

# PHOTOFACT<sup>®</sup> with CIRCUITRACE<sup>®</sup>

For Supplier Address See PHOTOFACT Index

## NOTE

Repair or adjustment of transmitter circuits must be under supervision of a person with first-or second-class radiotelephone license.  
(Refer to FCC Rules and Regulations Part 95, Subpart C & D.)

The frequency of the transmitter should be checked periodically with a secondary frequency standard to insure proper and legal operation.

Best results will be obtained when adjusting the final RF output circuit if the antenna normally used is connected and the chassis is as nearly in the cabinet as possible.

Connect either 50-ohm dummy load or the normally used antenna system.



MIDLAND MODEL 13-853

MODEL 13-853

**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.

Suggested Alignment Tools: GC Electronics:

T301, T302, T303, T305, T306.....	8728
L914.....	9296, 9297, 9300
L101, L102, L901 thru L909, L915.....	9440
VC1.....	5000

## SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Inputs of frequency counter and RF VTVM to Q901 emitter.	Ch. 13	L901	Adjust for 23.440MHz at maximum.
Input of frequency counter to Q901 emitter.	Ch. 17 Ch. 21 Ch. 1 Ch. 5 Ch. 9		Check for 23.490MHz. Check for 23.540MHz. Check for 23.290MHz. Check for 23.340MHz. Check for 23.390MHz.
Input of frequency counter to Q903 emitter.	Ch. 13 Ch. 14 Ch. 15 Ch. 16		Check for 14.950MHz. Check for 14.960MHz. Check for 14.970MHz. Check for 14.990MHz.
Input of RF VTVM to L904 secondary.	Ch. 13	L902, L903, L904	Adjust for maximum.
Input of frequency counter to Q904 emitter.	Ch. 13		Check for 11.730MHz.
Input of frequency counter to Q905 emitter.	Ch. 13, Xmit		Check for 11.275MHz.

## 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 Q301 base. 455kHz, 1000Hz @ 30% modulation.	Ch. 13	T306, T305, T303	Adjust for maximum output.
Output of signal generator thru .01uF to Q102 base. 11.275MHz, 1000Hz @ 30% modulation.	Ch. 13	T302, T301	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.115MHz, 1000Hz @ 30% modulation.	Ch. 13	L102, L101	Adjust for maximum output. Repeat above steps, if necessary.

## RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil.  
Adjust volume control to obtain a suitable indication.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of VTVM to TP. No signal input.	Ch. 13	VR1	IF GAIN Adjust VR1 for 1.70 volts.
Output of signal generator thru .01uF to antenna jack. 27.115MHz, 1000Hz @ 30% modulation. Output 1000uV.	Ch. 13	VR2	SQUELCH RANGE Set squelch VR3 fully clockwise. Adjust VR2 so that squelch just breaks.
Output of signal generator thru .01uF to antenna jack. 27.115MHz, 1000Hz @ 30% modulation. Output 1000uV.	Ch. 13	VR7	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.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of Spectrum analyzer to antenna jack.	Ch. 13	L905, L906, L907, L908, L909, VC1, L914	Adjust for maximum.
	Ch. 13	VC1	Adjust for 4 watts maximum.
	Ch. 13	L915	Adjust for MINIMUM at 54MHz.

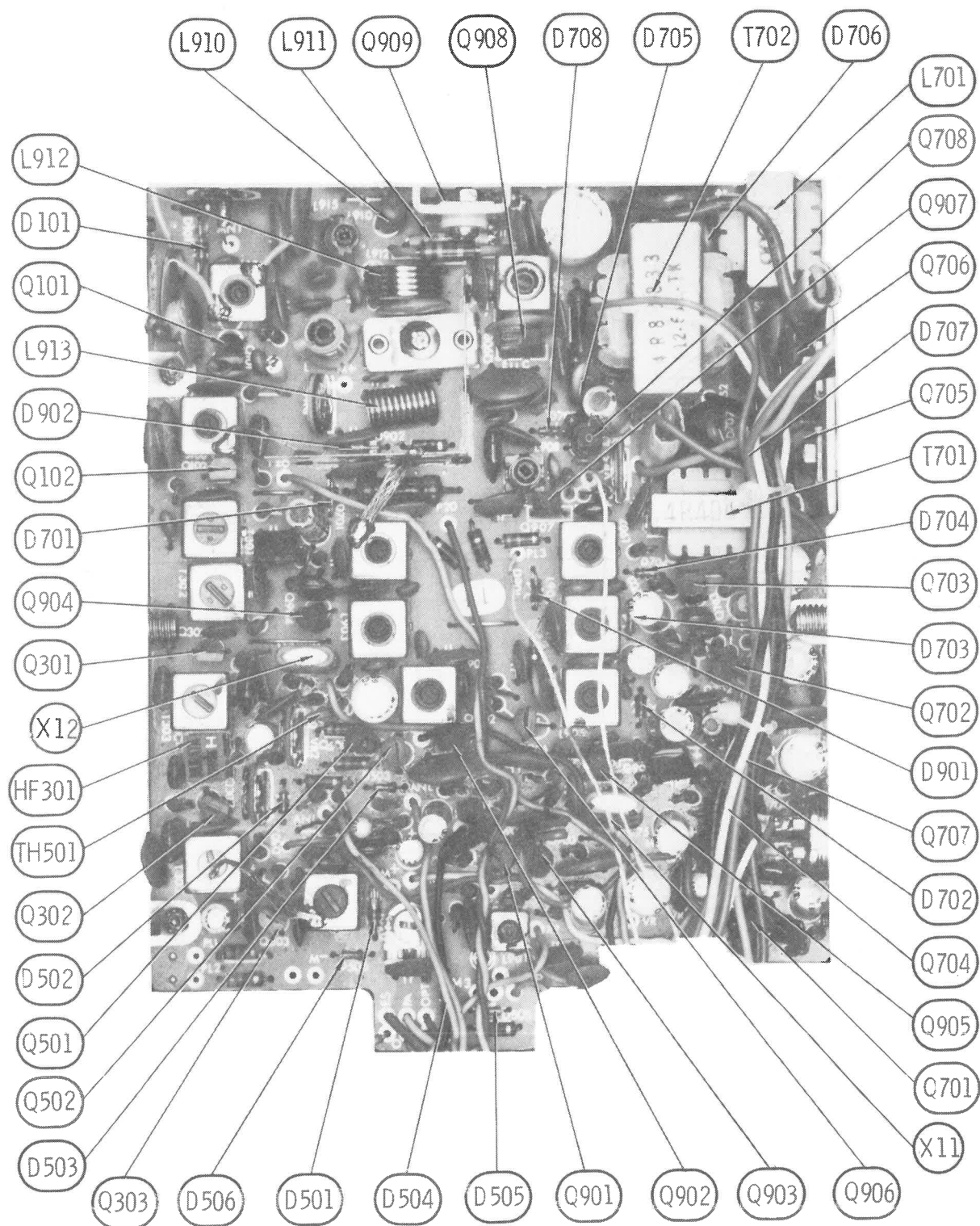
## TRANSMITTER ADJUSTMENTS

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

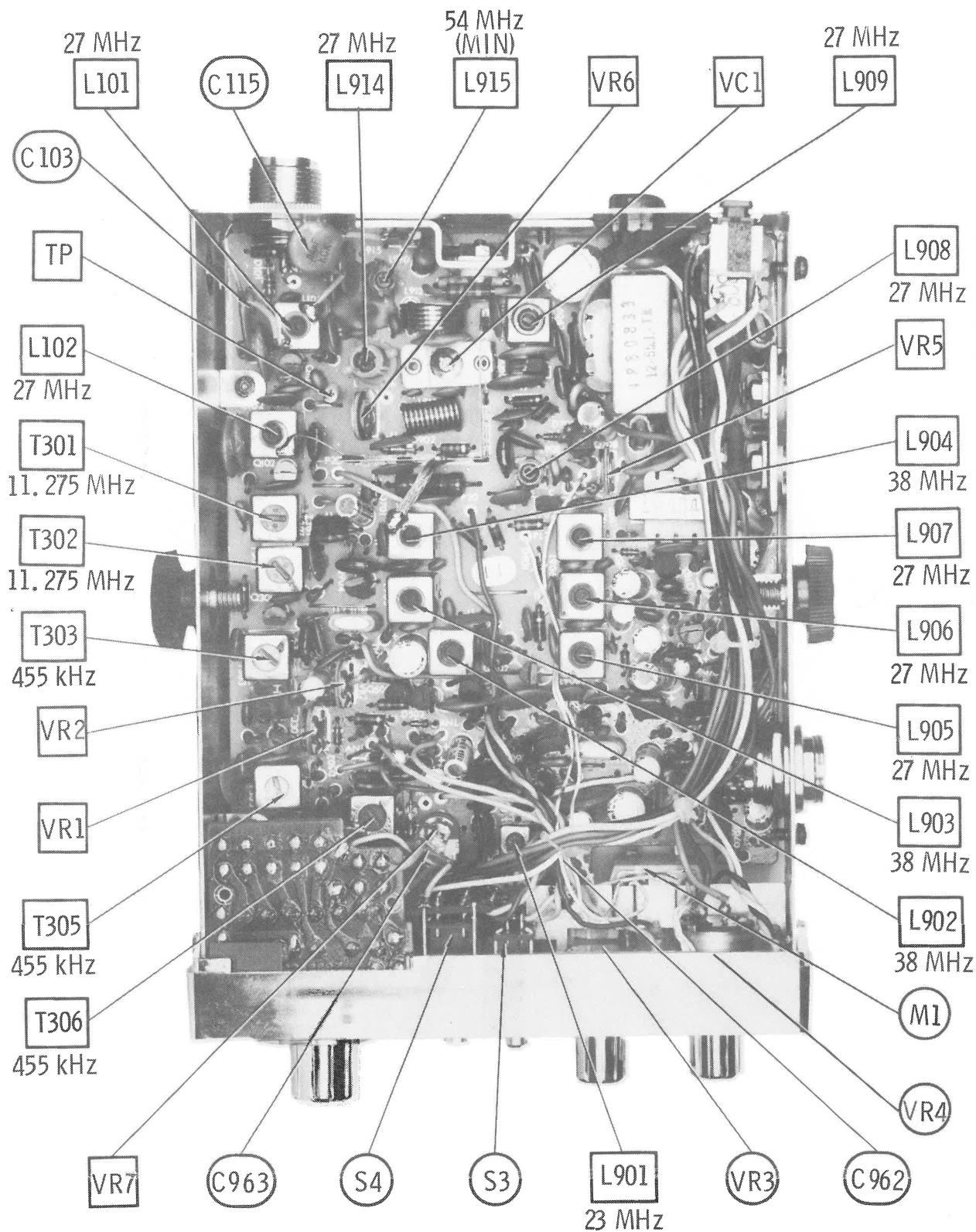
NOTE: Be sure to check transmit frequency and power on all active channels after adjustments of transmitter.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Modulation meter to antenna jack. Inject a 1000Hz signal at MIC input.	Ch. 13	VR5	AMC Disconnect C728 to disable AMC. Adjust signal for overmodulation. Restore AMC operation. Adjust VR5 for 100% modulation maximum.
	Ch. 13	VR6	RF PANEL METER Adjust VR6 for 3/4 reading on RF scale of meter.

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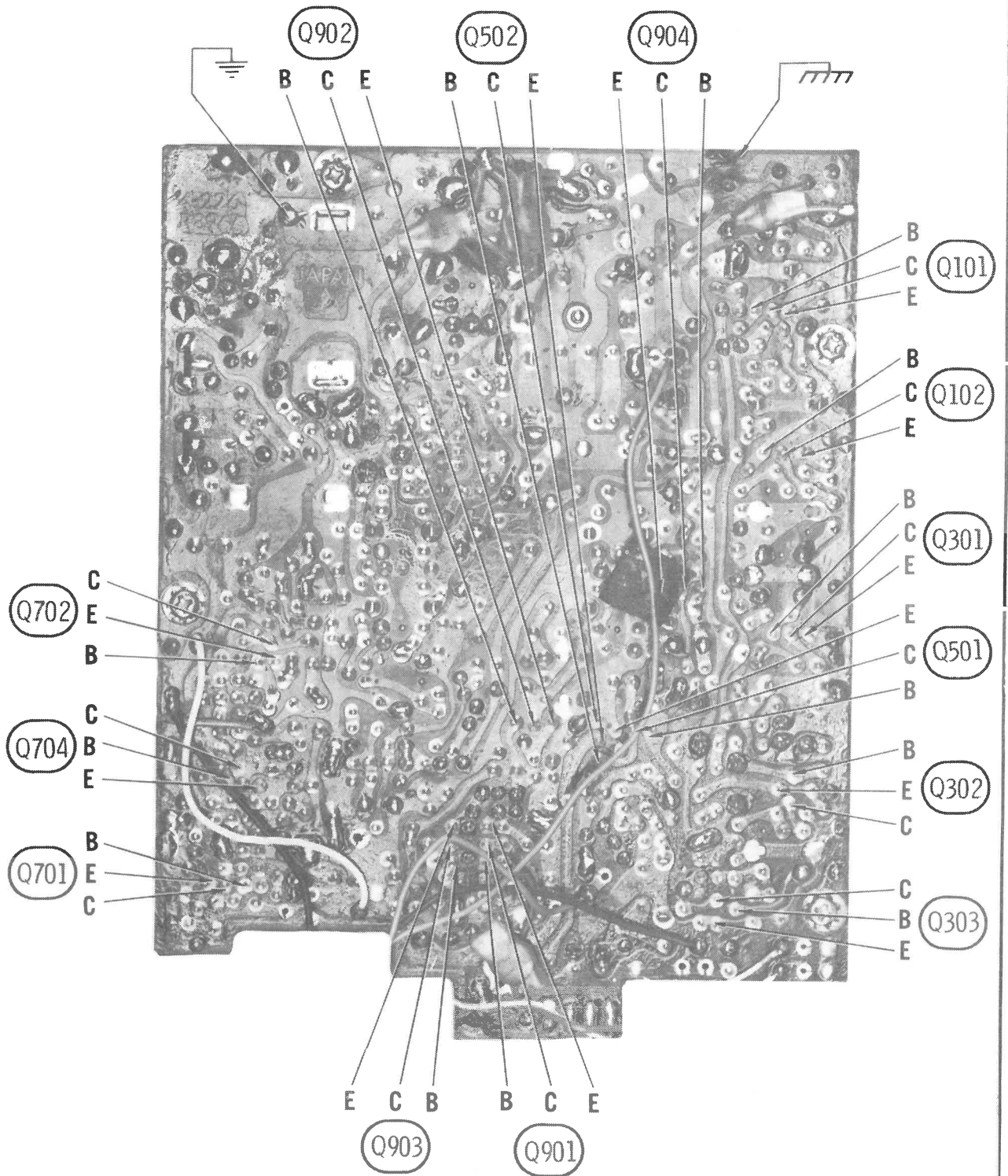


MAIN BOARD

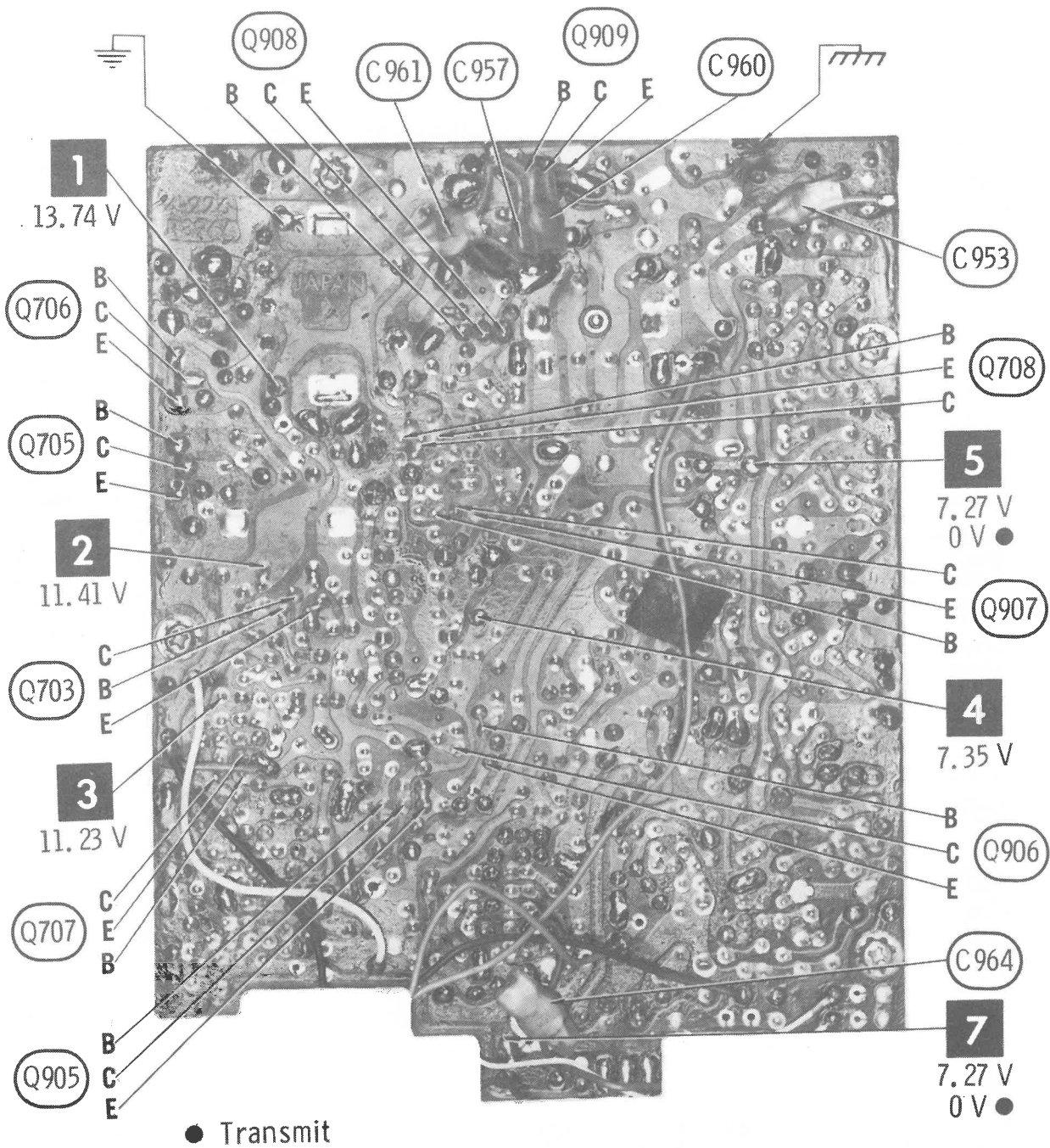


CHASSIS - BOTTOM



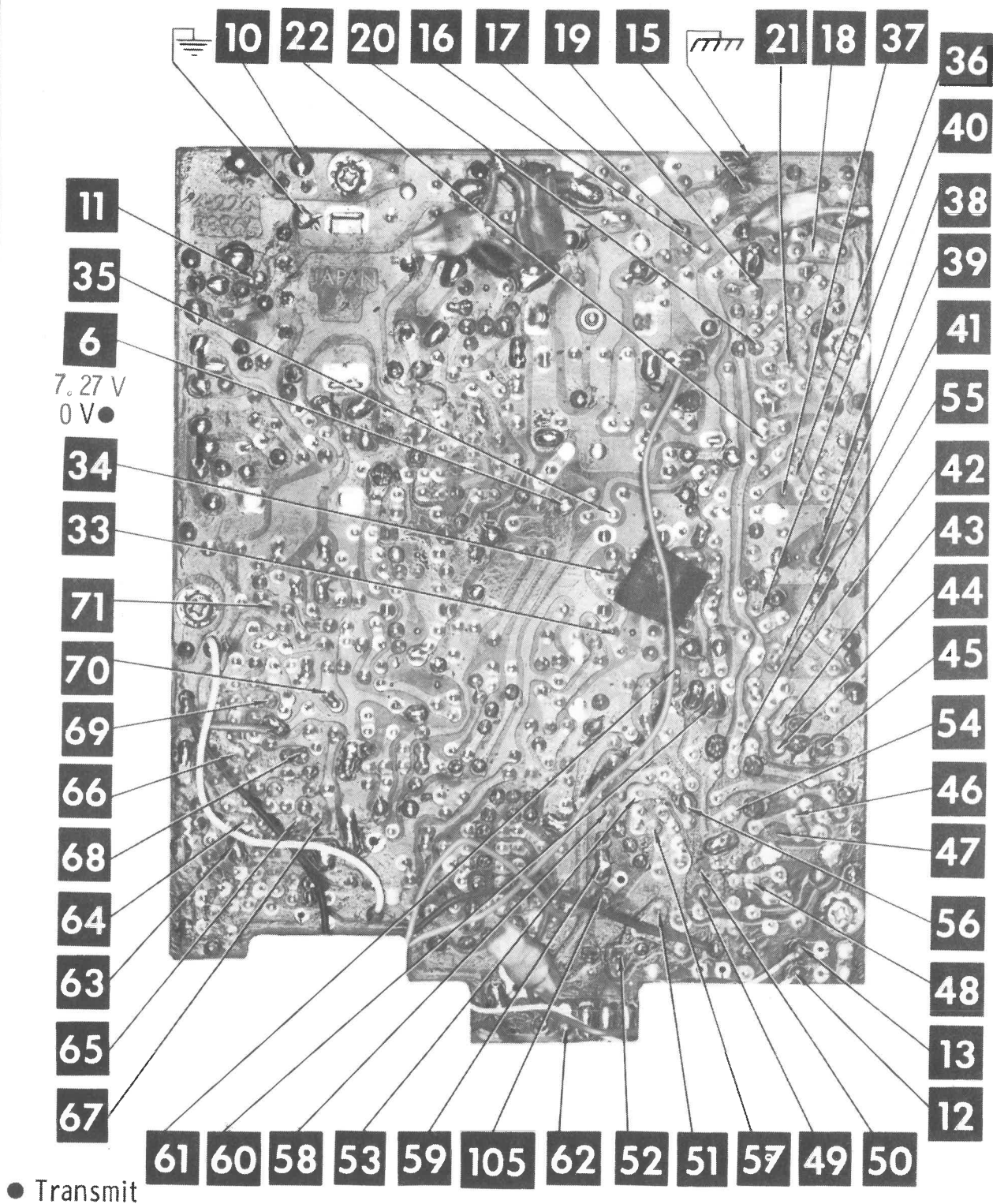


MAIN BOARD



MIDLAND MODEL 13-853

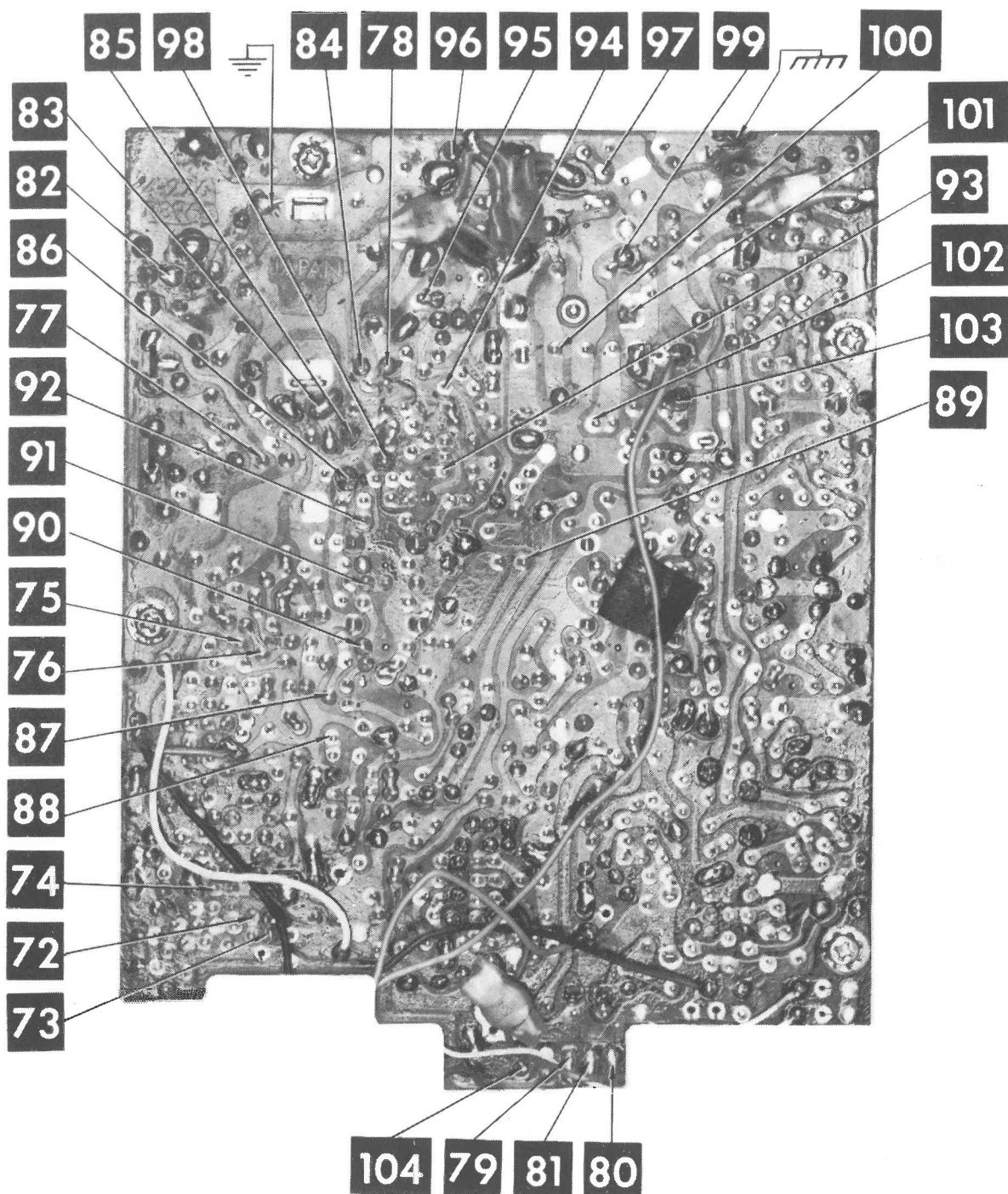
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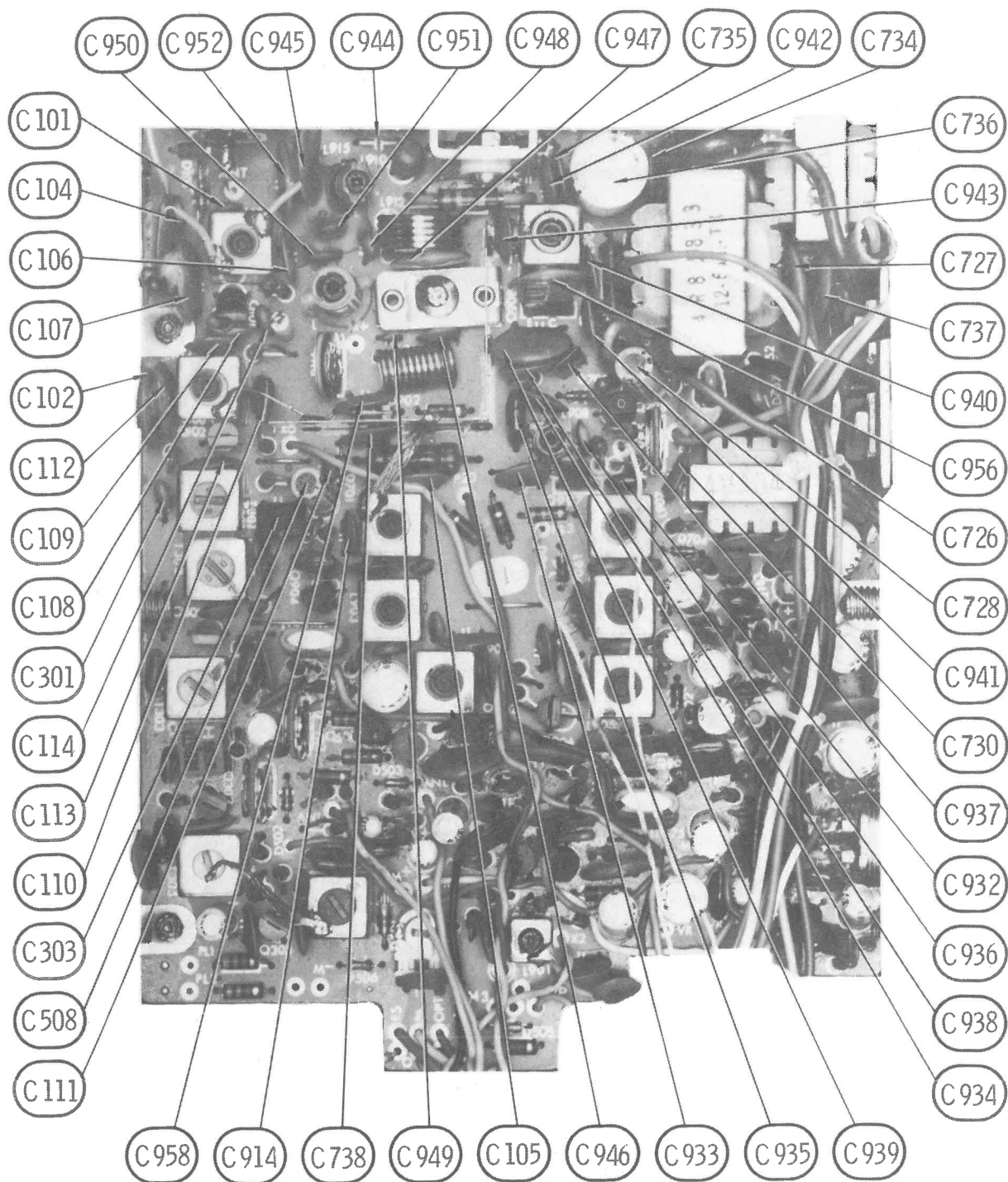
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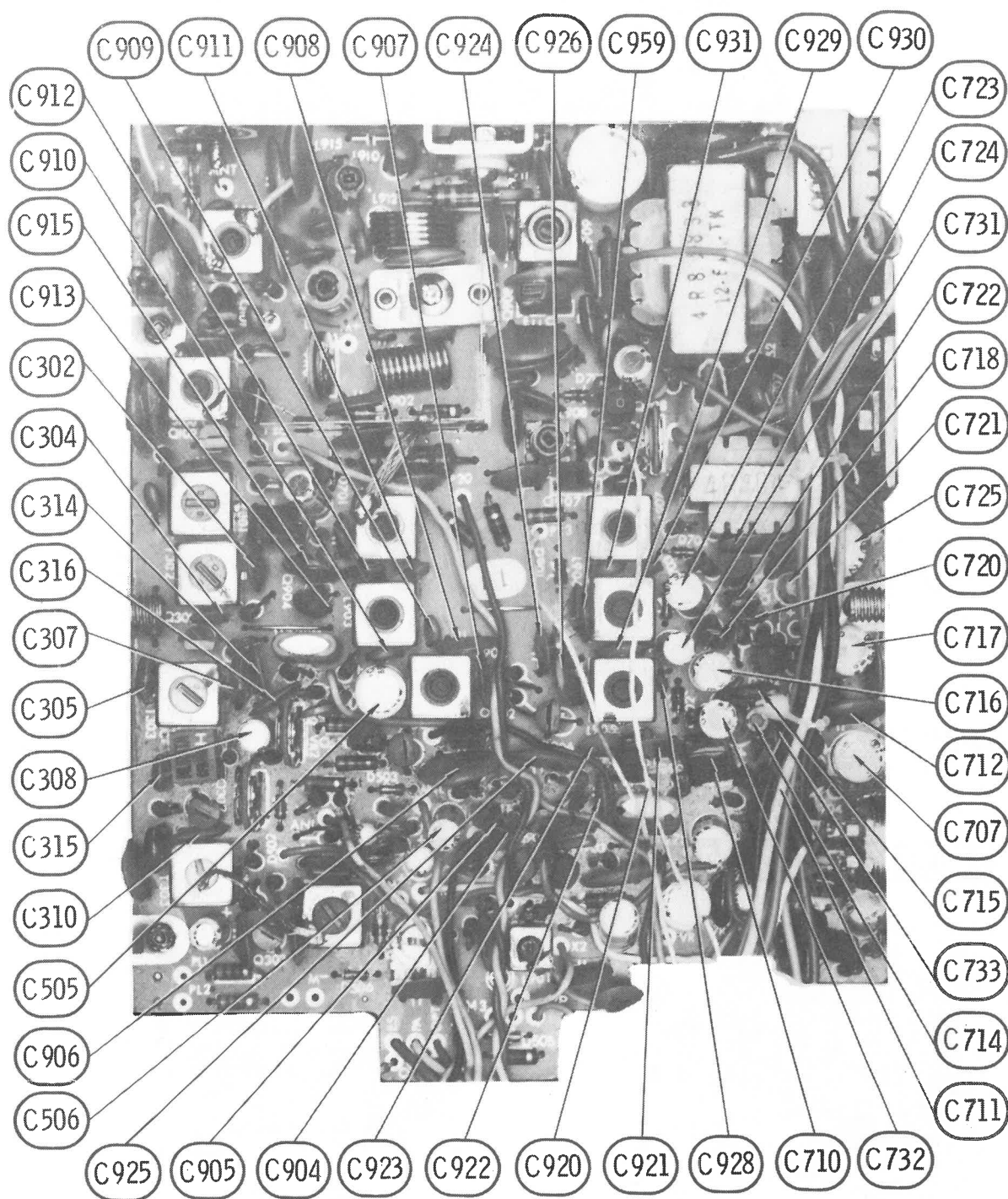
MIDLAND MODEL 13-853



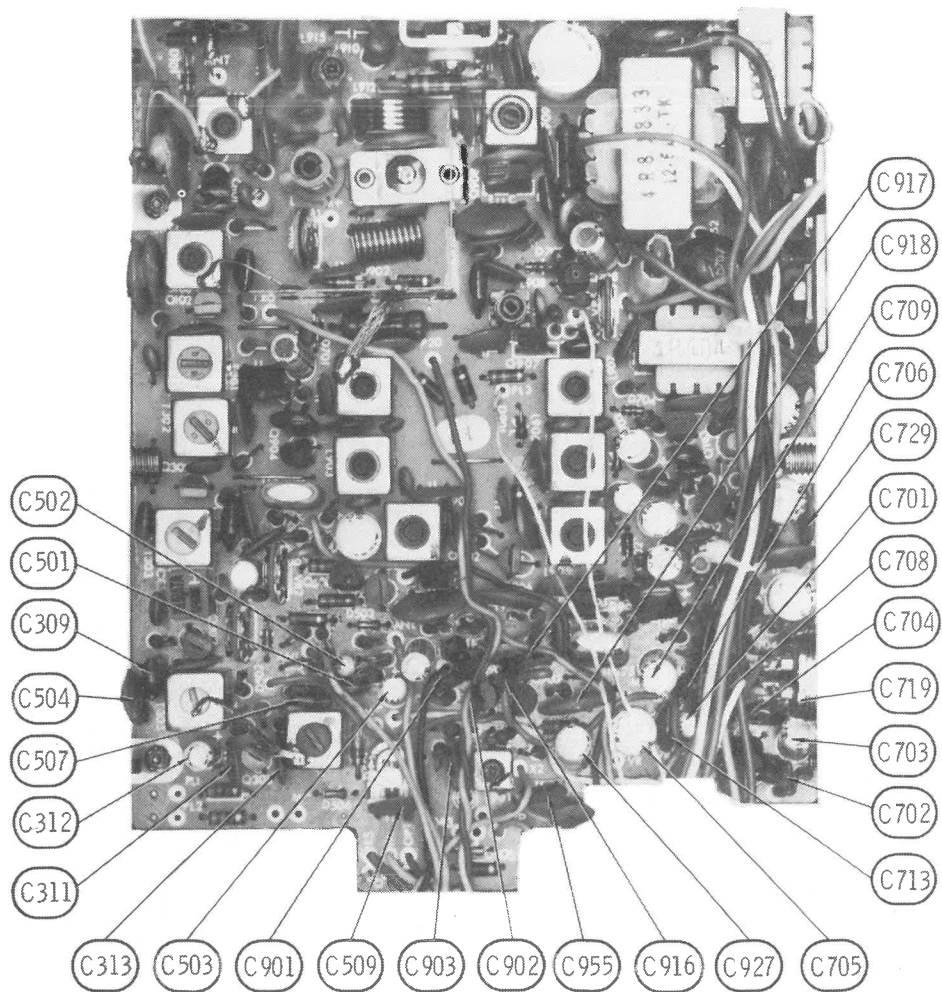
MAIN BOARD



MAIN BOARD

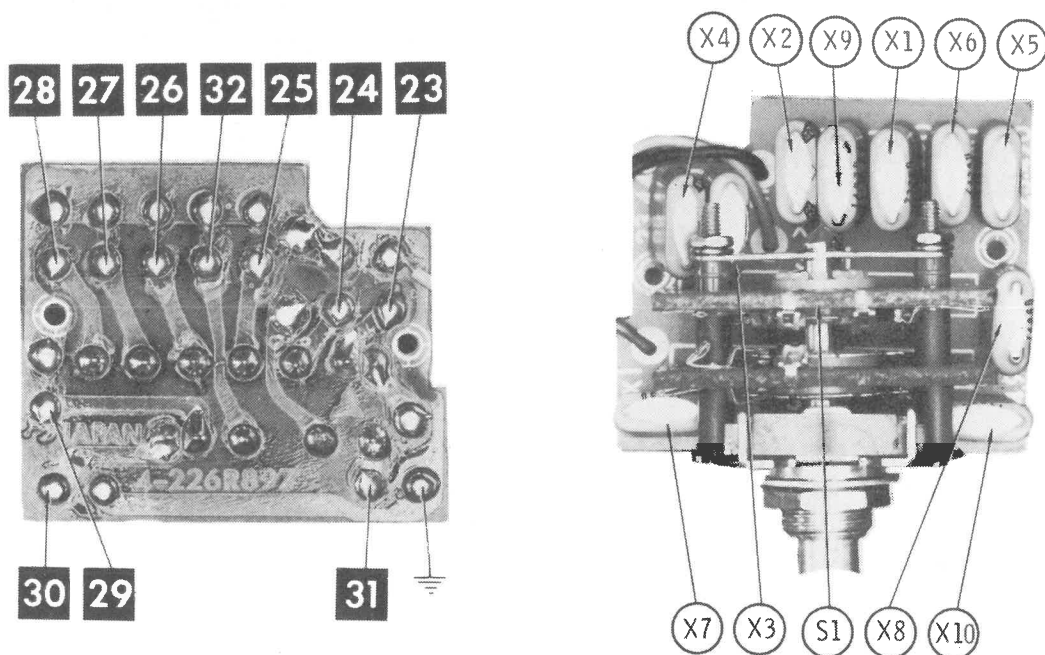


MAIN BOARD



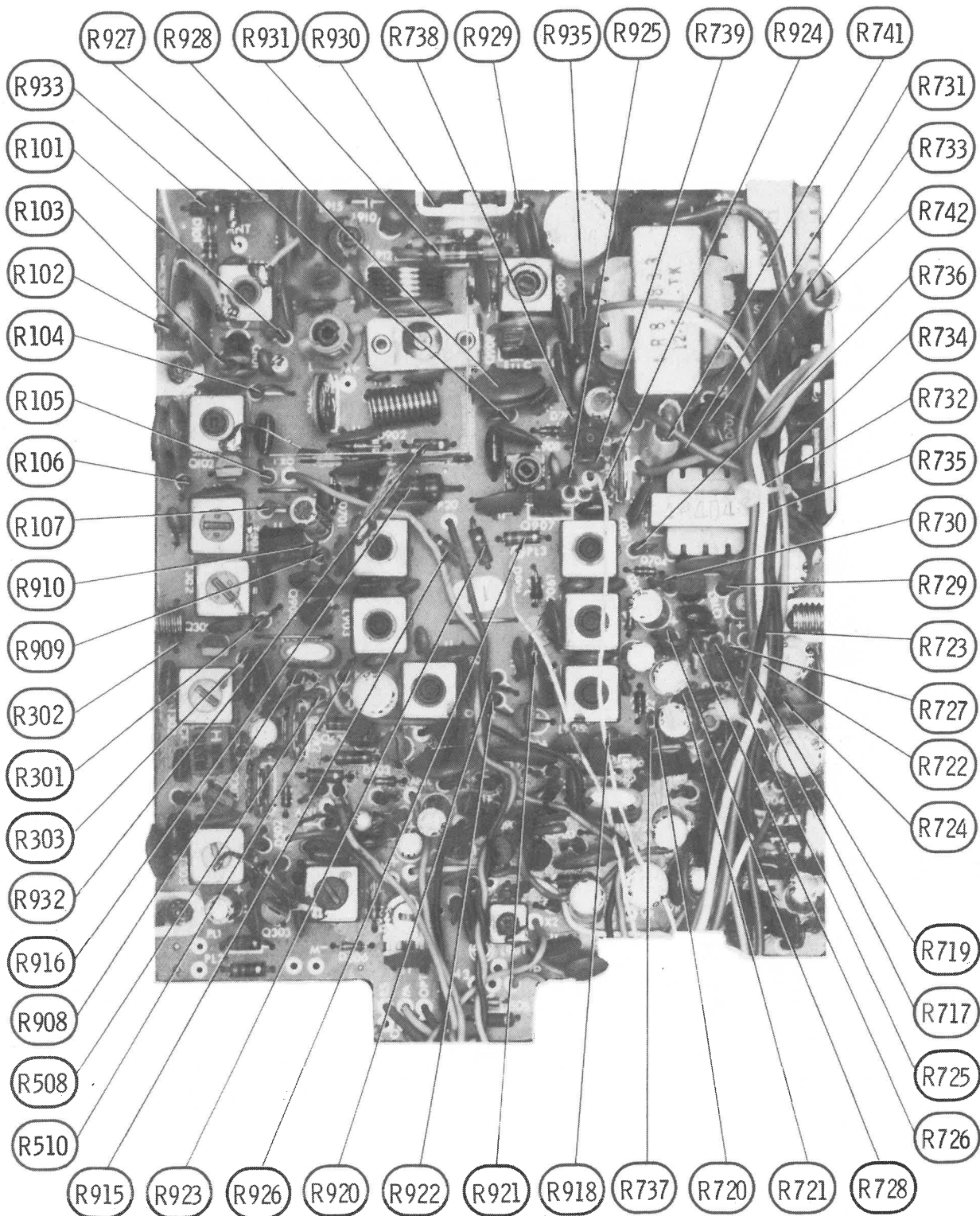
## MAIN BOARD

A Howard W. Sams CIRCUITRACE Photo



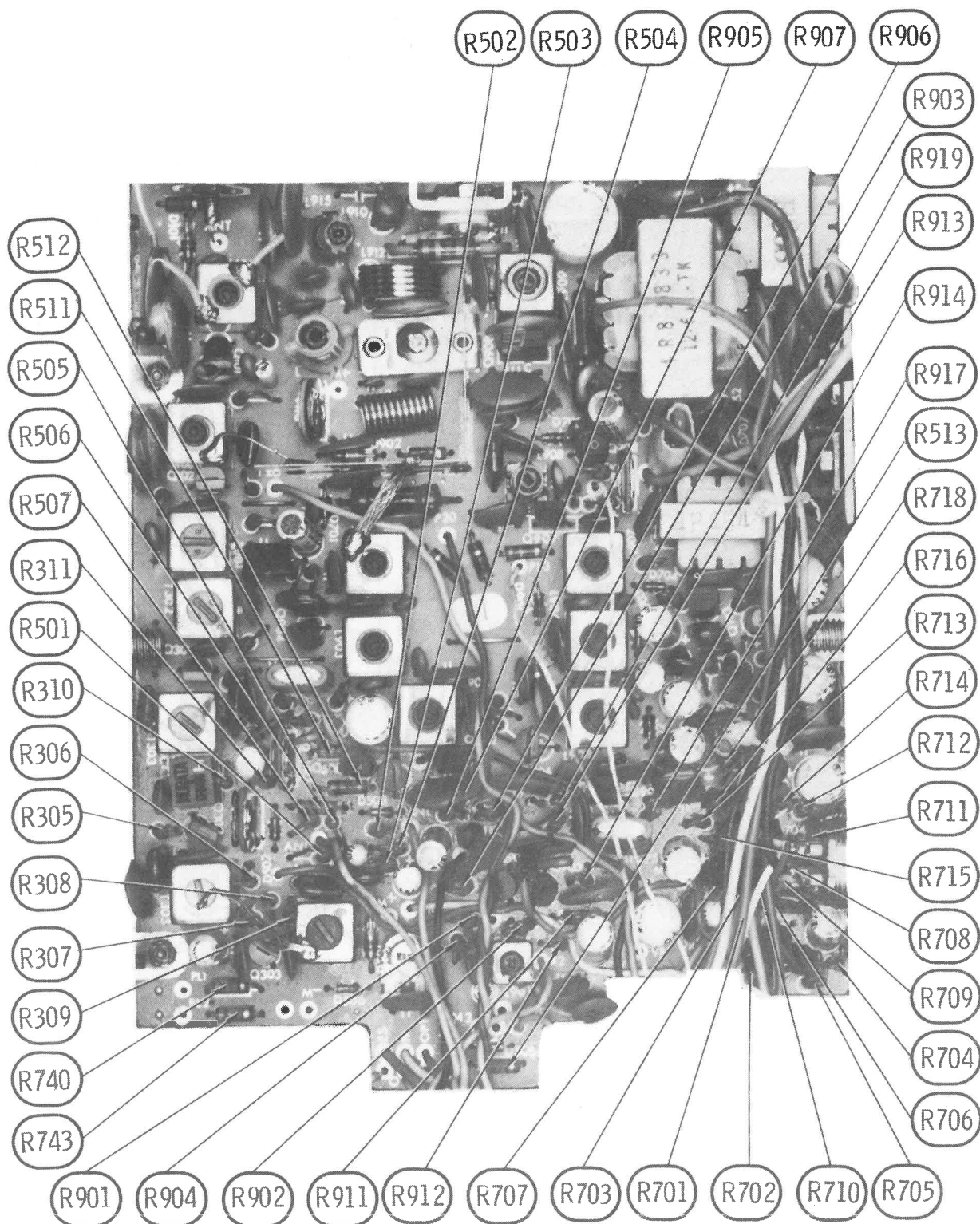
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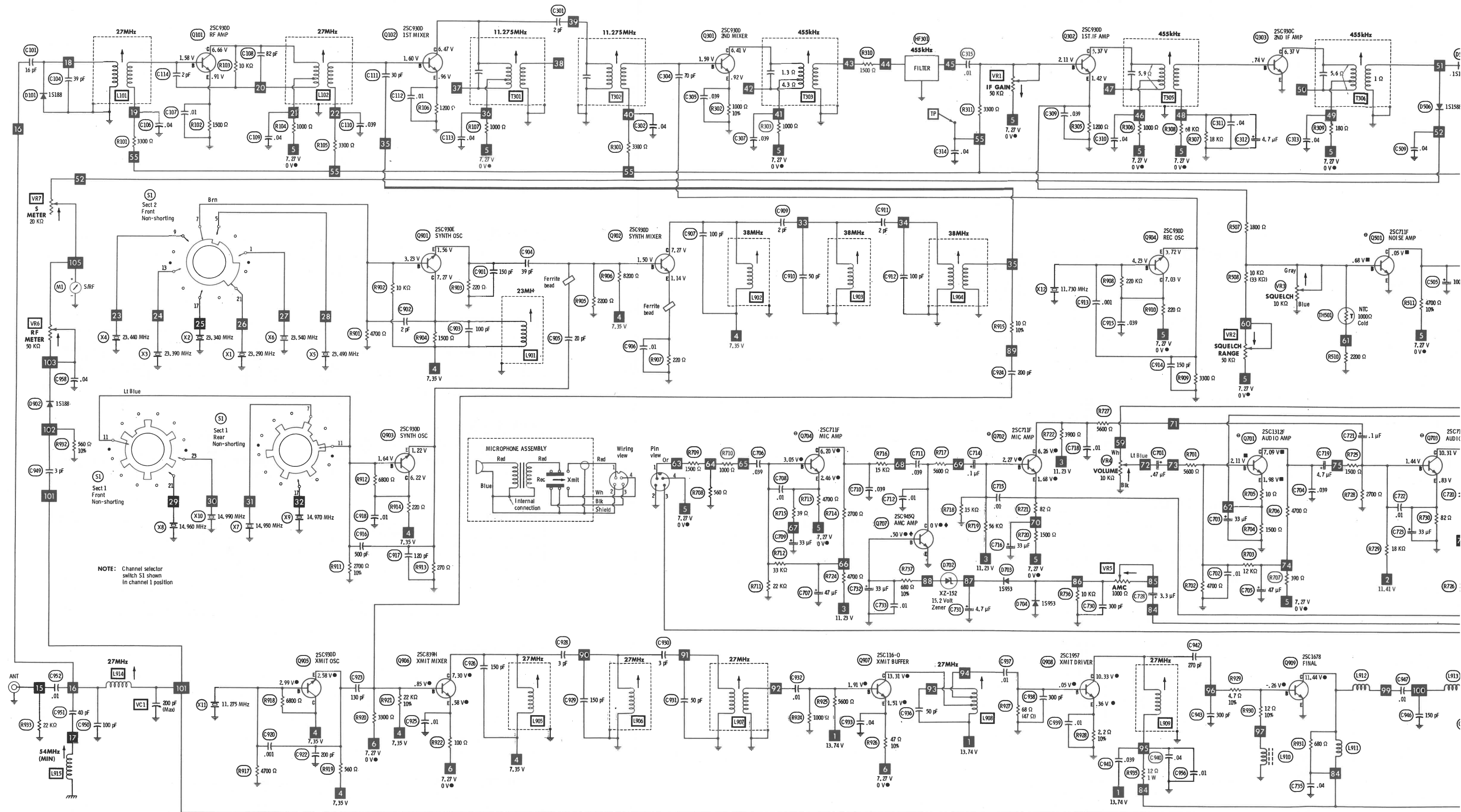


MAIN BOARD





MAIN BOARD



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.
C947	.01	13-123064	UK50-103	MGP01	MAG5011	TG-S10
C948	50		DTZ-3R3 DD-101	NP03P3 GP100	CN0533 GP310 CN0439 MAG5011 GP482	10TCC-V33
C949	3					10TCC-T10
C950	100 10%					10TCC-Q39
C951	40		UK50-103 DD-820	MGP01		TG-S10
C952	.01					10TS-Q82
C953	82 10%					
C955	.04		UK50-103 DD-820	MGP01	MAG5011 GP482	TG-S10
C956	.01					10TS-Q82
C957	82 10%					
C958	.04		DD-820 UK50-103 UK50-103	MGP01 MGP01	GP482 MAG5011 MAG5011 GP140	TG-S10
C959	.04					5GA-S40
C960	82 10%					
C961	.01					
C962	.01					
C963	.04					
VC1	200					

\* 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.	CLAROSTAT PART No.	TRW PART No.
VR1	IF Gain	50K	13-164136	T-50K (2)	C-503 (2)	MTC54L1 (2)
VR2	Squelch Range	50K	13-164136	T-50K (2)	C-503 (2)	MTC54L1 (2)
VR3	Squelch	10K	13-166072			
VR4	Volume/Switch	10K	13-160132			
VR5	AMC	1000	13-164151			
VR6	RF Meter	50K	13-164136	T-50K (2)	C-503 (2)	MTC54L1 (2)
VR7	S Meter	20K	13-164152			

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFR. PART No.			WORKMAN PART No.	MFR. PART No.
TH501	1000 CoId NTC	FR1015	SDT-100				

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L101	Rec Ant (27MHz)	13-176531	7A-326		
L102	Rec RF (27MHz)	13-176532			
L901	Synth Osc (23MHz)	13-170219			
L902	Synth Mixer (38MHz)	13-176533			
L903	Synth Mixer (38MHz)	13-176534			
L904	Synth Mixer (38MHz)	13-176535			
L905	Harmonic Suppressor (27MHz)	13-176536			
L906	Harmonic Suppressor (27MHz)	13-176536			
L907	Xmit Mixer (27MHz)	13-176537			
L908	Xmit Buffer (27MHz)	13-176538			
L909	Xmit Driver (27MHz)	13-176539	6R71430-63		
L910	RF Choke (1uH)	13-178216			
L911	RF Choke (10uH)	13-178217			
L912	Final Amp	13-176540			
L913	Pi Filter	13-176541			
L914	Ant Match (27MHz)	13-176542			
L915	TVI Trap (54MHz)	13-176543			
T301	Rec Mixer (11.275MHz)	13-090381			
T302	Rec Mixer (11.275MHz)	13-090382			
T303	IF (455kHz)	13-090383			
T305	IF (455kHz)	13-090384			
T306	IF (455kHz)	13-090385			

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFR. PART No.	THORDARSON PART No.	TRIAD PART No.	
L701	1.3A	.35	2mH	13-187215 R808 (1)			(1) Number on unit.

PARTS LIST AND DESCRIPTION (CONTINUED)

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

TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	SEC. 2	MFR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T701	2	1		13-096202 4R404 (1)			(1) Number on unit.

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T702	72	1 8 (2)	13-096203 4R80833 (1)			(1) Number on unit. (2) DC Resistance 1.2 Ohm.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFR. PART No.	QUAM PART No.	
SP1	3 PM 8 Ohms	13-060112	30A0528R	

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA					
		PART No.		BUSS PART No.		LITTELFUSE PART No.	
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER
F701	2A Fast Acting	13-204014	13-158468	AGC2	HDJ	312002	150145

MICROPHONE

ITEM No.	REPLACEMENT DATA				CONNECTION DATA						
	MFR. 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	13-038078	18-032	18-034	18-010	18-092	1	2	4	3	NC	2

CRYSTALS

ITEM No.	CRYSTAL FREQUENCY IN MHz	MFR. PART No.	CTS KNIGHTS PART No.	CHANNEL	ITEM No.	CRYSTAL FREQUENCY IN MHz	MFR. PART No.	CTS KNIGHTS PART No.	CHANNEL
X1	23.290	13-128114	MA14W23.290	1,2,3,4	X7	14.950	13-128120	MB90W14.950	1,5,9,13,17,21
X2	23.340	13-128115	MA14W23.340	5,6,7,8	X8	14.960	13-128121	MB90W14.960	2,6,10,14,18,22
X3	23.390	13-128116	MA14W23.390	9,10,11,12	X9	14.970	13-128122	MB90W14.970	3,7,11,15,19
X4	23.440	13-128117	MA14W23.440	13,14,15,16	X10	14.990	13-128123	MB90W14.990	4,8,12,16,20,23
X5	23.490	13-128118	MA14W23.490	17,18,19,20	X11	11.275	13-128124	MC150W11.275	Xmit Osc.
X6	23.540	13-128119	MA14W23.540	21,22,23	X12	11.730	13-128125	MC150W11.730	Rec Osc.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
HF301	Filter	13-179063	455kHz (CHO-455H)
M1	Meter	13-200075	S/RF
S1	Switch	13-180113	Channel Selector
S3	Switch	13-183231	ANL
S4	Switch	13-183230	PA/EXT-CB/Off
	Printed Circuit Board		Main (4-226R896A)
	Printed Circuit Board		Crystal (226R897)
	Printed Circuit Board		PA/EXT-CB/Off (4-226R90)

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

ITEM	PART No.	ITEM	PART No.
Panel, Front	13-010310	Knob, Control	13-110196
Cabinet, Top	13-010309	Mounting Bracket Mobile	13-158466
Cabinet, Bottom	13-013141	Hanger, Microphone	13-158467
Knob, Channel Selector	13-115132		

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS

ITEM No.	RATING	MFGR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C101	16		DTZ-15	NP015	CN0415	10TCC-Q15
C102	.01		UK50-103	MGP01	MAG5011	TG-S10
C103	.01		UK50-103	MGP01	MAG5011	TG-S10
C104	39 5%				CN0439	10TCC-Q39
C105	.04					
C106	.04		UK50-103	MGP01	MAG5011	TG-S10
C107	.01		DTZ-B2	NP082	CN0482	10TCC-Q82
C108	82 5%					
C109	.04				M192P3939R8	192P3939R8
C110	.039				CN0433	10TCC-Q33
C111	30		DTZ-33	NP033	MAG5011	TG-S10
C112	.01		UK50-103	MGP01		
C113	.04					
C114	2		DTZ-2R2	NP02P2	CN0522	10TCC-V22
C115	.04				GP140	5GA-S40
C301	2		DTZ-2R2	NP02P2	CN0522	10TCC-V22
C302	.04					
C303	.039 10%				M192P3939R8	192P3939R8
C304	70		DTZ-68	NP068	CN0468	10TCC-Q68
C305	.039				M192P3939R8	192P3939R8
C307	.039				M192P3939R8	192P3939R8
C309	.039				M192P3939R8	192P3939R8
C310	.04					
C311	.04					
C313	.04					
C314	.04					
C315	.01			WMF1S1	EWFA1110	1PB-S10
C316	.04					
C501	.022			DPMS2S22	M192P3339R8	192P3339R8
C504	.04					
C507	.039				M192P3939R8	192P3939R8
C509	.04					
C702	.01			WMF1S1	EWFA1110	1PB-S10
C704	.039				M192P3939R8	192P3939R8
C706	.039				M192P3939R8	192P3939R8
C708	.01			WMF1S1	EWFA1110	1PB-S10
C710	.039 10%				M192P3939R8	192P3939R8
C711	.039				M192P3939R8	192P3939R8
C712	.01		UK50-103	MGP01	MAG5011	TG-S10
C713	.039 10%				M192P3939R8	192P3939R8
C715	.01			WMF1S1	EWFA1110	1PB-S10
C718	.01			WMF1S1	EWFA1110	1PB-S10
C720	.01			WMF1S1	EWFA1110	1PB-S10
C722	.01			WMF1S1	EWFA1110	1PB-S10
C724	.04					
C726	.01		UK50-103	MGP01	MAG5011	TG-S10
C727	.1		CK-104	MGP1	MAG5011	TG-P10
C729	.04					
C730	300 5%					
C733	.01			WMF1S1	EWFA1110	1PB-S10
C734	.04					
C735	.04					
C737	.1		CK-104	MGP1	MMG5001	TG-P10
C738	.04					
C901	150 5% NPO		DTZ-150		CN0315	10TCC-T15
C902	2		DTZ-2R2	NP02P2	CN0522	10TCC-V22
C903	100 5% N220		*		*	10TCR-T10
C904	39				CN0439	10TCC-Q39
C905	20 NPO		DTZ-20	NP020	CN0420	10TCC-Q20
C906	.01		UK50-103	MGP01	MAG5011	TG-S10
C907	100 5% N075					
C908	.04					
C909	2		DTZ-2R2	NP02P2	CN0522	10TCC-V22
C910	50 N220		*		*	10TCR-Q50
C911	2		DTZ-2R2	NP02P2	CN0522	10TCC-V22
C912	100 5% N075		*		*	
C913	.001		DD-102G	GP1000	GP210	5GA-D10
C914	150 5%		DTZ-150		CN0315	10TCC-T15
C915	.039				M192P3939R8	192P3939R8
C916	500				SX351	MMA-S11
C917	120 10% NPO					
C918	.01		DTZ-120		CN0312	10TCC-T12
C920	.001		UK50-103	MGP01	MAG5011	TG-S10
C921	.04		DD-102G	GP1000	GP210	5GA-D10
C922	200 10%					
C923	130 10%		DD-201	GP200	GP320	10TS-T20
C924	200 10%					
C925	.01		DD-201	GP200	GP320	10TCC-T12
C926	150 5% N220		UK50-103	MGP01	MAG5011	10TS-T20
C928	3		DTZ-3R3	NP03P3	CN0533	TG-S10
C929	150 N220		*		*	10TCR-T15
C930	3		DTZ-3R3	NP03P3	CN0533	10TCC-V33
C931	50 N220		*		*	10TCR-T15
C932	.01			WMF1S1	EWFA1110	10TCC-V33
C933	.04					10TCR-Q50
C934	.04					1PB-S10
C935	.039					
C936	50 5% N220		*		M192P3939R8	192P3939R8
C937	.01			WMF1S1	EWFA1110	10TCR-Q50
C938	300 5%		DD-301	GP300	GP330	1PB-S10
C939	.01		UK50-103	MGP01	MAG5011	10TS-T30
C940	.04					TG-S10
C941	.039					
C942	270 10%		DD-221		M192P3939R8	192P3939R8
C943	300 10%		DD-301	GP300	GP322	10TS-T22
C944	.04				GP330	10TS-T30
C945	.01		UK50-103	MGP01	MAG5011	TG-S10
C946	150 5%		DTZ-150		CN0315	10TCC-T15

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFGR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C947	.01		UK50-103	MGP01	MAG5011	TG-S10
C948	50					
C949	3		DTZ-3R3	NP03P3	CN0533	10TCC-V33
C950	100 10%		DD-101	GP100	GP310	10TS-T10
C951	40				CN0439	10TCC-Q39
C952	.01		UK50-103	MGP01	MAG5011	TG-S10
C953	82 10%		DD-820		GP482	10TS-Q82
C955	.04					
C956	.01		UK50-103	MGP01	MAG5011	TG-S10
C957	82 10%		DD-820		GP482	10TS-Q82
C958	.04					
C959	.04					
C960	82 10%		DD-820		GP482	10TS-Q82
C961	.01		UK50-103	MGP01	MAG5011	TG-S10
C962	.01		UK50-103	MGP01	MAG5011	TG-S10
C963	.04				GP140	5GA-S40
VC1	200	13-123064				

\* 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			
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.
VR1	IF Gain	50K	13-164136	T-50K (2)	C-503 (2)	MTC54L1 (2)
VR2	Squelch Range	50K	13-164136	T-50K (2)	C-503 (2)	MTC54L1 (2)
VR3	Squelch	10K	13-166072			
VR4	Volume/Switch	10K	13-160132			
VR5	AMC	1000	13-164151			
VR6	RF Meter	50K	13-164136	T-50K (2)	C-503 (2)	MTC54L1 (2)
VR7	S Meter	20K	13-164152			

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFGR. PART No.			WORKMAN PART No.	MFGR. PART No.
TH501	1000 Cold NTC	FR1015	SDT-100				

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L101	Rec Ant (27MHz)	13-176531	7A-326		
L102	Rec RF (27MHz)	13-176532			
L901	Synth Osc (23MHz)	13-170219			
L902	Synth Mixer (38MHz)	13-176533			
L903	Synth Mixer (38MHz)	13-176534			
L904	Synth Mixer (38MHz)	13-176535			
L905	Harmonic Suppressor (27MHz)	13-176536			
L906	Harmonic Suppressor (27MHz)	13-176536			
L907	Xmit Mixer (27MHz)	13-176537			
L908	Xmit Buffer (27MHz)	13-176538			
L909	Xmit Driver (27MHz)	13-176539	6R71430-63		
L910	RF Choke (1uH)	13-178216			
L911	RF Choke (10uH)	13-178217			
L912	Final Amp	13-176540			
L913	Pi Filter	13-176541			
L914	Ant Match (27MHz)	13-176542			
L915	TVI Trap (54MHz)	13-176543			
T301	Rec Mixer (11.275MHz)	13-090381			
T302	Rec Mixer (11.275MHz)	13-090382			
T303	IF (455kHz)	13-090383			
T305	IF (455kHz)	13-090384			
T306	IF (455kHz)	13-090385			

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (O CURRENT 1000~)	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
L701	1.3A	.35	2mH	13-187215 R808 (1)			(1) Number on unit.

PARTS LIST AND D

(When ordering parts, state Mo

TRANSFORMER (Di

ITEM No.	TURNS RATIO		
	PRI.	SEC. 1	SE
T701	2	1	

TRANSFORMER (Ai

ITEM No.	IMPEDANCE		
	PRI.	SEC.	
T702	72	1 8	2 (2)

SPEAKER

ITEM No.	TYPE
SP1	3 PM 8 Ohms

FUSE DEVICES

ITEM No.	DESCRIPTION
F701	2A Fast Acting

MICROPHONE

ITEM No.	REP	
	MFGR. PART No.	PAR
MIC	13-038078	18-0

CRYSTALS

ITEM No.	CRYSTAL FREQUENCY IN MHz	MFGR. PART No
X1	23.290	13-128114
X2	23.340	13-128115
X3	23.390	13-128116
X4	23.440	13-128117
X5	23.490	13-128118
X6	23.540	13-128119

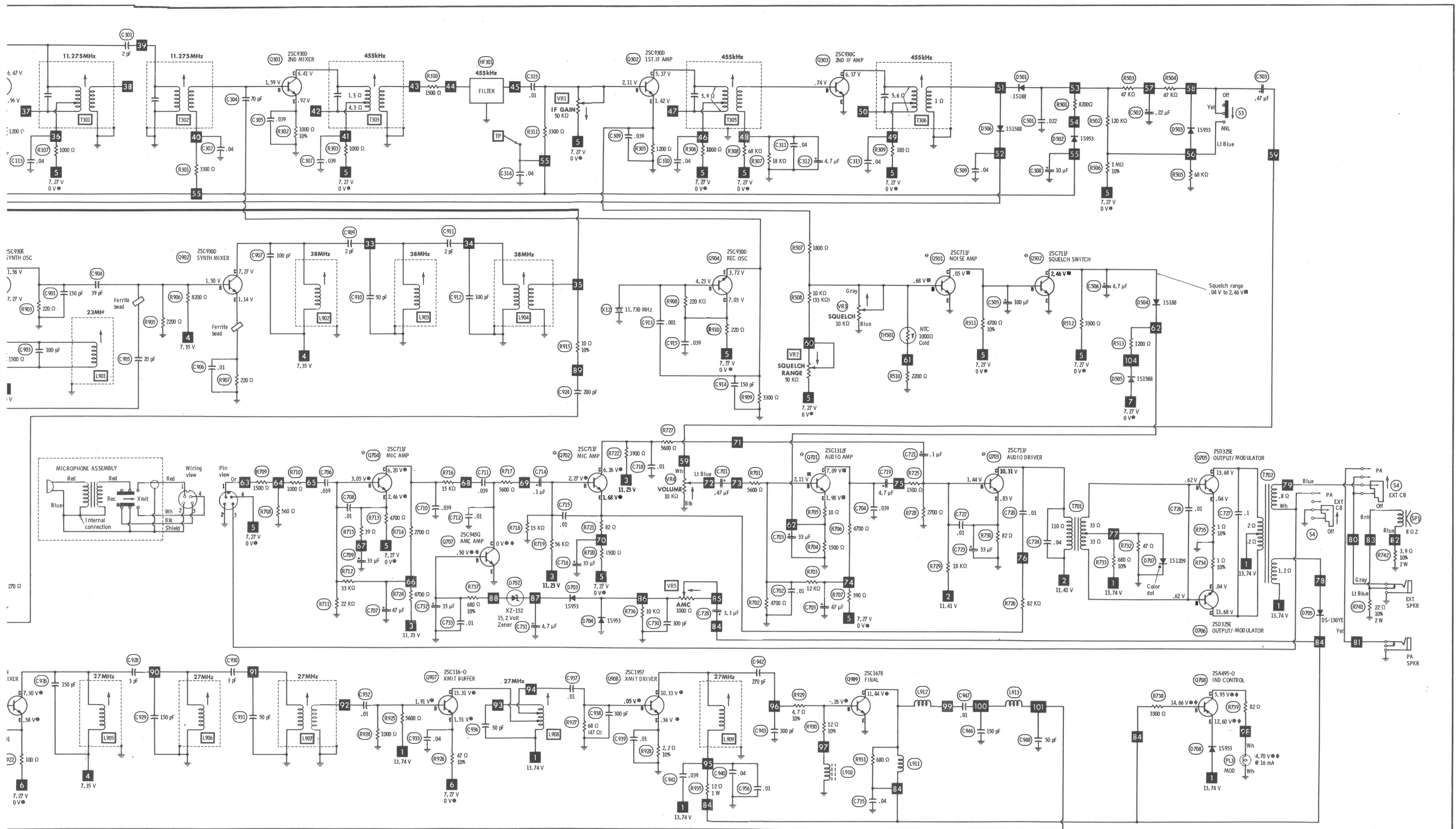
MISCELLANEOUS

ITEM No.	PART NAME
HF301	Filter
M1	Meter
S1	Switch
S3	Switch
S4	Switch
	Printed Circuit Boa
	Printed Circuit Boa
	Printed Circuit Boa

CABINETS & CABI

ITEM
Panel, Front
Cabinet, Top
Cabinet, Bottom
Knob, Channel Selector







## PARTS LIST AND DESCRIPTION

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

### WIRING DATA

General-use Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in 13 Colors 8524 (Stranded) Available in 13 Colors
Shielded Antenna Lead .....	Use BELDEN No. 8214 Lowest-Loss (RG-8/U Type) 8237 Low-Loss (RG-8/U) 8240 (Solid) Miniature (RG-58/U) 8259 (Stranded) Miniature (RG-58A/U)
Coiled Microphone Cable .....	Use BELDEN No. 8497 3-Conductor (1 shielded for Press-to-Talk) Neoprene

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

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
D101	1S188		1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
D501	1S188		1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
D502	1S953		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D503	1S953		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D504	1S188		1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
D505	1S1588		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D506	1S1588		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D701	XZ-070		GEZD-6.8	Z1206	ZB6.8A	HEPZ0409	RE 110		RT-238	ECG5071
D702	XZ-152		GEZD-15	Z1214	ZB15A	HEPZ0418	RE 121	SK3063	RT-245	ECG145
D703	1S953		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D704	1S953		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D705	DS-130YE		GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D706	DS-130YE		GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D707	1S1209				PTC301					
D708	1S953		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D901	XZ070		GEZD-6.8	Z1206	ZB6.8A	HEPZ0409	RE 110		RT-238	ECG5071
D902	1S188		1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
Q101	2SC930D		GE-60	(1R)2SC772	PTC132	HEPS0016	RE 9	SK3039	RT-308	ECG229
Q102	2SC930D		GE-60	(1R)2SC772	PTC132	HEPS0016	RE 9	SK3039	RT-308	ECG229
Q301	2SC930D		GE-60	(1R)2SC772	PTC132	HEPS0016	RE 9	SK3039	RT-308	ECG229
Q302	2SC930D		GE-60	(1R)2SC772	PTC132	HEPS0016	RE 9	SK3039	RT-308	ECG229
Q303	2SC930C		GE-60	(1R)2SC772	PTC132	HEPS0016	RE 9	SK3039	RT-308	ECG229
Q501	2SC711F		GE-62	(1R)2SC644	PTC121	HEPS0024	RE 192	SK3124	RT-304	ECG199
	2SC945(1)		GE-212	(1R)2SC945	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
Q502	2SC711F		GE-62	(1R)2SC644	PTC121	HEPS0024	RE 192	SK3124	RT-304	ECG199
	2SC945(1)		GE-212	(1R)2SC945	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
Q701	2SC1312F		GE-62	(1R)2SC372	PTC139	HEPS0015	RE 192	SK3122	RT-172	ECG199
	2SC945(1)		GE-212	(1R)2SC945	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
Q702	2SC711F		GE-62	(1R)2SC644	PTC121	HEPS0024	RE 192	SK3124	RT-304	ECG199
	2SC945(1)		GE-212	(1R)2SC945	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
Q703	2SC711F		GE-62	(1R)2SC644	PTC121	HEPS0024	RE 192	SK3124	RT-304	ECG199
	2SC945(1)		GE-212	(1R)2SC945	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
Q704	2SC711F		GE-62	(1R)2SC644	PTC121	HEPS0024	RE 192	SK3124	RT-304	ECG199
	2SC945(1)		GE-212	(1R)2SC945	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
Q705	2SD325E		GE-66	TR-76	PTC110	HEPS5027	RE 21	SK3054	RT-197	ECG152
	(10)									
Q706	2SD325E		GE-66	TR-76	PTC110	HEPS5027	RE 21	SK3054	RT-197	ECG152
	(10)									
Q707	2SC945Q		GE-212	(1R)2SC945	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
Q708	2SA495-0		GE-221	(1R)2SA495	PTC103	HEPS0013	RE 26	SK3114	RT-303	ECG159
Q901	2SC930E		GE-60	(1R)2SC772	PTC132	HEPS0016	RE 9	SK3039	RT-308	ECG229
Q902	2SC930D		GE-60	(1R)2SC772	PTC132	HEPS0016	RE 9	SK3039	RT-308	ECG229
Q903	2SC930D		GE-60	(1R)2SC772	PTC132	HEPS0016	RE 9	SK3039	RT-308	ECG229
Q904	2SC930D		GE-60	(1R)2SC772	PTC132	HEPS0016	RE 9	SK3039	RT-308	ECG229
Q905	2SC930D		GE-60	(1R)2SC772	PTC132	HEPS0016	RE 9	SK3039	RT-308	ECG229
Q906	2SC839H		GE-61	(1R)2SC644	PTC132	HEPS0015	RE 13	SK3018	RT-308	ECG123A
Q907	2SC1166-0		GE-81	TR-63	PTC143	HEPS5026	RE 210	SK3122	RT-141	ECG297
Q908	2SC1957				PTC180		RE 209			ECG295
Q909	2SC1678		GE-215		PTC186		RE 203	SK3197	RT-146	ECG235
	(11)									

(1) Used in some versions.

(10) Rating, 10 watt @ 1.5 Amp.

(11) Rating, 10 watt @ 2.0 Amp.

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C308	10 6.3V		PC10-25	VTT10A25	EV-1222
C312	4.7 6.3V		PC5-50	VTT4R7A50	EV-1319
C502	.22 10V			TDC224M050EL	SD50-R229
C503	.47 10V		PC1-50	VTT4R7B63	EV-1310
C505	100 10V		PC100-10	VTT100E10	EV-1130
C506	4.7 10V		PC5-50	VTT4R7A50	EV-1319
C508	10 10V		PC10-25	VTT10A25	EV-1222
C701	.47 10V		PC1-50	VTT4R7B63	EV-1310
C703	33 6.3V		PC30-25	VTT33A10	EV-1125
C705	47 16V		PC50-16	VTT47D16	EV-1226
C707	47 16V		PC50-16	VTT47D16	EV-1226
C709	33 10V		PC30-25	VTT33A10	EV-1125
C714	.1 10V			TDC104M050EL	SD50-R109
C716	33 10V		PC30-25	VTT33A10	EV-1125
C717	47 16V		PC50-16	VTT47D16	EV-1226
C719	4.7 6.3V		PC5-50	VTT4R7A50	EV-1319
C721	.1 10V			TDC104M050EL	SD50-R109
C723	33 6.3V		PC30-25	VTT33A10	EV-1125
C725	220 16V		PC250-25	VTT220G16	EV-1240
C728	3.3 50V		PC5-50	VTT3R3A50	EV-1618
C731	4.7 25V		PC5-50	VTT4R7A50	EV-1319
C732	33 6.3V		PC30-25	VTT33A10	EV-1125
C736	470 16V		PC500-16	VTT470J16	EV-1250
C927	33 10V		PC30-25	VTT33A10	EV-1125

MIDLAND MODEL 13-853



B C E  
 Q705  
 Q706  
 Q909  
 Front view

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