



# PHOTOFACT<sup>®</sup> with

# CIRCUITRACE<sup>®</sup>

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 29XLR

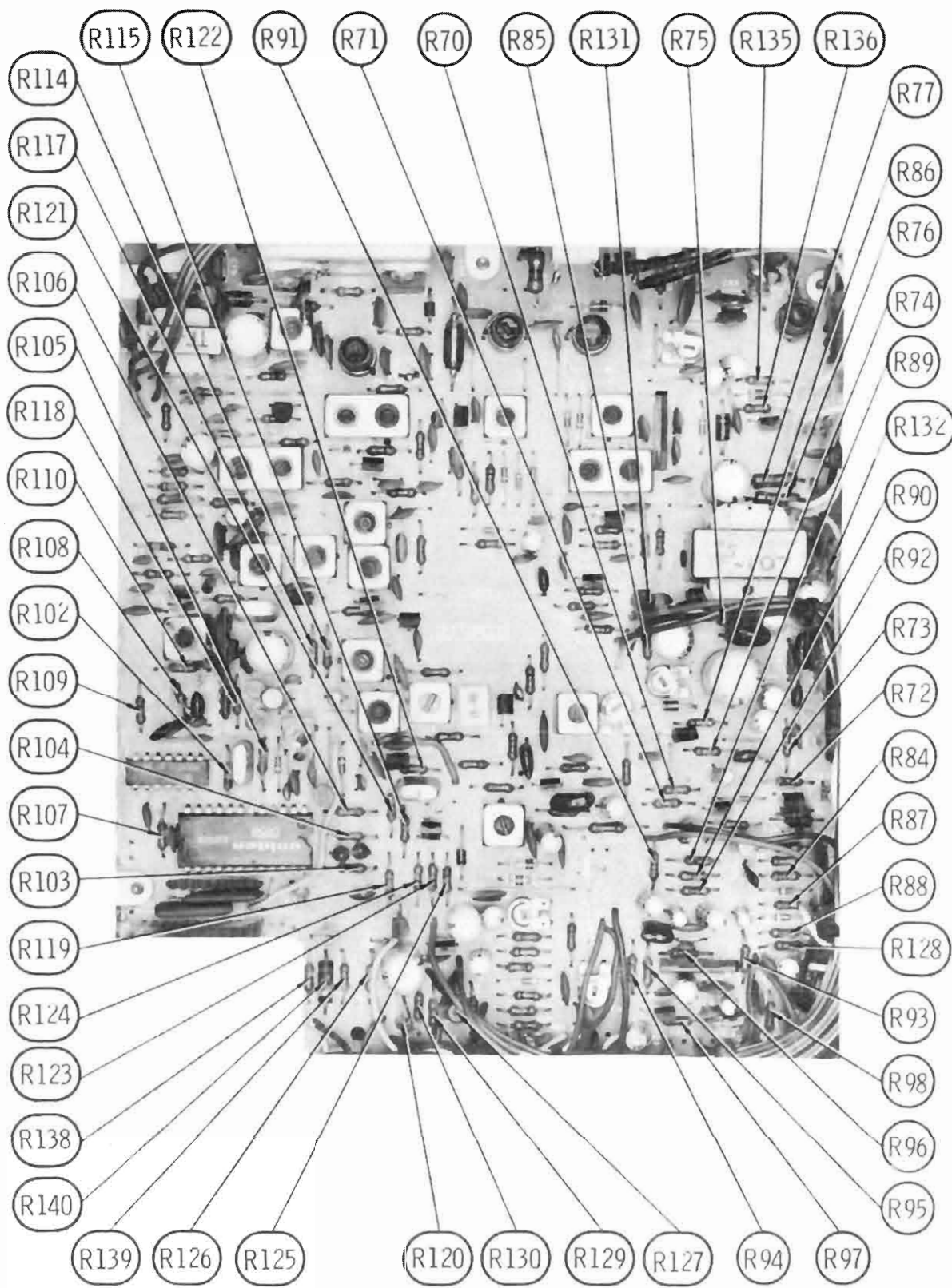
MODEL 29XLR

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

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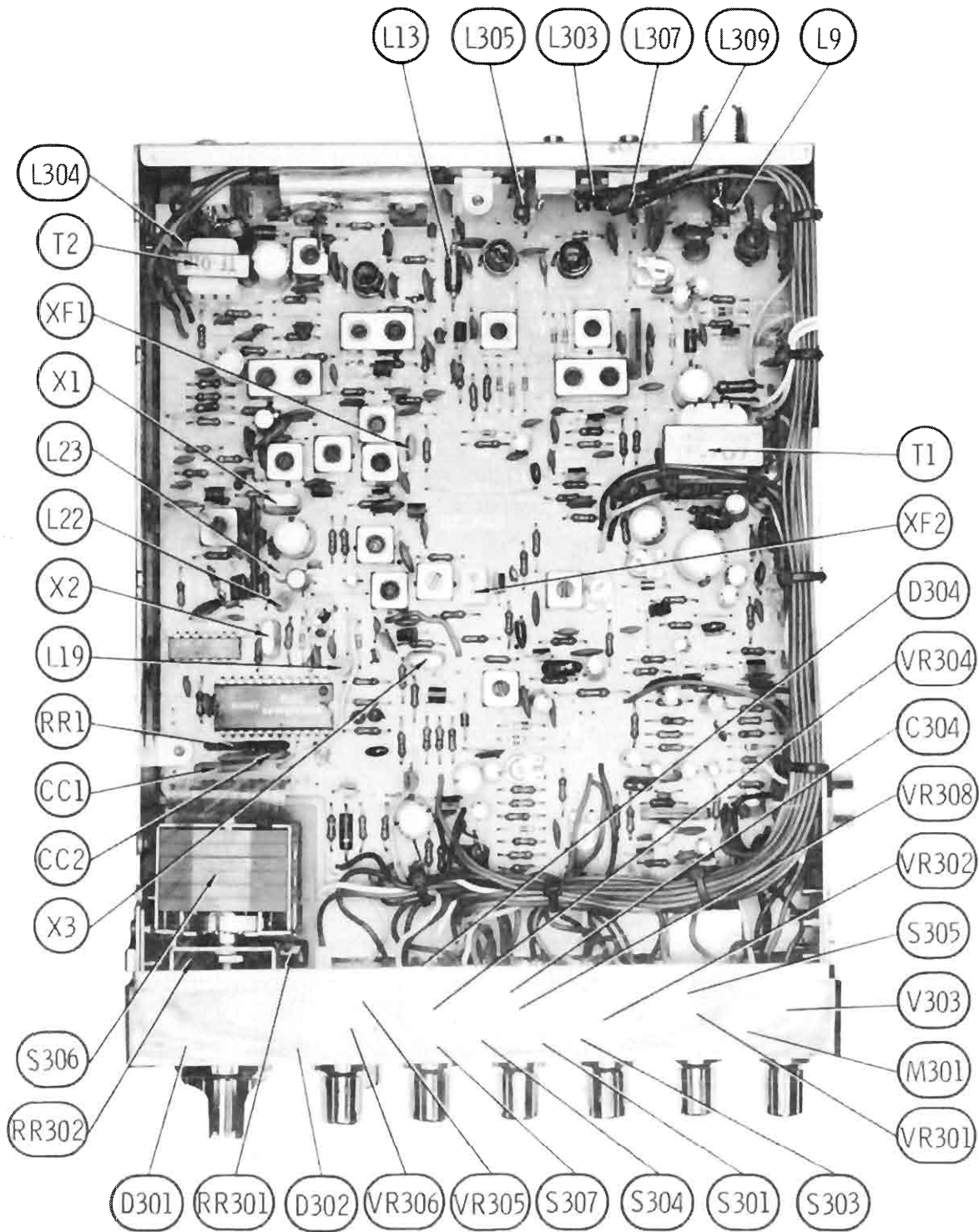


MAIN BOARD

### CHANNEL FREQUENCIES

FREQUENCY	CHANNEL	FREQUENCY	CHANNEL
26.965 MHz	1	27.215 MHz	21
26.975 MHz	2	27.225 MHz	22
26.985 MHz	3	27.235 MHz	24
27.005 MHz	4	27.245 MHz	25
27.015 MHz	5	27.255 MHz	23
27.025 MHz	6	27.265 MHz	26
27.035 MHz	7	27.275 MHz	27
27.055 MHz	8	27.285 MHz	28
27.065 MHz	9	27.295 MHz	29
27.075 MHz	10	27.305 MHz	30
27.085 MHz	11	27.315 MHz	31
27.105 MHz	12	27.325 MHz	32
27.115 MHz	13	27.335 MHz	33
27.125 MHz	14	27.345 MHz	34
27.135 MHz	15	27.355 MHz	35
27.155 MHz	16	27.365 MHz	36
27.165 MHz	17	27.375 MHz	37
27.175 MHz	18	27.385 MHz	38
27.185 MHz	19	27.395 MHz	39
27.205 MHz	20	27.405 MHz	40





CHASSIS-BOTTOM

## 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 a 50-ohm dummy load or antenna before keying transmitter.  
Suggested Alignment Tools: GC ELECTRONICS:  
L6, L7, L8, L10, L11, L12, L15 ..... 5009  
L1, L2, L3, L4, L5, L16, L17, L18, L20, L21, L24, L27, L28 ..... 9440  
VC1 ..... 5000

## SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of oscilloscope to TP1.	Ch. 19	L5	Adjust for maximum.
Input of frequency counter to TP1.	Ch. 19	VC1	Adjust for 10.240MHz.
Input of DC meter to TP5.	Ch. 19	L20	Adjust for 3.0 volts.
Input of oscilloscope to TP6.	Ch. 19	L21	Adjust for maximum.
Input of frequency counter to TP6.	Ch. 19	L24	Adjust for 37.880MHz.

## 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	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP10. 455kHz, 1000Hz @ 30% modulation.	Ch. 19 RF gain - Max Delta Tune-Mid range.	L8, L7, L6	Adjust for maximum output.
Output of signal generator thru .01uF to TP11. 10.695MHz, 1000Hz @ 30% modulation.	Ch. 19	L4, L3	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19.	L2, L1	Adjust for maximum output. Repeat above steps, if necessary.
Output of signal generator thru .01uF to antenna jack. 23.5MHz unmodulated. Input of RF VTVM to TP7.	Ch. 19	L28, L27	Adjust for maximum.

## 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 .9uV.	Ch.19, RF Gain - Max Delta Tune -Midrange Volume - Max	VR2	AGC Adjust VR2 for 2 volts audio.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 500uV.	Ch. 19	VR3	SQUELCH RANGE Set squelch control VR302 fully clockwise. Adjust VR3 so that squelch just breaks.
Output signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19	VR1	S METER Adjust 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	TRANSCIVER	ADJUST	REMARKS
Input of oscilloscope to TP3.	Ch. 19	L18, L17	Adjust for maximum.
	Ch. 19	L16, L15, L12, L11	Adjust for maximum.
	Ch. 19	L12	Adjust for 3.8 watts.
Input of spectrum analyzer to antenna jack.	Ch. 19	L10	Adjust for MINIMUM at 54MHz.

## TRANSMITTER ADJUSTMENTS

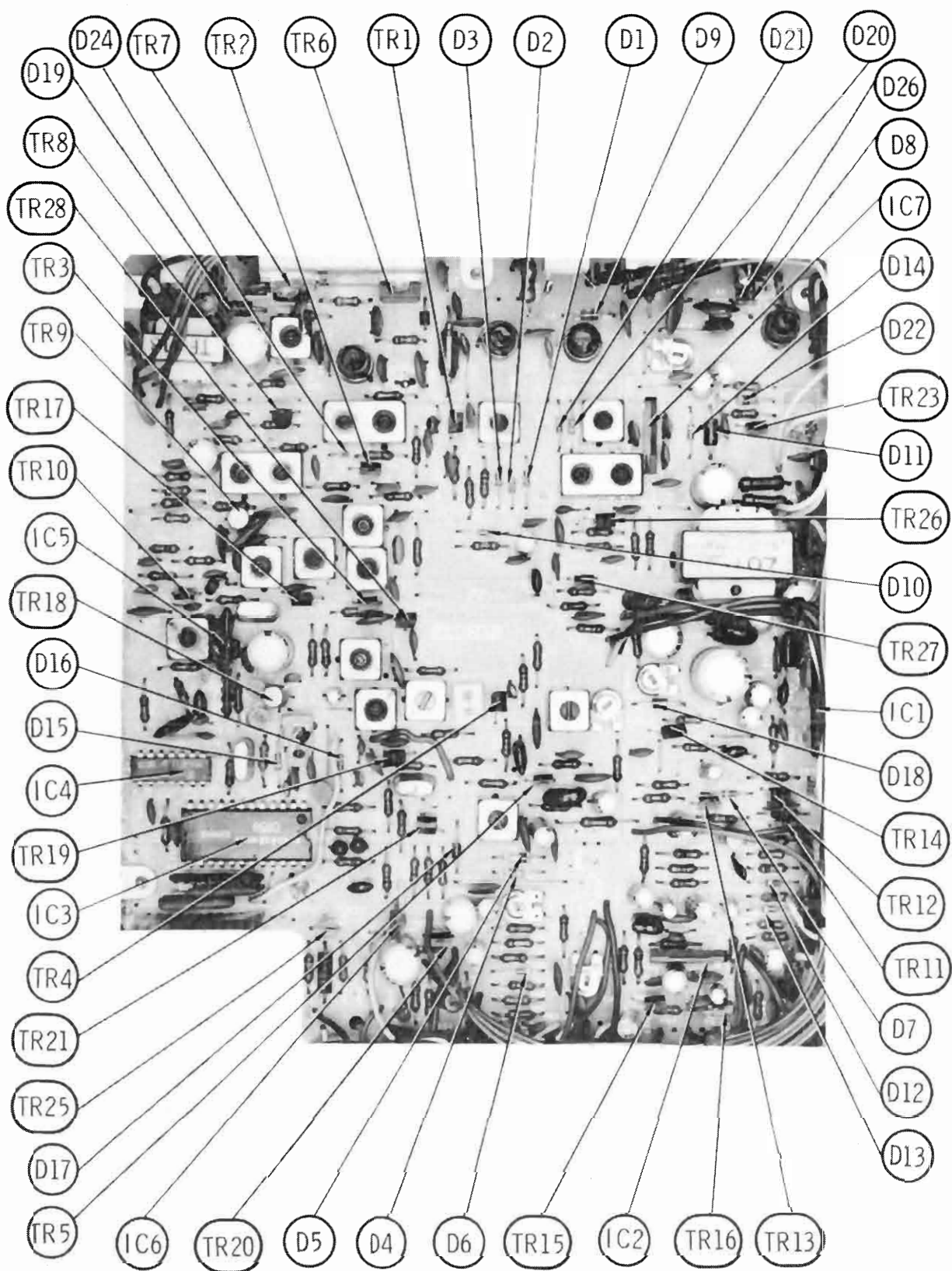
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.

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

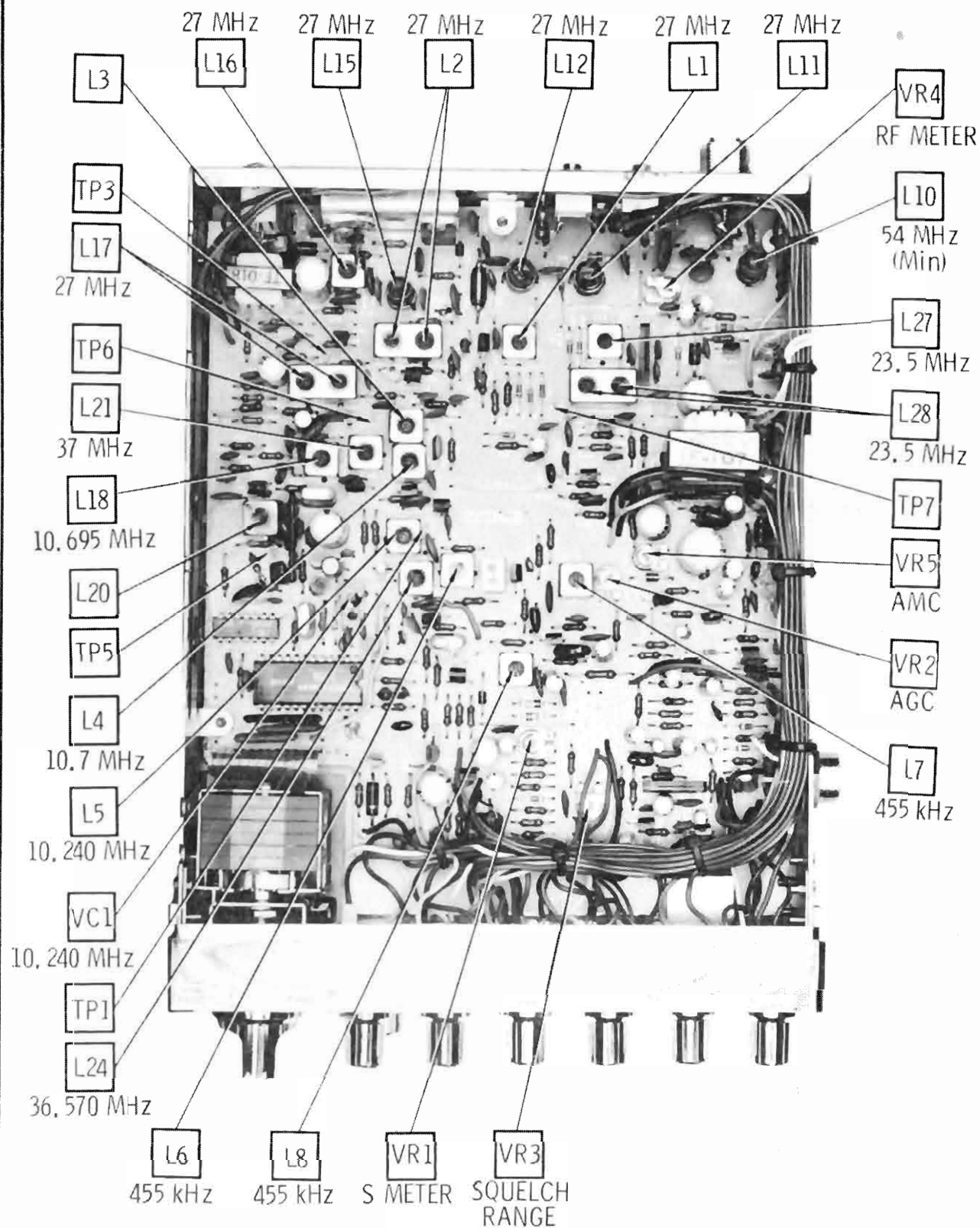
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Modulation meter to antenna jack. Inject a 1000Hz 10mV signal at Mic input.	Ch. 19 Dynamike-Max.	VR5	AMC Adjust VR5 for 95% modulation.
Modulation meter to antenna jack. Inject a 1000Hz 10mV signal at Mic input.	Ch. 19 Dynamike-Max.	VR6	MOD Adjust VR6 so that panel Mod. meter agrees with external modulation meter.
	Ch. 19	VR4	RF PANEL METER Adjust VR4 so that RF panel meter agrees with RF wattmeter.

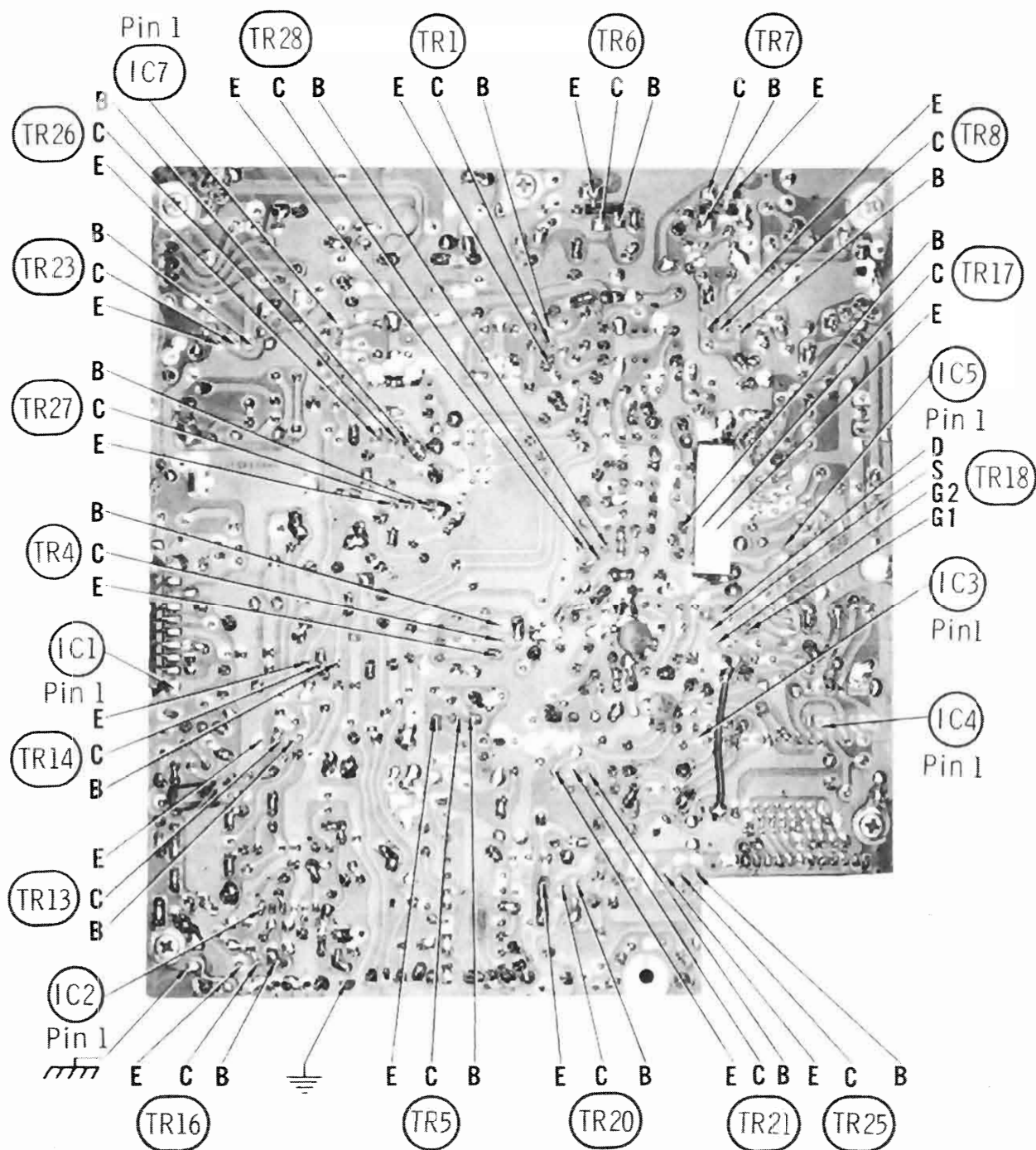
COBRA MODEL 29XLR



MAIN BOARD

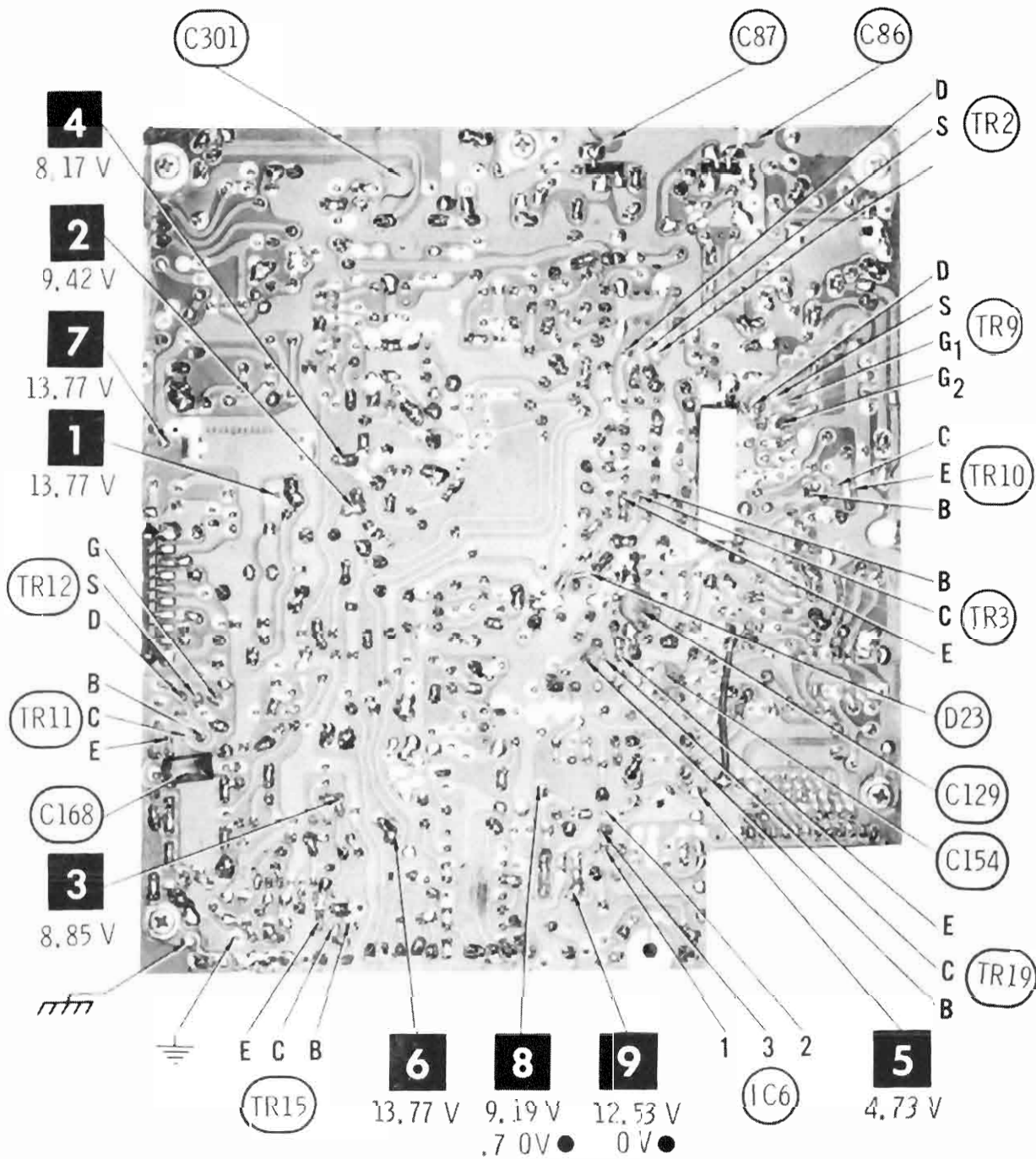


CHASSIS-BOTTOM



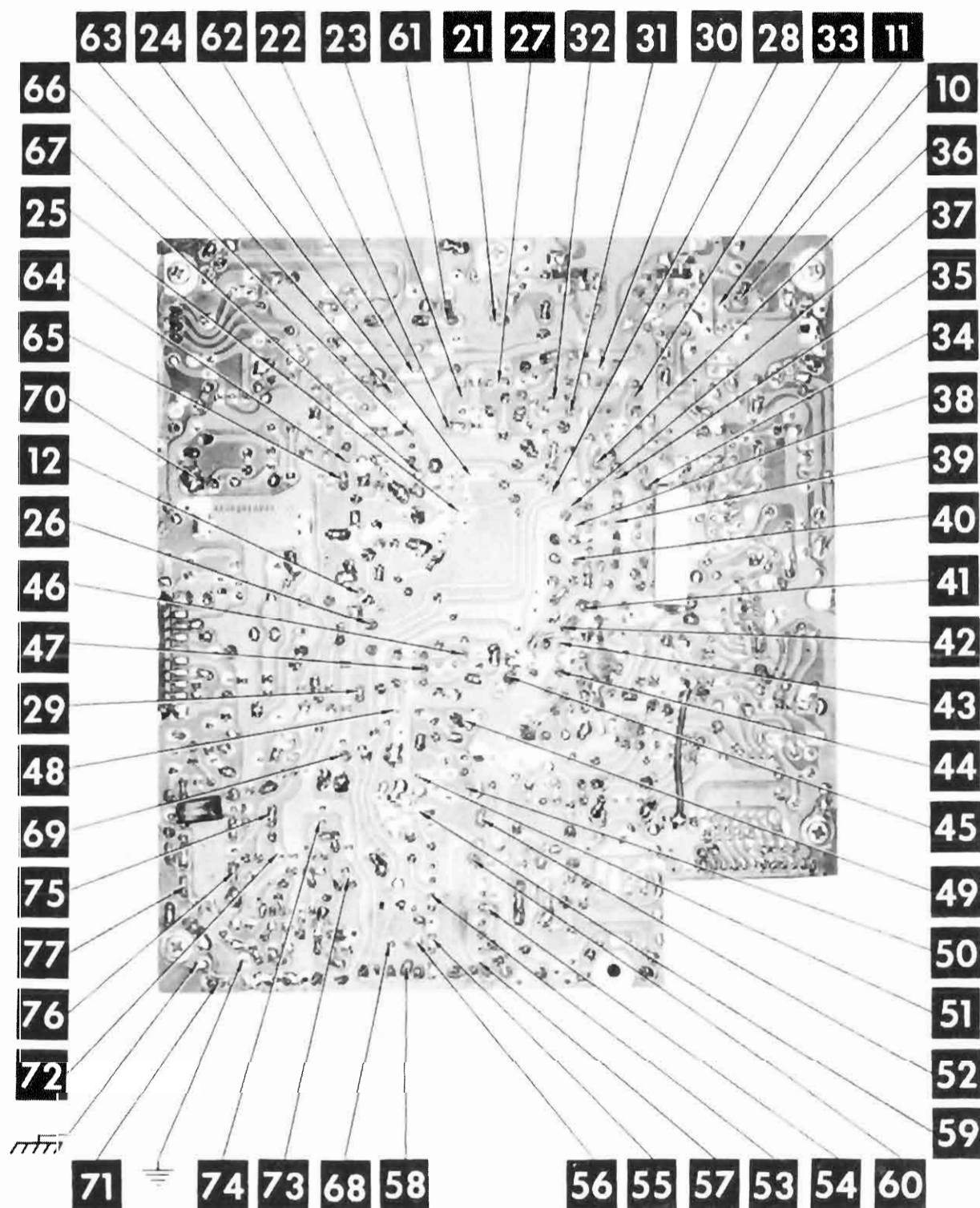
MAIN BOARD

COBRA MODEL 29XLR



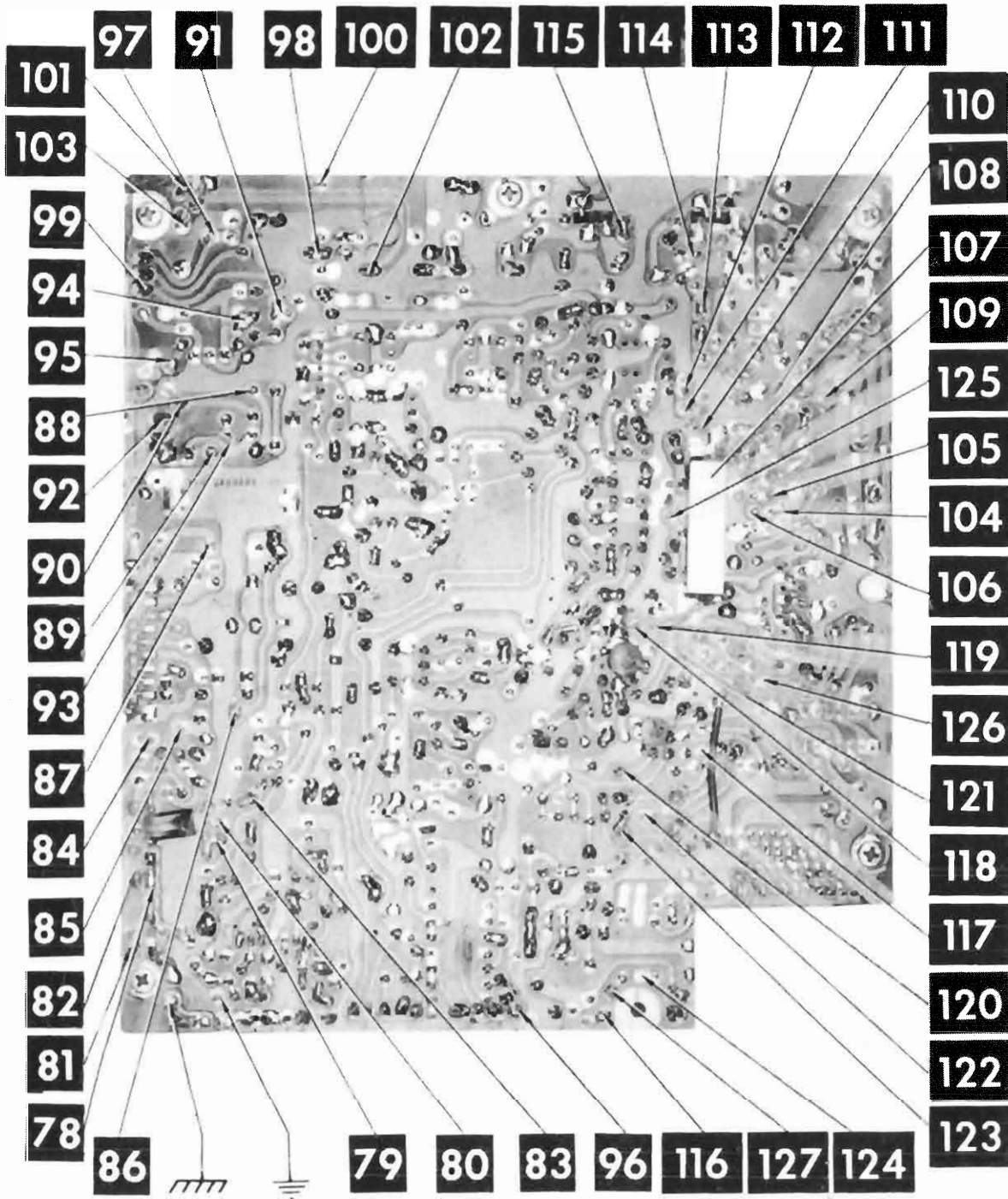
● Transmit

MAIN BOARD

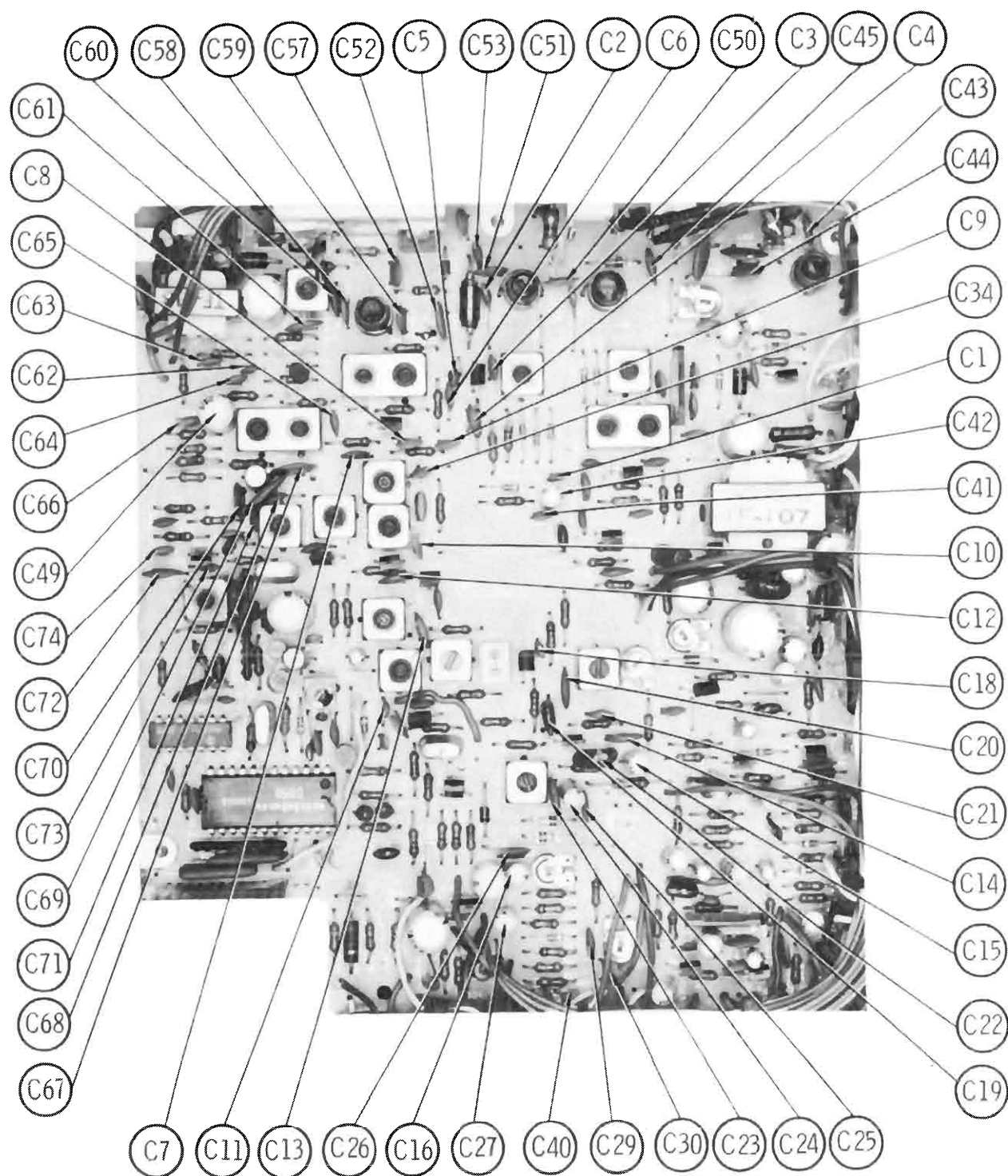


MAIN BOARD

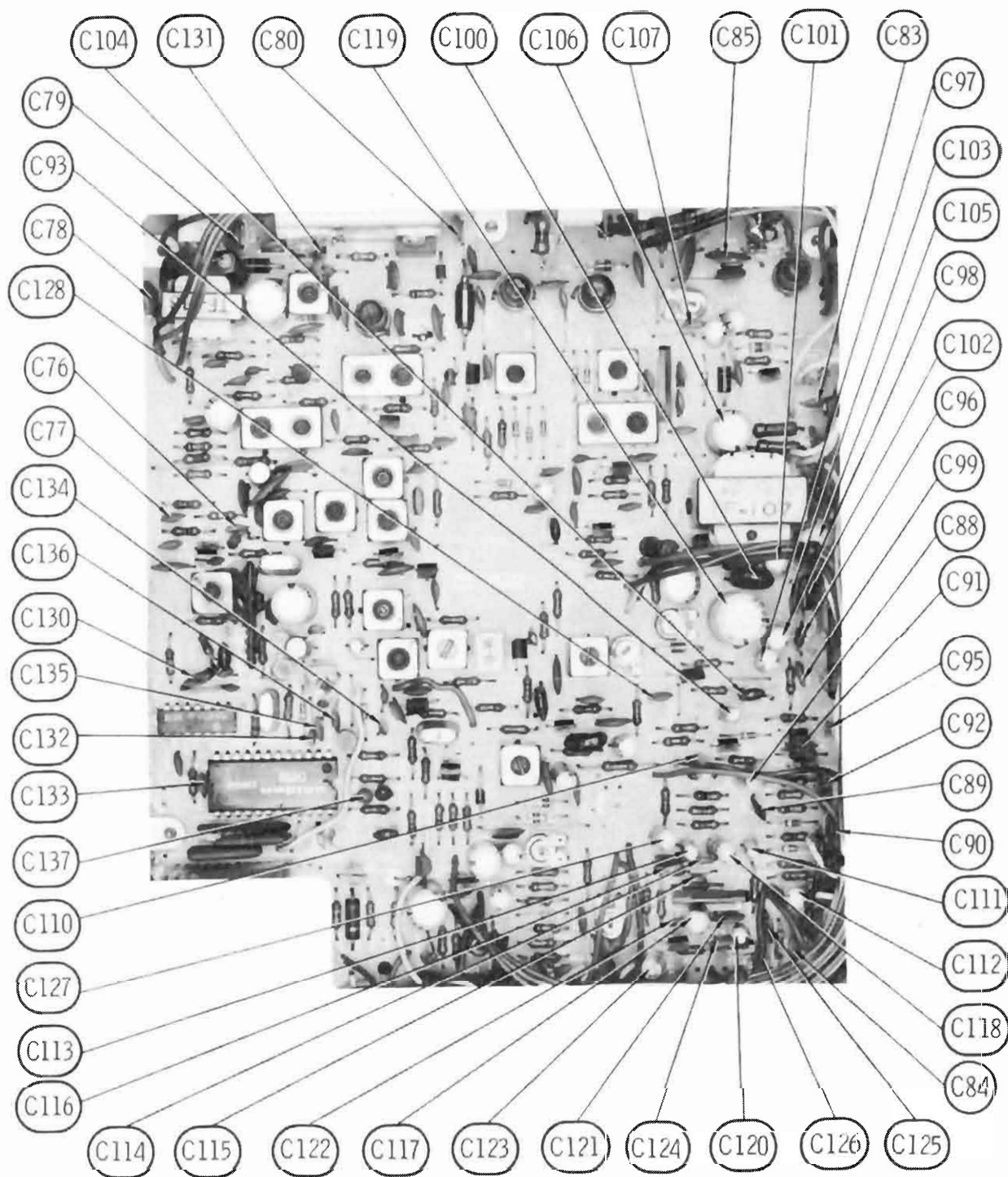
COBRA MODEL 29XLR



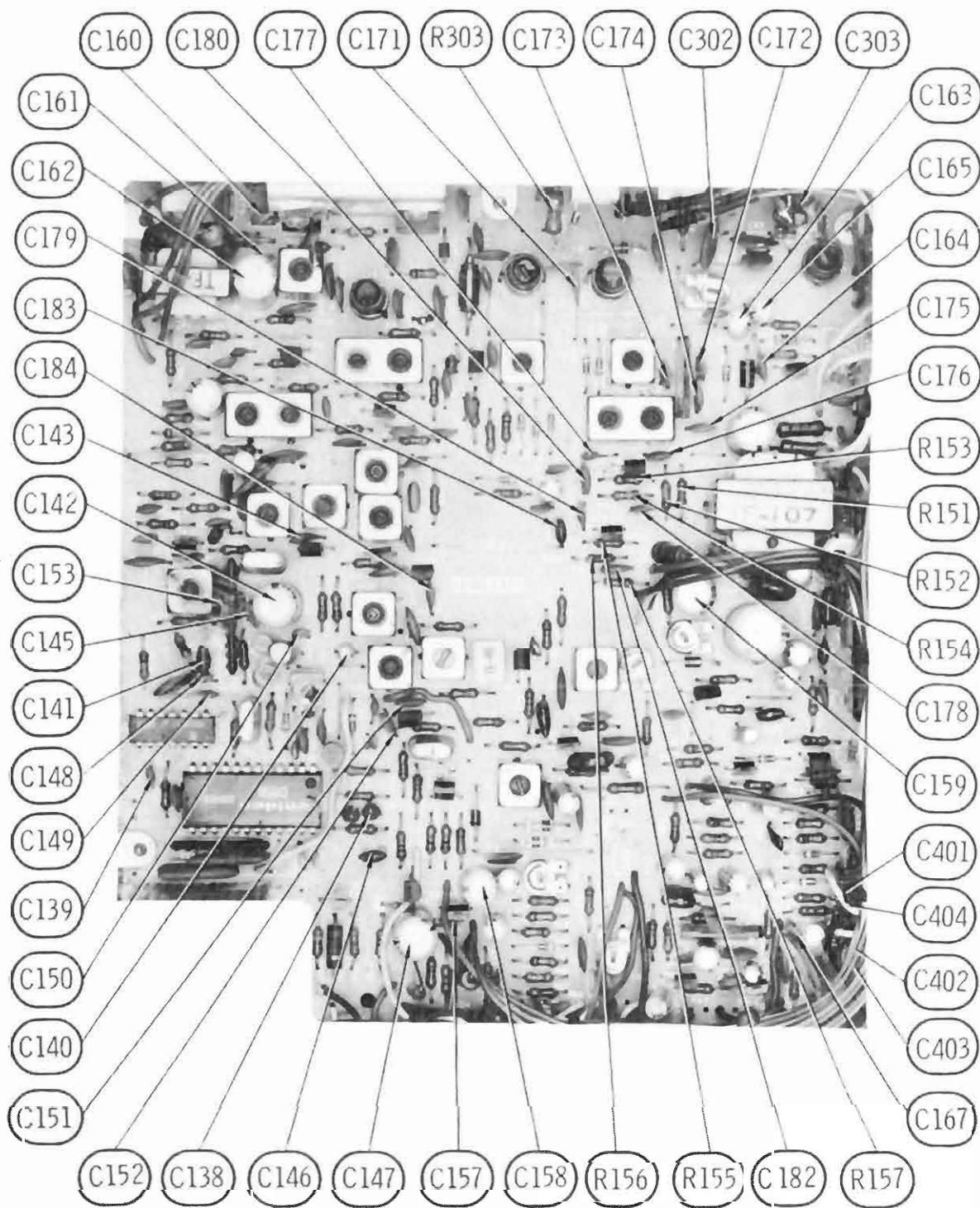
MAIN BOARD



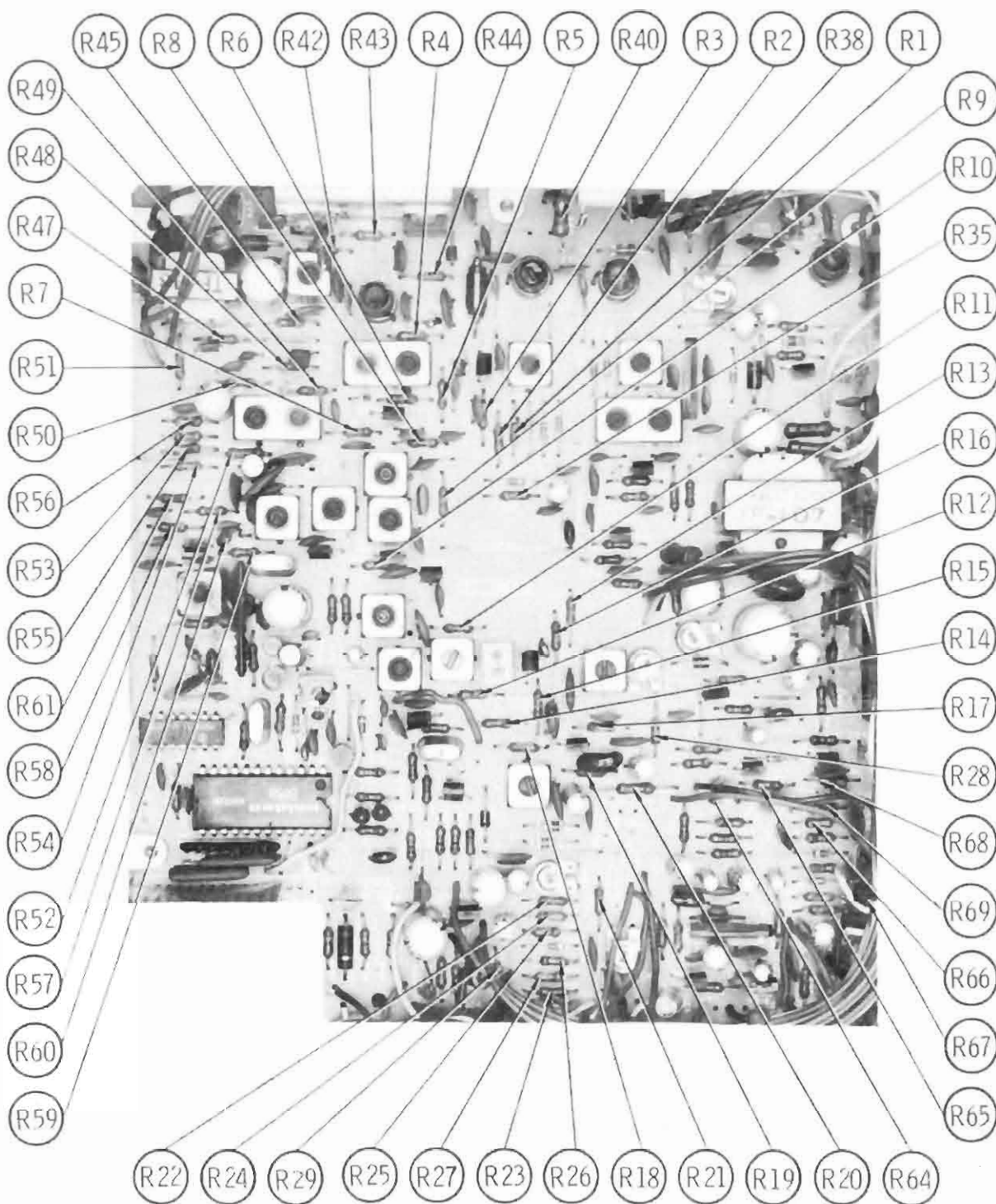
MAIN BOARD



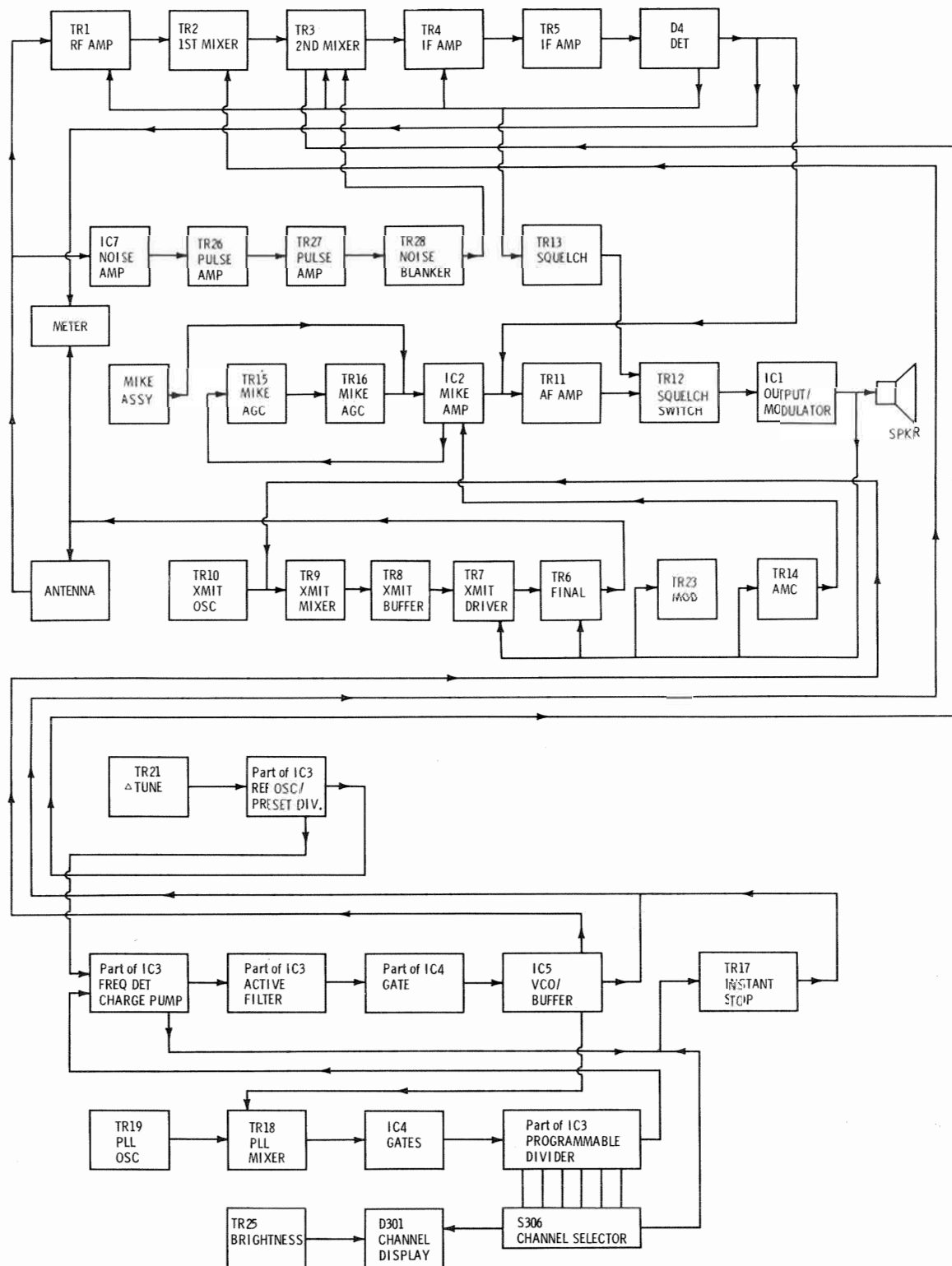
MAIN BOARD



MAIN BOARD



MAIN BOARD



BLOCK DIAGRAM

# PARTS LIST AND DESCRIPTION

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

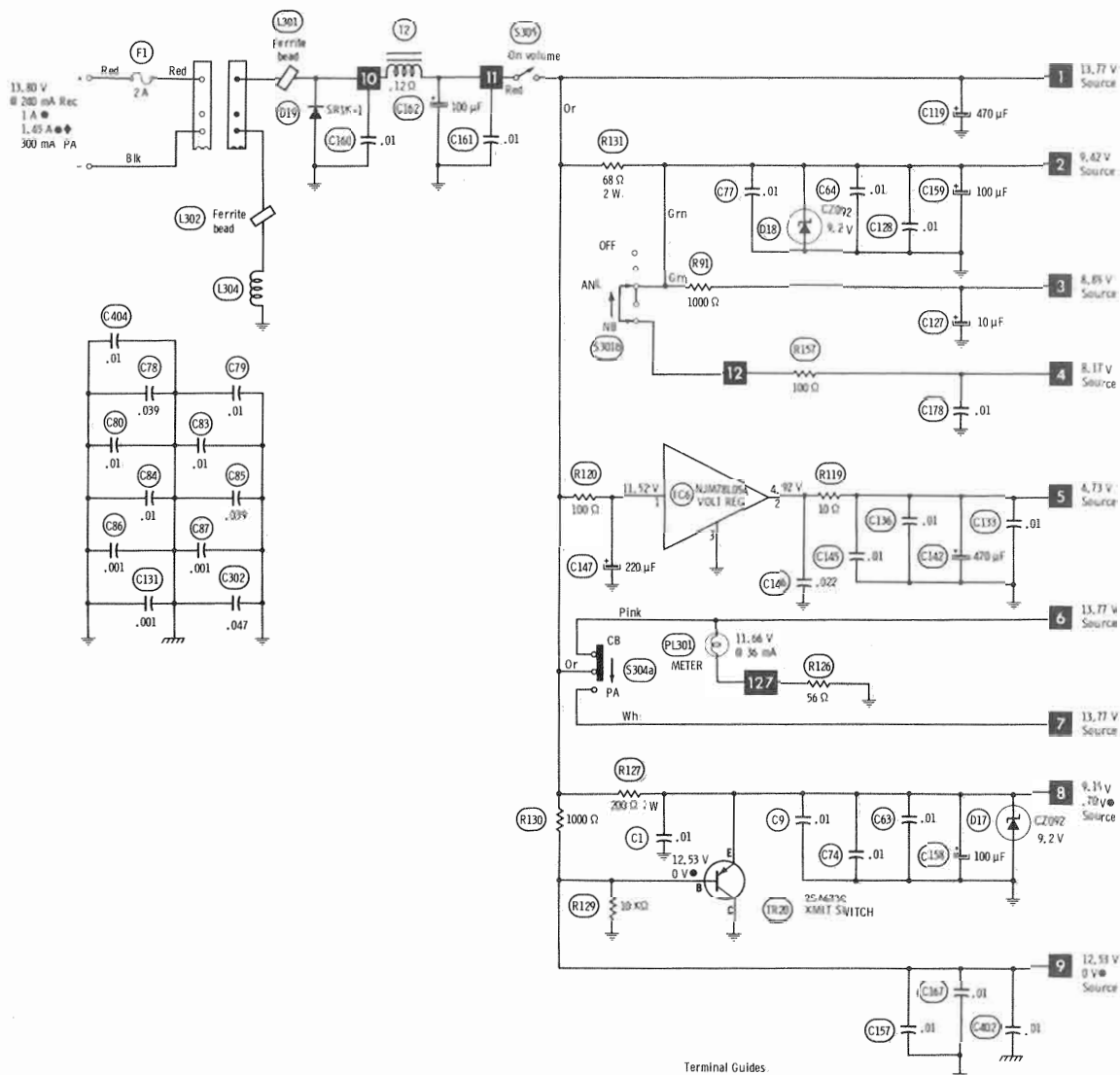
## WIRING DATA

General-use Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in 13 Colors 8524 (Stranded) Available in 13 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

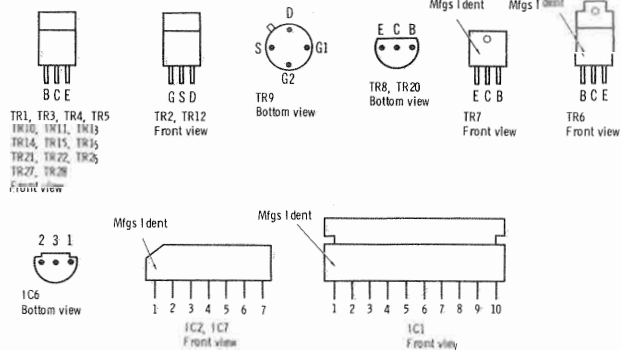
## SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFG. 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.
D1	1S2473	151-035-9-001	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D2	1S2473	151-035-9-001	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D3	1S2473	151-035-9-001	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D4	1N60AM	150-013-9-001	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D5	1N60AM	150-013-9-001	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D6	1S2473K	151-066-9-001	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D7	1S2473	151-035-9-001	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D8	1N60AM	150-013-9-001	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D9	1N60AM	150-013-9-001	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D10	1S2473	151-035-9-001	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D11	SR1K-1	151-040-9-003	GE-504A	5A4D	PTC201	HEPRO052	RE 49	SK3030	RT-213	ECG116
D12	1S2473K	151-066-9-001	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D13	1S2473K	151-066-9-001	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D14	1S2473	151-035-9-001	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D15	1S2339G	029-016-9-001	GE-90	D201	HEPR2503	RE 195	SK3126	RT-262	ECG177	
D16	1S2473	151-035-9-001	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D17	CZ-092	152-051-9-001	GEZD-9.1	Z1209	ZB9.1A	HEPZ0412	RE 114	SK3060	RT-240	ECG139
D18	CZ-092	152-051-9-001	GEZD-9.1	Z1209	ZB9.1A	HEPZ0412	RE 114	SK3060	RT-240	ECG139
D19	SR1K-1	151-040-9-003	GE-504A	5A4D	PTC201	HEPRO052	RE 49	SK3030	RT-213	ECG116
D20	1S2473	151-035-9-001	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D21	1S2473	151-035-9-001	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D22	1N60AM	150-013-9-001	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D23	1S2473	151-035-9-001	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D24	1S2473	151-035-9-001	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D26	1N60AM	150-013-9-001	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D304	1N60AM	150-013-9-001	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
IC1	UPC1156H	307-112-9-001								
IC2	UPC592H2	307-113-9-004								
IC3	UPC858C	307-095-9-004								
IC4	MB84011U	307-113-9-001								
IC5	UHC-004	307-113-9-002								
IC6	WM78L05A	307-113-9-003								
IC7	UPC577H	307-115-9-001								
TR1	2SC1342B	176-074-9-001	GE-61 *	TR-24 *	PTC136 *	HEPS0014 *	RE 9 *	SK3018 *	RT-108A *	ECG229 *
TR2	2SK55D	182-045-9-001	GE-FET-2	FE-100	PTC161	HEPF0021	RE 45	SK3116	RT-175	ECG312
TR3	2SC460B	176-072-9-005	GE-61 *	(IR)2SC460B	PTC136 *	HEPS0014 *	RE 9	SK3018 *	RT-134	ECG107
TR4	2SC460B	176-072-9-005	GE-61 *	(IR)2SC460B	PTC136 *	HEPS0014 *	RE 9	SK3018 *	RT-134	ECG107
TR5	2SC460B	176-072-9-005	GE-61 *	(IR)2SC460B	PTC136 *	HEPS0014 *	RE 9	SK3018 *	RT-134	ECG107
TR6	2SC2092	176-074-9-003	GE-215	WEP1306	PTC186		RE 203	SK3197	RT-146	ECG235
TR7	2SC2091	176-974-9-002	GE-270		PTC180		RE 209			ECG295
TR8	2SC2076C		GE-210	(IR)2SC829B	PTC121	HEPS0015	RE 13	SK3122	RT-308	ECG123A
	2SC2076CB	176-060-9-004	GE-210	(IR)2SC829B	PTC121	HEPS0015	RE 13	SK3122	RT-308	ECG123A
		(1)								
TR9	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)								
TR10	2SC460B	176-072-9-005	GE-61 *	(IR)2SC460B	PTC136 *	HEPS0014 *	RE 9	SK3018 *	RT-134	ECG107
TR11	2SC458C	176-048-9-002	GE-210 *	(IR)2SC458B	PTC121 *	HEPS0009 *	RE 13 *	SK3124	RT-187	ECG123A *
TR12	2SK55D	182-045-9-001	GE-FET-2	FE-100	PTC161	HEPF0021	RE 45	SK3116	RT-175	ECG312
TR13	2SC458C	176-048-9-002	GE-210 *	(IR)2SC458B	PTC121 *	HEPS0009 *	RE 13 *	SK3124	RT-187	ECG123A *
TR14	2SC458C	176-048-9-002	GE-210 *	(IR)2SC458B	PTC121 *	HEPS0009 *	RE 13 *	SK3124	RT-187	ECG123A *
TR15	2SA844C	177-025-9-002	GE-21 *	TR-54 *	PTC103 *	HEPS0019 *	RE 18 *	SK3114	RT-126A *	ECG129 *
TR16	2SC458C	176-048-9-002	GE-210 *	(IR)2SC458B	PTC121 *	HEPS0009 *	RE 13 *	SK3124	RT-187	ECG123A *
TR17	2SC458C	176-048-9-002	GE-210 *	(IR)2SC458B	PTC121 *	HEPS0009 *	RE 13 *	SK3124	RT-187	ECG123A *
TR18	3SK45		GE-FET-4	WEP905	PTC181	HEPF2004	RE 199	SK3050	RT-181	ECG222
	3SK45-B09	182-042-9-001	GE-FET-4	WEP905	PTC181	HEPF2004	RE 199	SK3050	RT-181	ECG222
		(1)								
TR19	2SC460B	176-072-9-005	GE-61 *	(IR)2SC460B	PTC136 *	HEPS0014 *	RE 9	SK3018 *	RT-134	ECG107
TR20	2SA673C	177-025-9-001	GE-269	TR-30 *	PTC103 *	HEPS5013 *	RE 26 *	SK3114	RT-126A *	ECG159 *
TR21	2SC458C	176-048-9-002	GE-210 *	(IR)2SC458B	PTC121 *	HEPS0009 *	RE 13 *	SK3124	RT-187	ECG123A *
TR23	2SC458C	176-048-9-002	GE-210 *	(IR)2SC458B	PTC121 *	HEPS0009 *	RE 13 *	SK3124	RT-187	ECG123A *
TR25	2SD467C	176-074-9-004	GE-88 *	TR-87 *	PTC178	WEP5001 *	RE 17 *	SK3020 *	RT-114 *	ECG128 *
TR26	2SC458C	176-048-9-002	GE-210 *	(IR)2SC458B	PTC121 *	HEPS0009 *	RE 13 *	SK3124	RT-187	ECG123A *
TR27	2SA844D		GE-21 *	TR-54 *	PTC103 *	HEPS0019 *	RE 18 *	SK3114	RT-126A *	ECG129 *
	2SA844C	177-025-9-002	GE-21 *	TR-54 *	PTC103 *	HEPS0019 *	RE 18 *	SK3114	RT-126A *	ECG129 *
		(1)								
TR28	2SC458C	176-048-9-002	GE-210 *	(IR)2SC458B	PTC121 *	HEPS0009 *	RE 13 *	SK3124	RT-187	ECG123A *

COBRA MODEL 29X1R



Terminal Guides



✱ Circuitry not used in some versions

--- Circuitry used in some versions

⊙ See parts list

✱ Nominal value

⊕ Ground

⏏ Chassis

Measurements with switching as shown unless noted:

■ Squelch fully clockwise ◆ 100% modulation

● Transmit

Supply voltage maintained as shown at input.

Voltages measured with digital meter, no signal.

Controls adjusted for normal operation.

Arrow at control indicates direction of advance.

Terminal identification may not be found on unit.

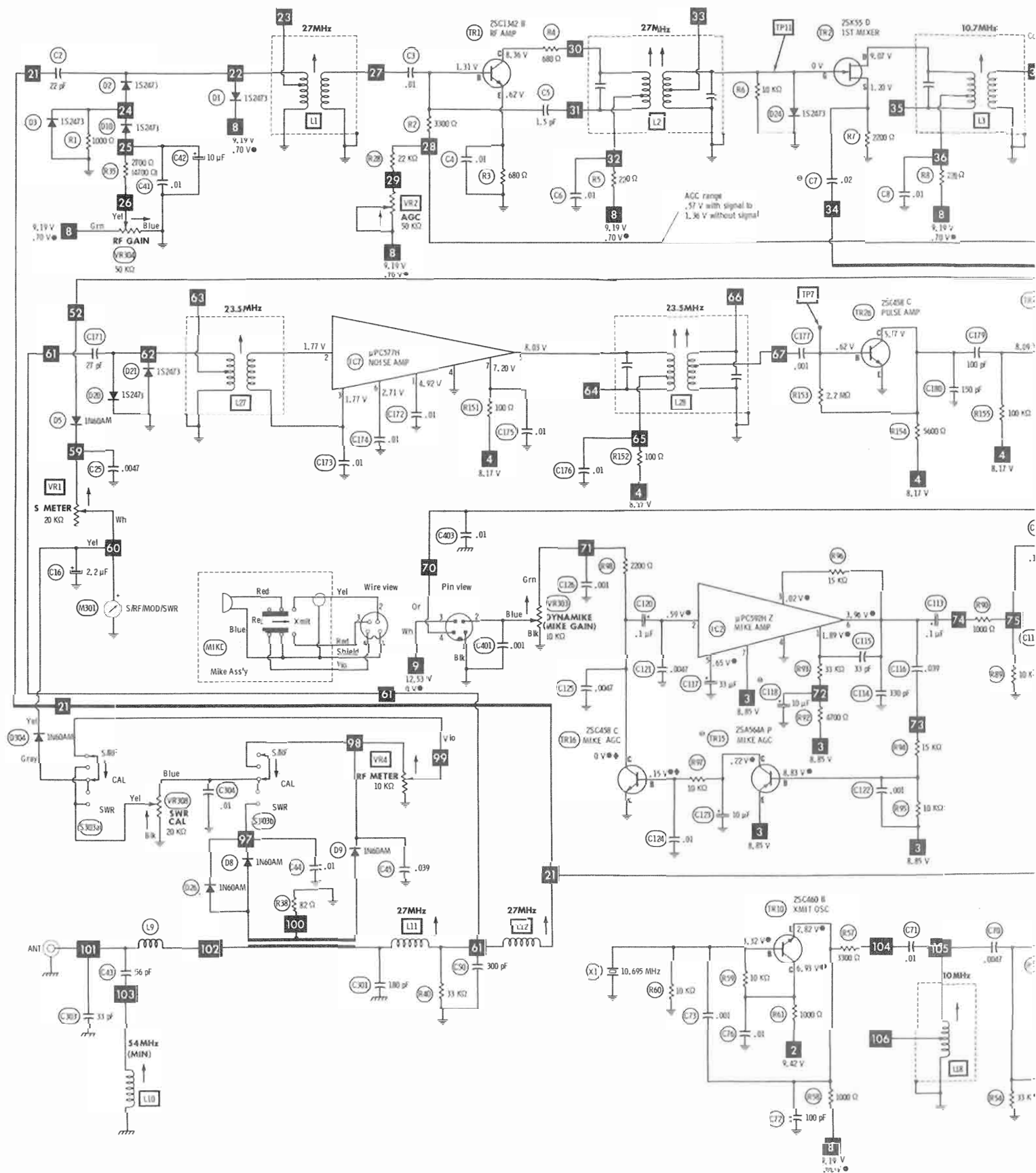
Resistors are 1/2W or less, 5% unless noted.

Value in ( ) used in some versions.

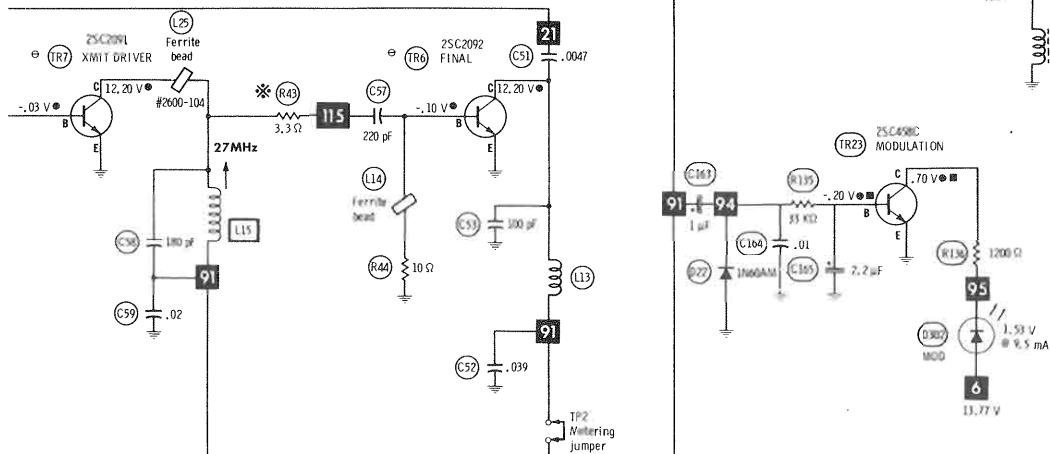
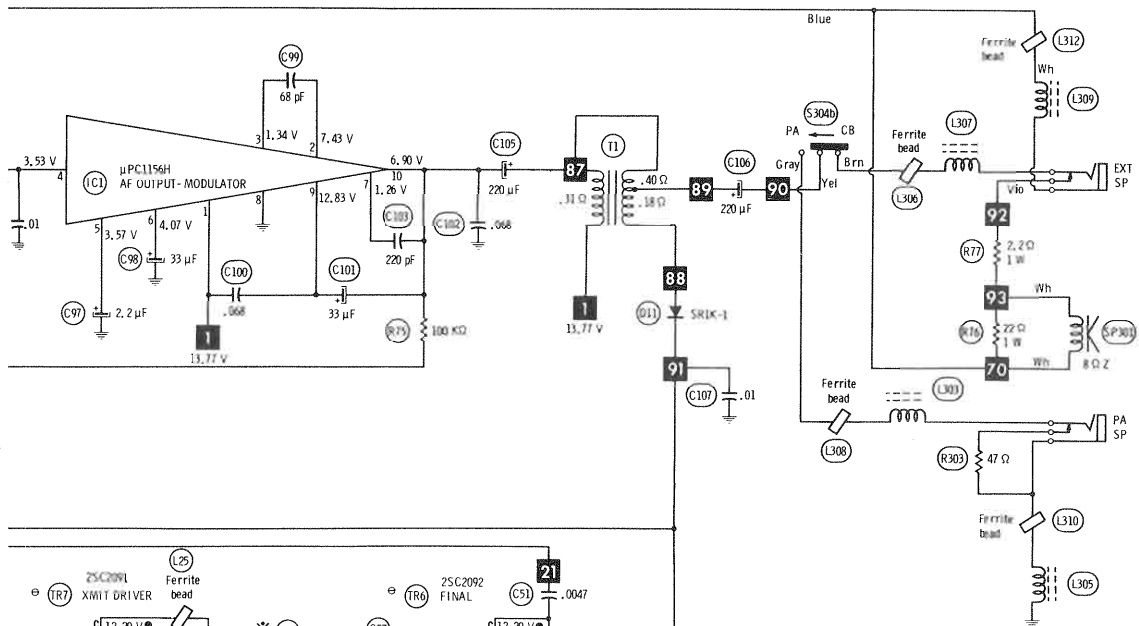
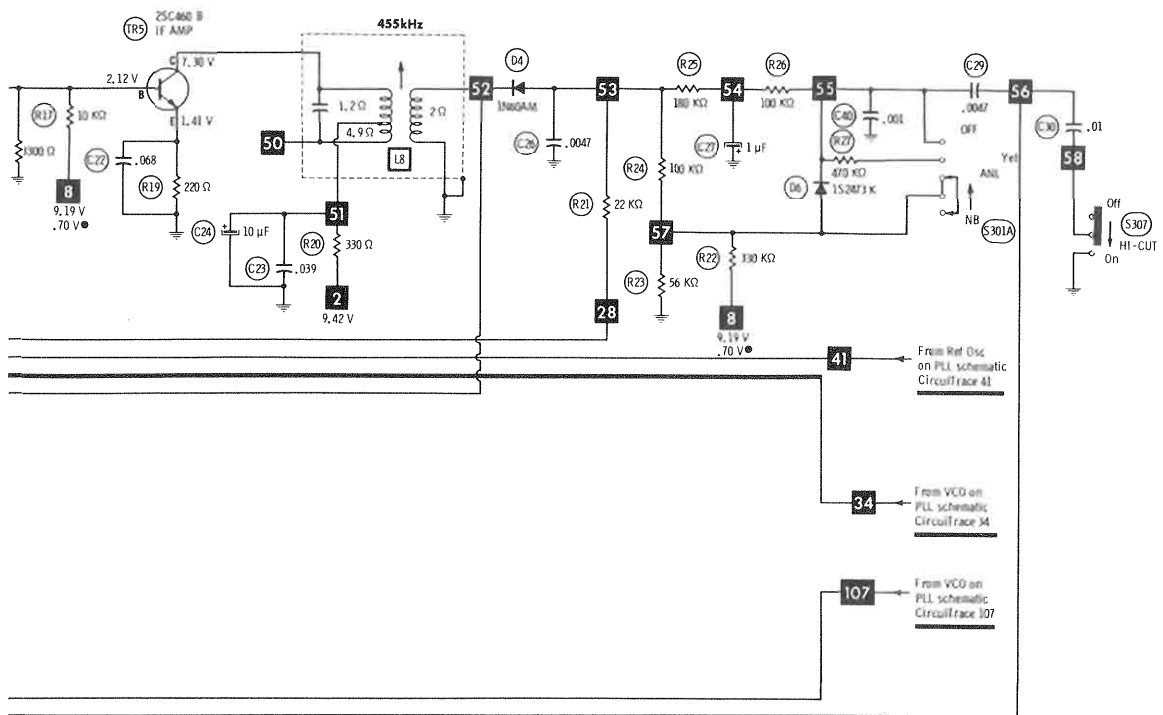
A PHOTOFACT STANDARD NOTATION SCHEMATIC

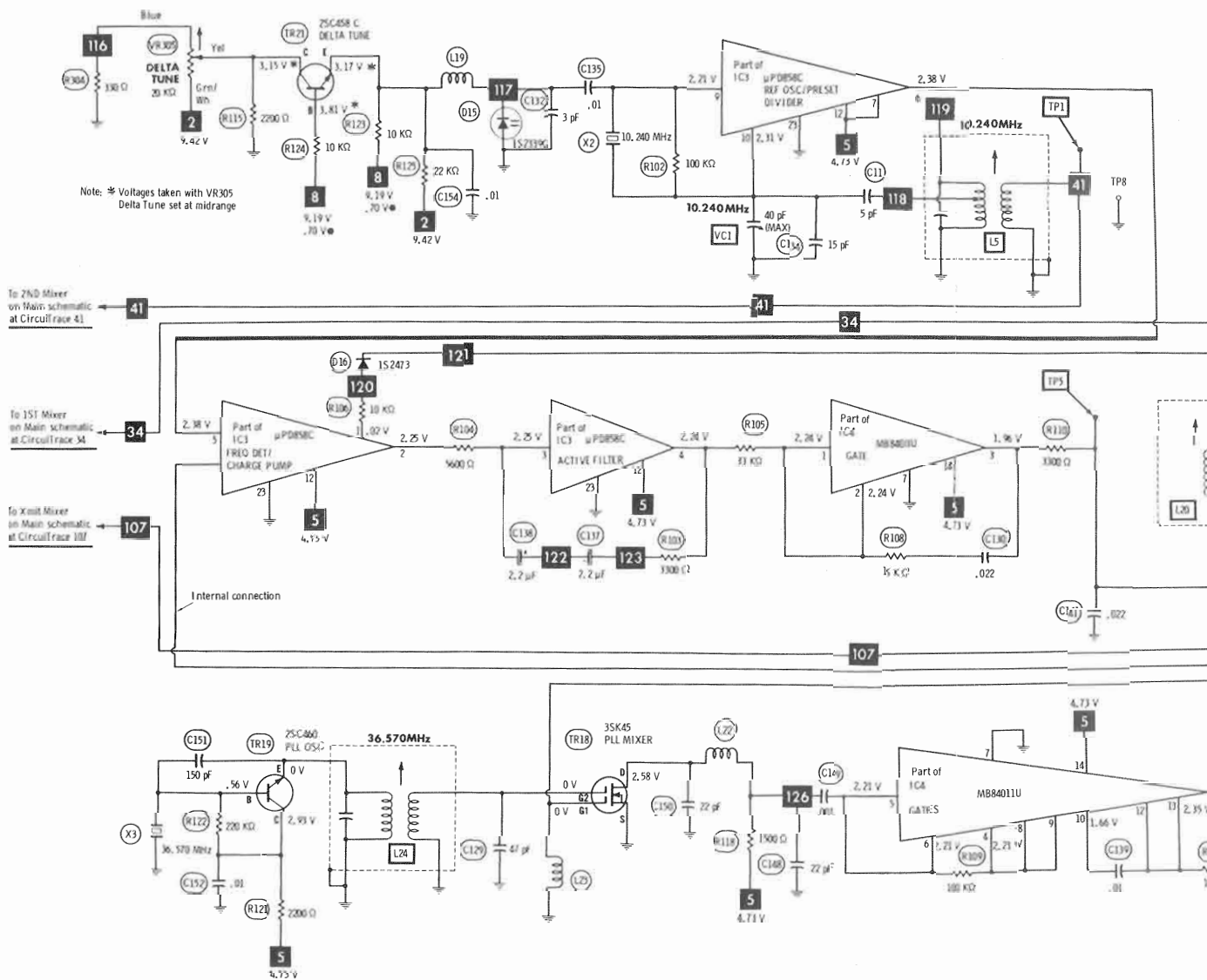
WITH CIRCUITRA CE

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Note: \* Voltages taken with VR305 Delta Tune set at midrange

To 2ND Mixer on Main schematic at CircuTrace 41

To 1ST Mixer on Main schematic at CircuTrace 34

To Xmit Mixer on Main schematic at CircuTrace 107

Internal connection

✕ Circuitry not used in some versions

--- Circuitry used in some versions

⊖ See parts list

\* Nominal value

⊕ Ground

Chassis

Measurements with switching as shown unless noted:

■ Squelch fully clockwise ◆ 100% modulation

● Transmit

Supply voltage maintained as shown at input.

Voltages measured with digital meter, no signal.

Controls adjusted for normal operation.

Arrow at control indicates direction of advance.

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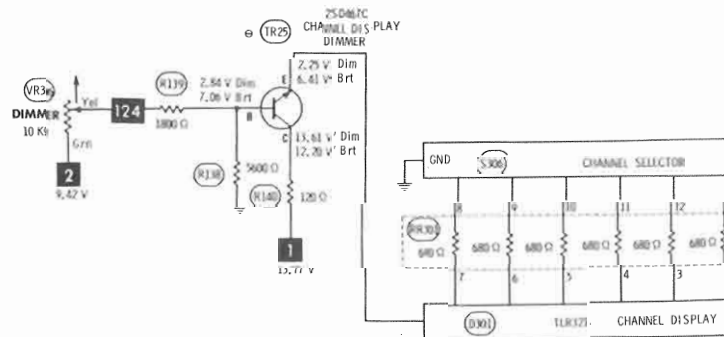
Resistors are 1/2W or less, 5% unless noted.

Value in ( ) used in some versions.

A PHOTOFAC STANDARD NOTATION SCHEMATIC

WITH CIRCUITRACE®

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## PARTS LIST AND DESCRIPTION (CONTINUED)

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

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C15	4.7 25V	022-122-9-003	PC5-50	VTT4R7A50	QV1-27	EV-1319
C16	2.2 25V	022-122-9-002	PC2-100	VTT2R2A50	QV1-19	EV-1517
C24	10 16V	022-120-9-001	PC10-25	VTT10A25	QV1-41	EV-1222
C27	1 50V	022-153-9-004	PC1-50	VTT1B63	QV1-11	EV-1615
C42	10 16V	022-120-9-001	PC10-25	VTT10A25	QV1-41	EV-1222
C49	47 16V	022-156-9-004	PC50-16	VTT47D16	QV1-73	EV-1226
C88	10 16V	022-120-9-001	PC10-25	VTT10A25	QV1-41	EV-1222
C93	.1 16V	033-028-9-001		TDC104M050EL	QDT1-2	SD50-R109
C95	.22 16V	033-023-9-002		TDC224M050EL	QDT1-10	SD50-R229
C97	2.2 25V	022-122-9-002	PC2-100	VTT2R2A50	QV1-19	EV-1517
C98	33 16V	022-132-9-005	PC30-25	VTT33D25	QV1-63	EV-1325
C101	33 16V	022-132-9-005	PC30-25	VTT33D25	QV1-63	EV-1325
C105	220 16V	022-122-9-008	PC250-25	VTT220G16	QV1-117	EV-1240
C106	220 16V	022-122-9-008	PC250-25	VTT220G16	QV1-117	EV-1240
C110	2.2 25V	022-122-9-002	PC2-100	VTT2R2A50	QV1-19	EV-1517
C111	.1 16V	033-028-9-001		TDC104M050EL	QDT1-2	SD50-R109
C112	.47 50V	022-152-9-003	PC1-50	VTT47B63	QV1-3	EV-1610
C113	.1 16V	033-028-9-002		TDC104M050EL	QDT1-2	SD50-R109
C117	33 16V	022-132-9-005	PC30-25	VTT33D25	QV1-63	EV-1325
C118	10 16V	022-120-9-001	PC10-25	VTT10A25	QV1-41	EV-1222
C119	470 16V	022-099-9-006	PC500-16	VTT470J16	QV1-151	EV-1250
C120	.1 16V	033-028-9-001		TDC104M050EL	QDT1-2	SD50-R109
C123	10 16V	022-120-9-001	PC10-25	VTT10A25	QV1-41	EV-1222
C127	10 16V	022-120-9-001	PC10-25	VTT10A25	QV1-41	EV-1222
C137	2.2 16V	027-022-9-001		TDC225M050FL	QDT1-37	SD50-2R29
C138	2.2 16V	027-022-9-001		TDC225M050FL	QDT1-37	SD50-2R29
C140	.22 16V	033-023-9-002		TDC224M050EL	QDT1-10	SD50-R229
C142	470 6.3V	022-122-9-014	PC500-16	VTT470J16	QV1-149	EV-1150
C147	220 16V	022-122-9-008	PC250-25	VTT220G16	QV1-117	EV-1240
C158	100 16V	022-099-9-005	PC100-16	VTT100F16	QV1-95	EV-1230
C159	100 16V	022-099-9-005	PC100-16	VTT100F16	QV1-95	EV-1230
C162	100 25V	022-135-9-002	PC100-25	VTT100G25	QV1-97	EV-1330
C163	1 50V	022-153-9-004	PC1-50	VTT1B63	QV1-11	EV-1615
C165	2.2 25V	022-122-9-002	PC2-100	VTT2R2A50	QV1-19	EV-1517

### CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C1	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C2	.22 N220	02-176-9-006			*		10TCC-027
C3	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C4	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C5	1.5 NPO		DTZ-1R5	NPO1P5	CN0515		10TCC-V15
C6	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C7	.02		DC-203	MGP02	TA120	QC2-157	TG-S20
C8	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C9	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C10	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C11	5		DTZ-4R7	NPO4P7	CN0547		10TCC-V47
C12	.039	020-178-9-021					
C13	.039	020-178-9-021					
C14	.039	020-178-9-021					
C18	2 N220	020-176-9-003			*		
C19	.022			DPMS2S22	EWFA1A122	QF1-127	1PB-S22
C20	.039	020-176-9-003					
C21	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C22	.068			WMF1S68	EWFA1A168	QF1-195	1PB-S68
C23	.039	020-176-9-003					
C25	.0047		DD-472	GP4700	GP247		5GA-D47
C26	.0047		DD-472	GP4700	GP247		5GA-D47
C29	.0047		DD-472	GP4700	GP247		5GA-D47
C30	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C34	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C40	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C41	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C43	56		DD-560		GP456		10TS-Q56
C44	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C45	.039	020-178-9-021					
C50	300		DD-307	GP300	GP330		10TS-T30
C51	.0047		DD-472	GP4700	GP247		5GA-D47
C52	.039	020-178-9-021					
C53	100		DD-101	GP100	GP310		10TS-T10
C57	220		DD-221		GP322		10TS-T22
C58	180		DD-181		GP318		10TS-T18
C59	.02		DC-203	MGP02	TA120	QC2-157	TG-S20
C60	330		DD-331	GP330	GP333		10TS-T33
C61	.039	020-178-9-021					
C62	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C63	.01		DC-103	MGP01	TA110	QC2-141	TG-S10

# PARTS LIST AND DESCRIPTION (CONTINUED)

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

## CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C64	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C65	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C66	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C67	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C68	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C69	.330		DD-331	GP330	GP333		10TS-T33
C70	.0047		DD-472	GP4700	GP247		5GA-D47
C71	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C72	100		DD-101	GP100	GP310		10TS-T10
C73	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C74	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C76	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C77	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C78	.039	020-178-9-021					
C79	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C80	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C83	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C84	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C85	.039	020-178-9-021					
C86	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C87	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C89	.001			DPMS6D1	EWFA210	QF1-i	1PB-D10
C90	.01			WMF1S1	EWFA110	QF1-91	1PB-S10
C91	100		DD-101	GP100	GP310		10TS-T10
C92	100		DD-101	GP100	GP310		10TS-T10
C96	.01			WMF1S1	EWFA110	QF1-91	1PB-S10
C99	.68		DD-680	GP68	GP468		10TS-Q68
C100	.068			WMF1S68	EWFA168	QF1-195	1PB-S68
C102	.068			WMF1S68	EWFA168	QF1-195	1PB-S68
C103	.220		DD-221		GP322		10TS-T22
C104	.022			DPMS2S22	EWFA122	QF1-127	1PB-S22
C107	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C114	.330		DD-331	GP330	GP333		10TS-T33
C115	.33		DTZ-33	NP033	CN0433		10TCC-Q33
C116	.039			DPMS6S39	PVC6139		6PS-S39
C121	.0047		DD-472	GP4700	GP247		5GA-D47
C122	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C124	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C125	.0047		DD-472	GP4700	GP247		5GA-D47
C126	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C128	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C129	.47		DTZ-47	NP047	CN0447		10TCC-Q47
C130	.022			DPMS2S22	EWFA122	QF1-127	1PB-S22
C131	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C132	3 N220	020-178-9-002			*		
C133	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C134	15 N220	020-176-9-005			*		10TCR-Q15
C135	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C136	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C139	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C141	.022			DPMS2S22	EWFA122	QF1-127	1PB-S22
C143	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C145	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C146	.022			DPMS2S22	EWFA122	QF1-127	1PB-S22
C148	.22		DTZ-22	NP022	CN0422		10TCC-Q22
C149	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C150	.22		DTZ-22	NP022	CN0422		10TCC-Q22
C151	.150		DD-151		GP315		10TS-T15
C152	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C153	7 N220				*		
C154	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C157	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C160	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C161	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C164	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C167	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C168	.01			WMF1S1	EWFA110	QF1-91	1PB-S10
C171	.27 N220	020-178-9-003			*		10TCR-Q27
C172	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C173	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C174	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C175	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C176	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C177	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C178	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C179	100		DD-101	GP100	GP310		10TS-T10
C180	180		DD-181		GP318		10TS-T18
C182	.330		DD-331	GP330	GP333		10TS-T33
C183	.001			DPMS6D1	EWFA210	QF1-1	1PB-D10
C184	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C301	.180		DD-181		GP318		10TS-T18
C302	.047		UK12-503		MAG1215		HY-350
C303	.33		DTZ-33	NP033	CN0433		10TCC-Q33
C304	.01		DC-103	MGP01	TA110	QC2-141	TG-S10

COBRA MODEL 29XLR

## 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 PART No.	
						Q-LINE	GENERAL LINE
C401	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C402	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C403	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C404	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
CC1	.01	527-077-9-002 (1)					
CC2	.01	527-077-9-002 (1)					
VC1	40	028-046-9-001					

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

(1) Consists of four .01 capacitors.

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

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
VR1	S Meter	20K	008-311-9-002				
VR2	AGC	50K	008-308-9-005				
VR3	Squelch Range	50K	008-308-9-005				
VR4	RF Meter	10K	008-311-9-001	T-10K (4)	C-103 (4)	MTC14L1 (4)	X201R103B (4)
VR5	AMC	5000	008-308-9-004				
VR301	Volume/Switch	50K	008-308-9-003				
VR302	Squelch	20K	008-311-9-003				
VR303	Dynamike	10K	008-311-9-005				
VR304	RF Gain	50K	008-311-9-004				
VR305	Delta Tune	20K	008-308-9-001				
VR306	Dimmer	10K	RV-064 (5)				
VR308	SWR/CAL	20K	008-308-9-002				
			008-311-9-003				

(4) Modify terminals to fit PC board.

(5) Number on unit.

### 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.
RR1	4700		527-016-9-001 (1)	RR302	680		527-076-9-002 (2)
RR301	680		527-076-9-002 (2)				

(1) Consists of seven 4700-ohm resistors.

(2) Consists of seven 680-ohm resistors.

### COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	Rec Antenna (27MHz)	066-017-9-001			
L2	Rec RF (27MHz)	060-024-9-012			
L3	IF (10.7MHz)	060-024-9-001			
L4	IF (10.7MHz)	060-024-9-002			
L5	Ref Osc (10.240MHz)	060-024-9-003			
L6	IF (455kHz)	060-022-9-001			
L7	IF (455kHz)	060-024-9-004			
L8	IF (455kHz)	060-024-9-005			
L9	RF Choke	044-042-9-002			
L10	TVI Trap (54MHz)	044-028-9-004			
L11	Antenna Match (27MHz)	044-028-9-005			
L12	Final Amp (27MHz)	041-056-9-003			
L13	RF Choke	044-028-9-003			
L15	Xmit Driver (27MHz)	044-028-9-004			
L16	Xmit Buffer (27MHz)	060-024-9-010			
L17	Xmit Mixer (27MHz)	060-024-9-006			
L18	Xmit Osc (10MHz)	060-024-9-011			
L19	RF Choke (33uH)	041-090-9-002			
L20	VCO Buffer	060-024-9-008			

## PARTS LIST AND DESCRIPTION (CONTINUED)

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

### COILS (RF-IF)(cont)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L21	VCO Buffer (37MHz)	060-024-9-009			
L22	RF Choke (100uH)	041-062-9-002			
L23	RF Choke (1.5uH)	041-090-9-001			
L24	PLL Osc (36.570MHz)	060-024-9-007			
L27	Noise Amp (23.5MHz)	066-017-9-001			
L28	Noise Amp (23.5MHz)	060-026-9-001			
L303	RF Choke	044-044-9-001			
L304	RF Choke	044-028-9-003			
L305	RF Choke	044-044-9-001			
L307	RF Choke	044-044-9-001			
L309	RF Choke	044-044-9-001			

### 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.	
T2	1.45 Amp	.1	1mH	044-028-9-006	TR507		

### TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	67	1 8 2 54	061-031-9-001 (TF-107) (1)			(1) On Unit.

### SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP301	4" PM 8 ohm	580-013-9-001	4A05Z8R	

### 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 Amp	191-251-9-002	426-080-9-001	AGC2	HDJ	B12002	150145	FG2-2	

COBRA MODEL 29XLR

## 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	562-018-9-001	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	10.695	133-014-9-002	CC90W10695	Xmit Osc.	X3	36.570	133-014-9-003		PLL Osc.
X2	10.240	133-014-9-001		Ref Osc.					

### MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
D301	LED	158-014-9-001	Channel Display Modulator Indicator
D302	LED	158-015-9-001	
L14	Ferrite Bead	763-081-9-003	
L25	Ferrite Bead	763-081-9-003	
L301	Ferrite Bead	044-042-9-001	
L302	Ferrite Bead	044-042-9-001	
L306	Ferrite Bead	763-084-9-003	
L308	Ferrite Bead	763-084-9-003	
L310	Ferrite Bead	763-084-9-003	S/R/F/SWR NB/ANL SWR/CAL/ S - RF CB/PA Power (On Volume Control) Channel Selector Hi Cut/Off
L312	Ferrite Bead	763-084-9-003	
M301	Meter	320-087-9-001	
S301	Switch	084-057-9-001	
S303	Switch	084-057-9-001	10.7MHz 455kHz Main (PC-98AA) Mike Jack (PC-181AA) Channel Selector (PC-207AA)
S304	Switch	084-055-9-001	
S305	Switch		
S306	Switch	083-220-9-001	
S307	Switch	084-055-9-001	
XF1	Ceramic Filter	140-018-9-001	
XF2	Ceramic Filter	140-018-9-002	
	Flat Cable	426-022-9-001	
	Printed Circuit Board	302-233-9-001	
	Printed Circuit Board	302-239-9-001	
	Printed Circuit Board	302-240-9-001	

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

ITEM	PART No.	ITEM	PART No.
Escutcheon	255-150-9-001	Cabinet, Top	253-056-9-001
Knob, Channel	751-146-9-003	Cabinet, Bottom	253-056-9-002
Knob, Control	751-146-8-001	Mounting Bracket	251-204-9-001
Knob, Dimmer	751-146-9-002	Mike Hanger	741-074-9-001