



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.



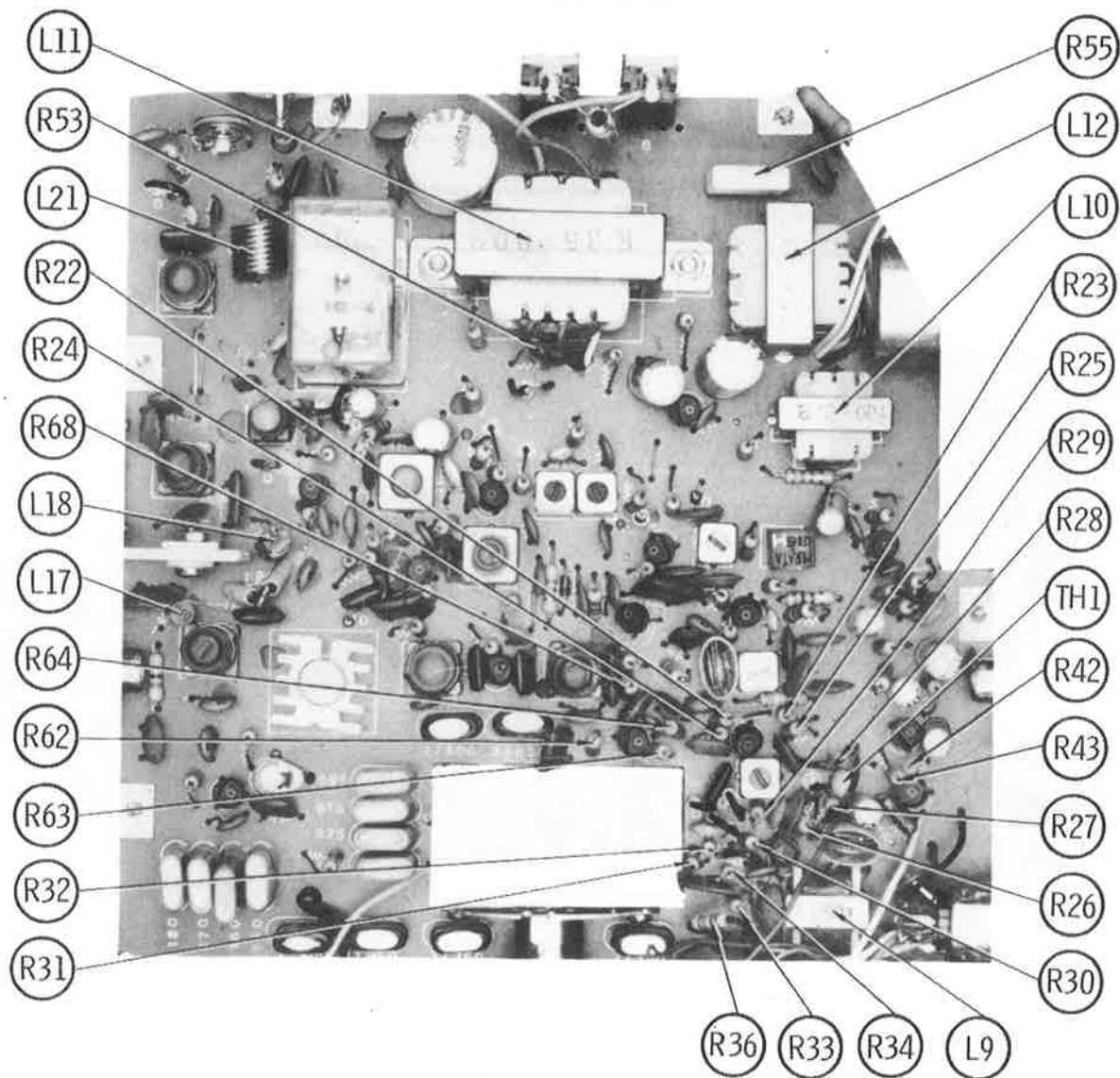
SURVEYOR MODEL 2300

MODEL 2300

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

© 1976 Howard W. Sams & Co., Inc.

Printed in U. S. of America 6CY406



MAIN BOARD

ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools: GC ELECTRONICS
 L1 thru L3..... #9440
 ALL other tuneable coils and transformers..... #5000, #8290

SYNTHESIZER

INDICATOR	CHANNEL	ADJUST	FREQUENCY	REMARKS
Input of Frequency Counter and RF VTVM to secondary of L3, common to ground.	13	L3	37.750MHz	Receive Adjust for frequency and maximum output.
Input of Frequency Counter to emitter of Q7, common to ground.	13		10.180MHz	Receive Check for frequency.
Input of Frequency Counter to emitter of Q15, common to ground.	13		10.635MHz	Key Transmitter Check for frequency.

SURVEYOR MODEL 2300

RECEIVER

Connect an AC VTVM or AF Wattmeter across speaker voice coil.
 Adjustments made with 14-volt DC input. Adjust volume control to obtain suitable reading.
 Set generator output low enough to prevent AGC limiting.

SIGNAL GENERATOR	GEN FREQ	CHANNEL	ADJUST	REMARKS
High side thru .01uF to base of Q4, low side to ground.	455kHz, 1000Hz @ 30% modulation.	13	L6, L7, L8	Adjust for maximum.
High side thru .01uF to antenna jack, low side to ground.	27.115MHz, 1000Hz @ 30% modulation.	13	L1, L2, L4, L5 CT1	Adjust for maximum.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF Wattmeter across speaker voice coil.
 These adjustments made with 14-volt DC input.
 Adjust volume control to obtain a suitable reading.

SIGNAL GENERATOR	GEN FREQ	CHANNEL	ADJUST	REMARKS
SQUELCH RANGE High side thru .01uF to antenna jack, low side to ground.	27.115MHz, 1000Hz @ 30% modulation, output 100uV	13	VR3	Set squelch control fully clockwise. Adjust VR3 so that squelch just breaks.

RECEIVER ADJUSTMENTS

SIGNAL GENERATOR	GEN FREQ	CHANNEL	ADJUST	REMARKS
S METER High side thru .01uF to antenna jack, low side to ground.	27.115MHz 1000Hz @ 30% modulation, output 200uV	13	VR1	Adjust for 9 on S scale.

TRANSMITTER

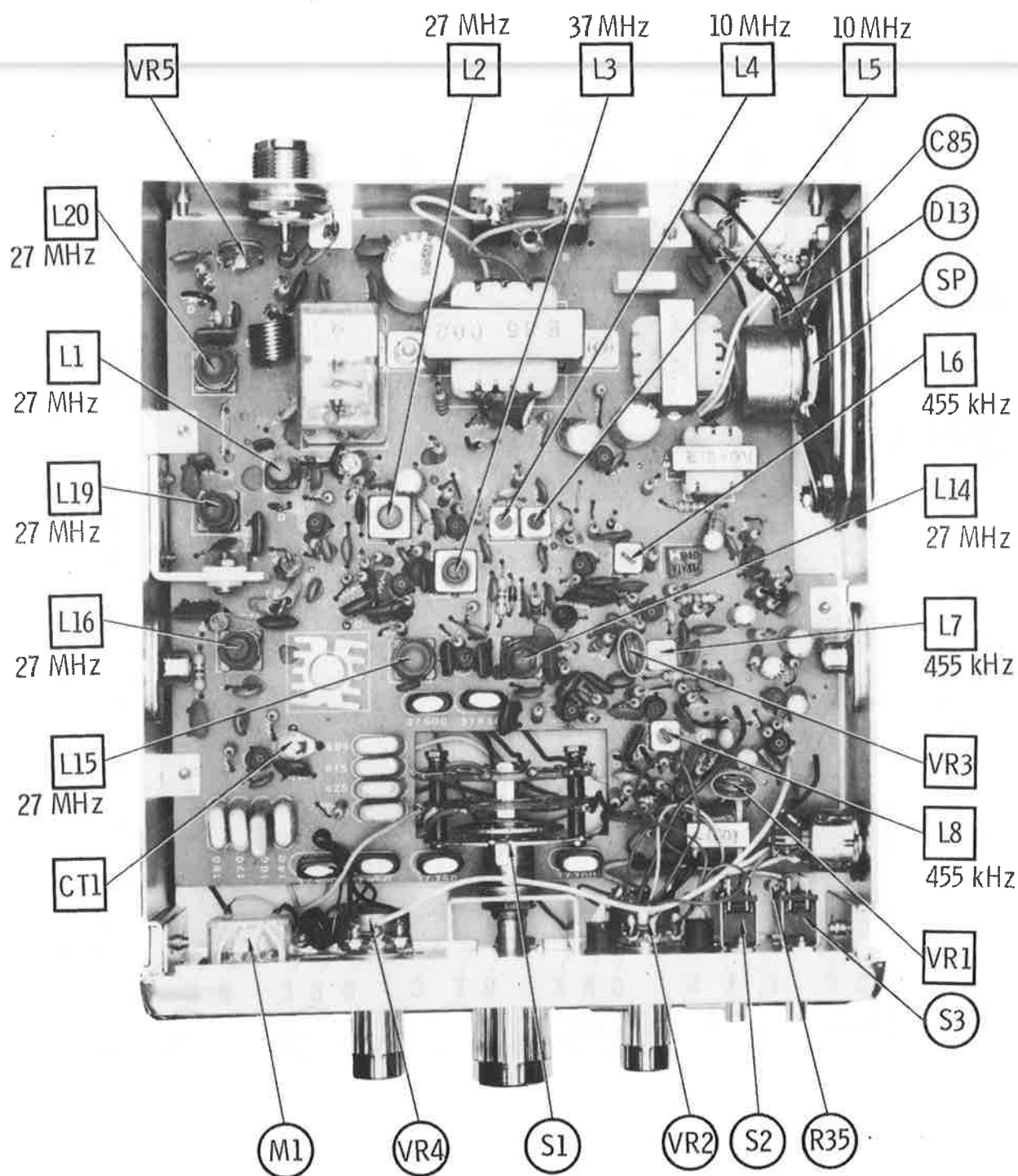
Connect an RF Wattmeter or 50-ohm, 25-watt dummy load to antenna connector.
Adjustments made with 14-volt DC input.

INDICATOR	ADJUST	REMARKS
MIXER, BUFFER, DRIVER, FINAL Input of RF Wattmeter to antenna jack, common to ground.	L14, L15, L16, L19, L20	Channel selector to Ch. 13. Key transmitter. Adjust for maximum.
OUTPUT POWER Input of RF Wattmeter to antenna jack, common to ground.	L19, L20	Key transmitter. Adjust for 4-watts output.

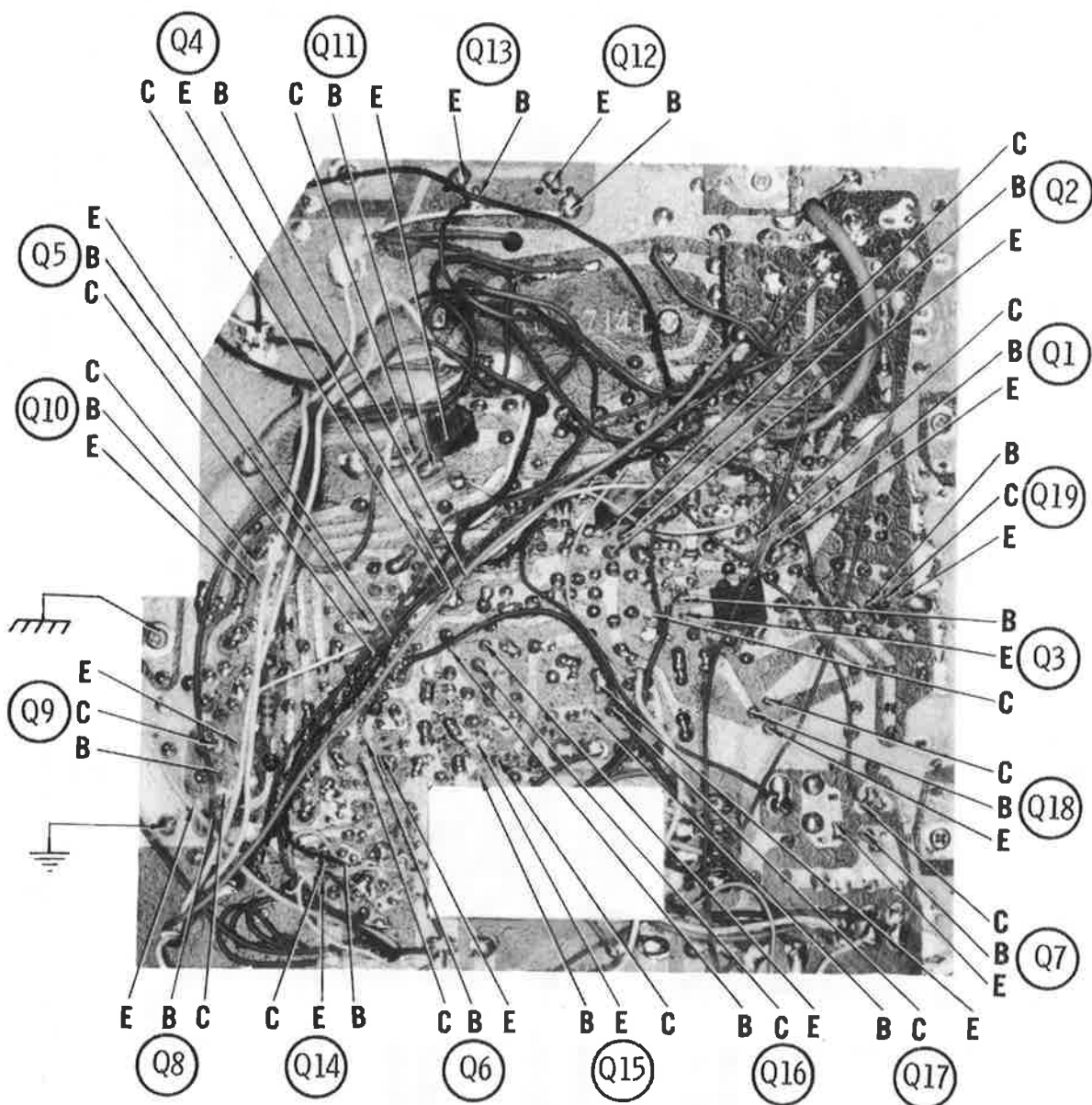
TRANSMITTER ADJUSTMENTS

Connect an RF Wattmeter or 50-ohm, 25-watt dummy load to antenna connector.
Adjustments made with 14-volt DC input.

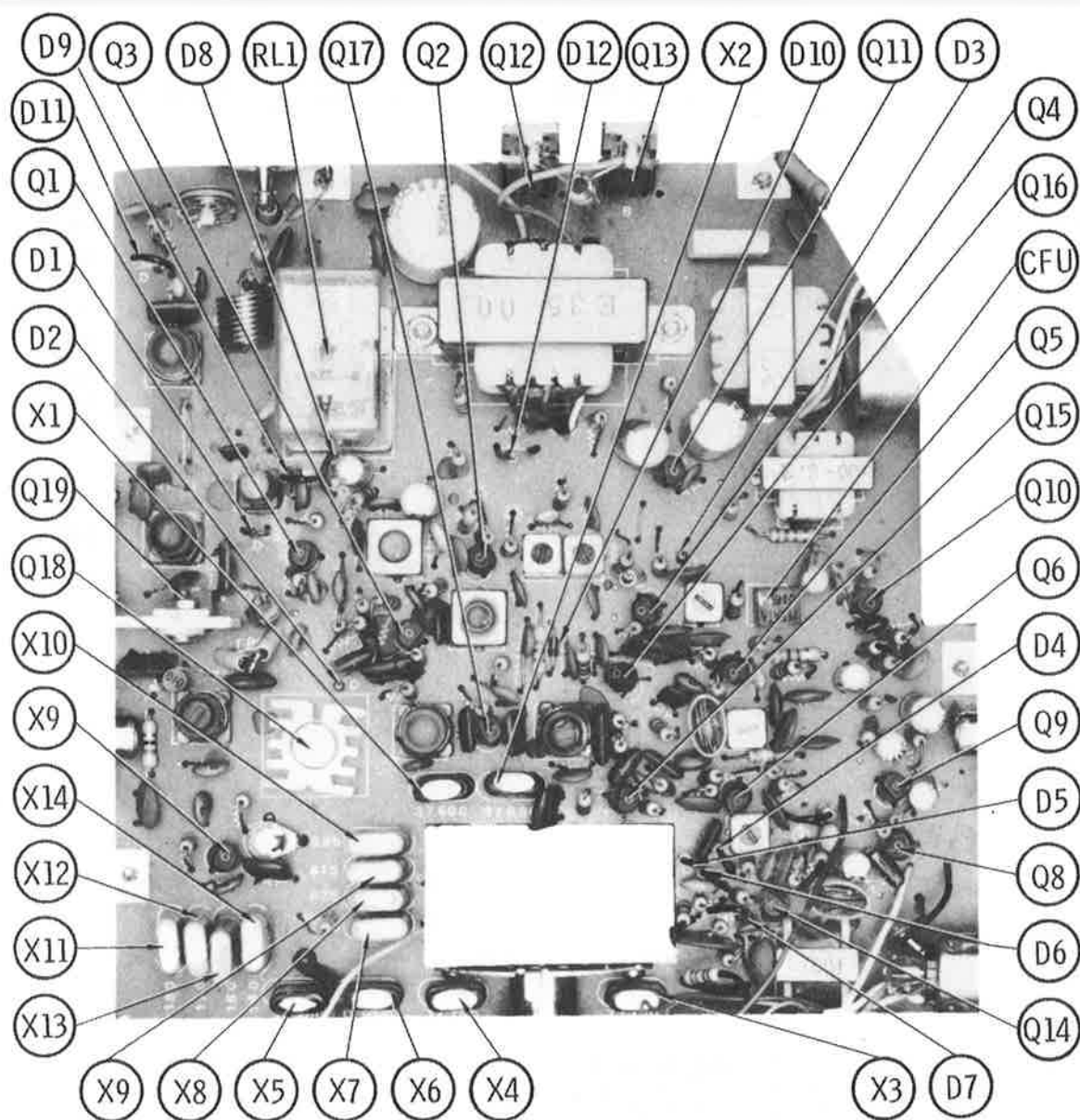
INDICATOR	ADJUST	REMARKS
RF PANEL METER Input of RF Wattmeter to antenna jack, common to ground.	VR5	Key transmitter. Adjust VR5 so that panel RF meter agrees with RF wattmeter.



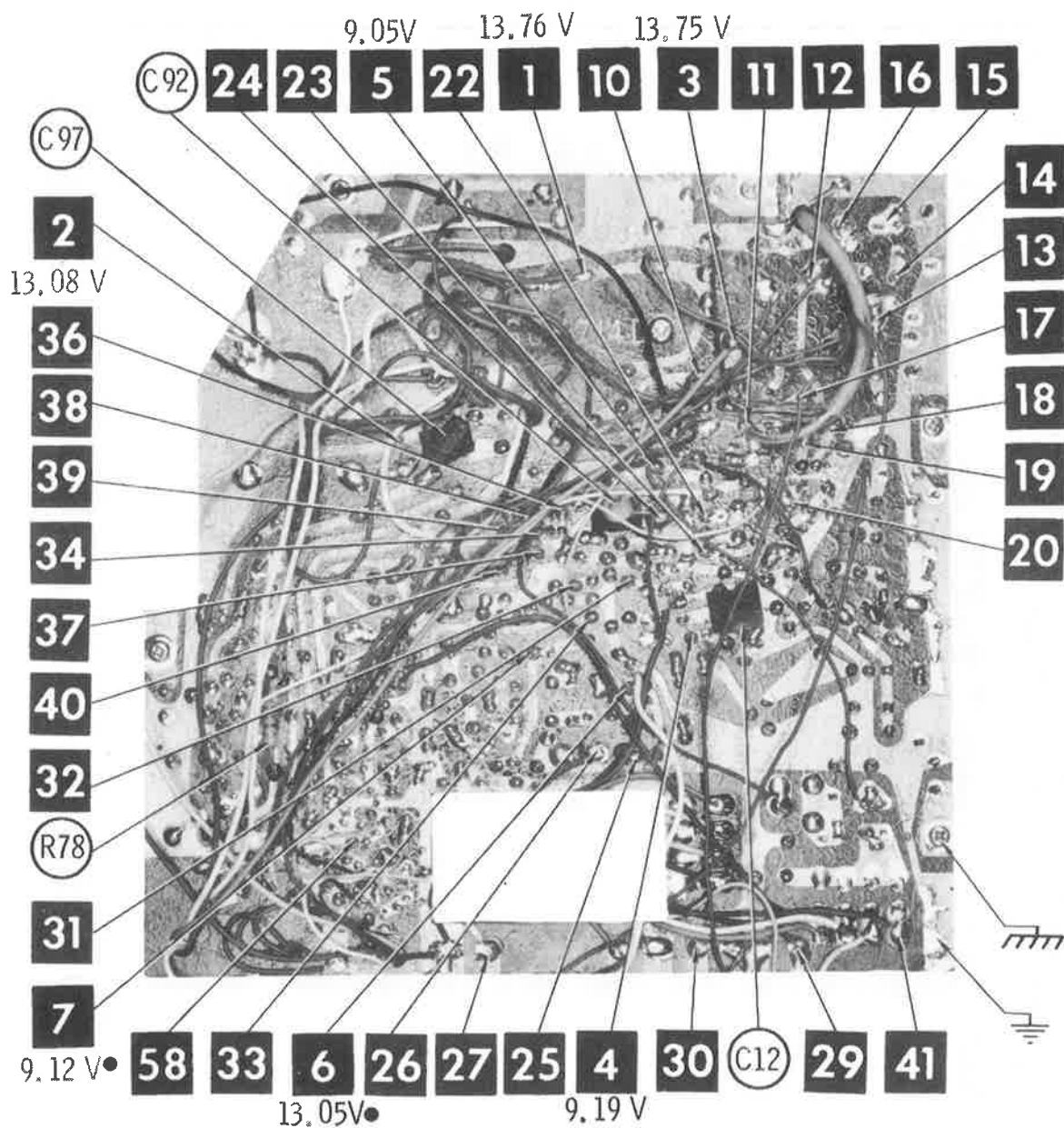
CHASSIS - BOTTOM



MAIN BOARD

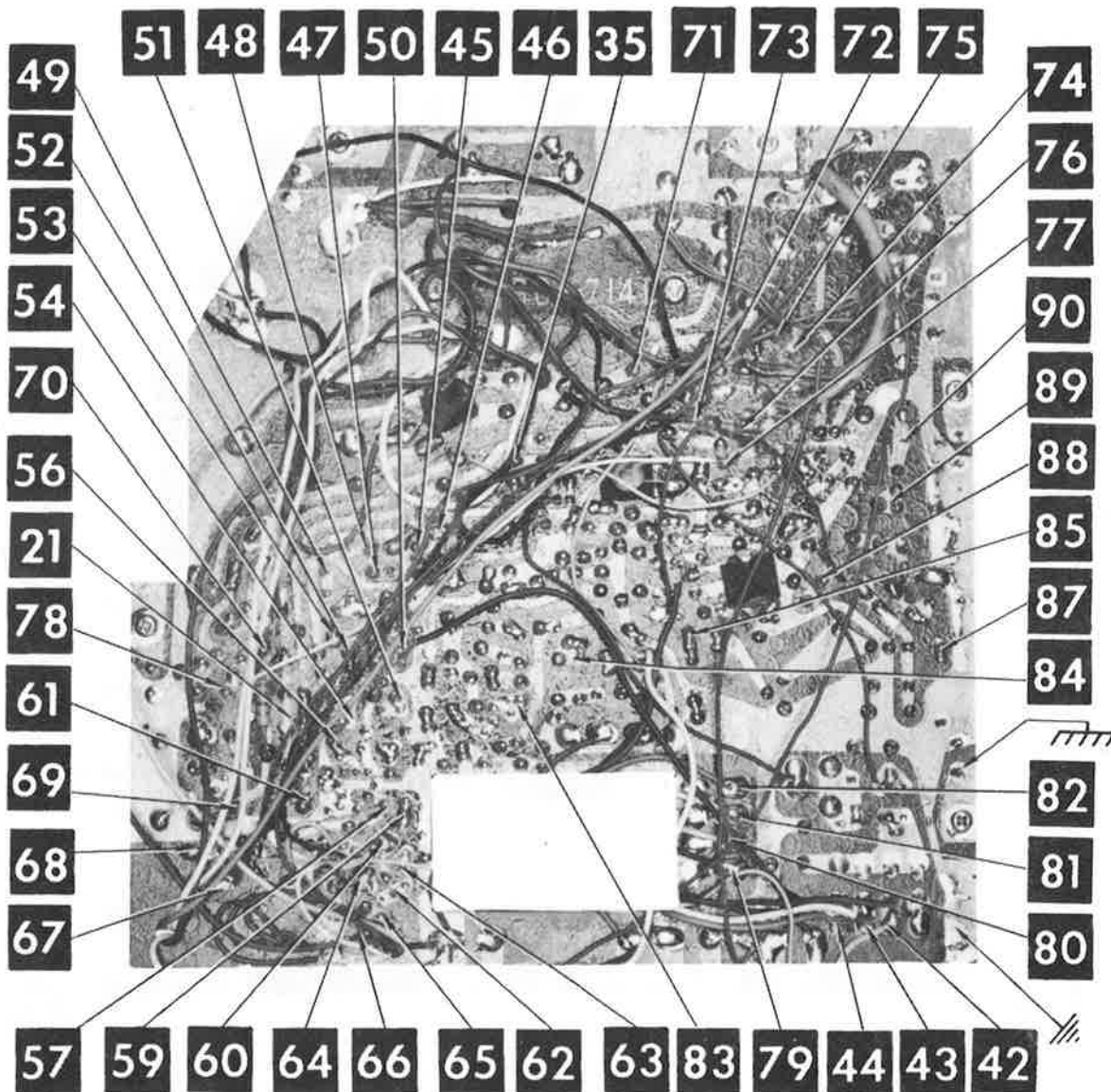


MAIN BOARD

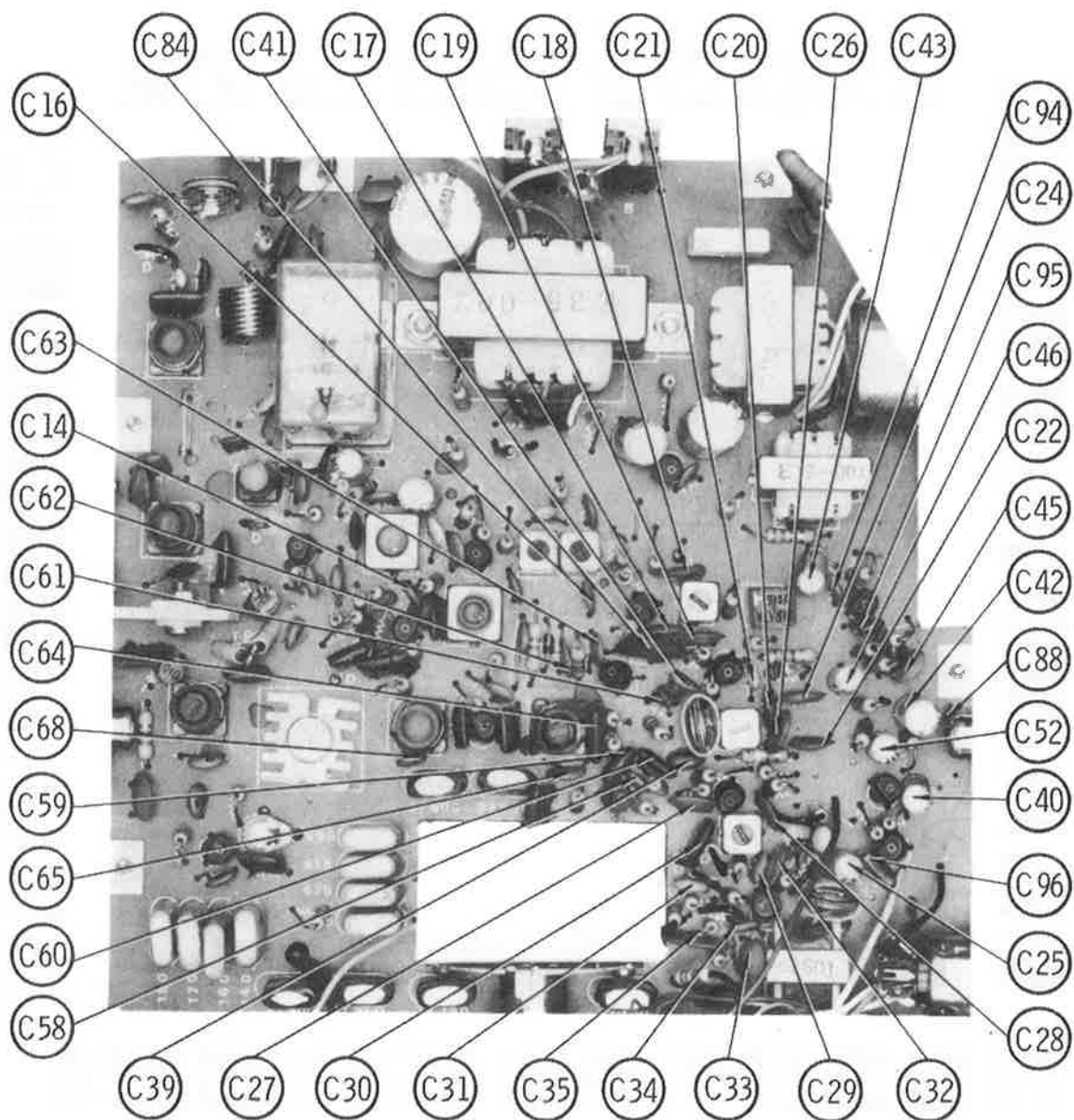


MAIN BOARD

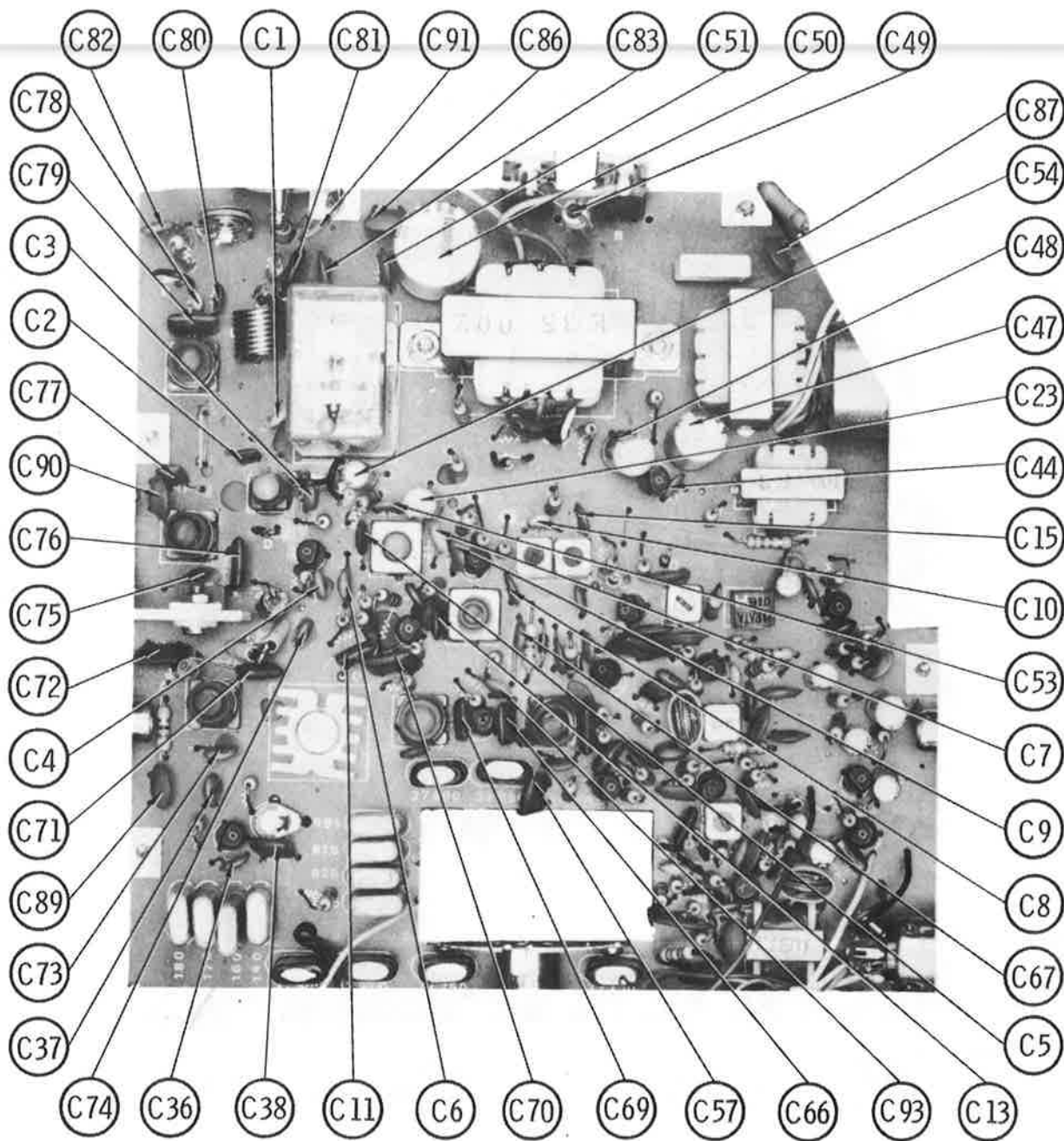
SURVEYOR MODEL 2300



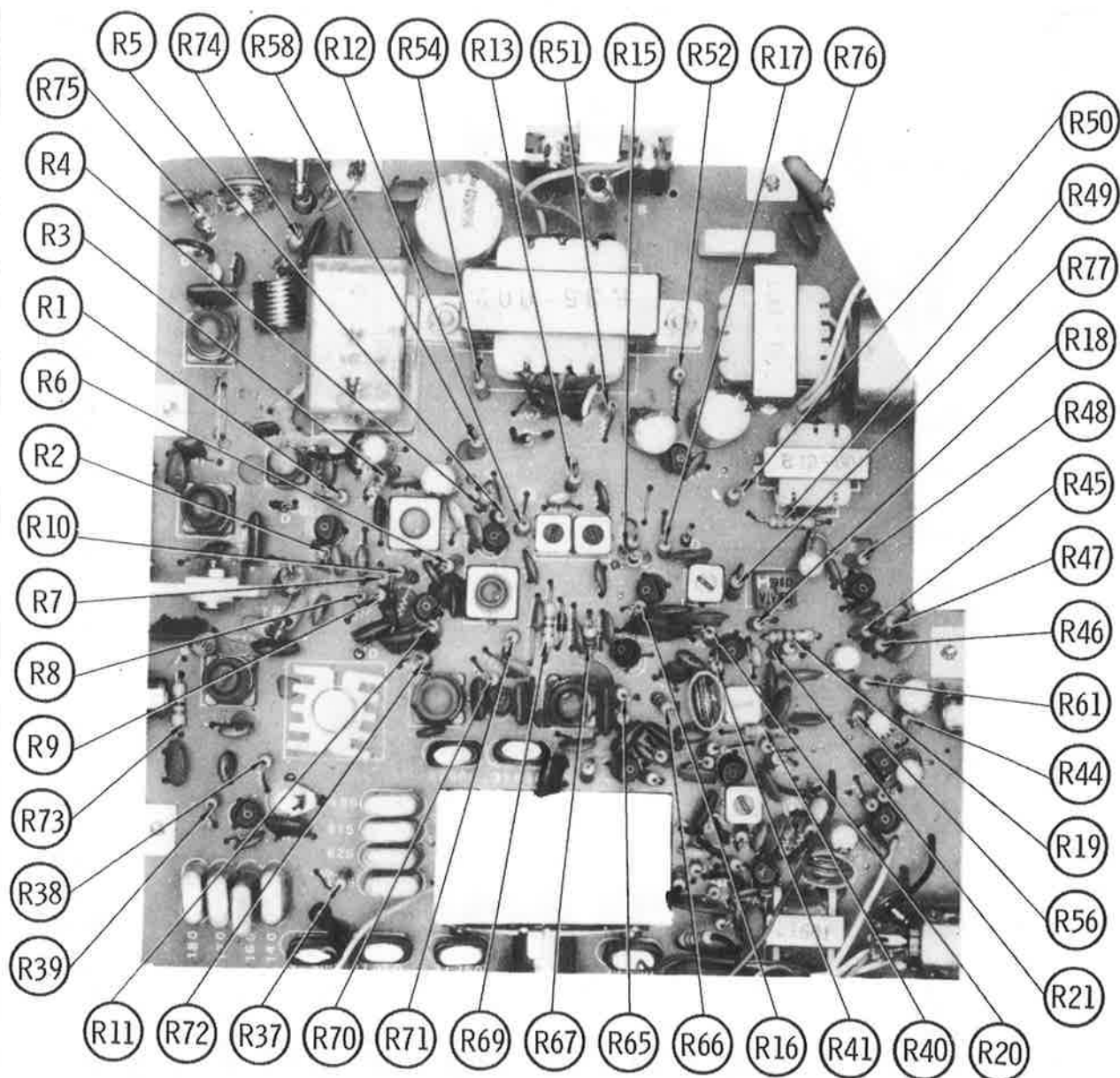
MAIN BOARD



MAIN BOARD



MAIN BOARD



MAIN BOARD

PARTS LIST AND DESCRIPTION

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

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.
D1	1S1588		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D2	WZ090		GEZD-9.1	Z1208	ZB9.1B				RT-240	ECG139
D3	WZ090		GEZD-9.1	Z1208	ZB9.1B				RT-240	ECG139
D4	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D5	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D6	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D7	1S1588		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D8	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D9	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D10	WZ090		GEZD-9.1	Z1208	ZB9.1B				RT-240	ECG139
D11	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D12	MV-3									
D13	1S1885		GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
Q1	2SC784-0		GE-61	(1R)2SC380A0	PTC132	HEPS0016	RE 9	SK3018	RT-108A	ECG107
Q2	2SC394-0		GE-61	(1R)2SC372	PTC121	HEPS0014	RE 9	SK3124	RT-107A	ECG229
Q3	2SC371-0		GE-20	(1R)2SC537B	PTC121	HEPS0014	RE 13	SK3018	RT-172	ECG123A
Q4	2SC394-0		GE-61	(1R)2SC380A0	PTC132	HEPS0016	RE 9	SK3018	RT-108A	ECG107
Q5	2SC371-0		GE-20	(1R)2SC537B	PTC121	HEPS0014	RE 13	SK3018	RT-172	ECG123A
Q6	2SC371-0		GE-20	(1R)2SC537B	PTC121	HEPS0014	RE 13	SK3018	RT-172	ECG123A
Q7	2SC371-0		GE-20	(1R)2SC537B	PTC121	HEPS0014	RE 13	SK3018	RT-172	ECG123A
Q8	2SC371-0		GE-20	(1R)2SC537B	PTC121	HEPS0014	RE 13	SK3018	RT-172	ECG123A
	2SC372Y	(1)	GE-210	(1R)2SC372	PTC121	HEPS0015	RE 13	SK3124	RT-105	ECG229
	2SA562-0		GE-82	TR-20	PTC103	HEPS0019	RE 26	SK3114	RT-115	ECG230
Q10	2SC733-0		GE-20	(1R)2SC633A	PTC139	HEPS0015	RE 192	SK3122	RT-108A	ECG199
Q11	2SC735-0		GE-220	TR-21	PTC123	HEPS0014	RE 13	SK3122	RT-172	ECG289
Q12	2SC1014	(10)			PTC193					ECG300
Q13	2SC1014	(10)			PTC193					ECG300
Q14	2SC372Y		GE-210	(1R)2SC372	PTC121	HEPS0015	RE 13	SK3124	RT-105	ECG123A
Q15	2SC371-0		GE-20	(1R)2SC537B	PTC121	HEPS0014	RE 13	SK3018	RT-172	ECG123A
Q16	2SC394-0		GE-61	(1R)2SC372	PTC121	HEPS0014	RE 9	SK3124	RT-107A	ECG229
Q17	2SC735-0		GE-220	TR-21	PTC123	HEPS0014	RE 13	SK3122	RT-172	ECG289
Q18	2SC781	(11)	GE-219	TR-65	PTC179	HEPS3001	RE 79	SK3048	RT-182	ECG195A
Q19	2SC1306	(12)	GE-215		PTC186		RE 203	SK3197		ECG235

- (1) Used in some versions.
 (10) Rating, 7.0 watt @ 1.5 amp.
 (11) Rating, 800 mW @ 1 amp.
 (12) Rating, 12 watt @ 3.0 amp.

SURVEYOR MODEL 2300

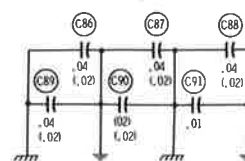
ELECTROLYTIC CAPACITORS

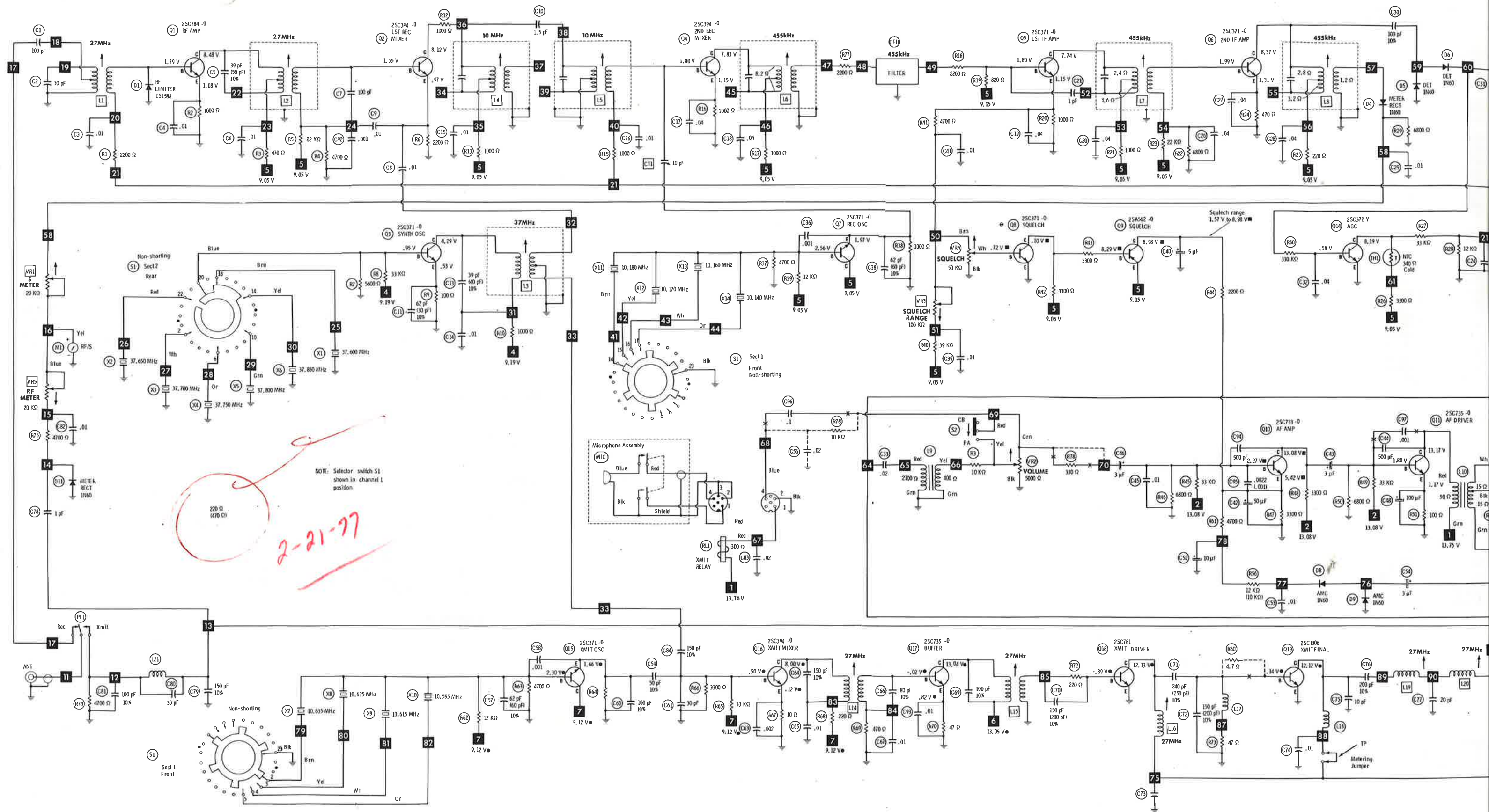
ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C23	50 10V		PC50-10	TT10X50A	TVA-1129.94
C25	10 16V		PC10-25	VT110A25	EV-1222
C40	5 10V		PC5-50	TT12X5	TVA-1129.84
C42	50 10V		PC50-10	TT10X50A	TVA-1129.94
C43	3 25V		PC5-50	TT25X3	TVA-1201.1
C46	3 25V		PC5-50	TT25X3	TVA-1201.1
C47	220 15V		PC250-25	VT220G16	EV-1240
C48	100 16V		PC100-10	VT1100E10	EV-1130
C49	1 50V NP		WNP1-50	TCN501A	TVAN-1560
C50	1000 16V		PC1000-16	VT11000L16	EV-1260
C52	10 16V		PC10-25	VT110A25	EV-1222
C54	3 25V		PC5-50	TT25X3	TVA-1201.1

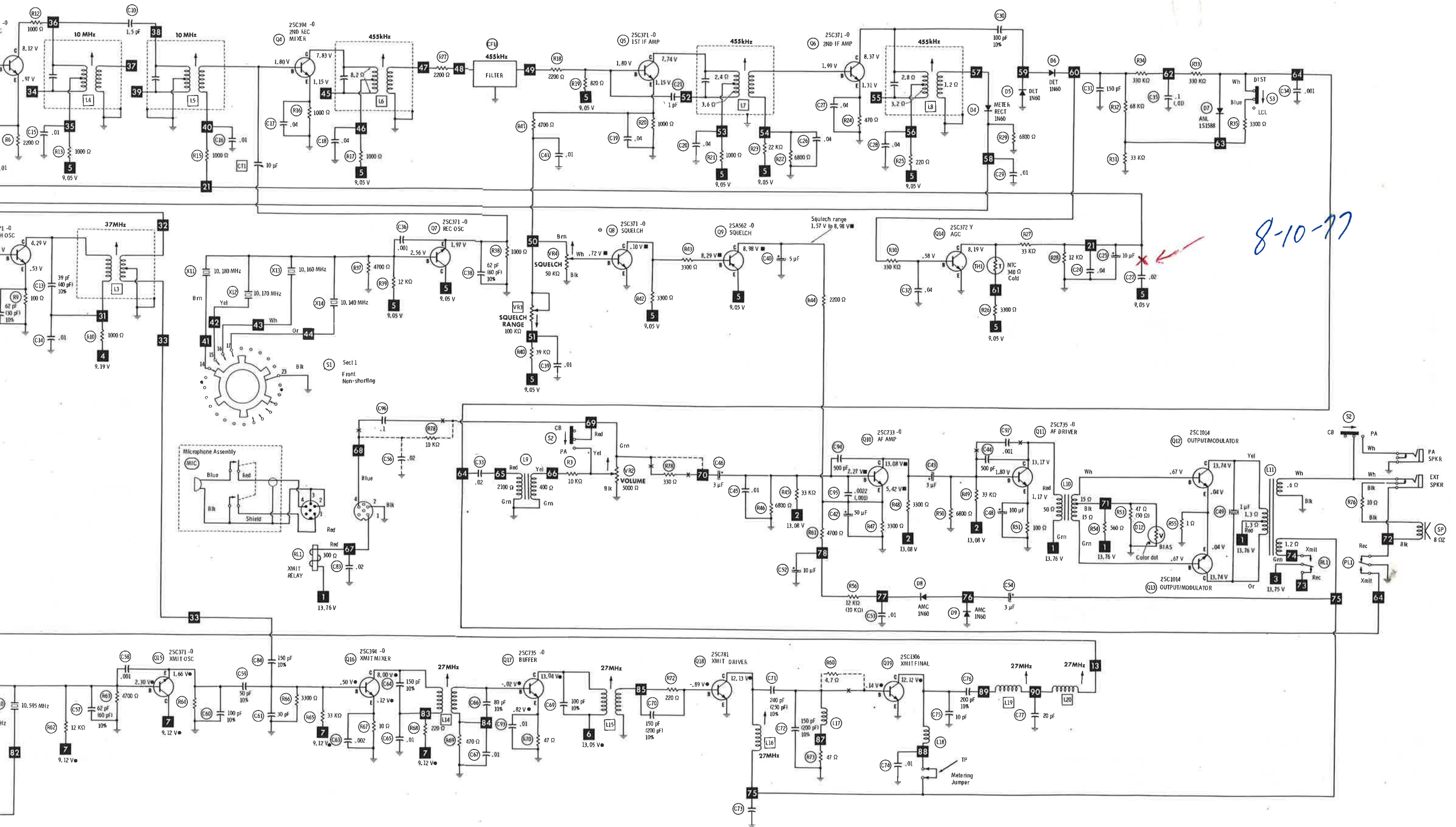
CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	100		DTZ-100	NP0100	CN0310	10TCC-T10
C2	30			CD15ED300J03	SX430	MWA-300
C3	.01		DC-103	MGP01	TA110	TG-S10
C4	.01		DC-103	MGP01	TA110	TG-S10
C5	39 10%			CD15ED390J03	SX439	MWA-390
C6	.01		DC-103	MGP01	TA110	TG-S10
C7	100		DTZ-100	NP0100	CN0310	10TCC-T10
C8	.01		DC-103	MGP01	TA110	TG-S10
C9	.01		DC-103	MGP01	TA110	TG-S10
C10	1.5		DTZ-1R5	NP01P5	CN0515	10TCC-V15
C11	62 10%			CD15FD620J03	SX462	MWA-620
C12	.01		DC-103	MGP01	TA110	TG-S10
C13	39 10%			CD15ED390J03	SX439	MWA-390
C14	.01		DC-103	MGP01	TA110	TG-S10
C15	.01		DC-103	MGP01	TA110	TG-S10
C16	.01		DC-103	MGP01	TA110	TG-S10
C17	.04					
C18	.04					

(CONTINUED ON PAGE 122)







CAPACITORS (cont)

ITEM No.	RATING	MFG. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C19	.04		UK50-223		CN0510	10TCC-V10
C20	.04				MAG5012	
C21	.04					
C22	.02					
C24	.04					
C26	.04		DC-103	MGP01	TA110	TG-S10
C27	.04			CD15FD101J03	SX310	MWA-101
C28	.04				CN0315	10TCC-T15
C29	.01		DTZ-150			
C30	100 10%					
C31	150					
C32	.04					
C33	.02		UK50-223		MAG5012	
C34	.001		DD-102G	GP1000	GP210	5GA-D10
C35	.1		CK-104		MAG5001	
C36	.001		DD-102G	GP1000	GP210	5GA-D10
C37	.01		DC-103	MGP01	TA110	TG-S10
C38	62 10%			CD15FD620	SX462	MWA-620
C39	.01		DC-103	MGP01	TA110	TG-S10
C41	.01		DC-103	MGP01	TA110	TG-S10
C44	500		DD-501	GP500	GP350	10TS-T50
C45	.01		DC-103	MGP01	TA110	TG-S10
C51	.04					
C53	.01		DC-103	MGP01	TA110	TG-S10
C55	.04					
C56	.02		UK50-223		MAG5012	
C57	62 10%		DD-102G	CD15ED620J03	SX462	MWA-620
C58	.001			GP1000	GP210	5GA-D10
C59	50 10%			WMF1S1	EWFA1110	1PB-S10
C60	100 10%			CD15FD101J03	SX310	MWA-620
C61	30			CD15ED300J03	SX430	MWA-300
C62	.01		DC-103	MGP01	TA110	TG-S10
C63	.002		DD-202	GP2000	GP220	5GA-D20
C64	150 10%			CD15FD151J03	SX315	MWA-151
C65	.01		DC-103	MGP01	TA110	TG-S10
C66	80 10%			CD15ED820J03	SX482	MWA-820
C67	.01		DC-103	MGP01	TA110	TG-S10
C68	.01		DC-103	MGP01	TA110	TG-S10
C69	100 10%			CD15FD101J03	SX310	MWA-101
C70	150 10%			CD15FD151J03	SX315	MWA-151
C71	240 10%			CD15FD241J03	SX324	MWA-241
C72	150 10%			CD15FD151J03	SX315	MWA-151
C73	.01		DC-103	MGP01	TA110	TG-S10
C74	.01		DC-103	MGP01	TA110	TG-S10
C75	10 10%			CD6CD100D03		
C76	200 10%			CD15FD201J03	SX320	MWA-201
C77	20			CD15ED200J03	SX420	MWA-200
C78	1				CN0510	10TCC-V10
C79	150 10%			CD15FD15J03	SX315	MWA-151
C80	30			CD15ED300J03	SX430	MWA-300
C81	100 10%			CD15FD101J03	SX310	MWA-101
C82	.01		DC-103	MGP01	TA110	TG-S10
C83	.02		UK50-223		MAG5012	
C84	150 10%			CD15FD151J03	SX315	MWA-151
C85	.02			CD19FD152J03	SX215	MWC-152
C86	.04					
C87	.04					
C88	.04					
C89	.04					
C90	.04					
C91	.01		DC-103	MGP01	TA110	TG-S10
C92	.001		DD-102G	GP1000	GP210	5GA-D10
C93	.01		DC-103	MGP01	TA110	TG-S10
C94	500		DD-501	GP500	GP350	10TS-T50
C95	.0022				M192P2229R8	192P2229R8
C96	.1			WMF05P1	EWFO5010	431P1049R5
C97	.001			DPM56D1	EWFA210	1PB-D10
CT1		ECV-1ZW10P12				

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

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA			
			MFG. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.
VR1	S Meter	20K		T-20K (2)	C-253 (2)	MTC24L1 (2)
VR2	Volume/Power Switch	5000				X201R253B (2)
VR3	Squelch Range	100K		T-100K (2)	C-104 (2)	MTC15L1 (2)
VR4	Squelch	50K				X201R104B (2)
VR5	RF Meter	20K		T-20K (2)	C-253 (2)	MTC24L1 (2)
						X201R253B (2)

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

PARTS LIST AND DESCRIPTION (CONTINUED)

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

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFG. PART No.			WORKMAN PART No.	MFG. PART No.
TH1	330 Cold NTC		33D26				

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	Rec Ant (27MHz)	HL-1VA			
L2	Rec RF (27MHz)	HL-2G	2G		
L3	Synth Osc (37MHz)	HL-3N	3N		
L4	Rec Mixer (10MHz)	25AC-2531	85AC2531A		
L5	Rec Mixer (10MHz)	25AC-2531	85AC2531A		
L6	IF (455kHz)	L-3054	LMC3054	8515	
L7	IF (455kHz)	LMC-4201A	LPC4201A	8811	
L8	IF (455kHz)	LMC-4202M	LMC4202A	8812	
L14	Xmit Mixer (27MHz)				
L15	Xmit Buffer (27MHz)				
L16	Xmit Driver (27MHz)				
L17	RF Choke	L1-4-D10K	101	70F126AI	
L18	RF Choke				
L19	Final Tank (27MHz)				
L20	Pi Filter (27MHz)				
L21	RF Choke				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFG. PART No.	THORDARSON PART No.	TRIAD PART No.	
L12	1.2A	.8	12mH	R24-5530H E24-001 (1)			(1) Number on unit

TRANSFORMER (MICROPHONE)

ITEM No.	TURNS RATIO			REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	SEC. 2	MFG. PART No.	THORDARSON PART No.	TRIAD PART No.	
L9	7	1		N16-754C E1601 (1)			(1) Number on unit

TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	SEC. 2	MFG. PART No.	THORDARSON PART No.	TRIAD PART No.	
L10	1.5	1		N19-5510AT E19-004 (1)			(1) Number on unit.

PARTS LIST AND DES

(When ordering parts, state Model,

TRANSFORMER (Audio

ITEM No.	IMPEDANCE		P
	PRI.	SEC.	
L11	32	8	N3 E3

SPEAKER

ITEM No.	TYPE
SP	2" x 3" PM 8 ohms

FUSE DEVICES

ITEM No.	DESCRIPTION
F1	2 Amp

MICROPHONE

ITEM No.	REPLACEMENT DATA	
	MFG. PART No.	GC PART No.
MIC	DM-1391	18-032

CRYSTALS

ITEM No.	CRYSTAL FREQUENCY IN MHz	MFG. PART No.
X1	37.600	
X2	37.650	
X3	37.700	
X4	37.750	
X5	37.800	
X6	37.850	
X7	10.635	

MISCELLANEOUS

ITEM No.	PART NAME
CFU	Filter
M1	Meter
RL1	Relay
S1	Switch
S2	Switch
S3	Switch

WIRING DATA

General-use Hook-up Wire
Power Cord, 2-Wire
Shielded Antenna Lead
Ignition Noise Suppression
Bonding Strap

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

MALLORY PART No.	TRW PART No.
C24L1 (2)	X201R253B (2)
C15L1 (2)	X201R104B (2)
C24L1 (2)	X201R253B (2)

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

WIRING DATA

ITEM No.	PART NAME	PART No.	NOTES
CFU M1 RL1 S1 S2 S3	Filter Meter Relay Switch Switch Switch	CFU455H1 H-308 SRG-400A R71ND625A	455kHz S/Rf Rec/Xmit Channel Selector CB/PA LCL/Dist

ITEM No.	TURNS RATIO			REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
L10	1.5	1		N19-5510AT E19-004 (1)			(1) Number on unit.

General-use Hook-up Wire	Use Belden No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Power Cord, 2-Wire	Use Belden No. 17106 (Plastic) or 17126 (Rubber) -6 feet 17109 (Plastic) or 17129 (Rubber) -9 feet
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)
Ignition Noise Suppression	Use Belden No. 7300-Series Spark-Plug Sets
Bonding Strap	Use Belden No. 8661 (3/8 inch)