



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.



MODEL 681



MODEL 682

HY-GAIN MODELS 681, 682

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

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7CY472

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:
L112,T106 thru T109.....8728,5000
L106,L109,L110.....9296,9297,9300
L103,L104,L115,T101 thru T105.....9440

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of frequency counter to Q102 base.	Ch. 13		Check for 9.510MHz.
Input of VTVM to TP8.	Ch. 1	T101	Adjust for 1.50 volts +0.1 volt.
Input of frequency counter to Q108 collector.	Ch. 13		Check for 21.0195MHz +0.38kHz.
Input of frequency counter to Q117 emitter.	Ch. 13		Check for 6.400500MHz +0.38kHz.
Input of RF VTVM to Q115 base.	Ch. 13	L115	Adjust for maximum output.
Input of frequency counter to Q109 emitter.	Ch. 13, Xmit		Check for 5.945300MHz +0.12kHz.

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 Q116 emitter. 455kHz,1000Hz @ 30% modulation.	Ch. 13	T109,T108, T107	Adjust for maximum output.
Output of signal generator thru .01uF to Q115 base. 5.945MHz,1000Hz @ 30% modulation.	Ch. 13	T106,L112	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.115MHz,1000Hz @ 30% modulation.	Ch. 13	T105,T104	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	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.115MHz, 1000Hz @ 30% modulation. Output 50uV.	Ch. 13	RV101	SQUELCH RANGE Set Squelch Control VR2 fully clockwise. Adjust RV101 so that squelch just breaks.
Output of signal generator thru .01uF to antenna jack. 27.115MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 13	RV103	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	TRANSCEIVER	ADJUST	REMARKS
	Ch. 13	L103, L104, T102, T103, L106, L109, L110	Adjust for maximum output.
	Ch. 13	L110, L109	Adjust for 4 watts maximum.

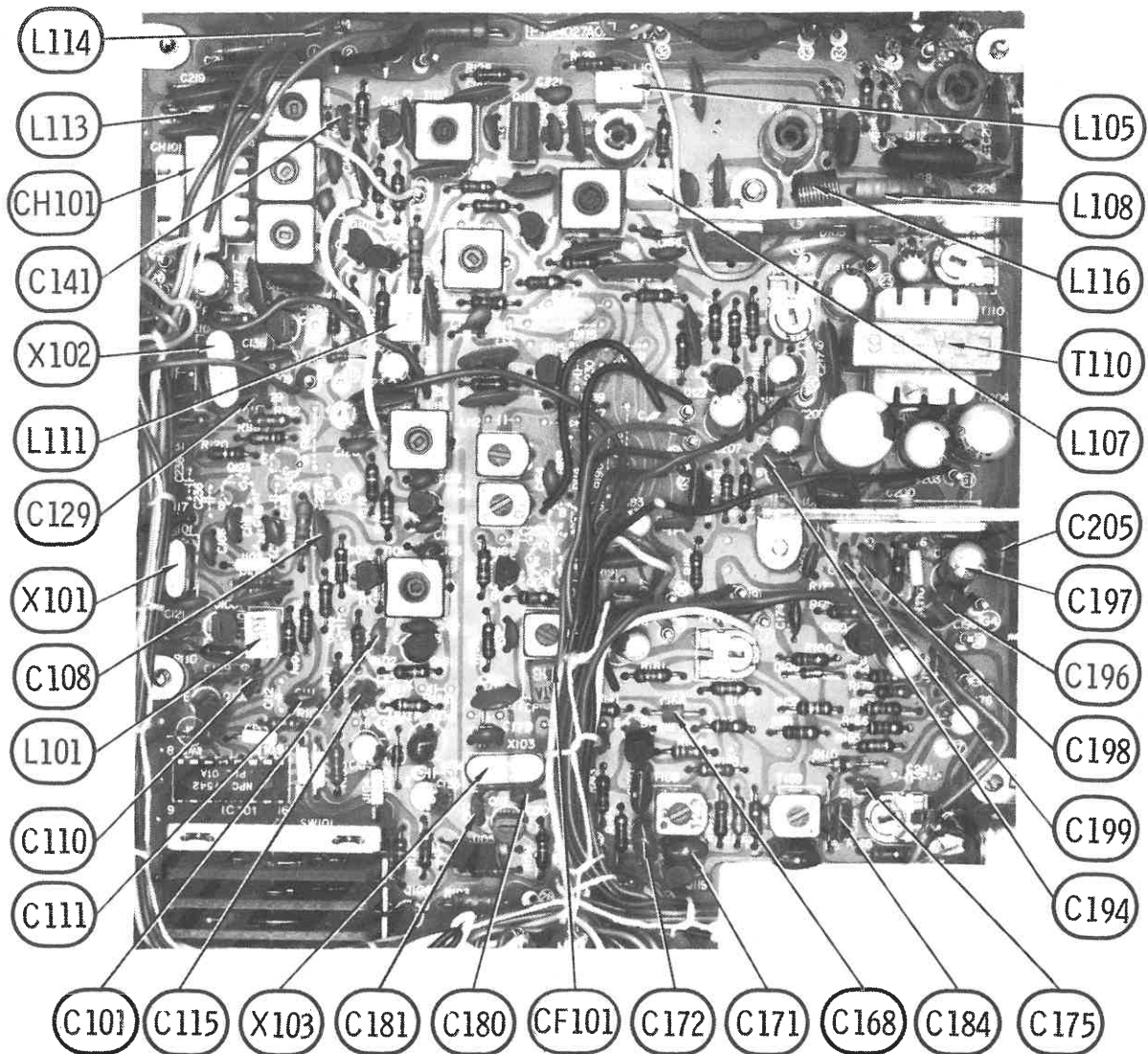
TRANSMITTER ADJUSTMENTS

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

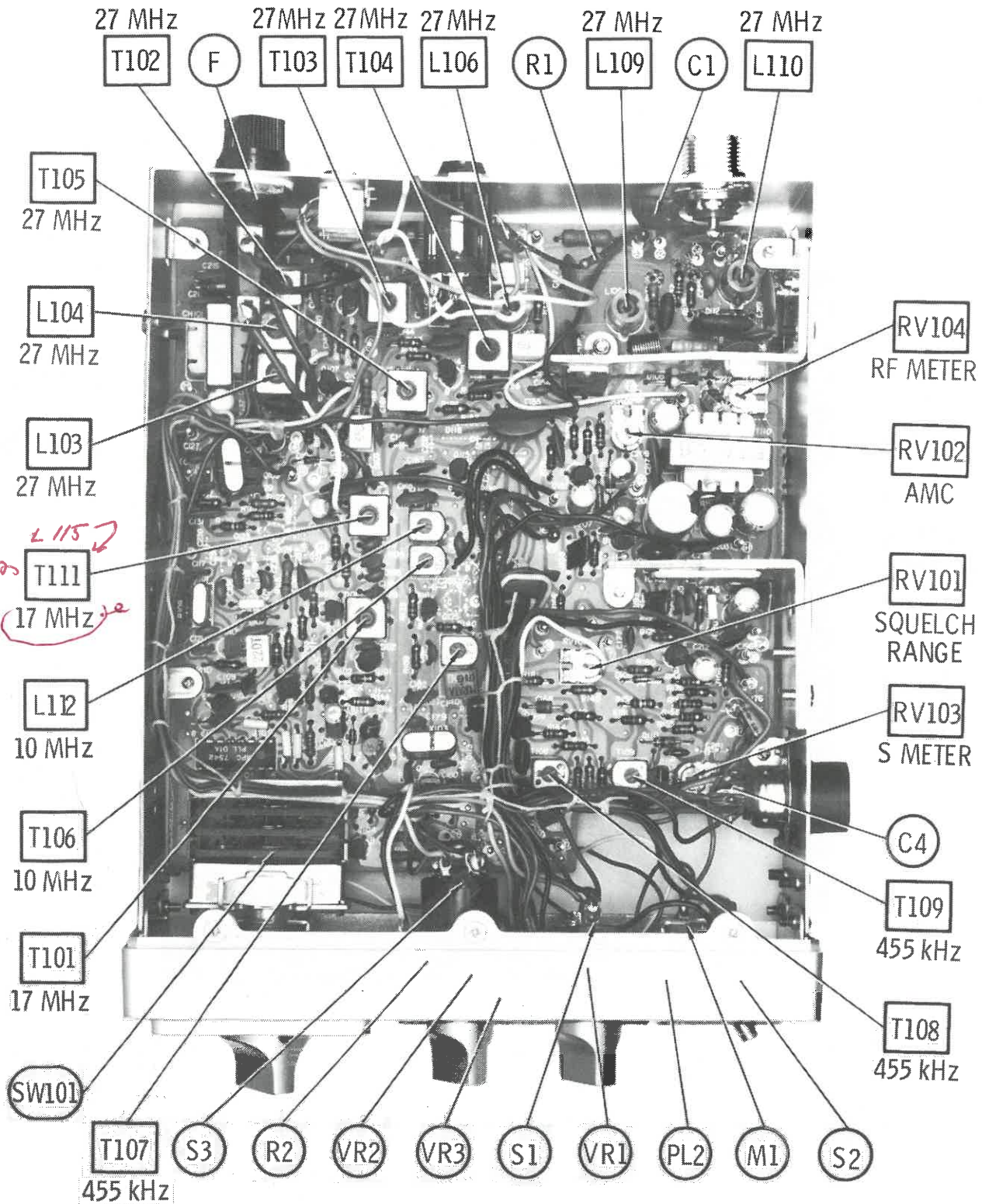
Note: Be sure to check transmit frequency and power on all active channels after adjustments of transmitter.

See page 4 for channel frequencies.

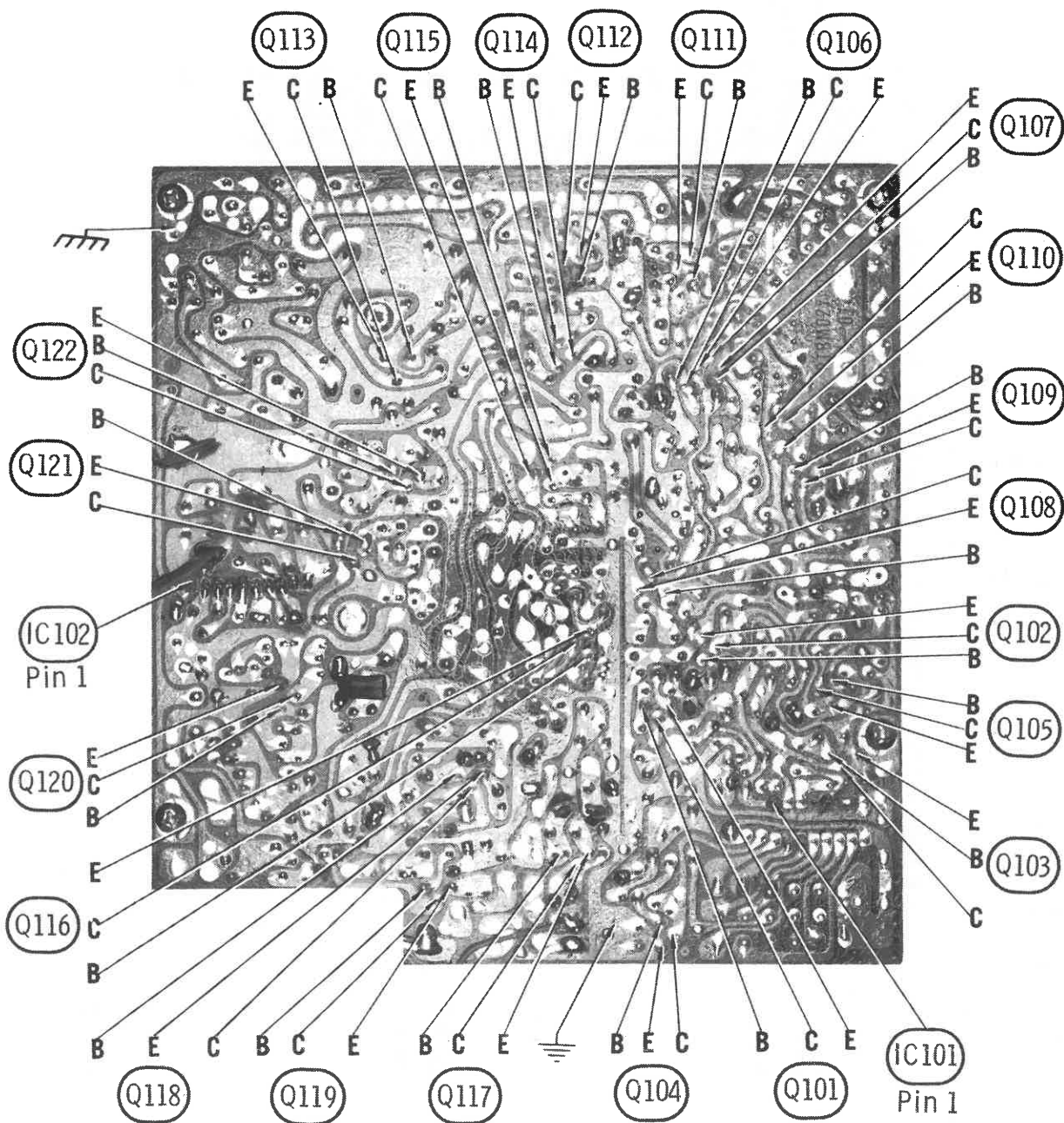
TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Modulation meter to antenna jack. Inject a 1000Hz signal at MIC input.	Ch. 13	RV102	AMC Disconnect C209 to disable AMC. Adjust signal for overmodulation. Restore AMC operation. Adjust RV102 for 100% modulation maximum.
	Ch. 13	RV104	RF PANEL METER Adjust RV104 so that RF panel meter agrees with RF wattmeter.



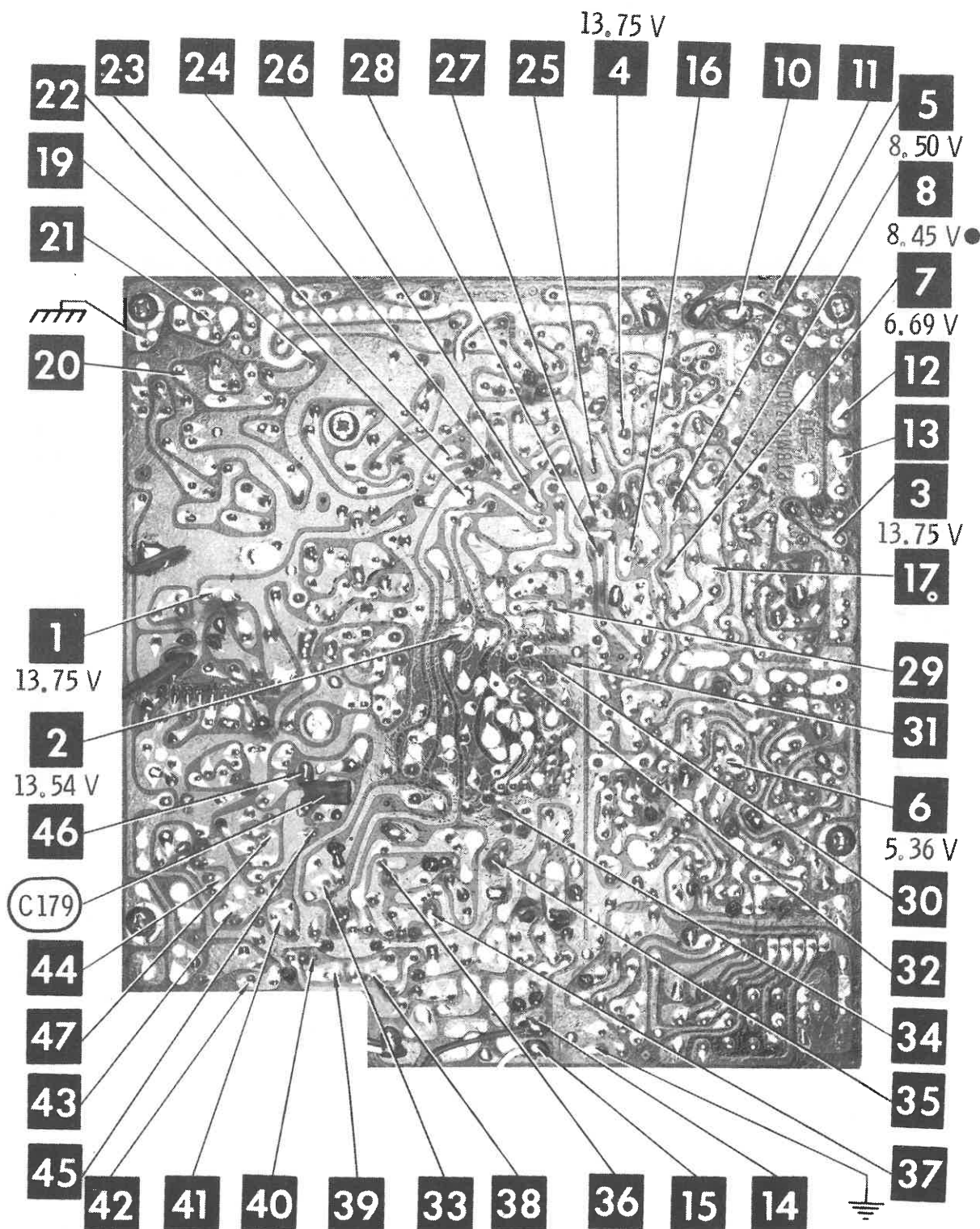
MAIN BOARD



CHASSIS-BOTTOM

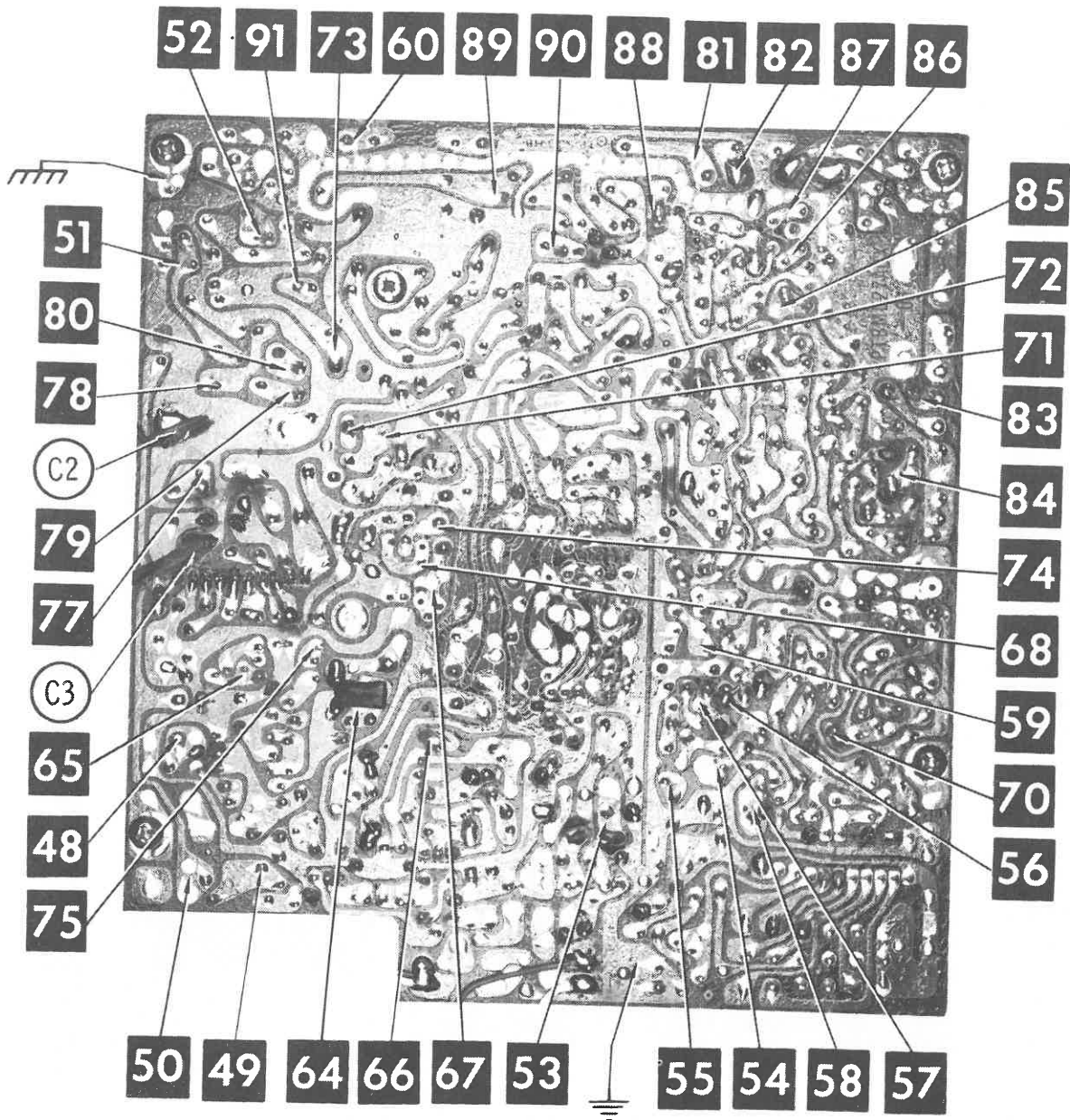


MAIN BOARD



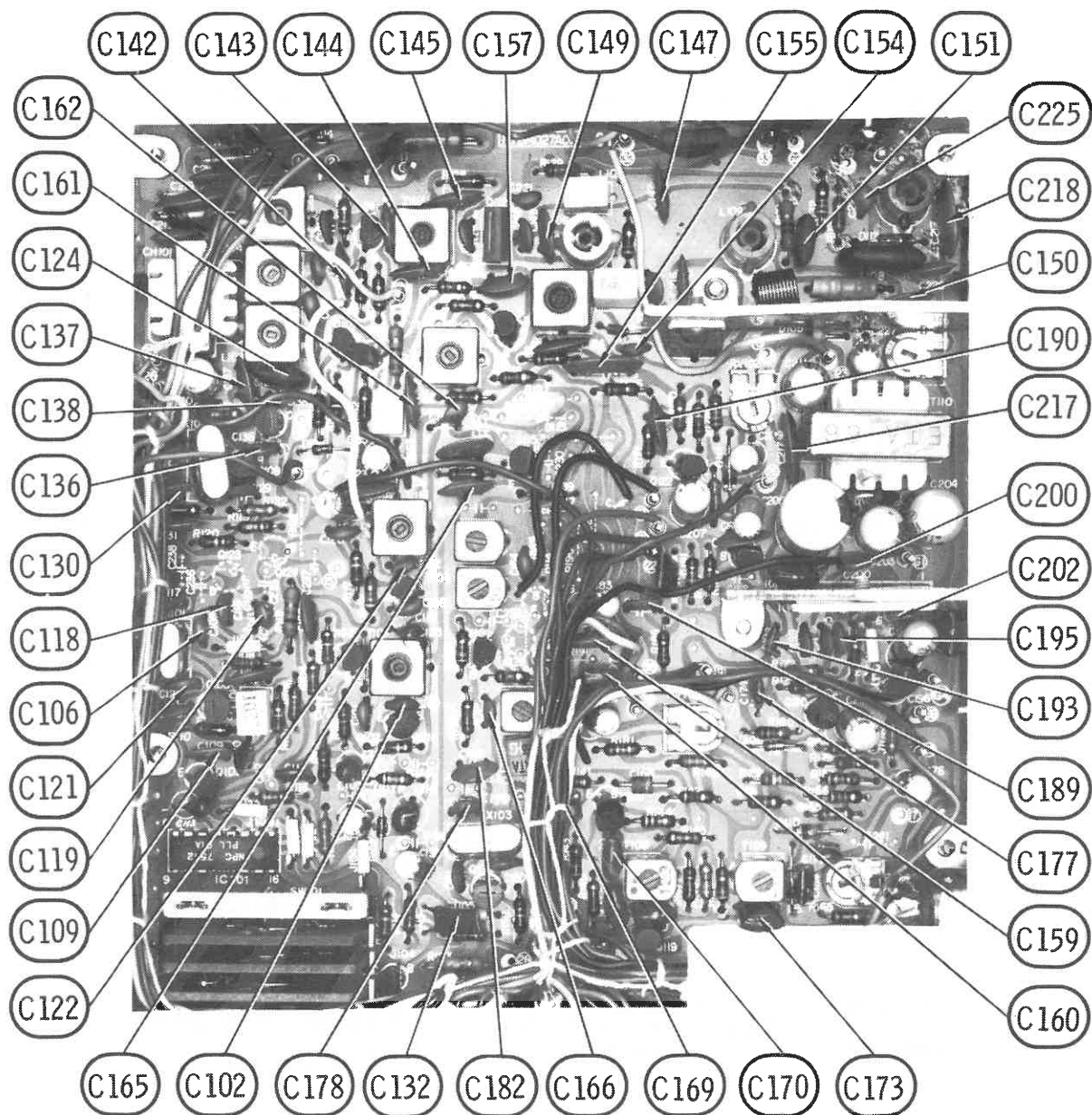
● Transmit

MAIN BOARD

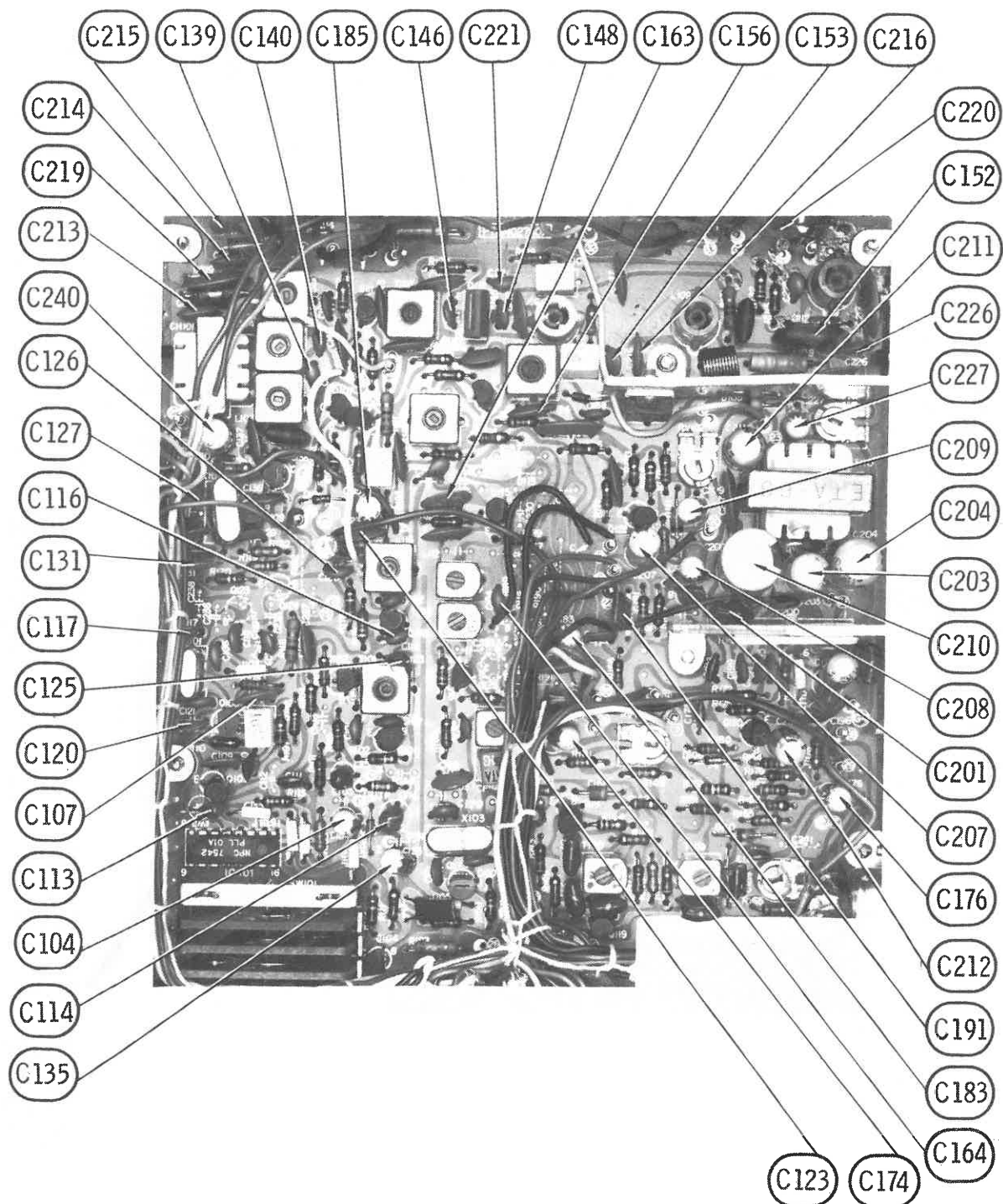


HY-GAIN MODELS 681,682

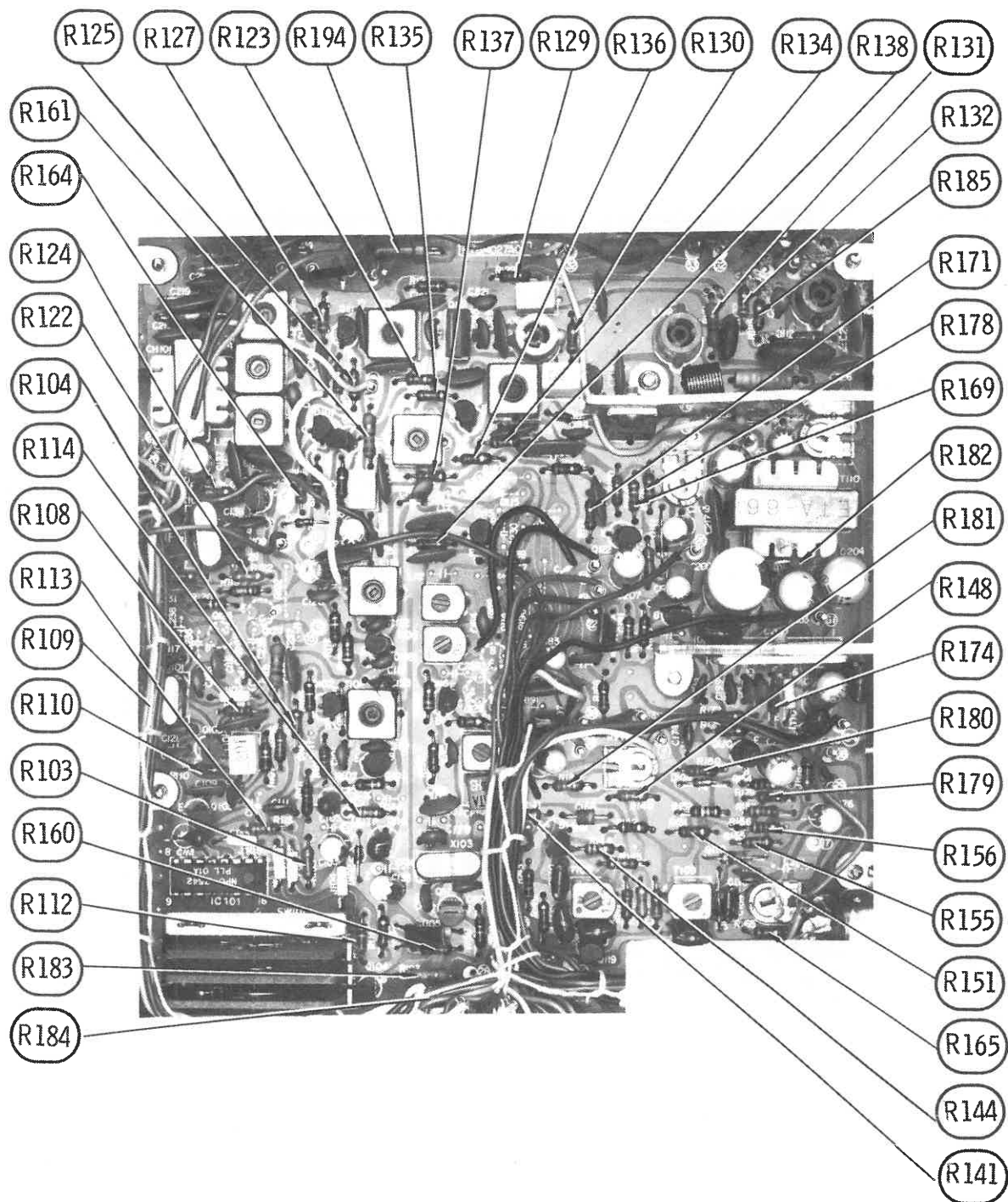
MAIN BOARD



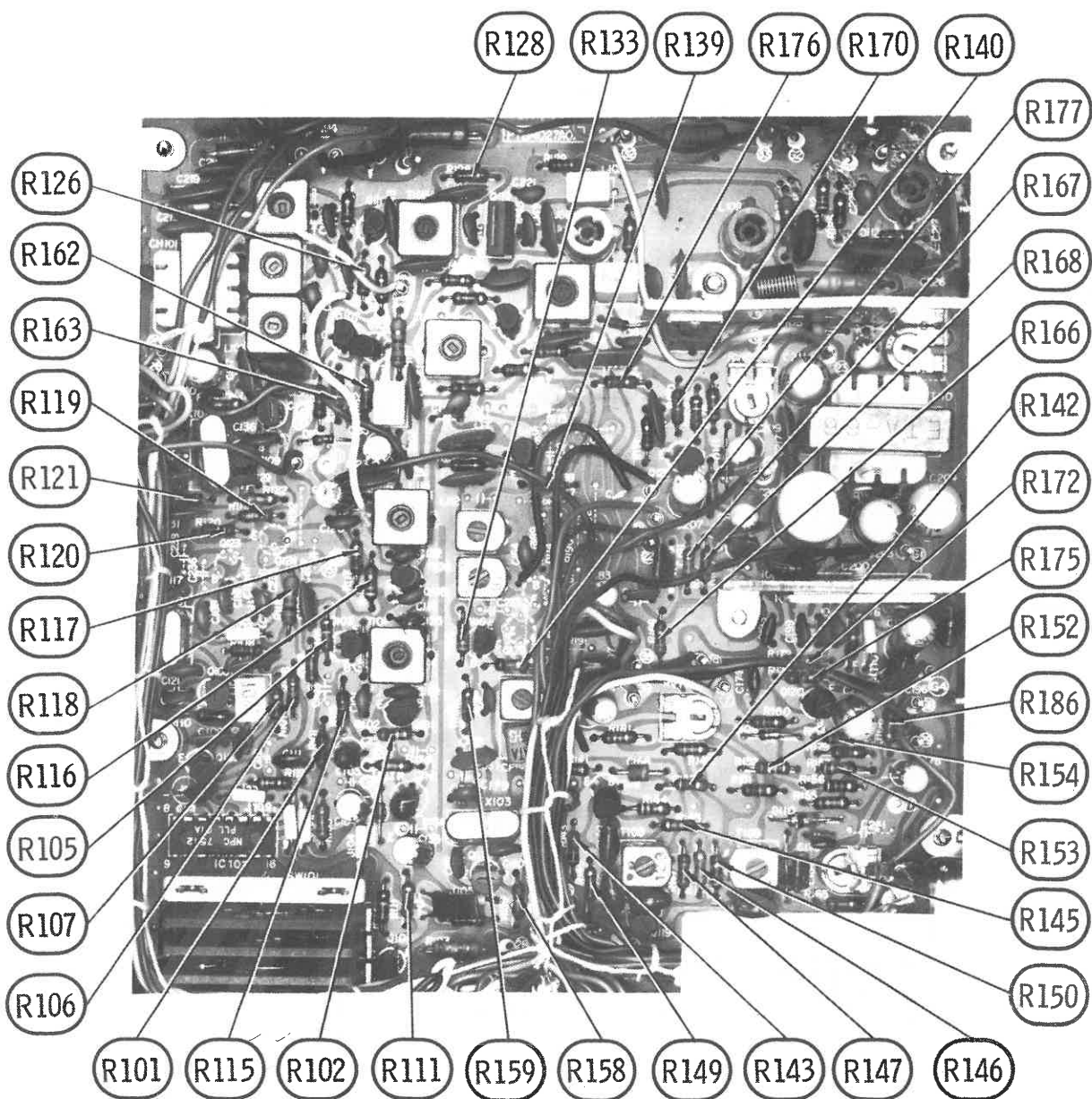
MAIN BOARD



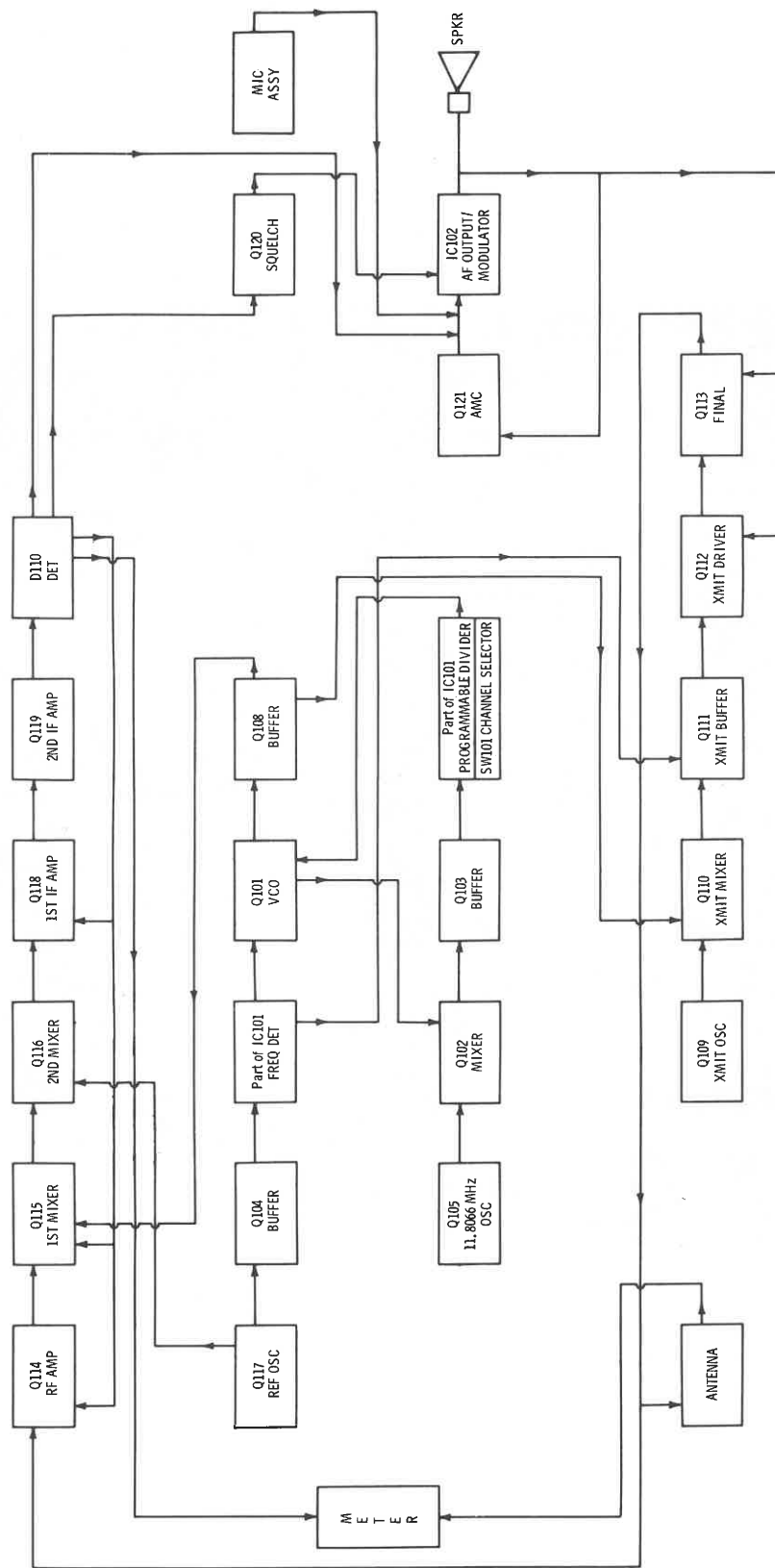
MAIN BOARD



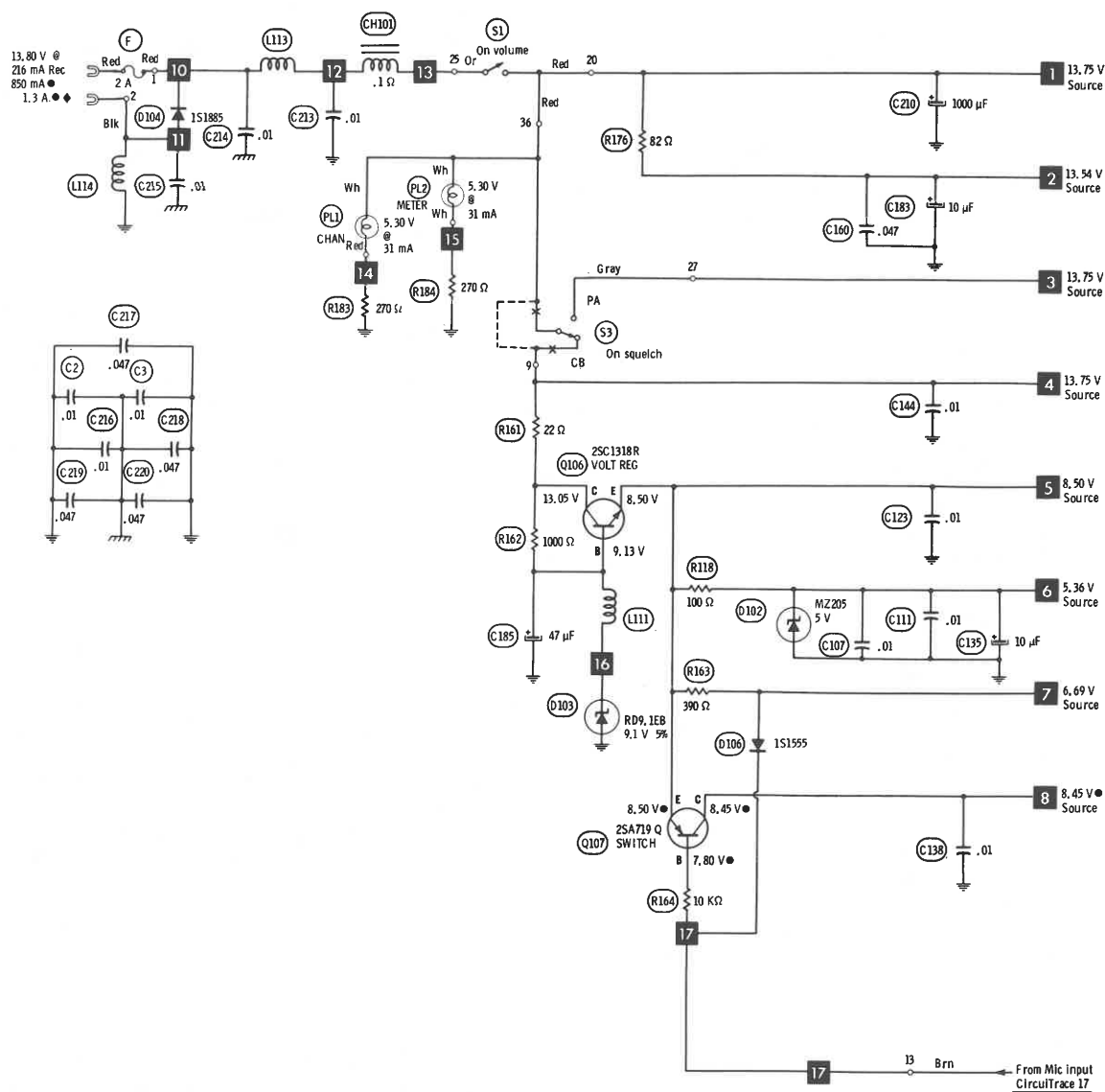
MAIN BOARD



MAIN BOARD



BLOCK DIAGRAM



— 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 PHOTOFAC STANDARD NOTATION SCHEMATIC

WITH **CIRCUITRACE**

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Terminal Guide



Q106, Q107



PARTS LIST AND DESCRIPTION

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

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')
	BELDEN No. 8401		BELDEN No. 8497 (6')
	BELDEN No. 8401		BELDEN No. 9472 (7-1/2')
Speaker Cable (available in 4 colors)	BELDEN No. 8782		28AWG BELDEN No. 9466 (6')
Bonding Strap	BELDEN No. 8672		31AWG BELDEN No. 9468 (10')
AC Power Cord	(6') BELDEN No. 17106	4-conductor (unshielded)	23AWG BELDEN No. 8415 (6')
	(9') BELDEN No. 17109	5-conductor (1 shielded)	28AWG BELDEN No. 9467 (6')
			BELDEN No. 9465 (7-1/2')

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.
D101	ITT410	QD-CTT410XQ	GE-90	D201		HEPR2503	RE 195	SK3126	RT-262	ECG610
D102	MZ205	QD-ZMZ205XE	GEZD-5.1						RT-235	
D103	RD9.1E	QD-ZRD9EXAA	GEZD-9.1		ZB9.1B		RE 114		RT-240	ECG139A
D104	1S1885	QD-SS1885XT	GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D105	V06C	QD-SV06CXXB	GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D106	1S1555	QD-SS1555XT	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D107	1S1555	QD-SS1555XT	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D108	1S1555	QD-SS1555XT	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D109	1N60	QD-G1N60XXT	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D110	1N60	QD-G1N60XXT	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D111	1N60	QD-G1N60XXT	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D112	1N60	QD-G1N60XXT	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
IC101	PLL01A	QQ-OPLL01A0								ECG1167
IC102	BA521	QQ-MBA521AX								ECG1166
Q101	2SC710D	QT-C0710XBE	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC829(1)		GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC839(1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
Q102	2SC829B	QT-C0829XAN	GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC710(1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC839(1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
Q103	2SC829B	QT-C0829XAN	GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC710(1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC839(1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
Q104	2SC829B	QT-C0829XAN	GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC710(1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC839(1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
Q105	2SC710D	QT-C0710XBE	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC829(1)		GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC839(1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
Q106	2SC1318Q	QT-C1318XAN	GE-210 *	TR-21 *	PTC178	HEPS0015 *	RE 17 *	SK3122	RT-302	ECG128 *
Q107	2SA719Q	QT-A0719XAN	GE-269	TR-28 *	PTC103 *	HEPS0019 *	RE 26 *	SK3114	RT-305	ECG290
Q108	2SC1359B	QT-C1359XAN	GE-212	(IR)2SC380A0	PTC121 *	HEPS0014 *	RE 192	SK3038 *	RT-308	ECG199
	2SC1047(1)		GE-60 *	(IR)2SC829B	PTC132 *	HEPS0016 *	RE 28 *	SK3018 *	RT-107	ECG161 *
Q109	2SC710D	QT-C0710XBE	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q110	2SC710D	QT-C0710XBE	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC1687(1)		GE-20 *	TR-24 *	PTC121 *	HEPS0015 *	RE 13 *	SK3018 *	RT-107A *	ECG123A *
Q111	2SC1687	QT-C1687XAN	GE-20 *	TR-24 *	PTC121 *	HEPS0015 *	RE 13 *	SK3018 *	RT-107A *	ECG123A *
	2SC1688(1)		GE-81 *	TR-24 *	PTC121 *	HEPS0027 *	RE 13 *	SK3137 *	RT-172 *	ECG123A *
	2SC1215(1)		GE-61 *	TR-21	PTC133 *	HEPS0020 *	RE 9	SK3039 *	RT-107A	ECG107
Q112	2SC1760		GE-276						RT-310	ECG306
	2SC1760-3	QT-C1760XAS (1)	GE-276						RT-310	ECG306
Q113	2SC1678		GE-322	WEP1678	PTC186		RE 203	SK3197	RT-146	ECG235
	2SC1306	QT-C1306XZA (11)	GE-215	WEP1306	PTC186		RE 203	SK3197	RT-146	ECG235
Q114	2SC1816(1)		GE-216	WEP1306	PTC186		RE 203	SK3197	RT-146	ECG235
	2SC1047B	QT-C1047XAN	GE-60 *	(IR)2SC829B	PTC132 *	HEPS0016 *	RE 28 *	SK3018 *	RT-107	ECG161 *
	2SC784(1)		GE-60 *	(IR)2SC380A0	PTC132 *	HEPS0008 *	RE 28 *	SK3018 *	RT-187	ECG229 *
	2SC1359(1)		GE-212	(IR)2SC380A0	PTC121 *	HEPS0014 *	RE 192	SK3038 *	RT-308	ECG199
Q115	2SC1359B	QT-C1359XAN	GE-212	(IR)2SC380A0	PTC121 *	HEPS0014 *	RE 192	SK3038 *	RT-308	ECG199
	2SC710(1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q116	2SC829C	QT-C0829XBN	GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC829(1)		GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC710(1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q117	2SC710D	QT-C0710XBE	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q118	2SC829C	QT-C0829XBN	GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC710(1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q119	2SC839(1)	QT-C0829XBN	GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
	2SC710(1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
	2SC839(1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
Q120	2SC372Y	QT-C0372XDN	GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC828(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
Q121	2SC828Q	QT-C0828XDN	GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
	2SC372(1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A *
	2SC945(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-308	ECG199
Q122	2SC828P	QT-C0828XAN	GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-308	ECG123A *
	2SC372(1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A *
	2SC945(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199

* Lead configuration may vary from original.
(1) Used in some versions.
(11) 12 WATTS @ 3 A
(12) 10 WATTS @ 3 A

PARTS LIST AND DESCRIPTION (CONTINUED)

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

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFG. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	GENERAL LINE
C104	10 16V	CE-ED100ALN	PC10-25	VTT10B25	QV1-41	EV-1222
C113	.22 50V	CE-EGR22ZMN		TDC224M050EL	QDT1-10	SD50-R229
C114	10 16V	CE-ED100ZMN	PC10-25	VTT10B25	QV1-41	EV-1222
C115	4.7 25V	CE-EE4R78MN		TDC475M010EL	QDT1-48	SD10-4R79
C135	10 16V	CE-ED100ALN	PC10-25	VTT10B25	QV1-41	EV-1222
C174	3.3 25V	CE-EE3R3ALN	PC5-50	VTT3R3A50	QV1-23	EV-1318
C176	1 50V	CE-EG010ALN	PC1-50	VTT1A50	QV1-11	EV-1615
C183	10 16V	CE-ED100ALN	PC10-25	VTT10B25	QV1-41	EV-1222
C185	10 16V	CE-ED100ALN	PC10-25	VTT10B25	QV1-41	EV-1222
C196	5.6 25V	CS-SE5R6MDN		TDC686M025FL	QDT1-55	SD25-6R89
C197	33 6.3V	CE-EB330ALN	PC30-25	VTT33B10	QV1-61	EV-1125
C203	47 16V	CE-ED470ALN	PC50-16	VTT47D16	QV1-73	EV-1226
C204	220 16V	CE-AD221ZLS	PC250-25	VTT220H16	QV1-117	EV-1240
C207	33 6.3V	CE-EB330ALN	PC30-25	VTT33B10	QV1-61	EV-1125
C208	10 16V	CE-ED100ALN	PC10-25	VTT10B25	QV1-41	EV-1222
C209	1 50V	CE-EG010ALN	PC1-50	VTT1A50	QV1-11	EV-1615
C210	1000 16V	CE-ED102ZUN	PC1000-16	VTT1000L16	QV1-183	EV-1260
C211	47 25V	CE-AE470ZLS	PC50-25	VTT47E25	QV1-75	EV-1326
C212	33 6.3V	CE-EB330ALN	PC30-25	VTT33B10	QV1-61	EV-1125
C227	1 50V	CE-EG010ALN	PC1-50	VTT1A50	QV1-11	EV-1615
C240	33 16V	CE-ED330ALN (1)	PC30-25	VTT33D25	QV1-63	EV-1325

(1) Used in Model 1 682 only.

CAPACITORS

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
C1	220	CC-CB470KPM CC-CB100KPM <					

ded) 23AWG BELDEN No. 9471 (5')
BELDEN No. 8497 (6')
BELDEN No. 9472 (7-1/2')
28AWG BELDEN No. 9466 (6')
31AWG BELDEN No. 9468 (10')
ded) 23AWG BELDEN No. 8415 (6')
ded) 28AWG BELDEN No. 9467 (6')
BELDEN No. 9465 (7-1/2')

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
C104	10 16V	CE-ED100ALN	PC10-25	VTT10B25	QV1-41	EV-1222
C113	.22 50V	CE-EGR22ZMN		TDC224M050EL	QDT1-10	SD50-R229
C114	10 16V	CE-ED100ZMN	PC10-25	VTT10B25	QV1-41	EV-1222
C115	4.7 25V	CE-EE4R78MN		TDC475M010EL	QDT1-48	SD10-4R79
C135	10 16V	CE-ED100ALN	PC10-25	VTT10B25	QV1-41	EV-1222
C174	3.3 25V	CE-EE3R3ALN	PC5-50	VTT3R3A50	QV1-23	EV-1318
C176	1 50V	CE-E6010ALN	PC1-50	VTT1A50	QV1-11	EV-1615
C183	10 16V	CE-ED100ALN	PC10-25	VTT10B25	QV1-41	EV-1222
C185	10 16V	CE-ED100ALN	PC10-25	VTT10B25	QV1-41	EV-1222
C196	5.6 25V	CS-SE5R6MDN		TDC686M025FL	QDT1-55	SD25-6R89
C197	33 6.3V	CE-EB330ALN	PC30-25	VTT33B10	QV1-61	EV-1125
C203	47 16V	CE-ED470ALN	PC50-16	VTT47D16	QV1-73	EV-1226
C204	220 16V	CE-AD221ZLS	PC250-25	VTT220H16	QV1-117	EV-1240
C207	33 6.3V	CE-EB330ALN	PC30-25	VTT33B10	QV1-61	EV-1125
C208	10 16V	CE-ED100ALN	PC10-25	VTT10B25	QV1-41	EV-1222
C209	1 50V	CE-E6010ALN	PC1-50	VTT1A50	QV1-11	EV-1615
C210	1000 16V	CE-ED102ZUN	PC1000-16	VTT1000L16	QV1-183	EV-1260
C211	47 25V	CE-AE470ZLS	PC50-25	VTT47E25	QV1-75	EV-1326
C212	33 6.3V	CE-EB330ALN	PC30-25	VTT33B10	QV1-61	EV-1125
C227	1 50V	CE-E6010ALN	PC1-50	VTT1A50	QV1-11	EV-1615
C240	33 16V	CE-ED330ALN (1)	PC30-25	VTT33D25	QV1-63	EV-1325

(1) Used in Model 682 only.

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	220			CD15FD221J03	SX322	QW1-35	MWA-221
C2	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C3	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C4	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C101	39				CN0439		10TCP-Q39
C102	22		DTZ-22	NP022	CN0422		10TCC-Q22
C106	22		DTZ-22	NP022	CN0422		10TCC-Q22
C107	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C108	330		DD-331	GP330	GP333		10TS-T33
C109	330		DD-331	GP330	GP333		10TS-T33
C110	.001			DPMS6D1	EWFTA210	QF1-1	1PB-D10
C111	.01			WMF1S1	EWFTA110	QF1-91	1PB-S10
C116	10		DTZ-10	NP010	CN0410		10TCC-Q10
C117	.01			WMF1S1	EWFTA110	QF1-91	1PB-S10
C118	47 N150	CC-CB470KPM			*		10TCP-Q47
C119	10 N150	CC-CB100KPM			*		10TCP-Q10
C120	560		DD-561		GP356		10TS-T56
C121	100		DD-101	GP100	GP310		10TS-T10
C122	8		DD-6R8	NP06P8	CN0568		10TCC-V68
C123	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C124	100			CD15FD101J03	SX310	QW1-27	MWA-101
C125	.001			DPMS6D1	EWFTA210	QF1-1	1PB-D10
C126	100		DD-101	GP100	GP310		10TS-T10
C127	33 N150	CC-CB330KPM			*		10TCP-Q33
C129	560		DD-561		GP356		10TS-T56
C130	82 N150	CC-CB820KPM			*		10TCP-Q82
C131	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C132	560						
C136	150		DD-151		GP315		10TS-T15
C137	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C138	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C139	2		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C140	2		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C141	68		DD-680	GP68	GP468		10TS-Q68
C142	.01		DC-103	MGP01	TA110	QC2-141	TG-S10

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
C143	100 N150	CC-CB101KPM			*		10TCP-T10
C144	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C145	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C146	470		DD-471	GP470	GP347		10TS-T47
C147	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C148	82		DD-820		GP482		10TS-Q82
C149	220		DD-221		GP322		10TS-T22
C150	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C151	100			CD15FD101J03	SX310	QW1-27	MWA-101
C152	270			CD15FD271J03	SX327	QW1-37	MWB-271
C153	82		DD-820		GP482		10TS-Q82
C154	27				CN0427		10TCC-Q27
C155	.047				MAG1215		HY-350
C156	.01		UK12-503		TA110	QC2-141	TG-S10
C157	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C159	.047		UK12-503		MAG1215		HY-350
C160	.047			DPMS2S47	EWFTA147	QF1-171	1PB-S47
C161	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C162	10		DTZ-10	NP010	CN0410		10TCC-Q10
C163	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C164	4		DTZ-4R7	NP04P7	CN0547		10TCC-V47
C165	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C166	47		DTZ-47	NP047	CN0447		10TCC-Q47
C168	2.2		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C169	.047			DPMS2S47	EWFTA147	QF1-171	1PB-S47
C170	.047			DPMS2S47	EWFTA147	QF1-171	1PB-S47
C171	.047			DPMS2S47	EWFTA147	QF1-171	1PB-S47
C172	.047			DPMS2S47	EWFTA147	QF1-171	1PB-S47
C173	.047			DPMS2S47	EWFTA147	QF1-171	1PB-S47
C175	.0047			WMF1D47	EWFTA247	QF1-57	1PB-D47
C177	.0047			WMF1D47	EWFTA247	QF1-57	1PB-D47
C178	39 N150	CC-CB390KPM			*		10TCP-Q39
C179	.002	(1)		DPMS6D2	PVC622		6PS-D20
C180	560		DD-561		GP356		10TS-T56
C181	560		DD-561		GP356		10TS-T56
C182	68 N150	CC-CB680KPM			*		10TCP-Q39
C184	.022			DPMS2S22	EWFTA122	QF1-127	1PB-S22
C189	.0022				GP222	QC2-97	5GA-D22
C190	.01		DD-222		TA110	QC2-141	TG-S10
C191	.022		DC-103	MGP01	DPMS2S22	QF1-127	1PB-S22
C193	.01			WMF1S1	EWFTA110	QF1-91	1PB-S10
C194	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C195	390		DD-391	GP390	GP339		10TS-T39
C198	68		DD-680	GP68	GP468		10TS-Q68
C199	68		DD-680	GP68	GP468		10TS-Q68
C200	390		DD-391	GP390	GP339		10TS-T39
C201	.068			WMF1S68	EWFTA168	QF1-195	1PB-S68
C202	.02			DPMS2S2	PVC212		2PS-S20
C205	.068				MAG25168		HY-740
C213	.01		UK25-683		TA110	QC2-141	TG-S10
C214	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C215	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C216	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C217	.047		UK12-503		MAG1215		HY-350
C218	.047		UK12-503		MAG1215		HY-350
C219	.047		UK12-503		MAG1215		HY-350
C220	.047		UK12-503		MAG1215		HY-350
C221	27				CN0427		10TCC-Q27
C225	4		DTZ-4R7	NP04P7	CN0547		10TCC-V47
C226	.0047		DD-472	GP4700	GP247		5GA-D47

* Not normally in distributor's stock. Available thru distributor on order to manufacturer. 435

(1) Not used in some versions.

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.	MALLORY PART No.	TRW PART No.
RV101	Squelch Range	10K	RP-GNB10301				
RV102	AMC	2000	RP-GNB20201				
RV103	S Meter	20K	RP-GNB20301				
RV104	RF Meter	20K	RP-GNB20301				
VR1	Volume/Power Switch	50K	ERV-0176				
VR2	Squelch	10K	ERV-0177 (17)				
VR2	Squelch/PA Switch	10K	RVJET03B03 (18)				
VR3	RF Gain	50K	ERV-0193 (18)				

(17) Used in Model 681 only.

(18) Used in Model 682 only.

PARTS LIST AND DESCRIPTION (CONTINUED)

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

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L101	RF Choke (220uH)	LF-220KD01N			
L103	Xmit Mixer (27MHz)	TR-10CD004S			
L104	Xmit Mixer (27MHz)	TR-10CD005S			
L105	RF Choke (22uH)	LF-2R2D01N			
L106	Xmit Driver (27MHz)	TR-A5CZ001M			
L107	RF Choke (68uH)	LF-680KD01N			
L108	RF Choke	LD-AX3825M			
L109	Final (27MHz)	TR-A5CZ002M			
L110	PI Filter (27MHz)	TR-A5CZ003M			
L111	RF Choke	LF-680KD01N			
L112	IF (10.7MHz)	TR-07MB007N			
L113	RF Choke	LD-ADB4024B			
L114	RF Choke	LD-ADB4024B			
L115	VCO Buffer	TR-10MD006S			
L116	RF Choke	LA-1KE1011A			
T101	VCO	TR-10CA004S			
T102	Xmit Mixer (27MHz)	TR-10CB001S			
T103	Xmit Buffer (27MHz)	TR-10CP005S			
T104	Rec Antenna (27MHz)	TR-10MP003T			
T105	Rec RF (27MHz)	TR-10CA005S			
T106	IF (10MHz)	TR-07MB007N			
T107	IF (455kHz)	TR-07LA004N			
T108	IF (455kHz)	TR-07LA005N			
T109	IF (455kHz)	TR-07LA023N			

HY-GAIN MODELS 681,682

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.	
CH101	850mA	.116	.48mH	LJ-119H001Y ELA-16 (1)	TR523		(1) Number on unit.

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T110	2	1 8 2 .5	TB-G25B001W ETA-66 (1)	TR723		(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP1	3" PM 8 Ohms	EAS-0029	30A05Z8R	

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
F	2Amp	EZF-0005	EZS-0001	AGC2-2	HKP	312002	342038A	FG2-2

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
MIC	EAM-0032	18-032	18-034	18-010	18-105	1	3	2	5	NC	3

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
X101	9.51	XA-S1B2001T	CA90M951	OSC	X103	6.400	XG-S1A200T	CC11DM6400	REF OSC
X102	5.945	XG-S1A1001T	CB25M5945	Xmit OSC					

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF101	Ceramic Filter	FB-R455A08M	455kHz
J1	Jack	YJC02S007Z	Antenna
J2	Jack	EZS-0084	Microphone
J3	Jack	EZS-0056	Ext Speaker
J4	Jack	EZS-0056	PA
J5	Jack	EZS-0126	Remote Speaker
M1	Meter	EMM-0046	"RF"/"S"
PL1	Lamp	EZP-0024E	Channel Indicator (31mA @ 5.30V)
PL2	Lamp	EZP-0024E	Meter (31mA @ 5.30V)
S1	Switch		Power (On Volume Control)
S2	Switch	EST-0004 (1)	ANL
S3	Switch		PA (On Squelch Control)
SW101	Switch	SR-0724301H	Channel Selector
	Printed Circuit Board	AP-TBM027BB (2)	Main (PTBM027A0X-01)
	Printed Circuit Board	AP-TBM027CB (1)	Main

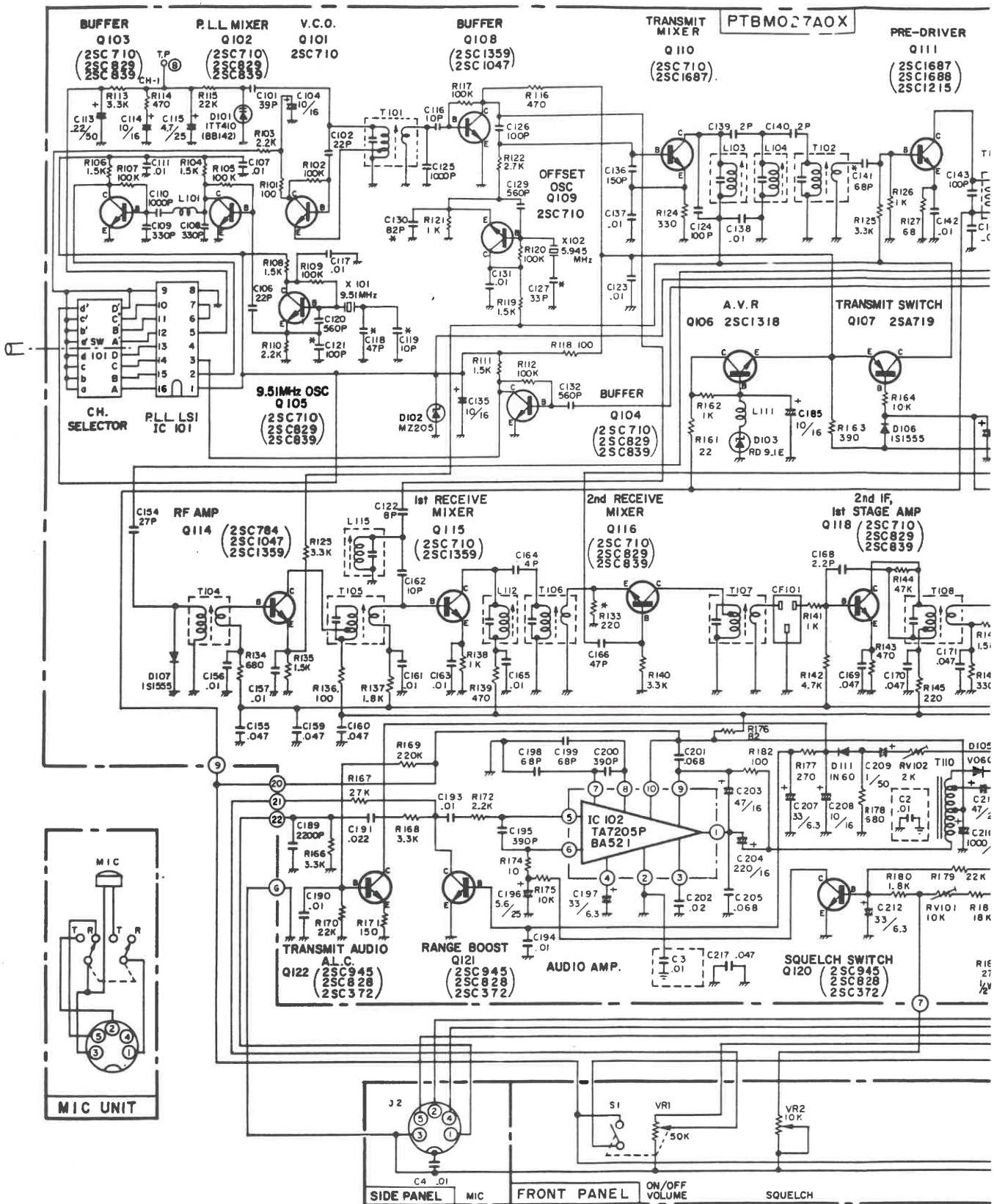
(1) Used in Model 682 only.

(2) Used in Model 681 only.

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

ITEM	PART No.	ITEM	PART No.
Cabinet Top	MC088P003	Disc, Channel Selector	VE-90XVC014
Cabinet Bottom	MC088P004	Mounting Bracket	MC046P006
Knob, Control	MT0-0004	Microphone Holder	MY0-0025
Knob, Channel Selector	MT0-0003		

CB-137
HY-GAIN
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9/22/87

Error in connections of IC101 especially to SW101. We have no way of checking the switch makeup.
Make Xerox copy of this mfr information and mail to customer.

SEMICONDUCTOR TERMINAL CONNECTION (BOTTOM VIEW UNLESS

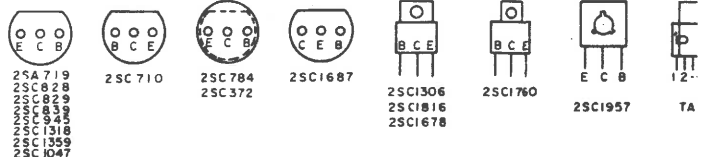


Figure 4-3. Schematic Diagram, Model 681