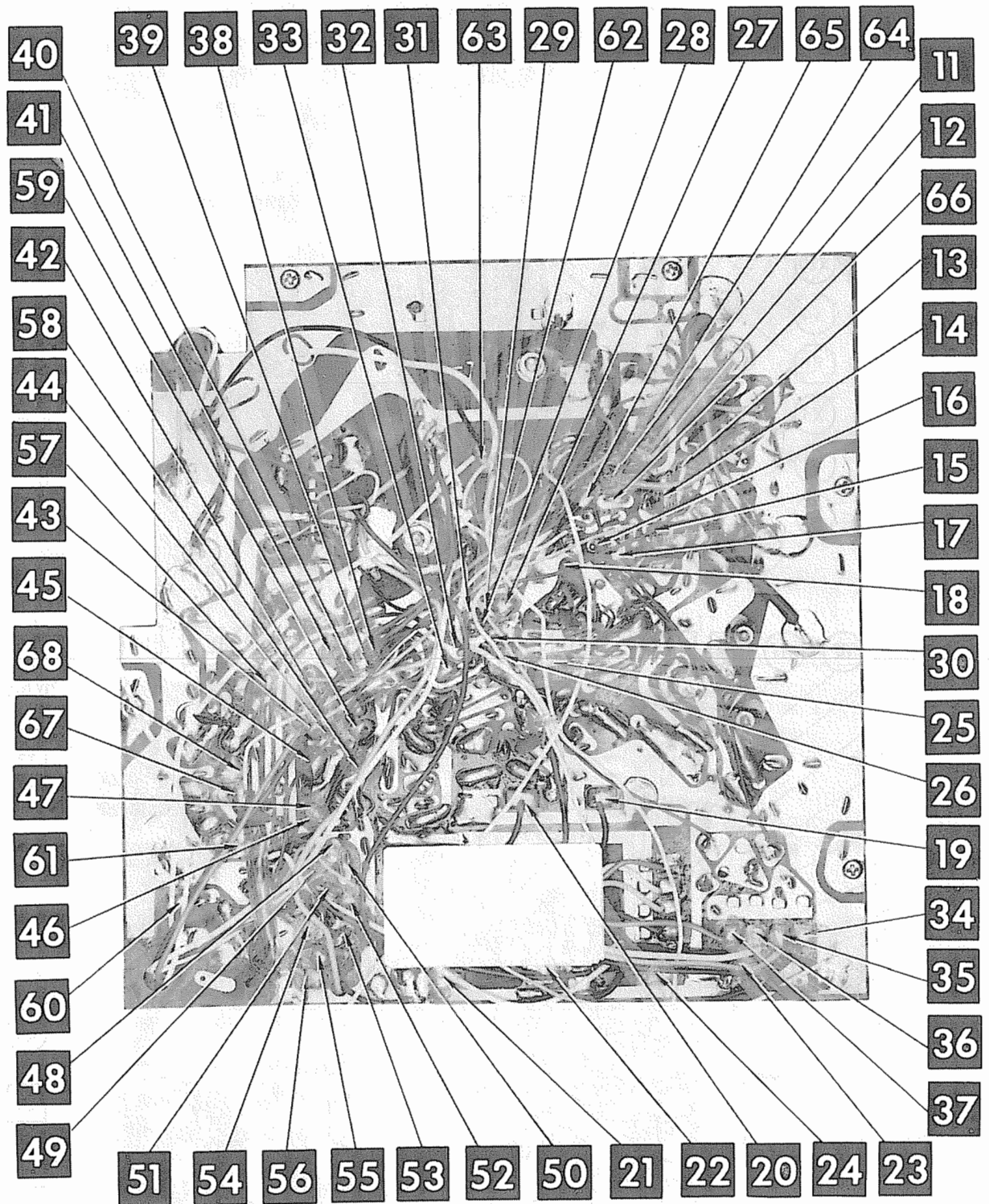
HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

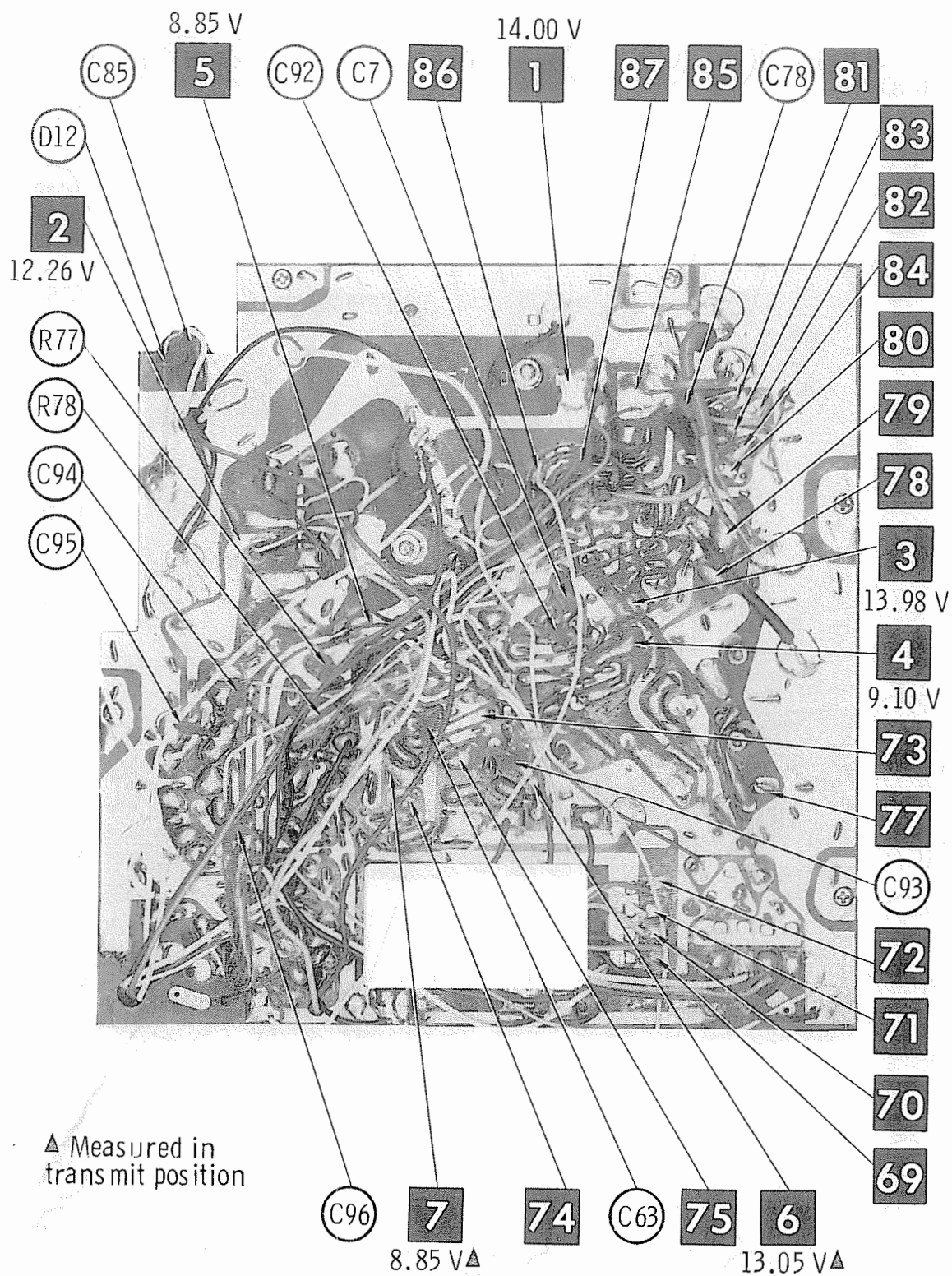
© 1974 Howard W Sams & Co., Inc. Printed in U. S. of America 4CY156

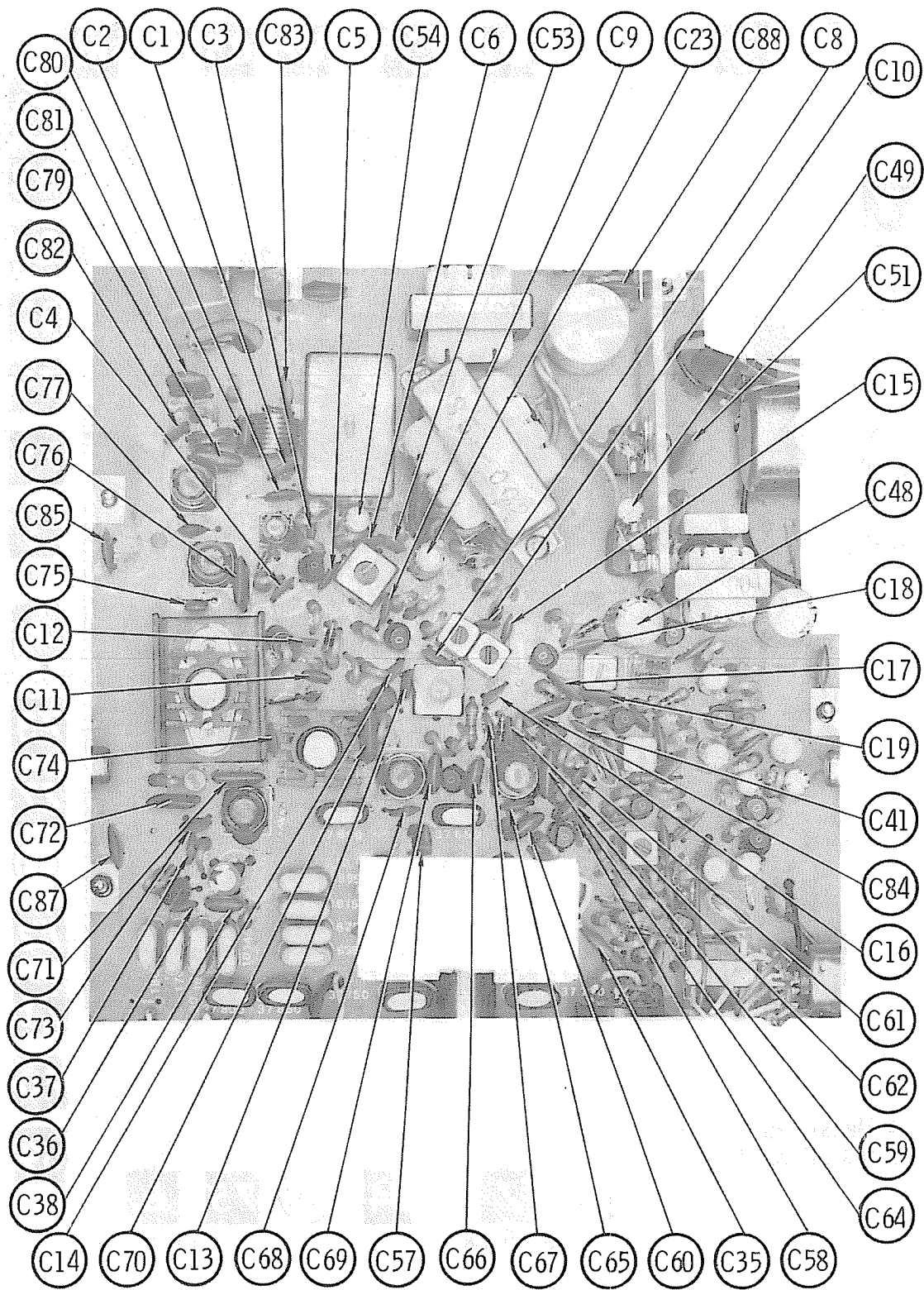
ELECTRONIC 2000 MODEL CONTACT CB-23CH

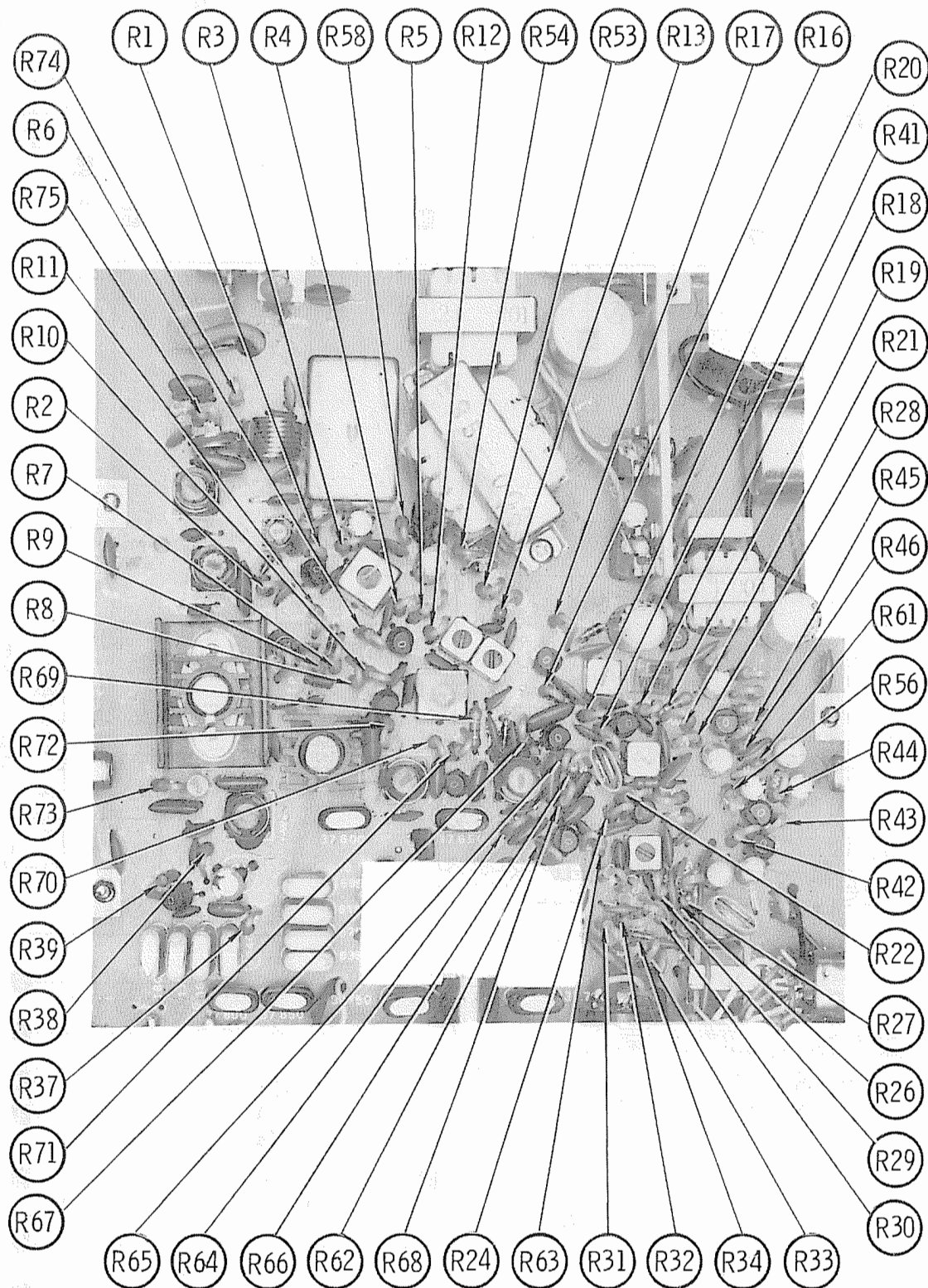


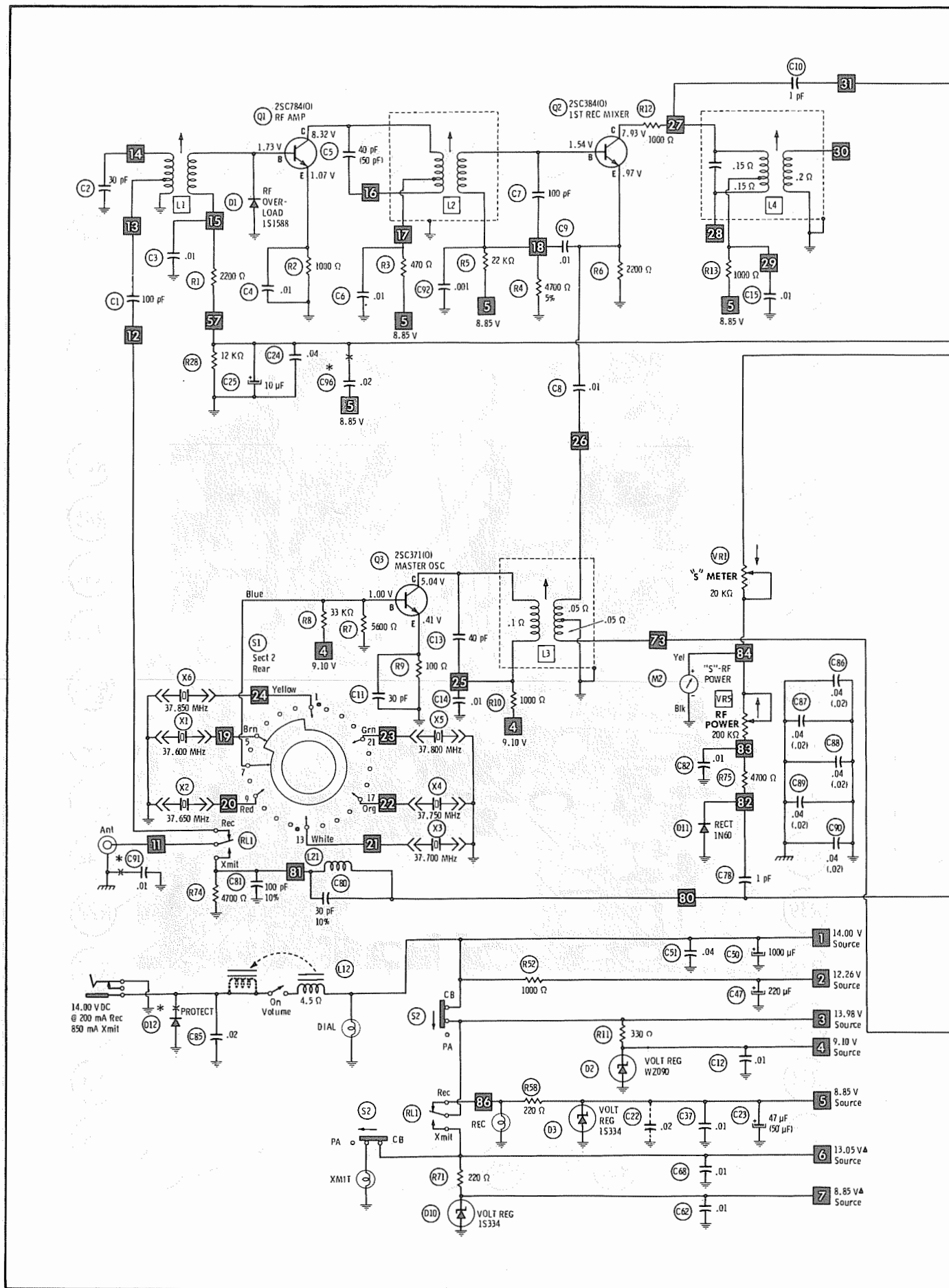


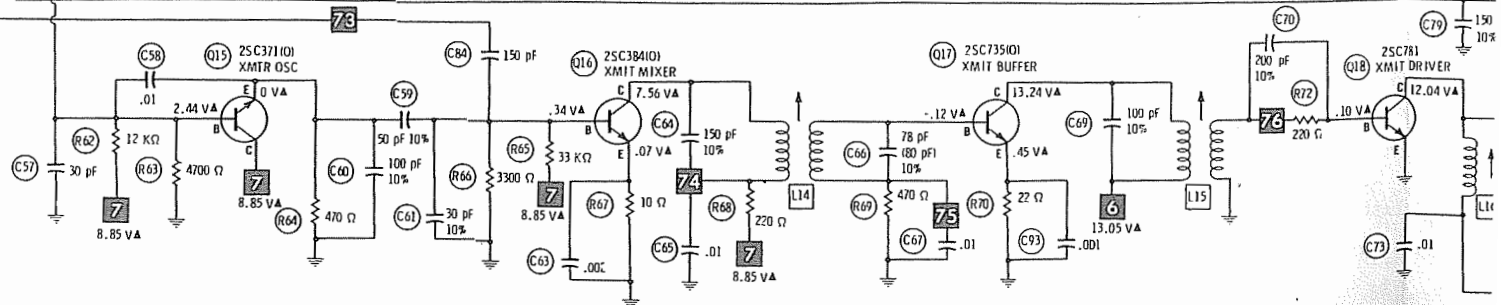
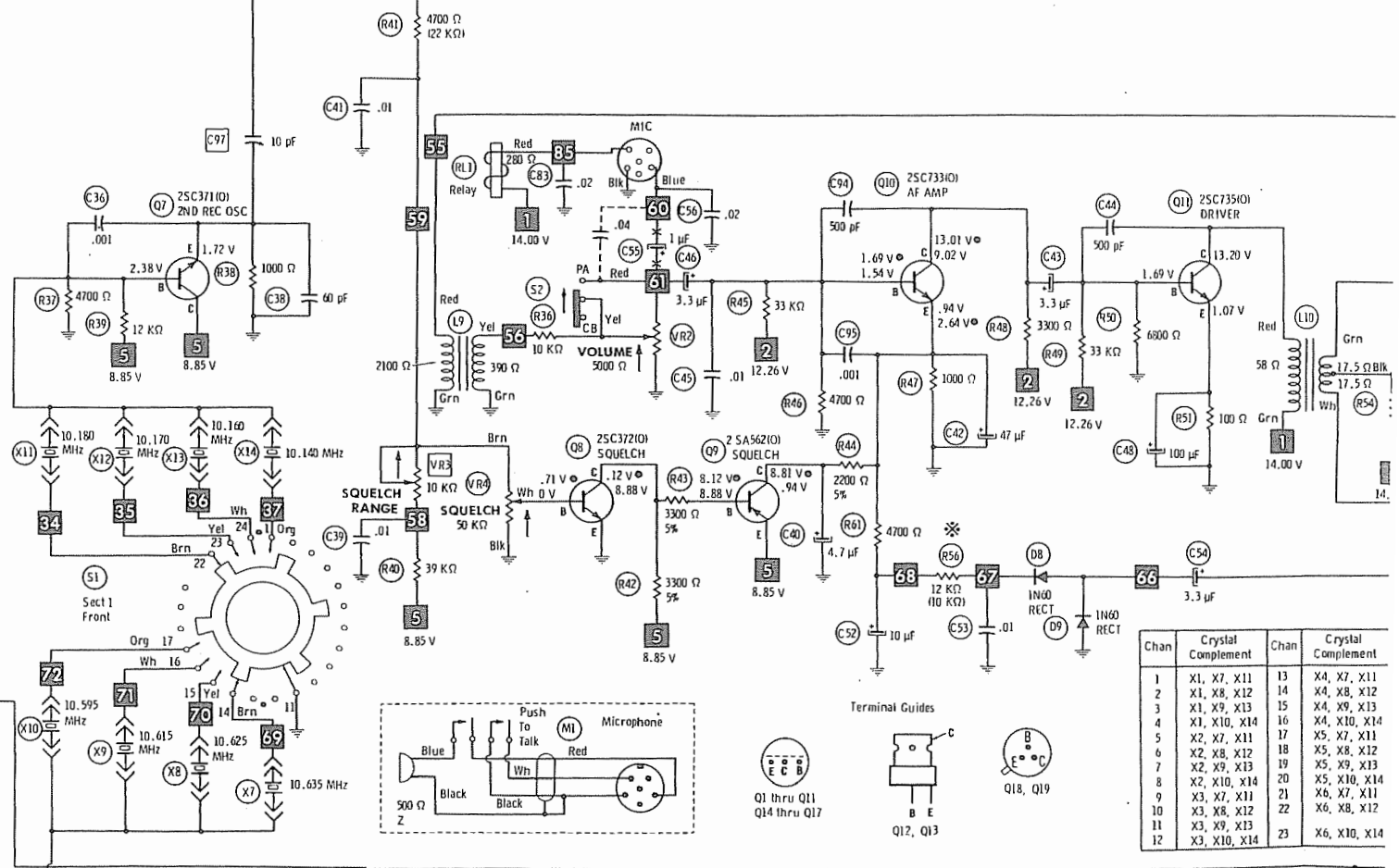


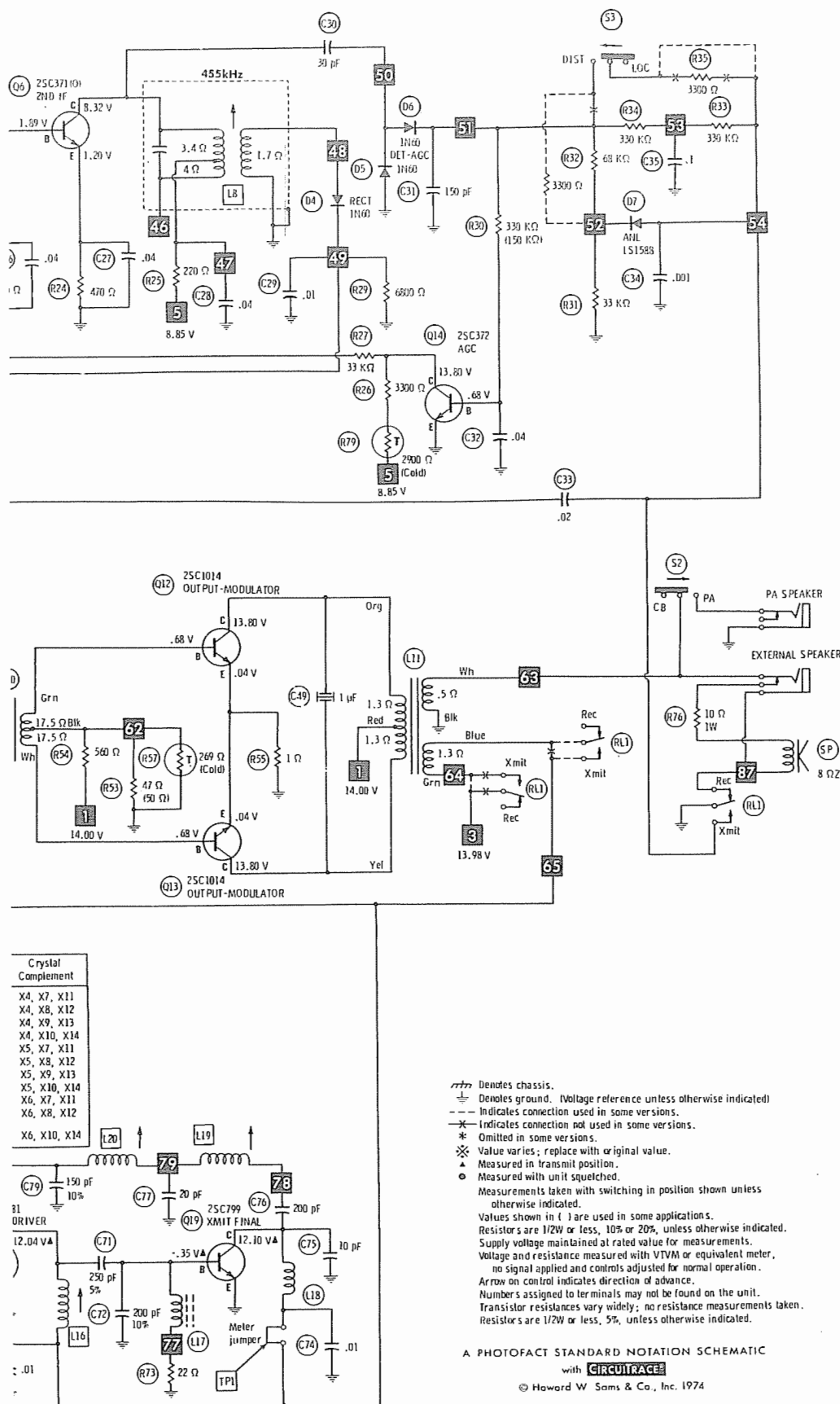












PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			ARCO/ELMENCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	100		CCO-101	DTZ-100	NP0100	CN0310	10TCC-T10
C2	30		DM-15-300J	CPR-30J		SX430	
C3	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C4	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C5	.01		DM-15-390J	CPR-39J	CD15ED390J03	SX439	MS-44
C6	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C7	100		CCO-101	DTZ-100	NP0100	CN0310	10TCC-T10
C8	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C9	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C10	1						
C11	30		DM-15-300J	CPR-30J		SX430	
C12	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C13	40		DM-15-390J	CPR-39J	CD15E0390J03	SX439	MS-44
C14	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C15	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C16	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C17	.04			DD-403		GP140	
C18	.04			DD-403		GP140	
C19	.04			DD-403		GP140	
C20	.04			DD-403		GP140	
C24	.04			DD-403		GP140	
C26	.04			DD-403		GP140	
C27	.04			DD-403		GP140	
C28	.04			DD-403		GP140	
C29	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C30	30		DM-15-300J	CPR-30J		SX430	
C31	150		CCD-151	DD-151	GP150	GP315	10TS-T15
C32	.04			DD-403		GP140	
C33	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C34	.001		CCD-102	DD-102	GP1000	SM210	25S-D10
C35	.1			CK-104		TA010	TG-P10
C36	.001		CCD-102	DD-102	GP1000	SM210	25S-D10
C37	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C38							MS-46
C39	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C41	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C44	500		CCD-501	DD-501	GP500	GP350	10TS-T50
C45	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C51	.04			DD-403		GP140	
C53	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C56			CCD-203	CK-203	MGP02	TA120	TG-S20
C57	30		DM-15-300J	CPR-30J		SX430	
C58	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C59	50	10%	DM-15-500J	CPJ-510			
C60	100	10%	DM-15-101J	CPR-100J	CD15F0101J03	SX310	424MC1000J501
C61	30	10%	DM-15-300J	CPR-30J		SX430	
C62	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C63	.02		CCD-202	DD-202	GP2000	GP220	25S-D20
C64	150	10%	DM-15-151J	CPR-150J	CD15F0151J03	SX315	424MC1500J501
C65	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C66	7B	10%					
C67	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C68	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C69	100	10%	DM-15-101J	CPR-100J	CD15F0101J03	SX310	424MC1000J501
C70	200	10%	DM-19-201J	CPR-200J	CD15F0201J03	SX320	424ME2000J501
C71	250	5%	DM-19-251J				
C72	200	10%	DM-19-201J	CPR-200J	CD15F0201J03	SX320	424ME2000J501
C73	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C74	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C75	10		DM-15-100J		CD15CD100J03	SX410	
C76	200		DM-19-201J	CPR-200J	CD15F0201J03	SX320	424ME2000J501
C77	20		DM-15-200J	CPR-200		SX420	
C78	1						
C79	150	10%	DM-15-151J	CPR-150J	CD15F0151J03	SX315	424MC1500J501
C80	30	10%	DM-15-300J	CPR-30J		SX430	
C81	100	10%	DM-15-101J	CPR-100J	CD15F0101J03	SX310	424MC1000J501
C82	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C83	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C84	150		DM-15-151J	CPR-150J	CD15F0151J03	SX315	424MC1500J501
C85	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C86	.04			DD-403		GP140	
C87	.04			DD-403		GP140	
C88	.04			DD-403		GP140	
C89	.04			DD-403		GP140	
C90	.04			DD-403		GP140	
C91	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C92	.001		CCD-102	DD-102	GP1000	SM210	25S-D10
C93	.001		CCD-102	DD-102	GP1000	SM210	25S-D10
C94	500		CCD-501	DD-501	GP500	GP350	10TS-T50
C95	.001					EPF1A210	1PB-D10
C96	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C97	10 (Max)						

PARTS LIST AND DESCRIPTION

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

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.)

SEMICONDUCTORS

ITEM No.	TYPE / MFR. No. / PART No.	REPLACEMENT DATA						
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	MOTOROLA PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
01	1S1588	GE-300	0200	PTC214	HEPR0602	SK3100	RT218	ECG 177
02	WZ-090 / 1S334 (9.1 V Zener)	GEZ0-9.1	Z-1210	PTC505	HEPZ0412	SK3060	RT240	ECG 139
D3	WZ-090 / 1S334 (9.1 V Zener)	GEZ0-9.1	Z-1210	PTC505	HEPZ0412	SK3060	RT240	ECG 139
D4	1N60	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D5	1N60	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D6	1N60	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
07	1S1588	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
08	1N60	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D9	1N60	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D10	WZ-90 / 1S334 (9.1 V Zener)	GEZ0-9.1	Z-1210	PTC505	HEPZ0412	SK3060	RT240	ECG 139
D11	1N60	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
Q1	2SC784(0)	GE-17	TR-70	PTC132	HEP56	SK3018	RT108	ECG 107
Q2	2SC394(0)	GE-17	TR-33	PTC121	HEP53	SK3018	RT108	ECG 107
Q3	2SC371(0)	GE-20	TR-24	PTC121	HEP50	SK3018	RT102	ECG 123A
Q4	2SC394(0)	GE-17	TR-33	PTC121	HEP53	SK3018	RT108	ECG 107
Q5	2SC371(0)	GE-20	TR-24	PTC121	HEP50	SK3018	RT102	ECG 123A
Q6	2SC371(0)	GE-20	TR-24	PTC121	HEP50	SK3018	RT102	ECG 123A
Q7	2SC371(0)	GE-20	TR-24	PTC121	HEP50	SK3018	RT102	ECG 123A
Q8	2SC372(0)	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
Q9	2SA562(0)	GE-21	TR-30	PTC103	HEP715	SK3114	RT115	ECG 159
Q10	2SC733(0)	GE-20	TR-24	PTC136	HEP725	SK3018	RT107	ECG 107
Q11	2SC735(0)	GE-17	TR-24	PTC123	HEP53	SK3124	RT102	ECG 123A
Q12	2SC1014	GE-28	TR-55	PTC110	HEPS3020	SK3041	RT154	ECG 186
Q13	2SC1014	GE-28	TR-55	PTC110	HEPS3020	SK3041	RT154	ECG 186
Q14	2SC372(0)	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
Q15	2SC371(0)	GE-20	TR-24	PTC121	HEP50	SK3018	RT102	ECG 123A
Q16	2SC394(0)	GE-17	TR-33	PTC121	HEP53	SK3018	RT108	ECG 107
Q17	2SC735(0)	GE-17	TR-24	PTC123	HEP53	SK3124	RT102	ECG 123A
Q18	2SC781		TR-87		HEPS3001	SK3048		ECG 195
Q19	2SC799					SK3049		ECG 224

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA					
		MFR. PART No.	ARCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C23	47 6.3 V		RME-C-B-050	EP6-50	PC50-10	VTT47A6	EV-1026
	50 10 V		RME-O-0-050	EP15-50	PC50-10	MTV50CB15	EV-1226
C25	10 16 V		RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222
	10 15 V		RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222
C40	4.7 16 V		RME-A-E-005	EP15-5	PC5-50	VTT47A50	EV-1319
	5 15 V		RME-A-E-005	EP15-5	PC5-50	VTT47A50	EV-1319
C42	47 6.3 V		RME-C-B-050	EP6-50	PC50-10	VTT47A6	EV-1026
	50 10 V		RME-O-0-050	EP15-50	PC50-10	MTV50CB15	EV-1226
C43	3.3 25 V		RME-A-H-003	EP30-5	PC5-50	VTT3R3A50	EV-1618
	3 15 V		RME-A-E-003	EP15-5	PC5-50	VTT3R3A50	EV-1318
C46	3.3 25 V		RME-A-H-003	EP30-5	PC5-50	VTT3R3A50	EV-1618
	3 15 V		RME-A-E-003	EP15-5	PC5-50	VTT3R3A50	EV-1318
C47	220 16 V		RME-J-E-250	EP15-250	PC250-25	MTV250DE15	EV-1245
	200 15 V		ME-6-E-200	EP15-250	PC200-16	MTV200DE15	EV-1240
C48	100 10 V		RME-E-D-100	EP15-100	PC100-10	MTV100CB10	EV-1130
C49	1 50 V NP						
	1 200 V						
C50	1000 16 V		RME-N-E-1000	EP15-1000	PC1000-16	MTA1000G25	EV-1260
	1000 15 V		RME-N-E-1000	EP15-1000	PC1000-16	MTA1000G25	EV-1260
C52	10 25 V		RME-B-G-010	EP30-10	PC10-25	VTT10A25	EV-1322
	10 15 V		RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222
C54	3.3 25 V		RME-A-H-003	EP30-5	PC5-50	VTT3R3A50	EV-1618
	3 15 V		RME-A-E-003	EP15-5	PC5-50	VTT3R3A50	EV-1318
C55	1 16 V		RME-A-E-001	EP15-1	PC1-50	MTV1CB50	EV-1315

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
VR1	"S" Meter	20 K		T-20K (2) or TSV-25K (2)	C-253 (2)	X201R253B (2)	MTC24L1 (2)
VR2	Volume/Switch	5000		F2-5000,SSK012, KR4		BU1,CF60,SS1,GC	UA53A,SK1000,US41 or [RU53A,SL38, SK1000, US41] MTC14L1 (2)
VR3	Squelch Range	10 K		TSV-10K (2) or T-10K (2)	C-103 (2)	X201R103B (2)	
VR4	Squelch	50 K		F1-50K,SSK012	A47-50K-S,KSS-3 or [NP-50K-S, UP-E-400]	BU1,CF12,SS1,DC1	UA54L,SK1000 or [RU54L,SL38, SK1000] MTC254L1
VR5	RF Power	200 K		TSV-250K (2) or T-250K (2)		X201R254B	

(2) Cut off one of the end terminals and bend to fit PC board.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFGR. PART No.			WORKMAN PART No.	MFGR. PART No.
R55	1 (WW 1W)			R79	2900 (cold)	FS-317	
R57	269 (cold)	FS-654					

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			
		MFGR. PART No.	OTHER IDENTIFICATION	MEISSNER PART No.	MILLER PART No.
L1	Rec Ant		HL-2G		
L2	Rec Ant		HL-3N		
L3	Rec Osc		85AC2531		
L4	Rec Mixer (10.7 kHz)		85AC2531		
L5	Rec Mixer (10.7 kHz)		LMC-3054		
L6	Input IF (455 kHz)		L-4201		
L7	Interstage IF (455 kHz)		LMC-4202A		
L8	Output IF (455 kHz)				
L14	Xmit Mixer				
L15	Xmit Buffer				
L16	Xmit Driver				
L17	Driver				
L18	Final Amp		010		
L19	Pi Network				
L20	Pi Network				
L21	Xmit Ant				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L12	850 mA	4.5	8.1 mH	R24-5530H (E24-001) (1)				(1) Number on unit.

TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA				NOTES
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD Part No.	
L10	4	1.5 CT		N19-5510AT (E19-004) (1)				(1) Number on unit.

ELECTRONIC 2000 MODEL CONTACT CB-23CH

PARTS LIST AND DESCRIPTION (CONTINUED)

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

TRANSFORMER

ITEM No.	TURNS RATIO			REPLACEMENT DATA				NOTES
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD Part No.	
L9	4	1		N16-754C (E1601) (1)				(1) Number on unit.

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA				NOTES
	PRI.	SEC.	MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L11	128	8	N35-55118M (E35-002) (1)				(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP1	2" X 3" PM, 8 ohms	(EV-225B) (1)		(1) Number on unit.

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	2A Fast Acting		F-3770	AGC2	H0J	312002	150145	FG2-2

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
LF-B6	Ceramic Filter	CFU455H1	455 kHz
M2	Meter	H-308	"S"/RF
RL1	Relay	SRG-400A	Xmit./Rec.
S1	Switch	R71ND625A	Channel Selector
S2	Switch		Local/Distant
S3	Switch		CB/PA
X1	Crystal		37.600 MHz
X2	Crystal		37.650 MHz
X3	Crystal		37.700 MHz
X4	Crystal		37.750 MHz
X5	Crystal		37.800 MHz
X6	Crystal		37.850 MHz
X7	Crystal		10.635 MHz
X8	Crystal		10.625 MHz
X9	Crystal		10.615 MHz
X10	Crystal		10.595 MHz
X11	Crystal		10.180 MHz
X12	Crystal		10.170 MHz
X13	Crystal		10.160 MHz
X14	Crystal		10.140 MHz

ACCESSORIES

ITEM	MFGR. PART No.	REMARKS
Microphone DC Plug	DM-1391 SP-018	



PHOTOFACT® with

CIRCUITRACE®

For Supplier Address See PHOTOFACT Index

NOTE

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, SUBPARTS C & D.)

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 50-ohm dummy load or the normally used antenna system.



MODEL COBRA 29

ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools:

L7, L8, L11, L13GC ELECTRONICS #8290, 5000
L9, T10, T11, T12GC ELECTRONICS #9440
T1 thru T8; T15 thru T19GC ELECTRONICS #9440

RECEIVER ALIGNMENT

Connect an AC VTVM to speaker voice coil.

Set Squelch control maximum counterclockwise, RF Gain control maximum clockwise, Delta Tune Center (Mid Scale), noise Blanker off; ANL off, CB/PA to CB.

Adjust Volume control for suitable reading.

DYNASCAN MODEL COBRA 29

SIGNAL GENERATOR	CHANNEL	ADJUST	REMARKS
Connect high side thru a .01 uF to base of TR6, low side to ground. Set to 455 kHz (1000 Hz @ 30% Mod.)	Any	T9, T10, T11, T12	Adjust for maximum.
Connect high side thru a .01 uF to antenna connector, low side to ground. Set to 27.115 MHz (1000 Hz @ 30% Mod.)	13	T1, T2, T7, T8	Adjust for maximum.

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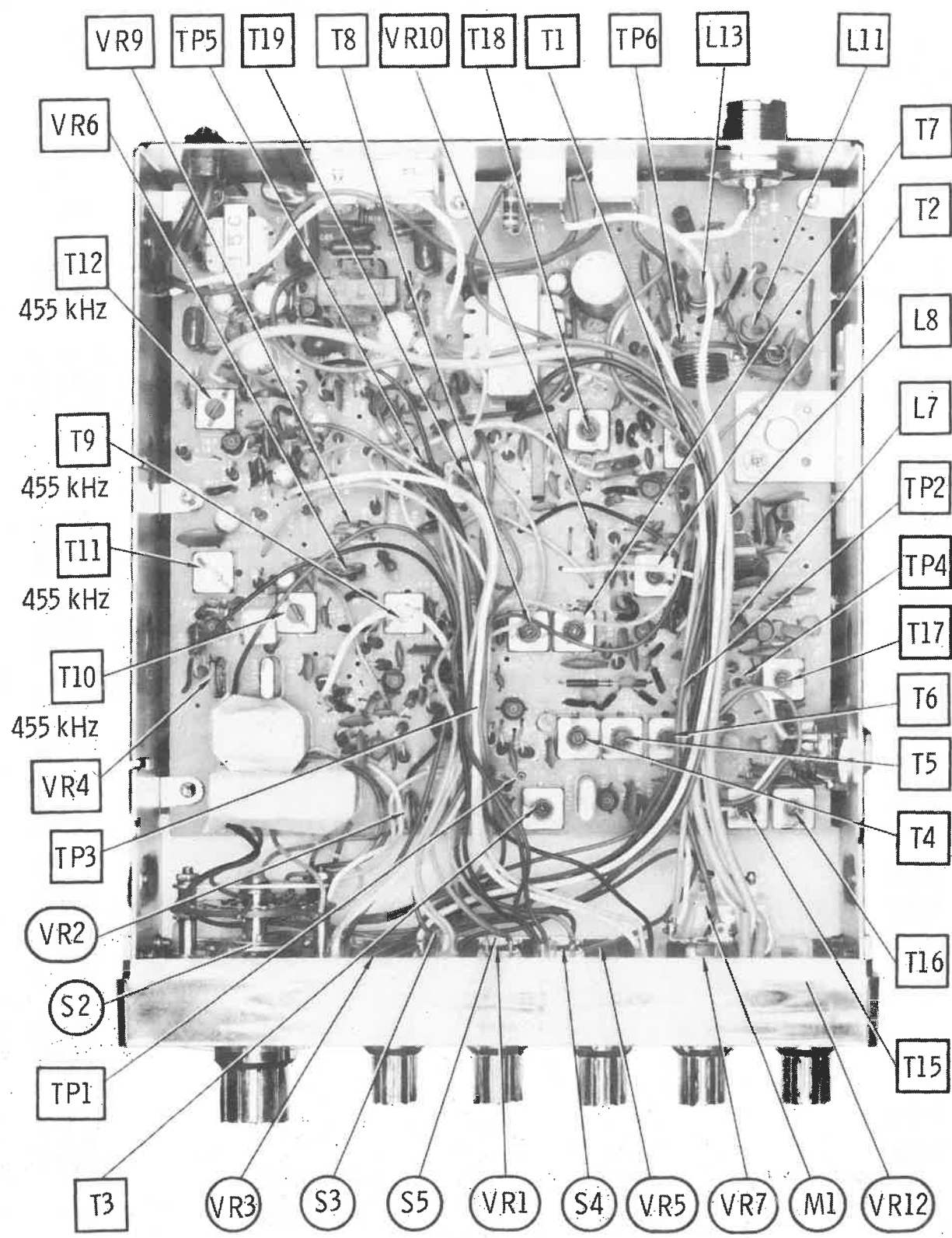
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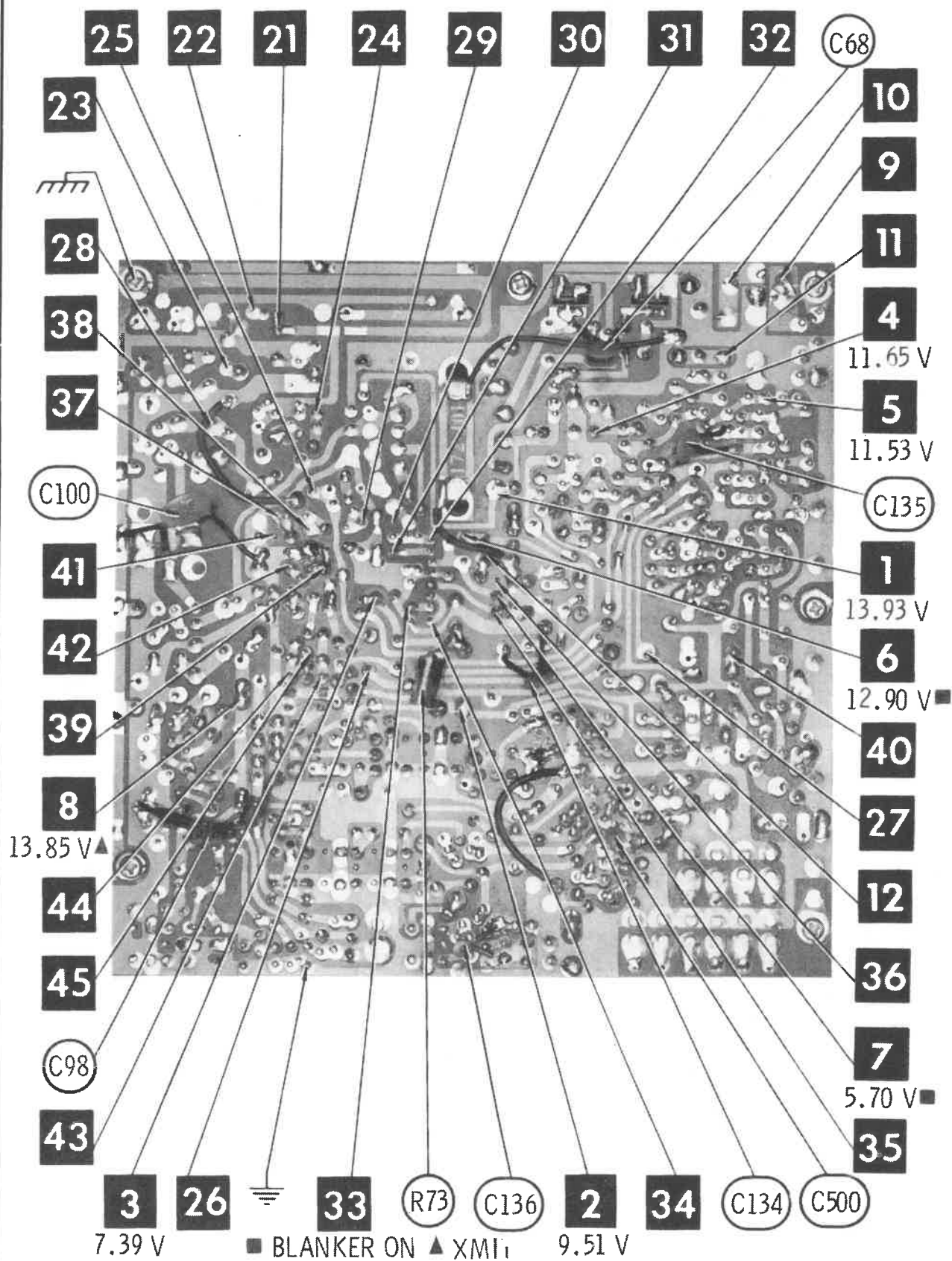
ALIGNMENT INSTRUCTIONS (Continued)

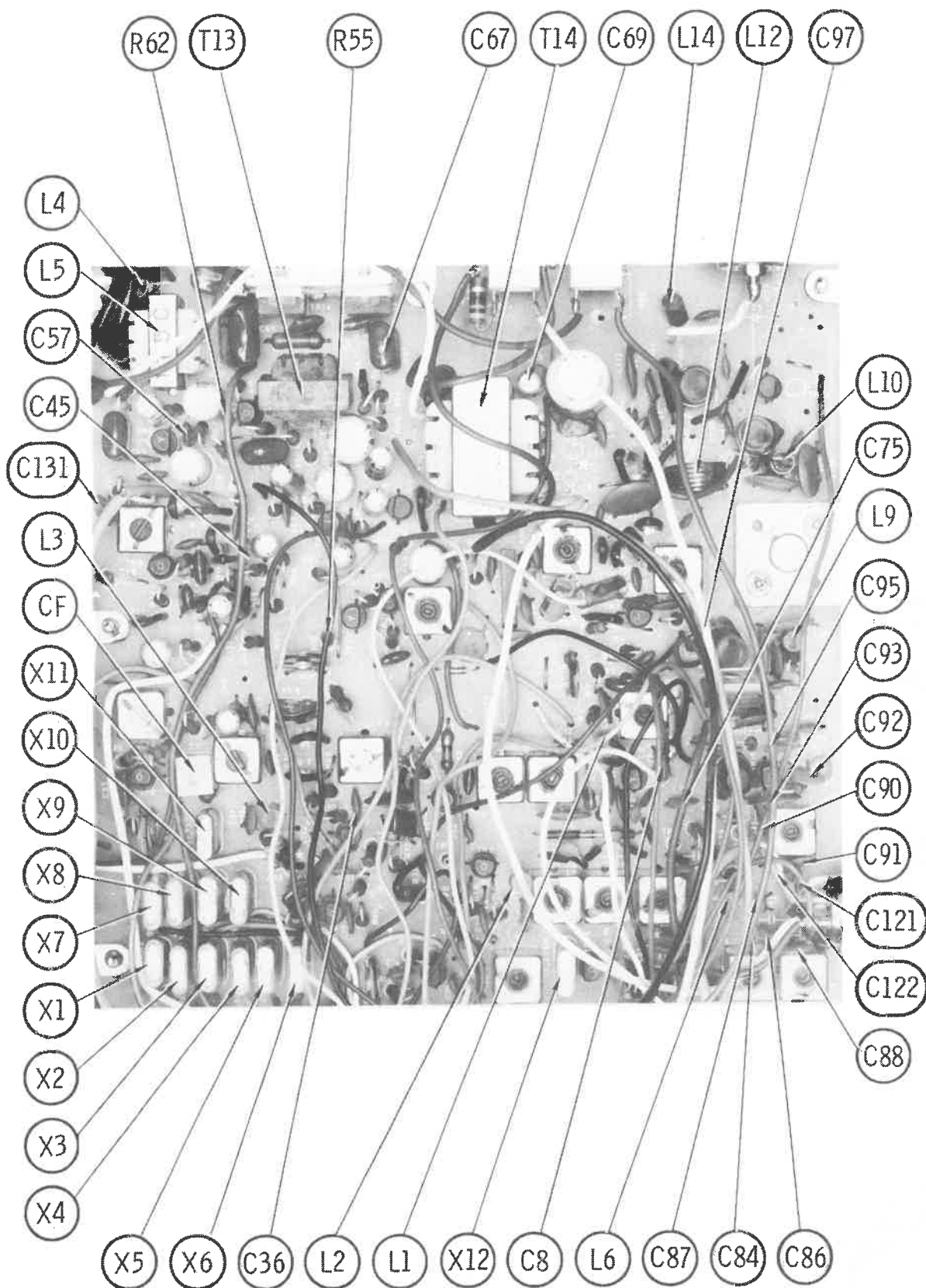
SIGNAL GENERATOR	CHANNEL	ADJUST	REMARKS
<u>AGC</u> Same as above output .04 uV.	13	VR6	Adjust for 2 V output on VTVM.
<u>SQUELCH</u> Same as above output 200 uV.	13	VR4	Adjust for 2 V output on VTVM.
<u>"S" METER</u> Same as above output 100 uV.	13	VR9	Adjust for "S9" reading on "S/RF" panel meter.
<u>NOISE BLANKER</u> Connect high side thru a .01 uF to antenna connector, low side to ground. Set to 23.5 MHz (unmod. output 100 mV.	13	T18, T19	Set Noise Blanker to On. Connect VTVM to Sec. of T19 TP5 Adjust for maximum.

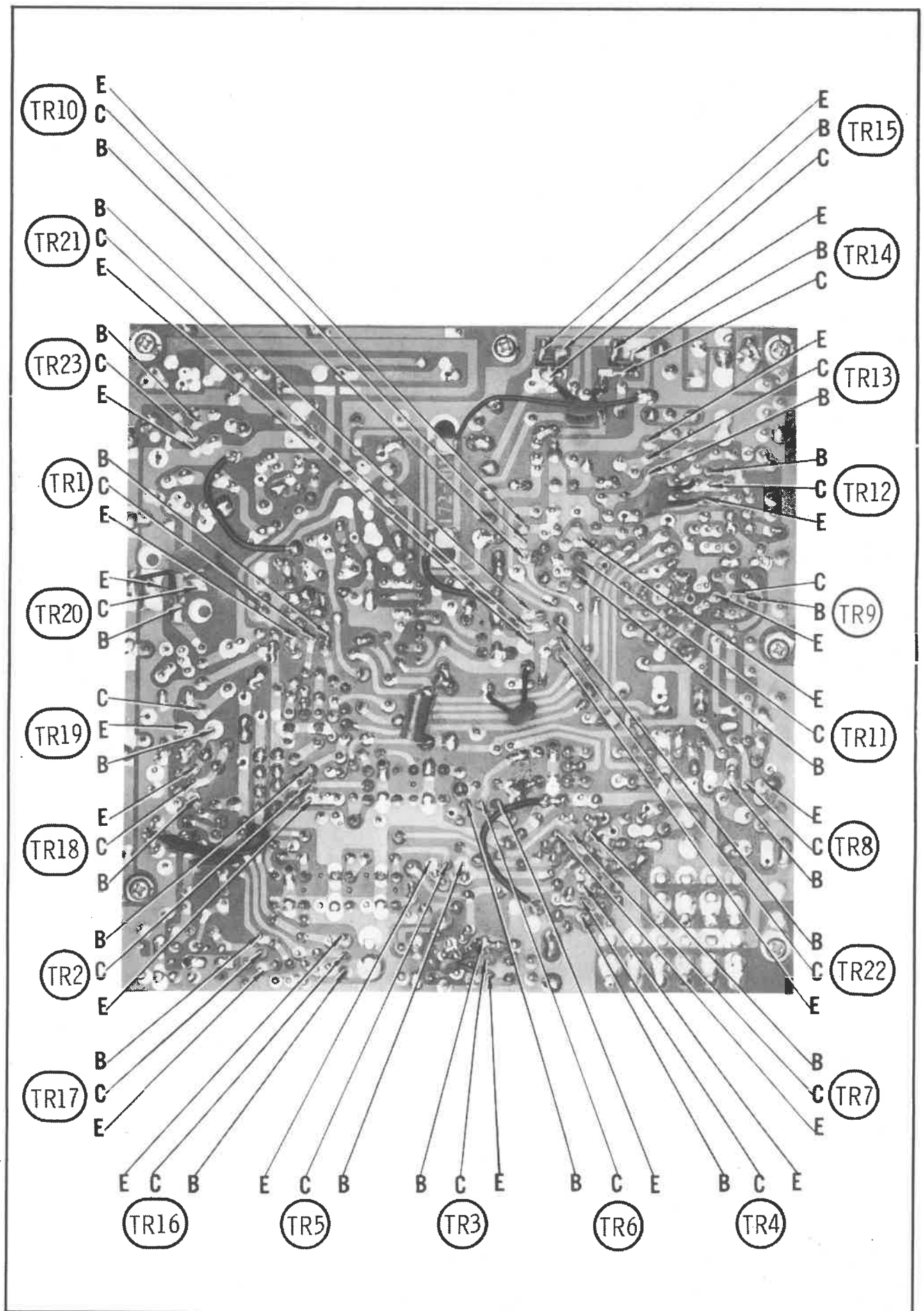
TRANSMITTER ALIGNMENT

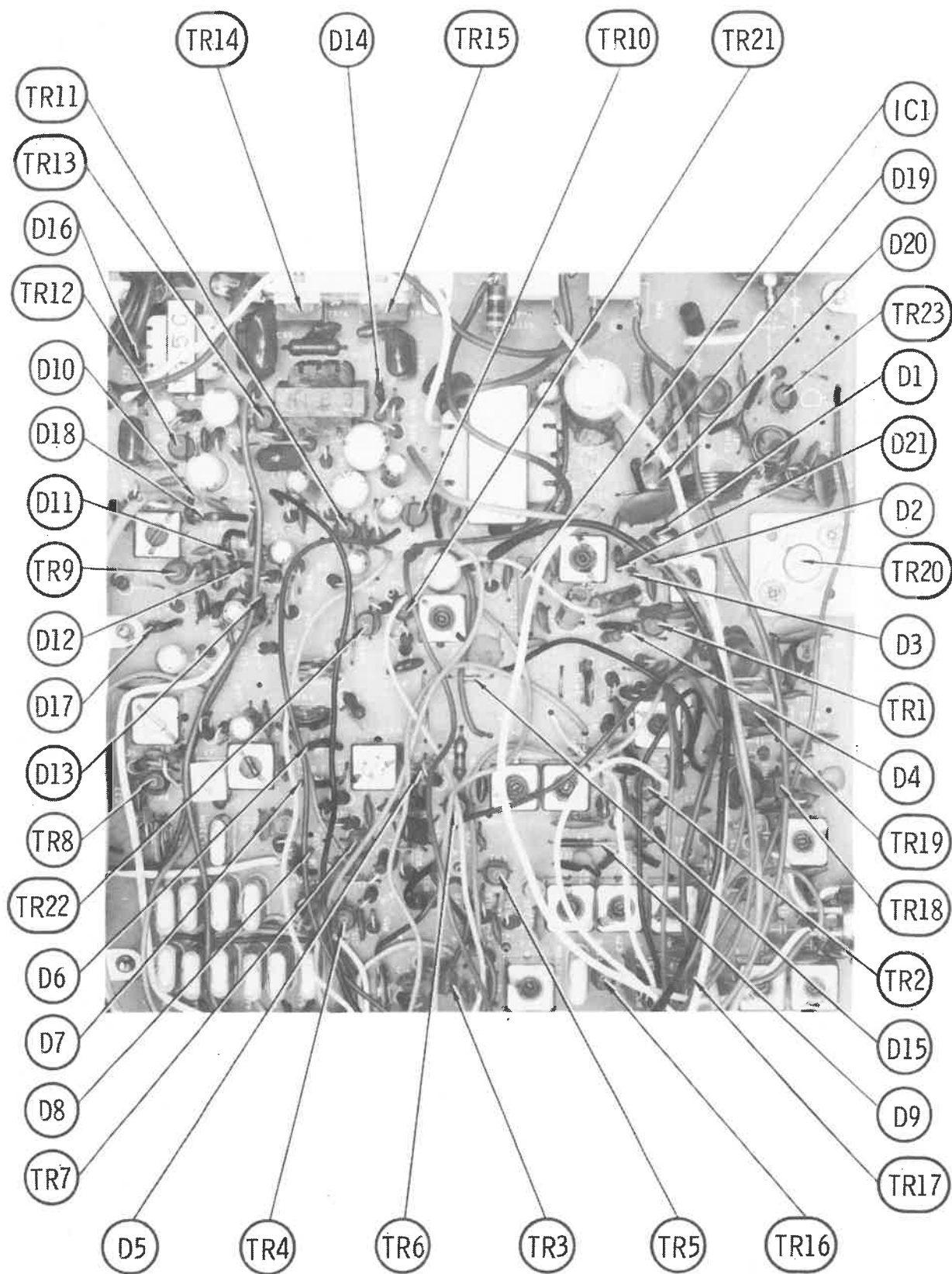
INDICATOR	ADJUST	REMARKS
VTVM (1 V, with RF Probe)	T3	Connect RF Wattmeter to antenna connector. VTVM to TP1. CH. 23, key transmitter. Adjust for peak, then advance core clockwise for 10% reduction in peak reading.
Same as above	T4, T5, T6	VTVM to TP2. CH. 13 Key transmitter. Adjust for maximum.
Same as above.	T15, T16, T17	VTVM to TP4. Key transmitter. Adjust for maximum.
RF Wattmeter	L7, L8	Key transmitter. Adjust for maximum RF output.
0-1A DC Milliammeter	L11	Remove Jumper TP6. Insert meter, key transmitter. Adjust for 5 watts DC input power.
TV Set (CH. 2)	L13	Key transmitter. Adjust for MINIMUM interference.
RF Wattmeter	VR10	Key transmitter. Adjust so "RF" meter agrees with RF wattmeter.
Frequency counter	VR2	Delta Tune control maximum clockwise. Freq. counter to TP3. Adjust for frequency between 11.7280 MHz and 11.7288 MHz.
Same as above		Freq counter coupled to antenna. Key transmitter. Check output frequency on all channels.

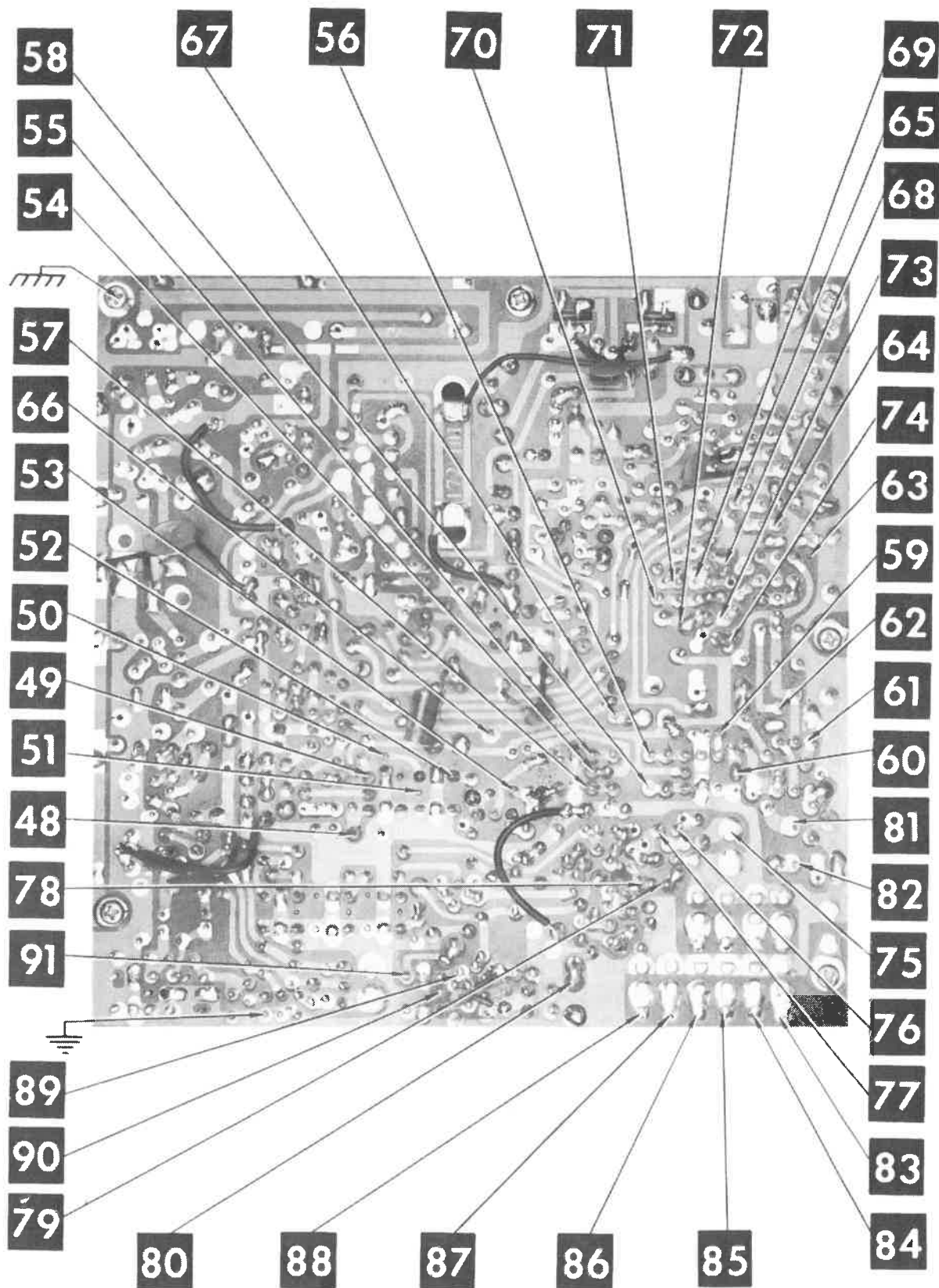




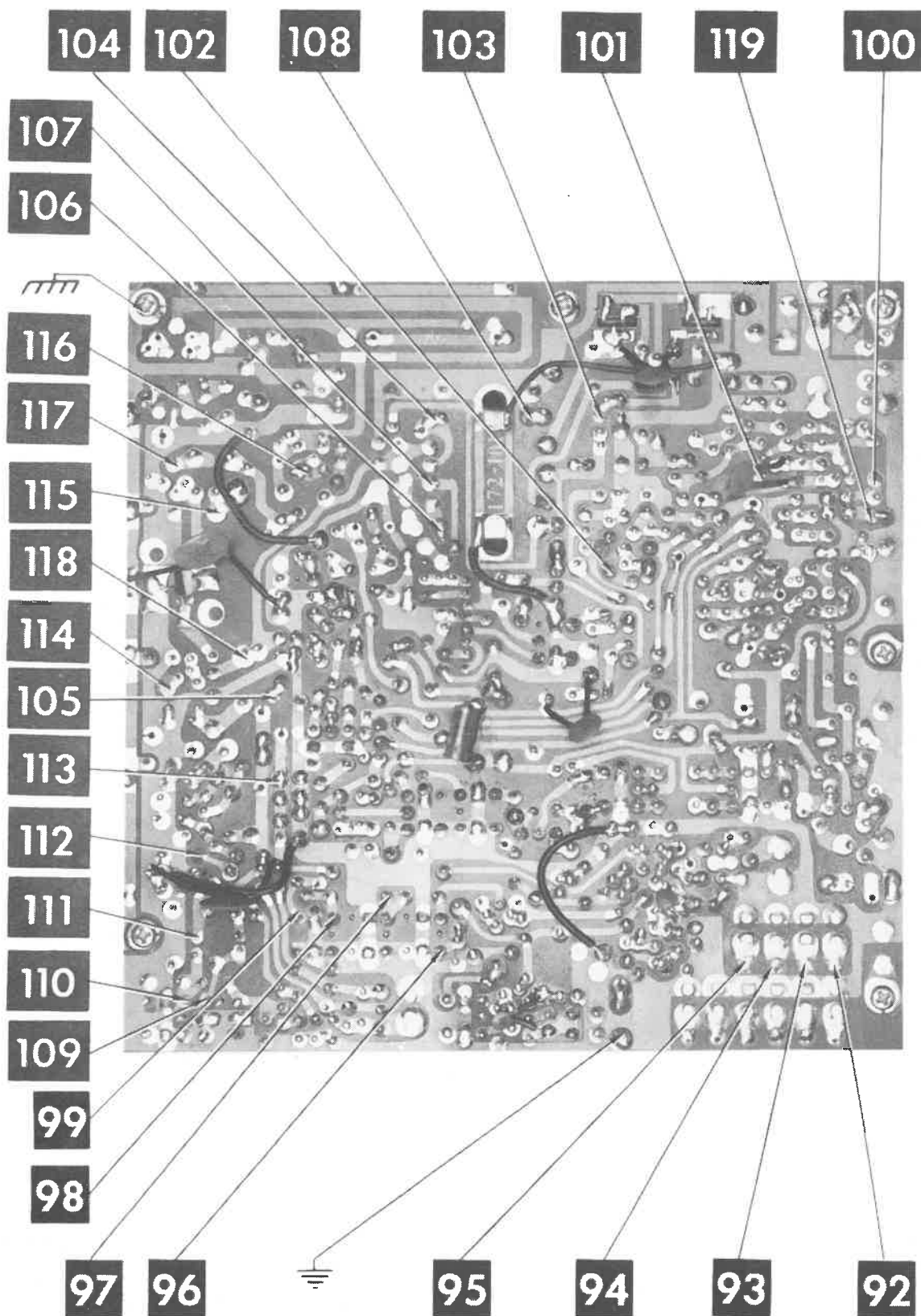


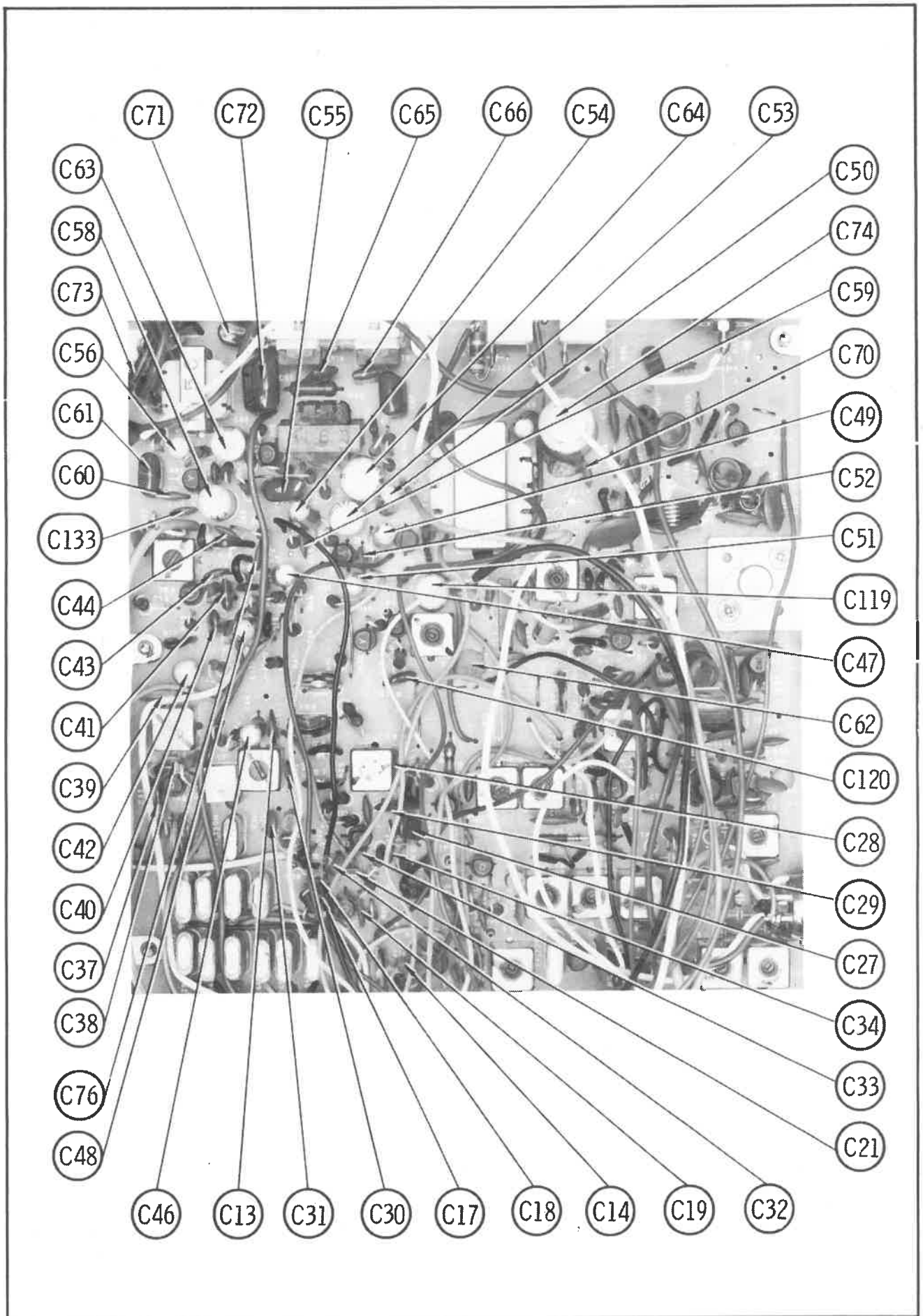


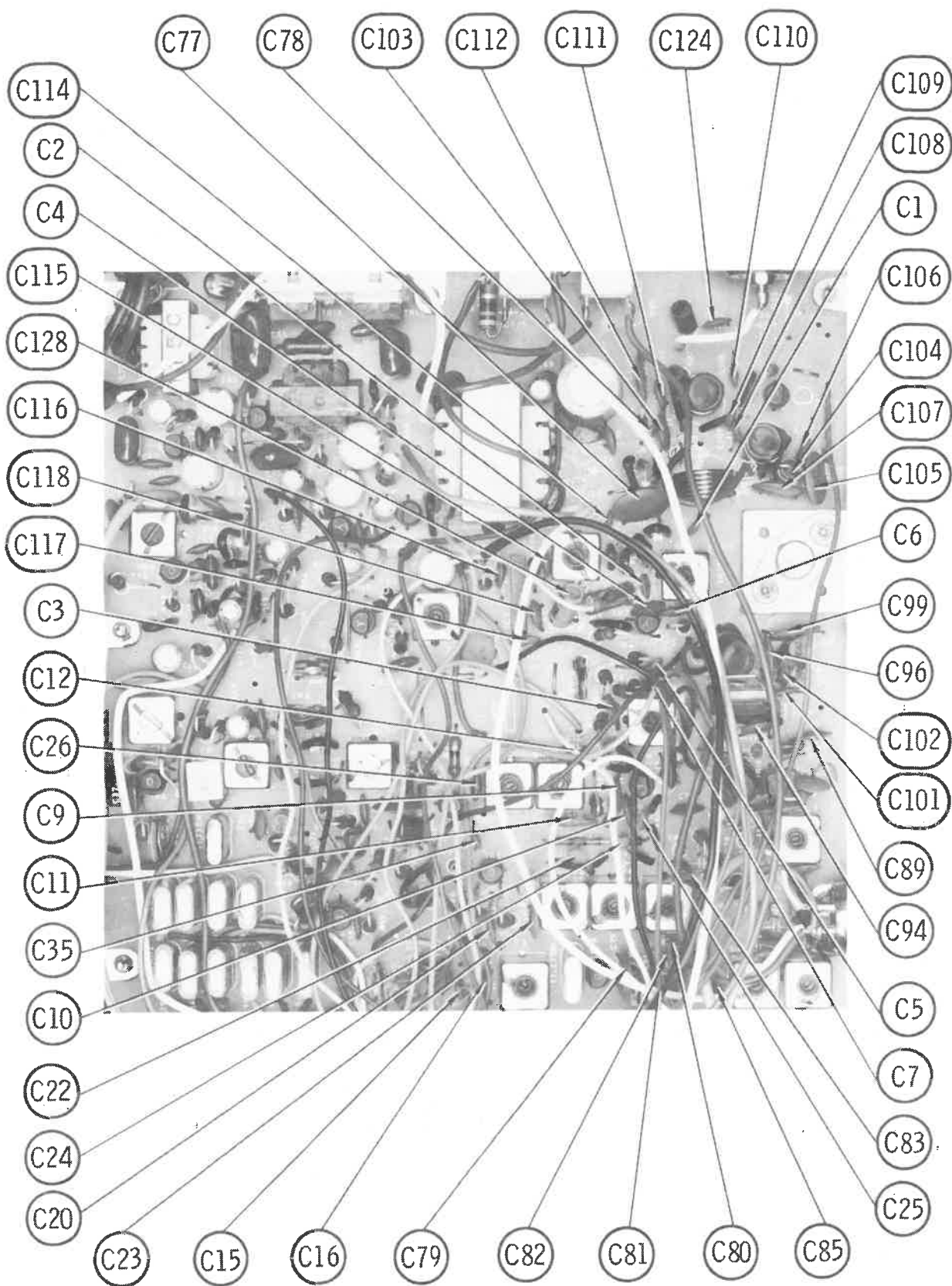


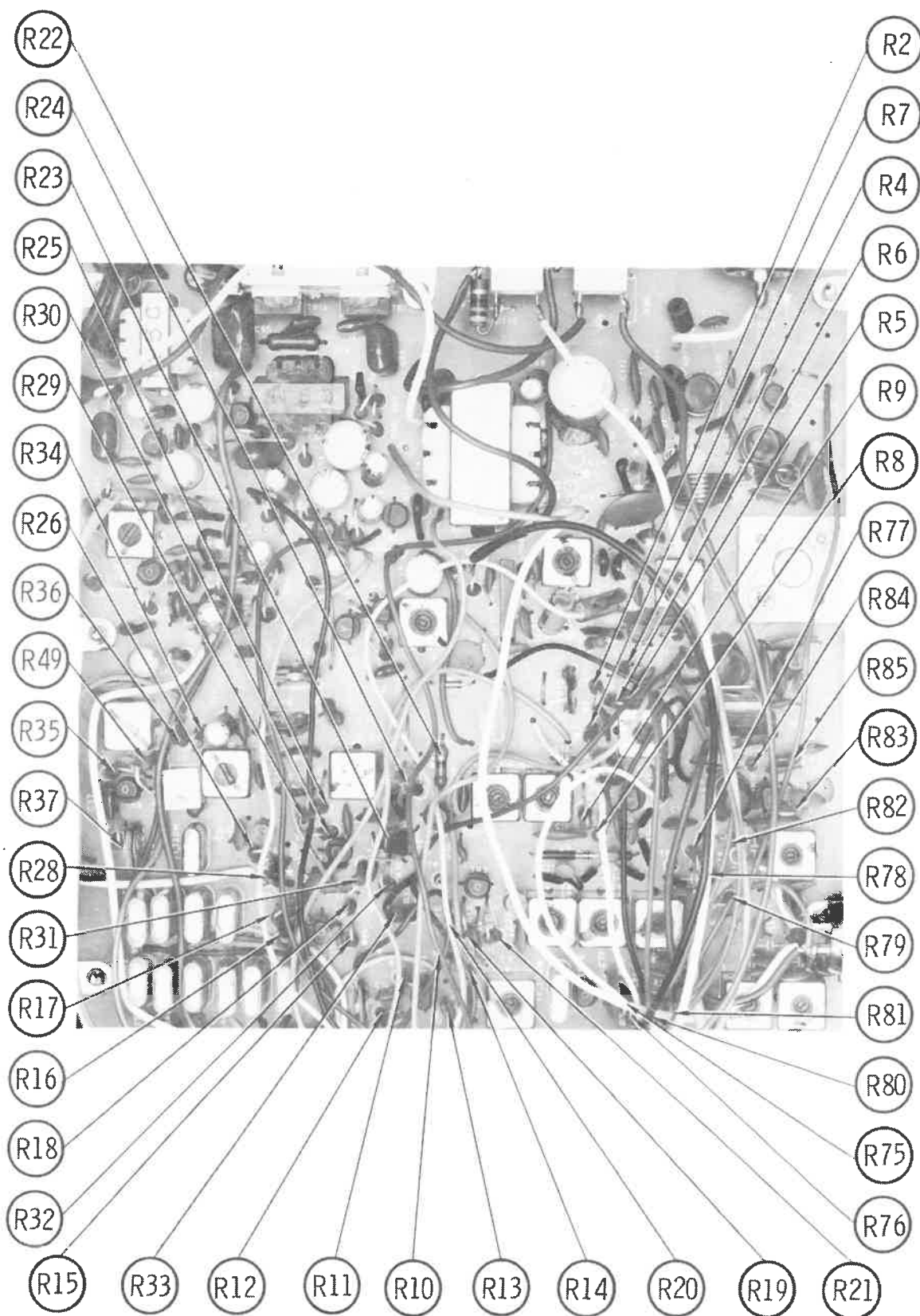


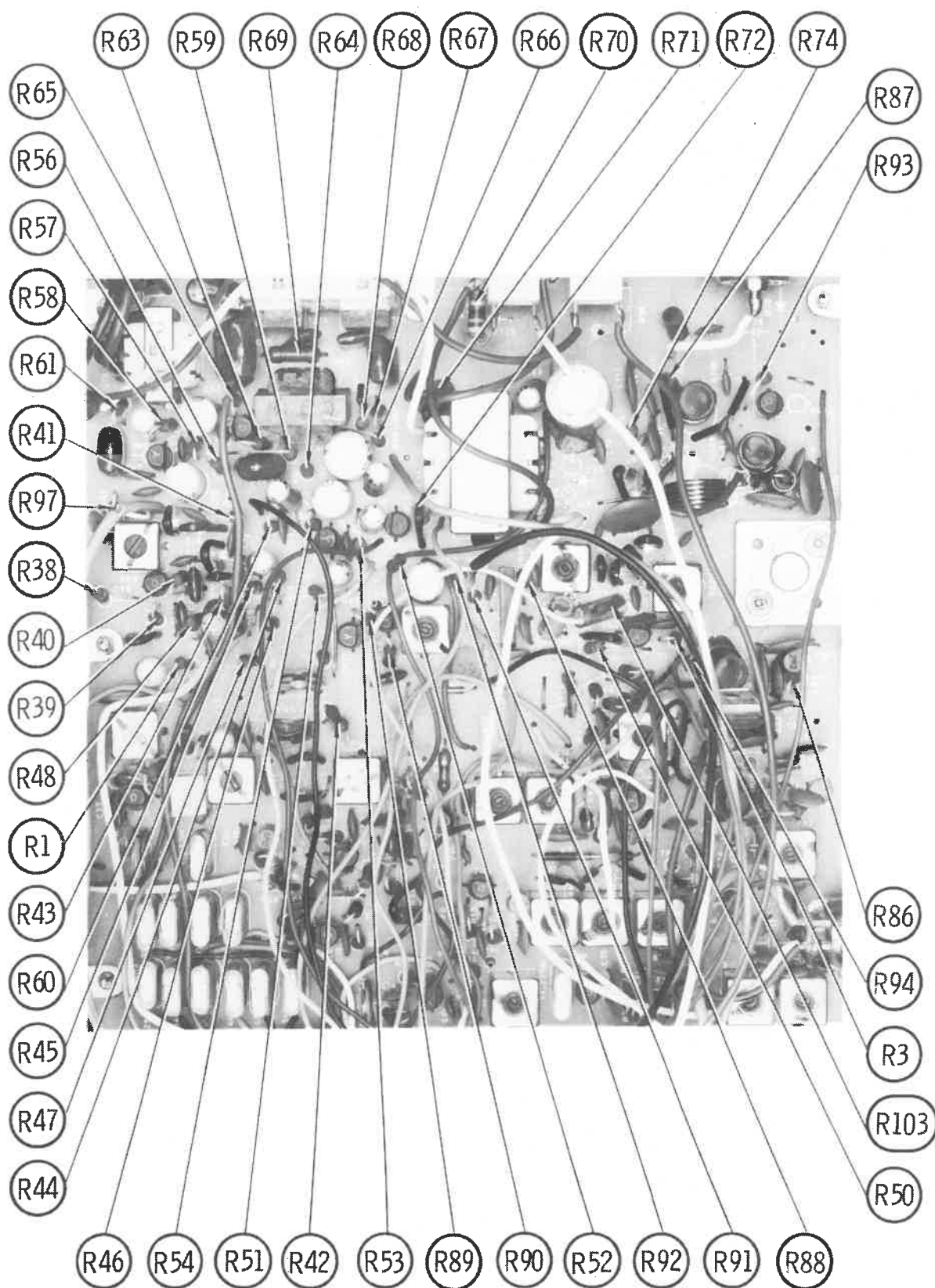
A Howard W. Sams CIRCUITRACE® Photo



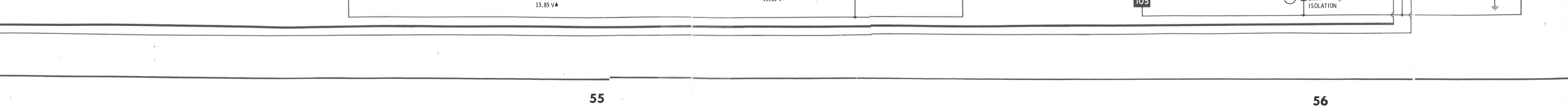
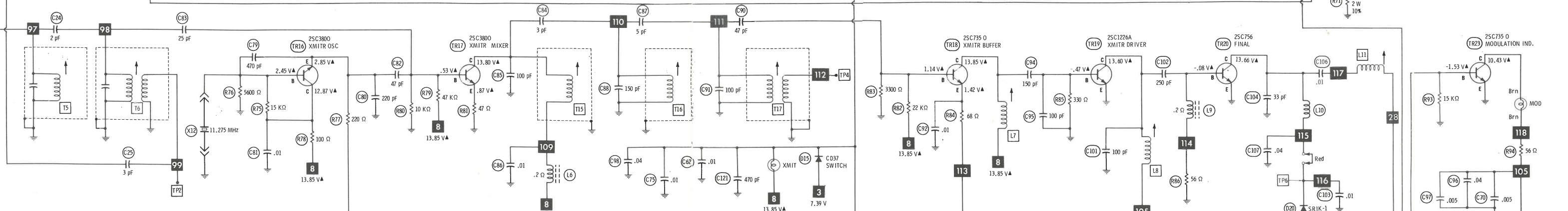
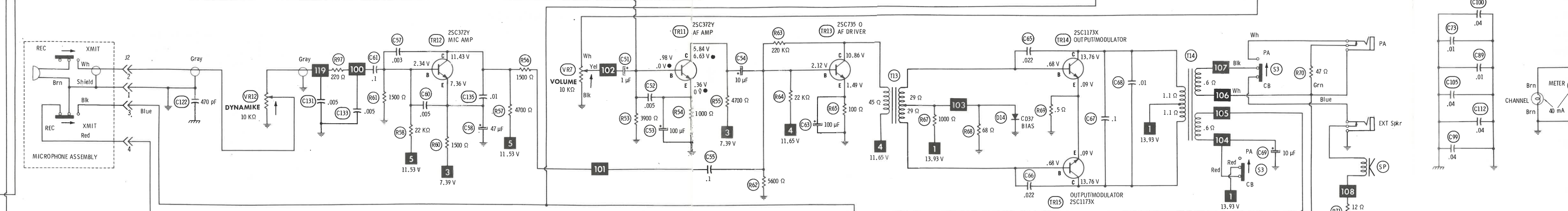
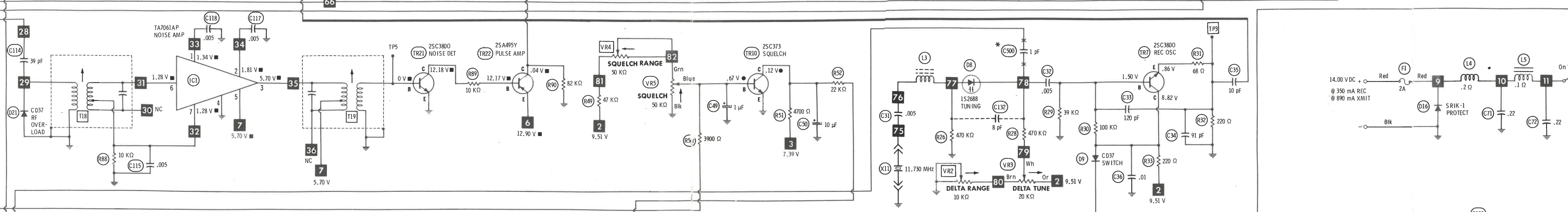
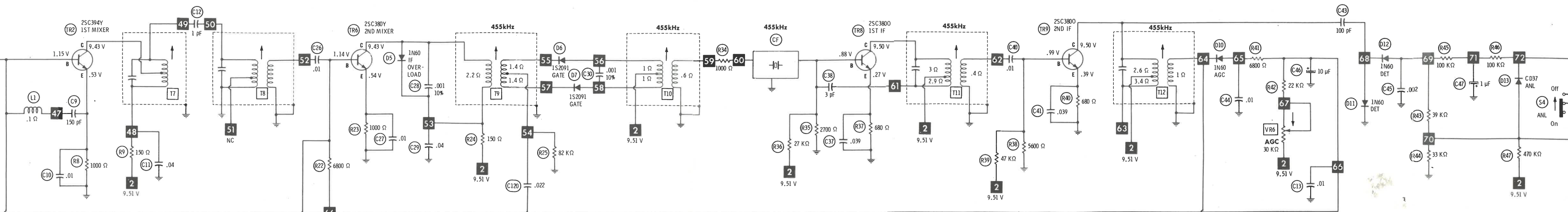














PARTS LIST AND DESCRIPTION
(When ordering parts, state Model, Part Number, and Description.)

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.)

SEMICONDUCTORS

ITEM No.	TYPE / MFR. No. / PART No.	REPLACEMENT DATA						
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	MOTOROLA PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
D1	CD-37/ 151-040-9-002	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D2	CD-37/ 151-040-9-002	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D3	CD-37/ 151-040-9-002	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D4	CD-37/ 151-040-9-002	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D5	1N60/ 150-001-9-005	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D6	1S2091/ 150-030-9-002	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D7	1S2091/ 150-030-9-002	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D8	1S2688/ 153-004-9-001	GE-90 (8)	D201 (8)		HEPR2503(8)	SK3126 (8)		
D9	CD-37/ 151-040-9-002	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D10	1N60/ 150-001-9-005	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D11	1N60/ 150-001-9-005	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D12	1N60/ 150-001-9-005	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D13	CD37/ 151-040-9-002	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D14	CD37/ 151-040-9-002	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D15	CD37/ 151-040-9-002	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D16	SR1K-1/ 151-040-9-003	GE-504A	8D4 or 5A4D	PTC201 or PTC202	HEPR0052	SK3030 or SK3031	RT213 or RT214	ECG 116 or ECG 117
D17	CZ-092/ 152-051-9-001 (9.5 V Zener)	GEZD-10	Z-1210	PTC506	HEPZ0413	SK3061	RT241	ECG 140
D18	1N60/ 150-001-9-005	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D19	1N60/ 150-001-9-005	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D20	SR1K-1/ 151-040-9-003	GE-504A	8D4 or 5A4D	PTC201 or PTC202	HEPR0052	SK3030 or SK3031	RT213 or RT214	ECG 116 or ECG 117
D21	CD-37/ 151-040-9-002	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
IC1	TA7061AP/ 307-007-9-001							
TR1	2SC394(Y)/ 176-042-9-001	GE-17	TR-33	PTC139	HEP53	SK3018	RT108	ECG 107
TR2	2SC394(Y)/ 176-042-9-001	GE-17	TR-33	PTC139	HEP53	SK3018	RT108	ECG 107
TR3	2SC372(O)/ 176-042-9-002	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
TR4	2SC380(O)/ 176-042-9-002	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A

PARTS LIST AND DESCRIPTION (CONTINUED)
(When ordering parts, state Model, Part Number, and Description.)

SEMICONDUCTORS(cont)

ITEM No.	TYPE / MFR. No. / PART No.	REPLACEMENT DATA						
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	MOTOROLA PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
TR5	2SC380(O)/ 176-042-9-002	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
TR6	2SC380(O)/ 176-042-9-002	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
TR7	2SC380(O)/ 176-042-9-002	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
TR8	2SC380(O)/ 176-042-9-002	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
TR9	2SC380(O)/ 176-042-9-002	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
TR10	2SC373/ 176-025-9-001	GE-20	TR-24	PTC101	HEP55	SK3122	RT107	ECG 123A
TR11	2SC372(Y)/ 176-042-9-001	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
TR12	2SC372(Y)/ 176-042-9-001	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
TR13	2SC735(O)/ 176-042-9-006	GE-17	TR-25	PTC123	HEP53	SK3124	RT102	ECG 123A
TR14	2SC1173(X)/ (1) 172-014-9-001	GE-66	TR-76	PTC110		SK3054	RT154	ECG 152
TR15	2SC1173(X)/ (1) 172-014-9-001	GE-66	TR-76	PTC110		SK3054	RT154	ECG 152
TR16	2SC380(O)/ 176-042-9-002	GE-17	TR-33	PTC139	HEP53	SK3018	RT108	ECG 107
TR17	2SC380(O)/ 176-042-9-002	GE-17	TR-33	PTC139	HEP53	SK3018	RT108	ECG 107
TR18	2SC735(O)/ 176-042-9-006	GE-17	TR-25	PTC123	HEP53	SK3124	RT102	ECG 123A
TR19	2SC1226(A)/ 176-042-9-005	GE-28	TR-55	PTC110	HEPS3023	SK3054	RT154	ECG 186
TR20	2SC756/ (2) 172-014-9-002					SK3049		ECG 224
TR21	2SC380(O)/ 176-042-9-002	GE-17	TR-33	PTC139	HEP53	SK3018	RT108	ECG 107
TR22	2SC380(O)/ 176-042-9-002	GE-17	TR-33	PTC139	HEP53	SK3018	RT108	ECG 107
TR23	2SC735(O)/ 176-042-9-002	GE-17	TR-25	PTC123	HEP53	SK3124	RT102	ECG 123A

- (1) Rating 10 Watt @ 3 Amp.
(2) Rating 10 Watt @ 4 Amp.
(8) Varactor

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		MFR. PART No.	ARCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C42	47 10 V	022-120-9-002	RME-D-D-050	EP15-50	PC50-10	MTV50CB15	EV-1226	
C46	10 16 V	022-120-9-001	RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222	
	10 10 V	022-099-9-002	RME-A-D-010	EP15-10	PC10-25	VTT10A25	EV-1222	
C47	1 50 V		RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615	
	1 16 V	022-099-9-003	RME-A-E-001	EP15-1	PC1-50	MTV1CB50	EV-1315	
C48	1 50 V		RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615	
	1 16 V	022-099-9-003	RME-A-E-001	EP15-1	PC1-50	MTV1CB50	EV-1315	
C49	1 50 V		RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615	
	1 16 V	022-099-9-003	RME-A-E-001	EP15-1	PC1-50	MTV1CB50	EV-1315	
C50	10 16 V	022-120-9-001	RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222	
	10 10 V	022-099-9-002	RME-A-D-010	EP15-10	PC10-25	VTT10A25	EV-1222	
C51	1 50 V		RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615	
	1 16 V	022-099-9-003	RME-A-E-001	EP15-1	PC1-50	MTV1CB50	EV-1315	

PARTS LIST AND
(When ordering parts,

ELECTROLYTIC C

ITEM No.	RATING		
C53	100	10 V	022
C54	10	16 V	022
	10	10 V	022
C56	10	16 V	022
	10	10 V	022
C58	47	16 V	022
	100	16 V	022
C63	100	10 V	022
C64	100	16 V	022
C69	10	16 V	022
C74	470	16 V	022
C119	47	16 V	022
C128	10	16 V	022

CAPACITORS

ITEM No.	RATING		
C1	33		
C2	.001		
C3	.01		
C4	.01		
C5	3		
C6	.01		
C7	.01		
C8	.01		
C9	150		
C10	.01		
C11	.04		
C12	1		
C13	.01		
C14	100		
C15	5		
C16	.01		
C17	470		
C18	220		
C19	220		
C20	.01		
C21	47		
C22	2		
C23	.01		
C24	2		
C25	3		
C26	.01		
C27	.01		
C28	.001	10%	
C29	.04		
C30	.001	10%	
C31	.005		
C32	.005		
C33	120		
C34	91		
C35	10		
C36	.01		
C37	.039		
C38	3		
C39	.04		
C40	.01		
C41	.039		
C43	100		
C44	.01		
C45	.002		

DYNASCAN MODEL COBRA 29

PARTS LIST AND DESCRIPTION (CONTINUED)

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

SEMICONDUCTORS(cont)

ITEM No.	TYPE / MFR. No. / PART No.	REPLACEMENT DATA						
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	MOTOROLA PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
TR5	2SC380(O)/ 176-042-9-002	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
TR6	2SC380(O)/ 176-042-9-002	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
TR7	2SC380(O)/ 176-042-9-002	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
TR8	2SC380(O)/ 176-042-9-002	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
TR9	2SC380(O)/ 176-042-9-002	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
TR10	2SC373/ 176-025-9-001	GE-20	TR-24	PTC101	HEP55	SK3122	RT107	ECG 123A
TR11	2SC372(Y)/ 176-042-9-001	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
TR12	2SC372(Y)/ 176-042-9-001	GE-20	TR-24	PTC139	HEP55	SK3018	RT102	ECG 123A
TR13	2SC735(O)/ 176-042-9-006	GE-17	TR-25	PTC123	HEP53	SK3124	RT102	ECG 123A
TR14	2SC1173(X)/ (1) 172-014-9-001	GE-66	TR-76	PTC110		SK3054	RT154	ECG 152
TR15	2SC1173(X)/ (1) 172-014-9-001	GE-66	TR-76	PTC110		SK3054	RT154	ECG 152
TR16	2SC380(O)/ 176-042-9-002	GE-17	TR-33	PTC139	HEP53	SK3018	RT108	ECG 107
TR17	2SC380(O)/ 176-042-9-002	GE-17	TR-33	PTC139	HEP53	SK3018	RT108	ECG 107
TR18	2SC735(O)/ 176-042-9-006	GE-17	TR-25	PTC123	HEP53	SK3124	RT102	ECG 123A
TR19	2SC1226(A)/ 176-042-9-005	GE-28	TR-55	PTC110	HEPS3023	SK3054	RT154	ECG 186
TR20	2SC756/ (2) 172-014-9-002					SK3049		ECG 224
TR21	2SC380(O)/ 176-042-9-002	GE-17	TR-33	PTC139	HEP53	SK3018	RT108	ECG 107
TR22	2SC380(O)/ 176-042-9-002	GE-17	TR-33	PTC139	HEP53	SK3018	RT108	ECG 107
TR23	2SC735(O)/ 176-042-9-002	GE-17	TR-25	PTC123	HEP53	SK3124	RT102	ECG 123A

(1) Rating 10 Watt @ 3 Amp.
(2) Rating 10 Watt @ 4 Amp.
(8) Varactor

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		MFR. PART No.	ARCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C42	47	10 V	022-120-9-002	RME-D-D-050	EP15-50	PC50-10	MTV50CB15	EV-1226
C46	10	16 V	022-120-9-001	RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222
	10	10 V	022-099-9-002	RME-A-D-010	EP15-10	PC10-25	VTT10A25	EV-1222
C47	1	50 V	022-099-9-003	RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615
	1	16 V		RME-A-E-001	EP15-1	PC1-50	MTV1CB50	EV-1315
C48	1	50 V		RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615
	1	16 V	022-099-9-003	RME-A-E-001	EP15-1	PC1-50	MTV1CB50	EV-1315
C49	1	50 V		RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615
	1	16 V	022-099-9-003	RME-A-E-001	EP15-1	PC1-50	MTV1CB50	EV-1315
C50	10	16 V	022-120-9-001	RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222
	10	10 V	022-099-9-002	RME-A-D-010	EP15-10	PC10-25	VTT10A25	EV-1222
C51	1	50 V		RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615
	1	16 V	022-099-9-003	RME-A-E-001	EP15-1	PC1-50	MTV1CB50	EV-1315

PARTS LIST AND DESCRIPTION (CONTINUED)

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

ELECTROLYTIC CAPACITORS(cont)

ITEM No.	RATING	REPLACEMENT DATA						
		MFR. PART No.	ARCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C53	100	10 V	022-099-9-004	RME-E-D-100	EP15-100	PC100-10	MTV100CB10	EV-1130
C54	10	16 V	022-120-9-001	RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222
	10	10 V	022-099-9-002	RME-A-D-010	EP15-10	PC10-25	VTT10A25	EV-1222
C56	10	16 V	022-120-9-001	RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222
	10	10 V	022-120-9-002	RME-A-D-010	EP15-10	PC10-25	VTT10A25	EV-1222
C58	47	16 V	022-120-9-003	RME-E-E-050	EP15-50	PC50-16	MTV50CB15	EV-1226
	100	16 V	022-120-9-004	RME-E-E-100	EP15-100	PC100-16	MTV100CD15	EV-1230
C63	100	10 V	022-099-9-004	RME-E-D-100	EP15-100	PC100-10	MTV100CB10	EV-1130
C64	100	16 V	022-120-9-004	RME-E-E-100	EP15-100	PC100-16	MTV100CD15	EV-1230
C69	10	16 V	022-120-9-001	RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222
C74	470	16 V	022-099-9-006	RME-L-E-500	EP15-500	PC500-16	MTV500DN15	EV-1250
C119	47	16 V	022-120-9-003	RME-E-E-050	EP15-50	PC50-16	MTV50CB15	EV-1226
C128	10	16 V	022-120-9-001	RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222

CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			ARCO/ELMENDO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	33		CCT0-330	DTZ-33	NP033	CN0433	10TCC-Q33
C2	.001		CCD-102	DD-102	GP1000	SM210	2SS-D10
C3	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C4	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C5	3						10TCC-V30
C6	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C7	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C8	.01		1DP-1-103	CPR-10000J	DPMS6S1	EFW1A110	225P10391WD3
C9	150		CCD-151	GP150	GP315	10TS-T15	10TS-T15
C10	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C11	.04		DD-403	GP140		GP140	
C12	1					CN0510	10TCC-V10
C13	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C14	100		CCT0-101	DTZ-100	NP0100	CN0310	10TCC-T10
C15	5				NP05		10TCC-V50
C16	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C17	470		DD-471	GP470	GP347	GP347	10TS-T47
C18	220		CCD-221	DD-221	GP220	GP322	10TS-T22
C19	220		CCD-221	DD-221	GP220	GP322	10TS-T22
C20	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C21	47		CCT0-470	DTZ-47	NP047	CN0447	10TCC-Q47
C22	2			DTZ-2R2	NP02P2	CN0522	10TCC-V22
C23	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C24	2			DTZ-2R2	NP02P2	CN0522	10TCC-V22
C25	3					CN0512	10TCC-V30
C26	.01		1DP-1-103	CPR-10000J	DPMS6S1	EFW1A110	225P10391WD3
C27	.01		1DP-1-103	CPR-10000J	DPMS6S1	EFW1A110	225P10391WD3
C28	.001		CCD-102	DD-102	GP1000	SM210	2SS-D10
C29	.04			DD-403		GP140	
C30	.001		CCD-102	DD-102	GP1000	SM210	2SS-D10
C31	.005		CCD-502	CK-502	MGP005	TA250	TG-D50
C32	.005		CCD-502	CK-502	MGP005	TA250	TG-D50
C33	120		CCT0-121	DTZ-120		CN0312	10TCC-T12
C34	91						
C35	10		CCT0-100	DTZ-10	NP010	CN0410	10TCC-Q10
C36	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C37	.039		1MD-1-393			EFW1A139	1PB-S39
C38	3						10TCC-V30
C39	.04						
C40	.01			DD-403		GP140	
C41	.039		1DP-1-103	CPR-10000J	DPMS6S1	EFW1A110	225P10391WD3
C43	100		1MD-1-393			EFW1A139	1PB-S39
C44	.01		CCT0-101	DTZ-100	NP0100	CN0310	10TCC-T10
C45	.002		CCD-103	CK-103	MGP01	TA110	TG-S10
			CCD-202	DD-202	GP2000	GP220	2SS-D20

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			ARCO/ELMENCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C52	.005	020-125-9-005	CCD-502	CK-502	MGP005	TA250	TG-D50
C55	.1		1DP-2-104		DPMS2P1	EWFA010	225P10491WD3
C57	.003		6DP-1-332		DMF6D33	EWF6233	6PS-D33
C59	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C60	.005		CCD-502	CK-502	MGP005	TA250	TG-D50
C61	.1		1DP-2-104		DPMS2P1	EWFA010	225P10491WD3
C62	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C65	.022		1DP-1-223		DPMS6S22	EWFA1A122	225P22391WD3
C66	.022		1DP-1-223		DPMS6S22	EWFA1A122	225P22391WD3
C67	.1		1DP-2-104		DPMS2P1	EWFA010	225P10491WD3
C68	.01						
C70	.005		CCD-502	CK-502	MGP005	TA250	TG-D50
C71	.22		4DP-5-224		DPMS4P22	EWFA022	4PS-P22
C72	.22		4DP-5-224		DPMS4P22	EWFA022	4PS-P22
C73	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C75	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C76	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C77	.1			CK-104		TA010	TG-P10
C78	2			DTZ-2R2	NPO2P2	CN0522	10TCC-V22
C79	470		CCD-471	DD-471	GP470	GP347	10TS-T47
C80	220		CCD-221	DD-221	GP220	GP322	10TS-T22
C81	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C82	47		CCT0-470	DTZ-47	NPO47	CN0447	10TCC-Q47
C83	25			DTZ-25		CN0425	10TCC-Q25
C84	3						10TCC-V30
C85	100		CCT0-101	DTZ-100	NPO100	CN0310	10TCC-T10
C86	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C87	5				NPO5		10TCC-V50
C88	150		CCD-151	DD-151	GP150	GP315	10TS-T15
C89	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C90	47		CCT0-470	DTZ-47	NPO47	CN0447	10TCC-Q47
C91	100		CCT0-101	DTZ-100	NPO100	CN0310	10TCC-T10
C92	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C93	.04			DD-403		GP140	
C94	150		CCD-151	DD-151	GP150	GP315	10TS-T15
C95	100		CCT0-101	DTZ-100	NPO100	CN0310	10TCC-T10
C96	.04			DD-403		GP140	
C97	.005		CCD-502	CK-502	MGP005	TA250	TG-D50
C98	.04			DD-403		GP140	
C99	.04			DD-403		GP140	
C100	.04			DD-403		GP140	
C101	100		CCT0-101	DTZ-100	NPO100	CN0310	10TCC-T10
C102	250						
C103	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C104	33		CCT0-330	DTZ-33	NPO33	CN0433	10TCC-Q33
C105	.04			DD-403		GP140	
C106	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C107	.04			DD-403		GP140	
C108	220		CCD-221	DD-221	GP220	GP322	10TS-T22
C109	5				NPO5		10TCC-V50
C110	47		CCT0-470	DTZ-47	NPO47	CN0447	10TCC-Q47
C111	100		CCT0-101	DTZ-100	NPO100	CN0310	10TCC-T10
C112	.04			DD-403		GP140	
C114	39					CN0439	10TCC-Q39
C115	.005		CCD-502	CK-502	MGP005	TA250	TG-D50
C116	.005		CCD-502	CK-502	MGP005	TA250	TG-D50
C117	.005		CCD-502	CK-502	MGP005	TA250	TG-D50
C118	.005		CCD-502	CK-502	MGP005	TA250	TG-D50
C120	.022		1DP-1-223		DPMS6S22	EWFA1A122	225P22391WD3
C121	470		CCD-471	DD-471	GP470	GP347	10TS-T47
C122	470		CCD-471	DD-471	GP470	GP347	10TS-T47
C124	100		CCT0-101	DTZ-100	NPO100	CN0310	10TCC-T10
C131	.005		CCD-502	CK-502	MGP005	TA250	TG-D50
C133	.005		CCD-502	CK-502	MGP005	TA250	TG-D50
C134	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C135	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C136	25			DTZ-25		CN0425	10TCC-Q25
C500	1					CN0510	10TCC-V10

DYNASCAN MODEL COBRA 29

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
VR1	RF Gain	50 K	008-187-9-003	TSV-10K (2) or T-10K (2)	C-103 (2)	X201R103B (2)	MTC14L1 (2)
VR2	Delta Range	10 K					
VR3	Delta Tune	20 K	008-158-9-006	TSV-50K (2) or T-50K (2)	C-503 (2)	X201R503B (2)	MTC54L1 (2)
VR4	Squelch Range	50 K	008-187-9-004				
VR5	Squelch	50 K	008-187-9-003	TSV-50K (2) or T-50K (2)	C-503 (2)	X201R503B (2)	MTC54L1 (2)
VR6	AGC	30 K	008-187-9-005				
VR7	Volume/Switch	10 K	008-187-9-001	T-20K (2) or TSV-25K (2)	C-253 (2)	X201R253B (2)	MTC24L1 (2)
VR9	"S" Meter	20 K	008-187-9-006				
VR10	RF Meter	20 K	008-187-9-006	T-20K (2) or TSV-25K (2)	C-253 (2)	X201R253B (2)	MTC24L1 (2)
VR12	Dynamike	10 K	008-187-9-002				

(2) Cut off one of the end terminals and bend to fit PC board.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFGR. PART No.			WORKMAN PART No.	MFGR. PART No.
R69	.5 1/2 W Film		044-123-9-001	R71	12 2 W	CC-2-12	004-138-9-001

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			
		MFGR. PART No.	OTHER IDENTIFICATION	MEISSNER PART No.	MILLER PART No.
L1	Trap (14 MHz)	041-056-9-001	TC-71096		
L2	RF Choke (2.2 uH)	041-061-9-001	LF4-2R2K		74F226AP
L3	RF Choke (6.8 uH)	041-061-9-002	LF4-6R8K		74F686AP
L4	Line Choke	042-011-9-001	TC-71095		
L6	RF Choke (2.2 uH)	041-061-9-001	LF4-2R2K		74F226AP
L7	Xmit.Buffer (27 MHz)	044-028-9-005	TC-71026		
L8	Xmit.Driver (27 MHz)	044-028-9-004	TC-71023		
L9	RF Choke (2.2 uH)	041-061-9-001	LF4-2R2K		74F226AP
L10	Xmit.Final (27 MHz)	044-028-9-003	TC-71029		
L11	Matching (27 MHz)	044-028-9-002	TC-71025		
L12	Ant (27 MHz)	044-028-9-001	NS-1344		
L13	Trap (54 MHz)	041-056-9-003	TC-71024		
L14	RF Choke (2.2 uH)	041-061-9-001	LF4-2R2K		74F226AP
T1	Rec Ant (27 MHz)	066-017-9-001	TKXN-22160BU		
T2	Rec RF (27 MHz)	066-017-9-002	TKXC-22534BU		
T3	Sync Osc (23 MHz)	066-017-9-003	TKXC-23169F		
T4	Sync Mixer (38 MHz)	066-017-9-004	TKXC-23170Z		
T5	Sync Mixer (38 MHz)	066-017-9-004	TKXC-23170Z		
T6	Sync Mixer (38 MHz)	066-017-9-005	TKXC-22535BM		
T7	Rec Mixer (11 MHz)	060-016-9-001	TKAC-225361E		
T8	Rec Mixer (11 MHz)	060-016-9-002	TKAC-21165A		
T9	Input IF (455 kHz)	060-017-9-001	RLN-40479N		
T10	Interstage IF (455 kHz)	060-017-9-002	RLN-40480N		
T11	Interstage IF (455 kHz)	060-016-9-004	YMC-20845AC		
T12	Output IF (455 kHz)	060-016-9-005	YMC-20846AC		
T15	Xmit Mixer (27 MHz)	066-017-9-006	KXN-136381HM		
T16	Xmit Mixer (27 MHz)	066-017-9-006	KXN-136381HM		
T17	Xmit Mixer (27 MHz)	066-017-9-007	KXN-13636BM		
T18	Noise Amp	066-018-9-001	14299A		
T19	Noise Amp	066-018-9-002	20979A		

PARTS LIST AND DESCRIPTION (CONTINUED)

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

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
L5	.890 A	.1	1.1 mH	044-028-9-006 (115C)				

TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA				NOTES
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD Part No.	
T13	1	1 CT		061-022-9-001 (69M)				

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA				NOTES
	PRI.	SEC.	MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T14	2.5	1	061-022-9-002 (N28-7518BM) (UT-115)				

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP1	4" PM 8 ohms	580-013-9-001 (10P03S)	4A1Z8	

DYNASCAN MODEL COBRA 29

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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	2 A Fast-acting 1.5 A (1)	191-002-9-001 (1)	742-018-9-001 (RF-104) 742-018-9-001 (RF-104) (1)	AGC2	HDJ	312002	150145	FG2-2

(1) Used in some versions.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF	Crystal Filter	140-009-9-001 (LF-B6)	455 kHz
M1	Meter	320-051-9-001 (A-39/S31EA563)	"S"/RF
S2	Switch	083-143-9-001 (4S32C000-A)	Channel Selector
S3	Switch	084-031-9-001	CB-PA
S4	Switch	084-031-9-001	ANL (On-Off)
S5	Switch	084-031-9-001	Noise Blanker (On-Off)
X1	Crystal	133-004-9-001	23.290 MHz
X2	Crystal	133-004-9-002	23.340 MHz
X3	Crystal	133-004-9-003	23.390 MHz
X4	Crystal	133-004-9-004	23.440 MHz
X5	Crystal	133-004-9-005	23.490 MHz
X6	Crystal	133-004-9-006	23.540 MHz
X7	Crystal	133-004-9-007	14.950 MHz
X8	Crystal	133-004-9-008	14.960 MHz
X9	Crystal	133-004-9-009	14.970 MHz
X10	Crystal	133-004-9-019	14.990 MHz
X11	Crystal	133-004-9-011	11.730 MHz
X12	Crystal	133-004-9-012	11.275 MHz

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Cabinet, Top	253-033-9-001	Knob, RF Gain	751-106-9-002
Cabinet, Bottom	252-012-9-001	Knob, Squelch	751-106-9-002
Chassis	257-056-9-001	Knob, Volume	751-106-9-002
Dial, Channel	380-176-9-002	Panel, Front	255-113-9-001
Knob, Channel	751-095-9-001	Plate, Front	260-044-9-001
Knob, Delta Tune	751-106-9-002	Plate, Microphone	600-018-9-001
Knob, Dynamike	751-106-9-002		

ACCESSORIES

ITEM	MFGR. PART No.	REMARKS
Microphone	562-006-9-001 (22-115-45)	



PHOTOFACT[®] with CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index

NOTE

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, SUBPARTS C & D.)

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 50-ohm dummy load or the normally used antenna system.



MODEL SPARTAN SSB

ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools:	GC ELECTRONICS
T1 thru T5, T9 thru T21	9440
T6 thru T8.	9089, 8868
CT2 thru CT17	5000, 8290

SYNTHESIZER ALIGNMENT

INDICATOR	CHANNEL	ADJUST	FREQUENCY	REMARKS
Frequency Counter	1	CT1	11.805 MHz	Connect frequency counter between TP4 and ground. Set Mode Switch to AM. Set Clarifier to mid range.
	5	CT2	11.855 MHz	
	9	CT3	11.905 MHz	
	13	CT4	11.955 MHz	
	17	CT5	12.005 MHz	
	21	CT6	12.055 MHz	
Frequency Counter	1	CT7	7.3615 MHz	Connect frequency counter between TP5 and ground. Set Mode Switch to USB.
	2	CT8	7.3715 MHz	
	3	CT9	7.3815 MHz	
	4	CT10	7.4015 MHz	
Frequency Counter	1	CT11	7.3585 MHz	Set Mode Switch to LSB.
	2	CT12	7.3685 MHz	
	3	CT13	7.3785 MHz	
	4	CT14	7.3985 MHz	
Frequency Counter		CT15	7.7985 MHz	Connect frequency counter between TP6 and ground. Set Mode Switch to USB.
Frequency Counter	1	CT16	7.8015 MHz	Set Mode Switch to LSB.
Oscilloscope (useable to 30 MHz)	1 thru 23	T9, T10, T11, T12, T13		Connect scope to TP3 and TP2 set to channel 11 and adjust for maximum amplitude. Check amplitude on all channels.

COURIER MODEL SPARTAN SSB

HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

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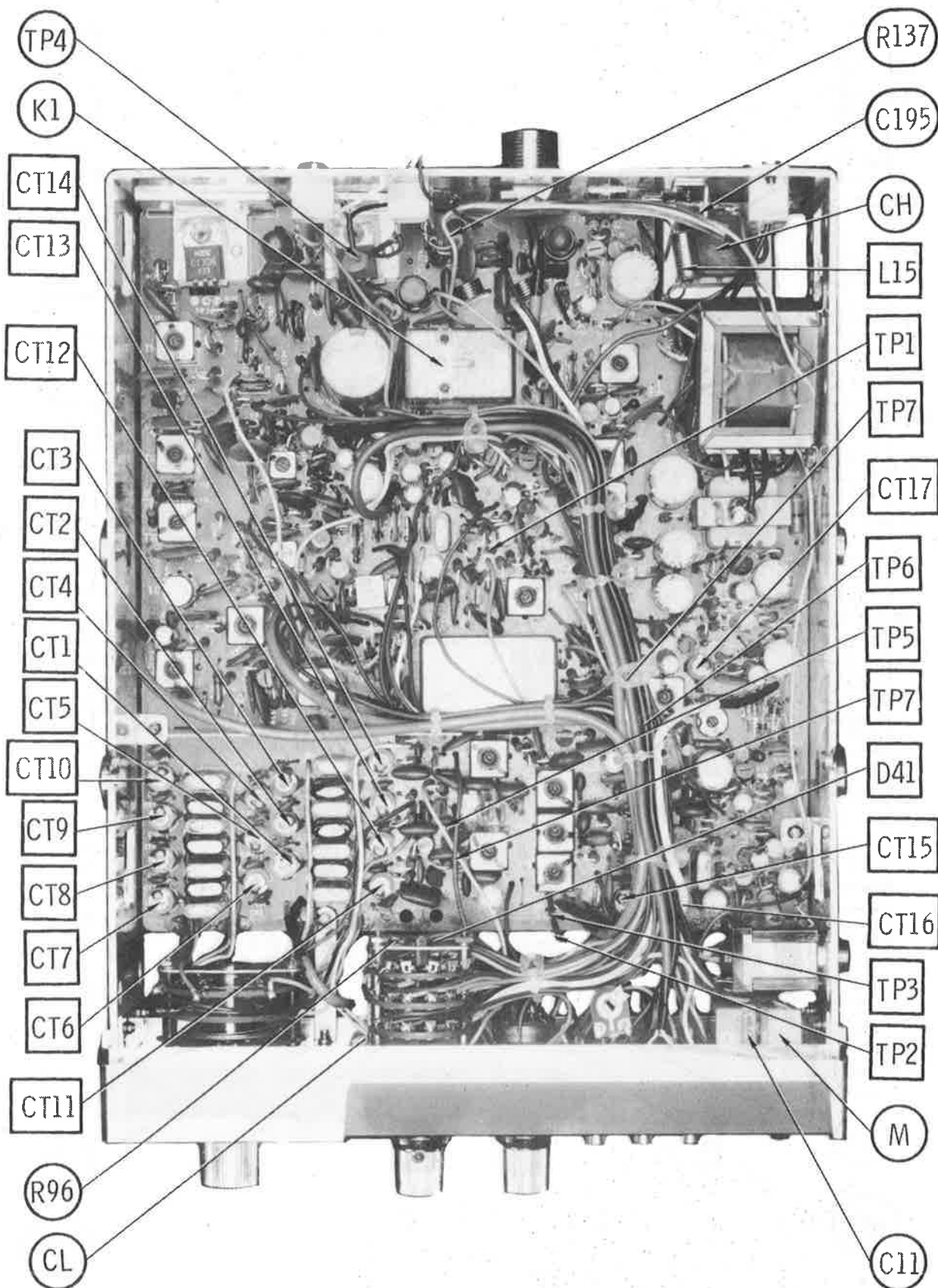
TRANSMITTER ALIGNMENT

INDICATOR	ADJUST	REMARKS
<u>AM</u> RF Wattmeter	T21, T20, T19, T18 L11, L9	Mode switch to AM, channel set to channel 13. Connect to antenna connector key transmitter and adjust for maximum power output.
0-1 ADC milliammeter	L9	Mode switch to AM. Connect meter to TP"C". Key transmitter adjust for 5 watts input.
TV Set (channel 2)	L6	Key transmitter Adjust for MINIMUM interference.
<u>SSB</u> RF Wattmeter	CT17, VR10	Connect wattmeter and scope to antenna connector. Set mode switch to use or LSB. Short microphone to ground. Key transmitter adjust for MINIMUM carrier (no modulation).
	T17	Adjust for maximum resident carrier.
0-50 mA DC Milliammeter	VR13	Insert meter at TP"C". Key transmitter and adjust for MINIMUM current. (no audio)

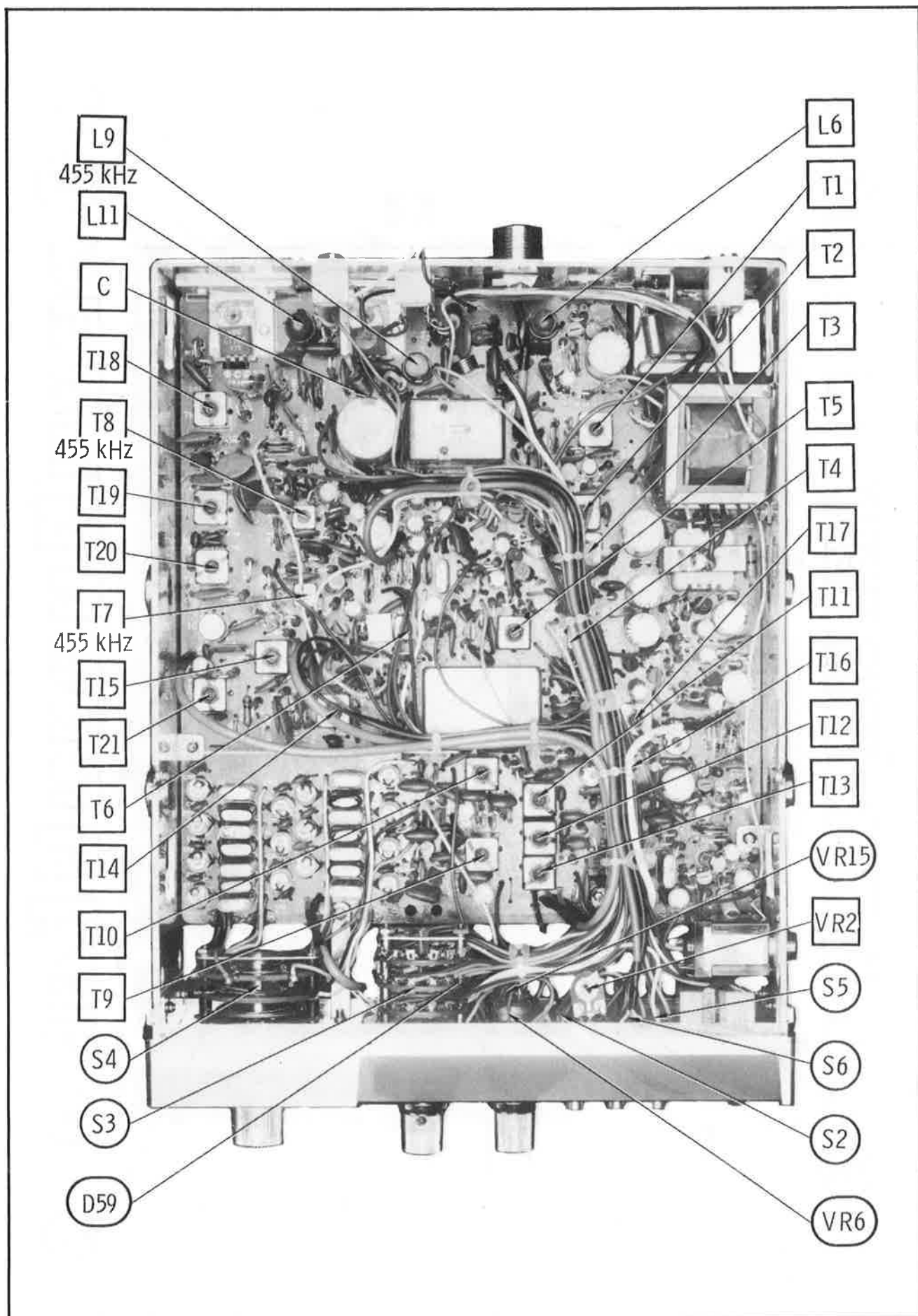
RECEIVER ALIGNMENT

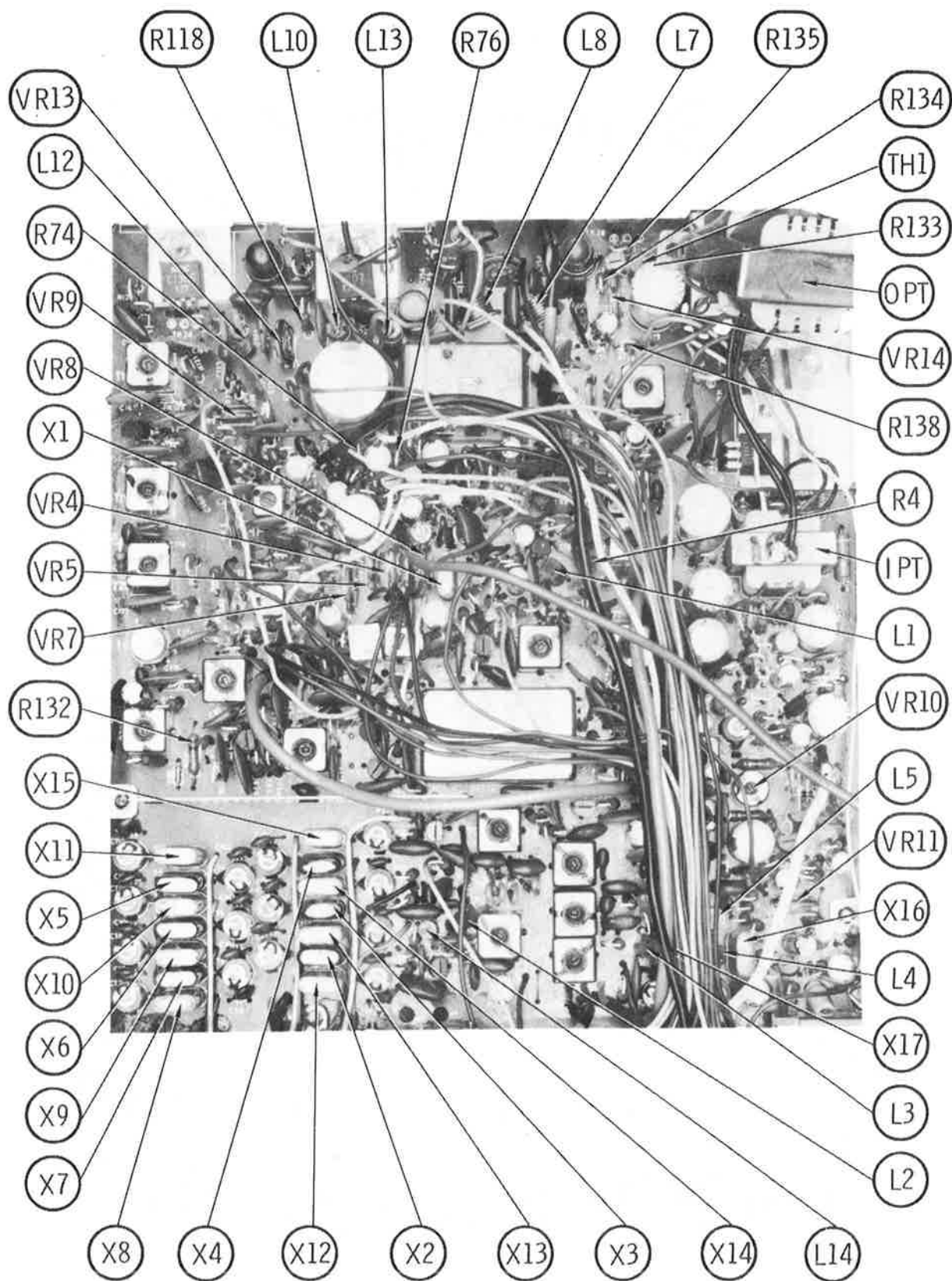
Correct an AC VTVM across speaker voice coil.
PA/CB to CB; NB/off to off; DX/local to local; clarifier to mid range; mode switch to
aplicable position.
Adjust volume control to obtain a suitable reading.

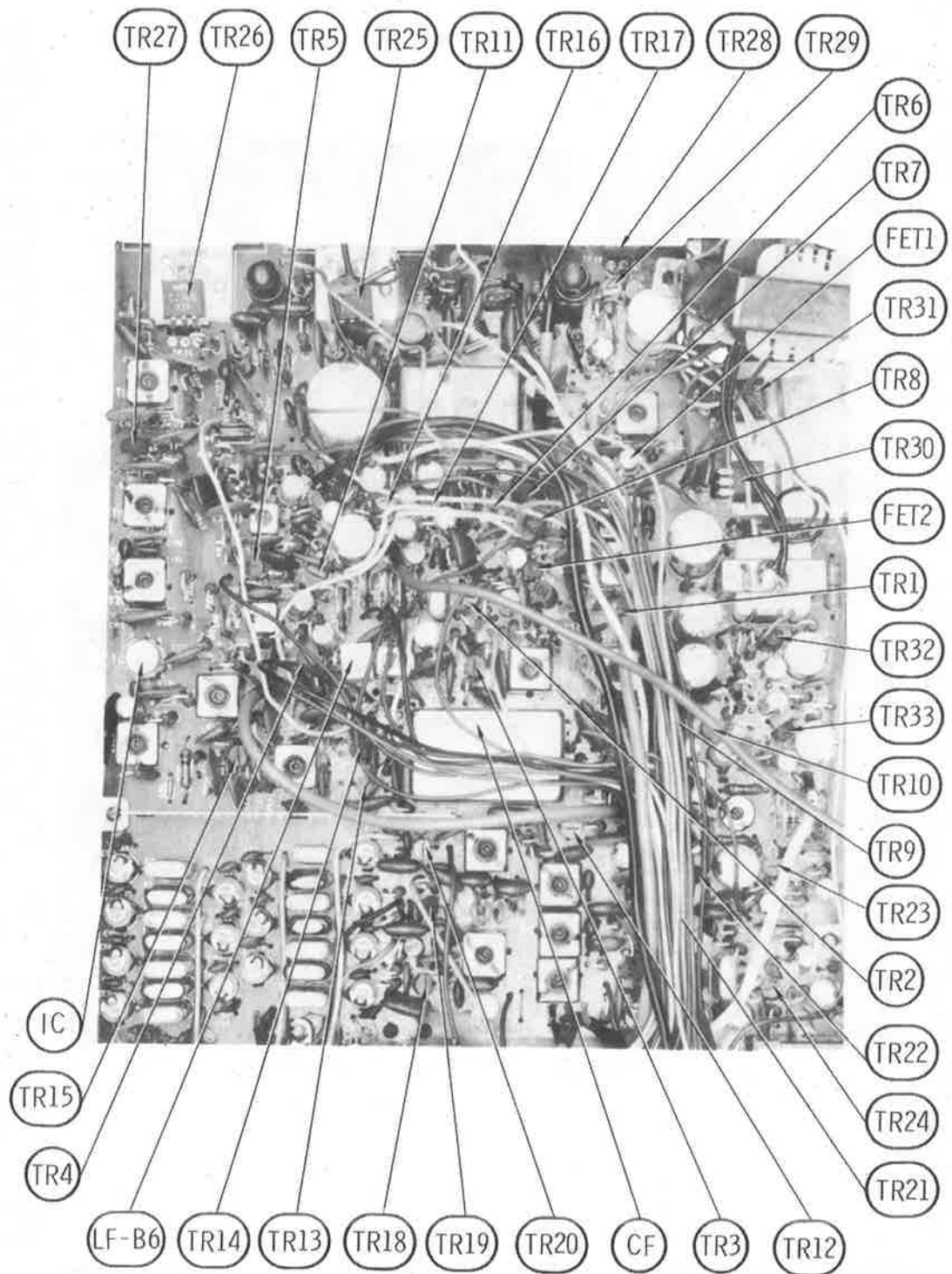
SIGNAL GENERATOR	CHANNEL	ADJUST	REMARKS
<u>AM</u> High side thru a .01 uF to base of TR3 (2nd mixer), low side to ground. Set to 455 MHz (1000 Hz, 30% mod.)	Any	T6, T7, T8	Mode switch to AM. Adjust for maximum.
High side thru a .01 uF to antenna connector, low side to ground. Set to 27.115 MHz (1000 Hz 30% mod.)	13	T1, T2, T3	Mode switch to Am. Adjust for maximum.
High side thru a .01 uF to TP3, low side to TP2. Set to 7.8 MHz (1000 Hz 30% mod.)	Any	T5	Mode switch to AM. Adjust for maximum.
<u>SSB</u> High side thru a .01 uF to TP3, low side to TP2. Set to 7.8 MHz, (1000 Hz, 30% mod.)	Any	T4, T14, T15	Mode switch to LSB. Adjust for maximum.
High side thru a .01 uF to TP3, low side to TP2. Set to 7.8 MHz unmodulated. An audio beat will be produced by the SSB Osc. and the 7.8 MHz IF.	Any	T16	Mode switch to LSB. Adjust for maximum.
<u>AM</u> High side thru a .01 uF to antenna connector, low side to ground. Set to 27.115 MHz, (1000 Hz, 30% mod. @ 5000 uV)	13	VR4	Mode switch to AM. Squelch control fully CW. Set so squelch just breaks.
<u>SSB</u> High side thru a .01 uF to antenna connector, low side to ground. Set to 27.115 MHz, (1000 Hz, 30% mod. @ 350 uV.)	13	VR5	Mode switch to LSB, squelch control fully CS. Set so squelch just breaks.

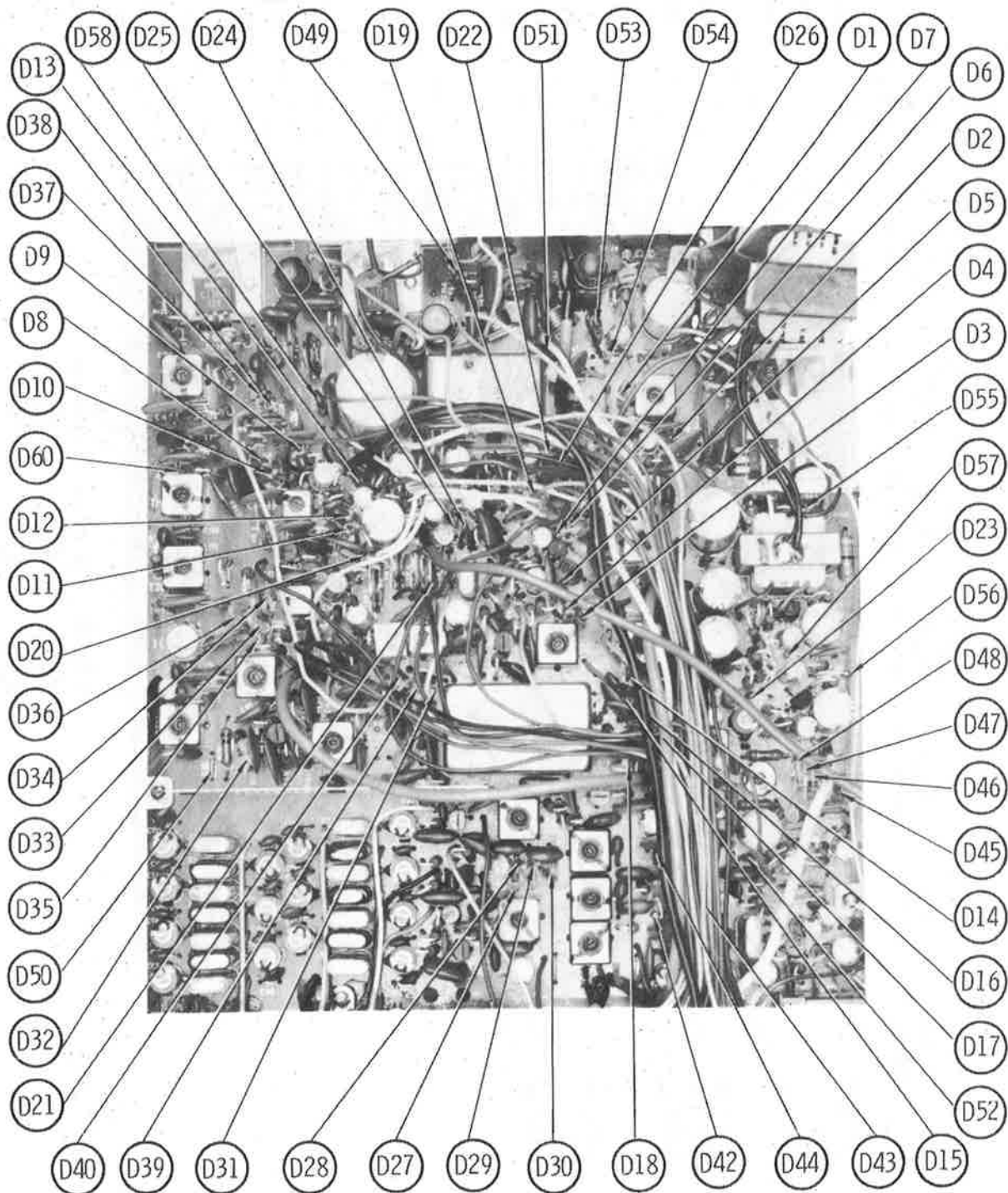


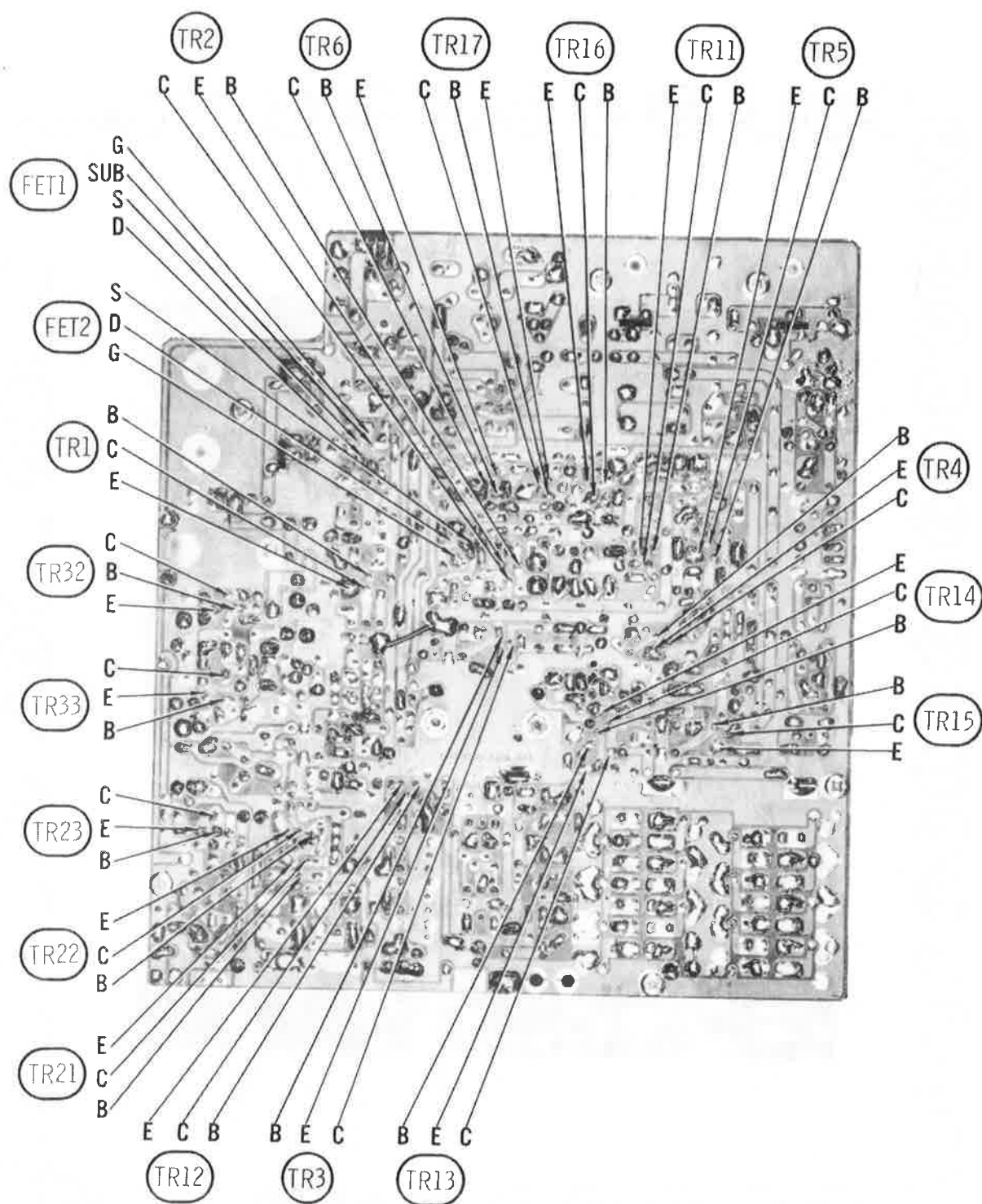
COURIER MODEL SPARTAN SSB

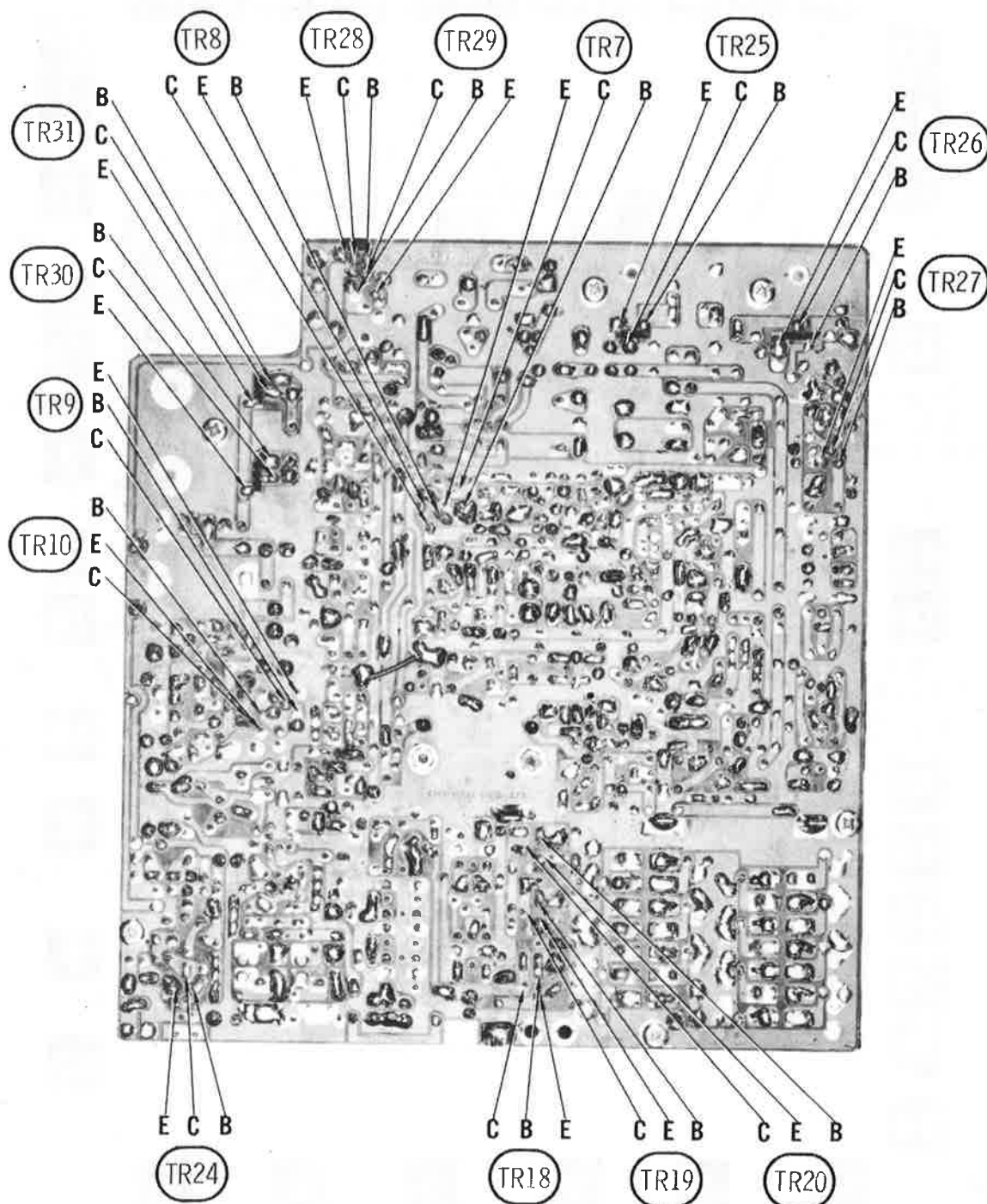


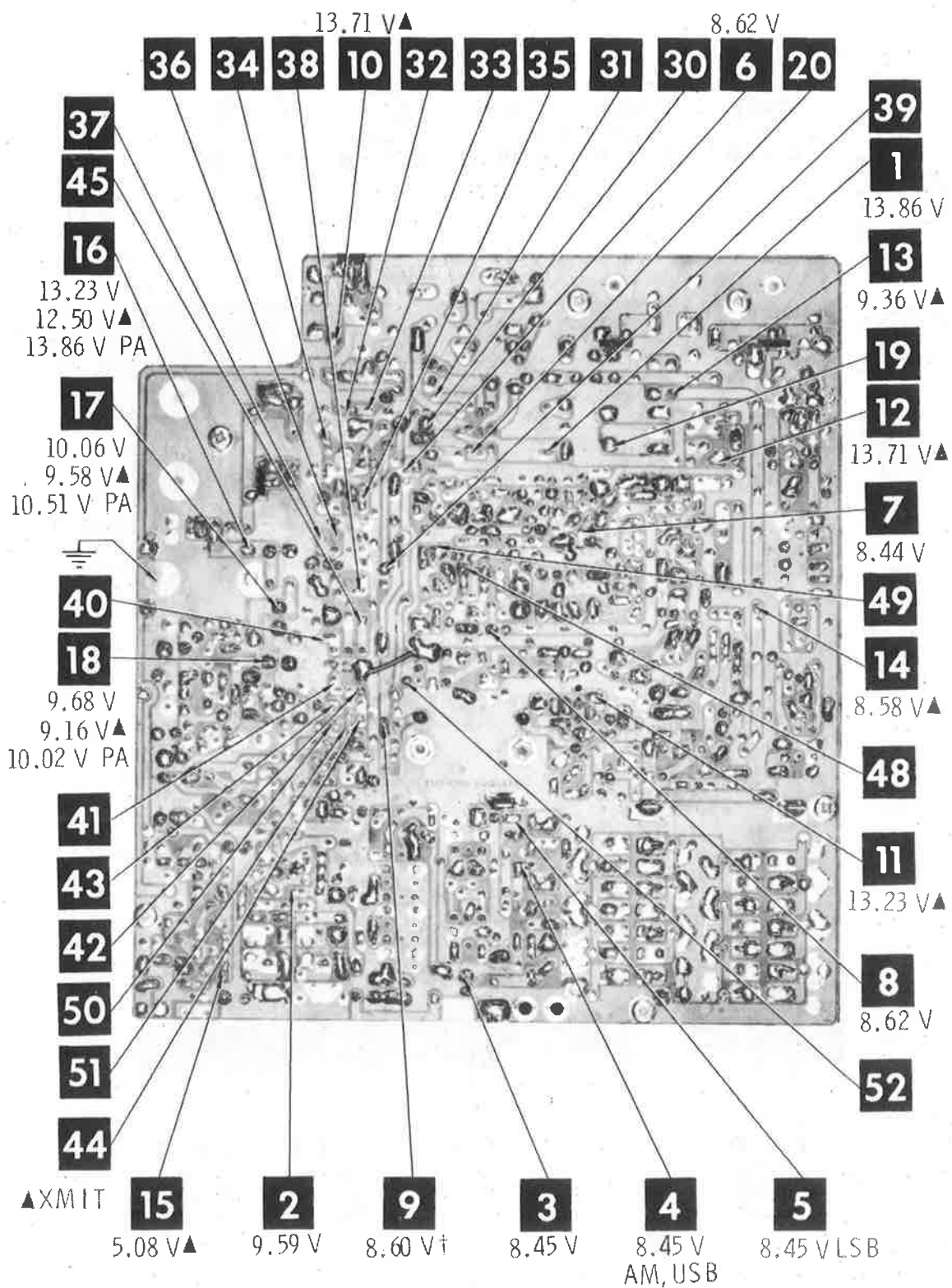


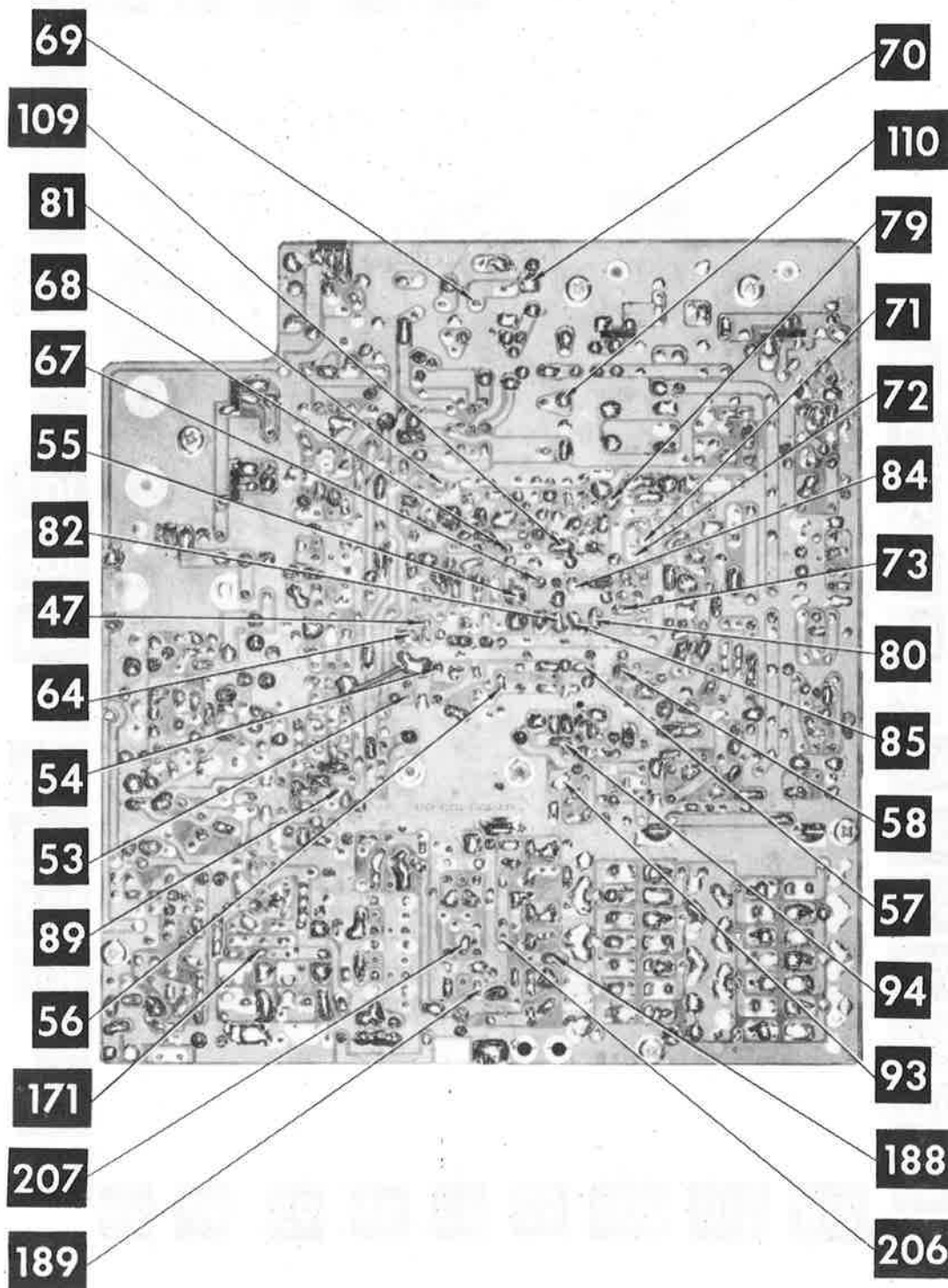


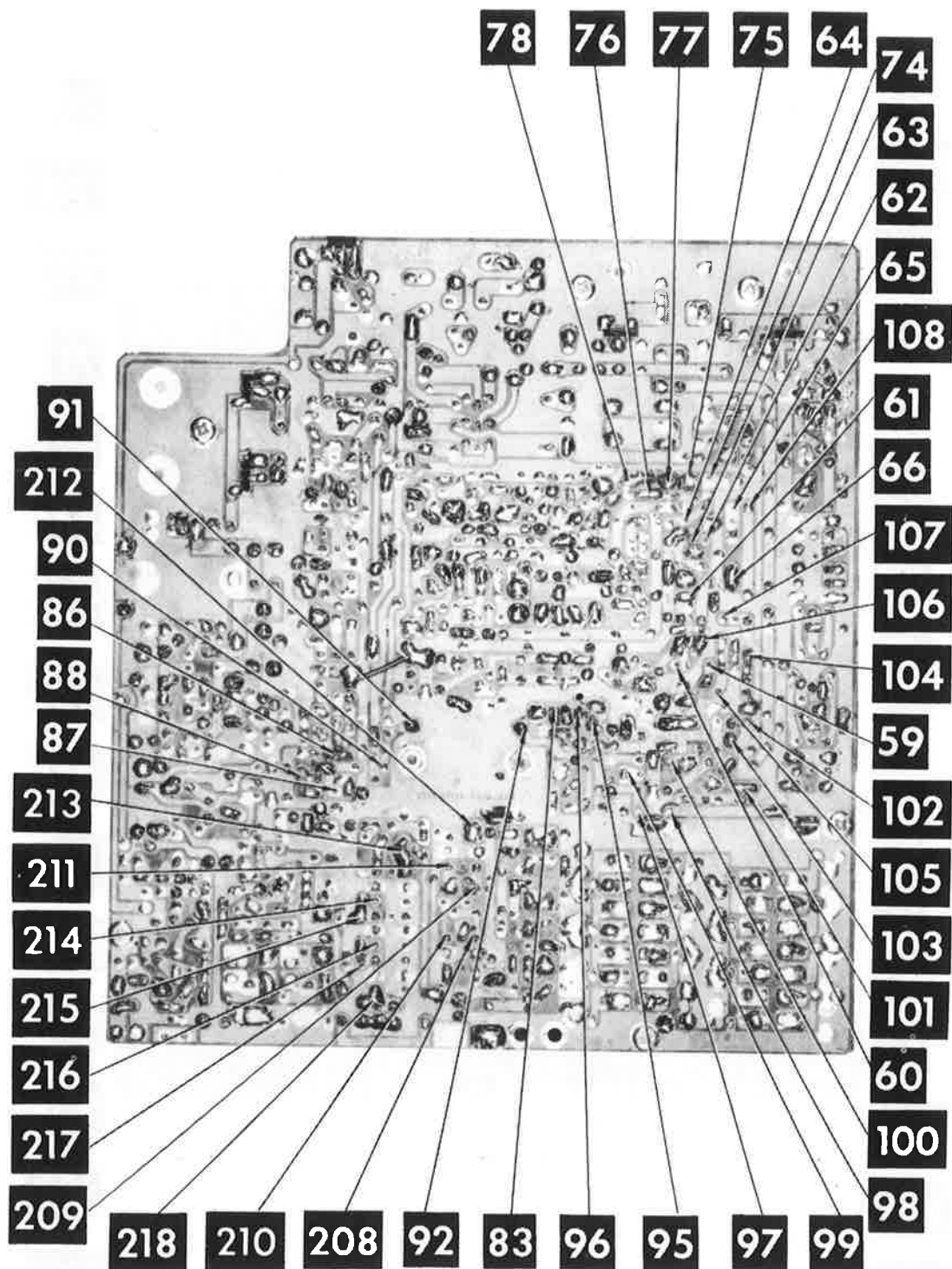


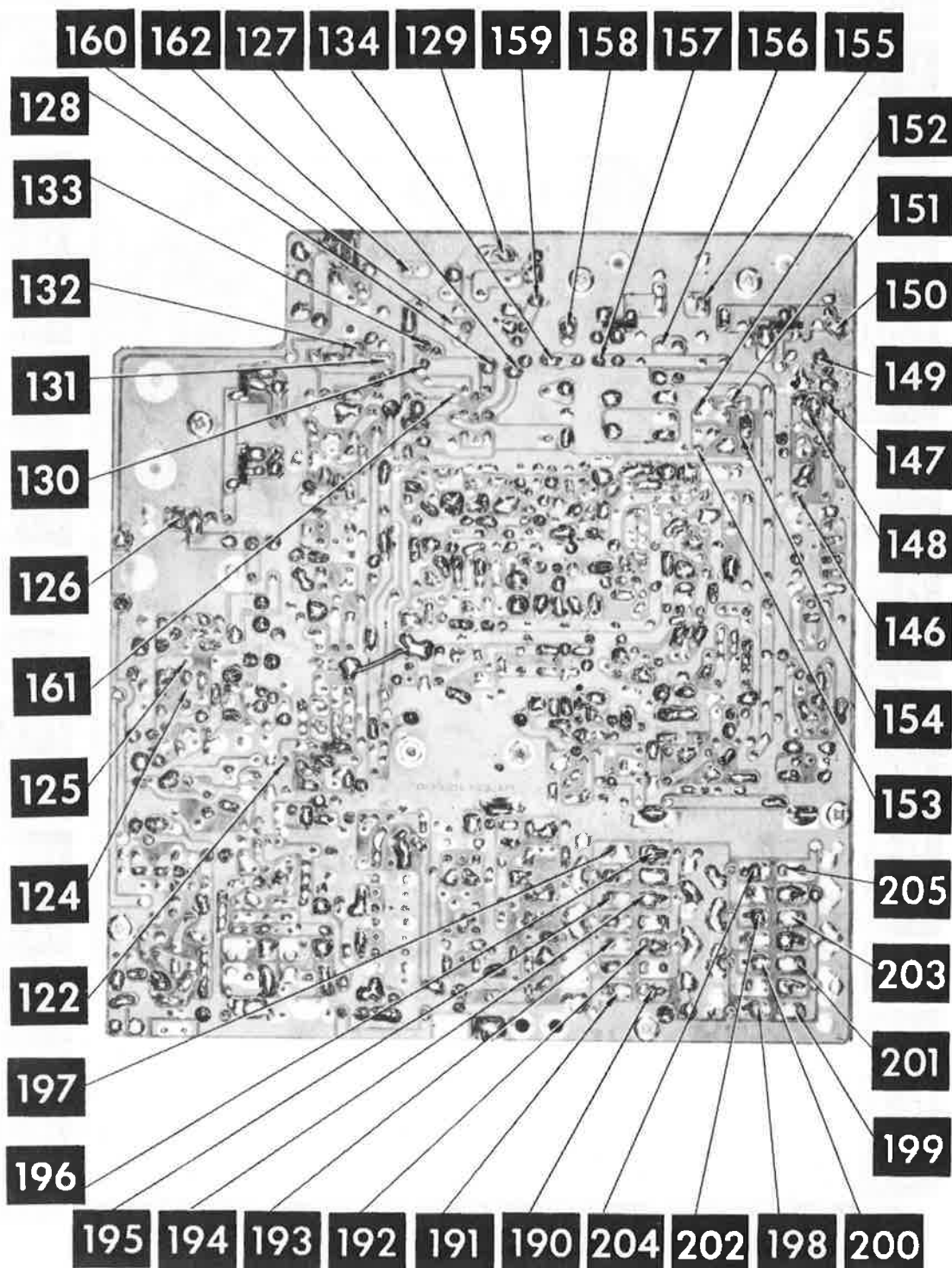


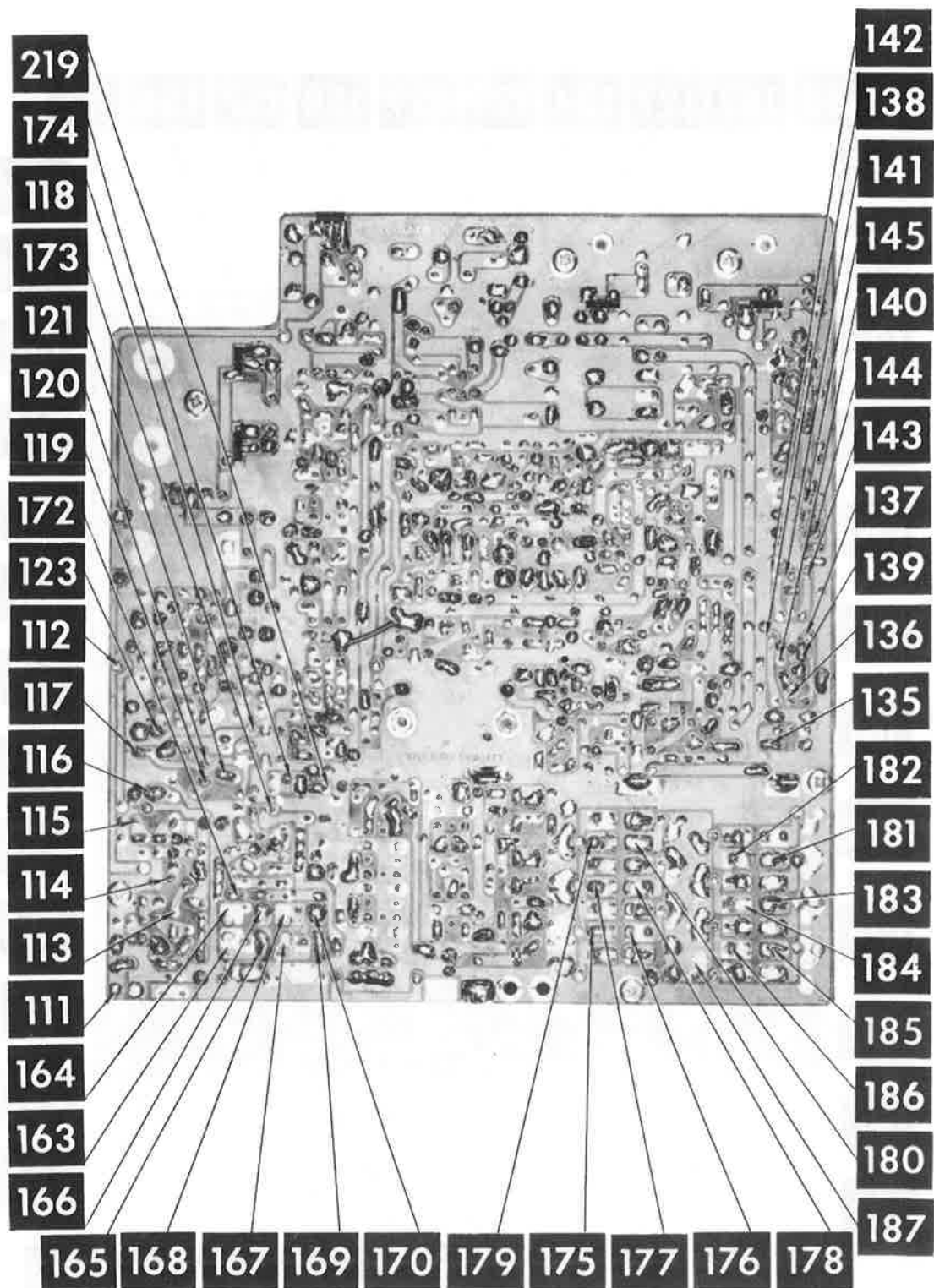


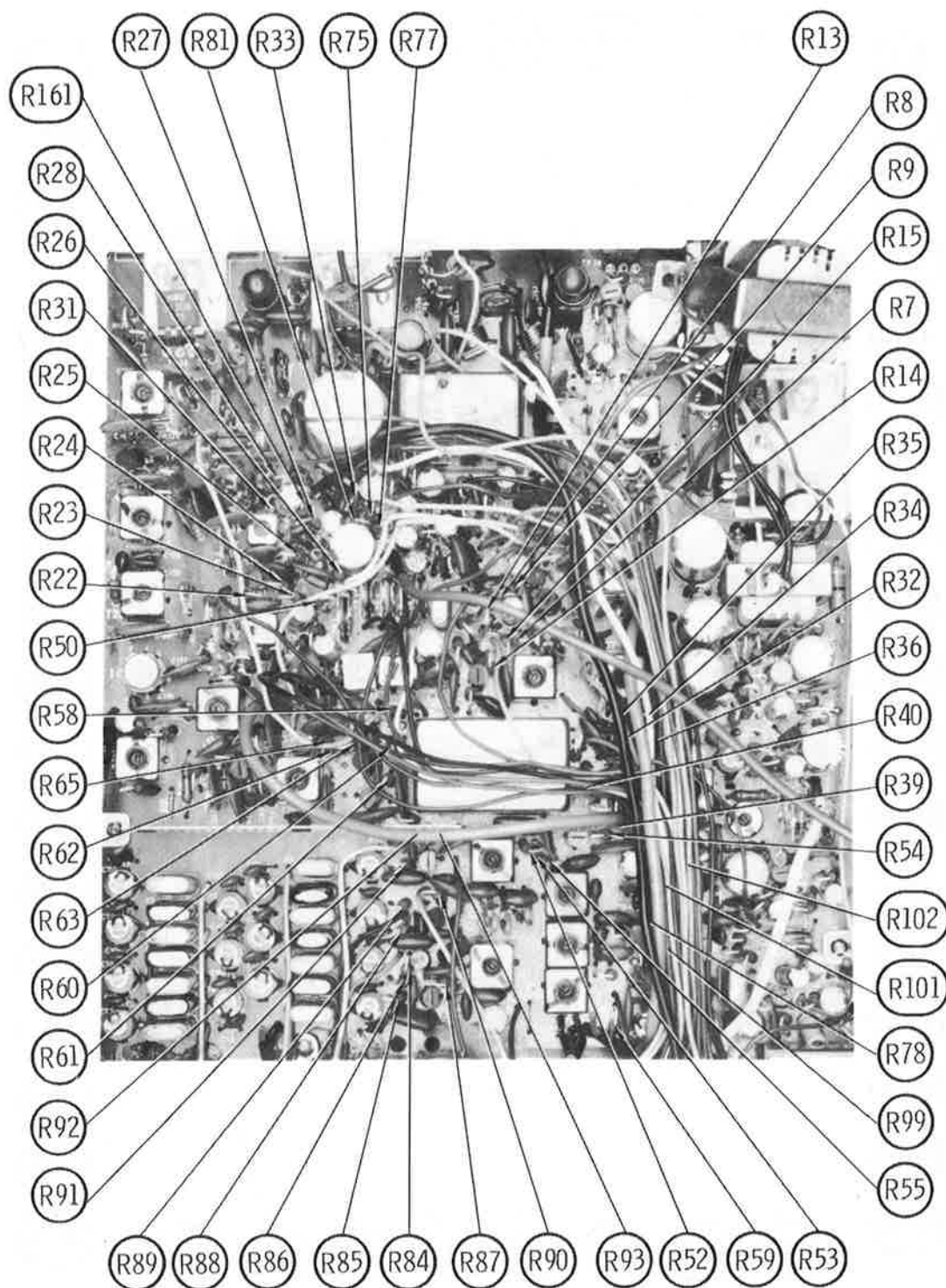


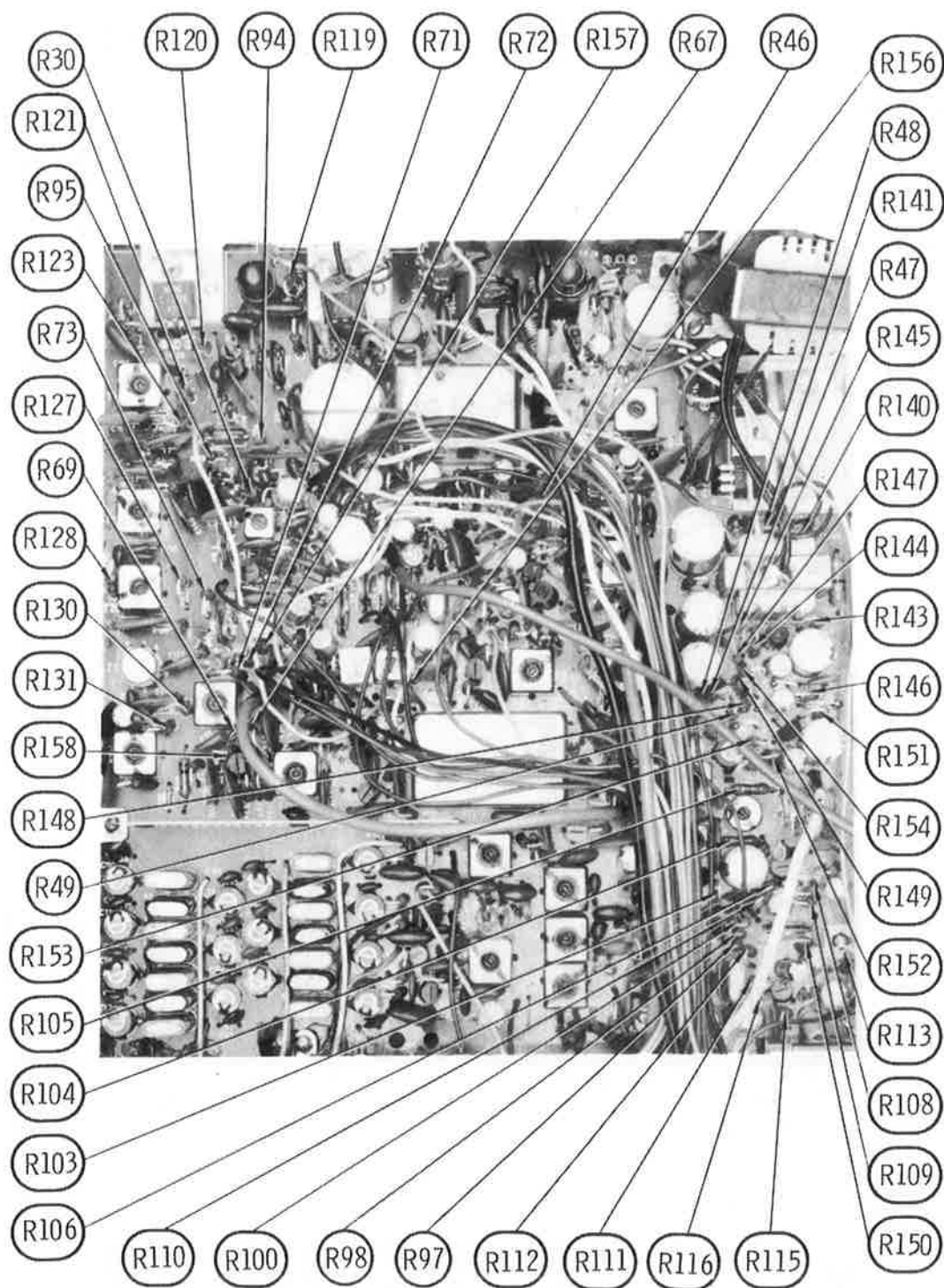


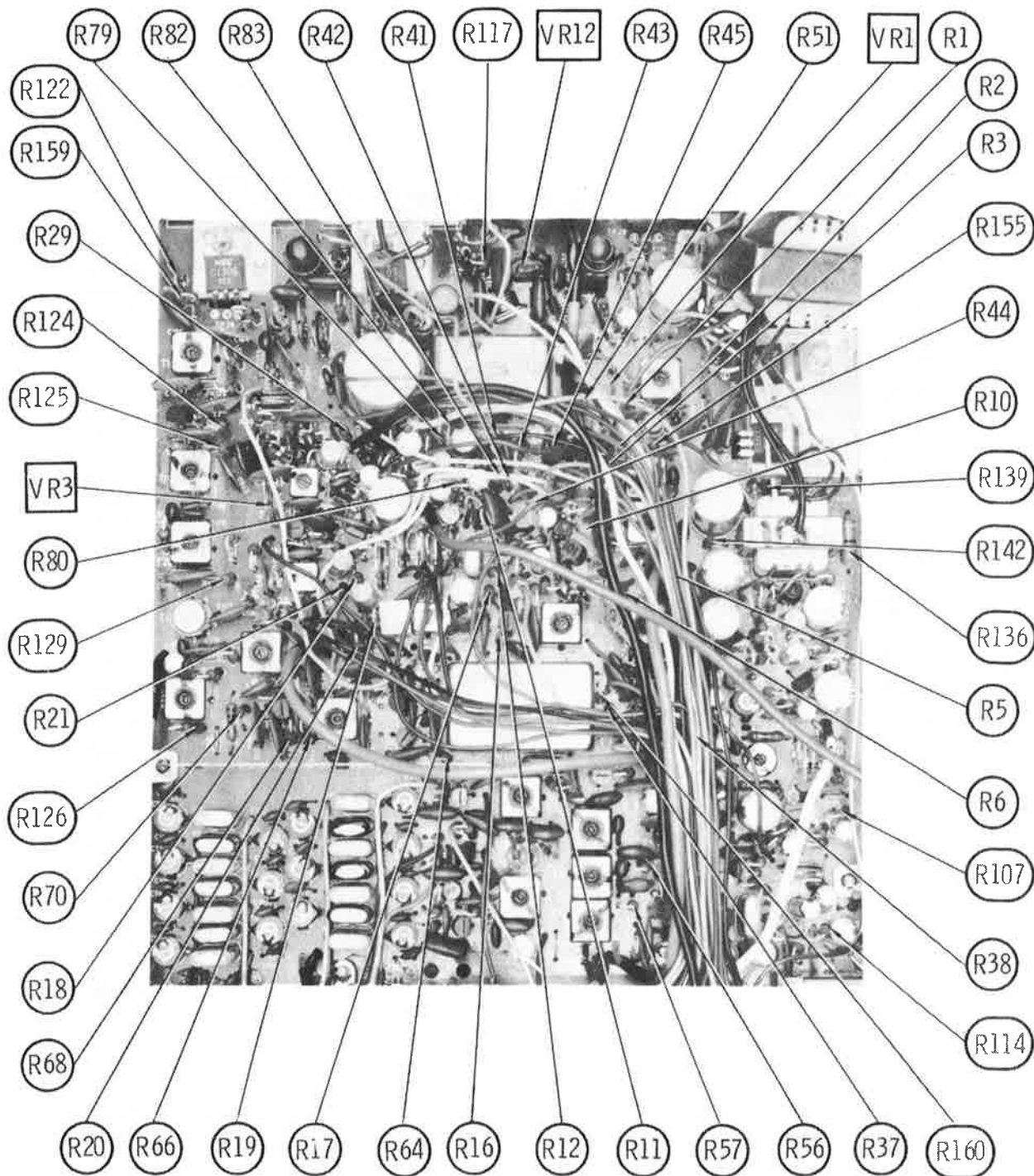




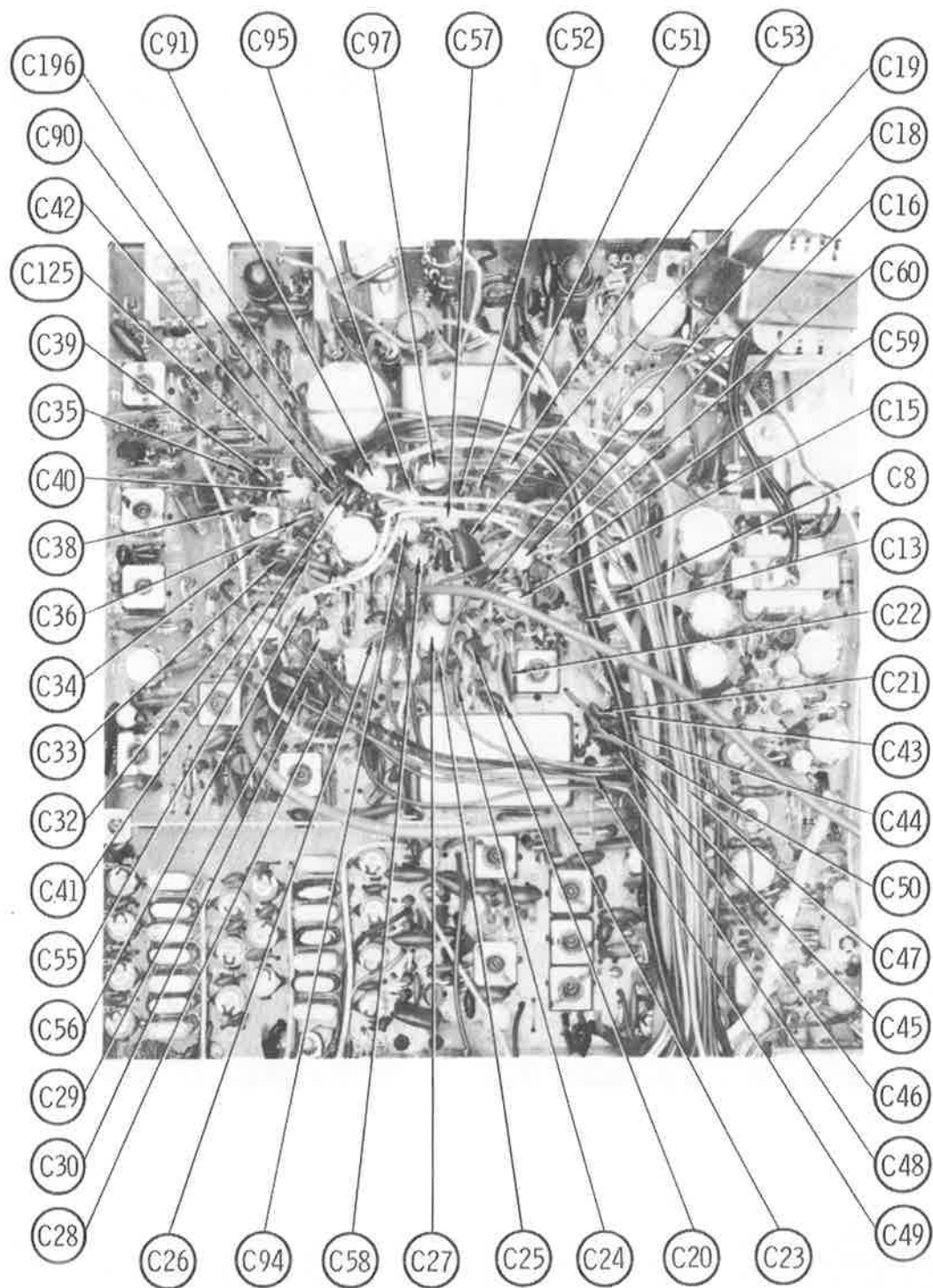


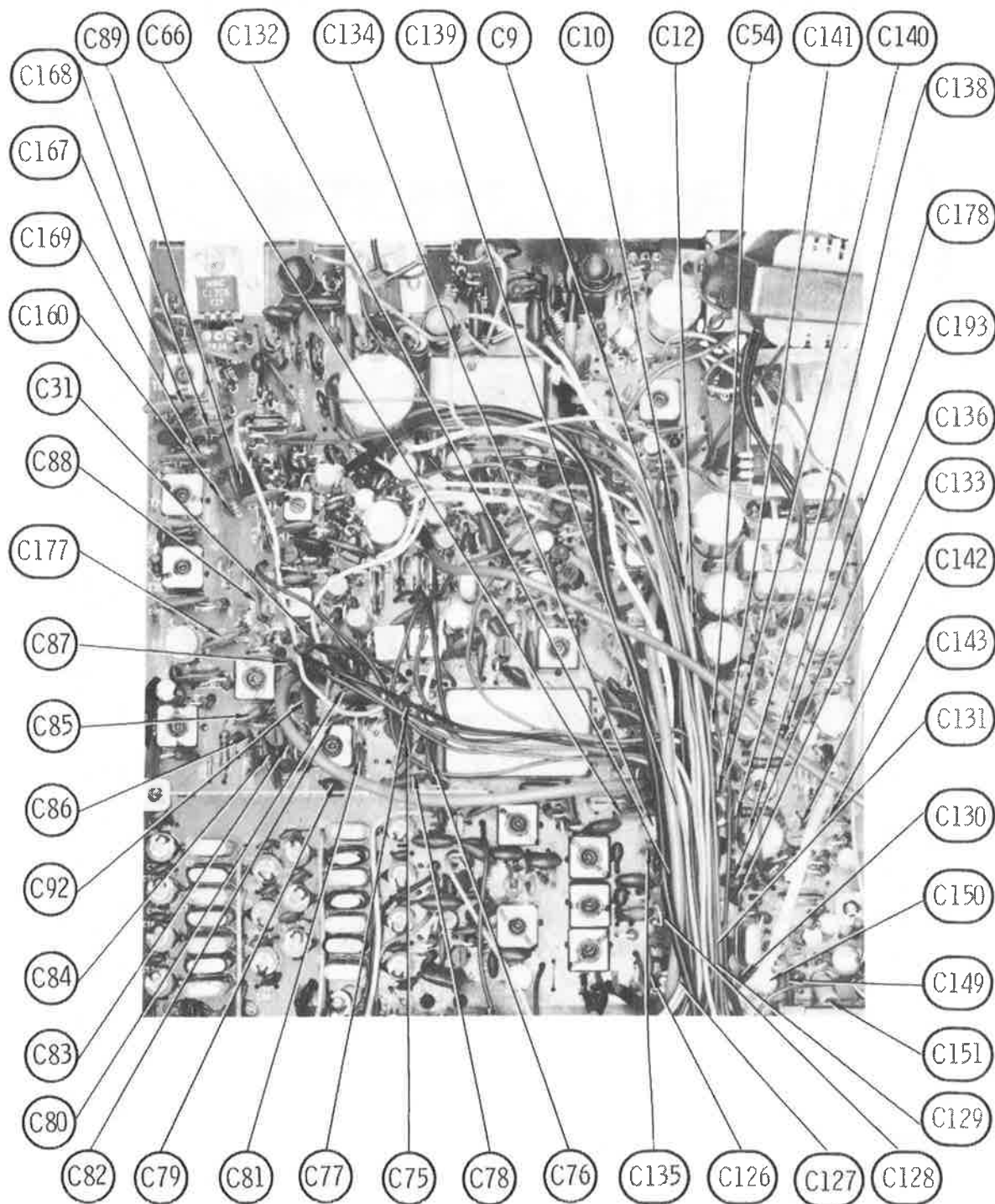




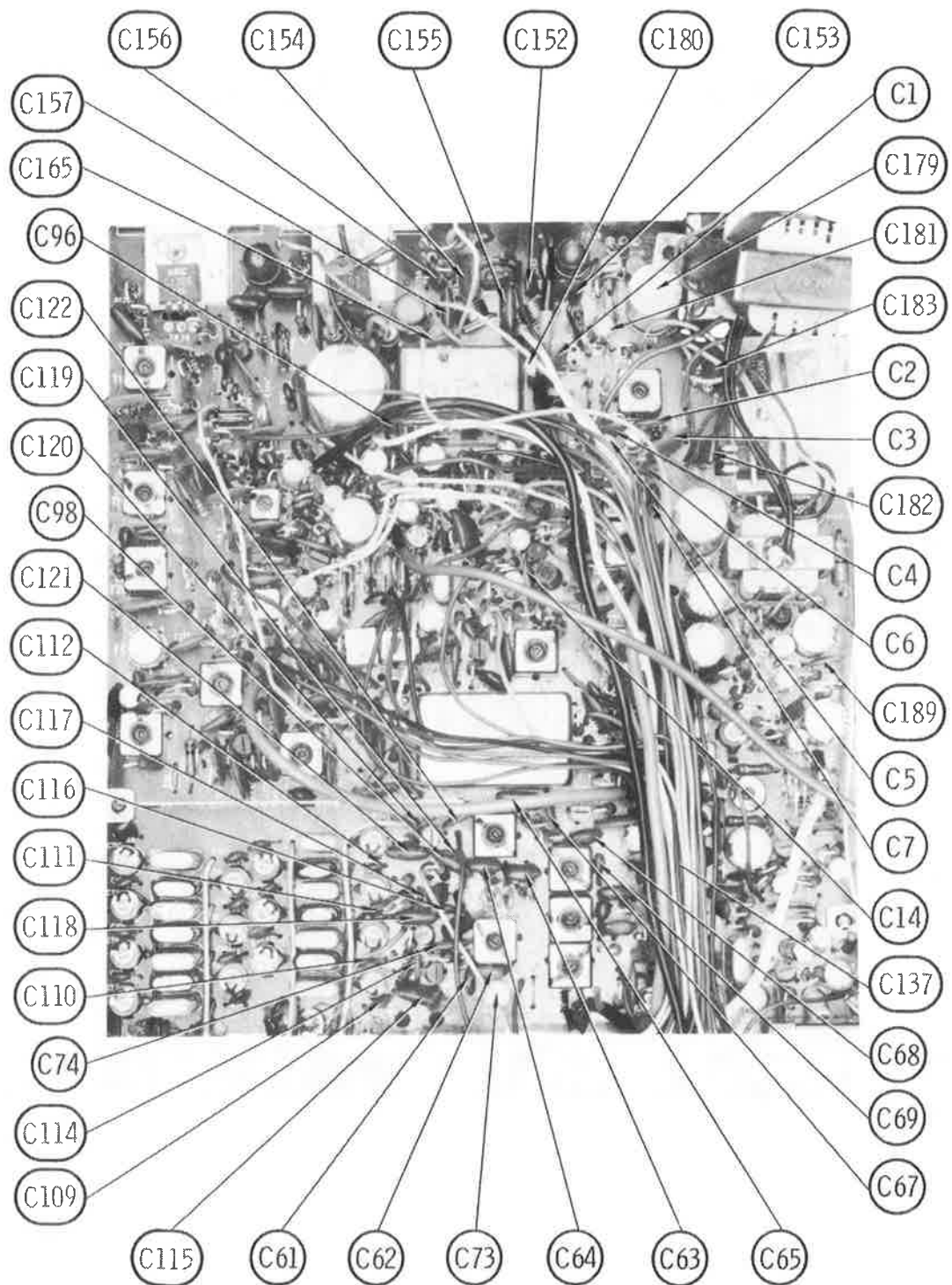


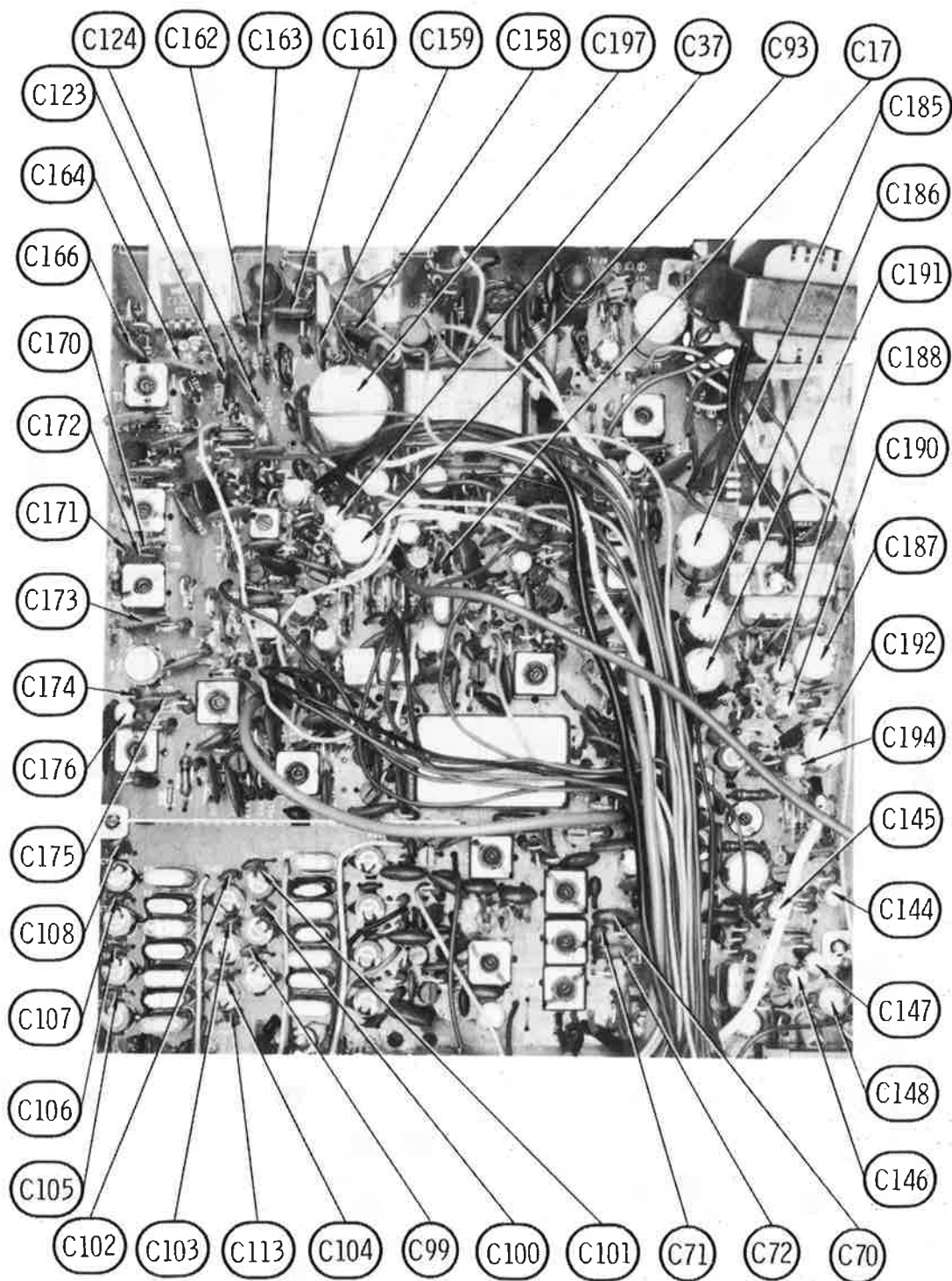
COURIER MODEL SPARTAN SSB

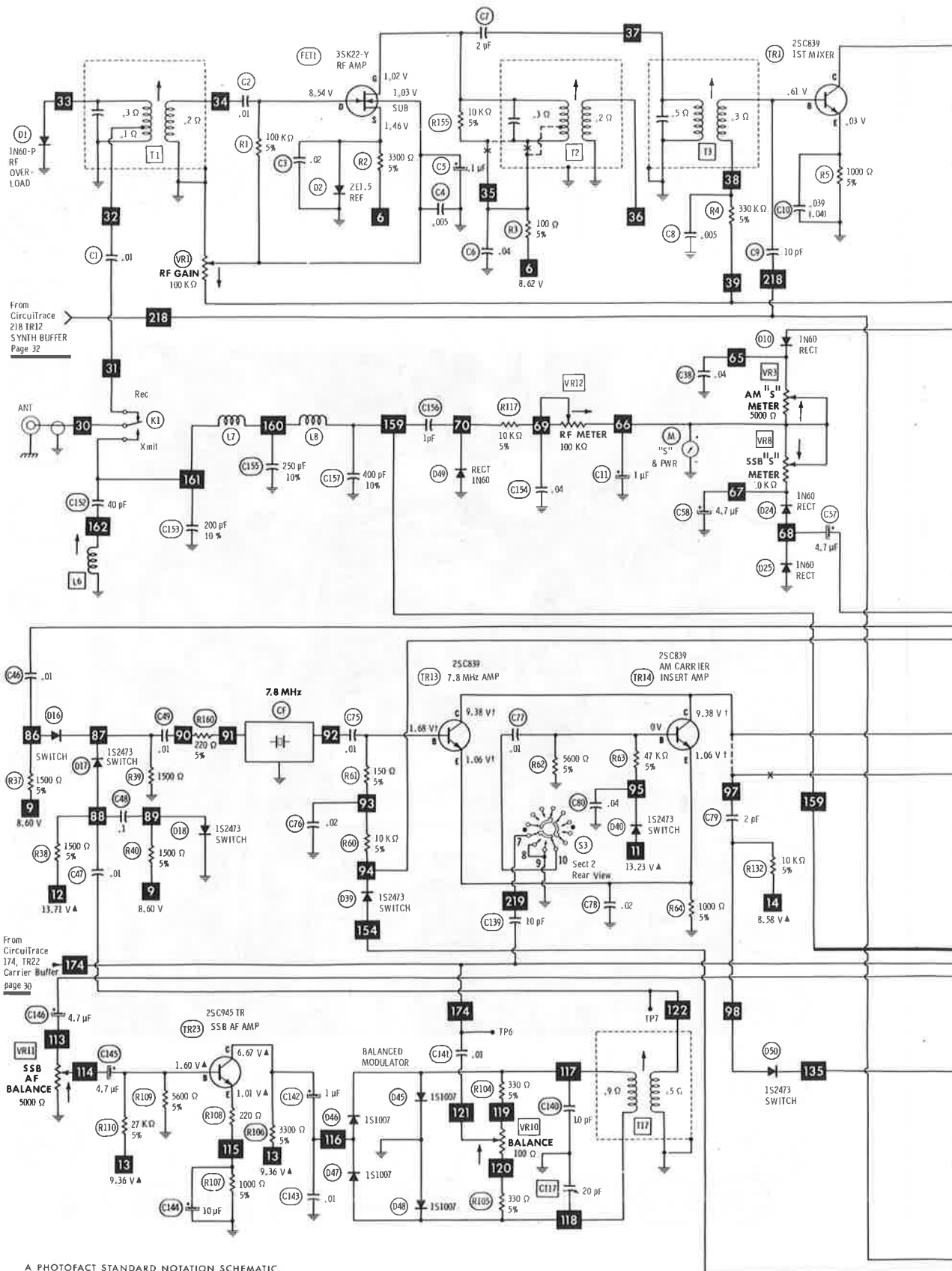




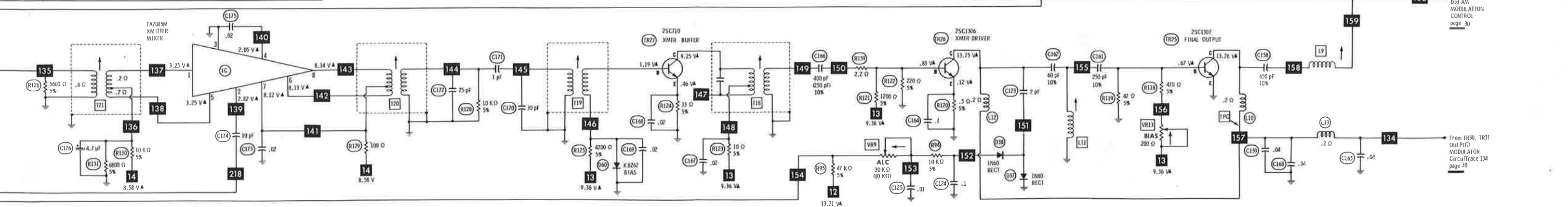
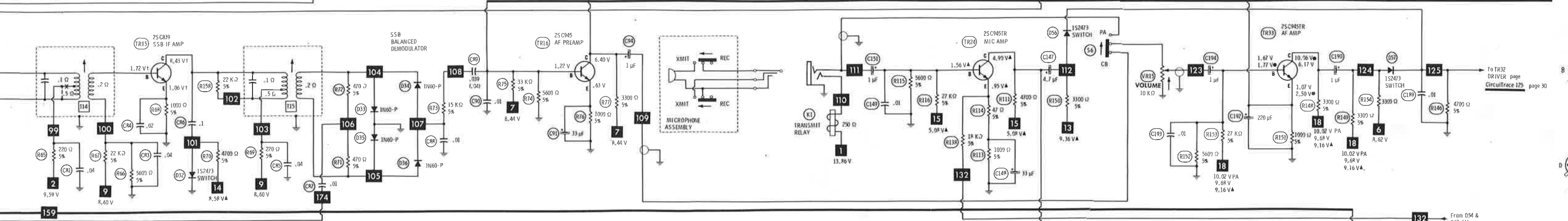
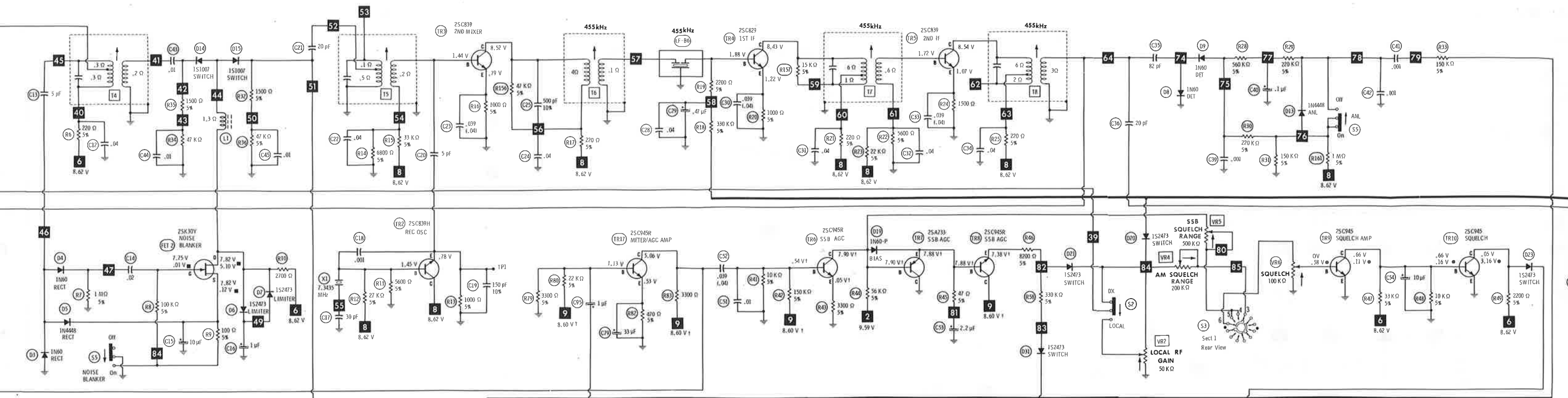
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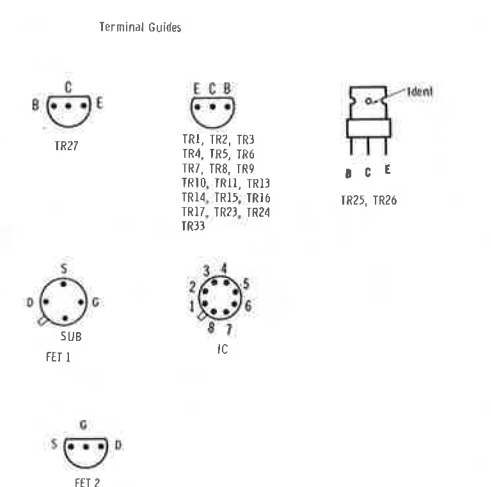
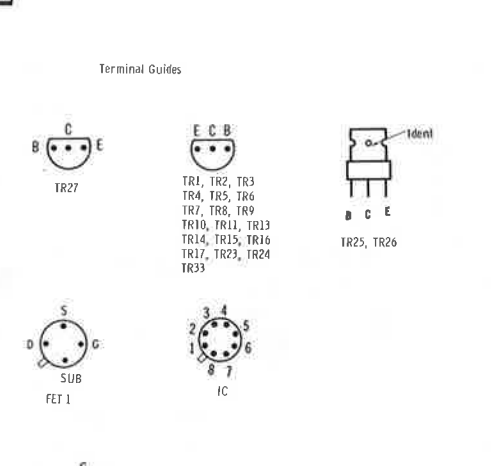
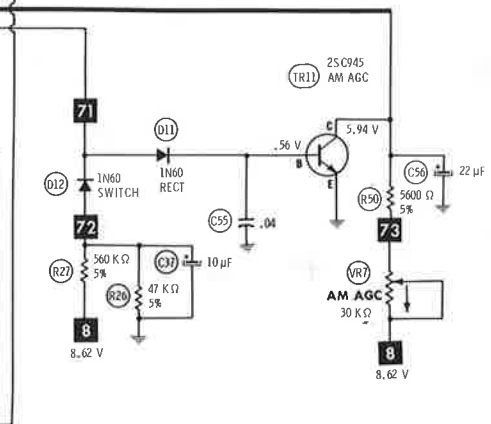
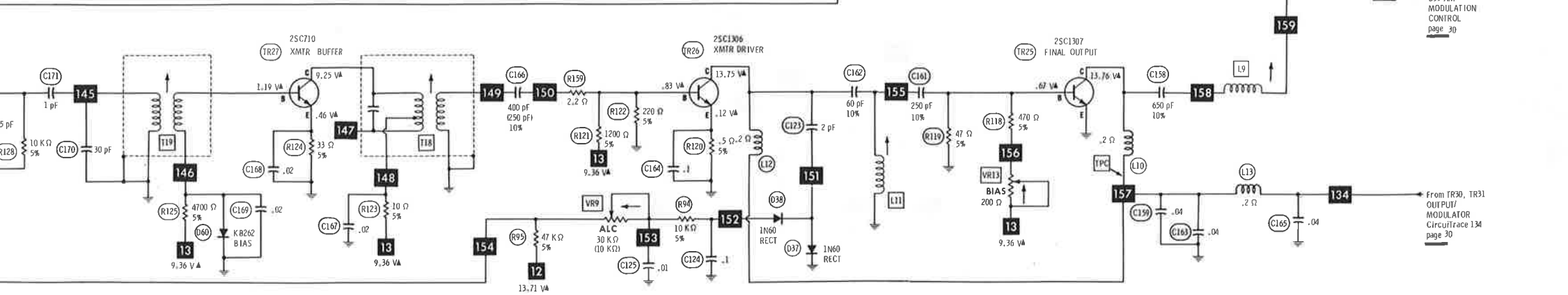
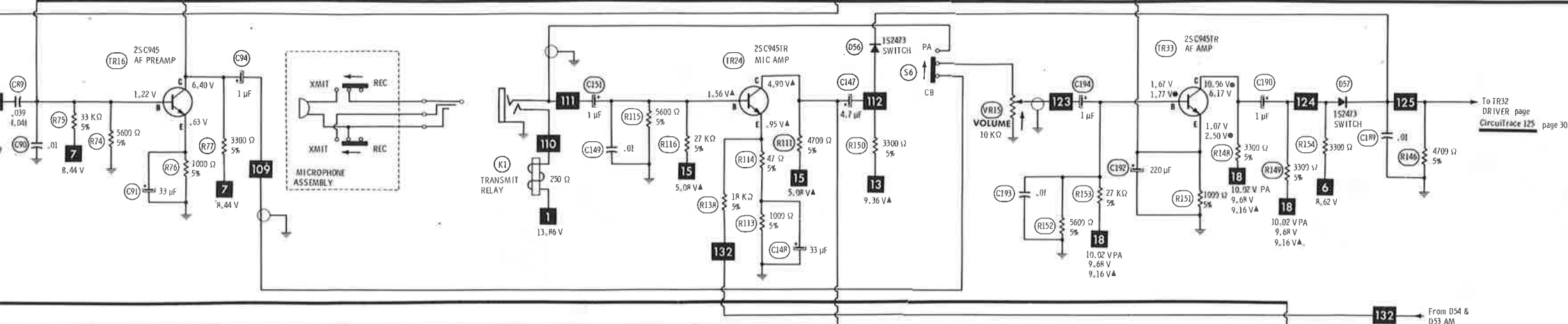
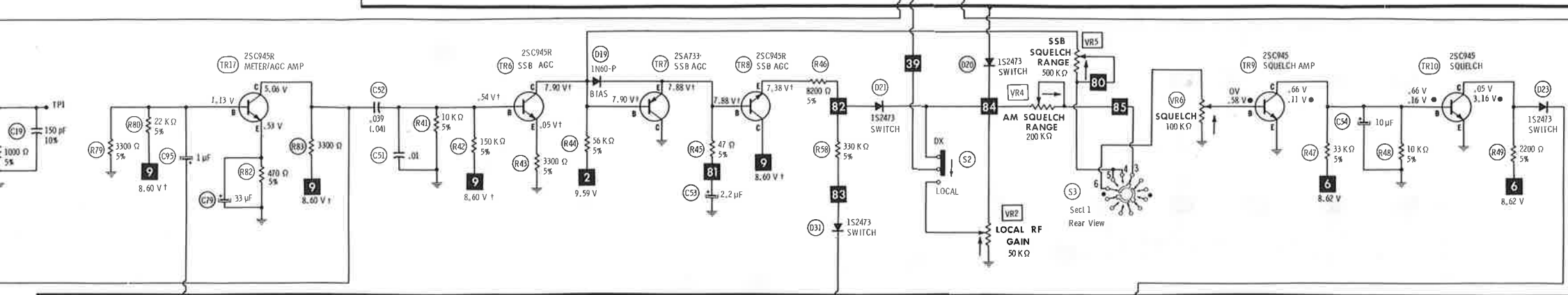
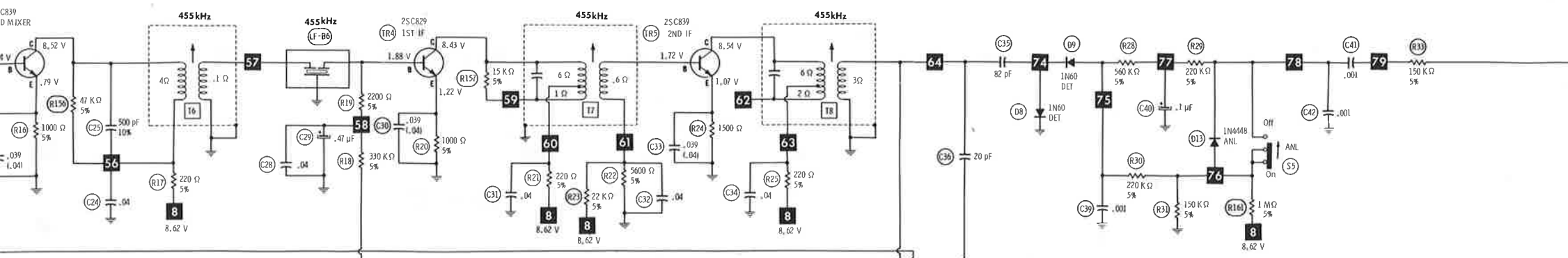


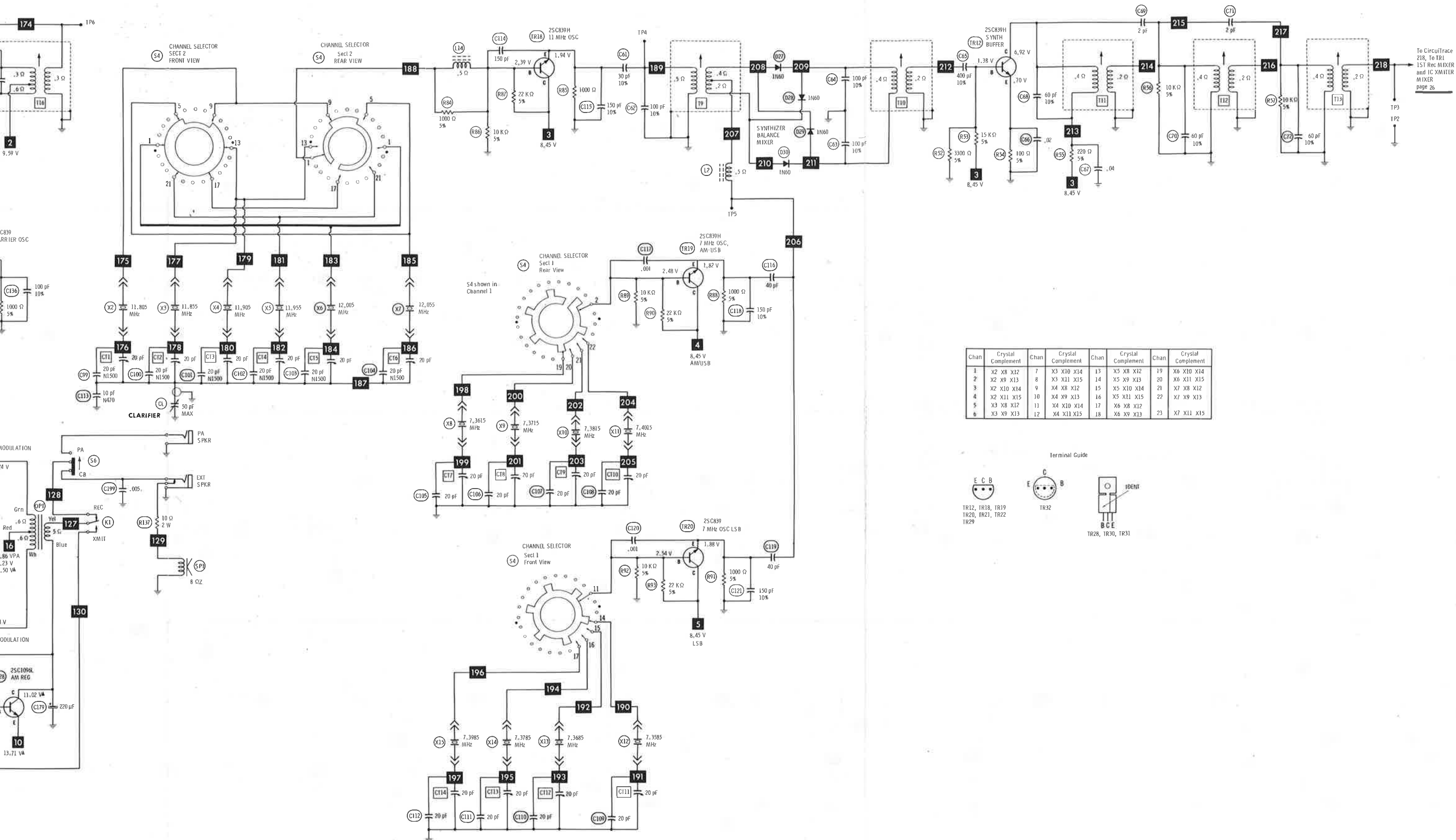




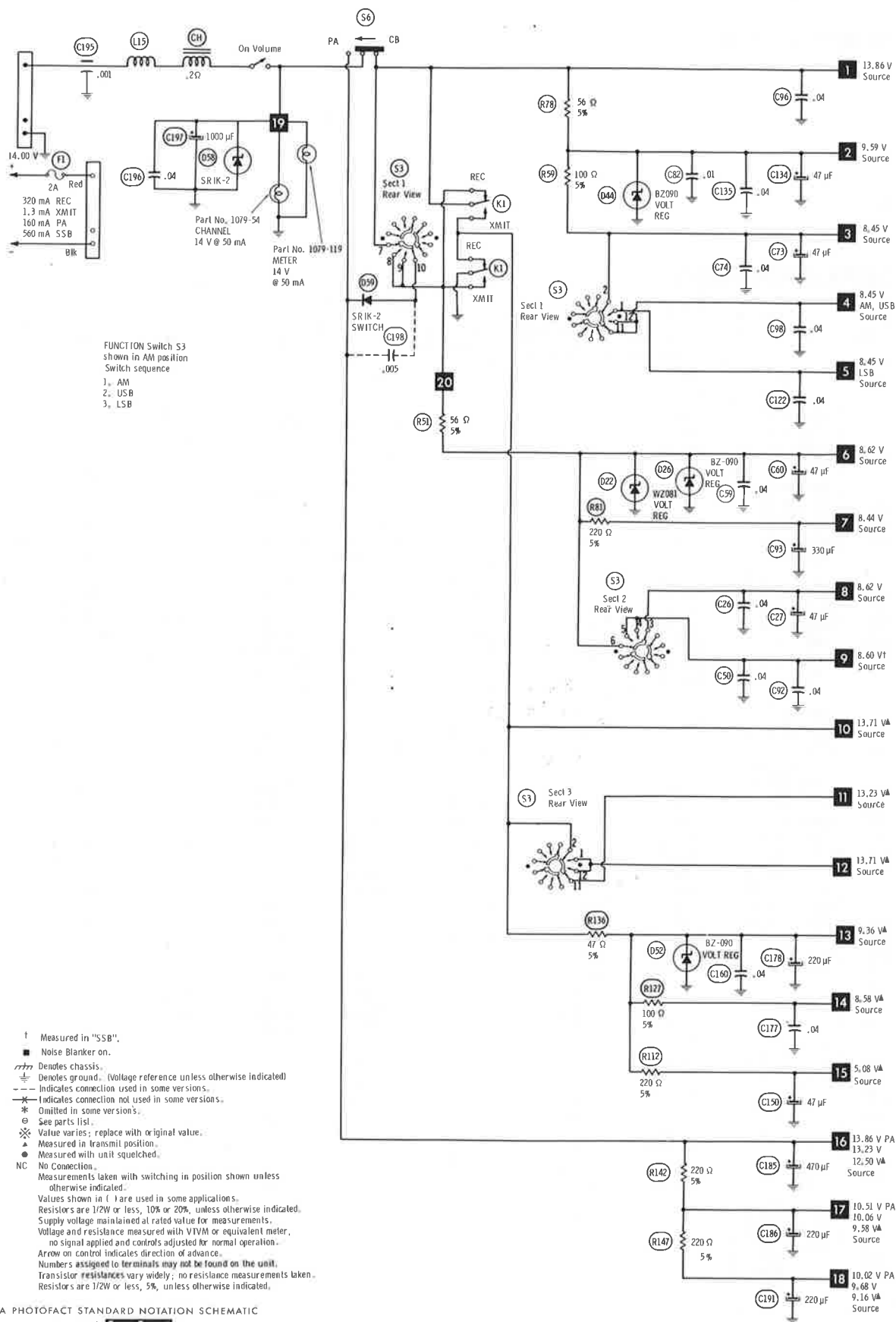
SEE NOTES ON PAGE 33







Chan	Crystal Complement	Chan	Crystal Complement	Chan	Crystal Complement	Chan	Crystal Complement
1	X2 X8 X12	7	X3 X10 X14	13	X5 X8 X12	19	X6 X10 X14
2	X2 X9 X13	8	X3 X11 X15	14	X5 X9 X13	20	X6 X11 X15
3	X2 X10 X14	9	X4 X8 X12	15	X5 X10 X14	21	X7 X8 X12
4	X2 X11 X15	10	X4 X9 X13	16	X5 X11 X15	22	X7 X9 X13
5	X3 X8 X12	11	X4 X10 X14	17	X6 X8 X12	23	X7 X11 X15
6	X3 X9 X13	12	X4 X11 X15	18	X6 X9 X13		



COURIER MODEL SPARTAN SSB

COURIER MODEL SPARTAN SSB

PARTS LIST AND DESCRIPTION

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

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.)

SEMICONDUCTORS

ITEM No.	TYPE / MFG. No. / PART No.	REPLACEMENT DATA						
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	MOTOROLA PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
D1	1N60P/1042-3	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D2	ZE1.5/13Z-1005 (1.5 V Zener) (1)							
D3	1N60/296-42-9	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D4	1N60/296-42-9	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D5	1N4448/1042-16	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D6	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D7	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D8	1N60/296-42-9	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D9	1N60/296-42-9	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D10	1N60/296-42-9	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D11	1N60/296-42-9	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D12	1N60/296-42-9	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D13	1N4448/1042-16	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D14	1S1007/1079-89	GE-511	D172	PTC216	HEPR3012	SK3130		ECG 506
D15	1S1007/1079-89	GE-511	D172	PTC216	HEPR3012	SK3130		ECG 506
D16	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D17	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D18	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D19	1N60P/1042-13	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D20	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D21	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D22	W2081/1074-122 (8.1 V Zener)	GE-X11	Z-1208	ZB8.2	HEPZ0411	SK3059	RT239	ECG 5072
D23	1N60/296-42-9	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D24	1N60/296-42-9	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D25	1N60/296-42-9	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D26	BZ090 (9.1 V Zener)	GEZD-9.1	Z-1210	PTC505	HEPZ0412	SK3060	RT240	ECG 139
D27	1N60P/1042-13	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D28	1N60P/1042-13	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D29	1N60P/1042-13	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D30	1N60P/1042-13	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D31	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D32	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D33	1N60P/1042-13	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D34	1N60P/1042-13	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D35	1N60P/1042-13	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D36	1N60P/1042-13	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D37	1N60/296-42-9	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D38	1N60/296-42-9	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D39	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D40	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D41	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D42	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D43	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D44	CZ-092/1080-10 (9.1 V Zener)	GEZD-9.1	Z-1210	PTC505	HEPZ0412	SK3060	RT240	ECG 139
D45	1S1007/1079-89	GE-511	D172	PTC216	HEPR3012	SK3130		ECG 506
D46	1S1007/1079-89	GE-511	D172	PTC216	HEPR3012	SK3130		ECG 506
D47	1S1007/1079-89	GE-511	D172	PTC216	HEPR3012	SK3130		ECG 506
D48	1S1007/1079-89	GE-511	D172	PTC216	HEPR3012	SK3130		ECG 506
D49	1N60/296-42-9	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D50	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D51	SRIK-2/1042-17	GE-504A	8D4 or 5A4D	PTC201 or	HEPR0052	SK3030 or	RT213 or	ECG 116 or
				PTC202		SK3031	RT214	ECG 117
D52	CZ-092/1080-10 (9.1 V Zener)	GEZD-9.1	Z-1210	PTC505	HEPZ0412	SK3060	RT240	ECG 139
D53	1N60/296-42-9	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D54	1N60/296-42-9	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D55	CB86003/1079-01	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D56	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D57	1S2473/1074-118	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
D58	SRIK-2/1042-17	GE-504A	8D4 or 5A4D	PTC201 or	HEPR0052	SK3030 or	RT213 or	ECG 116 or
				PTC202		SK3031	RT214	ECG 117
D59	SRIK-2/1042-17	GE-504A	8D4 or 5A4D	PTC201 or	HEPR0052	SK3030 or	RT213 or	ECG 116 or
				PTC202		SK3031	RT214	ECG 117
D60	KB262/1042-23	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177

PARTS LIST AND DESCRIPTION (CONTINUED)

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

SEMICONDUCTORS (cont)

ITEM No.	TYPE / MFR. No. / PART No.	REPLACEMENT DATA						
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	MOTOROLA PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
FET1	3SK22(Y)/1042-01	GE-FET-2	FE-100	PTC152	HEPF0021	SK3116	RT175	ECG 132
FET2	2SK30Y/1042-02	GE-FET-2	FE-100	PTC152	HEPF0021	SK3116	RT175	ECG 132
IC	TA7045M/1042-11							ECG 724
TR1	2SC839/1042-04	GE-20	TR-24	PTC121	HEP54	SK3122	RT102	ECG 123A
TR2	2SC839/1042-04	GE-20	TR-24	PTC121	HEP54	SK3122	RT102	ECG 123A
TR3	2SC839/1042-04	GE-20	TR-24	PTC121	HEP54	SK3122	RT102	ECG 123A
TR4	2SC839/1042-04	GE-20	TR-24	PTC121	HEP54	SK3122	RT102	ECG 123A
TR5	2SC839/1042-04	GE-20	TR-24	PTC121	HEP54	SK3122	RT102	ECG 123A
TR6	2SC945/1074-115	GE-20	TR-21	PTC136	HEP728	SK3124	RT102	ECG 199
TR7	2SA733/1079-85	GE-65	TR-51	PTC131	HEP708	SK3138	RT120	ECG 159
TR8	2SC945/1074-03	GE-20	TR-21	PTC136	HEP728	SK3124	RT102	ECG 199
TR9	2SC945/1074-03	GE-20	TR-21	PTC136	HEP728	SK3124	RT102	ECG 199
TR10	2SC945/1074-03	GE-20	TR-21	PTC136	HEP728	SK3124	RT102	ECG 199
TR11	2SC945/1074-03	GE-20	TR-21	PTC136	HEP728	SK3124	RT102	ECG 199
TR12	2SC839/1042-04	GE-20	TR-24	PTC121	HEP54	SK3122	RT102	ECG 123A
TR13	2SC839/1042-04	GE-20	TR-24	PTC121	HEP54	SK3122	RT102	ECG 123A
TR14	2SC839/1042-04	GE-20	TR-24	PTC121	HEP54	SK3122	RT102	ECG 123A
TR15	2SC839/1042-04	GE-20	TR-24	PTC121	HEP54	SK3122	RT102	ECG 123A
TR16	2SC945/1074-115	GE-20	TR-21	PTC136	HEP728	SK3124	RT102	ECG 199
TR17	2SC945(R)/1042-03	GE-20	TR-21	PTC136	HEP728	SK3124	RT102	ECG 199
TR18	2SC839/1042-04	GE-20	TR-24	PTC121	HEP54	SK3122	RT102	ECG 123A
TR19	2SC839/1042-04	GE-20	TR-24	PTC121	HEP54	SK3122	RT102	ECG 123A
TR20	2SC839/1042-04	GE-20	TR-24	PTC121	HEP54	SK3122	RT102	ECG 123A
TR21	2SC839/1042-04	GE-20	TR-24	PTC121	HEP54	SK3122	RT102	ECG 123A
TR22	2SC839/1042-04	GE-20	TR-24	PTC121	HEP54	SK3122	RT102	ECG 123A
TR23	2SC945(R)/1042-03	GE-20	TR-21	PTC136	HEP728	SK3124	RT102	ECG 199
TR24	2SC945(R)/1042-03	GE-20	TR-21	PTC136	HEP728	SK3124	RT102	ECG 199
TR25	2SC1307/1042-09	GE-66		PTC110				
TR26	2SC1306/1042-08	GE-66	TR-55	PTC110				ECG 186
TR27	2SC710/1042-07	GE-20	TR-24	PTC121	HEP56	SK3018	RT108	ECG 107
TR28	2SC1096	GE-28	TR-55	PTC110	HEP55003	SK3054	RT154	ECG 186
	2SC1095(L)/1074-116 (2)							
TR29	2SC945(R)/1042-03	GE-20	TR-21	PTC136	HEP728	SK3124	RT102	ECG 199
TR30	2SC1096	GE-28	TR-55	PTC110	HEP55003	SK3054	RT154	ECG 186
	2SC1095(L)/1074-116 (2)							
TR31	2SC1096	GE-28	TR-55	PTC110	HEP55003	SK3054	RT154	ECG 186
	2SC1095(L)/1074-116 (2)							
TR32	2SC735(Y)/1042-05	GE-63	TR-21	PTC123	HEP53	SK3124	RT102	ECG 123A
TR33	2SC945/1042-03	GE-20	TR-21	PTC136	HEP728	SK3124	RT102	ECG 199

(1) Rating - 1.5 V @ 70 MW.

(2) Used in Some Versions.

COURIER MODEL SPARTAN SSB

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA					
		MFR. PART No.	ARCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.1 50 V	1042-122				TDC104M050EL	SD50-R109
C11	1 50 V		RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615
C15	10 16 V		RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222
C16	1 50 V		RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615
C27	.47 10 V		RME-D-D-050	EP15-50	PC50-10	MTV50CB15	EV-1226
C29	.47 50 V	1042-133				TDC474M050EL	SD50-R479
C37	10 16 V		RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222
C40	.1 50 V	1042-122				TDC104M050EL	SD50-R109
C53	2.2 25 V		RME-A-G-002	EP30-2	PC2-100	VTT2R2A50	EV-1317
C54	10 16 V		RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222
C56	22 10 V		RME-B-D-025	EP15-25	PC25-25	MTV25CB35	EV-1125
C57	4.7 25 V		RME-A-G-005	EP30-5	PC5-50	VTT4R7A50	EV-1319
C58	4.7 25 V		RME-A-G-005	EP30-5	PC5-50	VTT4R7A50	EV-1319
C60	47 10 V		RME-D-D-050	EP15-50	PC50-10	MTV50CB15	EV-1226
C73	47 10 V		RME-D-D-050	EP15-50	PC50-10	MTV50CB15	EV-1226
C91	33 6.3 V		ME-2-B-035	EP6-25	PC30-25	VTT33A10	EV-1125
C93	330 10 V		ME-8-E-250	EP15-250	WBR300-35	MTA300G50	EV-1245
C94	1 50 V		RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615
C95	1 50 V		RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615
C97	33 6.3 V		ME-2-B-035	EP6-25	PC30-25	VTT33A10	EV-1125
C134	47 10 V		RME-D-D-050	EP15-50	PC50-10	MTV50CB15	EV-1226
C142	1 10 V	1042-120				TDC105M035EL	SD35-19
C144	10 16 V		RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222
C145	4.7 25 V		RME-A-G-005	EP30-5	PC5-50	VTT4R7A50	EV-1319
C146	4.7 25 V		RME-A-G-005	EP30-5	PC5-50	VTT4R7A50	EV-1319
C147	4.7 25 V		RME-A-G-005	EP30-5	PC5-50	VTT4R7A50	EV-1319
C148	33 6.3 V		ME-2-B-035	EP6-25	PC30-25	VTT33A10	EV-1125
C150	47 10 V		RME-D-D-050	EP15-50	PC50-10	MTV50CB15	EV-1226
C151	1 50 V		RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615
C176	4.7 25 V		RME-A-G-005	EP30-5	PC5-50	VTT4R7A50	EV-1319
C178	220 10 V		RME-G-D-250	EP15-250	PC250-10	MTV250DB10	EV-1145
C179	220 25 V		RME-K-G-250	EP30-250	PC250-25	MTV250DJ25	EV-1345
C180	4.7 25 V		RME-A-G-005	EP30-5	PC5-50	VTT4R7A50	EV-1319
C181	10 16 V		RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222

PARTS LIST AND DESCRIPTION (CONTINUED)

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

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA					
		MFGR. PART No.	ARCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C185	470 16 V		ME-G500	EA15-500	WBR500-16	MTA500G25	EV-1250
C186	220 16 V		RME-J-E-250	EP15-250	PC250-25	MTV250DE15	EV-1245
C187	220 6.3 V		RME-F-B-250	EP6-250	PC250-10	MTV250DB10	EV-1145
C188	.1 50 V		1042-122			TDC104M050EL	SD50-R109
C190	.1 50 V		RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615
C191	220 16 V		RME-J-E-250	EP15-250	PC250-25	MTV250DE15	EV-1245
C192	220 6.3 V		RME-F-B-250	EP6-250	PC250-10	MTV250DB10	EV-1145
C194	.1 50 V		RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615
C197	1000 25 V		RME-P-G-1000	EP30-1000	WBR1000-25	MTA1000G25	EV-1360

CAPACITORS

ITEM No.	RATING	MFGR. PART No.	REPLACEMENT DATA				
			ARCO/ELMENC0 PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C2	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C3	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C4	.005		CCD-502	CK-502	MGP005	TA250	TG-D50
C6	.04			DD-403		GP140	
C7	2		DM-15-020D				
C8	.005		CCD-502	CK-502	MGP005	TA250	TG-D50
C9	10		DM-15-100J		CD15CD100J03	SX410	
C10	.039		1MD-1-393			EW1A139	1PB-S39
C12	.04			DD-403		GP140	
C13	5	1079-132	DM-15-050D		CD15CD050D03	SX550	
C14	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C17	30		DM-15-300J	CPR-30J		SX430	
C18	.001		6DP-1-102	CPR-1000J	DPMS6D1	EW1A210	225P10291WD3
C19	150	10%	DM-15-151J	CPR-150J	CD15FD151J03	SX315	424MC1500J501
C20	5	1079-132	DM-15-050D				
C21	20		MD-15-200J	CPR-20J		SX420	
C22	.04			DD-403		GP140	
C23	.039		1MD-1-393			EW1A139	1PB-S39
C24	.04			DD-403		GP140	
C25	500	10%	CCD-501	DD-501	GP500	GP350	10TS-T50
C26	.04			DD-403		GP140	
C28	.04			DD-403		GP140	
C30	.039		1MD-1-393			EW1A139	1PB-S39
C31	.04			DD-403		GP140	
C32	.04			DD-403		GP140	
C33	.039		1MD-1-393			EW1A139	1PB-S39
C34	.04			DD-403		GP140	
C35	82		CC10-820	DTZ-82	NP082	CN0482	10TCC-Q82
C36	20		DM-15-200J	CPR-20J		SX420	
C38	.04			DD-403		GP140	
C39	.001		6DP-1-102	CPR-1000J	DPMS6D1	EW1A210	225P10291WD3
C41	.001		6DP-1-102	CPR-1000J	DPMS6D1	EW1A210	225P10291WD3
C42	.001		6DP-1-102	CPR-1000J	DPMS6D1	EW1A210	225P10291WD3
C43	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C44	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C45	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C46	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C47	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C48	.1			CK-104		TA010	TG-P10
C49	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C50	.04			DD-403		GP140	
C51	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C52	.039		1MD-1-393			EW1A39	1PB-S39
C55	.04			DD-403		GP140	
C59	.04			DD-403		GP140	
C61	30	10%	DM-15-300J	CPR-30J		SX430	
C62	100	10%	DM-15-101J	CPR-100J	CD15FD101J03	SX310	424MC1000J501
C63	100	10%	DM-15-101J	CPR-100J	CD15FD101J03	SX310	424MC1000J501
C64	100	10%	DM-15-101J	CPR-100J	CD15FD101J03	SX310	424MC1000J501
C65	400	10%					MS-34
C66	.02						
C67	.04			DD-403		GP140	
C68	60	10%					MS-46
C69	2		DM-15-020D				
C70	60	10%					MS-46
C71	2		DM-15-020D				
C72	60	10%					MS-46
C74	.04			DD-403		GP140	
C75	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C76	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C77	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C78	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C79	2		DM-15-020D				
C80	.04			DD-403		GP140	
C81	.04			DD-403		GP140	
C82	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C83	.04			DD-403		GP140	

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			ARCO/ELMENCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C84	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C85	.04			DD-403		GP140	
C86	.1			CK-104		TA010	TG-P10
C87	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C88	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C89	.039		1MD-1-393			EWFA39	1PB-S39
C90	.01		CCD-203	DD-203		GP120	10TS-S20
C92	.04			DD-403		GP140	
C96	.04			DD-403		GP140	
C98	.04			DD-403		GP140	
C99	20	N1500	*			*	10TCW-Q20
C100	20	N1500	*			*	10TCW-Q20
C101	20	N1500	*			*	10TCW-Q20
C102	20	N1500	*			*	10TCW-Q20
C103	20	N1500	*			*	10TCW-Q20
C104	20	N1500	*			*	10TCW-Q20
C105	20		MD-15-00J	CPR-20J		SX420	
C106	20		MD-15-200J	CPR-20J		SX420	
C107	20		MD-15-200J	CPR-20J		SX420	
C108	20		MD-15-200J	CPR-20J		SX420	
C109	20		MD-15-200J	CPR-20J		SX420	
C110	20		MD-15-200J	CPR-20J		SX420	
C111	20		MD-15-200J	CPR-20J		SX420	
C112	20		MD-15-200J	CPR-20J		SX420	
C113	10	N470	*			*	10TCT-Q10
C114	150		CCD-151	DD-151	GP150	GP315	10TS-T15
C115	150	10%	DM-15-151J	CPR-150J	CD15FD151J03	SX315	424MC1500J501
C116	40		DM-15-390J	CPR-39J	CD15ED390J03	SX439	MS44
C117	.001		6DP-1-102	CPR-1000J	DPMS6D1	EWFA210	225P10291WD3
C118	150	10%	DM-15-151J	CPR-150J	CD15FD151J03	SX315	424MC1500J501
C119	40		DM-15-390J	CPR-39J	CD15ED390J03	SX439	MS44
C120	.001		6DP-1-102	CPR-1000J	DPMS6D1	EWFA210	225P10291WD3
C121	150	10%	DM-15-151J	CPR-150J	CD15FD151J03	SX315	424MC1500J501
C122	.04			DD-403		GP140	
C123	2		DM-15-020D				
C124	.1			CK-104		TA010	TG-P10
C125	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C126	.04			DD-403		GP140	
C127	20	N750		DTN-20	N20	CN7420	10TCU-Q20
C128	.001		6DP-1-102	CPR-1000J	DPMS6D1	EWFA210	225P10291WD3
C129	.04			DD-403		GP140	
C130	20	N750		DTN-20	N20	CN7420	10TCU-Q20
C131	.001		6DP-1-102	CPR-1000J	DPMS6D1	EWFA210	225P10291WD3
C132	.001		6DP-1-102	CPR-1000J	DPMS6D1	EWFA210	225P10291WD3
C133	.001		6DP-1-102	CPR-1000J	DPMS6D1	EWFA210	225P10291WD3
C135	.04			DD-403		GP140	
C136	100	10%	DM-15-101J	CPR-100J	CD15FD101J03	SX310	424MC1000J501
C137	10		DM-15-100J		CD15CD100J03	SX410	
C138	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C139	10		DM-15-100J		CD15CD100J03	SX410	
C140	10		DM-15-100J		CD15CD100J03	SX410	
C141	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C143	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C149	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C152	40		DM-15-390J	CPR-39J	CD15ED390J03	SX439	MS-44
C153	200	10%	DM-19-201J	CPR-200J	CD15FD201J03	SX320	424ME2000J501
C154	.04			DD-403		GP140	
C155	250	10%	DM-19-251J				
C156	1		DM-15-010D				
C157	400	10%					MS-34
C158	650	10%					
C159	.04			DD-403		GP140	
C160	.04			DD-403		GP140	
C161	250	10%	DM-19-251J				
C162	60	10%					MS-46
C163	.04			DD-403		GP140	
C164	.1			CK-104		TA010	TG-P10
C165	.04			DD-403		GP140	
C166	400	10%					MS-34
C167	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C168	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C169	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C170	30		DM-15-300J	CPR-30J		SX430	
C171	1		DM-15-010D				
C172	25		DM-15-240J	CPR-24J		SX424	MS425
C173	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C174	10		DM-15-100J		CD15CD100J03	SX410	
C175	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C177	.04			DD-403		GP140	
C182	.039		1MD-1-393			EWFA39	1PB-S39
C183	.039		1MD-1-393			EWFA39	1PB-S39
NU							
C189	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C193	.01		CCD-103	CK-103	MGP01	TA110	TG-S10
C195	.001	+100%, -10%					
C196	.04			DD-403		GP140	
C198	.005		CCD-502	CK-502	MGP005	TA250	TG-D50

COURIER MODEL SPARTAN SSB

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			ARCO/ELMENCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C199 CL CT-1 thru CT-17	.005 20 pF (max)	1079-122	CCD-502	CK-502	MGP005	TA250	TG-D50

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
VR1	RF Gain	100 K	1042-95	TSV-100K or T-100K	C-104	X201R104B	MTC15L1
VR2	Local RF Gain	50 K	1079-21	TSV-50K or T-50K	C-503	X201R503B	MTC54L1
VR3	AM "S" Meter	5000	1079-20	TSV-5K (2) or T-5000 (2)	C-502 (2)	X201R502B (2)	MTC53L1 (2)
VR4	AM Squelch Range	200 K	1079-18	TSV-250K (2) or T-250K (2)		X201R254B (2)	MTC254L1 (2)
VR5	SSB Squelch Range	500 K	1042-93	TSV-500K (2) or T-500K (2)	C-504 (2)	X201R504B (2)	MTC55L1 (2)
VR6	Squelch	100 K	1079-121				
VR7	AM AGC	30 K	1079-19	TSV-50K (2) or T-50K (2)	C-503 (2)	X201R503B (2)	MTC54L1 (2)
VR8	SSB "S" Meter	10 K	1042-98	TSV-10K (2) or T-10K (2)	C-103 (2)	X201R103B (2)	MTC14L1 (2)
VR9	ALC	30 K		TSV-50K (2) or T-50K (2)	C-503 (2)	X201R503B (2)	MTC54L1 (2)
	ALC	10 K	1042-98	TSV-10K (2) or T-10K (2)	C-103 (2)	X201R103B (2)	MTC14L1 (2)
VR10	Balance	100	1079-124	TSV-100 or T-100		X201R101B	MTC12L1
VR11	SSB AF Balance	5000	1042-99	TSV-5K or T-5000	C-502	X201R502B	MTC53L1
VR12	RF Meter	100 K	1042-96	TSV-100K (2) or T-100K (2)	C-104 (2)	X201R104B (2)	MTC15L1 (2)
VR13	Bias	200	1042-100	T-200 (2) or TSV-250 (2)		X201R251B (2)	MTC251L1 (2)
VR14	AM Power	10 K	1042-98	TSV-10K (2) or T-10K (2)	C-103 (2)	X201R103B (2)	MTC14L1 (2)
VR15	Volume/Switch	10 K	1079-120				

(2) Cut off one of the end terminals and bend to fit PC board.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFR. PART No.			WORKMAN PART No.	MFR. PART No.
R120	.5 (1/4 W, Carbon)		1042-205	R159	3.9 (1/4 W, Carbon)		1079-181
R139	1 (1 W, Carbon)		1079-32	TH1	3000 (CoId)		1079-02

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			
		MFR. PART No.	OTHER IDENTIFICATION	MEISSNER PART No.	MILLER PART No.
L1	RF Choke (100 uH)	1079-09	101	19-3100	4642
L2	RF Choke (8.2 uH)	1079-10	8R2	19-2015	4611
L3	RF Choke (470 uH)	1079-08	471		6138
L4	RF Choke (470 uH)	1079-08	471		6138
L5	RF Choke (470 uH)	1079-08	471		6138
L6	54 MHz Trap (TVI)	1079-06			
L7	Xmtr Ant	1079-07			
L8	Xmtr Ant	1079-07			
L9	Ant. Loading	1079-06			
L10	Final Amp	1074-01			
L11	Xmtr Driver	1079-06			
L12	Xmtr Driver	1074-01			
L13	RF Choke	1074-01			
L14	RF Choke (3.9 uH)	1079-11	3R9	19-1003	4608
L15	Line Choke	1042-44			
T1	Rec Ant	1042-24	TKXC22019GN		
T2	Rec RF	1042-25	TKXC22017A0		
T3	Rec RF	1042-25	TKXC22017A0		
T4	Rec Mixer (7.8 MHz)	1042-29	TKAC22526N		
T5	Rec Mixer (7.8 MHz)	1042-30	TKAC22015A		
T6	Input IF (455 kHz)	1079-05			

PARTS LIST AND DESCRIPTION (CONTINUED)

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

COILS (RF-IF) (cont)

ITEM No.	FUNCTION	REPLACEMENT DATA			
		MFGR. PART No.	OTHER IDENTIFICATION	MEISSNER PART No.	MILLER PART No.
T7	Interstage IF (455 kHz)	1042-34	LLC3657		
T8	Output IF (455 kHz)	1042-35	LLC4990A2		
T9	11 MHz Osc	1042-26	TRXN21017ZVI		
T10	Synth. Buffer	1042-27	KXN6711BM		
T11	Synth. Buffer	1042-27	KXN6711BM		
T12	Synth. Buffer	1042-27	KXN6711BM		
T13	Synth. Buffer	1042-27	KXN6711BM		
T14	SSB IF (7.8 MHz)	1042-30	TKAC22015A		
T15	SSB IF (7.8 MHz)	1042-30	TKAC22015A		
T16	Carrier Osc (7.8 MHz)	1042-33	113CC2804AC		
T17	Bal Mod. Out (7.8 MHz)	1042-32	TKAN21016A0		
T18	Xmit Buffer	1079-03	TKXC23444N		
T19	Xmit Mixer	1042-38	TKXN210414A0		
T20	Xmit Mixer	1042-37	TKXN21379UH		
T21	Xmit Mixer (7.8 MHz)	1079-04	TKAN23360ZVI		

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
CH	1300 mA	.2	2.6 mH	1079-107 (7111) (1)		TR159		(1) Number on unit.

TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA				NOTES
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD Part No.	
IPT	1	1 CT		1079-13 (7258) (1)				(1) Number on unit.

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA				NOTES
	PRI.	SEC.	MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
OPT	32	8	1079-14 (7274) (1)				(1) Number on unit.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
				MFGR. PART No.	QUAM PART No.	
SP1	3"	PM	8 ohms	1079-112		

COURIER MODEL SPARTAN SSB

PARTS LIST AND DESCRIPTION (CONTINUED)

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

FUSE DEVICES

		REPLACEMENT DATA						
ITEM No.	DESCRIPTION	PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	2A Quick Acting	1042-104	1043-133	AGC 2	HDJ	312002	150145	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF	Filter	1042-84	Crystal 7.8 MHz
LF	Filter	1079-12	Ceramic 455 kHz
M	Meter	1079-55	"S"/RF
RL	Relay	1079-113	Xmit/Rec
S2	Switch	1079-52	Slide, DX/Local
S3	Switch	1079-115	Rotary, Mode
S4	Switch	1079-114	Rotary, Channel Selector
S5	Switch	1079-52	Slide, Noise Blanker
S6	Switch	1079-53	Slide, CB/PA
X1	Crystal	1042-81	7.3435 MHz HC25/U
X2	Crystal	1079-79	11.805 MHz HC25/U
X3	Crystal	1079-80	11.855 MHz HC25/U
X4	Crystal	1079-81	11.905 MHz HC25/U
X5	Crystal	1079-82	11.955 MHz HC25/U
X6	Crystal	1079-83	12.005 MHz HC25/U
X7	Crystal	1079-84	12.055 MHz HC25/U
X8	Crystal	1079-75	7.3615 MHz HC25/U
X9	Crystal	1079-76	7.3715 MHz HC25/U
X10	Crystal	1079-77	7.3815 MHz HC25/U
X11	Crystal	1079-78	7.4015 MHz HC25/U
X12	Crystal	1079-71	7.3585 MHz HC25/U
X13	Crystal	1079-72	7.3685 MHz HC25/U
X14	Crystal	1079-73	7.3785 MHz HC25/U
X15	Crystal	1079-74	7.3985 MHz HC25/U
X16	Crystal	1042-83	7.8015 MHz HC25/U
X17	Crystal	1042-82	7.7985 MHz HC25/U

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Chassis	1079-56	Panel Front	1079-63
Cabinet, Top	1079-57	Knob, Channel	1079-65
Cabinet, Bottom	1079-58	Knob, Control	1079-64
Chassis, Front	1079-59	Dial Plate, Channel	1079-66
Chassis, Holder	1079-60	Plate, Control	1079-67
Bracket, Mounting	1079-61		

ACCESSORIES

ITEM	MFGR. PART No.	REMARKS
Microphone Cord	1042-58 1079-177	DC Power



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index

NOTE

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, SUBPARTS C & D.)

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 50-ohm dummy load or the normally used antenna system.



MODEL 13-723

ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools:	GC ELECTRONICS
L1, L7, L9	.9440
L2 thru L6	.8290, 5000

RECEIVER

Connect an AC VTVM across speaker voice coil.
Set volume control for suitable reading, set squelch control fully ccw.

SIGNAL GENERATOR	CHANNEL	ADJUST	REMARKS
High side thru a .01 uF to base of TR2, low side to ground. Set to 455 kHz (1000 Hz @ 30% mod.)	Any	L4, L5, L6	Adjust for maximum
High side thru a .01 uF to TP1, low side to ground. Set to 27.085 MHz (1000 Hz @ 30 mod.)	11	L3, L2	Adjust for maximum
Same as above with generator set for 1 uV	11	VR3	Volume maximum CW. Adjust for .063 V on VTVM.

TRANSMITTER

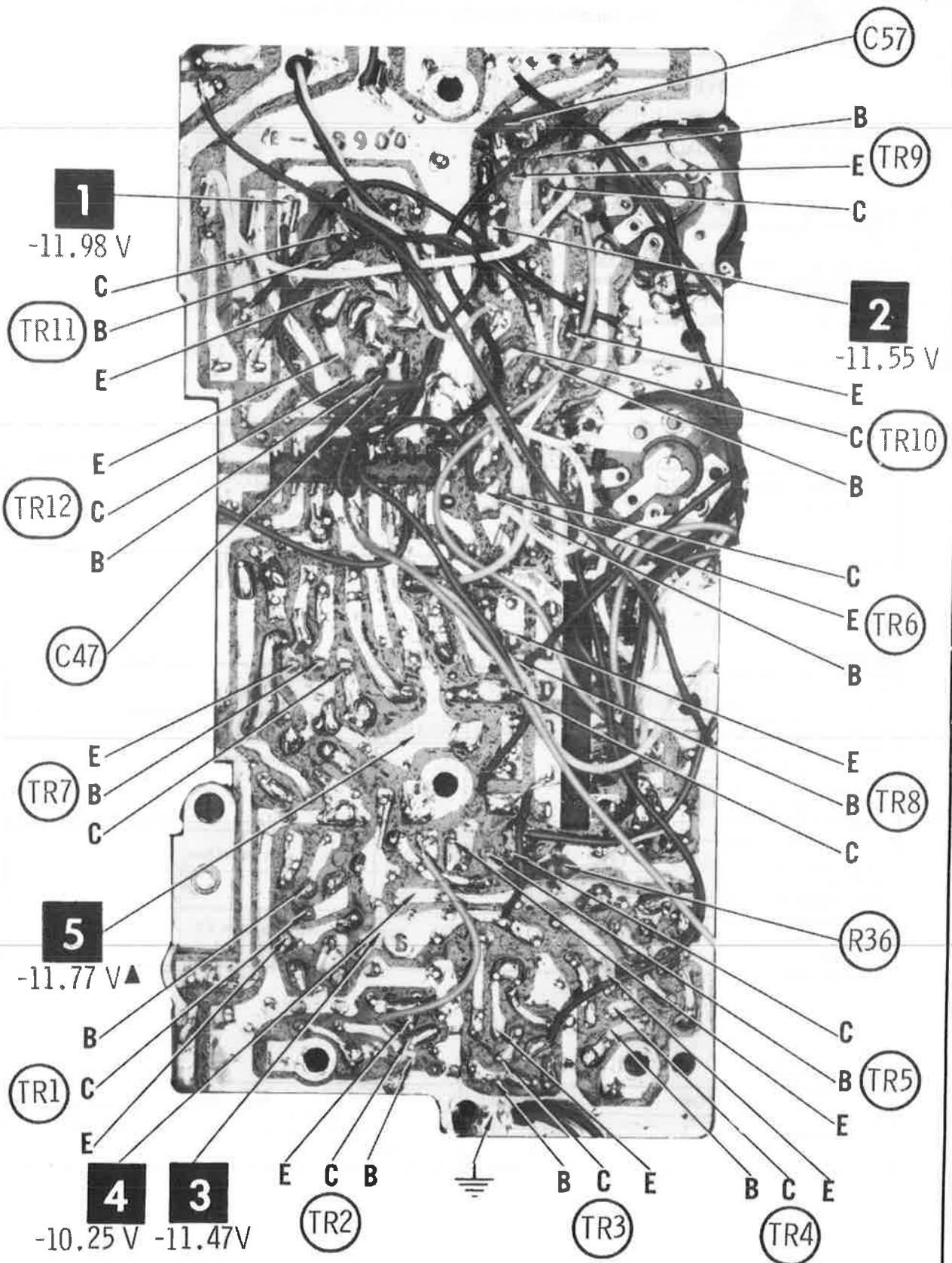
INDICATOR	ADJUST	REMARKS
RF Wattmeter	L7, L9, L1	Connect to TP1. Key Transmitter. Adjust for maximum.

HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

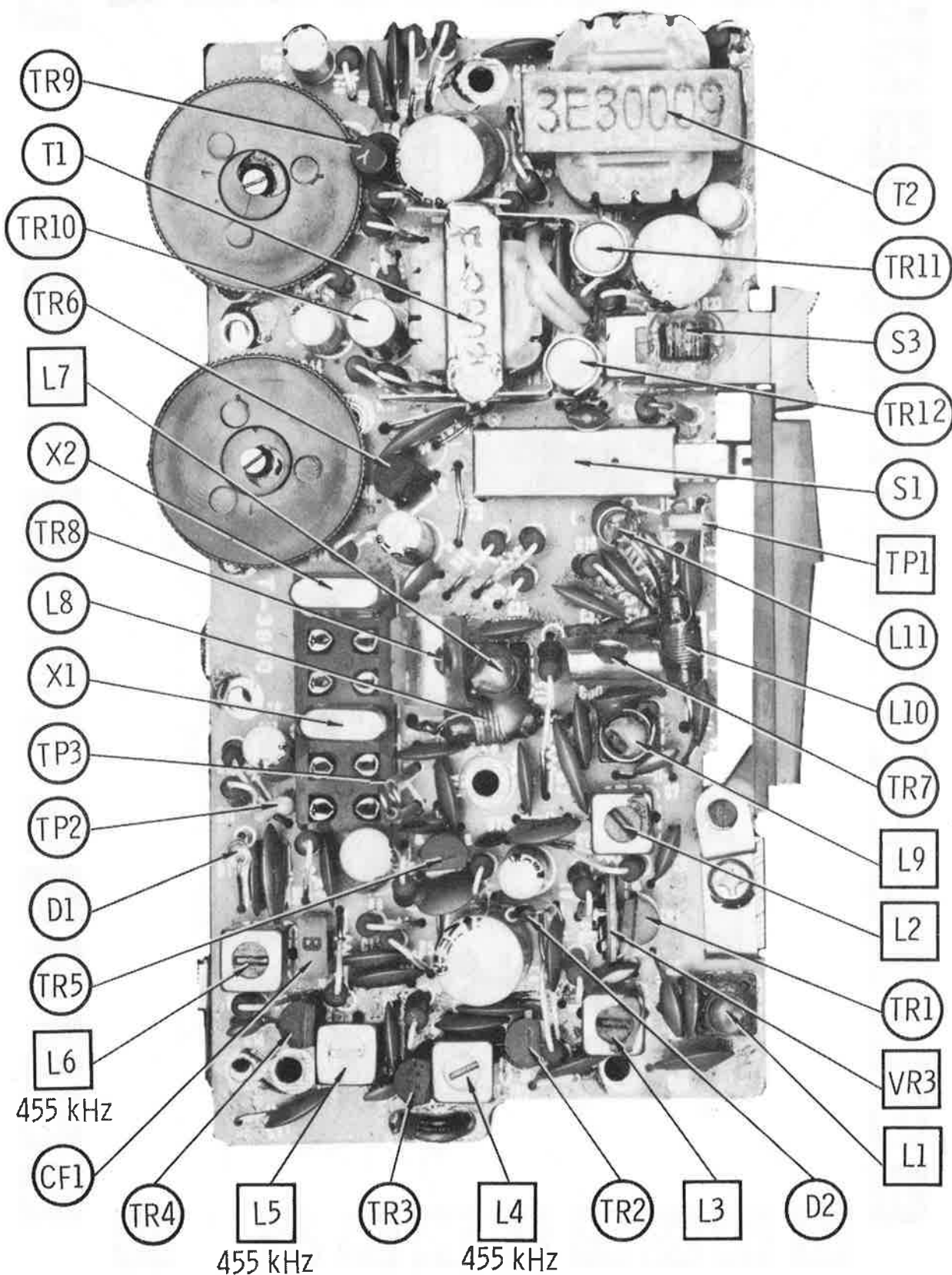
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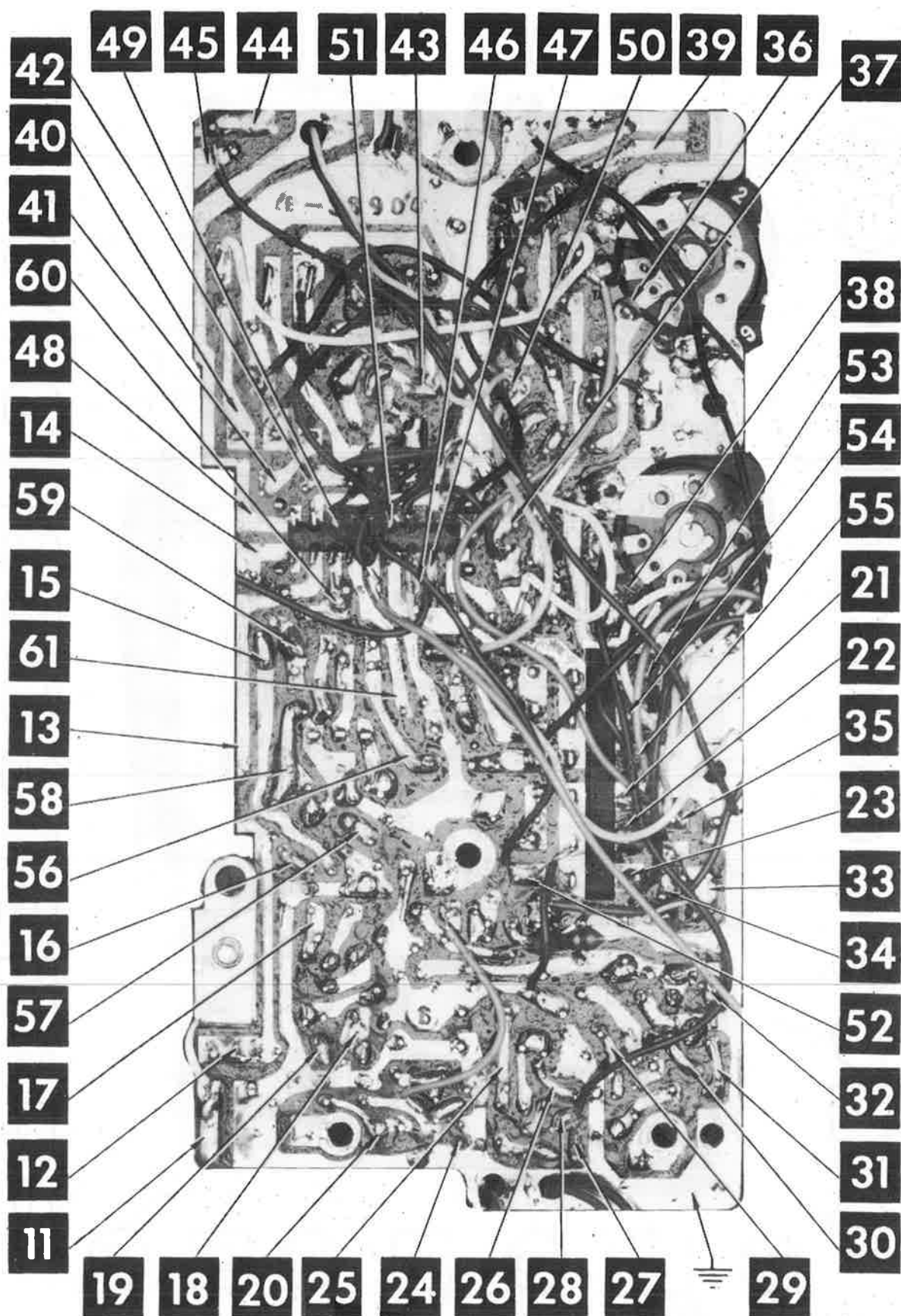
Printed in U. S. of America

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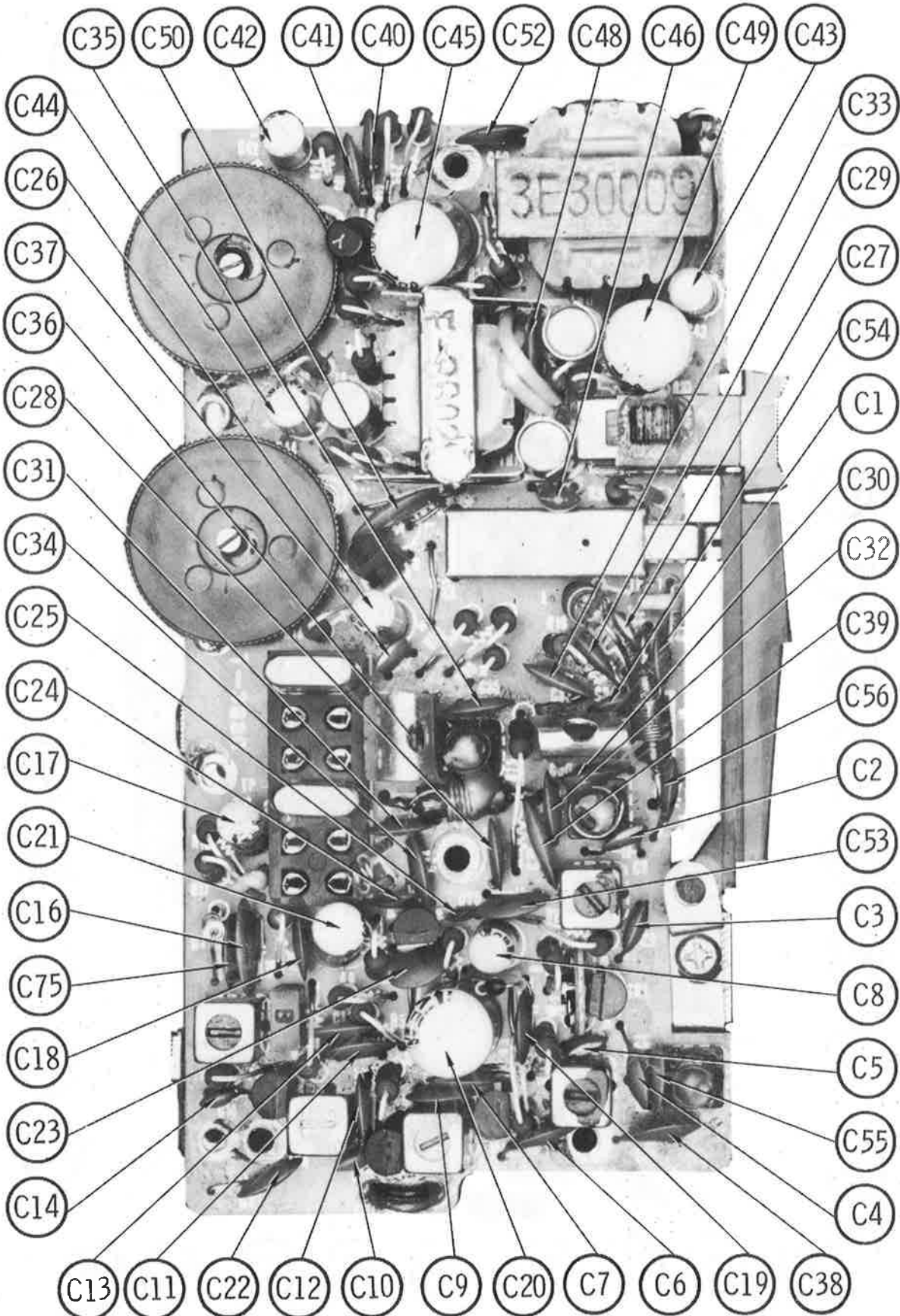


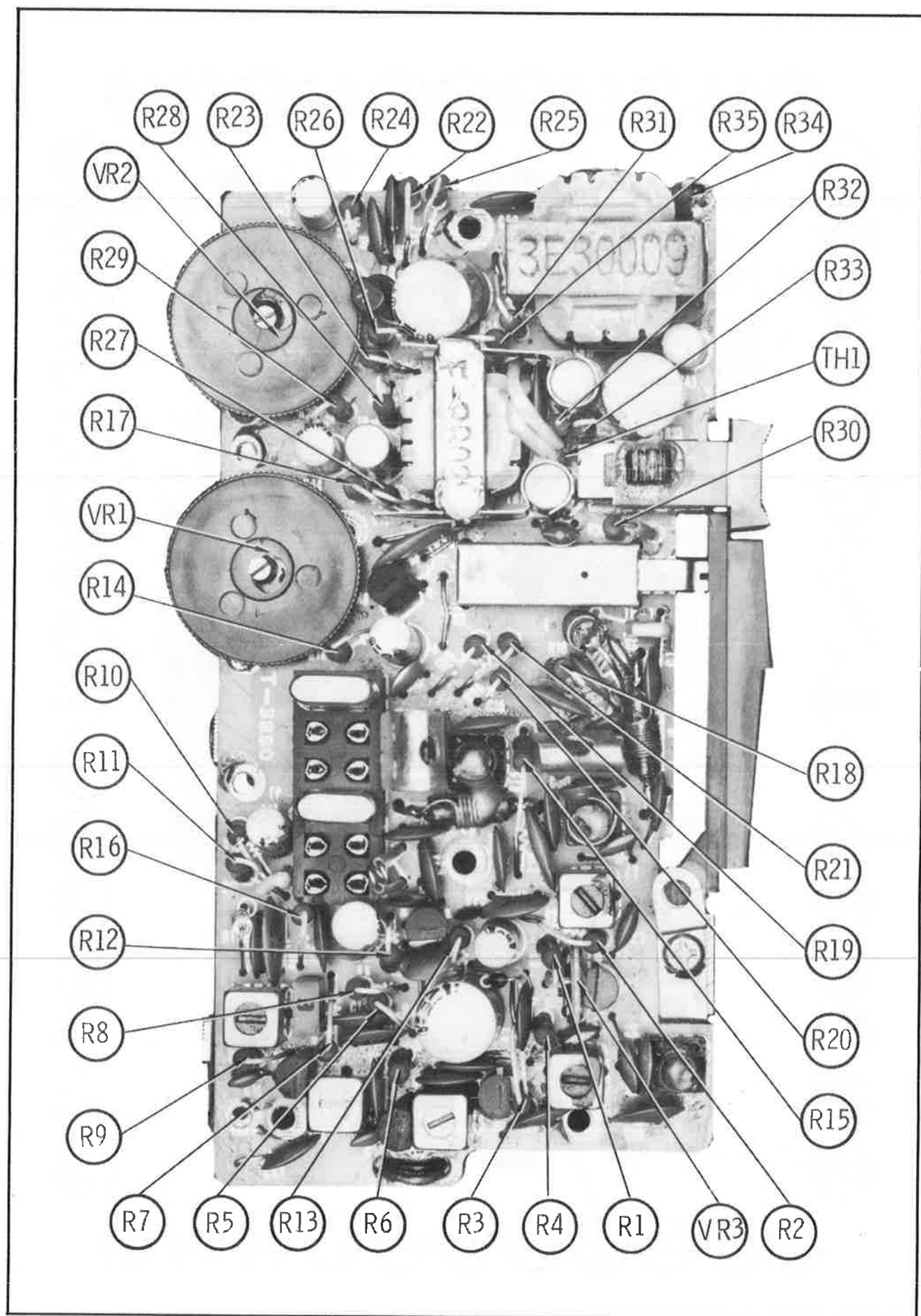
A Howard W. Sams **CIRCUITRACE**® Photo





A Howard W. Sams CIRCUITRACE® Photo





PARTS LIST AND DESCRIPTION

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

WIRING DATA

General-use Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors
Shielded Antenna Lead	8524 (Stranded) Available in 12 Colors
	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. 8499 Single-Conductor Shielded (Neoprene)
	8498 Single-Conductor Shielded (Vinyl)
Ignition Noise Suppression	Use BELDEN No. 7300-Series Spark-Plug Sets
Bonding Strap	Use BELDEN No. 8661 (3/8 In.)

SEMICONDUCTORS

ITEM No.	TYPE / MFR. No. / PART No.	REPLACEMENT DATA						
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	MOTOROLA PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
D1	1N60/09-306019	1N60	1N60	PTC206	HEP135	SK3088		ECG 109
D2	KB-265/09-307045	GE-300	D200	PTC214	HEPR0602	SK3100		ECG 177
TR1	25C710/09-302012	GE-20	TR-24	PTC121	HEP56	SK3018	RT107	ECG 107
TR2	25C710/09-302012	GE-20	TR-24	PTC121	HEP56	SK3018	RT108	ECG 107
TR3	25C710/09-302012	GE-20	TR-24	PTC121	HEP56	SK3018	RT108	ECG 107
TR4	25C710/09-302012	GE-20	TR-24	PTC121	HEP56	SK3018	RT108	ECG 107
TR5	25C710/09-302012	GE-20	TR-24	PTC121	HEP56	SK3018	RT108	ECG 107
TR6	25A628/09-30063	GE-17	TR-24	PTC131	HEP729	SK3018	RT107	ECG 107
TR7	25C1018/09-302102	GE-28	TR-55	PTC110	HEPS3020	SK3054		ECG 210
TR8	25C1017/09-302135		TR-64		HEPS3020	SK3047		
TR9	25A495(Y)/09-300037	GE-21	TR-52	PTC103	HEP52	SK3118	RT115	ECG 159
TR10	25B54/09-301003	GE-52	TR-14	PTC109	HEP633	SK3004	RT121	ECG 102A
TR11	25B364/09-301066	GE-53	TR-14	PTC109	HEP238	SK3004		ECG 102A
TR12	25B364/09-301066	GE-53	TR-14	PTC109	HEP238	SK3004		ECG 102A

MIDLAND MODEL 13-723

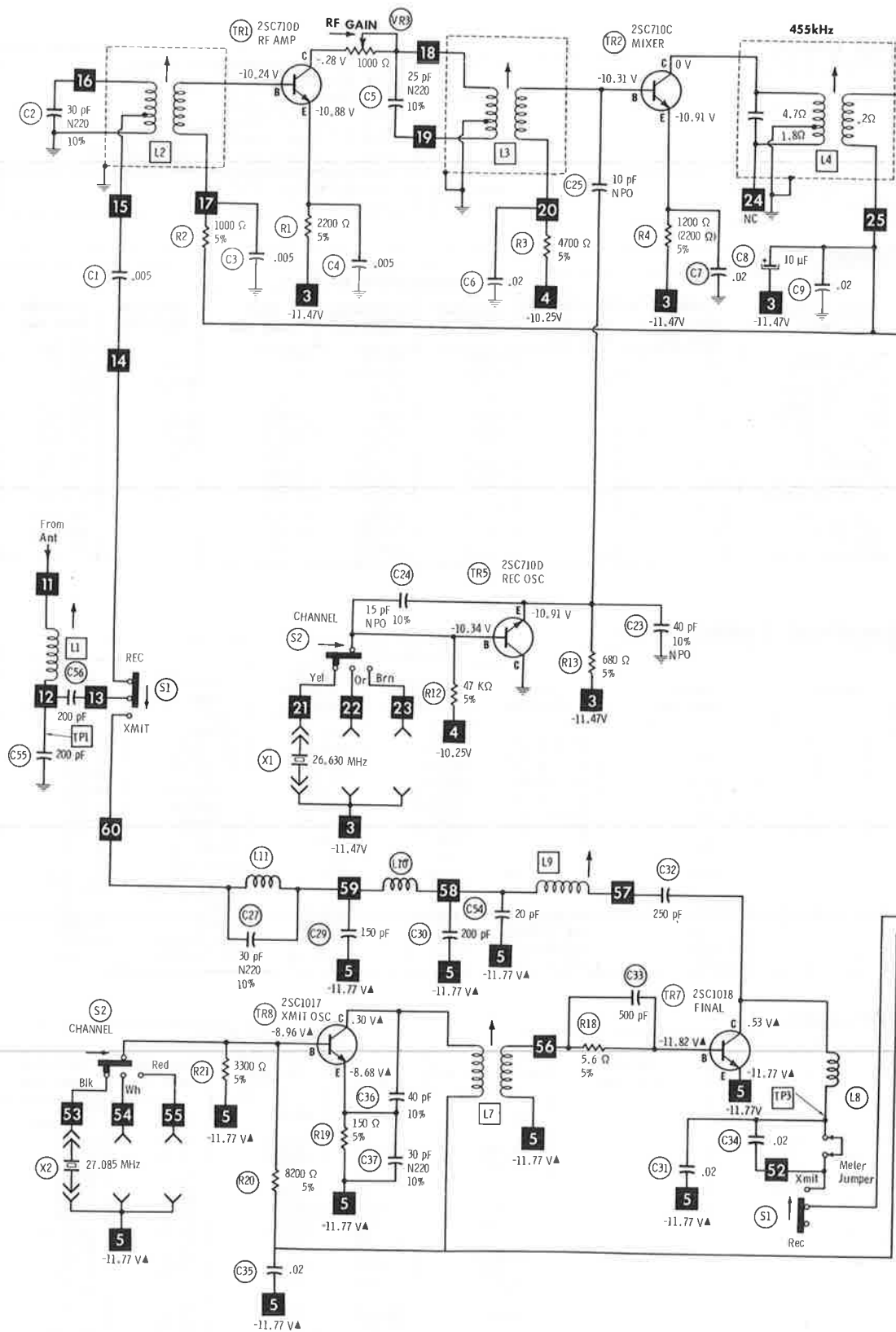
ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA					
		MFR. PART No.	ARCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
CB	10 16 V		RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222
	10 6.3 V	77-332106	RME-A-B-010	EP6-10	PC10-25	VTT10A25	EV-1222
C17	4.7 25 V		RME-A-G-005	EP30-5	PC5-50	VTT4R7A50	EV-1319
	4.7 6.3 V	77-3324175	RME-A-D-005	EP6-5	PC5-50	VTT4R7A50	EV-1319
C20	100 16 V	77-337107	RME-E-E-100	EP15-100	PC100-16	MTV100CD15	EV-1230
C21	33 16 V	77-337336	ME-3-E-035	EP15-25	PC30-25	MTV30CB25	EV-1325
C26	10 16 V		RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222
	10 6.3 V	77-332106	RME-A-B-010	EP6-10	PC10-25	VTT10A25	EV-1222
C42	4.7 25 V		RME-A-G-005	EP30-5	PC5-50	VTT4R7A50	EV-1319
	4.7 6.3 V	77-332475	RME-A-D-005	EP6-5	PC5-50	VTT4R7A50	EV-1319
C43	.1 50 V					TDC104M050EL	SD50-R109
	.1 6.3 V	77-332104				TDC104M050EL	SD50-R109
C44	33 6.3 V		ME-2-B-035	EP6-25	PC30-25	VTT33A10	EV-1125
	10 6.3 V	77-332106	RME-A-B-010	EP6-10	PC10-25	VTT10A25	EV-1222
C45	100 16 V	77-337107	RME-E-E-100	EP15-100	PC100-16	MTV100CD15	EV-1230
C49	100 16 V	77-337107	RME-E-E-100	EP15-100	PC100-16	MTV100CD15	EV-1230

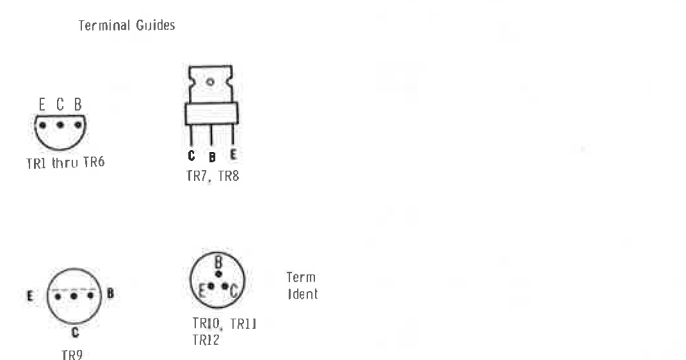
CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			ARCO/ELMENDO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	.005		CCD-502	CK-502	MGP005	TA250	TG-D50
C2	30	N220 10%	*			*	10TCR-Q30
C3	.005		CCD-502	CK-502	MGP005	TA250	TG-D50
C4	.005		CCD-502	CK-502	MGP005	TA250	TG-D50
C5	25	N220 10%	*			*	10TCR-Q25
C6	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C7	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C8	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C9	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C10	2		CCD-203	CK-203	MGP02	TA120	TG-S20
C11	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C12	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C13	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C14	3		CCD-203	CK-203	MGP02	TA120	TG-S20
C15	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C16	.04		CCD-203	CK-203	MGP02	TA120	TG-S20
C18	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C19	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C22	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C23	40	NPO 10%	CCTO-150	DTZ-15	NP015	CN0439	10TCC-Q39
C24	15	NPO 10%	CCTO-100	DTZ-10	NP010	CN0415	10TCC-Q15
C25	10	NPO	*			CN0410	10TCC-Q10
C27	30	N220 10%	CCD-203	CK-203	MGP02	TA120	10TCR-Q30
C28	.02						TG-S20

(CONTINUED ON PAGE 125)



A PHOTOFAC STANDARD NOTATION SCHEMATIC
with **CIRCUITRACE®**
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-  Denotes chassis.
-  Denotes ground. (Voltage reference unless otherwise indicated)
-  Indicates connection used in some versions.
-  Indicates connection not used in some versions.
-  Omitted in some versions.
-  See parts list.
-  Value varies; replace with original value.
-  Measured in transmit position.
-  Measured with unit squelched.

NC No Connection.

Measurements taken with switching in position shown unless otherwise indicated.

Values shown in () are used in some applications.

Resistors are 1/2W or less, 10% or 20%, unless otherwise indicated.

Supply voltage maintained at rated value for measurements.

Voltage and resistance measured with VIVM or equivalent meter, no signal applied and controls adjusted for normal operation.

Arrow on control indicates direction of advance.

Numbers assigned to terminals may not be found on the unit.

Transistor resistances vary widely; no resistance measurements taken.

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS(cont)

ITEM No.	RATING	MFG. PART No.	REPLACEMENT DATA				
			ARCO/ELMENCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C29	150		CCD-151	DD-151	GP150	GP315	10TS-T15
C30	200		CCD-201	DD-201	GP200	GP320	10TS-T20
C31	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C32	250		DM-19-251J				
C33	500		CCD-501	DD-501	GP500	GP350	10TS-T50
C34	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C35	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C36	40	N220				TA120	TG-S20
C37	30	10%	*			CN0439	10TCC-Q39
C38	.02		CCD-203	CK-203	MGP02	TA120	10TCR-Q30
C39	.04			DD-403			TG-S20
C40	.02		CCD-203	CK-203	MGP02	TA120	
C41	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C46	.0047		6DP-1-472		DMS6D47	EW6247	6PS-D47
C47	.01		1DP-1-103	CPR-10000J	DPMS6S1	EWFTA110	225P10391WD3
C48	.01		1DP-1-103	CPR-10000J	DPMS6S1	EWFTA110	225P10391WD3
C50	.04			DD-403		GP140	
C52	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C53	.02		CCD-203	CK-203	MGP02	TA120	TG-S20
C54	20		CCT0-200	DTZ-20	NPO20	CN0420	10TCC-Q20
C55	200		CCD-201	DD-201	GP200	GP320	10TS-T20
C56	200		CCD-201	DD-201	GP200	GP320	10TS-T20
C57	.02		CCD-203	CK-203	MGP02	TA120	TG-S20

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

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFG. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
VR1	Squelch	5000	13-166035	B16-113 (18)			
VR2	Volume/Switch	5000	13-160081	B16-114			
VR3	RF Gain	1000	13-164069	TSV-1K (2) or T-1000 (2)	C-102 (2)	X201R102B (2)	MTC13L1 (2)

(2) Cut off one of the end terminals and bend to fit PC board.
(18) Fabricate mounting.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFG. PART No.			WORKMAN PART No.	MFG. PART No.
R18	5.6 1/4 W 5%			R34	5.6 1/4 W 5%		
R33	2.2 1/4 W 5%			TH1	170 (cold)	FS-926	09-307003 (D22A)

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			
		MFG. PART No.	OTHER IDENTIFICATION	MEISSNER PART No.	MILLER PART No.
L1	Ant Loading	13-176340			
L2	Rec. Ant	13-176308	2E16007B		
L3	Rec. RF	13-176309	3E4500B		
L4	Rec. Mixer (455 kHz)	13-090237			
L5	Input IF (455 kHz)	13-090238	2E48012		
L6	Output IF (455 kHz)	13-090239	2E48013		
L7	Xmit. Osc	13-170181			
L8	RF Choke (.18 uH)	13-176312		4582	
L9	Final Amp	13-176341	19-2002		
L10	Pi Network	13-176315			
L11	Trap	13-176315			
L12	Line Choke (6 uH)	13-178124	19-2014	4610	
L13	Line Choke (6 uH)	13-178124	19-2014	4610	

PARTS LIST AND DESCRIPTION (CONTINUED)

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

TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA				NOTES
	PRI.	SEC. 1	SEC. 2	MFG. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD Part No.	
T1	2	1 CT		13-096133 (E-3602) (1)				(1) Number on unit.

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA				NOTES
	PRI.	SEC.	MFG. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	128	8	13-096134 (3E30009) (1)				(1) Number on unit.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
				MFG. PART No.	QUAM PART No.	
SP1	2"	PM	8 ohms	13-060077		

BATTERIES

ITEM No.	VOLTAGE	MFG. PART No.	EVEREADY PART No.	NOTES
M1	12 V		CF500	Ni-Cad (10 required)

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF1	Ceramic Filter	13-179027	455 kHz
S1	Switch	13-183146	Push to talk
S2	Switch	13-183135	Channel Selector
S3	Switch	13-183147	Call
X1	Crystal		26.630 MHz
X2	Crystal		27.085 MHz

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Case, Front	13-010166	Panel, Front	13-010167
Case, Rear	13-013091	Plate, 2 Watt - 3 channel	13-020456
Grille, Speaker	13-020454	Plate, FCC	13-023137
Knob, Call (Red)	13-115059	Plate, Jack	13-020457
Knob, Push to Talk	13-115058	Plate, Name	13-020455
Knob, Volume/Squelch	13-110129		

ACCESSORIES

ITEM	MFG. PART No.	REMARKS
Ant, Telescopic	13-040069	
Box, Battery	13-030114	
Jack, AC	13-153097	
Jack, Charger	13-153098	
Jack, Earphone	13-153093	