

PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index

NOTE

Repair or adjustment of transmitter circuits must be under supervision of a person with first-or second-class radiotelephone license.

(Refer to FCC Rules and Regulations Part 95, Subpart 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.

COBRA MODEL 77X



MODEL 77X

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

© 1977 Howard W. Sams & Co., Inc.

Printed in U. S. of America

7CE611

ALIGNMENT INSTRUCTIONS

CAUTION: Use isolation transformer or observe polarity when connecting test equipment. Maintain line voltage at 120V AC. Allow a 15-minute warm-up period.
Adjustments made with 13.8-volt DC input.
Connect low sides of test equipment to ground unless specified otherwise.
Connect 50-ohm dummy load or antenna before keying transmitter.
Suggested Alignment Tools: GC ELECTRONICS:
L204, L205, L206, L211, L212, L214 5009
L1, L2, L7, L201, L202, L203, L207, L208, L209, L210 9440
VC1 5000

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of RF VTVM to TP10.	Ch. 19	L7	Adjust for maximum.
Input of frequency counter to TP10.	Ch. 19		Check for 10.240MHz.
Input of DC meter to TP1.	Ch. 40	L2	Adjust for 3.50 volts.
Input of frequency counter to TP11.	Ch. 1	VC1	Adjust for 17.180MHz.
Input of RF VTVM to TP11.	Ch. 19	L1	Adjust for maximum.
Inputs of frequency counter and RF VTVM to TP201.	Ch. 19, Xmit	L207	Adjust for maximum at 9.785MHz.

RECEIVER ALIGNMENT

Connect an AC VTVM or AF wattmeter across speaker voice coil. Adjust volume control to obtain a suitable indication. Set generator output low enough to prevent AGC limiting.			
TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP12. 455kHz, 1000Hz @ 30% modulation.	Ch. 19	L206, L205, L204	Adjust for maximum output.
Output of signal generator thru .01uF to TP13. 9.785MHz, 1000Hz @ 30% modulation.	Ch. 19	L203	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19	L202, L201	Adjust for maximum output. Repeat above steps, if necessary.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil. Adjust volume control to obtain a suitable indication.			
TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 50,000uV.	Ch. 19	VR201	AGC Set volume control VR202 for 0dB. Decrease generator to 50uV. Adjust VR201 so that audio level does not drop more than 10dB.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 1000uV.	Ch. 19	VR204	SQUELCH RANGE Set squelch control VR203 fully clockwise. Adjust VR204 so that squelch just breaks.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19	VR205	S METER Adjust VR205 for 9 on S scale of meter.

TRANSMITTER ALIGNMENT

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.

NOTE: Be sure to check transmit frequency and power on all active channels after alignment of transmitter.

See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
	Ch. 19	L208, L209, L210, L211, L212, L214	Adjust for maximum.
	Ch. 19	L214	Adjust for 3.8 watts.

TRANSMITTER ADJUSTMENTS

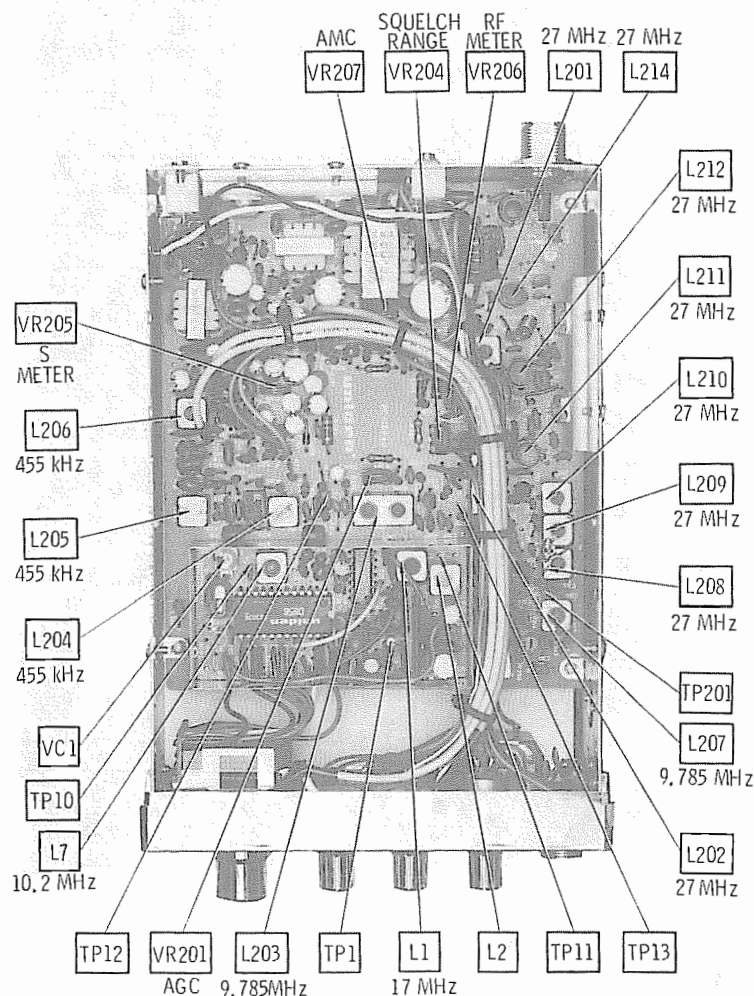
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.

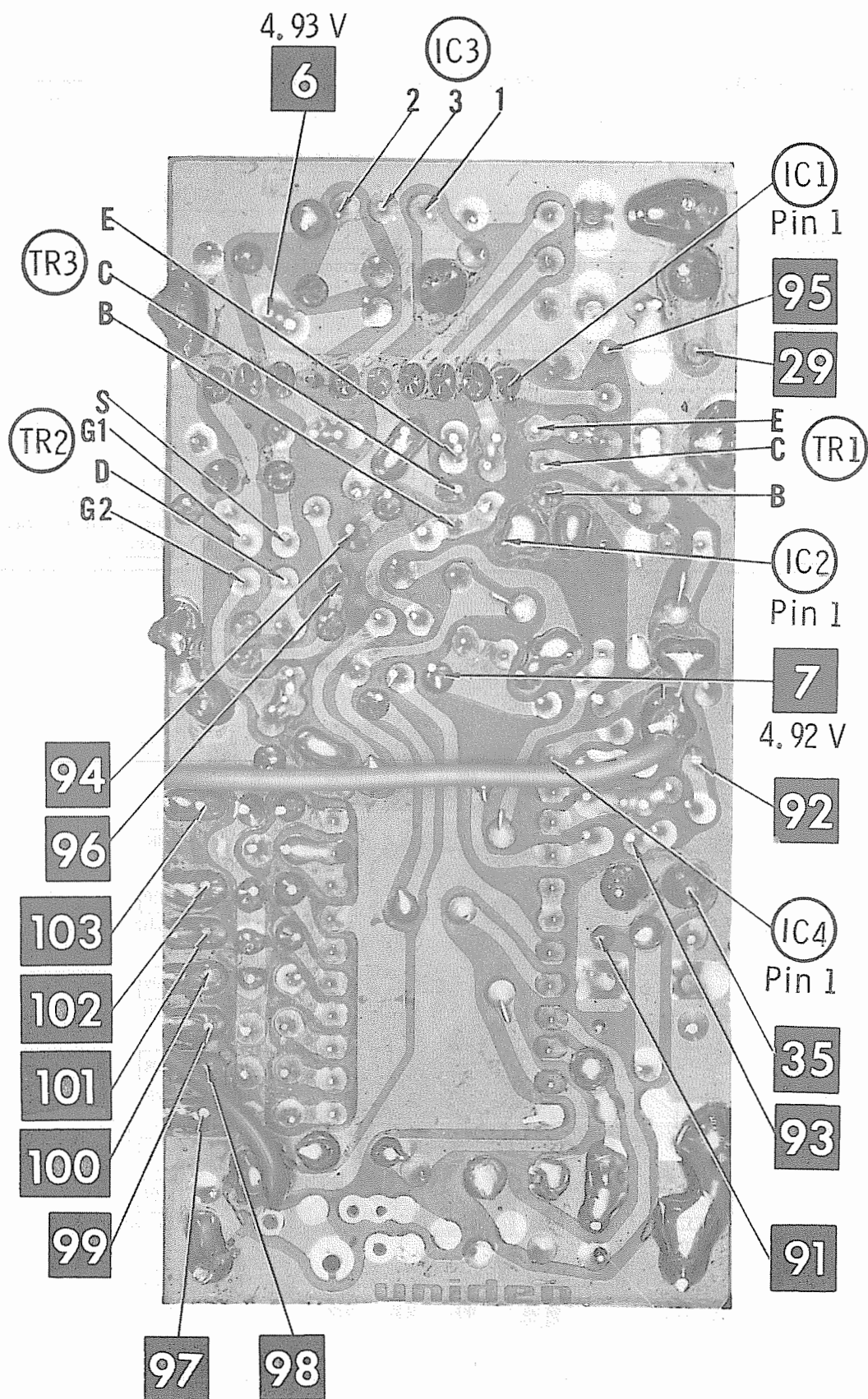
NOTE: Be sure to check transmit frequency and power on all active channels after adjustment of transmitter.

See page 4 for channel frequencies.

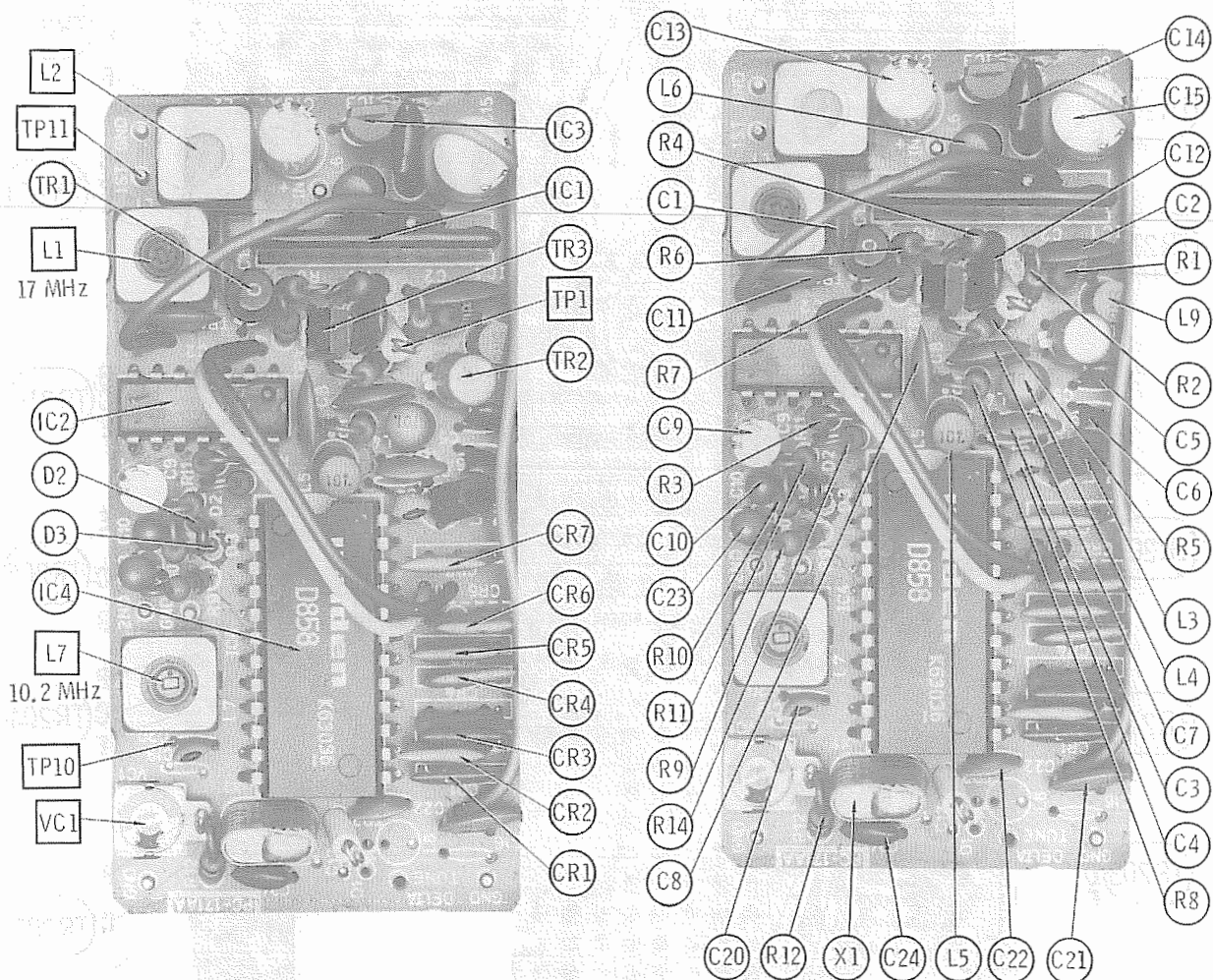
TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Modulation meter to antenna jack. Inject a 1000Hz, 100mV signal at mike input.	Ch. 19	VR207	AMC Adjust VR207 for 90% modulation.
	Ch. 19	VR206	RF PANEL METER Adjust VR206 for 2/3 reading on RF scale of meter.

COBRA MODEL 77X

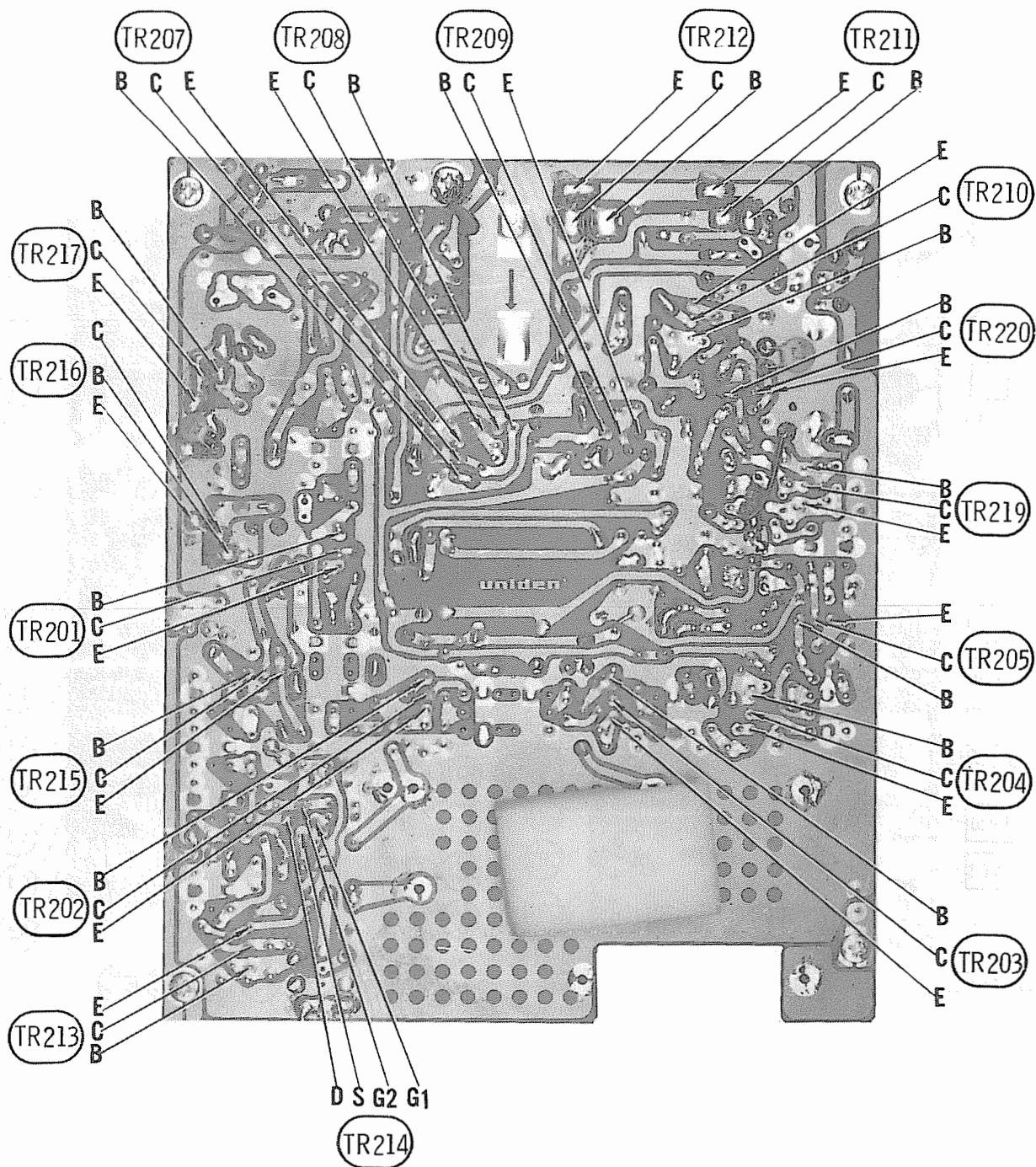




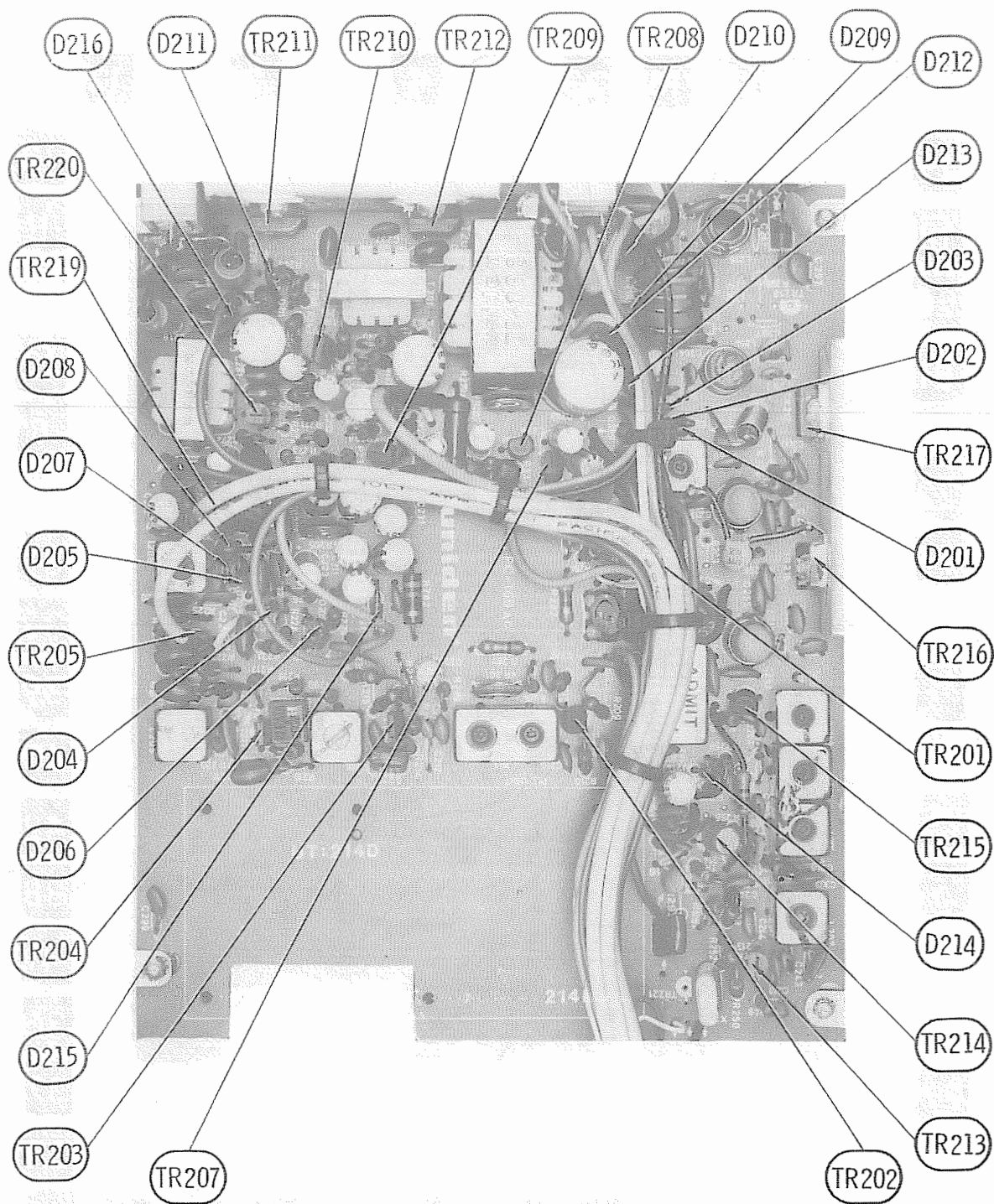
SYNTH BOARD



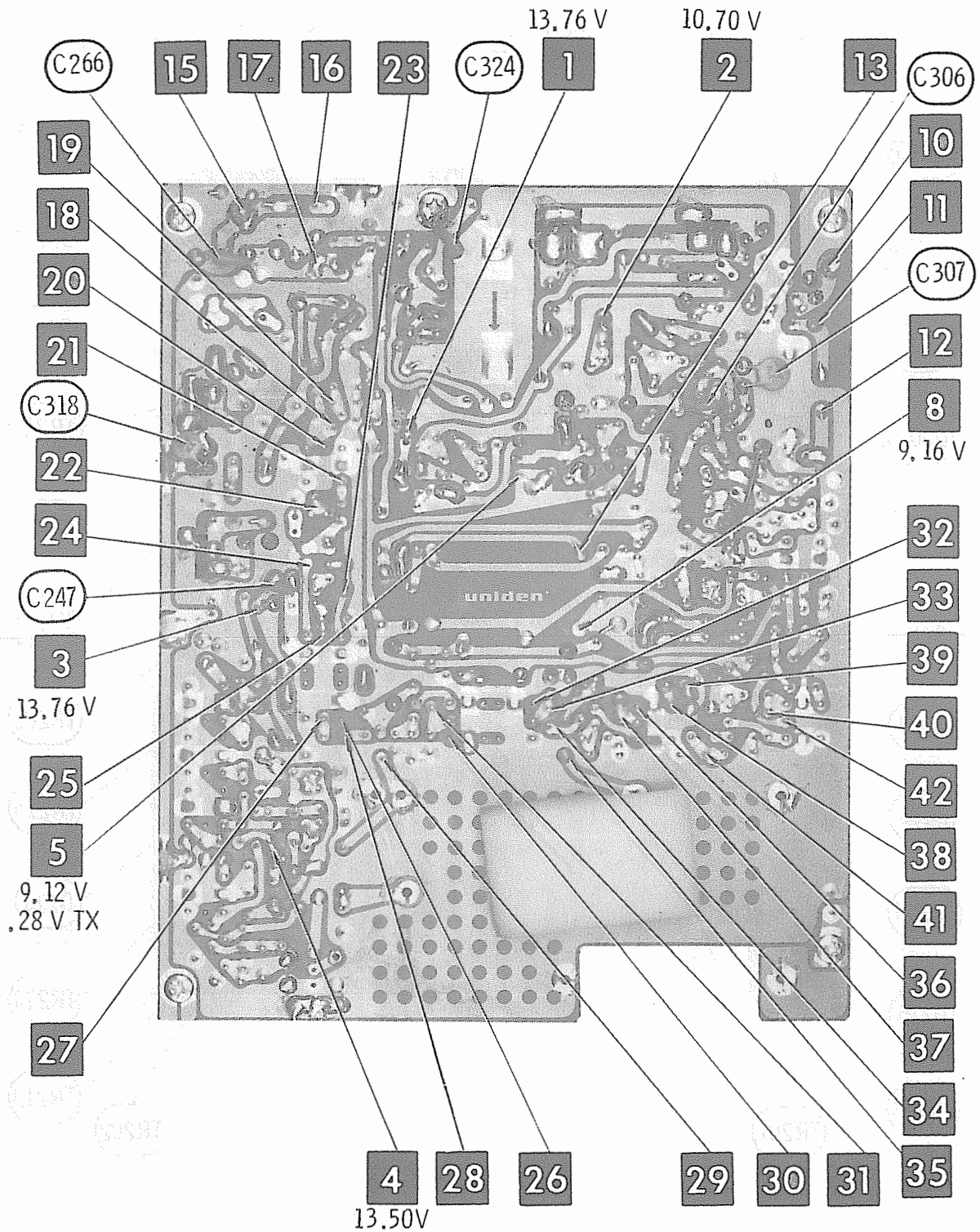
SYNTH BOARD



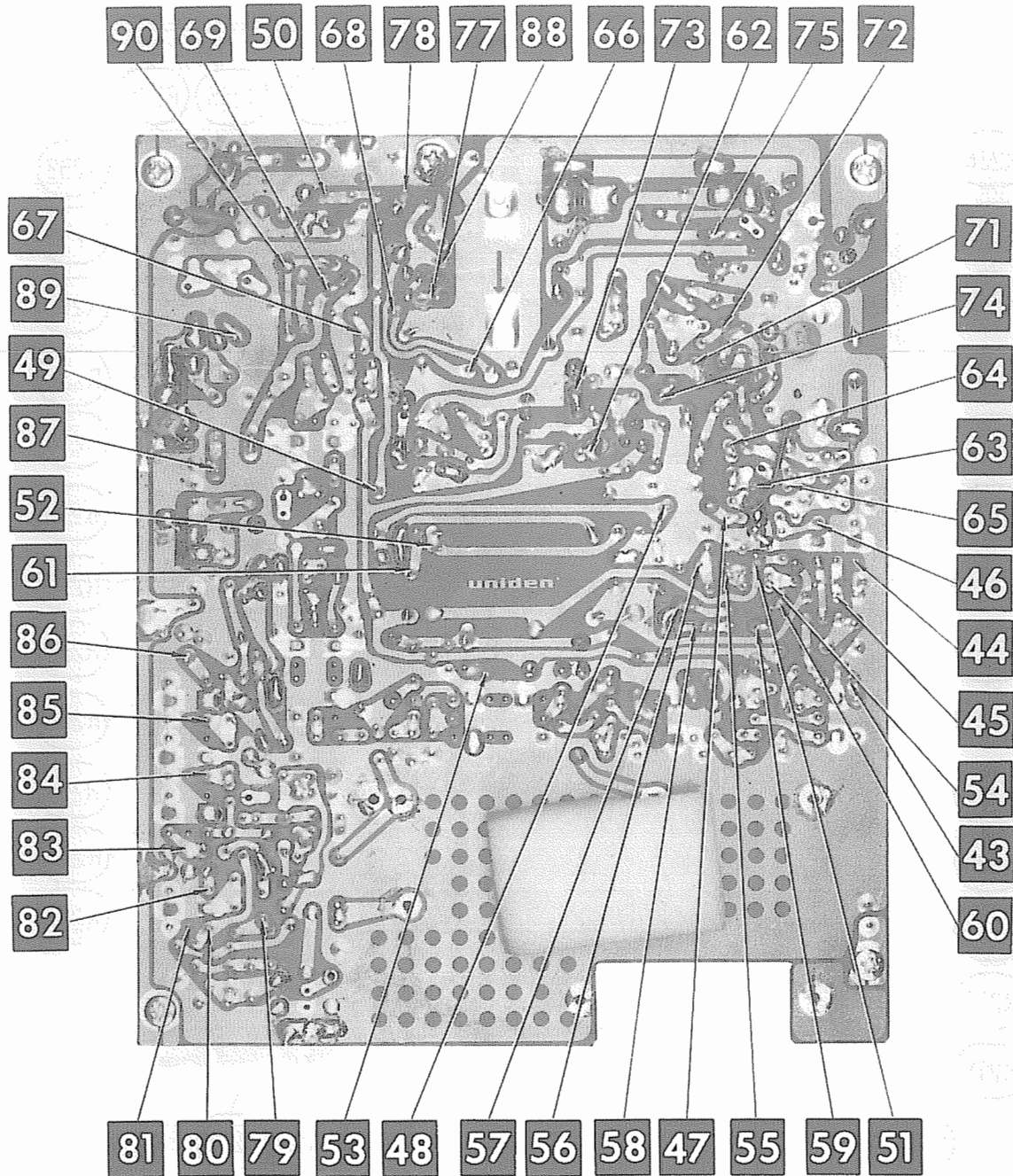
MAIN BOARD



MAIN BOARD

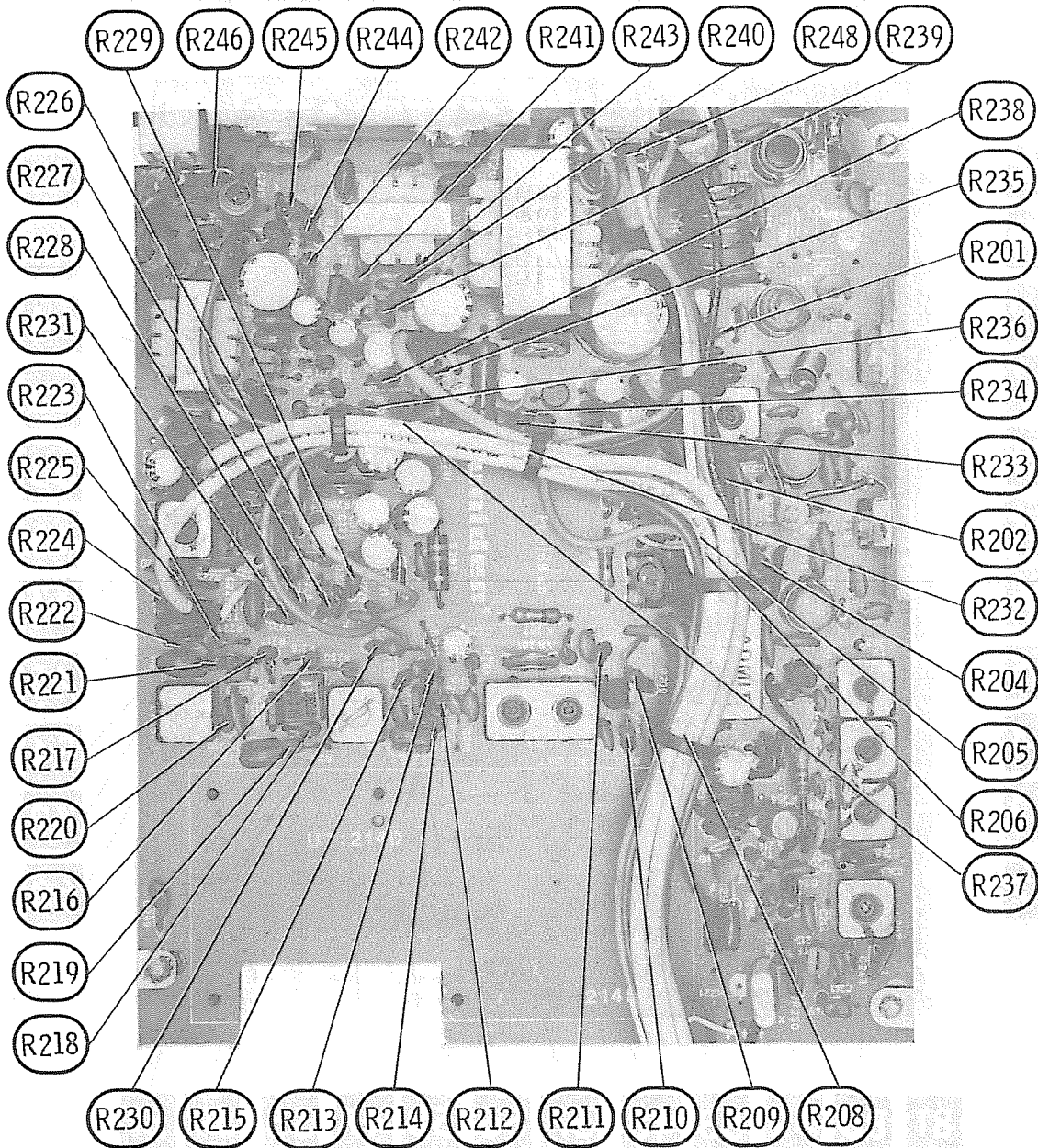


MAIN BOARD

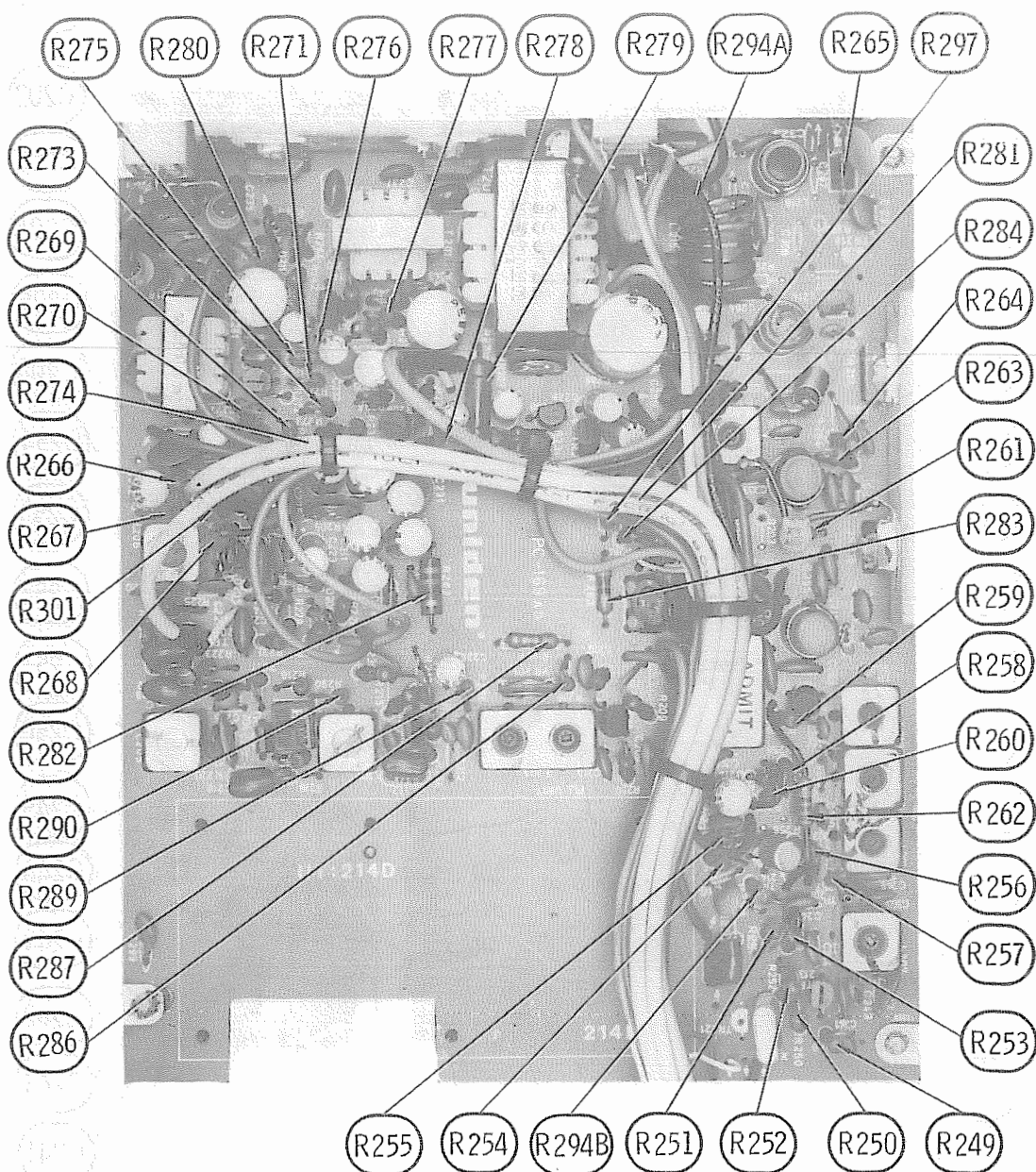


COBRA MODEL 77X

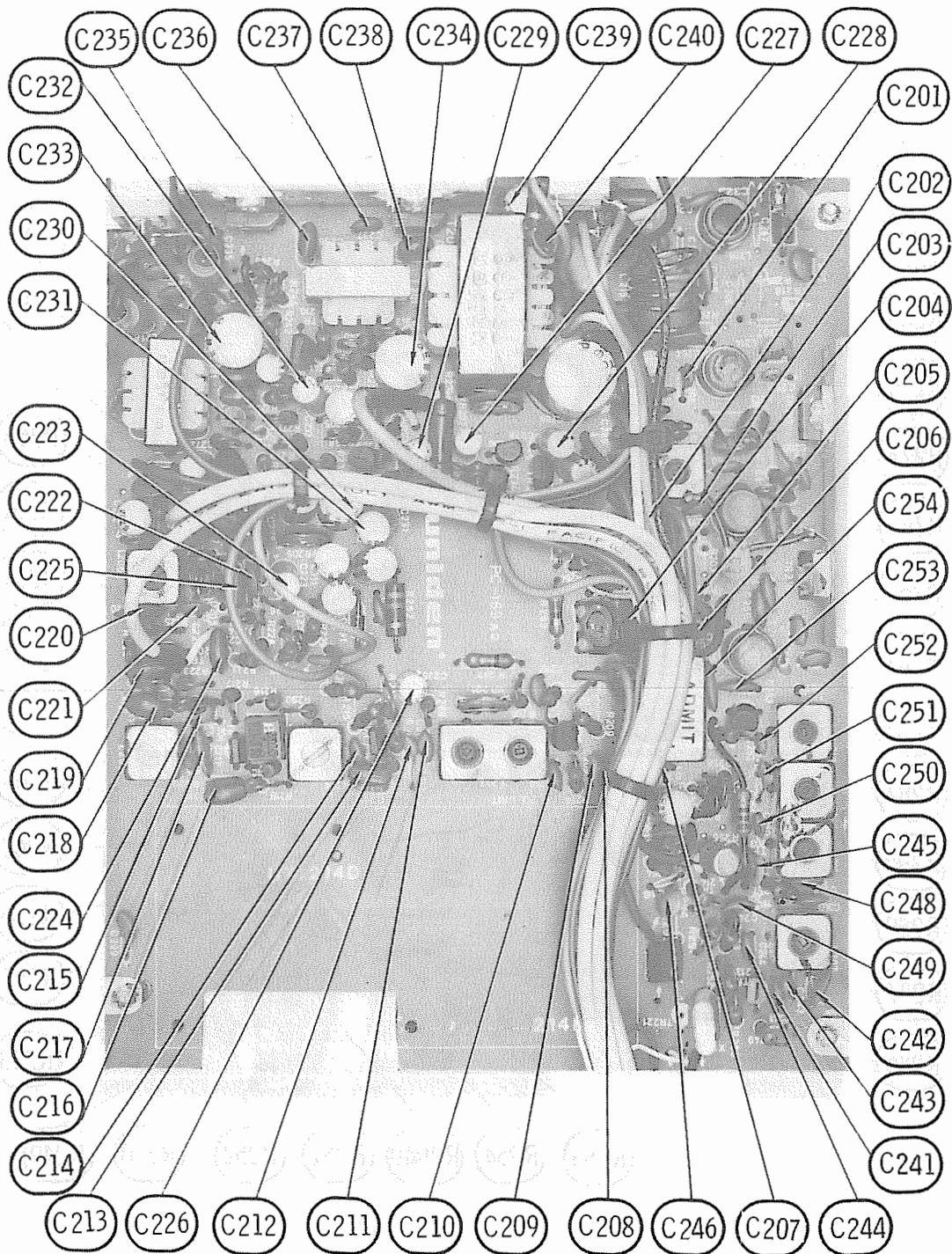
MAIN BOARD



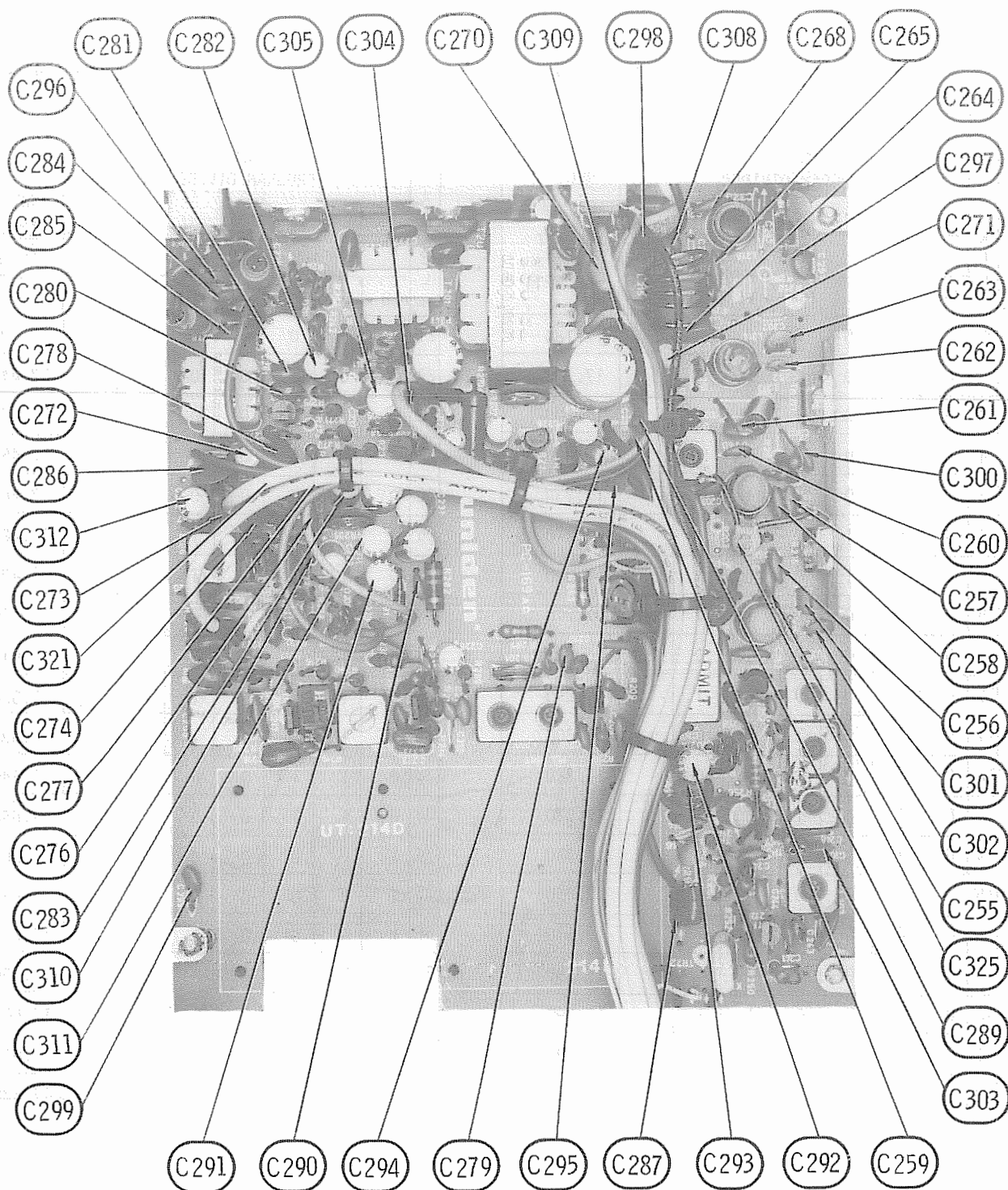
MAIN BOARD



MAIN BOARD



MAIN BOARD

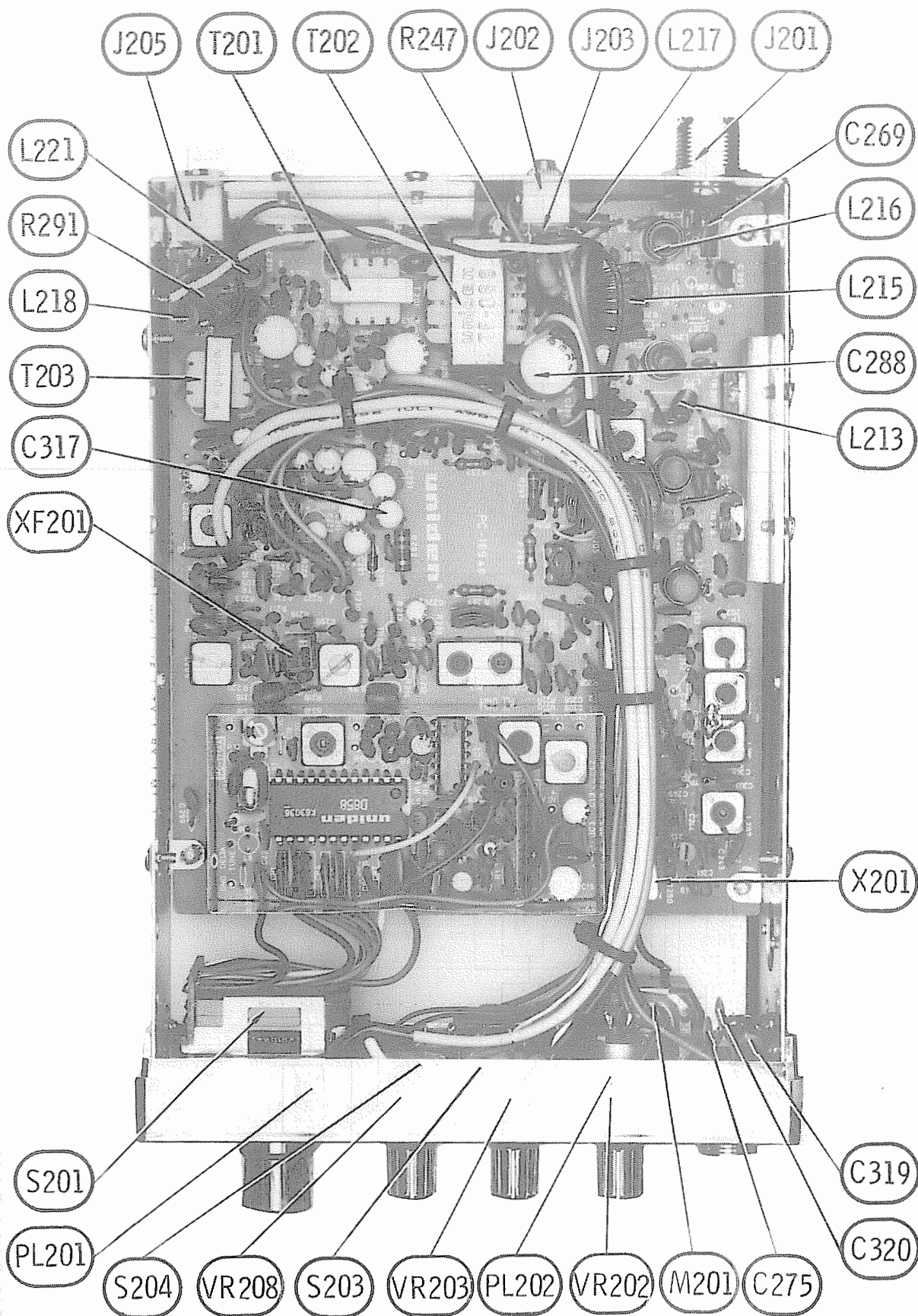


MAIN BOARD

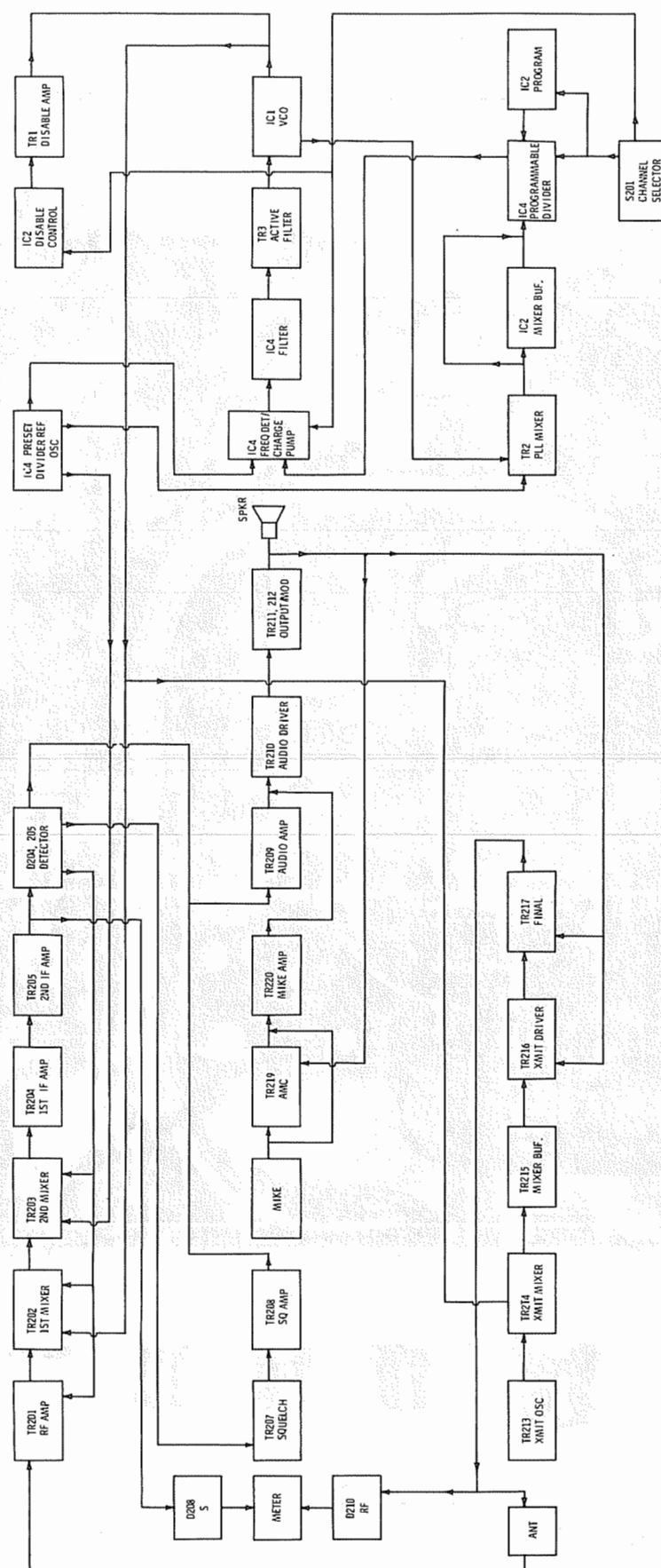
TRUTH CHART

1 = <u>4.93</u> Volts 0 = <u>0</u> Volts								
C H A N N E L	IC4 PROGRAM DIVIDER							REC. VCO OUTPUT IN MHz AT TP11
	PINS							
	18	17	16	15	14	13		
1	0	0	0	0	1	0		17.180
2	0	0	0	0	1	1		17.190
3	0	0	0	1	0	0		17.200
4	0	0	0	1	1	0		17.220
5	0	0	0	1	1	1		17.230
6	0	0	1	0	0	0		17.240
7	0	0	1	0	0	1		17.250
8	0	1	0	0	0	1		17.270
9	0	1	0	0	1	0		17.280
10	0	1	0	0	1	1		17.290
11	0	1	0	1	0	0		17.300
12	0	1	0	1	1	0		17.320
13	0	1	0	1	1	1		17.330
14	0	1	1	0	0	0		17.340
15	0	1	1	0	0	1		17.350
16	0	0	0	0	0	1		17.370
17	0	0	0	0	1	0		17.380
18	0	0	0	0	1	1		17.390
19	0	0	0	1	0	0		17.400
20	0	0	0	1	1	0		17.420

1 = <u>4.93</u> Volts 0 = <u>0</u> Volts								
C H A N N E L	IC4 PROGRAM DIVIDER							REC. VCO OUTPUT IN MHz AT TP11
	PINS							
	18	17	16	15	14	13		
21	0	0	0	1	1	1		17.430
22	0	0	1	0	0	0		17.440
23	0	1	0	0	0	1		17.470
24	0	0	1	0	0	1		17.450
25	0	1	0	0	0	0		17.460
26	0	1	0	0	1	0		17.480
27	0	1	0	0	1	1		17.490
28	0	1	0	1	0	0		17.500
29	0	1	0	1	0	1		17.510
30	0	1	0	1	1	0		17.520
31	0	1	0	1	1	1		17.530
32	0	1	1	0	0	0		17.540
33	0	1	1	0	0	1		17.550
34	1	0	0	0	0	0		17.560
35	1	0	0	0	0	1		17.570
36	1	0	0	0	1	0		17.580
37	1	0	0	0	1	1		17.590
38	1	0	0	1	0	0		17.600
39	1	0	0	1	0	1		17.610
40	1	0	0	1	1	0		17.620



CHASSIS-BOTTOM



PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE Q-LINE	PART No. GENERAL LINE
C210	.01		UK50-103		MAG5011		
C211	.01		UK50-103		MAG5011		
C212	15 50V		DTZ-15	NP015	CN0415		10TCC-Q15
C213	.047 50V			DPMS2S47	EWFA1A147	QF1-171	1PB-S47
C214	.01		UK50-103		MAG5011		
C215	1 NPO 50V				CN0510		10TCC-V10
C216	.047 50V			DPMS2S47	EWFA1A147	QF1-171	1PB-S47
C217	.04				GP140		5GA-S40
C218	.01 50V			WMF1S1	EWFA1A110	QF1-91	1PB-S10
C219	.047 50V			DPMS2S47	EWFA1A147	QF1-171	1PB-S47
C220	.039				GP140		5GA-S40
C221	100		DTZ-100	NP0100	CN0310		10TCC-T10
C222	.002				GP220		10TS-D20
C224	.01 50V			WMF1S1	EWFA1A110	QF1-91	1PB-S10
C225	.01 50V			WMF1S1	EWFA1A110	QF1-91	1PB-S10
C235	.01		UK50-103		MAG5011		
C236	.033 50V				M192P3339R8		192P3339R8
C237	.01		UK50-103		MAG5011		
C238	.033 50V				M192P3339R8		192P3339R8
C240	.01		UK50-103		MAG5011		
C241	.001		DD-102		GP210		10TS-D10
C242	82 NPO 50V		DTZ-82	NP082	CN0482		10TCC-Q82
C243	1 50V				CN0510		10TCC-V10
C244	.01		UK50-103		MAG5011		
C245	.001		DD-102		GP210		10TS-D10
C246	.001		DD-102		GP210		10TS-D10
C247	.01		UK50-103		MAG5011		
C248	.01		UK50-103		MAG5011		
C249	.01		UK50-103		MAG5011		
C250	2 NPO 50V		DTZ-2R2	NP02P2	CN0522		10TCC-V22
	3 50V	(1)	DTZ-3R3	NP03P3	CN0533		10TCC-V33
C251	2 NPO 50V		DTZ-2R2	NP02P2	CN0522		10TCC-V22
	3 50V	(1)	DTZ-3R3	NP03P3	CN0533		10TCC-V33
C252	33 50V		DTZ-33	NP033	CN0433		10TCC-Q33
C253	.0033		DD-332	GP3300	GP233	QC2-107	5GA-D33
C254	.039				GP140		5GA-S40
C255	180		DTZ-180				10TCC-T18
C256	180		DTZ-180				10TCC-T18
C257	68		DTZ-68	NP068	CN0468		10TCC-Q68
C258	220		DTZ-220				10TCC-T22
C259	.01		UK50-103		MAG5011		
C260	.01		UK50-103		MAG5011		
C261	.01		UK50-103		MAG5011		
C262	33 50V		DTZ-33	NP033	CN0433		10TCC-Q33
C263	.01		UK50-103		MAG5011		
C264	.04				GP140		5GA-S40
C265	250		DTZ-220				10TCC-T22
C266	390		DD-391	GP390	GP339		10TS-T39
C267	47	(1)	DTZ-47	NP047	CN0447		10TCC-Q47
C268	220		DTZ-220				10TCC-T22
C269	250		DTZ-220				10TCC-T22
	150	(1)	DTZ-150				10TCC-T15
C273	.01		UK50-103		CN0315		
C274	.01		UK50-103		MAG5011		
C275	.01		UK50-103		MAG5011		
C276	.01 50V			WMF1S1	EWFA1A110	QF1-91	1PB-S10
C278	.1 50V			WMF05P1	EWFO5010		431P1049R5
C279	.01		UK50-103		MAG5011		
C280	.039 50V				M192P3939R8		192P3939R8
C281	.039 50V				M192P3939R8		192P3939R8
C284	.01		UK50-103		MAG5011		
C285	.04				GP140		5GA-S40
C286	.04				GP140		5GA-S40
C287	.047 50V			DPMS2S47	EWFA1A147	QF1-171	1PB-S47
C289	.01		UK50-103		MAG5011		
C290	.01		UK50-103		MAG5011		
C293	.01		UK50-103		MAG5011		
C295	.04				GP140		5GA-S40
C296	.01		UK50-103		MAG5011		
C297	.01		UK50-103		MAG5011		
C298	.04				GP140		5GA-S40
C299	.01		UK50-103		MAG5011		
C300	.01		UK50-103		MAG5011		
C301	.01		UK50-103		MAG5011		
C302	.01		UK50-103		MAG5011		
C303	.01		UK50-103		MAG5011		
C304	.022				M192P2239R8		192P2239R8
C306	100	(1)	DTZ-100	NP0100	CN0310		10TCC-T10
C307	.01		UK50-103		MAG5011		
C308	2 50V		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C309	.04				GP140		5GA-S40

COBRA MODEL 77X

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFG. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C310	.01 50V		DD-102	WMF151	EWFA110	QF1-91	1PB-S10
C318	.001		UK50-103		GP210		10TS-D10
C319	.01		UK50-103		MAG5011		
C320	.01		DC-502	MGP005	MAG5011	QC2-123	TG-D50
C321	.005		DTZ-47	NP047	TA250		10TCC-Q47
C323	47	(1)	UK50-103		CN0447		
C324	.01		DTZ-47	NP047	MAG5011		10TCC-Q47
C325	47		UK50-103		CN0447		
VC1	.01	(1)			MAG5011		
	50	028-036-9-001					

(1) Used in some versions.

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

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFG. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
VR201	AGC	50K	008-209-9-008	T-50K (2)	C-503 (2)	MTC54L1 (2)	X201R503B (2)
VR202	Volume/Switch	10K	008-187-9-001				
VR203	Squelch	50K	008-227-9-003				
VR204	Squelch Range	50K	008-209-9-008	T-50K (2)	C-503 (2)	MTC54L1 (2)	X201R503B (2)
VR205	S Meter	20K	008-209-9-010	T-20K (2)	C-253 (2)	MTC24L1 (2)	X201R253B (2)
VR206	RF Panel Meter	20K	008-209-9-010	T-20K (2)	C-253 (2)	MTC24L1 (2)	X201R253B (2)
VR207	AMC	5000	008-284-9-001	T-5000 (2)	C-502 (2)	MTC53L1 (2)	X201R502B (2)
VR208	Dynamike	10K	008-187-9-002				
			RV-055 (5)				

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

(5) Number on unit.

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	VCO (17MHz)	066-025-9-005			
L2	VCO	044-046-9-001			
L3	RF Choke (2.2uH)	041-056-9-002			
L4	RF Choke (100uH)	041-078-9-002			
L5	RF Choke (100uH)	041-078-9-002			
L6	RF Choke (390uH)	041-078-9-003			
L7	Ref Osc (10.2MHz)	044-039-9-002			
L9	RF Choke (5.6uH)	041-078-9-004			
L201	Rec Antenna (27MHz)	066-017-9-001			
L202	Rec RF (27MHz)	066-025-9-001			
L203	Rec Mixer (9.785MHz)	066-025-9-002			
L204	Rec Mixer (455kHz)	060-022-9-001			
L205	IF (455kHz)	060-022-9-002			
L206	IF (455kHz)	060-022-9-003			
L207	Xmit Osc (9.785MHz)	066-025-9-003			
L208	Harmonic Suppressor (27MHz)	046-017-9-001			
L209	Harmonic Suppressor (27MHz)	046-017-9-001			
L210	Xmit Mixer (27MHz)	066-025-9-004			
L211	Xmit Buffer (27MHz)	044-028-9-002			
L212	Xmit Driver (27MHz)	044-028-9-004			
L213	RF Choke	044-028-9-003			
L214	Final Amp (27MHz)	044-028-9-002			
L215	RF Choke	044-028-9-001			
L216	Ant Match	041-078-9-001			
L217	TVI Trap	042-019-9-001			
L218	RF Choke	042-011-9-001			
L221	RF Choke	042-011-9-001			

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.	THORDARSON PART No.	TRIAD PART No.	
T203	1.3A	.8	.86mH	044-028-9-006 TF-083 (1)	TR516		(1) Number on unit.

TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T201	1	1		061-022-9-001 TF-069 (1)	TR635		(1) Number on unit.

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T202	38.7	1 8 23.1	061-022-9-002 TF-068 (1)	TR754	MCB-8	(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP	4" PM, 8 Ohms	580-013-9-001	4A05Z8	

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	191-251-9-002		AGC2	HDJ	312002	150145	FG2-2

COBRA MODEL 77X

PARTS LIST AND DESCRIPTION (CONTINUED)

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

MICROPHONE

ITEM No.	REPLACEMENT DATA				CONNECTION DATA						
	MFGR. PART No.	GC PART No.	GC NOISE CANCEL	GC POWER	GC CONNECTOR	GC Red	GC Shield	GC Yellow	GC Blue	GC White	GC Black
MIKE	562-006-9-001	18-032	18-034	18-010	18-092	2	1	3	4	NC	1

CRYSTALS

ITEM No.	CRYSTAL FREQUENCY IN MHz	MFGR. PART No.	CTS KNIGHTS PART No.	CHANNEL	ITEM No.	CRYSTAL FREQUENCY IN MHz	MFGR. PART No.	CTS KNIGHTS PART No.	CHANNEL
X1	10.240	132-027-9-001		Xmit Osc.	X201	9.785	132-028-9-001	CB80W9785	Ref. Osc.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CR1	Component Combination	523-162-9-001	
CR2	Component Combination	523-162-9-001	
CR3	Component Combination	523-162-9-001	
CR4	Component Combination	523-162-9-001	
CR5	Component Combination	523-162-9-001	
CR6	Component Combination	523-162-9-001	
CR7	Component Combination	523-162-9-001	
J201	Jack	772-027-9-001	Antenna
J202	Jack	773-079-9-003	PA Speaker
J203	Jack	773-079-9-003	External Speaker
J204	Jack	773-072-9-001	Mike
J205	Jack	773-079-9-002	Power
M201	Meter	320-078-9-001	S/Rf
PL201	Lamp	400-035-9-004	Channel Indicator (11.56V @ 45mA)
PL202	Lamp	400-046-9-001	Meter Illumination (11.56V @ 42mA)
XF201	Filter	140-015-9-001	455kHz
S201	Switch	083-224-9-001	Channel Selector
S202	Switch		Power (Part of Volume Control)
S203	Switch	084-051-9-001	CB/PA
S204	Switch	084-051-9-001	ANL
	Printed Circuit Board	302-244-9-001	PLL Unit
	Printed Circuit Board	302-245-9-001	Main
	Printed Circuit Board	302-246-9-001	Channel Selector

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

ITEM	PART No.	ITEM	PART No.
Case, Upper	272-112-9-001	Hanger, Mike	741-074-9-001
Case, Lower	272-113-9-001	Knob, Channel	751-149-9-001
Panel, Front	255-060-9-001	Knob, Volume/Squelch/Dynamike	751-146-9-001

WIRING DATA

General-use Hook-up Wire (available in 5 colors)	BELDEN No. 8523	Coiled Microphone Cable	
Shielded Hook-up Wire (spiral wrapped)	BELDEN No. 8421	3-conductor (1 shielded)	23AWG BELDEN No. 9471 (5')
(braided)	BELDEN No. 8401		BELDEN No. 8497 (6')
Speaker Cable (available in 4 colors)	BELDEN No. 8782		BELDEN No. 9472 (7-1/2')
Bonding Strap	BELDEN No. 8672		28AWG BELDEN No. 9466 (6')
AC Power Cord	(6') BELDEN No. 17106		31AWG BELDEN No. 9468 (10')
	(9') BELDEN No. 17109	4-conductor (unshielded)	23AWG BELDEN No. 8415 (6')
		5-conductor (1 shielded)	28AWG BELDEN No. 9467 (6')
			BELDEN No. 9465 (7-1/2')

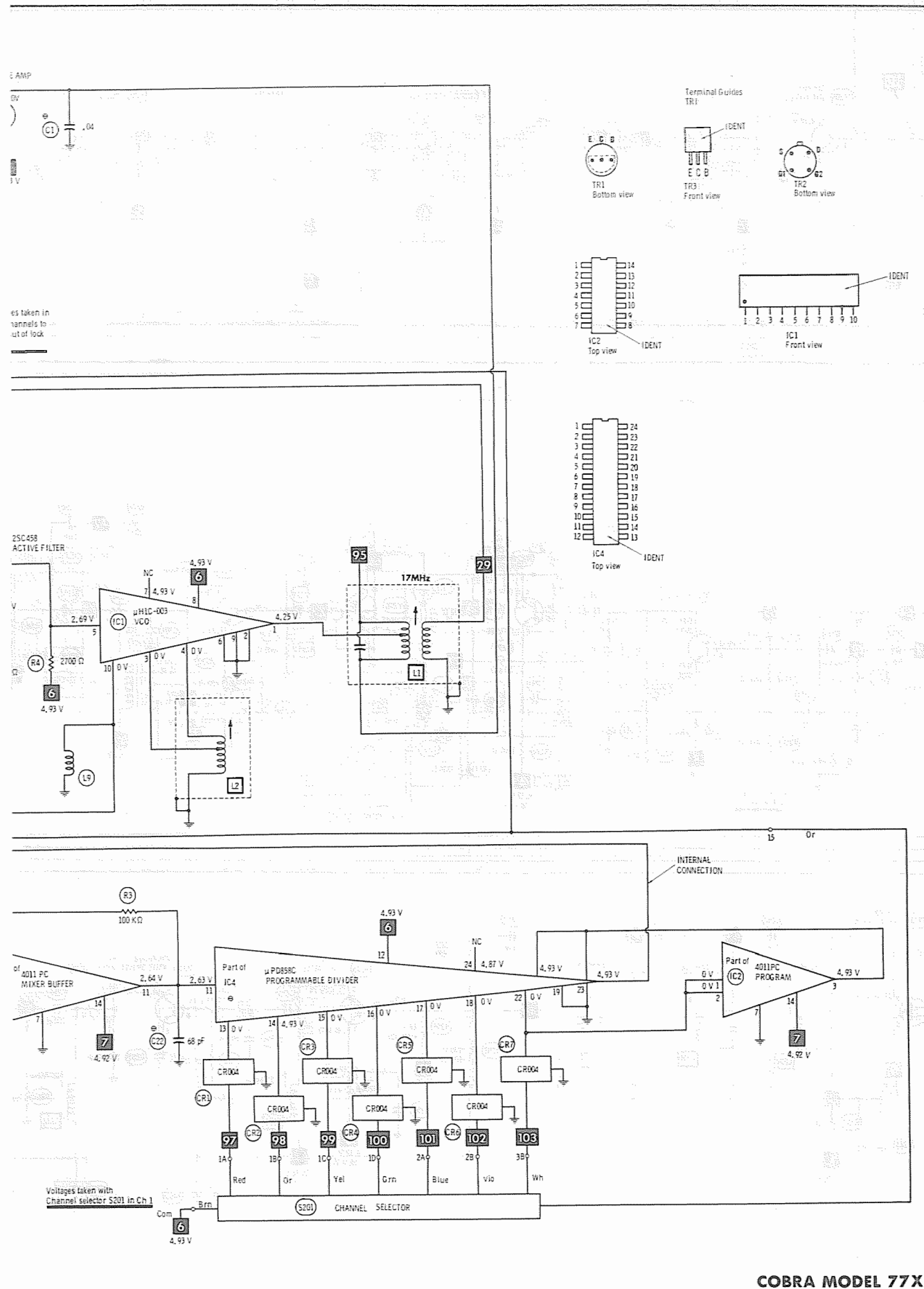
PARTS LIST AND DESCRIPTION

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

SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
D2	1S2473	151-059-9-001	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D3	1S2473	151-059-9-001	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D201	1S2473	151-059-9-001	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D202	1S2473	151-059-9-001	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D203	1S2473	151-059-9-001	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D204	1N60AM	150-014-9-001	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D205	1N60AM	150-014-9-001	1N60	1N60	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D206	1S2473K	151-060-9-001	GE-300	D200	PTC214	HEPR9135	RE 47	SK3088	RT-263	ECG109
D207	1N60AM	150-014-9-001	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D208	1N60AM	150-014-9-001	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D209	SR1K1	151-040-9-003	GE-504(3)	C005	PTC403	HEPR0053(3)	RE 49(3)	SK3017A(3)	RT-215(3)	ECG116(3)
D210	1N60AM	150-014-9-001	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D211	MV1	151-049-9-007			PTC301					ECG601
D212	1N60AM	150-014-9-001	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D213	1N60AM	150-014-9-001	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D214	CZ-092	152-051-9-001	GEZD-9.1	Z1209	ZB9.1A	HEPZ0412	RE 114	SK3060	RT-240	ECG139
D215	CZ-092	152-051-9-001	GEZD-9.1	Z1209	ZB9.1A	HEPZ0412	RE 114	SK3060	RT-240	ECG139
D216	SR1K1	151-040-9-003	GE-504(3)	C005	PTC403	HEPR0053(3)	RE 49(3)	SK3017A(3)	RT-215(3)	ECG116(3)
IC1	UHC003	307-108-9-001								ECG4011B
IC2	4011PC	307-095-9-002								ECG977
IC3	78L05AV	307-095-9-003								ECG977
	78L05	(1)								ECG1196
IC4	UP0858									ECG1196
	UP0858C	307-095-9-004								
		(1)								
TR1	2SC372	(1)	GE-61 *	(IR)2SC372	PTC121 *	HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A *
	2SC945		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
TR2	3SK45		GE-FET-4	WEP905	PTC181	HEPF2004	RE 199	SK3050	RT-181	ECG222
	3SK45B	182-038-9-001	GE-FET-4	WEP905	PTC181	HEPF2004	RE 199	SK3050	RT-181	ECG222
		(1)								
TR3	2SC458		GE-210 *	(IR)2SC458B	PTC121 *	HEPS0009 *	RE 13 *	SK3124	RT-187	ECG123A *
	2SC458C	176-048-9-002	GE-210 *	(IR)2SC458B	PTC121 *	HEPS0009 *	RE 13 *	SK3124	RT-187	ECG123A *
		(1)								
TR201	2SC930		GE-60 *	(IR)2SC772	PTC132 *	HEPS0016 *	RE 9	SK3039 *	RT-308	ECG229 *
	2SC930D	176-060-9-001	GE-60 *	(IR)2SC772	PTC132 *	HEPS0016 *	RE 9	SK3039 *	RT-308	ECG229 *
		(1)								
TR202	2SC930		GE-60 *	(IR)2SC772	PTC132 *	HEPS0016 *	RE 9	SK3039 *	RT-308	ECG229 *
	2SC9300	176-060-9-001	GE-60 *	(IR)2SC772	PTC132 *	HEPS0016 *	RE 9	SK3039 *	RT-308	ECG229 *
		(1)								
TR203	2SC460		GE-61 *	(IR)2SC460B	PTC136 *	HEPS0014 *	RE 9	SK3018 *	RT-134	ECG107
	2SC1675	(1)	GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC1675M	176-060-9-002	GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
		(1)								
TR204	2SC460		GE-61 *	(IR)2SC460B	PTC136 *	HEPS0014 *	RE 9	SK3018 *	RT-134	ECG107
	2SC1675	(1)	GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC1675M	176-060-9-002	GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
		(1)								
TR205	2SC460		GE-61 *	(IR)2SC460B	PTC136 *	HEPS0014 *	RE 9	SK3018 *	RT-134	ECG107
	2SC1675	(1)	GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC1675M	176-060-9-002	GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
		(1)								
TR207	2SC945		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC945AP	176-060-9-003	GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
		(1)								
TR208	2SA564A		GE-65	(IR)2SA564A	PTC103 *	HEPS0019 *	RE 193	SK3114	RT-303	ECG234
	2SA733	(1)	GE-48	TR-31	PTC103 *	HEPS0019 *	RE 26 *	SK3138	RT-303	ECG294
	2SA733Q	177-018-9-001	GE-48	TR-31	PTC103 *	HEPS0019 *	RE 26 *	SK3138	RT-303	ECG294
		(1)								
TR209	2SC945		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC945AP	176-060-9-003	GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
		(1)								
TR210	2SC1364		GE-210 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 13 *	SK3124	RT-308	ECG123A *
	2SC1364-6	176-054-9-001	GE-210 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 13 *	SK3124	RT-308	ECG123A *
		(1)								
TR211	2SC1096		GE-28	WEP1096	PTC110	HEPS5027	RE 42	SK3197	RT-166	ECG186A
	2SC10964ZL	172-038-9-003	GE-28	WEP1096	PTC110	HEPS5027	RE 42	SK3197	RT-166	ECG186A
		(1)								
TR212	2SC1096		GE-28	WEP1096	PTC110	HEPS5027	RE 42	SK3197	RT-166	ECG186A
	2SC10964ZL	172-038-9-003	GE-28	WEP1096	PTC110	HEPS5027	RE 42	SK3197	RT-166	ECG186A
		(1)								
TR213	2SC1675M		GE-213	TR-33	PTC139	HEPS0025	RE 13	SK3124	RT-308	ECG229
TR214	3SK45		GE-FET-4	WEP905	PTC181	HEPF2004	RE 199	SK3050	RT-181	ECG222
	3SK45B	182-038-9-001	GE-FET-4	WEP905	PTC181	HEPF2004	RE 199	SK3050	RT-181	ECG222
		(1)								
TR215	2SC2076		GE-210 *	TR-24 *	PTC121 *	HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A
	2SC2076CB	176-060-9-004	GE-210 *	TR-24 *	PTC121 *	HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A
		(1)								
TR216	2SC2028/2		GE-270	WEP913	PTC180	HEPS3044	RE 209			ECG295
	2SC2028B/20	172-038-9-001	GE-270	WEP913	PTC180	HEPS3044	RE 209			ECG295
		(1)								
TR217	2SC2029/1		GE-337	WEP913	PTC186		RE 203	SK3197	RT-146	ECG235
	2SC2029B/10	172-038-9-002	GE-337	WEP1306	PTC186	HEPS3044	RE 203	SK3197	RT-146	ECG235
		(1)								

COBRA MODEL 77X



PARTS LIST AND DESCRIPTION (CONTINUED)

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

SEMICONDUCTORS (Select replacement transistor for best results) (cont)

ITEM No.	TYPE	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
TR219	2SC945	176-060-9-003 (1)	GE-212	(1R)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
TR220	2SC945	176-060-9-003 (1)	GE-212	(1R)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199

* Lead configuration may vary from original.

(1) Used in some versions.

(11) Rating 10W @ 2 AMP.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	Q-LINE
C9	1 50V	022-157-9-002	PC1-50	VTT1A50	QV1-11	EV-1615
C10	10 10V	027-025-9-001	PC30-25	TDC105M050EL	QDT1-25	SD50-19
C13	33 16V	022-157-9-006	PC100-10	VTT33025	QV1-63	EV-1325
C15	100 10V	022-157-9-008		VTT100E10	QV1-93	EV-1130
C23	10 10V	027-025-9-001		TDC105M050EL	QDT1-25	SD50-19
C223	1 50V	022-157-9-002	PC1-50	VTT1A50	QV1-11	EV-1615
C226	10 16V	022-157-9-004	PC10-25	VTT10825	QV1-41	EV-1222
C227	10 16V	022-157-9-004	PC10-25	VTT10825	QV1-41	EV-1222
C228	10 16V	022-157-9-004	PC10-25	VTT10825	QV1-41	EV-1222
C229	47 50V	022-157-9-001	PC1-50	VTT47A63	QV1-3	EV-1610
C230	100 10V	022-157-9-008	PC100-10	VTT100E10	QV1-93	EV-1130
C231	33 16V	022-157-9-006	PC30-25	VTT33025	QV1-63	EV-1325
C232	1 50V	022-157-9-002	PC1-50	VTT1A50	QV1-11	EV-1615
C233	220 6.3V	022-157-9-010	PC250-10	VTT220F10	QV1-115	EV-1140
C234	100 16V	022-151-9-009	PC100-16	VTT100F16	QV1-95	EV-1230
C239	22 16V	022-157-9-005	PC25-25	VTT22B16	QV1-55	EV-1224
C270	1 50V	022-157-9-002	PC1-50	VTT1A50	QV1-11	EV-1615
C271	4.7 25V	022-157-9-003	PC5-60	VTT47B50	QV1-27	EV-1319
C272	10 16V	022-157-9-004	PC10-25	VTT10825	QV1-41	EV-1222
C277	47 50V	022-157-9-001	PC1-50	VTT47A63	QV1-3	EV-1610
C282	1 50V	022-157-9-002	PC1-50	VTT1A50	QV1-11	EV-1615
C283	47 10V	022-157-9-007	PC50-16	VTT47D16	QV1-73	EV-1226
C288	470 16V	022-157-9-011	PC500-16	VTT470K16	QV1-151	EV-1250
C291	33 16V	022-157-9-006	PC30-25	VTT33025	QV1-63	EV-1325
C292	33 16V	022-157-9-006	PC30-25	VTT33025	QV1-63	EV-1325
C294	4.7 25V	022-157-9-003	PC5-50	VTT47B50	QV1-27	EV-1319
C305	22 16V	022-157-9-005	PC25-25	VTT22B16	QV1-55	EV-1224
C311	47 10V	022-157-9-007	PC50-16	VTT47D16	QV1-73	EV-1226
C312	47 10V	022-157-9-007	PC50-16	VTT47D16	QV1-73	EV-1226
C317	22 16V	022-157-9-005	PC25-25	VTT22B16	QV1-55	EV-1224

CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	.04	020-180-9-029	UK50-223		GP140	5GA-S40
C2	.02				MAG5012	
C3	39 N220 5%		DTZ-2R2	NP02P2	CN0522	10TCR-V39
C4	2 NPO 50V				CN0427	10TCC-V22
C5	27 50V				CN0427	10TCC-Q27
C6	27 50V				CN0427	10TCC-Q27
C7	.01		UK50-103		MAG5011	
C8	.04				GP140	5GA-S40
C11	.04				GP140	5GA-S40
C12	.01 50V			WMF1S1	EWFA1110	1PB-S10
C14	.047			DPMS2S47	EWFA1147	1PB-S47
C20	5 NPO 50V		DTZ-4R7	NP04P7	CN0547	10TCC-V47
C21	.04				GP140	5GA-S40
C22	68		DTZ-68	NP068	CN0468	10TCC-Q68
C24	470 50V		DD-471	GP470	GP347	10TS-T47
C201	22 50V		DTZ-22	NP022	CN0422	10TCC-Q22
C202	.01		UK50-103		MAG5011	
C203	.01		UK50-103		MAG5011	
C204	.01 50V			WMF1S1	EWFA1110	1PB-S10
C205	.01				MAG5011	
C206	.01		UK50-103		MAG5011	
C207	.01		UK50-103		MAG5011	
C208	5 50V		DTZ-4R7	NP04P7	CN0547	10TCC-V47
C209	.01		UK50-103		MAG5011	



