



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.

TENNA MODEL 10902



MODEL 10902

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

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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. Connect microphone.

Suggested Alignment Tools:	GC ELECTRONICS:
T1, T2, T3	9440
T4, T5, T6, T7, T8	5000, 5009, 8276, 8728, 9089
T11, T12, T13	9440
T15, T16, L4	5728, 9304, 9089

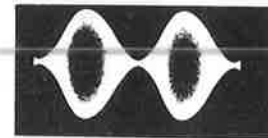


Figure 1

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of frequency counter to TP1.	Ch. 19 Delta Detent (Midrange)		Check for 10.240MHz.
Input of frequency counter to TP1.	Ch. 19 Delta + (Fully CW)	R134	Adjust for 10.239MHz.
Input of frequency counter to TP1.	Ch. 19 Delta - (Fully CCW)	R135	Adjust for 10.241MHz.
Input of frequency counter to TP10 (PLL Unit Pin 19).	Ch. 1 Delta Detent (Midrange)		Check for 37.660MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to TP11 (PLL Unit Pin 23).	Ch. 1, XMT		Check for 26.965MHz. Check all channels. (See Truth Chart for correct frequencies.)

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. Preset controls as follows, unless otherwise noted: RF Gain Maximum, Delta Detent, Squelch MINIMUM, NB Off

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP1. 455kHz, 1000Hz @ 30% modulation.	Ch. 19	T8,T7,T6	Adjust for maximum output.
Output of signal generator thru .01uF to antenna input. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19	T5,T4,T3, T2,T1	Adjust for maximum output. Readjust T6, T7 and T8 for maximum.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.
Preset controls as follows, unless otherwise noted:
RF Gain Maximum, Delta Detent, Squelch MINIMUM, NB Off

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 1000uV.	Ch. 19 Squelch Maximum	R94	SQUELCH RANGE Adjust so squelch just breaks.
Output of signal generator thru .01uF to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19	R28	S METER Adjust for 9 on S scale of meter.

TRANSMITTER ALIGNMENT

Connect a 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 RF wattmeter to antenna input.	Ch. 19	T11, T12, T13, T14, T15, T16	Adjust for maximum RF output.
Input of RF wattmeter to antenna input.	Ch. 19	L4	Adjust for 4.0 watts RF output maximum.

TRANSMITTER ADJUSTMENTS

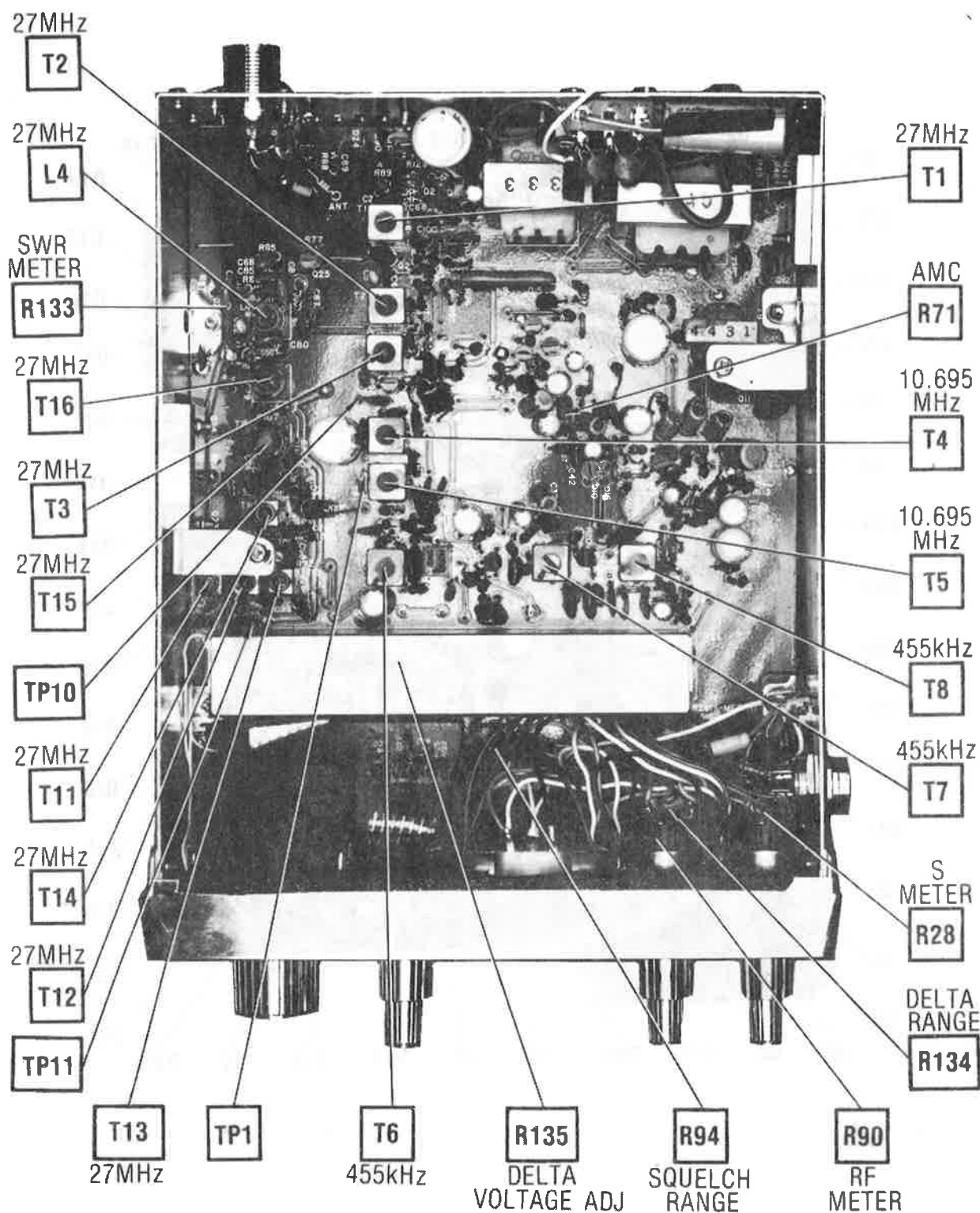
Connect a 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after adjustment of transmitter.
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of oscilloscope or modulation meter to antenna input. Inject a 1000Hz, 10mV audio signal at Mic input.	Ch. 19	R71	AMC Adjust for 100% modulation maximum. (See Figure 1.)
Connect a 150-ohm non-inductive resistor across antenna input.	Ch. 19	R132	SWR Set SWR/CAL to CAL and adjust SWR/CAL R91, for CAL on SWR scale of meter. Switch SWR/CAL to SWR and adjust R132 for 3 on SWR scale of meter.
Input of RF wattmeter to antenna input.	Ch. 19 SWR (R91) RF	R90	W METER At 4.0 watts RF output, adjust for 4 on W scale of meter.

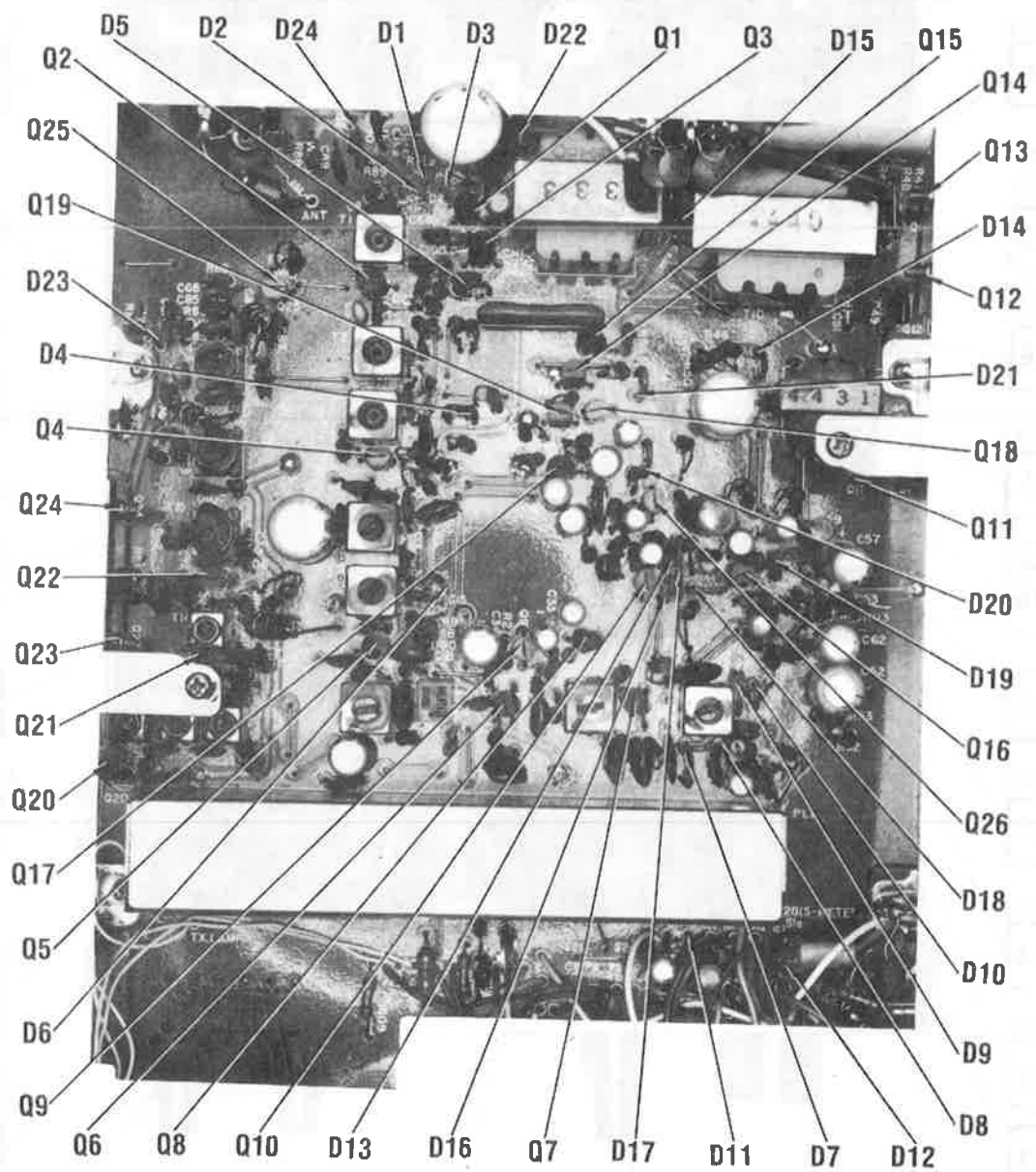
TENNA MODEL 10902

TRUTH CHART

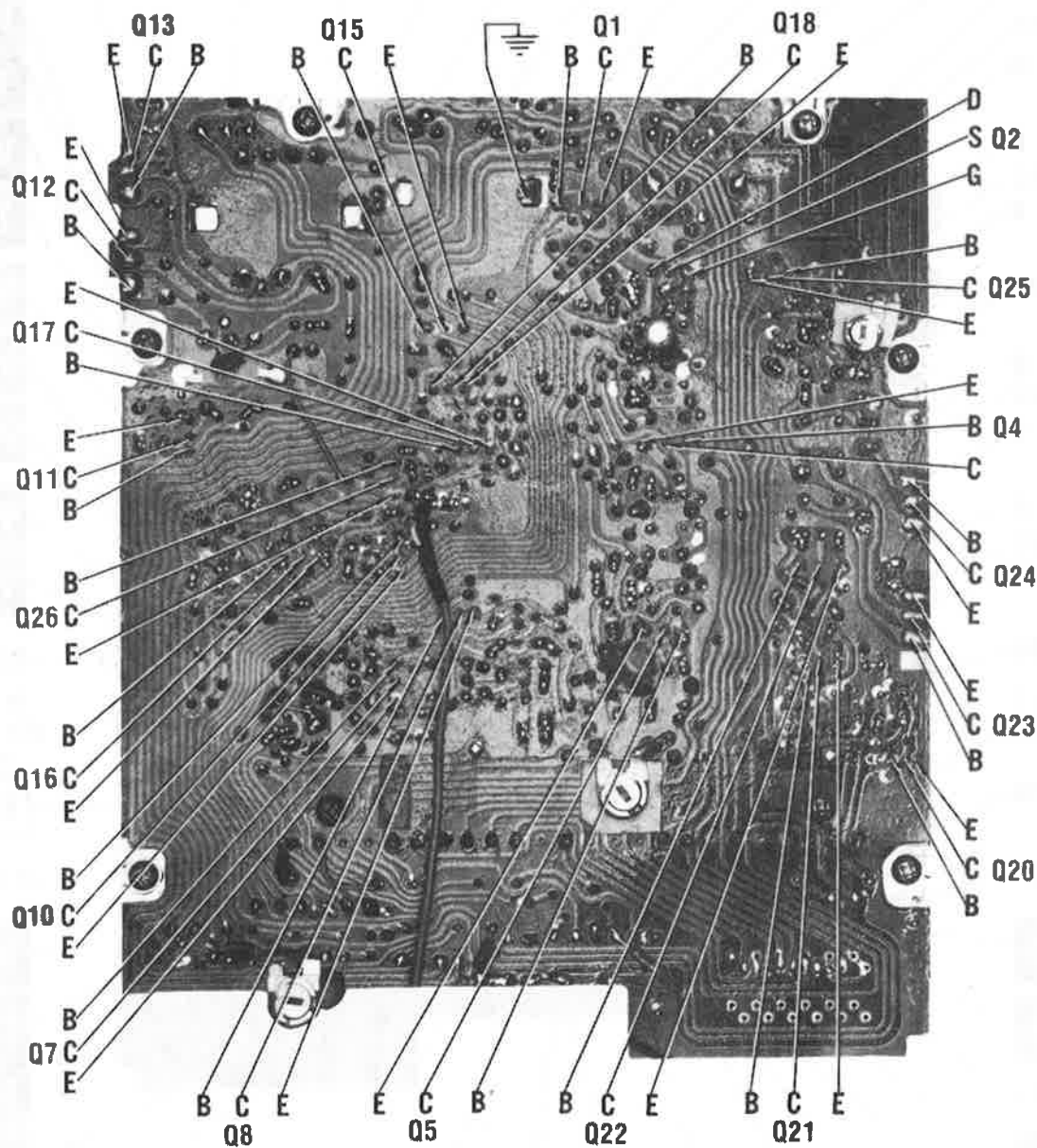
CHANNEL	1 = 6.10 Volts 0 = 0 Volts								REC SYNTHESIZER OUTPUT IN MHz AT TP10	XMT SYNTHESIZER OUTPUT IN MHz AT TP11	
	CHANNEL INPUT CODES										
	PINS										
	6	5	7	8	10	9					
1	1	1	1	1	1	1			37.660	26.965	
2	1	1	1	1	1	0			37.670	26.975	
3	1	1	1	1	0	1			37.680	26.985	
4	1	1	1	0	1	1			37.700	27.005	
5	1	1	1	0	1	0			37.710	27.015	
6	1	1	1	0	0	1			37.720	27.025	
7	1	1	1	0	0	0			37.730	27.035	
8	1	1	0	1	1	0			37.750	27.055	
9	1	1	0	1	0	1			37.760	27.065	
10	1	1	0	1	0	0			37.770	27.075	
11	1	1	0	0	1	1			37.780	27.085	
12	1	1	0	0	0	1			37.800	27.105	
13	1	1	0	0	0	0			37.810	27.115	
14	1	0	1	1	1	1			37.820	27.125	
15	1	0	1	1	1	0			37.030	27.135	
16	1	0	1	1	0	0			37.850	27.155	
17	1	0	1	0	1	1			37.860	27.165	
18	1	0	1	0	1	0			37.870	27.175	
19	1	0	1	0	0	1			37.880	27.185	
20	1	0	0	1	1	1			37.900	27.205	
21	1	0	0	1	1	0			37.910	27.215	
22	1	0	0	1	0	1			37.920	27.225	
23	1	0	0	0	1	0			37.950	27.255	
24	1	0	0	1	0	0			37.930	27.235	
25	1	0	0	0	1	1			37.940	27.245	
26	1	0	0	0	0	1			37.960	27.265	
27	1	0	0	0	0	0			37.970	27.275	
28	0	1	1	1	1	1			37.980	27.285	
29	0	1	1	1	1	0			37.990	27.295	
30	0	1	1	1	0	1			38.000	27.305	
31	0	1	1	1	0	0			38.010	27.315	
32	0	1	1	0	1	1			38.020	27.325	
33	0	1	1	0	1	0			38.030	27.335	
34	0	1	1	0	0	1			38.040	27.345	
35	0	1	1	0	0	0			38.050	27.355	
36	0	1	0	1	1	1			38.060	27.365	
37	0	1	0	1	1	0			38.070	27.375	
38	0	1	0	1	0	1			38.080	27.385	
39	0	1	0	1	0	0			38.090	27.395	
40	0	1	0	0	1	1			38.100	27.405	



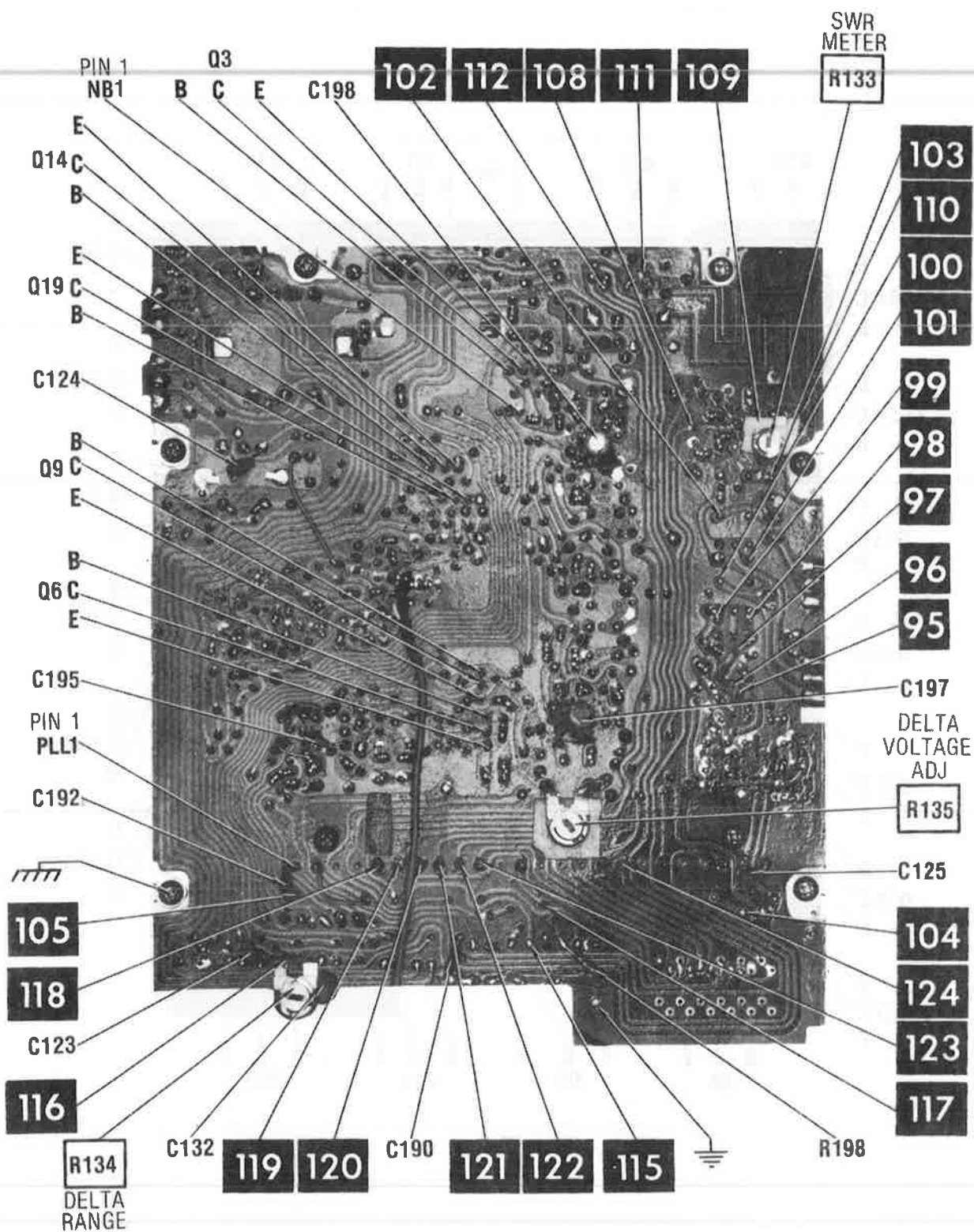
CHASSIS-BOTTOM



MAIN BOARD

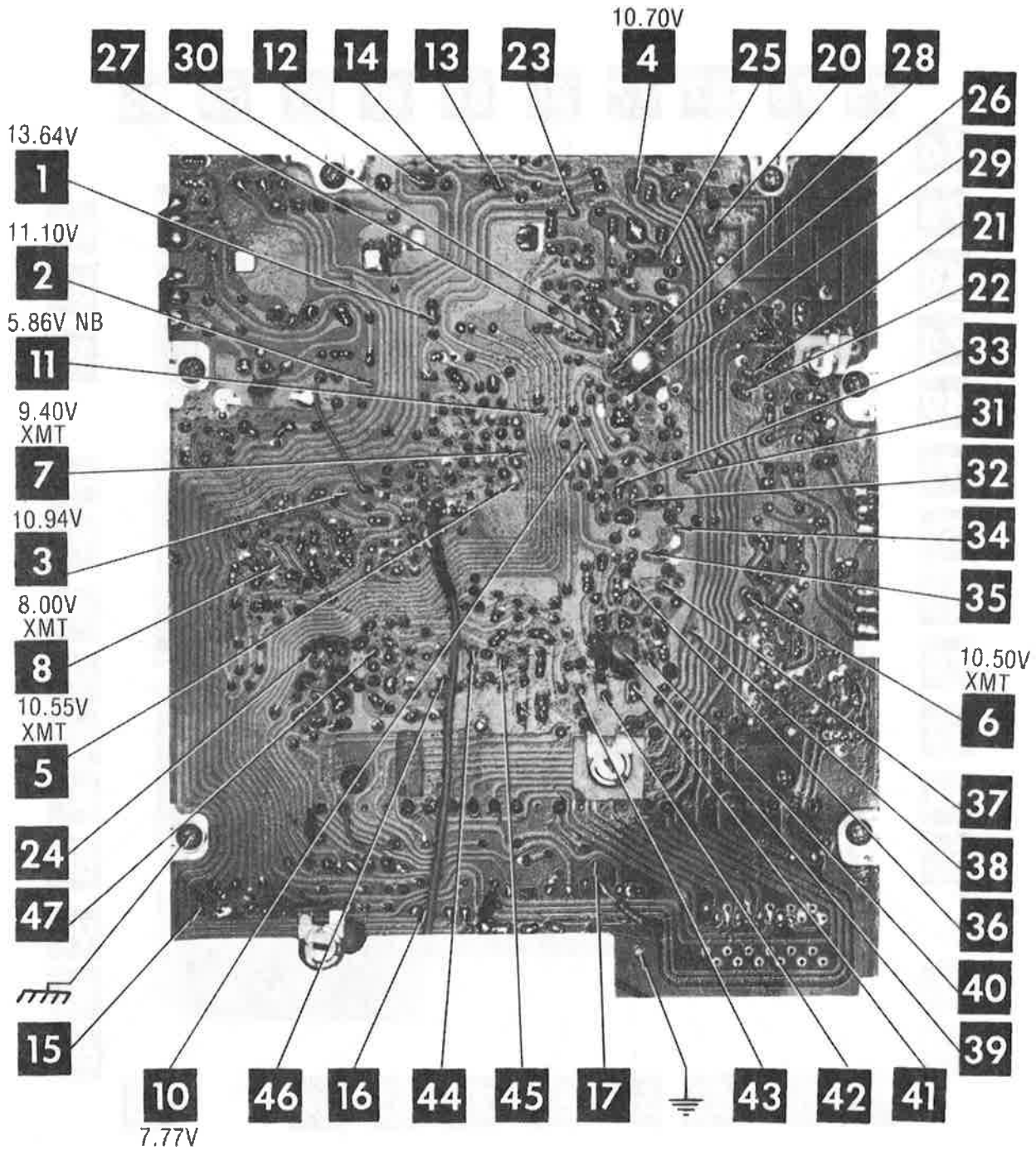


MAIN BOARD

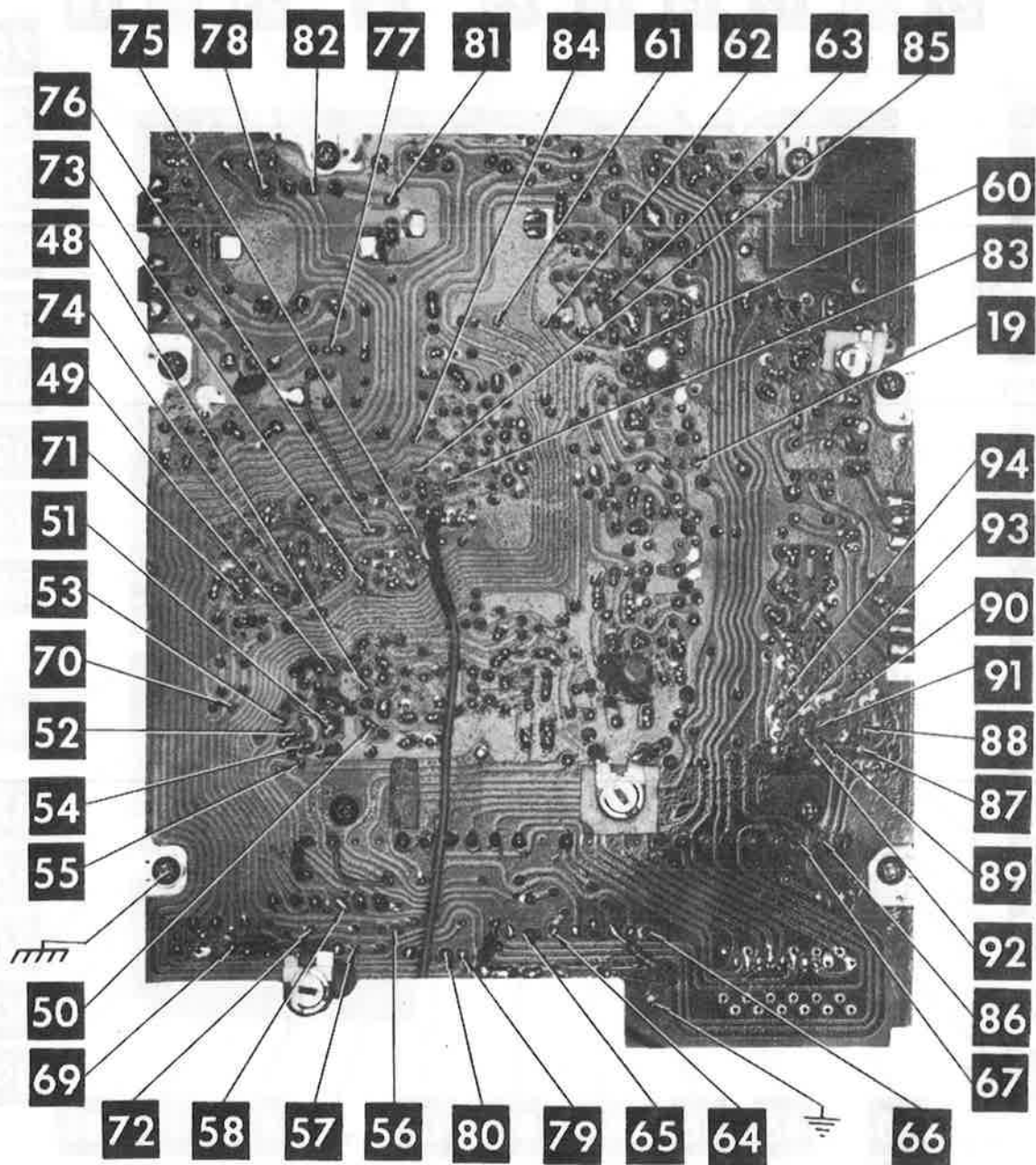


MAIN BOARD

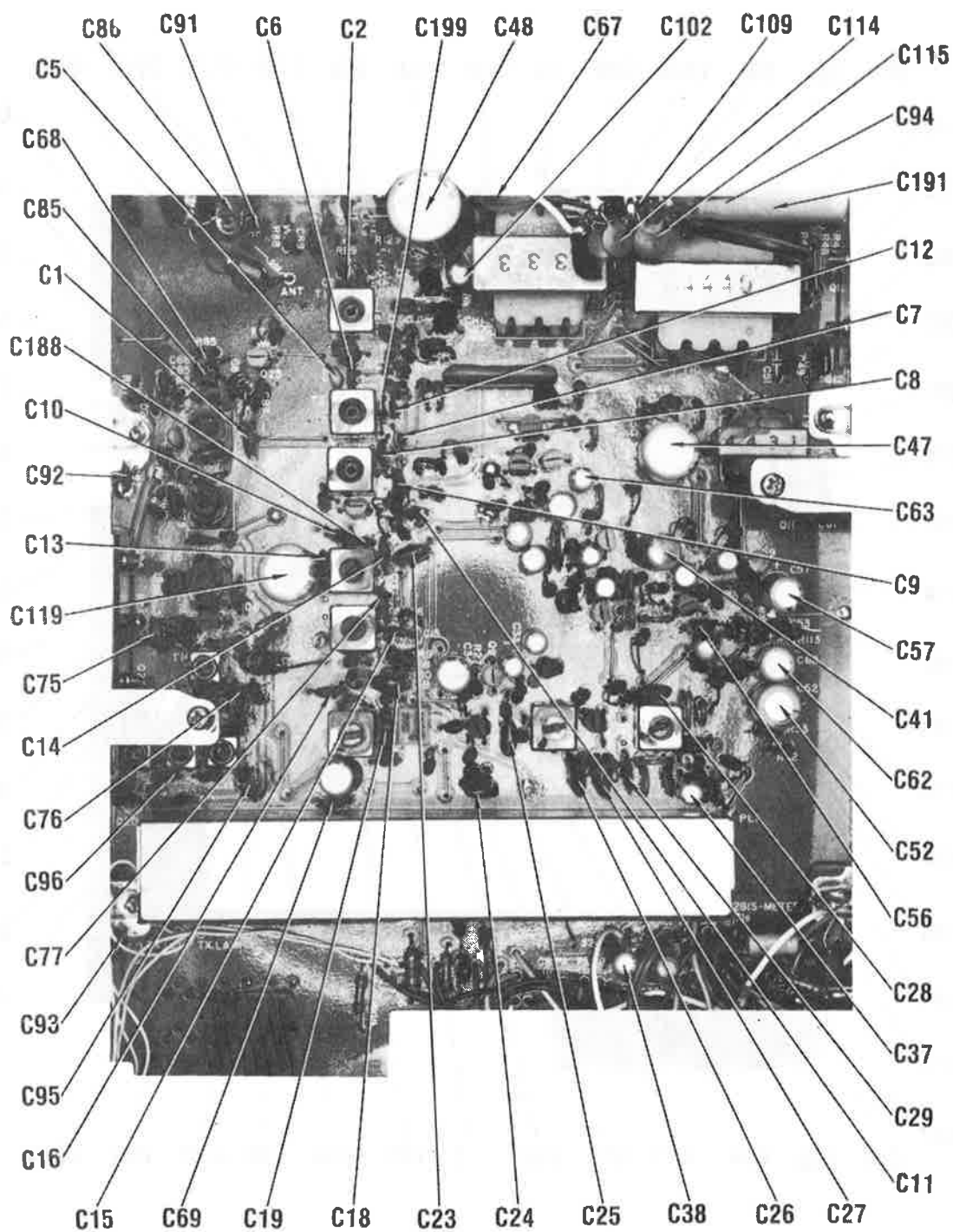
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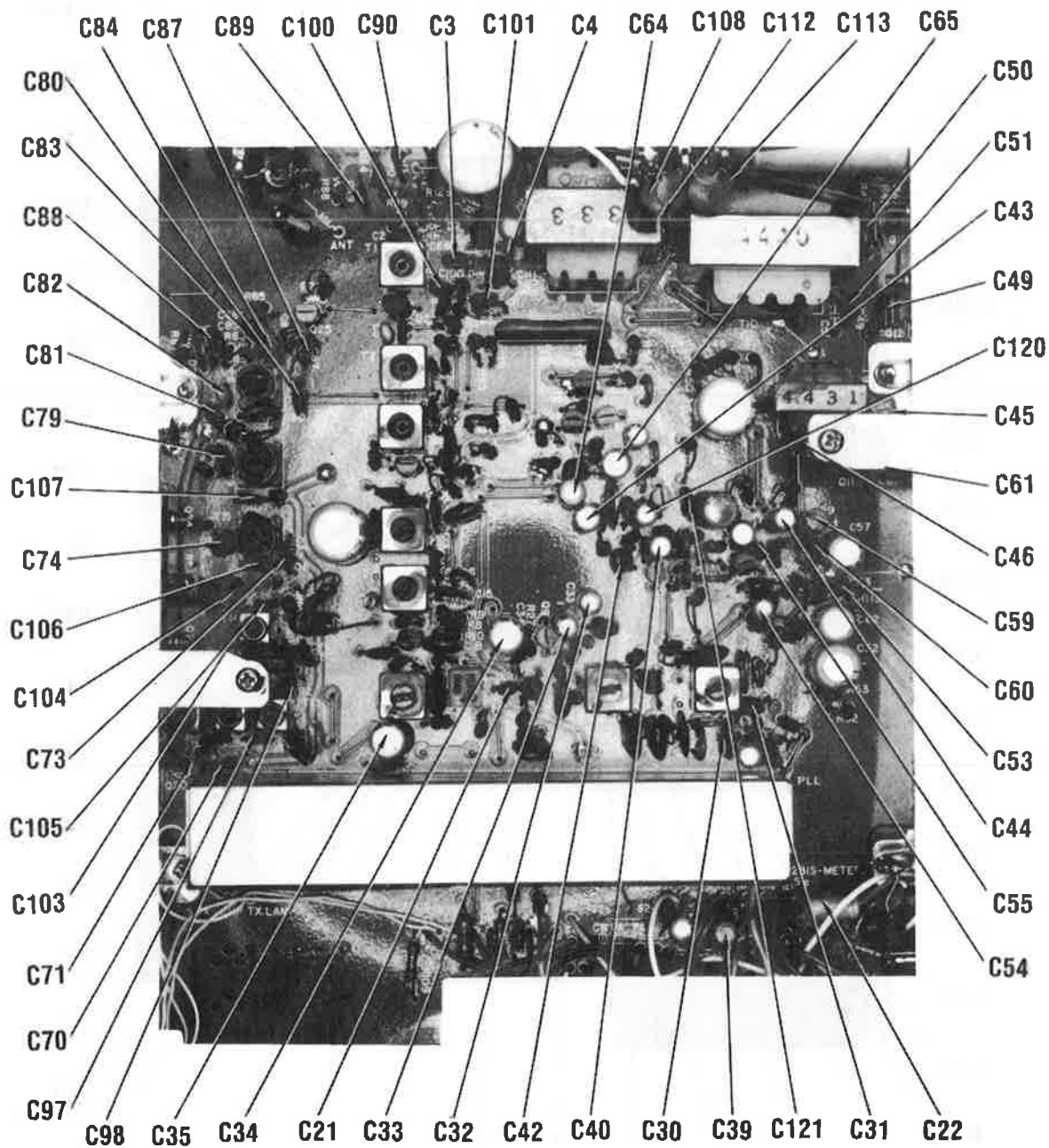
MAIN BOARD



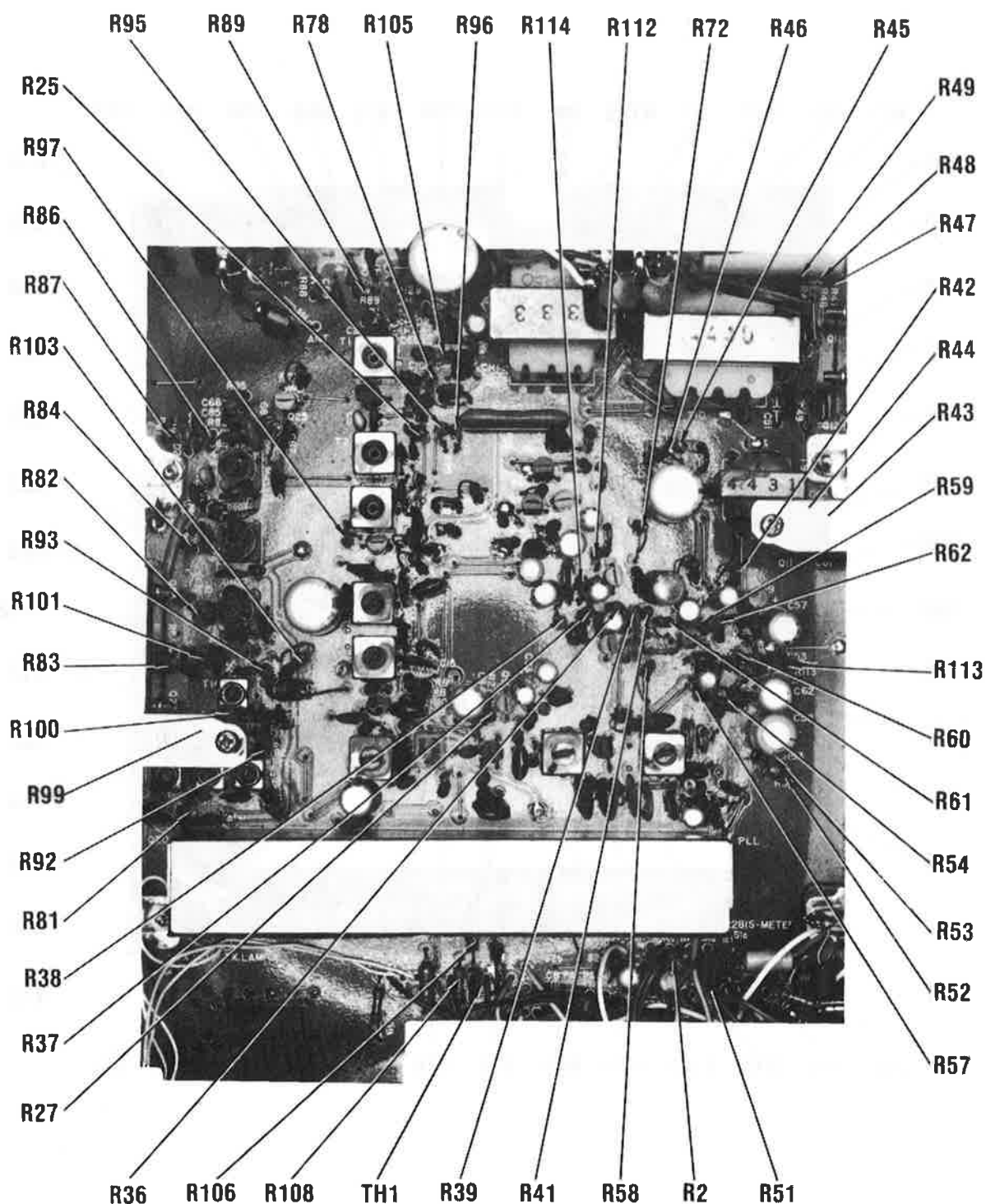
MAIN BOARD



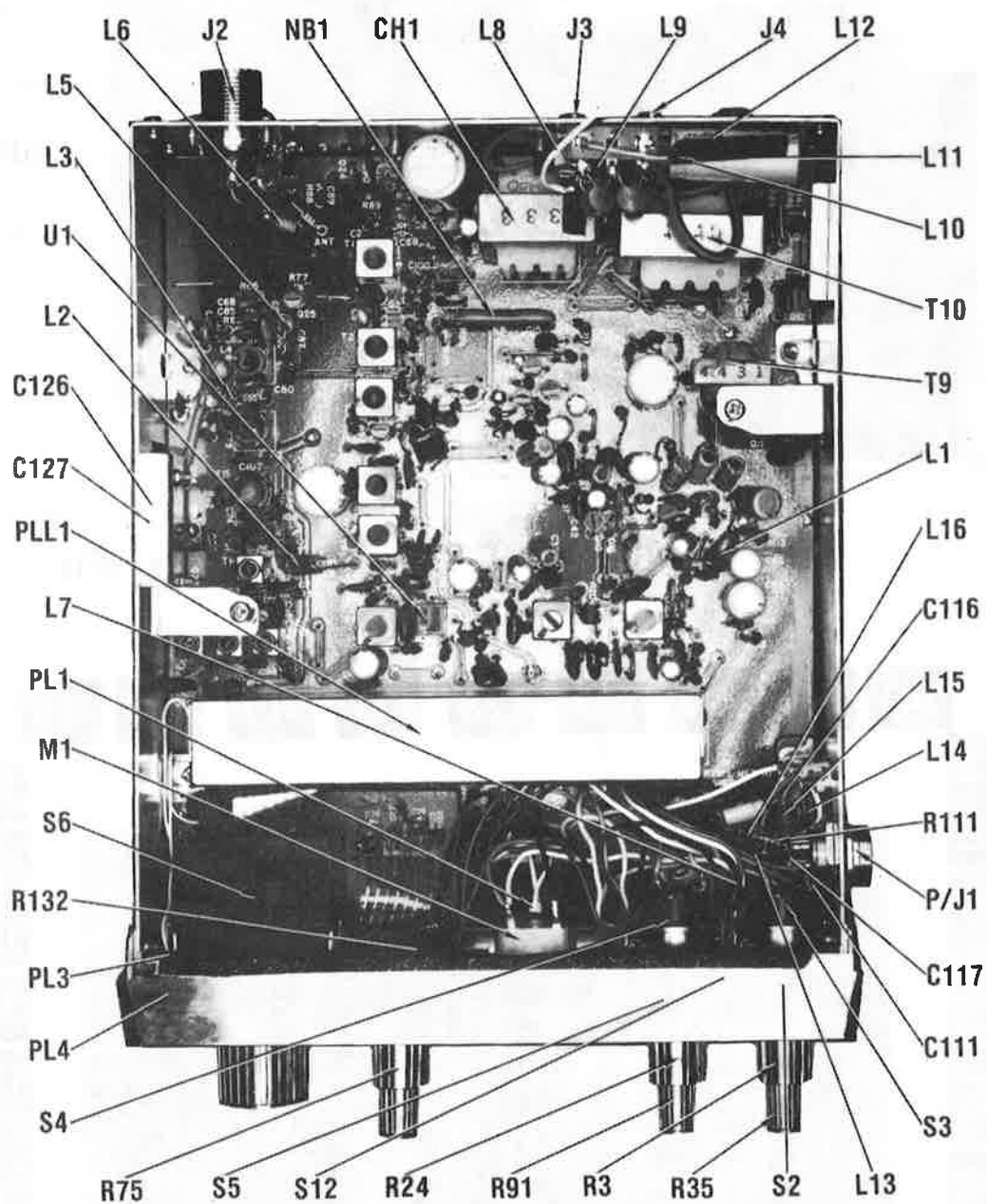
MAIN BOARD



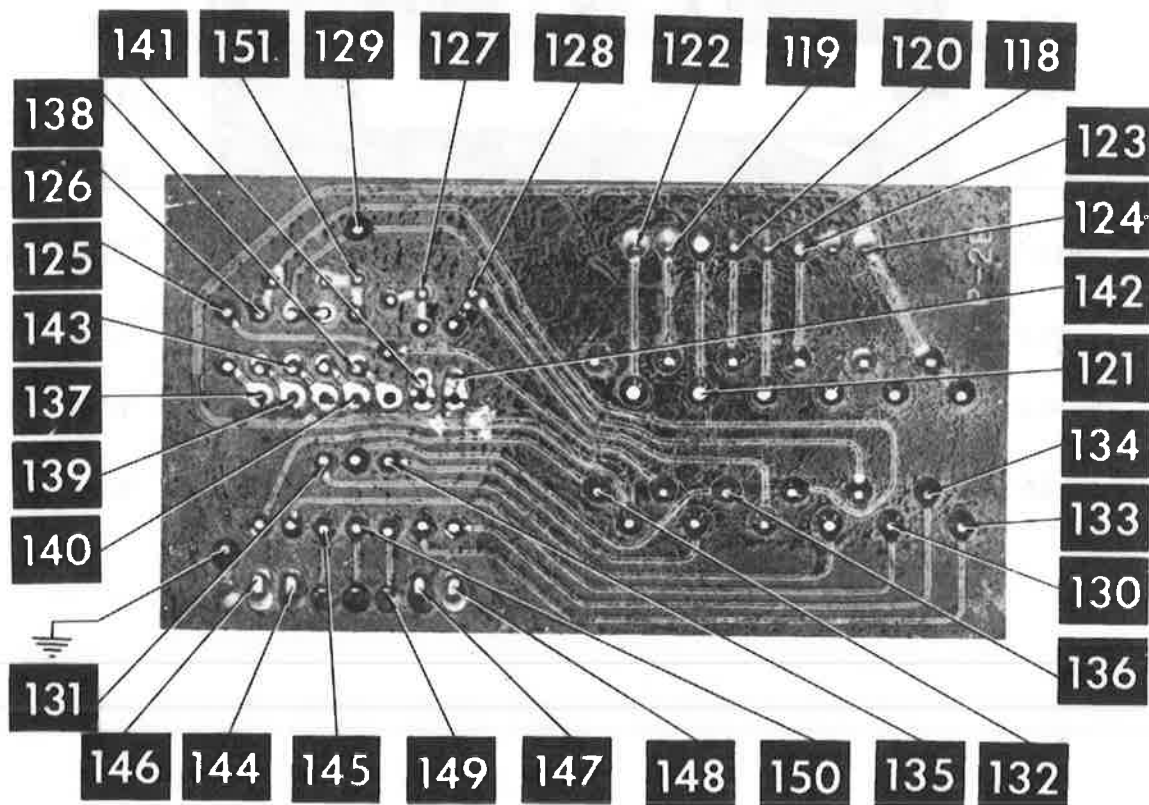
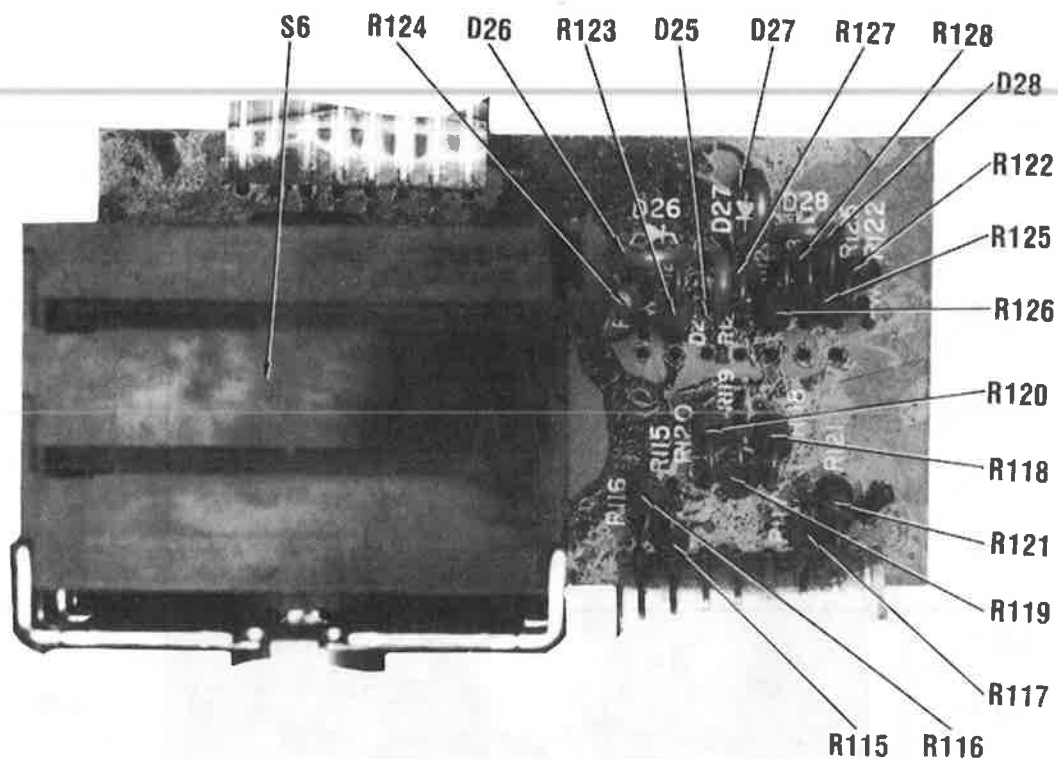
MAIN BOARD



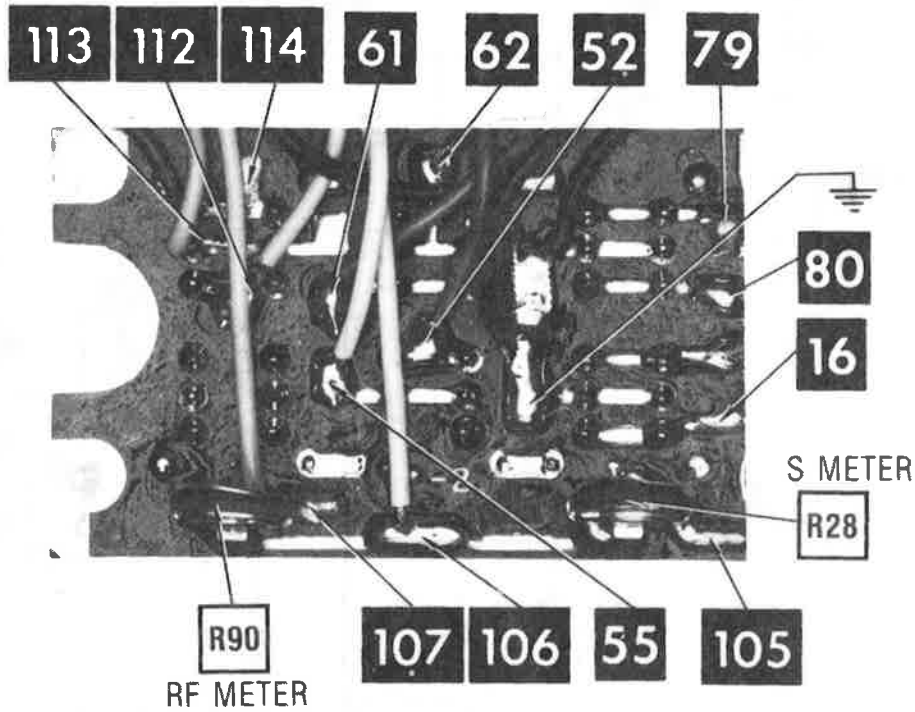
MAIN BOARD



CHASSIS-BOTTOM

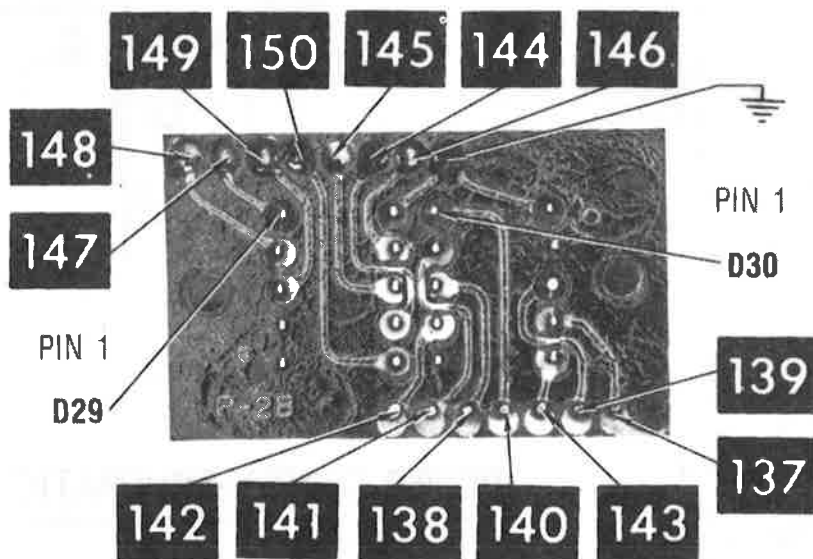


CHANNEL SELECTOR BOARD

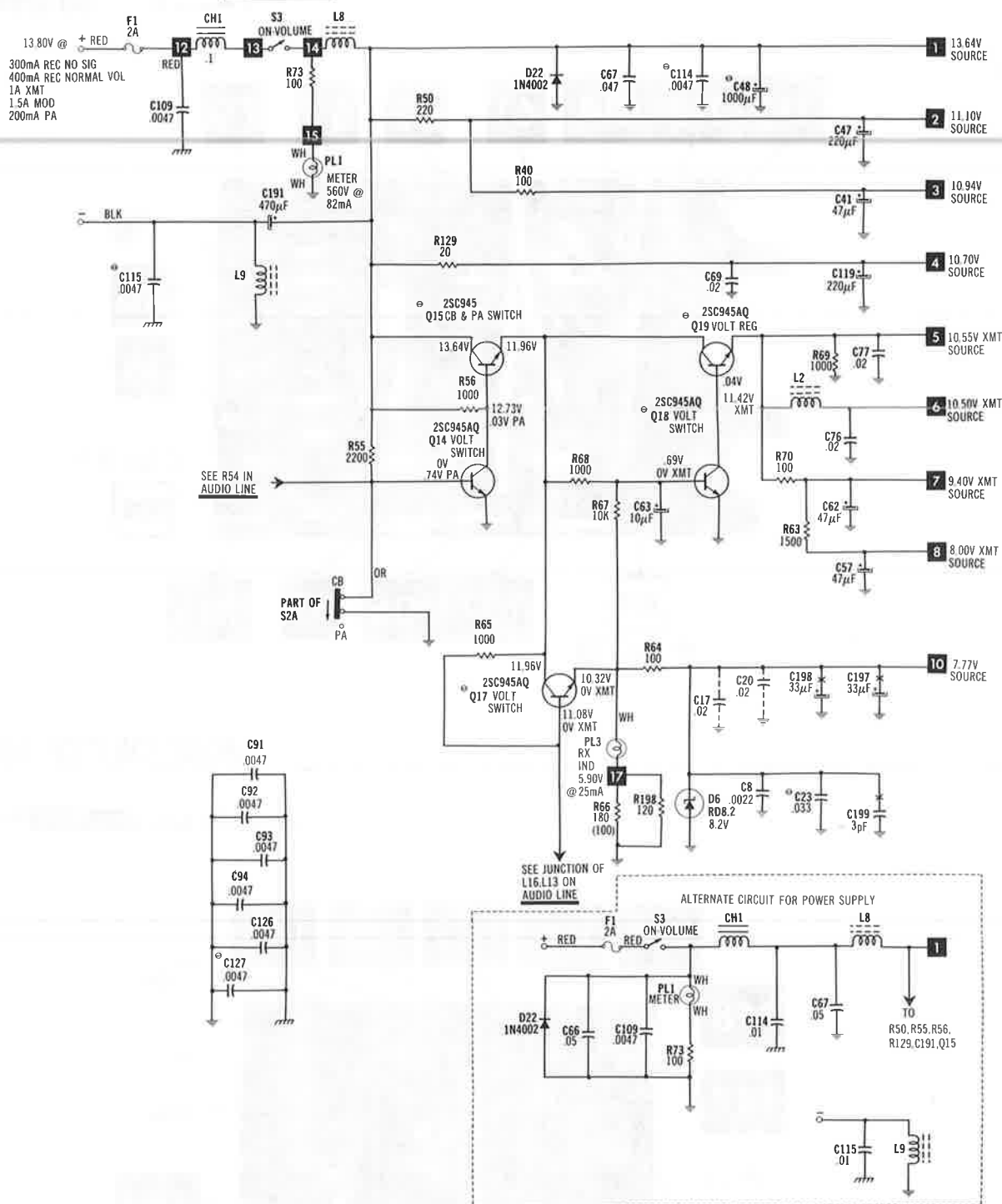


TENNA MODEL 10902

MODE SWITCH BOARD



CHANNEL READOUT



- | | | | |
|---|--------------------------------------|---|------------------|
|  | Circuitry not used in some versions. |  | Common tie point |
|  | Circuitry used in some versions. |  | Signal path |
|  | Nominal value |  | Voltage path |
|  | Ground | | |
|  | Chassis | | |
|  | See parts list | | |

POWER SUPPLY SCHEMATIC

Measurements made in Channel 19 with switching
in receive unless noted.

Item numbers in rectangles appear in the alignment/adjustment instructions.

Supply voltage maintained as shown at input.

Voltages measured with digital meter, no signal.

Controls adjusted for normal operation.

Terminal identification may not be found on unit.

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

Value in () used in some versions.

Arrow head(s) at coils and transformers

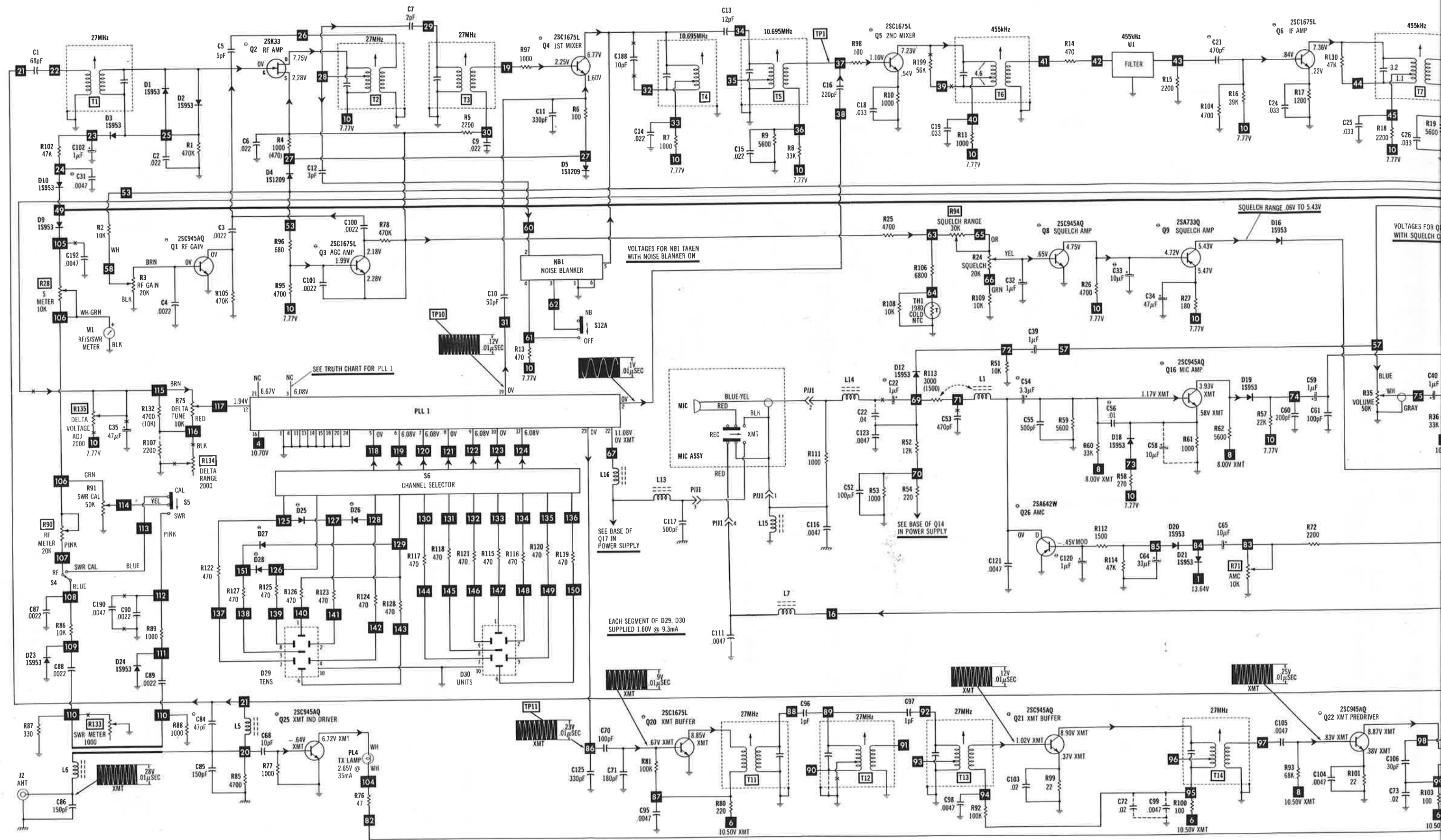
indicates accessibility of tuning slug(s).

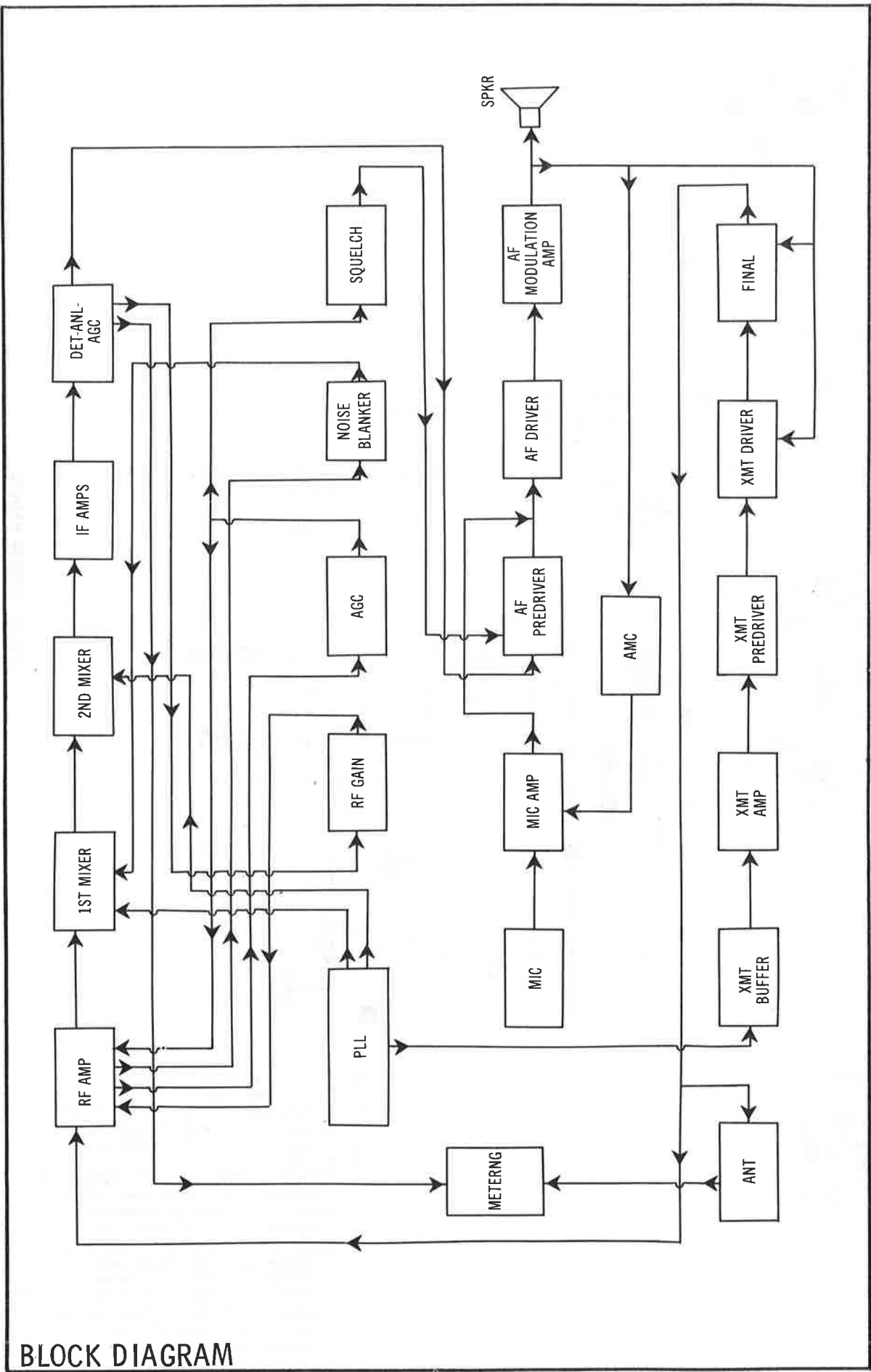
A PHOTOFAC T STANDARD NOTATION SCHEMATIC

WITH **CIRCUITRACE[®]**

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TENNA MODEL 10902





BLOCK DIAGRAM

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	BELDEN No. 9471 (5')
Shielded Hook-up Wire (spiral wrapped)	BELDEN No. 8421	3-conductor (1 shielded)	BELDEN No. 8497 (6')
(braided)	BELDEN No. 8401		BELDEN No. 9472 (7-1/2')
Speaker Cable (available in 4 colors)	BELDEN No. 8782		BELDEN No. 9466 (6')
Bonding Strap	BELDEN No. 8672	28AWG BELDEN No. 9466 (6')	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.	MFGR. PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
D1	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D2	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D3	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D4	1S1209		GE-300	PTC301	HEPRO602	REN 601	SK3463	RT-218	ECG601	TM177	WEP1062	103-131
D5	1S1209		GE-300	PTC301	HEPRO602	REN 601	SK3463	RT-218	ECG601	TM177	WEP1062	103-131
D6	RD8, 2		GE-300	PTC214	HEPRO602	REN 5072	SK3136	RT-257	ECG5072A	TM5072/**	WEP1108	103-131
D7	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D8	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D9	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D10	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D11	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D12	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D13	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D14	1S1209		GE-300	PTC301	HEPRO602	REN 601	SK3463	RT-218	ECG601	TM177	WEP1062	103-131
D15	1N4002		GE-300	PTC301	HEPRO602	REN 601	SK3463	RT-218	ECG601	TM177	WEP1062	103-131
D16	1S953		GE-300	PTC214	HEPRO602	REN 116	SK3312	RT-213	ECG116	TM116	WEP156	212-76-02
D17	1S953		GE-300	PTC214	HEPRO602	REN 116	SK3311	RT-213	ECG116	TM116	WEP156	212-76-02
D18	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D19	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D20	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D21	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D22	1N4002		GE-300	PTC214	HEPRO602	REN 116	SK3312	RT-213	ECG116	TM116	WEP156	212-76-02
D23	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D24	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D25	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D26	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D27	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D28	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
Q1	2SC945AQ		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
Q2	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
Q3	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
Q4	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
Q5	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
Q6	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
Q7	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
Q8	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
Q9	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
Q10	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
Q11	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
Q12	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
Q13	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
Q14	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
Q15	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
Q16	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
Q17	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972

PARTS LIST AND DESCRIPTION

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

SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFGR. PART No.	GENERAL ELECTRIC PART No.
Q18	2SC372		GE-61*
Q19	2SC945AQ		GE-212
Q20	2SC945		GE-212
Q21	2SC1675		GE-213
Q22	2SC372		GE-61*
Q23	2SC945AQ		GE-212
Q24	2SC945		GE-212
Q25	2SC1675		GE-213
Q26	2SC372		GE-61*
Q27	2SC945AQ		GE-212
Q28	2SC945		GE-212
Q29	2SC1675		GE-213
Q30	2SC372		GE-61*
Q31	2SC945AQ		GE-212
Q32	2SC945		GE-212
Q33	2SC1675		GE-213
Q34	2SC372		GE-61*
Q35	2SC945AQ		GE-212
Q36	2SC945		GE-212
Q37	2SC1675		GE-213
Q38	2SC372		GE-61*
Q39	2SC945AQ		GE-212
Q40	2SC945		GE-212
Q41	2SC1675		GE-213
Q42	2SC372		GE-61*
Q43	2SC945AQ		GE-212
Q44	2SC945		GE-212
Q45	2SC1675		GE-213
Q46	2SC372		GE-61*
Q47	2SC945AQ		GE-212
Q48	2SC945		GE-212
Q49	2SC1675		GE-213
Q50	2SC372		GE-61*
Q51	2SC945AQ		GE-212
Q52	2SC945		GE-212
Q53	2SC1675		GE-213
Q54	2SC372		GE-61*
Q55	2SC945AQ		GE-212
Q56	2SC945		GE-212
Q57	2SC1675		GE-213
Q58	2SC372		GE-61*
Q59	2SC945AQ		GE-212
Q60	2SC945		GE-212
Q61	2SC1675		GE-213
Q62	2SC372		GE-61*
Q63	2SC945AQ		GE-212
Q64	2SC945		GE-212
Q65	2SC1675		GE-213
Q66	2SC372		GE-61*
Q67	2SC945AQ		GE-212
Q68	2SC945		GE-212
Q69	2SC1675		GE-213
Q70	2SC372		GE-61*
Q71	2SC945AQ		GE-212
Q72	2SC945		GE-212
Q73	2SC1675		GE-213
Q74	2SC372		GE-61*
Q75	2SC945AQ		GE-212
Q76	2SC945		GE-212
Q77	2SC1675		GE-213
Q78	2SC372		GE-61*
Q79	2SC945AQ		GE-212
Q80	2SC945		GE-212
Q81	2SC1675		GE-213
Q82	2SC372		GE-61*
Q83	2SC945AQ		GE-212
Q84	2SC945		GE-212
Q85	2SC1675		GE-213
Q86	2SC372		GE-61*
Q87	2SC945AQ		GE-212
Q88	2SC945		GE-212
Q89	2SC1675		GE-213
Q90	2SC372		GE-61*
Q91	2SC945AQ		GE-212
Q92	2SC945		GE-212
Q93	2SC1675		GE-213
Q94	2SC372		GE-61*
Q95	2SC945AQ		GE-212
Q96	2SC945		GE-212
Q97	2SC1675		GE-213
Q98	2SC372		GE-61*
Q99	2SC945AQ		GE-212
Q100	2SC945		GE-212

ELECTROLYTIC CAPACITORS

ITEM No.	RATING
C22	1 50V
C32	1 25V
C33	10 16V
C34	1 50V
C35	47 16V
C36	47 16V
C37	3.3 25V
C38	1 25V
C39	1 25V
C40	1 25V
C41	47 16V
C42	47 16V
C43	33 16V
C44	1 25V
C45	47 16V
C46	220 25V
C47	1000 25V
C48	100 25V
C49	3.3 25V
C50	47 25V
C51	10 25V
C52	1 25V
C53	1 25V
C54	1 25V
C55	1 25V
C56	1 25V
C57	1 25V
C58	1 25V
C59	1 25V
C60	1 25V
C61	1 25V
C62	1 25V
C63	1 25V
C64	1 25V
C65	1 25V
C66	1 25V
C67	1 25V
C68	1 25V
C69	1 25V
C70	1 25V
C71	1 25V
C72	1 25V
C73	1 25V
C74	1 25V
C75	1 25V
C76	1 25V
C77	1 25V
C78	1 25V
C79	1 25V
C80	1 25V
C81	1 25V
C82	1 25V
C83	1 25V
C84	1 25V
C85	1 25V
C86	1 25V
C87	1 25V
C88	1 25V
C89	1 25V
C90	1 25V
C91	1 25V
C92	1 25V
C93	1 25V
C94	1 25V
C95	1 25V
C96	1 25V
C97	1 25V
C98	1 25V
C99	1 25V
C100	1 25V

* Axial replacement for radial type

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

5')
6')
7-1/2')
6')
10')
6')
5')
7-1/2')

				REPLACEMENT DATA
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TENNA MODEL 10902

* Lead configuration may vary from original.
/** Also available as exact type replacement.

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ITEM No.	RATING	REPLACEMENT DATA				
		MFGR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C22	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C32	1 25V		PC1-50	VTT1A50	QV1-11	EV-1615
C33	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C34	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C35	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C37	3.3 25V		PC50-16	VTT47D16	QV1-73	EV-1226
C38	1 25V		PC1-50	VTT1A50	QV1-25	EV-1618.1
C39	1 25V		PC1-50	VTT1A50	QV1-11	EV-1615
C40	1 25V		PC1-50	VTT1A50	QV1-11	EV-1615
C41	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C43	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C44	1 25V		PC1-50	VTT1A50	QV1-11	EV-1615
C45	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C47	220 25V		PC250-25	VTT220K25	QV1-119	EV-1340
C48	1000 25V		WBRI000-25*	VTT1000M25	QV1-185	EV-1360
C52	100 25V		PC100-25	VTT100G25	QV1-97	EV-1331
C54	3.3 25V		PC5-50	VTT3R3A50	QV1-25	EV-1618.1
C57	47 25V		PC50-25	VTT47E25	QV1-77	EV-1426.1
C58	10 25V		PC10-25	VTT10B25		EV-1422
C59	1 25V		PC1-50	VTT1A50	QV1-11	EV-1615
C62	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C63	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C64	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C65	10 25V		PC10-25	VTT10B25		EV-1422
C102	1 25V		PC1-50	VTT1A50	QV1-11	EV-1615
C119	220 25V		PC250-25	VTT220K25	QV1-119	EV-1340
	100 25V		PC100-25	VTT100G25	QV1-97	EV-1331
C120	1 25V		PC1-50	VTT1A50	QV1-11	EV-1615
C191	470 25V		WBRS000-25*	VTT470M25	QV1-157	EV-1451
C197	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C198	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325

* Axial replacement for radial device.

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

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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	68 NPO 10%		DTZ-68	NPO68	CNO468		10TCC-Q68
C2	.022				M192P2239R8		192P2239R8
C3	.0022 10%				GP222		10TS-D22
C4	.0022 10%				GP222		10TS-D22
C5	5				*		10TCC-V50
C6	.0022 10%				GP222		10TS-D22
C7	2 NPO		DTZ-2R2	NPO2P2	CNO522		10TCC-V22
C8	.0022 10%				GP222		10TS-D22
C9	.022				M192P2239R8		192P2239R8
C10	50 NPO 5%		DTZ-47	NPO47	CNO447		10TCC-Q47
C11	330 10%		DD-331	GP330	GP333		10TS-T33
C12	3 NPO		DTZ-3R3	NPO3P3	CNO533		10TCC-V33
C13	12 NPO				CNO412		10TCC-Q12
C14	.022				M192P2239R8		192P2239R8
C15	.022				M192P2239R8		192P2239R8
C16	220 10%		DTZ-220				10TCC-T22
C17	.02		UK50-223		MAG5012		
C18	.033 50V 10%			DPMS6S33	M192P3339R8	QFT2-149	1FT-S33
C19	.033 50V 10%			DPMS6S33	M192P3339R8	QFT2-149	1FT-S33
C20	.02		UK50-223		MAG5012		
C21	470		DD-471	GP470	GP347		10TS-T47
C23	.033 50V 10%			DPMS6S33	M192P3339R8	QFT2-149	1FT-S33
C24	.033 50V 10%			DPMS6S33	M192P3339R8	QFT2-149	1FT-S33
C25	.033 50V 10%			DPMS6S33	M192P3339R8	QFT2-149	1FT-S33
C26	.033 50V 10%			DPMS6S33	M192P3339R8	QFT2-149	1FT-S33
C27	.033 50V 10%			DPMS6S33	M192P3339R8	QFT2-149	1FT-S33
C28	.033 50V 10%			DPMS6S33	M192P3339R8	QFT2-149	1FT-S33
C29	100 NPO 10%		DTZ-100	NPO100	CNO310		10TCC-T10
C30	.001		DD-102		GP210		10TS-D10
C31	.0047 50V 10%			WMF-1047	M192P4729R8	QFT2-63	1FT-D47
C42	.01 100V 10%			WMF-1S1	M192P1039R8	QFT2-91	1FT-S10
C46	.04 50V				GP140		56A-S40
	.1 50V		CK-104		MAG5001		
C49	.033 50V 10%			DPMS6S33	M192P3339R8	QFT2-149	1FT-S33
C50	.033 50V 10%			DPMS6S33	M192P3339R8	QFT2-149	1FT-S33
C51	.02		UK50-223		MAG5012		
C53	470		DD-471	GP470	GP347		10TS-T47
C55	500 10%		DD-501	GP500	GP350		10TS-T50
C56	.01 100V 10%			WMF-1S1	M192P1039R8	QFT2-91	1FT-S10
C60	200 10%		DTZ-200				10TCC-T20
C61	100 NPO 10%		DTZ-100	NPO100	CNO310		10TCC-T10
C66	.05		UK50-503		MAG5015		
C67	.047			DPMS2S47	EW1A147	QF1-171	1PB-S47
C68	10		DTZ-10	NPO10	CNO410		10TCC-Q10
C69	.02		UK50-223		MAG5012		
C70	100 NPO 10%		DTZ-100	NPO100	CNO310		10TCC-T10
C71	180		DTZ-180				10TCC-T18
C72	.02		UK50-223		MAG5012		
C73	.02		UK50-223		GP210		
C74	.001		DD-102		MAG5012		
C75	.047			DPMS2S47	EW1A147	QF1-171	10TS-D10
C76	.02		UK50-223		MAG5012		1PB-S47
C77	.02		UK50-223		MAG5012		
C78	.02		UK50-223		MAG5012		
C79	300 5%		DD-301	GP300	GP330		10TS-T30
C80	.047			DPMS2S47	EW1A147	QF1-171	1PB-S47
C81	120 10%		DTZ-120		CNO312		10TCC-T12
C82	5		DTZ-4R7	NPO4P7	CNO547		10TCC-V47
C83	120 10%		DTZ-120		CNO312		10TCC-T12
C84	47 N750		DTN-47	N47	CN7447		10TCU-Q47
C85	150 5%		DTZ-150		CNO315		10TCC-T15
C86	150 10%		DTZ-150		CNO315		10TCC-T15
C87	.0022 10%				GP222		10TS-D22
	.022				M192P2239R8		192P2239R8
C88	.0022 10%				GP222		10TS-D22
	.022				M192P2239R8		192P2239R8
C89	.0022 10%				GP222		10TS-D22
	.022				M192P2239R8		192P2239R8
C90	.0022 10%				GP222		10TS-D22
	.022				M192P2239R8		192P2239R8
C91	.0047 10%				M192P4729R8		192P4729R8
C92	.0047 10%				M192P4729R8		192P4729R8
C93	.0047 10%				M192P4729R8		192P4729R8
C94	.0047 10%				M192P4729R8		192P4729R8
C95	.0047 10%				M192P4729R8		192P4729R8
C96	1 NPO				CNO510		10TCC-V10
C97	1 NPO				CNO510		10TCC-V10
C98	.0047 10%				M192P4729R8		192P4729R8
C99	.0047				M192P4729R8		192P4729R8
C100	.0022 10%				GP222		10TS-D22
	.022				M192P2239R8		192P2239R8
C101	.0022 10%				GP222		10TS-D22
	.022				M192P2239R8		192P2239R8
C103	.02		UK50-223		MAG5012		
C104	.0047 10%				M192P4729R8		192P4729R8
C105	.0047 10%				M192P4729R8		192P4729R8
C106	30 NPO 10%		DTZ-33	NPO33	CNO433		10TCC-Q33
C107	30 NPO 10%		DTZ-33	NPO33	CNO433		10TCC-Q33
C108	.0047 10%				M192P4729R8		192P4729R8
C109	.0047 10%				M192P4729R8		192P4729R8
C111	.0047 10%				M192P4729R8		192P4729R8
C112	.0047 10%				M192P4729R8		192P4729R8
C113	.0047 10%				M192P4729R8		192P4729R8
C114	.0047 10%				M192P4729R8		192P4729R8
	.01				GP110		56A-S10
C115	.0047 10%		DD-1032	GP10000	M192P4729R8		192P4729R8
	.01		DD-1032	GP10000	GP110		56A-S10
C116	.0047 10%				M192P4729R8		192P4729R8
C117	500 10%		DD-501	GP500	GP350		10TS-T50

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
C121	.0047 10%				M192P4729R8	192P4729R8
C123	.0047 10%				M192P4729R8	192P4729R8
C124	.0022				GP222	10TS-D22
C125	330		DD-331	GP330	GP333	10TS-T33
C126	.001		DD-102		GP210	10TS-D10
C127	.0047 10%				M192P4729R8	192P4729R8
C132	.0047 10%				M192P4729R8	192P4729R8
C188	10 NPO		DTZ-10	NP010	CN0410	10TCC-Q10
C190	.0047 10%				M192P4729R8	192P4729R8
C192	.0047				M192P4729R8	192P4729R8
C195	120 10%		DTZ-120		CN0312	10TCC-T12
C199	3 NPO		DTZ-3R3	NP03P3	CN0533	10TCC-V33

*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			
			MFR. PART No.	CENTRALAB PART No.	MALLORY PART No.	TRW PART No.
R3	RF Gain	20K	(18)			
R35	Volume/Power Switch	50K				
R24	Squelch	20K	(19)			
R91	SWR CAL/Switch	50K				
R28	S Meter	10K				X260R103B (2)
R71	AMC	10K				X260R103B (2)
R75	Delta Tune	20K				
R90	RF Meter	20K		T-20K (2)	MTC24L1 (2)	X201R253B (2)
R94	Squelch Range	30K				X260R503B (2)
R133	SWR Meter	1000				X260R102B (2)
R134	Delta Range	2000				X260R252B (2)
R135	Delta Voltage Adjust	2000				X260R252B (2)

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

(18) Includes R3, R35 and S3.

(19) Includes R24, R91 and S4.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFR. PART No.	WORKMAN PART No.			MFR. PART No.	WORKMAN PART No.
TH1	1.98K Cold NTC		FR1014				

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	Pi Filter				
L2	RF Choke				
L3	RF Choke				
L4	Loading Final (27MHz)				
L5	RF Choke				
L6	RF Choke				
L7	RF Choke				
L8	RF Choke				
L9	RF Choke				
L10	RF Choke				
L11	RF Choke				
L12	RF Choke				
L13	RF Choke				
L14	RF Choke				
L15	RF Choke				
L16	RF Choke				
T1	Rec RF (27MHz)		L4516		
T2	RF Amp (27MHz)		L4517		
T3	RF Amp (27MHz)		L4518		
T4	Mixer (10.695MHz)		L4519		
T5	Mixer (10.695MHz)		L4520		
T6	IF Mixer (455kHz)		L4521		
T7	IF Amp (455kHz)		L4522		
T8	IF Amp (455kHz)		L4523		
T11	XMT Buffer (27MHz)		L4406		
T12	XMT Buffer (27MHz)		L4406		
T13	XMT Buffer (27MHz)		L4406		
T14	XMT Buffer (27MHz)		L4406		
T15	Predriver (27MHz)				
T16	XMT Driver (27MHz)				

Tenna Model 10902

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.	
CH	1.5A	.1	1.4mH	4333(1)			(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.	
T9	1	.5CT		4431 (1)			(1) Number on unit.

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T10	50	1 2 8 4.5	4445 (1)			(1) Number on unit.

SPEAKER

ITEM No.	TYPE		REPLACEMENT DATA		NOTES
			MFGR. PART No.	QUAM PART No.	
SP1	2" X 6" PM	16 Ohms		26A07Z16	

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 Quick-Acting			AGC2	HDJ	312002	150145	F62-2

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		18-032	18-034	18-010	18-092	2	1	3	4	NC	1

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
D29 D30 M1 S2 S3 S5 S6 S12 U1	LED LED Meter Switch Switch Switch Switch Switch Filter		Channel Readout, TENS (1.60V @ 9.3mA) Channel Readout, UNITS (1.60V @ 9.3mA) RF/S/SWR PA/CB Power On/Off (Part of Volume Control) SWR/CAL Channel Selector Off/ANL-NB IF (455kHz)