



PHOTOFACT[®] with CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index

NOTE

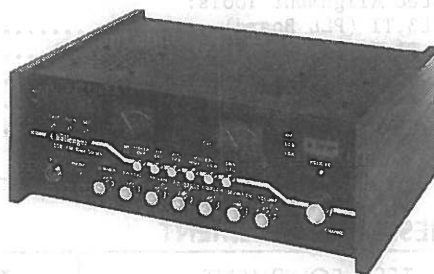
Repair or adjustment of transmitter circuits must be under supervision of a person with first-or second-class radiotelephone license.

(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 1400

MANUFACTURER'S SPECIFICATIONS

GENERAL

- Phase Locked Loop Digital Synthesizer
- Frequency Range 26.965 MHz to 27.405 MHz
- Supply Voltage AC 117V $\pm$ 15% 60Hz
- Dimensions 5-7/8"(H)x15-7/8"(W)x11-3/8"(D)
- Weight 19 pounds

Transmitter: SSB Section

- Output Power: 12 watts P.E.P. at 117V AC
- Type of Emission: A3J
- Carrier Suppression -40dB
- Spurious Harmonic Suppression: Better than -60dB
- Output Impedance: 50 ohms unbalanced
- Frequency Stability: $\pm$ 0.003% at -30° to +50°C

Transmitter: AM Section

- Output Power: 4 watts at 117V AC
- Type of Emission: 6A3
- Modulation Capacity: 100%
- Output impedance: 50 ohms
- Frequency Stability: $\pm$ 0.003% at -30° to +50°C
- Modulation Distortion: Less than 5% at 80% mod. at 1 KHz

TRS CHALLENGER MODEL 1400

Courtesy of the Manufacturer

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:
 L1,L2,L3,T1 (PLL Board).....9440
 L1,L14,T1,T2,T4 thru T10 (Main Board).....9440
 L2,L5,L10,T3.....8728,8728A,9304
 CV1,CV2 (PLL Board).....5000,8276,9089
 CV1,CV2 (Main Board).....5000,8276,9089

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of frequency counter to TP1 (IC1 Pin 16 on PLL Board).	Ch. 19	CV2 (On PLL Board)	Adjust for 10.240MHz.
Input of DC meter to TP2 (Junction of R20 and R22 on PLL Board).	Ch. 1	L2 (On PLL Board)	Adjust for 2.10 Volts. Check for approximately 4.30 volts on channel 40.
Input of oscilloscope to TP10 (T1 secondary on PLL Board).	Ch. 19	L3,T1 (On PLL Board)	Adjust for maximum RF (.2 volts P-P typical). (See Figure 1.)
Input of frequency counter to TP10 (T1 secondary on PLL Board).	Ch. 1 AM Clarifier Midrange	L1 (On PLL Board)	Adjust for 17.180MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to TP3 (IC2 Pin 9 on PLL Board).	Ch. 1		Check for .910MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to TP11 (Q10 emitter on Main Board).	Ch. 19 USB	CV2 (On Main Board)	Adjust for 9.782MHz.
Input of frequency counter to TP11 (Q10 emitter on Main Board).	Ch. 19 LSB	CV1 (On Main Board)	Adjust for 9.785MHz.
Input of frequency counter to antenna input.	Ch. 1 AM XMT	CV1 (On PLL Board)	Adjust for 26.965MHz.

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: Squelch MINIMUM, RF Gain Maximum, Clarifier Midrange, Filter High.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator to TP12 (XF1 input). 9.785MHz, 1000Hz @ 30% modulation.	Ch. 19	T9, T8	Adjust for maximum audio output.
Output of signal generator to antenna input. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19	T7, T6, T5, T4	Adjust for maximum audio output. Readjust T8 and T9 for maximum.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.
Preset control as follows, unless otherwise noted: Squelch MINIMUM, RF Gain Maximum,
Clarifier Midrange, Filter High.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
No signal input. Input of DC meter to TP13 (Q21 and Q22 emitter).	Ch. 19	VR13	AGC Adjust for 1.80 volts.
Output of signal generator to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 1000uV.	Ch. 19 Squelch Maximum	VR10	SQUELCH RANGE Adjust so squelch just breaks.
Output of signal generator to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19	VR9	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. Inject a two-tone, 10mV audio signal at mic input.	Ch. 19 USB XMT	T10, CV3, T1, L1, L14, T2, T3 (On Main Board)	Adjust for maximum RF output.
Input of RF wattmeter to antenna input.	Ch. 19 AM XMT	L2, L5 (On Main Board)	Adjust for 4.0 watts maximum RF output.
Input of spectrum analyzer or harmonic meter to antenna input.	Ch. 19 XMT	L10	Adjust for MINIMUM at 54MHz (2nd harmonic).

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
Connect a 0-500mA meter at TP3 (On Main Board), no modulation.	Ch. 19 USB XMT	VR6	FINAL BIAS Adjust for 150mA idle current.
Connect a 0-500mA meter at TP14, no modulation.	Ch. 19 USB XMT	VR5	DRIVER BIAS Adjust for 150mA idle current.
Input of RF wattmeter to antenna output, no modulation.	Ch. 19 USB XMT	VR3, VR4	CARRIER BALANCE Adjust for MINIMUM RF output.

TRANSMITTER ADJUSTMENTS (Continued)

TEST EQUIPMENT	TRANSCIEVER	ADJUST	REMARKS
Input of RF wattmeter to antenna input. Inject a two-tone 10mV audio signal at mic input.	Ch. 19 USB XMT	VR2	SSB MIC GAIN Set VR8 to maximum. Adjust for 12 watts PEP RF output maximum.
Input of RF wattmeter to antenna input. Inject a two-tone 10mV audio signal at mic input.	Ch. 19 USB XMT	VR8	ALC Adjust for 10.5 watts PEP RF output maximum.
Input of oscilloscope or modulation meter to antenna input. Inject a 1000Hz, 30mV audio signal at mic input.	Ch. 19 XMT	VR1	AM MIC GAIN Adjust for 100% modulation maximum. (See Figure 2.)
Input of RF wattmeter to antenna input.	Ch. 19 XMT	VR15	AM POWER Adjust for 4.0 watts RF output maximum.
Input of RF wattmeter to antenna input.	Ch. 19 XMT	VR7	RF POWER METER At 4.0 watts RF output adjust for 4 on RF POWER scale on meter.

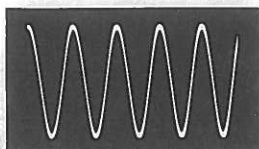


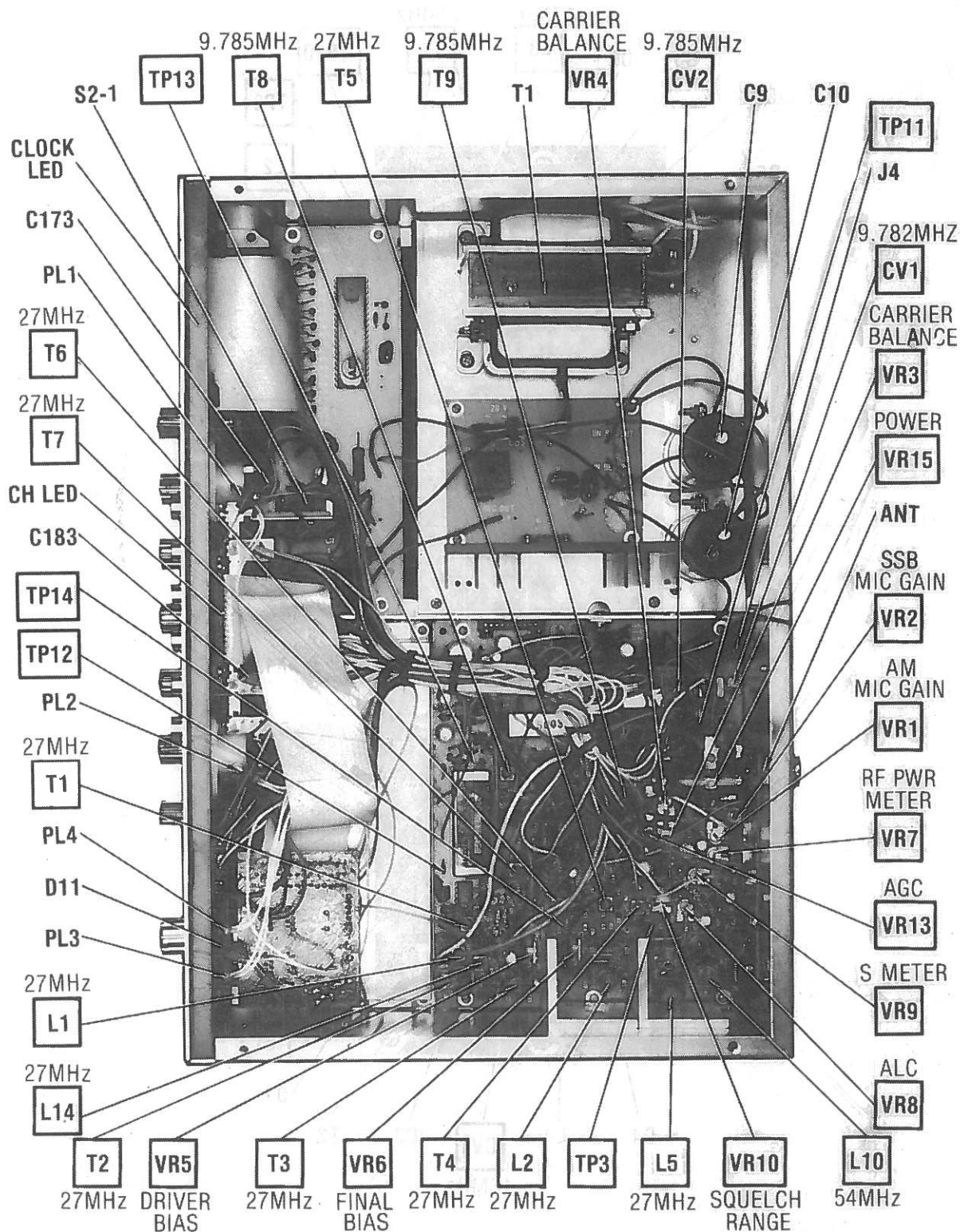
FIGURE 1



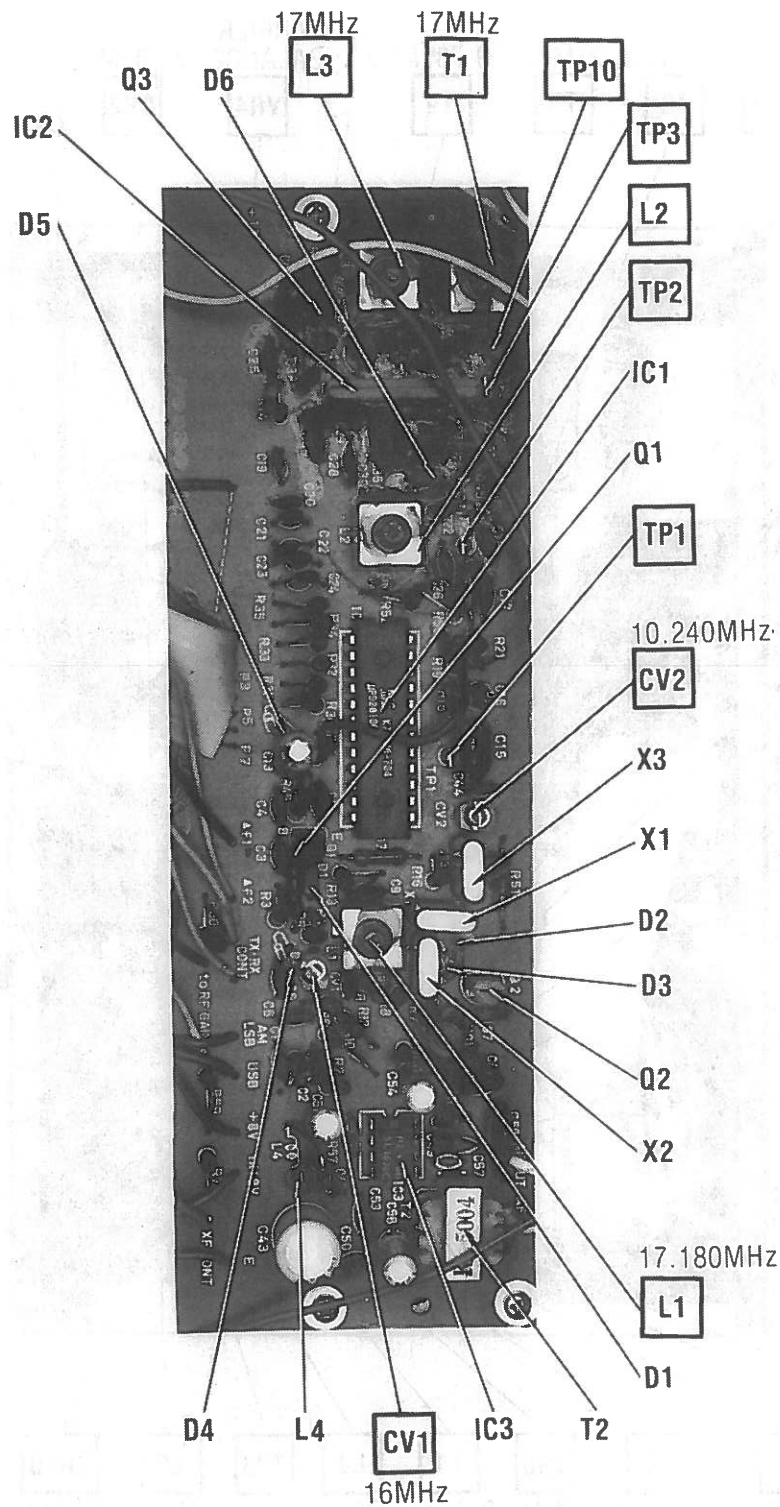
FIGURE 2

TRUTH CHART

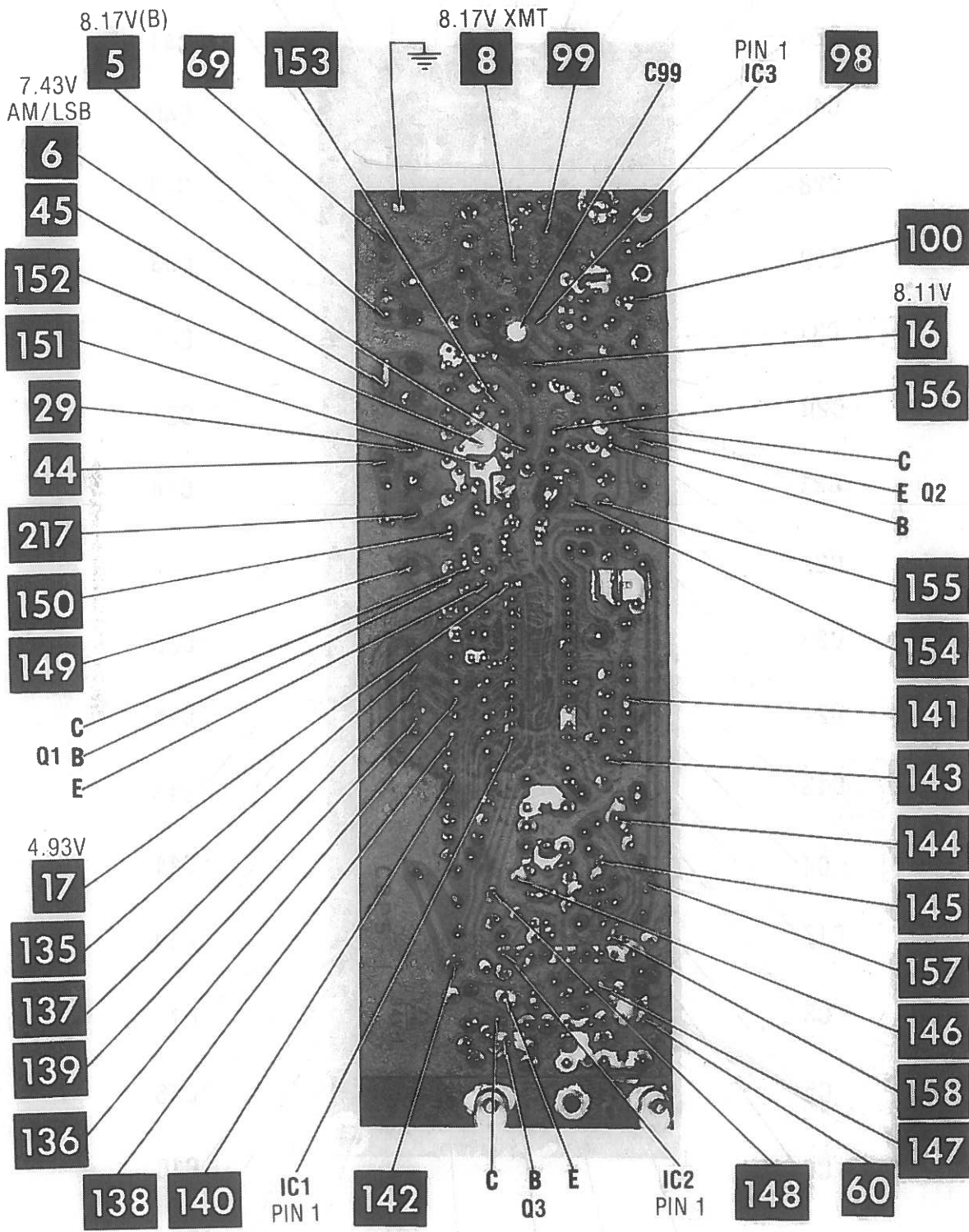
CHANNEL	Logic 1 = 4.79 Volts Logic 0 = .02 Volts CHANNEL INPUT CODES						AM/LSB RECEIVE AND TRANSMIT VCO OUTPUT IN MHz AT TP10	USB RECEIVE AND TRANSMIT VCO OUTPUT IN MHz AT TP10	AM/USB/LSB DIVIDER INPUT IN MHz AT TP3	CHANNEL	Logic 1 = 4.79 Volts Logic 0 = .02 Volts CHANNEL INPUT CODES						AM/LSB RECEIVE AND TRANSMIT VCO OUTPUT IN MHz AT TP10	USB RECEIVE AND TRANSMIT VCO OUTPUT IN MHz AT TP10	AM/USB/LSB DIVIDER INPUT IN MHz AT TP3
	IC1 PINS										IC1 PINS								
	6	5	4	3	2	1					6	5	4	3	2	1			
1	0	0	0	0	0	1	17.180	17.183	.910	21	1	0	0	0	0	1	17.430	17.433	1.160
2	0	0	0	0	0	1	17.190	17.193	.920	22	1	0	0	0	1	0	17.440	17.443	1.170
3	0	0	0	0	0	1	17.200	17.203	.930	23	1	0	0	0	1	1	17.470	17.473	1.200
4	0	0	0	0	1	0	17.220	17.223	.950	24	1	0	0	1	0	0	17.450	17.453	1.180
5	0	0	0	0	1	0	17.230	17.233	.960	25	1	0	0	1	0	1	17.460	17.463	1.190
6	0	0	0	1	1	0	17.240	17.243	.970	26	1	0	0	1	1	0	17.480	17.483	1.210
7	0	0	0	1	1	1	17.250	17.253	.980	27	1	0	0	1	1	1	17.490	17.493	1.220
8	0	0	1	0	0	0	17.270	17.273	1.000	28	1	0	1	0	0	0	17.500	17.503	1.230
9	0	0	1	0	0	1	17.280	17.283	1.010	29	1	0	1	0	0	1	17.510	17.513	1.240
10	0	1	0	0	0	0	17.290	17.293	1.020	30	1	1	0	0	0	0	17.520	17.523	1.250
11	0	1	0	0	0	1	17.300	17.303	1.030	31	1	1	0	0	0	1	17.530	17.533	1.260
12	0	1	0	0	1	0	17.320	17.323	1.050	32	1	1	0	0	1	0	17.540	17.543	1.270
13	0	1	0	0	1	1	17.330	17.333	1.060	33	1	1	0	0	1	1	17.550	17.553	1.280
14	0	1	0	1	0	0	17.340	17.343	1.070	34	1	1	0	1	0	0	17.560	17.563	1.290
15	0	1	0	1	0	1	17.350	17.353	1.080	35	1	1	0	1	0	1	17.570	17.573	1.300
16	0	1	0	1	1	0	17.370	17.373	1.100	36	1	1	0	1	1	0	17.580	17.583	1.310
17	0	1	0	1	1	1	17.380	17.383	1.110	37	1	1	0	1	1	1	17.590	17.593	1.320
18	0	1	1	0	0	0	17.390	17.393	1.120	38	1	1	1	0	0	0	17.600	17.603	1.330
19	0	1	1	0	0	1	17.400	17.403	1.130	39	1	1	1	0	0	1	17.610	17.613	1.340
20	1	0	0	0	0	0	17.420	17.423	1.150	40	0	0	0	0	0	0	17.620	17.623	1.350



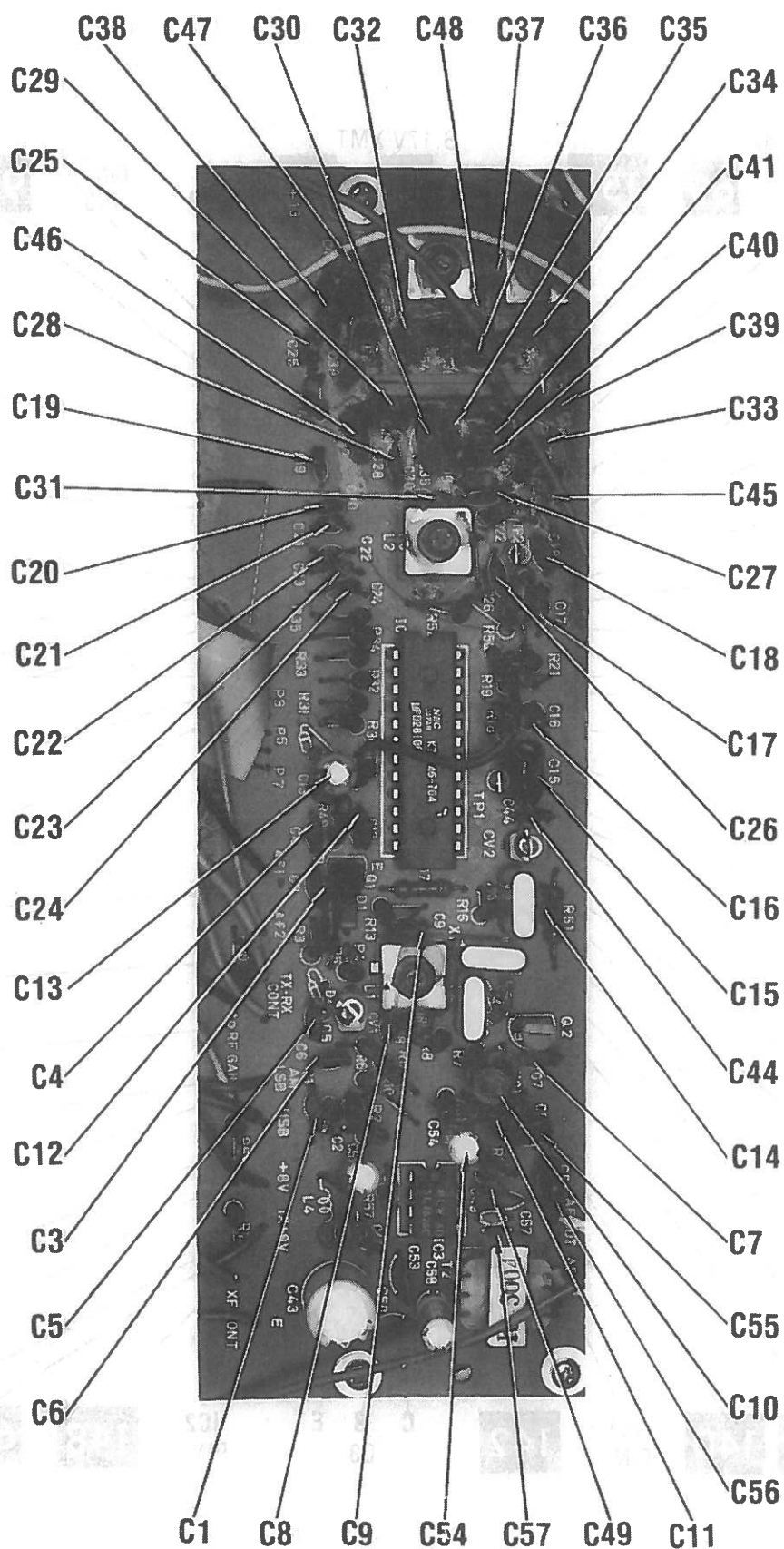
CHASSIS-TOP



PLL BOARD

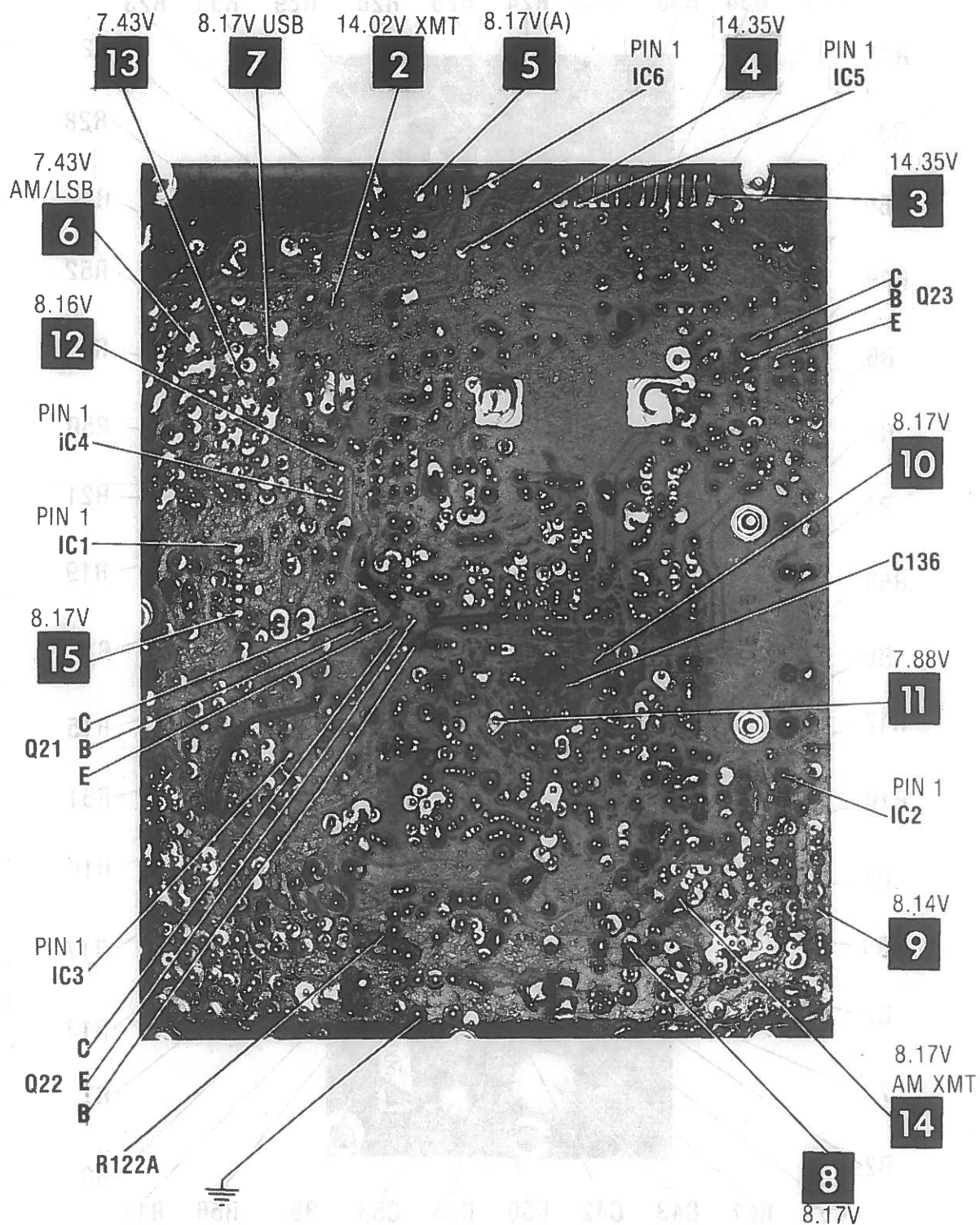


PLL BOARD

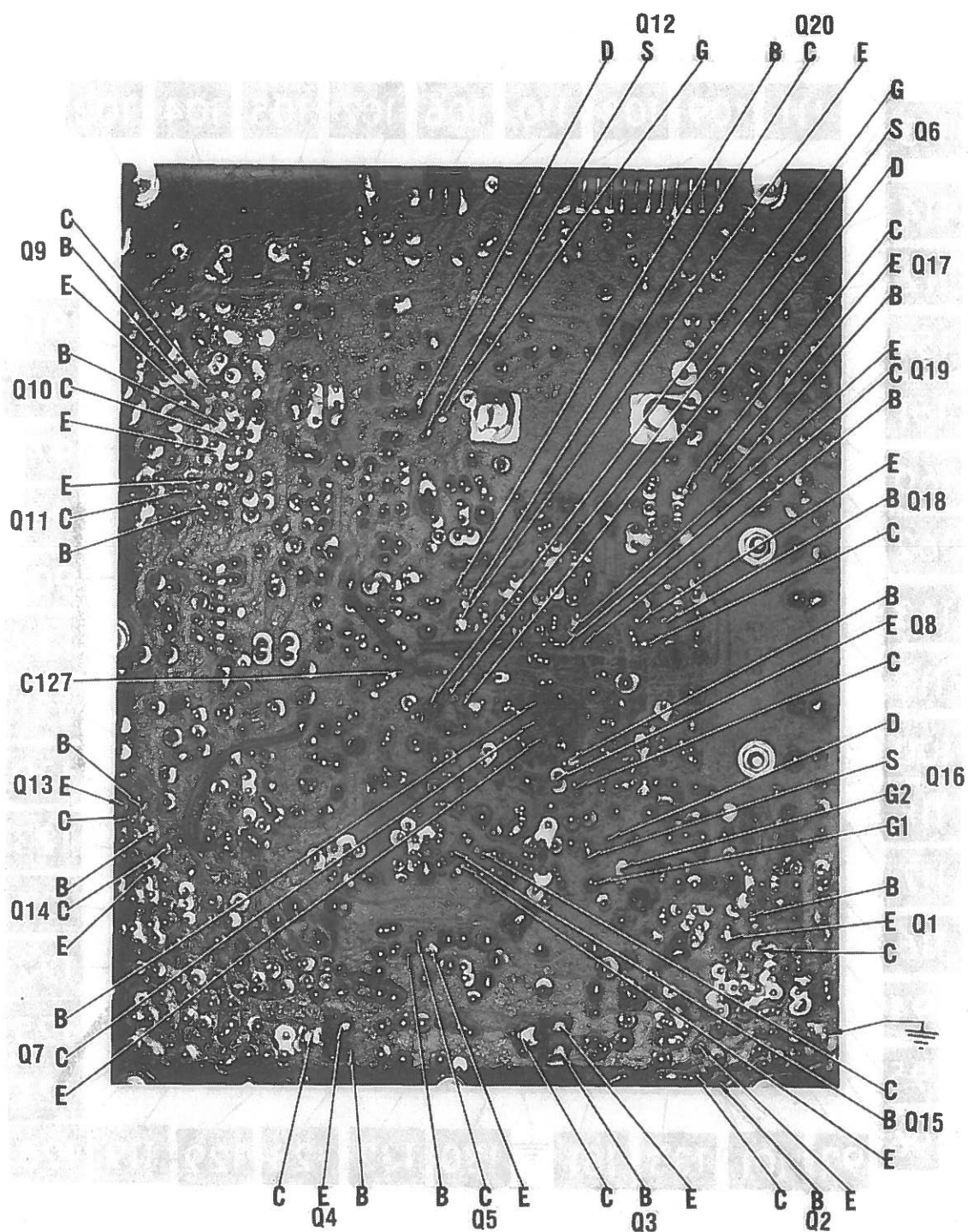


PLL BOARD

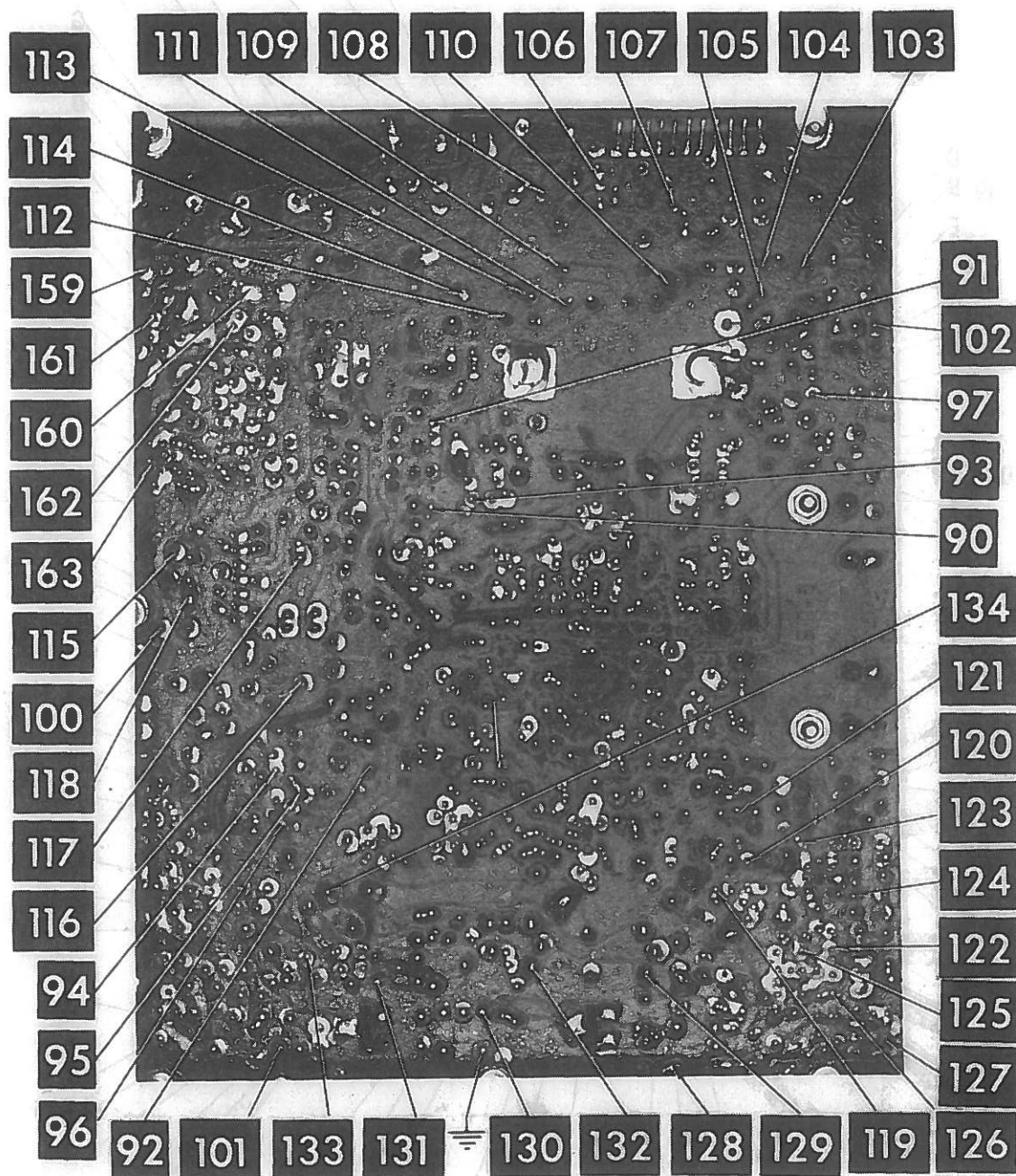




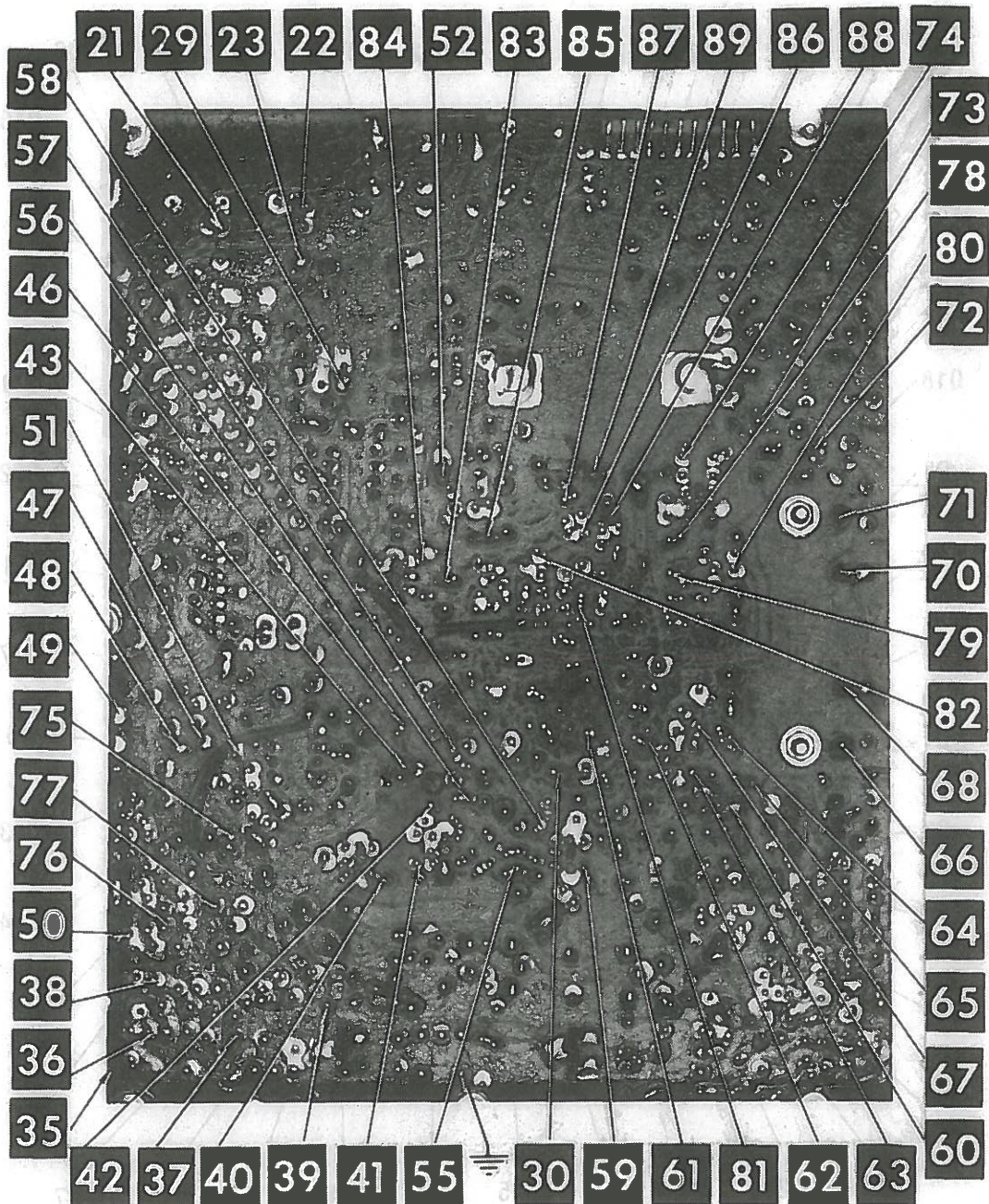
MAIN BOARD



MA IN BOARD

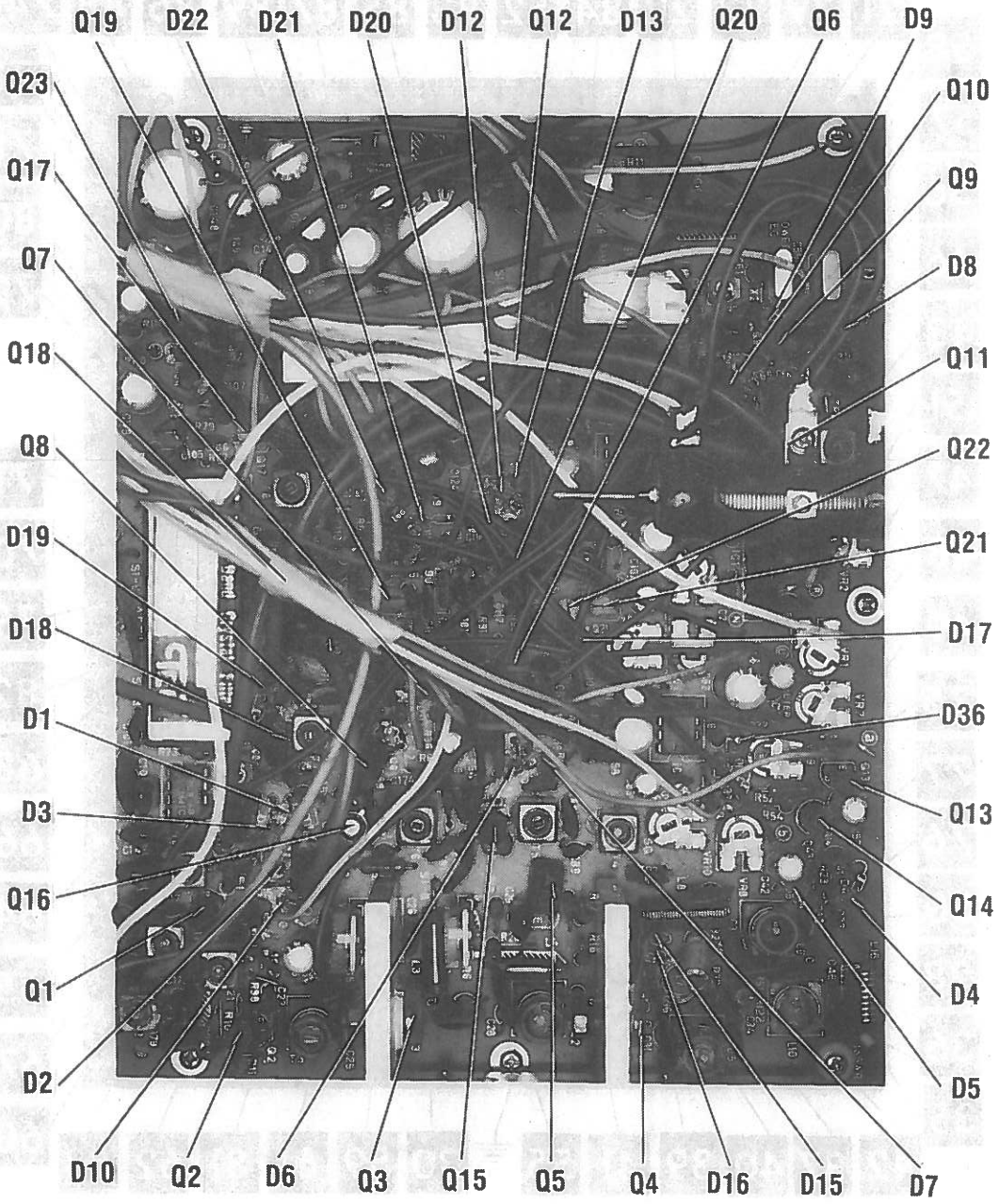


MAIN BOARD

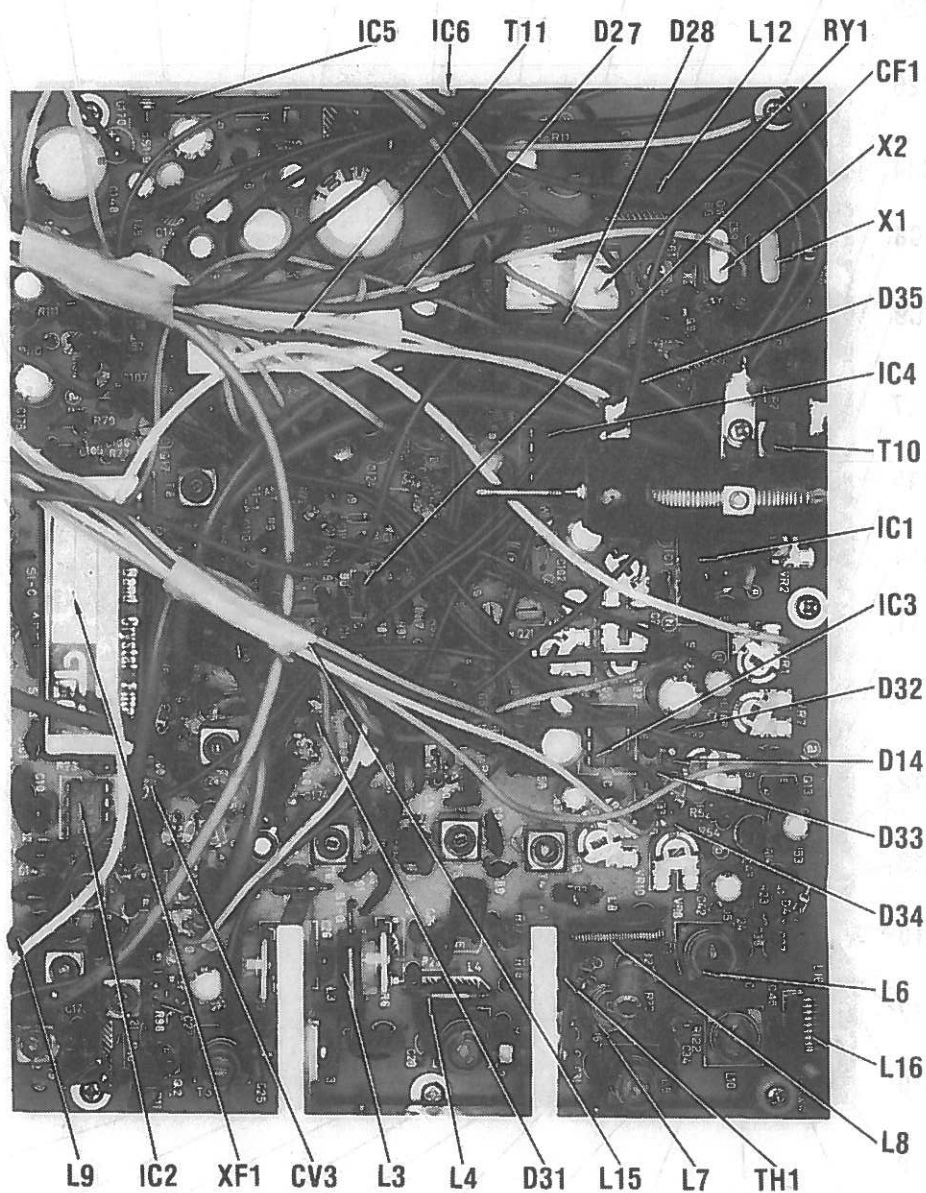


TRS CHALLENGER MODEL 1400

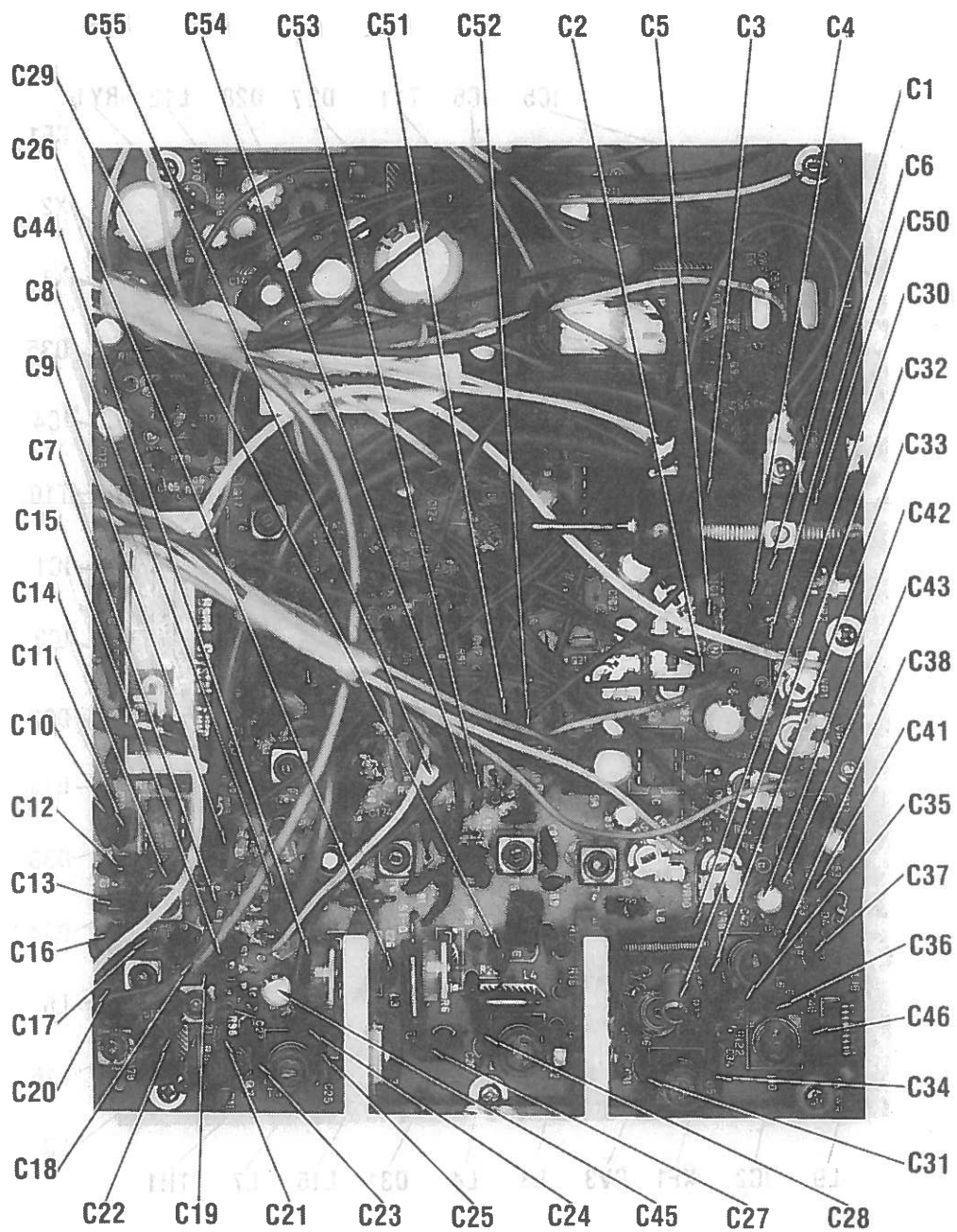
MAIN BOARD



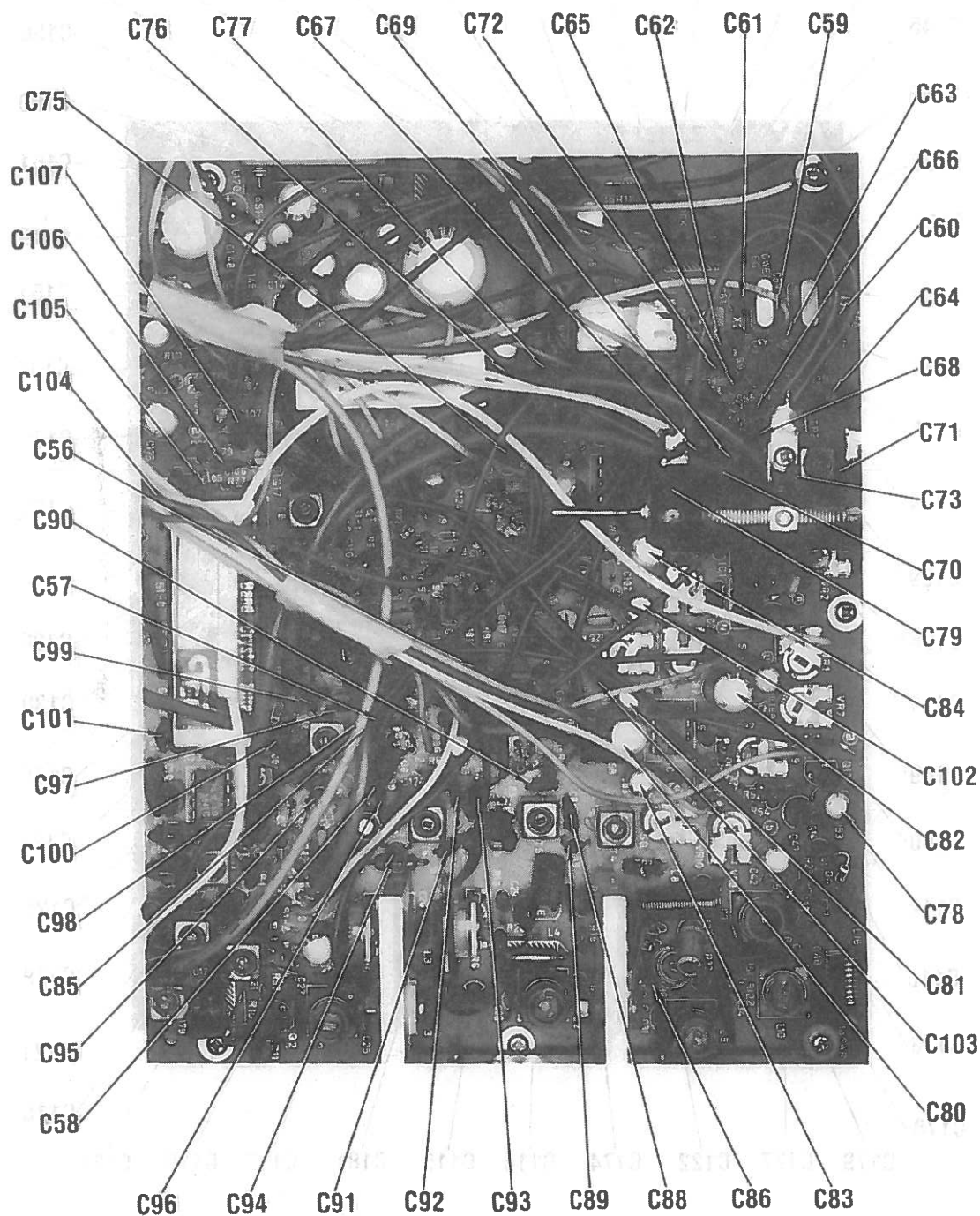
MAIN BOARD



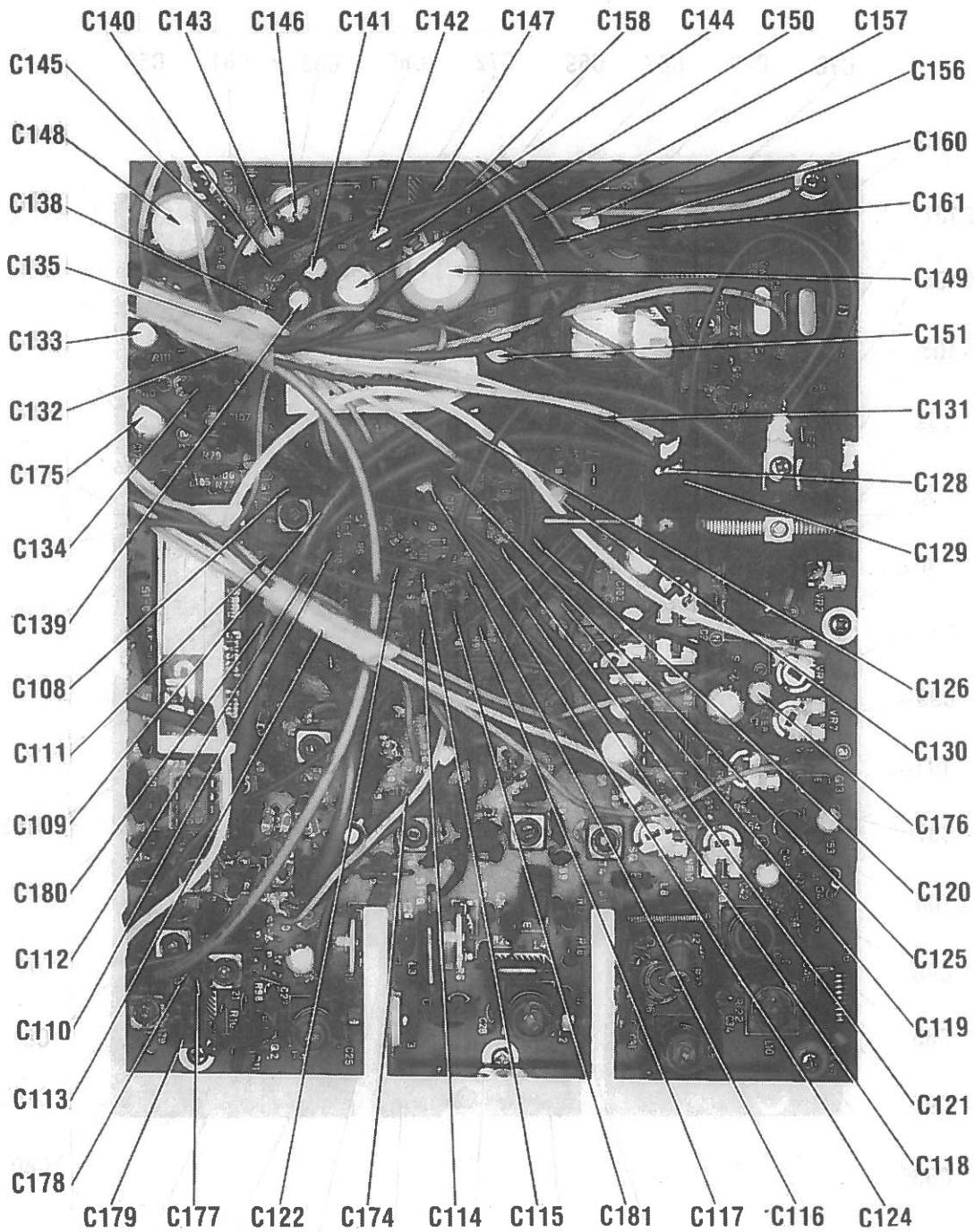
MAIN BOARD



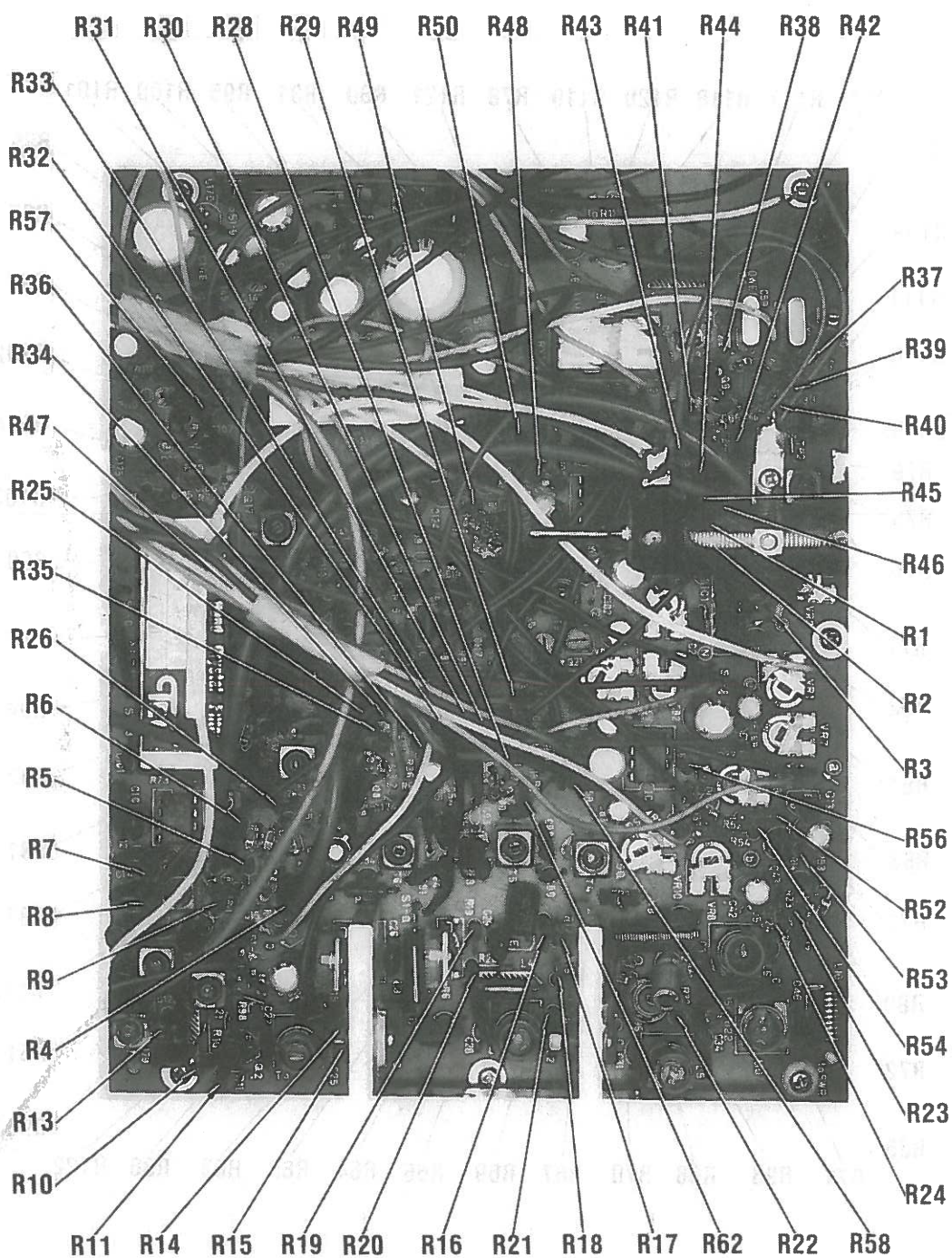
MAIN BOARD



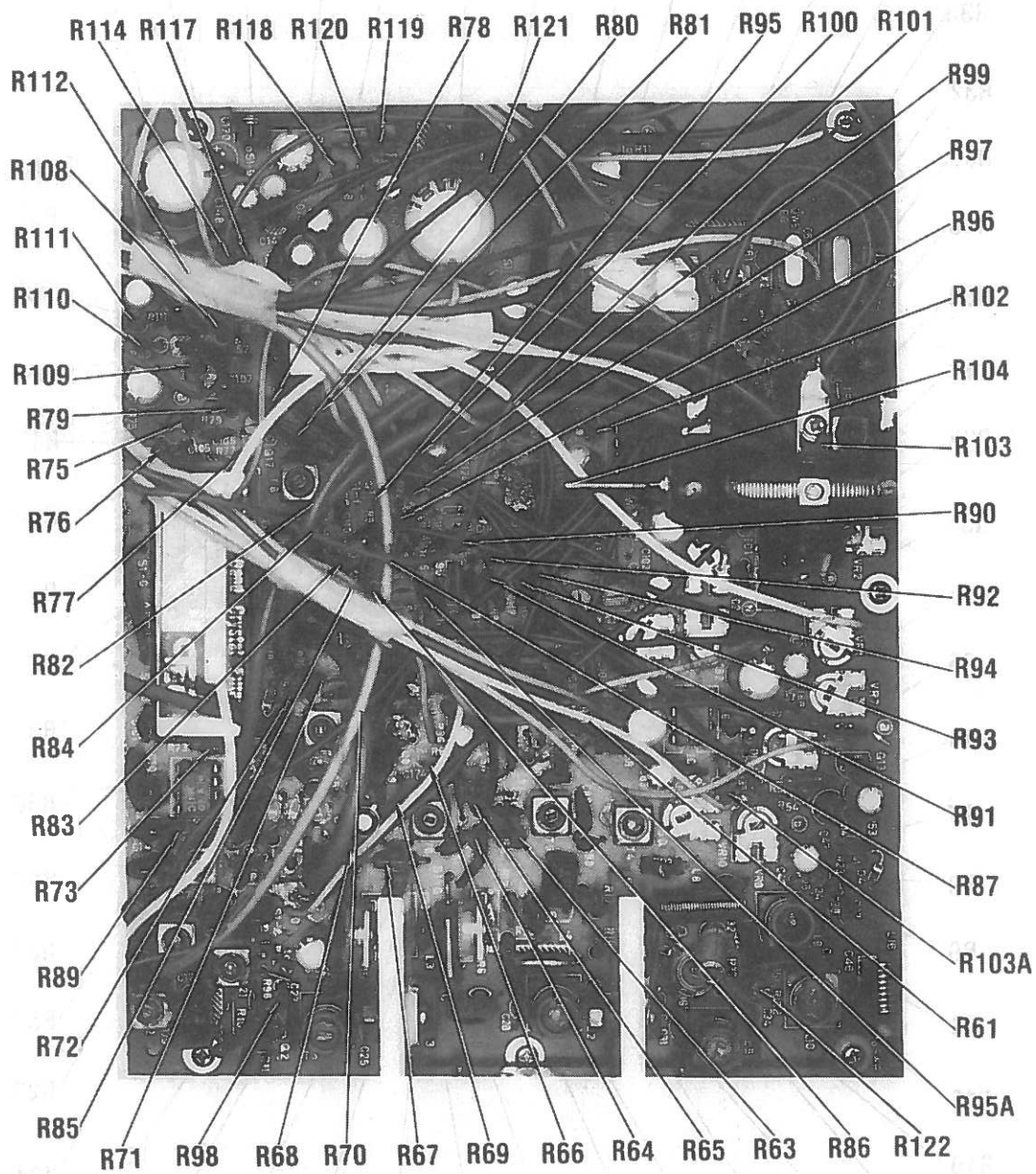
MAIN BOARD



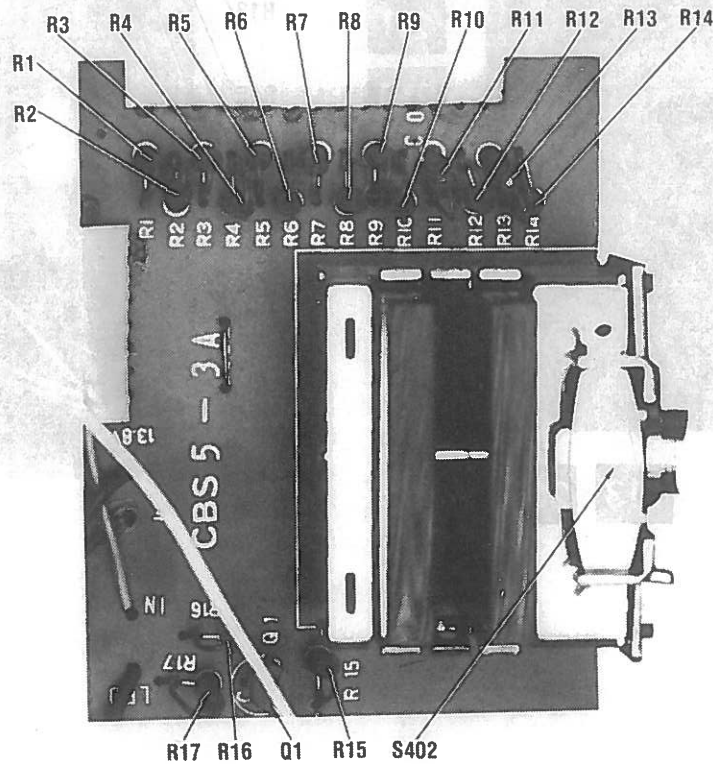
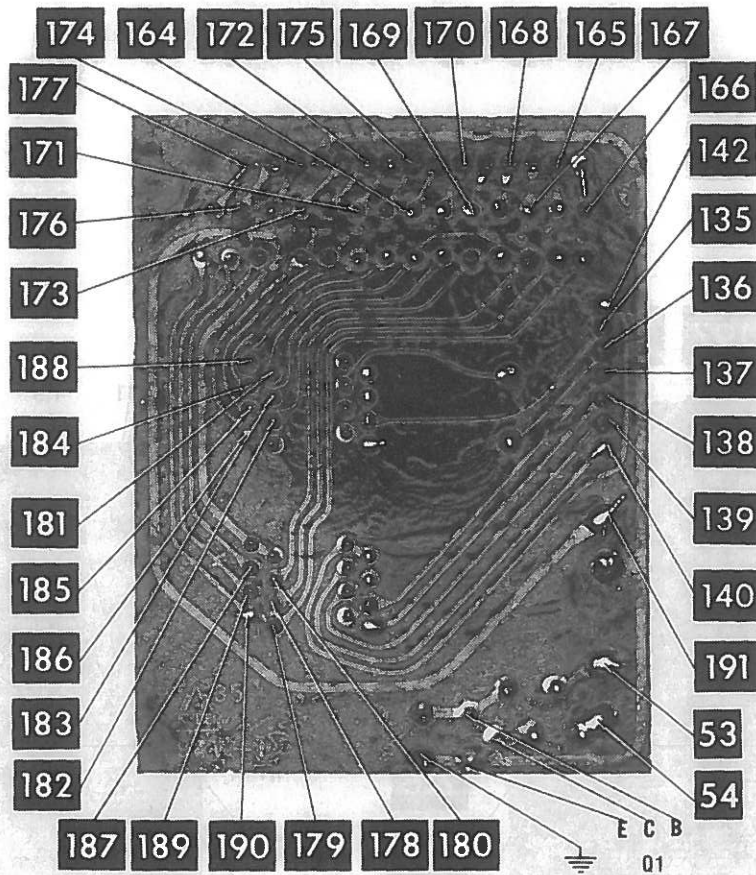
MAIN BOARD



MAIN BOARD

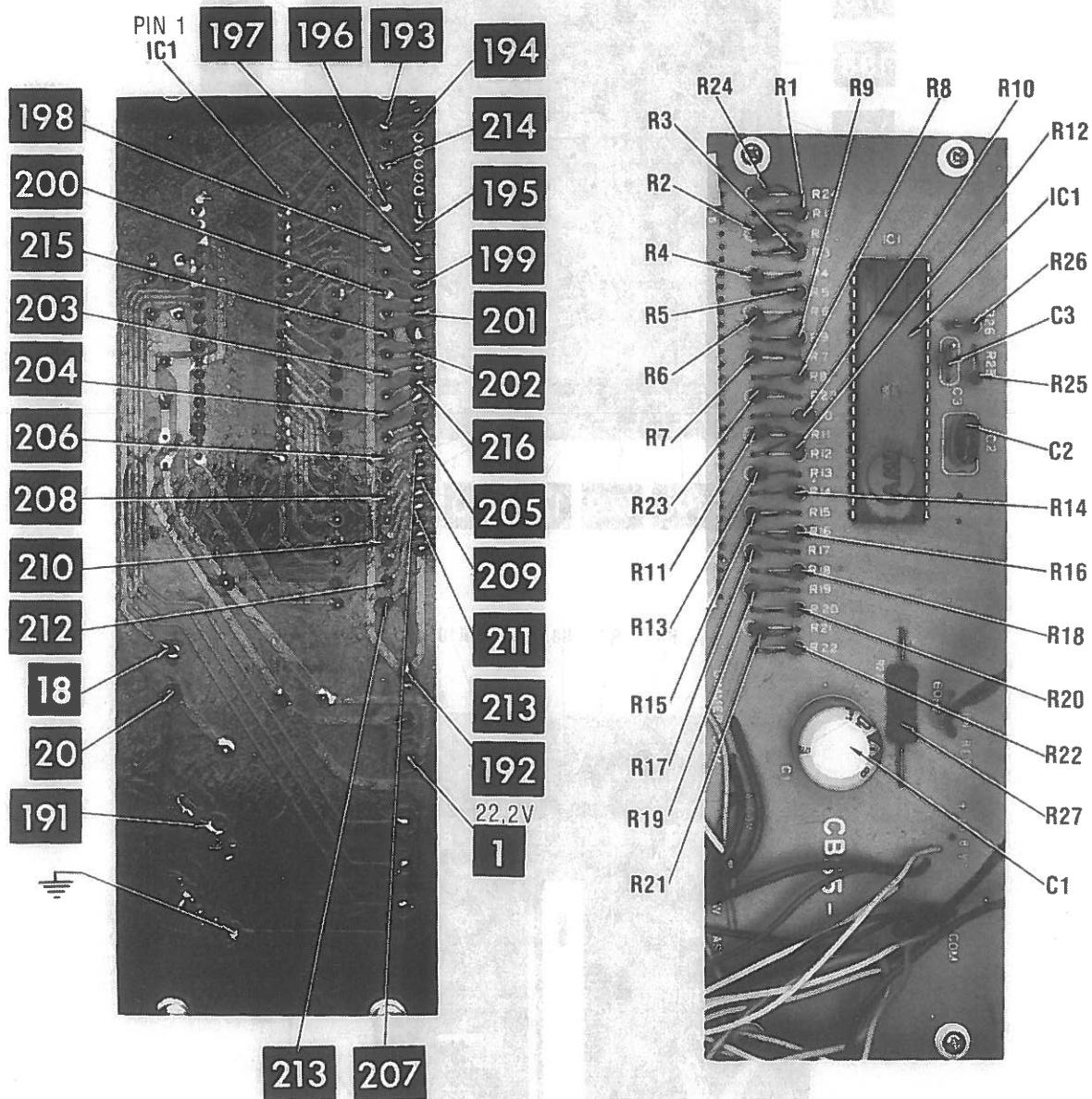


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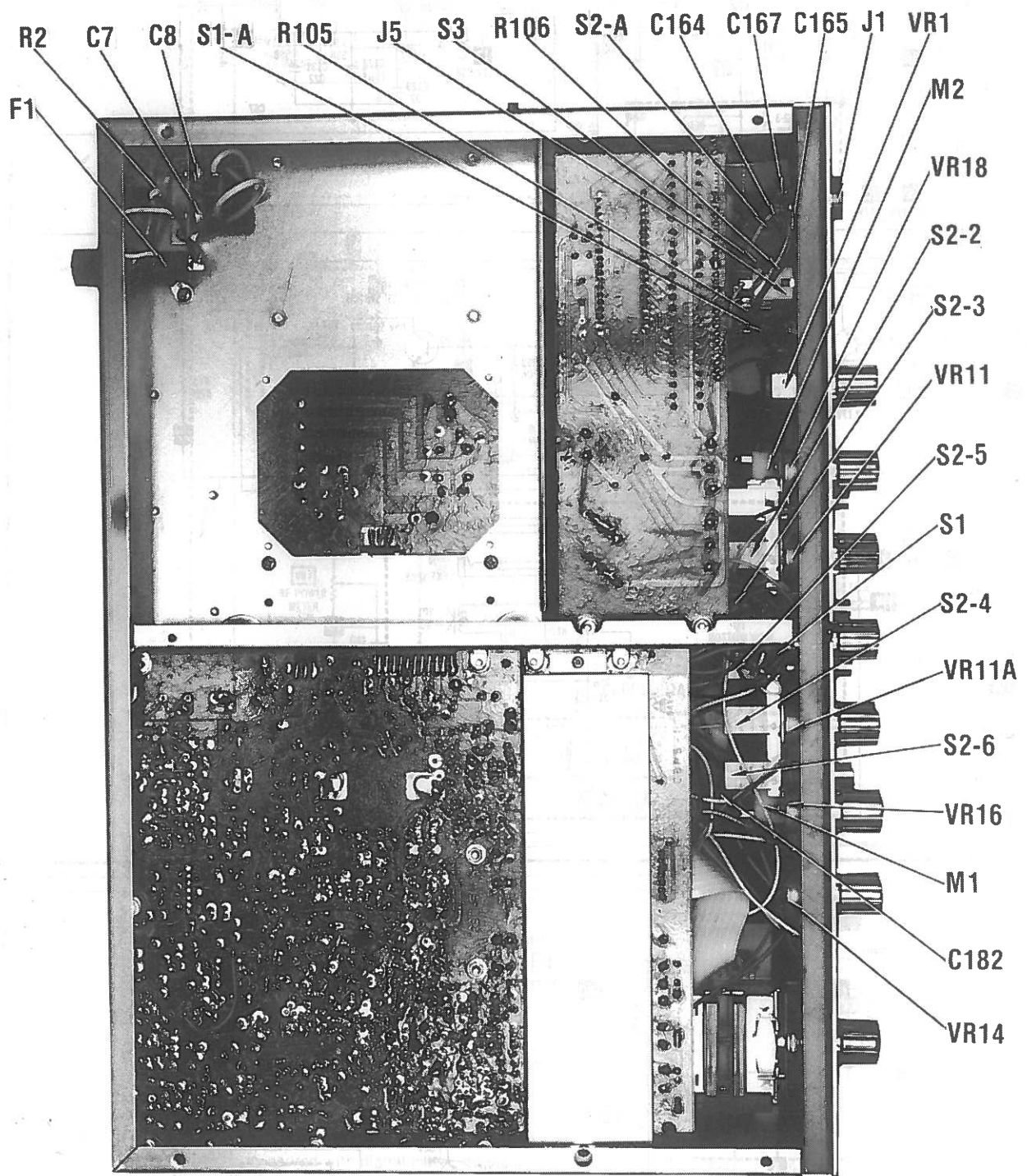


CHANNEL SELECTOR BOARD

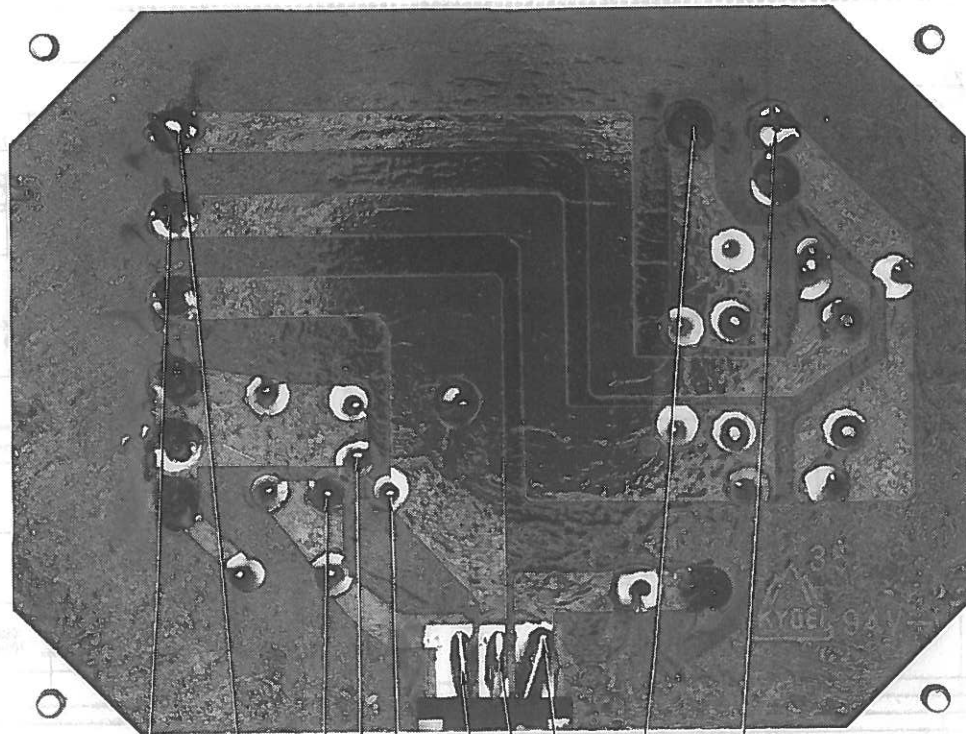
TRS CHALLENGER MODEL 1400



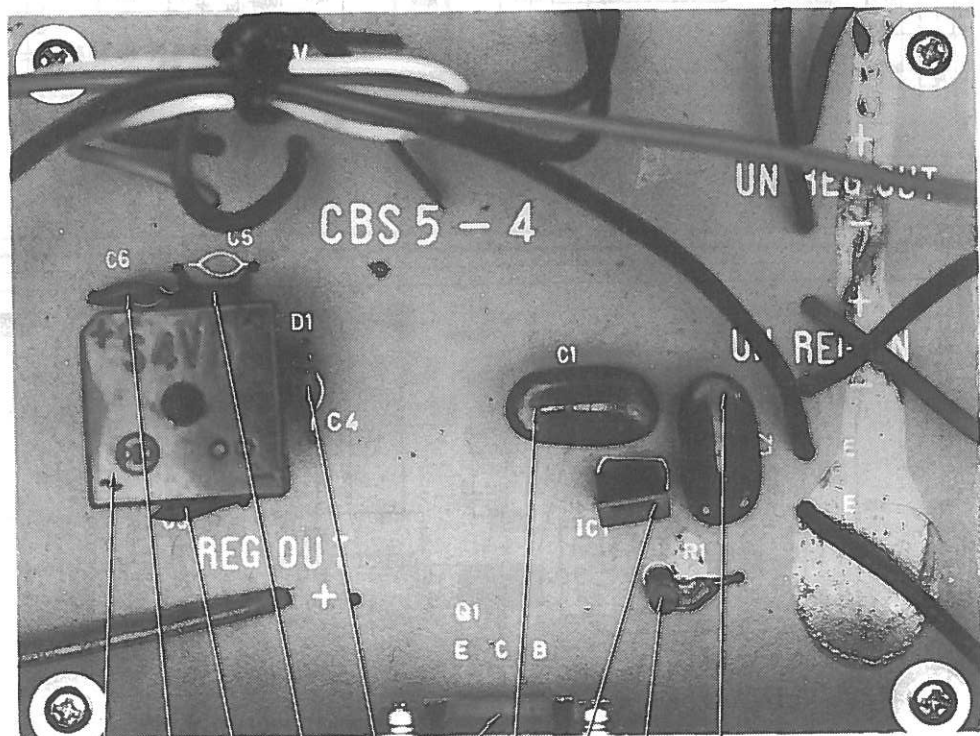
CLOCK BOARD



CHASSIS-BOTTOM

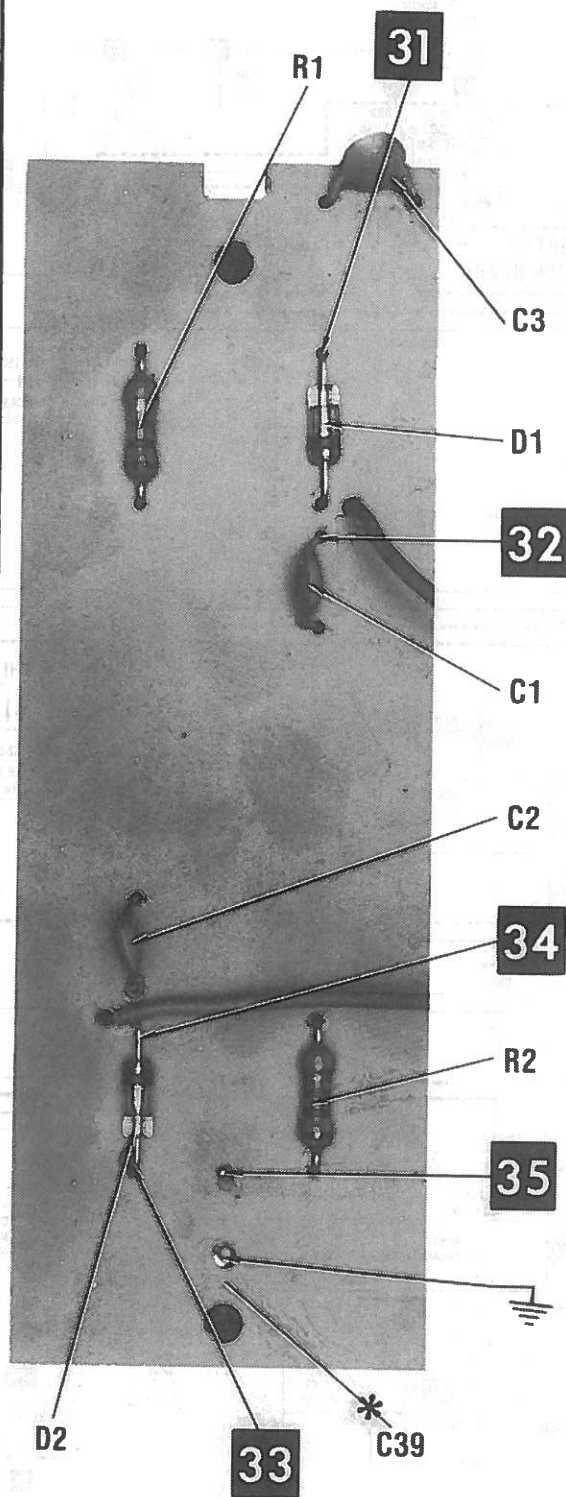


20 2 3 1 B C E 18 19
 IC1 Q1



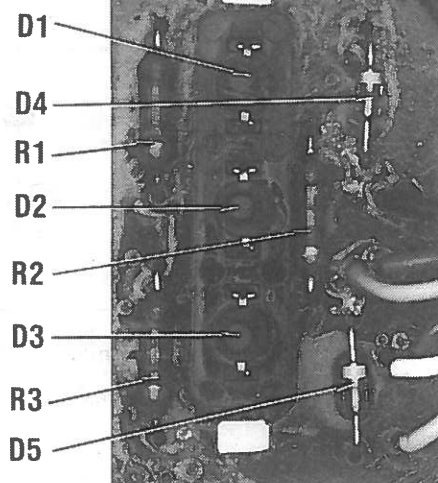
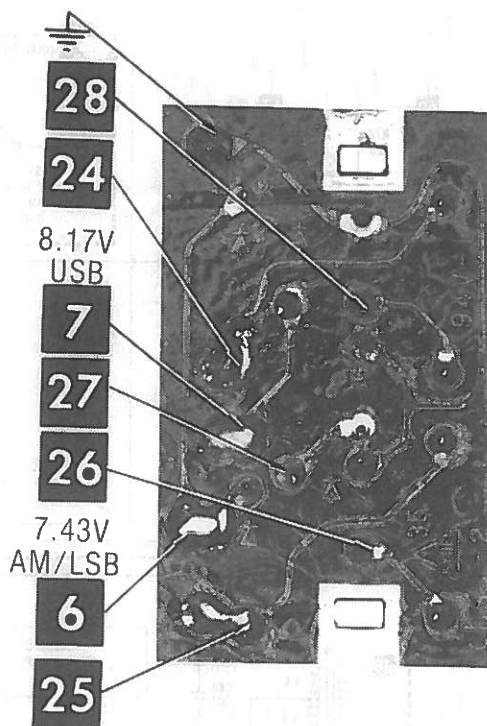
D1 C6 C3 C5 C4 Q1 C1 IC1 R1 C2

RECTIFIER BOARD

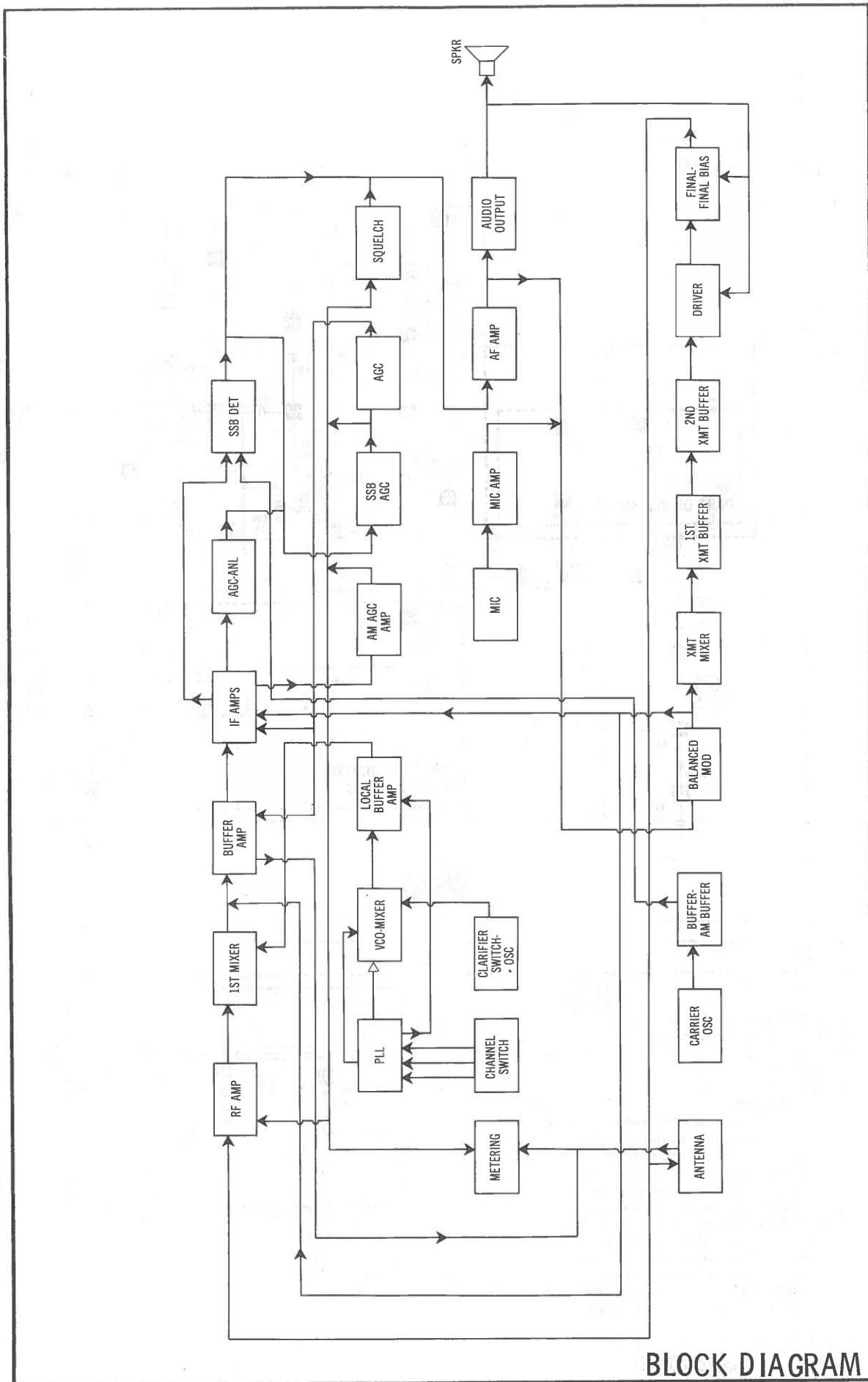


* LOCATED ON OTHER SIDE OF BOARD

SWR BOARD

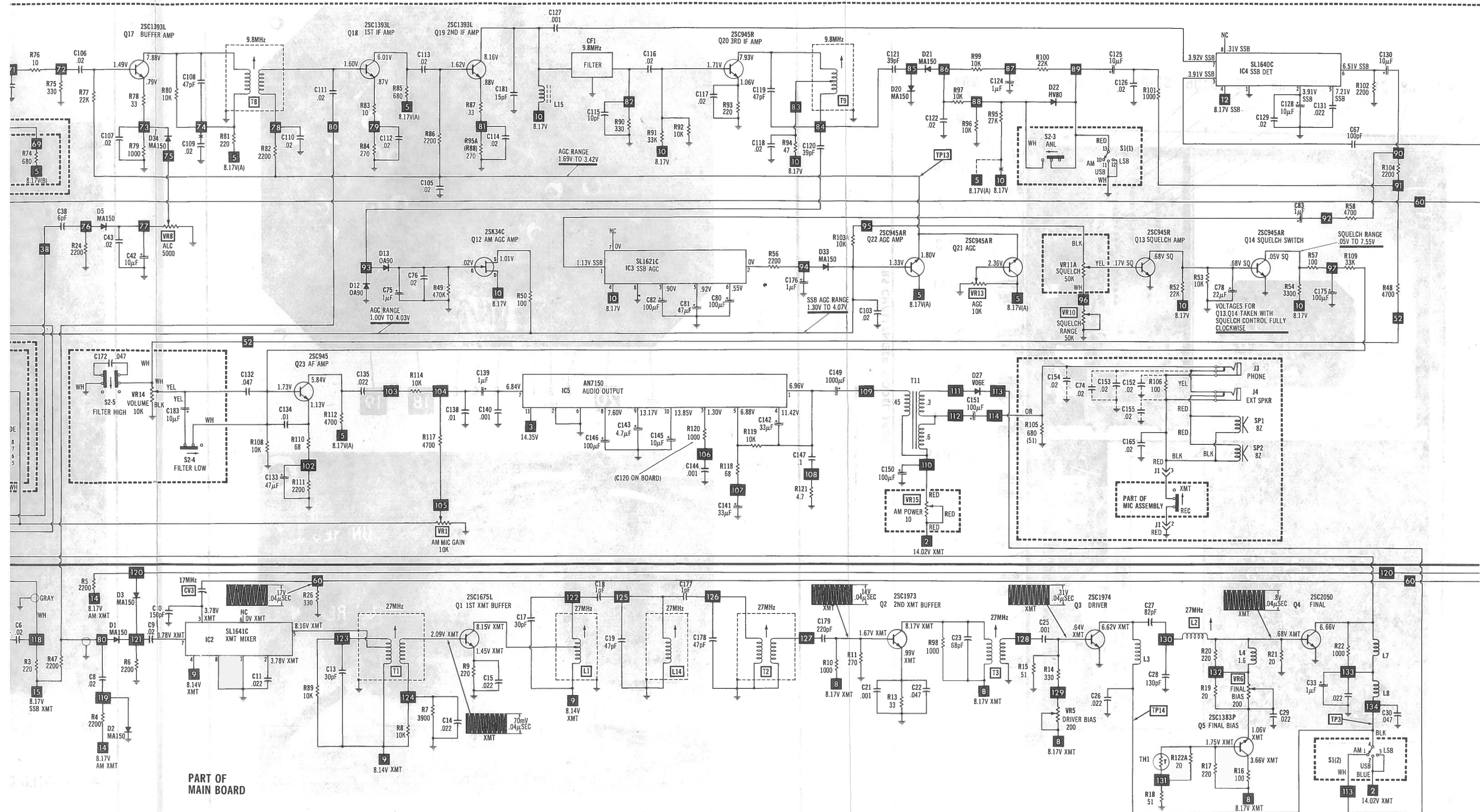


MODE INDICATOR BOARD



BLOCK DIAGRAM

TRS CHALLENGER MODEL 1400





A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH **CIRCUITRACE[®]**
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PARTS LIST AND DESCRIPTION

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

WIRING DATA

Cable (Speaker) (Unshielded).....	Use BELDEN No. 8782 (AWG24) (4 colors)
Shielding Strap.....	Use BELDEN No. 8660 (3/16" width)
Hook-up Wire (General Use).....	Use BELDEN No. 8524 (AWG22) (13 colors)
Hook-up Wire (Shielded).....	Use BELDEN No. 8401 (Braided Shield) (1 conductor) (AWG25)
	Use BELDEN No. 8421 (Spiral Shield) (1 conductor) (AWG25)
	Use BELDEN No. 8737 (Spiral Shield) (2 conductor) (AWG22)
Coax (Transmission Line).....	Use BELDEN No. 8216 (RG-174/U, 50 ohms)
Microphone Cable (Coiled).....	Use BELDEN No. 9466 (3 conductor-1 shielded) (6 ft.) (AWG28)
AC Power Cord (Black).....	Use BELDEN No. 17238 (8 ft.) (3 conductors)

SEMICONDUCTORS (Select replacement transistor for best results)

SEMICONDUCTORS (Select replacement transistor for each resistor)			REPLACEMENT DATA							
ITEM No.	TYPE No.	MFR. PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	RAYTHEON PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
Q1	CHANNEL	SELECT BOARD	GE-212 GE-212	PTC121* PTC121*	REN 199 REN 199	SK3124/289 SK3124/289	ECG199 ECG199	TM199/** TM199/**	WEP1945 WEP1945	121-972* 121-972*
	25C945L 25C945R	10-016								
IC1	CLOCK	BOARD	1N60 1N60 GE-300. GE-300 GE-300	PTC206 PTC206 PTC214 PTC214	REN 109 REN 109 REN 177 REN 177 REN 177	SK3088 SK3088 SK3175/177 SK3175/177 SK3175/177	ECG109 ECG109 ECG177 ECG177 ECG177	TM109/** TM109/** TM177 TM177 TM177	WEP134/109 WEP134/109 WEP1062/177 WEP1062/177 WEP1062/177	103-Z9001 103-Z9001 103-131 103-131 103-131
	S1998A	BOARD								
D1	MAIN	BOARD	1N60 1N60 GE-300 GE-300 GE-300	PTC206 PTC206 PTC214 PTC214	REN 109 REN 109 REN 177 REN 177 REN 177	SK3088 SK3088 SK3175/177 SK3175/177 SK3175/177	ECG109 ECG109 ECG177 ECG177 ECG177	TM109/** TM109/** TM177 TM177 TM177	WEP134/109 WEP134/109 WEP1062/177 WEP1062/177 WEP1062/177	103-Z9001 103-Z9001 103-131 103-131 103-131
	MA150	10-026								
D2	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D3	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D4	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D5	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D6	OA90	10-029	1N60	PTC206	REN 109	SK3088	ECG109	TM109/**	WEP134/109	103-Z9001
D7	OA90	10-029	1N60	PTC206	REN 109	SK3088	ECG109	TM109/**	WEP134/109	103-Z9001
D8	MA150	10-026	GE-300.	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D9	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D10	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D12	OA90	10-029	1N60	PTC206	REN 109	SK3088	ECG109	TM109/**	WEP134/109	103-Z9001
D13	OA90	10-029	1N60	PTC206	REN 109	SK3088	ECG109	TM109/**	WEP134/109	103-Z9001
D14	MA150	10-029	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D15	MA150	10-029	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D16	MA150	10-029	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D17	MA150	10-029	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D18	MA150	10-029	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D19	MA150	10-029	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D20	MA150	10-029	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D21	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D22	HV80	10-031		PTC301	REN 601	SK3463/601	ECG601	TM601	WEP156	212-76-02
D27	V06E	10-030	GE-504A	PTC201	REN 116	SK3311	ECG116	TM116	WEP1062/177	103-131
D28	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP134/109	103-Z9001
D31	OA90	10-029	1N60	PTC206	REN 109	SK3088	ECG109	TM109/**	WEP1062/177	103-131
D32	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D33	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D34	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D35	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D36	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
IC1	AN612	10-005					ECG1249	TM1249		221-Z9068
IC2	SL1641C	10-009								
IC3	SL1621C	10-006								
IC4	SL1640C	10-008								
IC5	SL1640									
IC6	AN7150	10-001								
Q1	14308		GEC-191			SK3630/964	ECG964	TM964		
	UPC14308	10-010	GEC-191			SK3630/964	ECG964	TM964		
Q2	25C1675L	10-020	GE-213	PTC132*	REN 229*	SK3122	ECG229*	TM229*	WEP773	121-Z9021*
	25C1675R	10-021	GE-213	PTC132*	REN 229*	SK3122	ECG229*	TM229*	WEP773	121-Z9021*
Q3	25C1974	10-022	GE-337	PTC186	REN 235	SK3239/236	ECG235	TM235	WEP785/235	121-Z9039
	25C2050	10-023	GE-216	PTC186	REN 236	SK3197/264	ECG236	TM236	WEP840/236	121-Z9040
Q4	25C1383P	10-018	GE-47	PTC143*	REN 293	SK3849/293	ECG293	TM293	WEP912/293	121-Z9066
Q5	25K33E	10-012	GE-FET-2	PTC161	REN 132*	SK3834/132	ECG312*	TM312*	WEP920/312*	921-1067*
Q7	25A844D	10-015	GE-244*	PTC103*	REN 129*	SK3114/290	ECG129*	TM129*	WEP564	121-Z9005
	25A844		GE-244*	PTC103*	REN 129*	SK3114/290	ECG129*	TM129*	WEP564	121-Z9005
Q8	25C1675L	10-020	GE-213	PTC132*	REN 229*	SK3122	ECG229*	TM229*	WEP773	121-Z9021*
	25C1675R		GE-213	PTC132*	REN 229*	SK3122	ECG229*	TM229*	WEP773	121-Z9021*
Q9	25C1675L	10-020	GE-213	PTC132*	REN 229*	SK3122	ECG229*	TM229*	WEP773	121-Z9021*
Q10	25C1675L	10-020	GE-213	PTC132*	REN 229*	SK3122	ECG229*	TM229*	WEP773	121-Z9021*
Q11	25C1675L	10-020	GE-213	PTC132*	REN 229*	SK3122	ECG229*	TM229*	WEP773	121-Z9021*
Q12	25K34C	10-013	GE-FET-2*	PTC161*	REN 132*	SK3448	ECG312*	TM312*	WEP920/312*	921-1067*
Q13	25C945AR		GE-212	PTC121*	REN 199	SK3124/289	ECG199	TM199/**	WEP1945	121-972*
	25C945R	10-016	GE-212	PTC121*	REN 199	SK3124/289	ECG199	TM199/**	WEP1945	121-972*
Q14	25C945AR		GE-212	PTC121*	REN 199	SK3124/289	ECG199	TM199/**	WEP1945	121-972*
	25C945R	10-016	GE-212	PTC121*	REN 199	SK3124/289	ECG199	TM199/**	WEP1945	121-972*
Q15	25C1393L	10-019	GE-62*	PTC136*	REN 123A*	SK3246/229	ECG123A*	TM123A*	WEP736/123A*	121-Z9000A*

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 No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RAYTHEON PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
Q16	3SK49-Q	10-014	GE-FET-4	PTC182*	REN 222	SK3065/222	ECG222	TM222	WEP905/222	121-826
Q17	25C1393L	10-019	GE-62*	PTC136*	REN 123A*	SK3246/229	ECG123A*	TM123A*	WEP736/123A*	121-Z9000A*
Q18	25C1393L	10-019	GE-62*	PTC136*	REN 123A*	SK3246/229	ECG123A*	TM123A*	WEP736/123A*	121-Z9000A*
Q19	25C1393L	10-019	GE-62*	PTC136*	REN 123A*	SK3246/229	ECG123A*	TM123A*	WEP736/123A*	121-Z9000A*
Q20	25C945AR	10-016	GE-212	PTC121*	REN 199	SK3124/289	ECG199	TM199/**	WEP1945	121-972*
	25C945R		GE-212	PTC121*	REN 199	SK3124/289	ECG199	TM199/**	WEP1945	121-972*
Q21	25C945AR	10-016	GE-212	PTC121*	REN 199	SK3124/289	ECG199	TM199/**	WEP1945	121-972*
	25C945R		GE-212	PTC121*	REN 199	SK3124/289	ECG199	TM199/**	WEP1945	121-972*
Q22	25C945AR	10-016	GE-212	PTC121*	REN 199	SK3124/289	ECG199	TM199/**	WEP1945	121-972*
	25C945R		GE-212	PTC121*	REN 199	SK3124/289	ECG199	TM199/**	WEP1945	121-972*
Q23	25C945AR	10-016	GE-212	PTC121*	REN 199	SK3124/289	ECG199	TM199/**	WEP1945	121-972*
	25C945R		GE-212	PTC121*	REN 199	SK3124/289	ECG199	TM199/**	WEP1945	121-972*
	25C945		GE-212	PTC121*	REN 199	SK3124/289	ECG199	TM199/**	WEP1945	121-972*
	MODEL INDICATOR BOARD									
D4	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D5	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
	PLL									
D1	1SV50	10-025	GE-90		REN 614		ECG614	TM614	WEP200/614	103-219
D2	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D3	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D4	MA150	10-026	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062/177	103-131
D5	MA1047	10-028		ZM4.7B		SK3775/5009A	ECG5009A	TM5009	WEP1409/5009	103-279-09
D6	1SV50	10-025	GE-90		REN 614		ECG614	TM614	WEP200/614	103-219
IC1	UPD2810C	10-003								
IC2	AN103-0				REN 1192	SK3445/1192	ECG1192	TM1192	WEP2120/1192	221-Z9061
	AN103	10-004			REN 1192	SK3445/1192	ECG1192	TM1192	WEP2120/1192	221-Z9061
IC3	SL1626C	10-007								
Q1	2SC1675L	10-020	GE-213	PTC132*	REN 229*	SK3122	ECG229*	TM229*	WEP773	121-Z9021*
Q2	2SC1675L	10-020	GE-213	PTC132*	REN 229*	SK3122	ECG229*	TM229*	WEP773	121-Z9021*
Q3	25C945AR	10-016	GE-212	PTC121*	REN 199	SK3124/289	ECG199	TM199/**	WEP1945	121-972*
	25C945R		GE-212	PTC121*	REN 199	SK3124/289	ECG199	TM199/**	WEP1945	121-972*
	RECTIFIER BOARD									
D1	S4VB	10-033	GEBR-206	FWHF200	REN 156(4)	SK3051/156(4)	ECG5313	TM156(4)	WEP1044	212-Z9000(4)
IC1	S4VB10		GEBR-206	FWHF200	REN 156(4)	SK3051/156(4)	ECG5313	TM156(4)	WEP1044	212-Z9000(4)
	78L15K					SK3593/968				
Q1	UPC78L15K	10-011				SK3593/968	ECG968	TM968		
	2SD586	10-024					ECG380	TM380		
	SWR BOARD									
D1	1N60	10-027	1N60	PTC206	REN 109	SK3088	ECG109	TM109/**	WEP134/109	103-Z9001
D2	1N60	10-027	1N60	PTC206	REN 109	SK3088	ECG109	TM109/**	WEP134/109	103-Z9001

*Lead configuration may vary from original.
 /**Also available as exact type replacement.
 When ordering parts specify model number.
 (4) Four required.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
	CLOCK BOARD					
C1	470 35V	14-009	WBR500-35*	VTT470M35	QV1-157	EV-1451
	MAIN BOARD					
C32	1 50V	14-014	PC1-50	VTT1A50	QV1-11	EV-1615
C42	10 16V	14-007	PC10-25	VTT10B25	QV1-41	EV-1222
C45	47 10V	14-004	PC50-16	VTT47D16	QV1-73	EV-1226
C55	4.7 25V	14-004	PC5-50	VTT4R7B50	QV1-31	EV-1619.1
C75	1 50V	14-014	PC1-50	VTT1A50	QV1-11	EV-1615
C78	22 10V	14-002	PC25-25	VTT22B16	QV1-55	EV-1224
C80	100 10V	14-005	PC100-10	VTT100D10	QV1-93	EV-1131
C81	47 10V	14-004	PC50-16	VTT47D16	QV1-73	EV-1226
C82	100 10V	14-005	PC100-10	VTT100D10	QV1-93	EV-1131
C83	1 50V	14-014	PC1-50	VTT1A50	QV1-11	EV-1615
C84	100 10V	14-005	PC100-10	VTT100D10	QV1-93	EV-1131
C102	47 10V	14-004	PC50-16	VTT47D16	QV1-73	EV-1226
C124	1 50V	14-014	PC1-50	VTT1A50	QV1-11	EV-1615
C125	10 16V	14-007	PC10-25	VTT10B25	QV1-41	EV-1222
C128	10 16V	14-007	PC10-25	VTT10B25	QV1-41	EV-1222
C130	10 16V	14-007	PC10-25	VTT10B25	QV1-41	EV-1222
C133	47 10V	14-004	PC50-16	VTT47D16	QV1-73	EV-1226
C139	1 50V	14-014	PC1-50	VTT1A50	QV1-11	EV-1615
C141	33 10V	14-003	PC30-25	VTT33B10	QV1-93	EV-1225
C142	33 10V	14-003	PC30-25	VTT33B10	QV1-93	EV-1225
C143	4.7 25V	14-011	PC5-50	VTT4R7B50	QV1-31	EV-1619.1
C145	10 16V	14-007	PC10-25	VTT10B25	QV1-41	EV-1222
C146	100 10V	14-005	PC100-10	VTT100D10	QV1-93	EV-1131
C148	470 16V	14-009	PC500-16	VTT470K16	QV1-151	EV-1251
C149	1000 16V	14-010	PC1000-16	VTT1000M16	QV1-183	EV-1261
C150	100 16V	14-008	PC100-16	VTT100E16	QV1-95	EV-1231
C151	100 16V	14-008	PC100-16	VTT100E16	QV1-95	EV-1231
C156	100 10V	14-005	PC100-10	VTT100D10	QV1-93	EV-1131
C175	100 10V	14-005	PC100-10	VTT100D10	QV1-93	EV-1131

TRS CHALLENGER MODEL 1400

PARTS LIST AND DESCRIPTION (CONTINUED)

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

ELECTROLYTIC CAPACITORS (cont)

ITEM No.	RATING	REPLACEMENT DATA				
		MFGR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C176	1 50V	14-014	PC1-50	VTT1A50	QV1-11	EV-1615
	PLL BOARD					
C13	47 10V	14-004	PC50-16	VTT47D16	QV1-73	EV-1226
C16	47 35V	14-004		TDC474M050EL	QDT1-19	SD50-R479
C43	220 10V	14-006	PC250-10	VTT220F10	QV1-115	EV-1140
C51	10 16V	14-007	PC10-25	VTT10B25	QV1-41	EV-1222
C54	2.2 50V	14-015	PC2-100	VTT2R2A50	QV1-21	EV-1617.1
C58	10 16V	14-007	PC10-25	VTT10B25	QV1-41	EV-1222
C99	47 10V	14-004	PC50-16	VTT47D16	QV1-73	EV-1226

When ordering parts specify model.

CAPACITORS

ITEM No.	RATING	MFGR. PART No.	REPLACEMENT DATA			
			CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
	CLOCK BOARD					
C2	.1 10%		WMFQ5P1	EWFO5010	QFT2-215	1FT-P10
C3	.0022 10%		DPMS6D22	M192P2239R8	QFT2-27	1FT-D22
	MAIN BOARD					
C1	.1		WMFQ5P1	EWFO5010	QFT2-215	1FT-P10
C2	.02 50V			MAG5012		
C3	22 NPO 50V		NP022	CN0422		10TCC-Q22
C4	.02 50V			MAG5012		
C5	.02 50V			MAG5012		
C6	.02 50V			MAG5012		
C7	.02 50V			MAG5012		
C8	.02 50V			MAG5012		
C9	.02 50V			MAG5012		
C10	150 NPO 50V 10%			CN0315		10TCC-T15
C11	.022 10%		DPMS2S22	M192P2239R8	QFT2-127	1FT-S22
C12	.022 10%		DPMS2S22	M192P2239R8	QFT2-127	1FT-S22
C13	30 NPO 50V 5%	14-040	DPMS2S22	M192P2239R8	QFT2-127	10TCC-Q30
C14	.022 10%		DPMS2S22	M192P2239R8	QFT2-127	1FT-S22
C15	.022 10%		DPMS2S22	M192P2239R8	QFT2-127	1FT-S22
C16	.022 10%		DPMS2S22	M192P2239R8	QFT2-127	1FT-S22
C17	30 NPO 50V 5%	14-040				10TCC-Q30
C18	1 NPO 50V			CN0510		10TCC-V10
C19	47 NPO 50V 5%		NP047	CN0447		10TCC-Q47
C20	.022 10%		DPMS2S22	M192P2239R8	QFT2-127	1FT-S22
C21	.001 50V			GP210		10TS-D10
C22	.047 10%		DPMS2S47	EWFT1A147	QFT2-171	1FT-S47
C23	68 NPO 50V 5%		NP068	CN0468		10TCC-Q68
C24	.022 10%		DPMS2S22	M192P2239R8	QFT2-127	1FT-S22
C25	.001 50V			GP210		10TS-D10
C26	.022 10%		DPMS2S22	M192P2239R8	QFT2-127	1FT-S22
C27	82 NPO 50V 5%		NP082	CN0482		10TCC-Q82
C28	130 NPO 50V 10%	14-051				10TCC-T15
C29	.022 10%		DPMS2S22	M192P2239R8	QFT2-127	1FT-S22
C30	.047 50V			MAG5015		
C31	100 NPO 50V 10%		NP0100	CN0310		10TCC-T10
C33	.022 10%		DPMS2S22	M192P2239R8	QFT2-127	1FT-S22
C34	150 NPO 50V 10%			CN0315		10TCC-T15
C35	390 50V 10%		GP390	GP339		10TS-T39
C36	220 50V 10%			GP322		10TS-T22
C37	1 NPO 50V			CN0510		10TCC-V10
C38	6 NPO 50V		NP06P8	CN0568		10TCC-V68
C39	150 NPO 50V 10%			CN0315		10TCC-T15
C41	.02 50V			MAG5012		
C43	.02 50V			MAG5012		
C44	.022 10%		DPMS2S22	M192P2239R8	QFT2-127	1FT-S22
C46	39 NPO 50V 5%			CN0439		10TCC-Q39
C50	.02 50V			MAG5012		
C51	39 NPO 50V 10%			CN0439		10TCC-Q39
C52	470 50V		GP470	GP347		10TS-T47
C53	.047 50V			MAG5015		
C54	.047 50V			MAG5015		
C56	.0047 50V		GP4700	GP247		5GA-D47
C57	.0047 50V		GP4700	GP247		5GA-D47
C58	100 NPO 50V 10%		NP0100	CN0310		10TCC-T10
C59	.02 50V			MAG5012		
C60	22 NPO 50V		NP022	CN0422		10TCC-Q22
C61	22 NPO 50V		NP022	CN0422		10TCC-Q22
C62	.02 50V			MAG5012		
C63	470		CD15FD471J03	SX347	QW1-42	MWB-471
C64	470		CD15FD471J03	SX347	QW1-42	MWB-471
C65	.001 50V			GP210		10TS-D10
C66	150 NPO 50V 10%			CN0315		10TCC-T15
C67	100 NPO 50V 10%		NP0100	CN0310		10TCC-T10
C68	.02 50V			MAG5012		
C69	150 NPO 50V 10%			CN0315		10TCC-T15
C70	.02 50V			MAG5012		
C71	.02 50V			MAG5012		
C72	.022 10%		DPMS2S22	M192P2239R8	QFT2-127	1FT-S22
C73	47 NPO 50V 5%		NP047	CN0447		10TCC-Q47
C76	.02 50V			MAG5012		
C77	.02 50V			MAG5012		
C79	.1 10%		WMFQ5P1	EWFO5010	QFT2-215	1FT-P10
C85	.02 50V			MAG5012		
C86	33 NPO 50V 5%		NP033	CN0433		10TCC-Q33

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA					
			CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.			
					Q-LINE	GENERAL LINE		
C88	39 NPO 50V 5%	14-029	NP06P8	CN0439		10TCC-Q39		
C89	6 NPO 50V			CN0568		10TCC-V68		
C90	.02 50V		NP010	MAG5012				
C91	.02 50V			MAG5012				
C92	39 NPO 50V 5%			CN0439		10TCC-Q39		
C93	10 NPO 50V			CN0410		10TCC-Q10		
C94	.001 50V		NP047	GP210		10TS-D10		
C95	.001 50V			GP210		10TS-D10		
C96	.02 50V			MAG5012				
C97	.02 50V			MAG5012				
C98	47 NPO 50V 5%		NP022	CN0447		10TCC-Q47		
C99	.02 50V			MAG5012				
C100	.02 50V			MAG5012				
C101	22 NPO 50V			CN0422		10TCC-Q22		
C103	.02 50V	NP022	MAG5012	10TCC-Q22				
C104	22 NPO 50V		CN0422					
C105	.02 50V		MAG5012					
C106	.02 50V		MAG5012					
C107	.02 50V	NP047	MAG5012	10TCC-Q47				
C108	47 NPO 50V 5%		CN0447					
C109	.02 50V		MAG5012					
C110	.02 50V		MAG5012					
C111	.02 50V	NP06P8	MAG5012					
C112	.02 50V		MAG5012					
C113	.02 50V		MAG5012					
C114	.02 50V		MAG5012	10TCC-V68				
C115	6 NPO 50V	14-029	NP047	CN0568				
C116	.02 50V			MAG5012				
C117	.02 50V			MAG5012				
C118	.02 50V			MAG5012				
C119	47 NPO 50V 5%		NP047	CN0447	10TCC-Q47			
C120	39 NPO 50V 5%			CN0439	10TCC-Q39			
C121	39 NPO 50V 5%			CN0439	10TCC-Q39			
C122	.02 50V			MAG5012				
C126	.02 50V		DPMS2S22	MAG5012				
C127	.001 50V			GP210	10TS-D10			
C129	.02 50V			MAG5012				
C131	.022 10%			M192P2239R8	QFT2-127			
C132	.047 10%		14-028	DPMS2S47	EW1A147	QFT2-171		
C134	.01 10%			WMF1S1	EW1A110	QFT2-91		
C135	.022 10%	DPMS2S22		M192P2239R8	QFT2-127			
C136	120 50V 10%	WMF1S1		EW1A110	QFT2-91			
C138	.01 10%			EW1A210	QFT2-1			
C140	.001 50V 10%			EW1A210	QFT2-1			
C144	.001 50V 10%			EW1A210	QFT2-1			
C147	.1 10%	WMF05P1		EW1F05010	QFT2-215			
C157	.1 10%	WMF05P1		EW1F05010	QFT2-215			
C158	.22 10%	WMF05P22		EW1F05022	QFT2-253			
C160	.047 50V	14-028		MAG5015				
C161	.047 50V			MAG5015				
C167	.02 50V			MAG5012				
C173	.02 50V			MAG5012				
C174	.02 50V		MAG5012					
C177	1 NPO 50V		NP047	CN0510	10TCC-V10			
C178	47 NPO 50V 5%			CN0447	10TCC-Q47			
C179	220 50V 10%			GP322	10TS-T22			
C180	.02 50V			MAG5012				
C181	15 NPO 50V		NP015	CN0415	10TCC-Q15			
CV1	Trimmer							
CV2	Trimmer							
CV3	Trimmer							
PLL BOARD								
C1	.02 50V	MAG5012						
C2	.02 50V	MAG5012						
C3	.02 50V	MAG5012						
C4	.02 50V	MAG5012						
C5	.02 50V	MAG5012						
C6	.02 50V	MAG5012						
C7	.02 50V	MAG5012						
C8	15 NPO 50V	NP015					CN0415	10TCC-Q15
C9	.02 50V						MAG5012	
C10	150						SX315	QW1-31
C11	82 NPO 50V 10%						CN0482	MMA-151
C12	.02 50V	MAG5012					10TCC-Q82	
C14	22 NPO 50V	NP022					CN0422	10TCC-Q22
C15	.1 10%		WMF05P1	EW1F05010	1FT-P10			
C17	.02 50V		MAG5012					
C18	.02 50V		MAG5012					
C19	.001 50V	14-040	GP210	10TS-D10				
C20	.001 50V		GP210	10TS-D10				
C21	.001 50V		GP210	10TS-D10				
C22	.001 50V		GP210	10TS-D10				
C23	.001 50V		GP210	10TS-D10				
C24	.001 50V		GP210	10TS-D10				
C25	.02 50V		MAG5012					
C26	470 50V		GP347	10TS-T47				
C27	30 NPO 50V 5%		14-040		10TCC-Q30			
C28	30 NPO 50V 5%				10TCC-Q30			
C29	130 NPO 50V 10%							
C30	100 NPO 50V 10%			NP0100	10TCC-T10			
C31	22 NPO 50V		14-051	NP022	10TCC-Q22			
C32	.02 50V							
C33	470 50V	GP470		10TS-T47				
C34	100 NPO 50V 10%	NP0100		10TCC-T10				

TRS CHALLENGER MODEL 1400

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

CAPACITORS (CON)			REPLACEMENT DATA					
ITEM No.	RATING	MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.			
					Q-LINE	GENERAL LINE		
C35	47 NPO 50V 5%	14-040	NP047	CN0447	QFT2-171 QFT2-171	10TCC-Q47		
C36	.02 50V		NP082 NP0100	MAG5012		10TCC-T15 10TCC-Q82 10TCC-T10		
C37	.02 50V			MAG5012				
C38	150 NPO 50V 10%			CN0315				
C39	82 NPO 50V 10%			CN0482				
C40	100 NPO 50V 10%			CN0310				
C41	.02 50V			MAG5012				
C42	.02 50V		MAG5012	10TCC-Q22 10TCC-Q30				
C44	22 NPO 50V		CN0422					
C45	30 NPO 50V 5%		MAG5012					
C46	.02 50V		NP03P3	MAG5012		10TCC-V33 10TS-D10 10TS-D10		
C47	.02 50V			CN0533				
C48	3 NPO 50V			GP210				
C49	.001 50V			GP210				
C50	.001 50V			MAG5012				
C53	.02 50V	14-028 14-028	DPMS2S47	EW1A147	QFT2-253 QFT2-253	1FT-S47 1FT-S47 10TS-D10		
C55	.047 10%		DPMS2S47	EW1A147				
C56	.047 10%			GP210				
C57	.001 50V							
CV1	Trimmer							
CV2	Trimmer							
RECTIFIER BOARD								
C1	.22 10%		WMF05P22	EWF05022			QFT2-253 QFT2-253	1FT-P22 1FT-P22
C2	.22 10%		WMF05P22	EWF05022				
C3	.02 50V			MAG5012		10TCC-T15		
C4	.02 50V			MAG5012				
C5	.02 50V			MAG5012				
C6	.02 50V			MAG5012				
SWR BOARD								
C1	.01 50V			MAG5011				
C2	.01 50V			MAG5011				
C3	.01 50V			MAG5011				
C39	150 NPO 50V 10%			CN0315				
CHASSIS								
C7	.047							
C8	.047							
C74	.02			MAG5012				
C152	.02			MAG5012				
C153	.02			MAG5012				
C154	.02			MAG5012				
C155	.02			MAG5012				
C164	.02			MAG5012				
C165	.02			MAG5012				
C166	.02			MAG5012				
C172	.047			MAG5015				
C182	.02			MAG5012				

When ordering parts specify model number.

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

CONTROLS (All Wavages 1/2 watt, or less, unless noted)					
ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA		
			MFR. PART No.	MALLORY PART No.	TRW PART No.
	MAIN BOARD				
VR1	AM Mic Gain	10K	12-001	RVA0911H103	U260R103B
VR2	SSB Mic Gain	10K	12-001	RVA0911H103	U260R103B
VR3	Carrier Balance	5000	12-003	RVA0911H502	U260R502B
VR4	Carrier Balance	10K	12-001	RVA0911H103	U260R103B
VR5	Driver Bias	200	12-005		
VR6	Final Bias	200	12-005		
VR7	RF Power Meter	50K	12-004	RVA0911H503	U260R503B
VR8	ALC	5000	12-003	RVA0911H502	U260R502B
VR9	"S" Meter	20K	12-002	RVA0911H253	U260R253B
VR10	Squelch Range	50K	12-004	RVA0911H503	U260R503B
VR13	AGC	10K	12-001	RVA0911H103	U260R103B
	CHASSIS				
VR1A	Dimmer	1000	12-007 (18)	P13L, 3014, RU126L, CS3500	BU1, CF6, CR1, SS1, SS7A, DC
VR1B	Dimmer				
VR11	RF Gain	10K	12-011		
VR11A	Squelch	50K	12-009		
VR14	Volume	10K	12-010		
VR16	Clarifier	10K	12-008		
VR18	SWR CAL	10K	12-008		

(18) Includes VR1A and VR1B.

When ordering parts specify model number.

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	MAIN BOARD	10-032		VR15	CHASSIS		
	Thermistor				100 10W WW Variable Tapped		

When ordering parts specify model number.

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.	
	MAIN BOARD				
L1	XMT Buffer (27MHz)	11-001			
L2	Driver (27MHz)	11-002			
L3	RF Choke	11-003			
L4	RF Choke	11-004			
L5	Loading Final (27MHz)	11-005			
L6	Pi Filter	11-006			
L7	RF Choke	11-007			
L8	RF Choke	11-011			
L9	RF Choke	11-004			
L10	TVI Trap (54MHz)	11-008			
L12	RF Choke	11-012			
L14	XMT Buffer (27MHz)	11-009			
L15	RF Choke	11-013			
L16	Antenna Matching	11-010			
T1	XMT Mixer (27MHz)	11-014			
T2	XMT Buffer (27MHz)	11-015			
T3	XMT Buffer (27MHz)	11-016			
T4	Receive Antenna (27MHz)	11-017			
T5	Receive Antenna (27MHz)	11-017			
T6	RF Amp (27MHz)	11-018			
T7	Mixer (27MHz)	11-019			
T8	Buffer Amp (9.8MHz)	11-019			
T9	IF (9.8MHz)	11-020			
T10	AM Buffer (17MHz)	11-019			
	PLL BOARD				
L1	Oscillator (17.180MHz)	11-022			
L2	VCO Mixer	11-023			
L3	Local Buffer Amp	11-024			
L4	RF Choke	11-025			
T1	Local Buffer Amp (17MHz)	11-026			

When ordering parts specify model number.

TRANSFORMER (Power) (CHASSIS)

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	120V AC @ 680mA	19.07V AC @ 2.8A	11-028 (1) K6004 (2)			(1) When ordering parts specify model number. (2) Number on unit.

TRANSFORMER (MIC INPUT) (PLL BOARD)

ITEM No.	TURNS RATIO			REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	1	.8CT		11-027 (1) K5004 (2)			(1) When ordering parts specify model number. (2) Number on unit.

TRANSFORMER (Audio Output) (MAIN BOARD)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T11	16	1 2 8 4	11-021 (1) K5003 (2)			(1) When ordering parts specify model number. (2) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP1	3 1/2" PH 8 Ohms	16-023 (1) 9G70B (2)		(1) When ordering parts specify model number. (2) Number on unit.
SP2	3 1/2" PH 8 Ohms	16-023 (1) 9G70B (2)		

TRS CHALLENGER MODEL 1400

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.	
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	WORKMAN PART No.
F1	2A Quick Acting	16-016	16-015	AGC2	HKP	312002	F62-2

When ordering parts specify model.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
	MAIN BOARD		
CF1	Filter	16-001	9.8MHz (Ceramic)
J1	Jack	16-010	Microphone
J3	Jack	16-011	Phone
J4	Jack	16-012	External Speaker
M1	Meter	16-007	S/RF Power
RY1	Relay	16-002	Transmit (250 Ohm)
X1	Crystal	15-001	9.785MHz
X2	Crystal	15-002	9.782MHz
XF1	Filter	16-001	9.785MHz (Ceramic)
	MODE INDICATOR BOARD		
D1	LED	10-026	AM (MA150) AM (MA150) (2.01V @ 9mA)
D2	LED	10-026	USB (MA150) USB (MA150) (2.01V @ 9mA)
D3	LED	10-26	LSB (MA150) LSB (MA150) (2.01V @ 9mA)
	PLL BOARD		
X1	Crystal	15-003	16.270MHz
X2	Crystal	15-004	16.273MHz
X3	Crystal	15-005	10.240MHz
	SWITCH BOARD		
S402	Switch	16-009	Channel Selector
	LED	10-037	Channel Indicator (SEL805) (Each segment supplied with 1.86V @ 7mA)
	CHASSIS		
D11	LED	10-035	Receive (SEL351G) (1.86V @ 4.5mA)
J2	Jack	16-013	Antenna
M2	Meter	16-008	SWR
PL1	Lamp	16-014	SWR Meter (14.33V @ 80mA)
PL2	Lamp	16-014	S/RF Power Meter (14.33V @ 80mA)
PL3	Lamp	16-014	ON THE AIR (14.02V @ 80mA)
PL4	Lamp	16-014	ON THE AIR (14.02V @ 80mA)
S1	Switch	16-003	Mode (LSB/USB/AM)
S1-A	Switch	16-005	Seconds
S2	Switch	16-006	Fast
S2-1	Switch	16-004	Power Assembly
S2-2	Switch	16-004	Noise Blanker Assembly
S2-3	Switch	16-004	ANL
S2-4	Switch	16-004	Low Filter Assembly
S2-5	Switch	16-004	High Filter Assembly
S2-6	Switch	16-004	SWR/CAL Assembly
S3	Switch	16-006	Slow
	LED	10-036	Clock (TLR2047) (Each segment supplied with 1.90V @ 6mA)
	P.C. Board	16-066	Channel Selector (CBS5-3A)
	P.C. Board	16-067	Clock (CBS5-1A)
	P.C. Board	16-065	PLL (CBP5-1)
	P.C. Board	16-063	Power Supply (CBS5-4)
	P.C. Board	16-068	Mode Indicator (CBS5-2)
	P.C. Board	16-069	SWR
	P.C. Board	16-064	XMT/Rec (CBT-51)
	Microphone	16-022	

When ordering parts specify model number.

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

ITEM	PART No.	ITEM	PART No.
Cover, Bottom	16-033	Knob B	16-026
Cover, Top	16-032	Side Plate, Left	16-036
Knob A	16-025	Side Plate, Right	16-037