



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index

NOTE

ONLY THOSE PERSONS PROPERLY LICENSED ARE PERMITTED TO MAKE REPAIRS OR ADJUSTMENTS WHICH MAY RESULT IN ILLEGAL OPERATION. (REFER TO FCC RULES AND REGULATIONS PART 95, SUBPARTS 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 13-796

ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools:

GC ELECTRONICS

L15, L16, L178290, 5000

ALL other Tunable Transformers and Coils.....9440

RECEIVER

Connect an AC VTVM or AF Wattmeter across speaker voice coil.

Adjustments made with 12-volt DC input.

Adjust volume control to obtain suitable reading.

SIGNAL GENERATOR	GEN FREQ	CHANNEL	ADJUST	REMARKS
High side thru .01uF to cathode of D102, low side to ground.	455kHz, 1000Hz @ 30% modulation	Any	L15, L16, L17	Adjust generator output to produce .5V on VTVM across speaker. Adjust for maximum.
High side thru .01uF to base of Q8, low side to ground.	10.625MHz, 1000Hz @ 30% modulation, output 20uV	Any	L13, L14	Same as above Adjust for maximum.
High side thru .01uF to Antenna Jack, low side to ground.	27.115MHz, 1000Hz @ 30% modulation, output 1uV	13	L11, L12	Adjust for maximum.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF Wattmeter across speaker voice coil.

These adjustments made with 12-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 500uV.	13	VR3	Set squelch control fully clockwise. Adjust so that squelch just breaks.

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

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5CX237

MIDLAND MODEL 13-796

RECEIVER ADJUSTMENTS(cont)

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 100uV.	13	VR5	Adjust for meter to deflect 80% on red scale.

TRANSMITTER

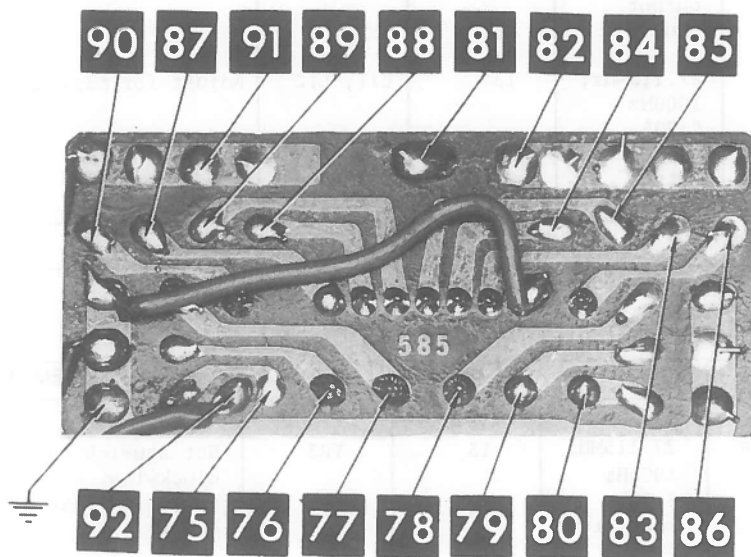
Connect an RF Wattmeter or 50-ohm, 25-watt dummy load to antenna connector.
Adjustments made with 12-volt DC input.

INDICATOR	ADJUST	REMARKS
OSCILLATOR, MIXER, DRIVER, FINAL RF Wattmeter	L1, L2, L3, L4, L5, L6	Power Hi-Lo Switch to Hi. Channel selector to 13. Key transmitter. Adjust for maximum.
TVI TRAP TV (Ch. 2)	L9	Key transmitter. Adjust for MINIMUM interference on TV.
FINAL INPUT POWER Connect 0-1000 DC milliammeter between R16 and RFC2	L6	Adjust for 5 watts (maximum).

TRANSMITTER ADJUSTMENTS

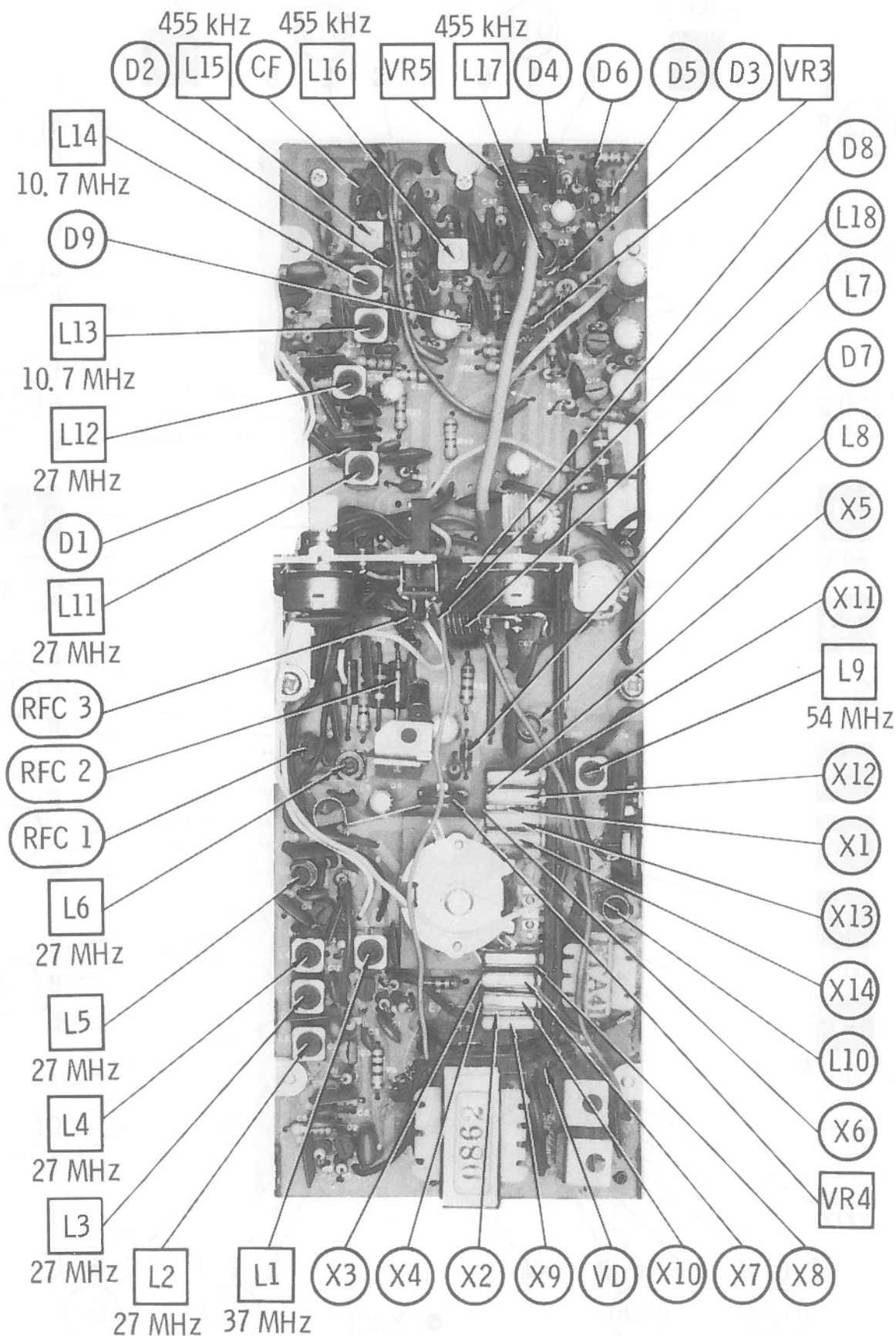
Connect an RF Wattmeter or 50-ohm, 25-watt dummy load to antenna connector.
Adjustments made with 12-volt DC input.

INDICATOR	ADJUST	REMARKS
AMC Modulation Meter connected to Antenna Jack	VR4	Deactivate AMC (VR4). Inject a 1000Hz signal into microphone input. Increase 1000Hz signal to produce 110% modulation. Adjust VR4 for 100%.

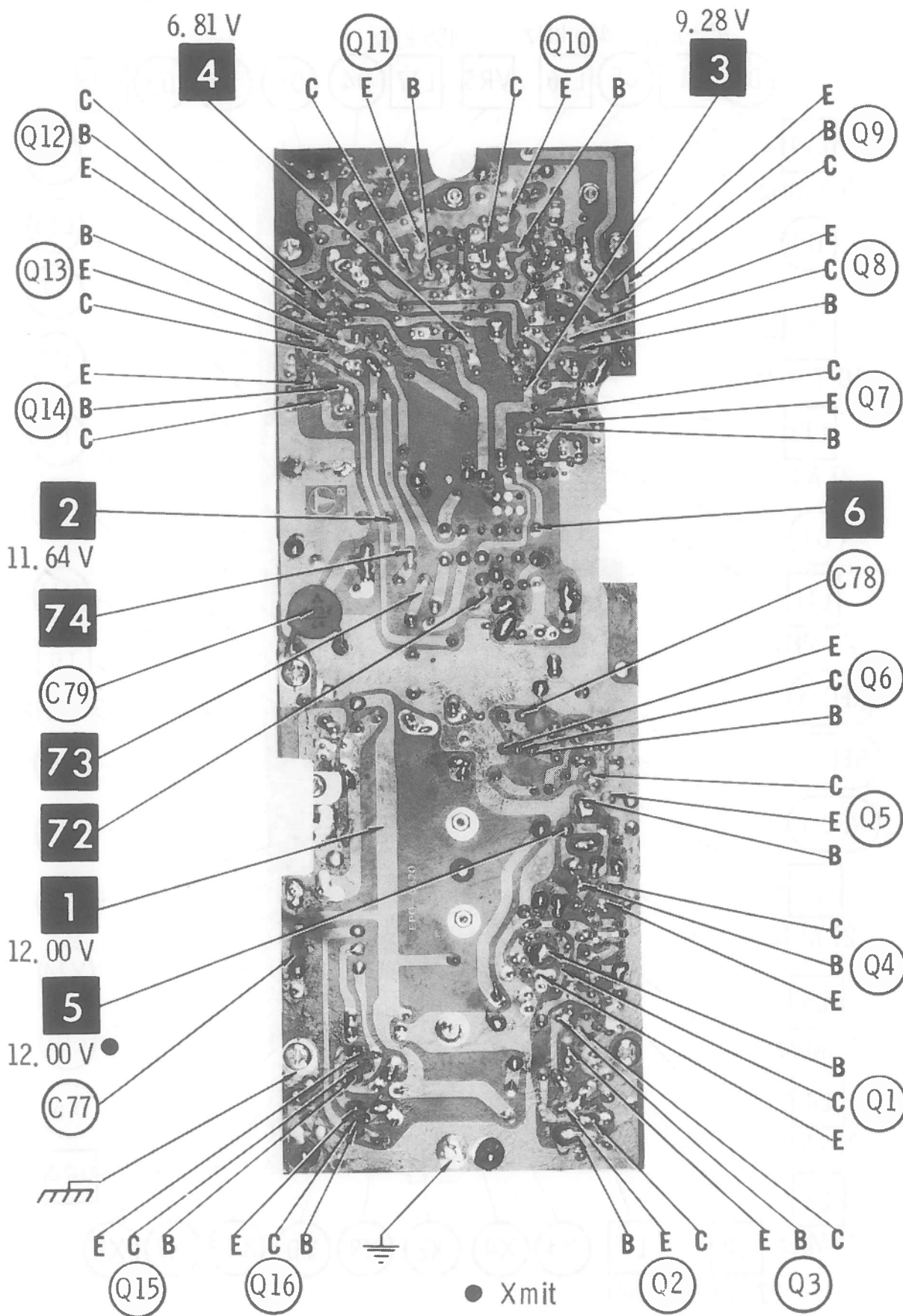


A Howard W. Sams **CIRCUITRACE®** Photo

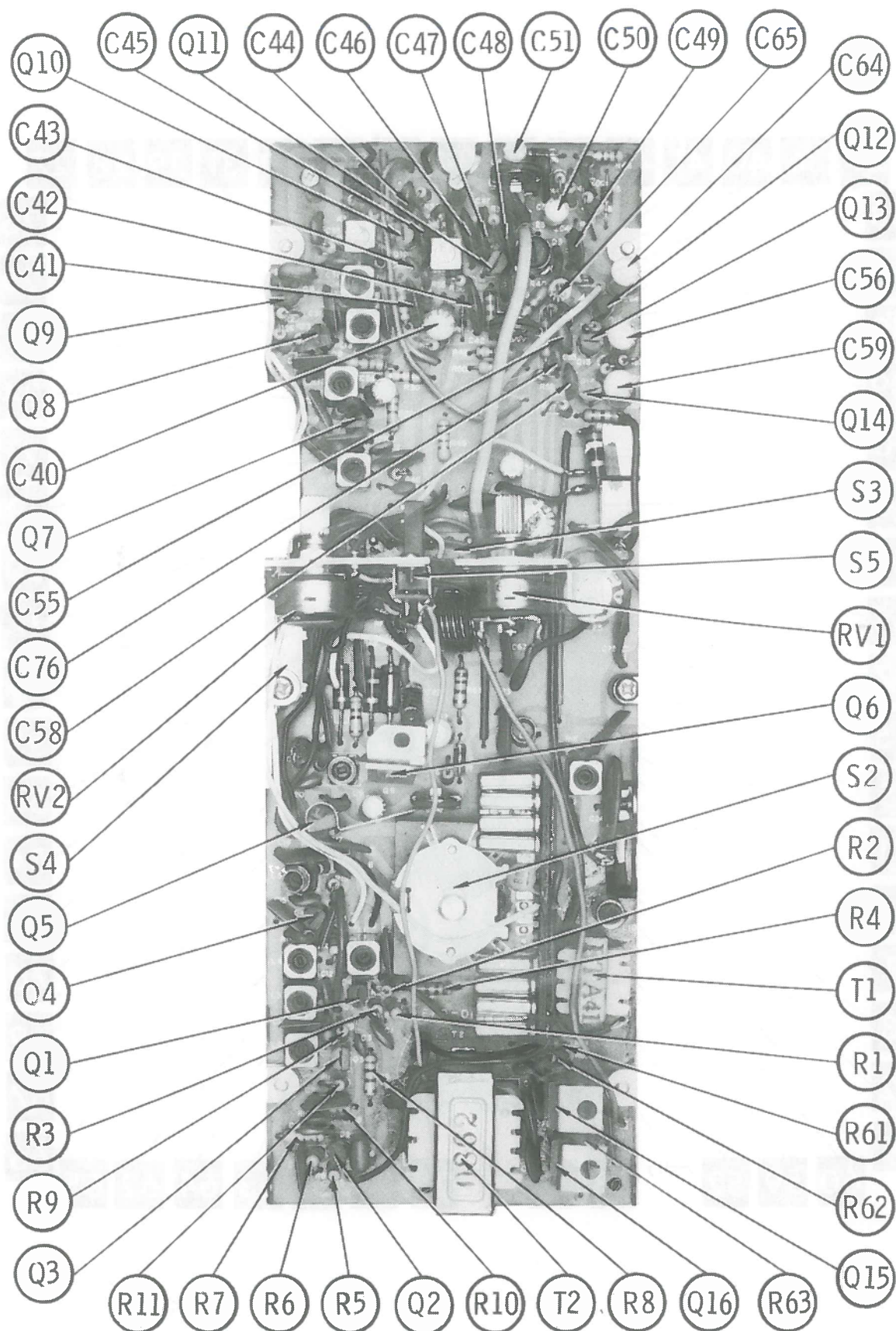
CHANNEL SELECTOR & CRYSTAL BOARD



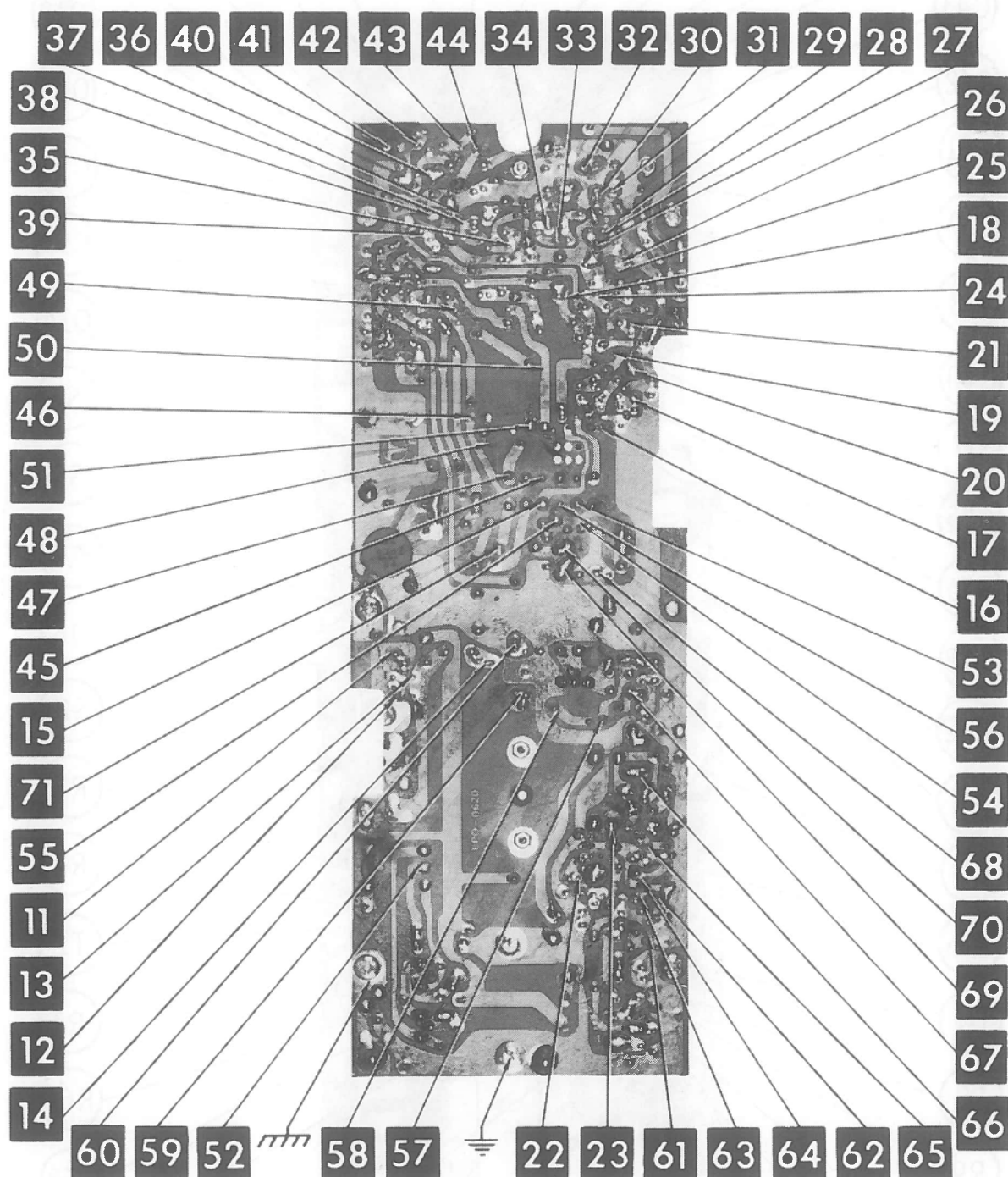
MAIN BOARD-TOP VIEW



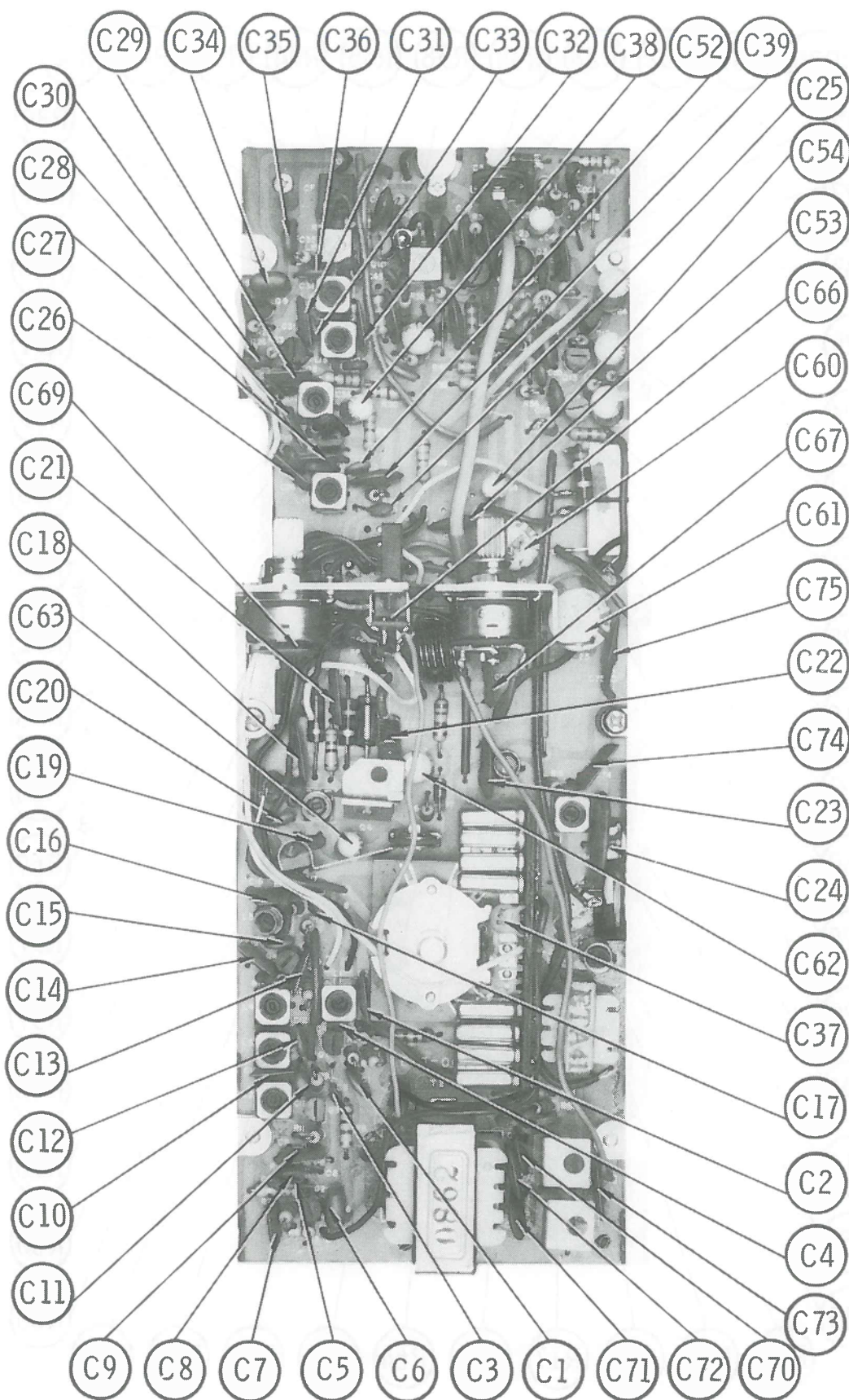
MAIN BOARD-BOTTOM VIEW



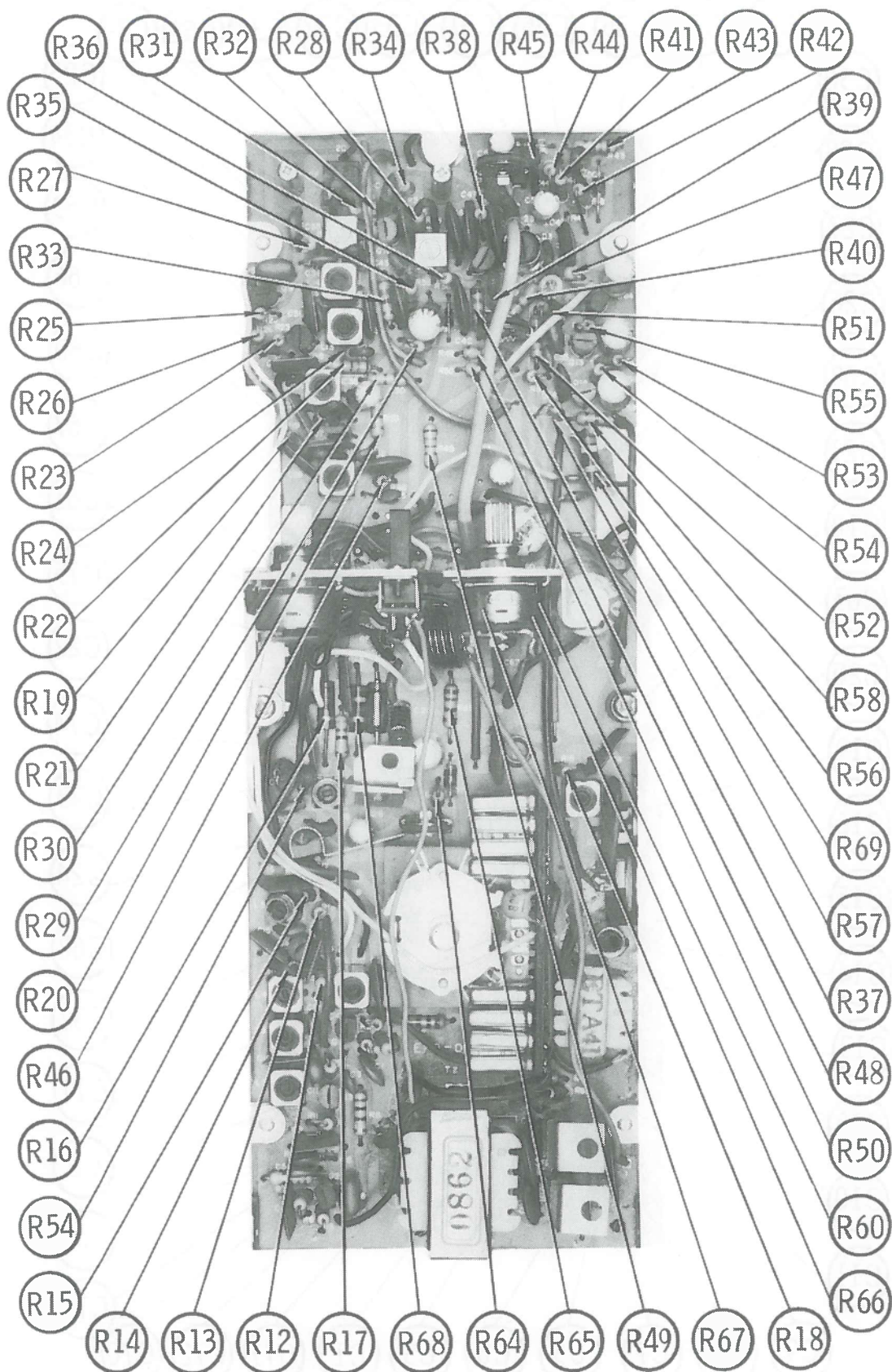
MAIN BOARD-TOP VIEW



MAIN BOARD-BOTTOM VIEW



MAIN BOARD-TOP VIEW



MAIN BOARD-TOP VIEW

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 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Antenna Lead	Use BELDEN No. 8240 (Solid) Miniature (RG-58/U) 8259 (Stranded) Miniature (RG-58A/U)
Shielded Cable	Use BELDEN No. 8499 Single-conductor Shielded (Neoprene)

SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
D1	1S1555	09-306154	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D2	1N60	09-306019	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D3	1N60	09-306019	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D4	1N60	09-306019	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D5	1N60	09-306019	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D6	1N60	09-306019	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D7	1N60	09-306019	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D8	1N60	09-306019	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D9	MZ207-02A 7V Zener	09-306325	GEZD-6.8	Z1206	ZB6.8	HEPZ0409	RE 110	SK3058	RT-238	ECG5071
Q1	2SC839	09-302124	GE-20	TR-24	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q2	2SC839	09-302124	GE-20	TR-24	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q3	2SC839	09-302124	GE-20	TR-24	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q4	2SC839	09-302124	GE-20	TR-24	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q5	2SC1475	09-302202	GE-45	TR-64	PTC143	HEPS5014		SK3048	RT-114	ECG195
Q6	2SC1306	09-305136(1)	GE-66	TR-55	PTC186					ECG235
Q7	2SC839	09-302124	GE-20	TR-24	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q8	2SC839	09-302124	GE-20	TR-24	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q9	2SC839	09-302124	GE-20	TR-24	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q10	2SC839	09-302124	GE-20	TR-24	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q11	2SC839	09-302124	GE-20	TR-24	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q12	2SC945	09-302125	GE-18	(IR)2SC945	PTC123	HEPS0015	RE 13	SK3124	RT-107A	ECG123A
Q13	2SC945	09-302125	GE-18	(IR)2SC945	PTC123	HEPS0015	RE 13	SK3124	RT-107A	ECG123A
Q14	2SC945	09-302125	GE-18	(IR)2SC945	PTC123	HEPS0015	RE 13	SK3124	RT-107A	ECG123A
Q15	2SC1096	09-302126(2)	GE-28	TR-55	PTC110	HEPS5000	RE 42	SK3054	RT-197	ECG186
Q16	2SC1096	09-302126(2)	GE-28	TR-55	PTC110	HEPS5000	RE 42	SK3054	RT-197	ECG186
VD	1S1209	09-307043	GE-504A	8D4	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116

- (1) Rating 12 watts @ 3 amp.
(2) Rating 10 watts @ 2 amp.

MIDLAND MODEL 13-796

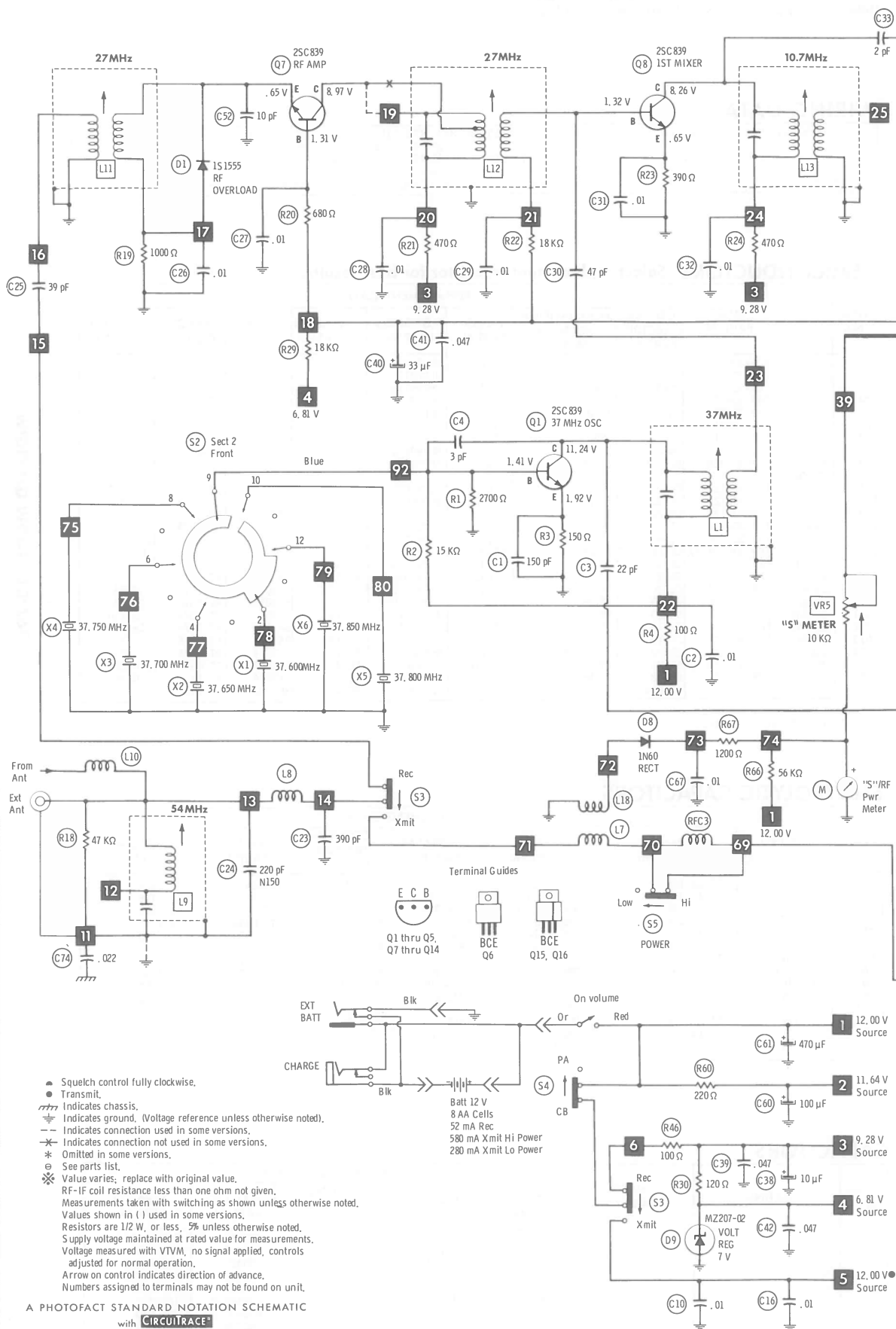
ELECTROLYTIC CAPACITORS

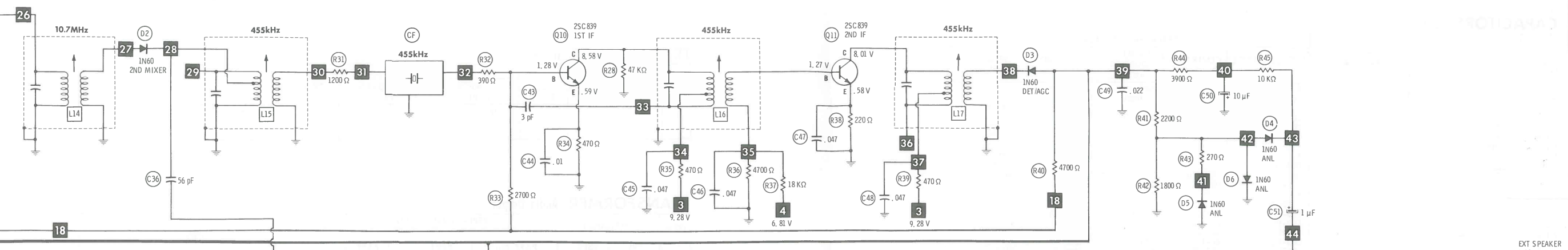
ITEM No.	RATING	REPLACEMENT DATA					
		MFR. PART No.	ARCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C38	10 16V	77-337106	RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222
C40	33 10V	77-336336	ME-3-D-035	EP15-25	PC30-25	VTT33A10	EV-1125
C50	10 16V	77-337106	RME-B-E-010	EP15-10	PC10-25	VTT10A25	EV-1222
C51	1 50V	77-333104	RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615
C54	1 50V	77-333104	RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615
C56	33 10V	77-336336	ME-3-D-035	EP15-25	PC30-25	VTT33A10	EV-1125
C59	33 10V	77-336336	ME-3-D-035	EP15-25	PC30-25	VTT33A10	EV-1125
C60	100 16V	77-337107	RME-E-E-100	EP15-100	PC100-16	MTV100CD15	EV-1230
C61	470 16V	77-337477	RME-L-E-500	EP15-500	PC500-16	MTV500DN15	EV-1250
C62	33 10V	77-336336	ME-3-D-035	EP15-25	PC30-25	VTT33A10	EV-1125
C63	1 50V	77-333104	RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615
C64	33 10V	77-336336	ME-3-D-035	EP15-25	PC30-25	VTT33A10	EV-1125
C65	10 10V	77-336106	RME-A-D-010	EP15-10	PC10-25	VTT10A25	EV-1222
C66	33 16V	77-337336	ME-3-E-035	EP15-25	PC30-25	MTV30CB25	EV-1325

CAPACITORS

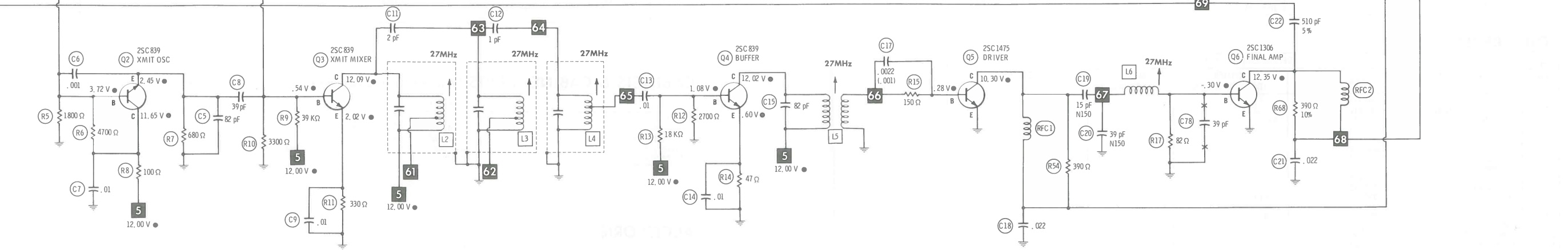
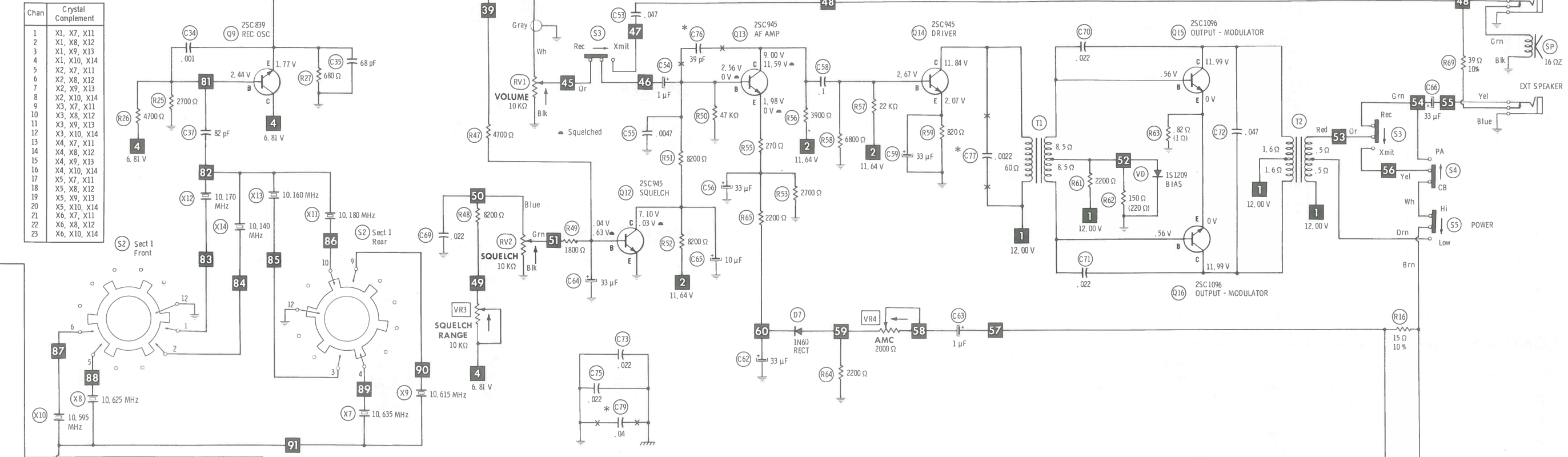
ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			ARCO/ELMENCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	150		CCTO-151	DTZ-150		CN0315	10TCC-T15
C2	.01		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C3	22		CCTO-220	DTZ-22	NP022	CN0422	10TCC-Q22
C4	3		CCTO-3R3	DTZ-3R3	NP03P3	CN0533	10TCC-V33
C5	82		CCD-820	DD-820		GP482	10TS-Q82
C6	.001		1MDF-1-102	CPJ-102	DPMS6D1	EWFI A210	1PB-D10
C7	.01		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C8	39		CCTO-390			CN0439	10TCC-Q39
C9	.01		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C10	.01		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C11	2		CCTO-2R2	DTZ-2R2	NP02P2	CN0522	10TCC-V22
C12	1					CN0510	10TCC-V10

(CONTINUED ON PAGE 65)





Chan	Crystal Complement
1	X1, X7, X11
2	X1, X8, X12
3	X1, X9, X13
4	X1, X10, X14
5	X2, X7, X11
6	X2, X8, X12
7	X2, X9, X13
8	X2, X10, X14
9	X3, X7, X11
10	X3, X8, X12
11	X3, X9, X13
12	X3, X10, X14
13	X4, X7, X11
14	X4, X8, X12
15	X4, X9, X13
16	X4, X10, X14
17	X5, X7, X11
18	X5, X8, X12
19	X5, X9, X13
20	X5, X10, X14
21	X6, X7, X11
22	X6, X8, X12
23	X6, X10, X14



PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFGR. PART No.	REPLACEMENT DATA				
			ARCO/ELMENCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C13	.01		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C14	.01		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C15	82		CCD-820	DD-820	GP482	GP482	10TS-Q82
C16	.01		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C17	.0022		CCD-222		GP222	GP222	10TS-D22
C18	.022		CCD-203		*	GP120	5GA-S20
C19	15 N150		*				10TCP-Q15
C20	39 N150		*				10TCP-Q39
C21	.022		CCD-203				5GA-S20
C22	510 5%		DM15-511J	CPR-510J	CD15FD511J03	SX351	424ME5100J501
C23	390		CCD-391	DD-391	GP390	GP339	10TS-T39
C24	220 N150		*				10TCP-T22
C25	39		CCTO-390			CN0439	10TCC-Q39
C26	.01		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C27	.01		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C28	.01		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C29	.01		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C30	47		CCTO-470	DTZ-47	NP047	CN0447	10TCC-Q47
C31	.01		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C32	.01		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C33	2		CCTO-2R2	DTZ-2R2	NP02P2	CN0522	10TCC-V22
C34	.001		1MDF-1-102	CPJ-102	DPMS6D1	EWFTA210	1PB-D10
C35	68		CCD-680	DD-680	GP68	GP468	10TS-Q68
C36	56		CCTO-560			CN0456	10TCC-Q56
C37	82		CCD-820	DD-820		GP482	10TS-Q82
C39	.047		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C41	.047		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C42	.047		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C43	3		CCTO-3R3	DTZ-3R3	NP03P3	CN0533	10TCC-V33
C44	.01		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C45	.047		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C46	.047		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C47	.047		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C48	.047		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C49	.022		CCD-203			GP120	5GA-S20
C52	10		CCTO-100	DTZ-10	NP010	CN0410	10TCC-Q10
C53	.047		CCD-403			GP140	5GA-S40
C55	.0047		CCD-472				10TS-D47
C58	.1			DC-104	MGP1	MAG5001	TG-P10
C67	.01		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C69	.022		CCD-203			GP120	5GA-S20
C70	.022		CCD-203			GP120	5GA-S20
C71	.022		CCD-203			GP120	5GA-S20
C73	.022		CCD-203			GP120	5GA-S20
C74	.022		CCD-203			GP120	5GA-S20
C75	.022		CCD-203			GP120	5GA-S20
C76	39		CCTO-390			CN0439	10TCC-Q39
C77	.022		CCD-203			GP120	5GA-S20
C78	39		CCTO-390			CN0439	10TCC-Q39
C79	.04		CCD-403			GP140	5GA-S40

* 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.	TRW PART No.
VR1	Volume/Switch	10K	13-160111				
VR2	Squelch	10K	13-166041				
VR3	Squelch Range	10K	13-164087	TSV-10K (2) or T-10K (2)	C-103 (2)	MTC14L1 (2)	X201R103B (2)
VR4	AMC	2000	13-164090	TSV-25K (2) or T-2500 (2)	C-252 (2)	X201R252B (2)	MTC23L1 (2)
VR5	"S" Meter	10K	13-164087	TSV-10K (2) or T-10K (2)	C-103 (2)	MTC14L1 (2)	X201R103B (2)

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

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	37MHz Osc.	13-090311	ETR196		
L2	Xmit. Mixer (27MHz)	13-090312	R30463J		
L3	Xmit. Mixer (27MHz)	13-090312	R30463J		
L4	Xmit. Mixer (27MHz)	13-090313	R31471E		
L5	Xmit. Buffer (27MHz)	13-090335			
L6	Xmit Driver (27MHz)	13-090336			
L7	RF Choke	13-090337			
L8	RF Choke	13-090338			
L9	TVI Trap (54MHz)	13-090339			
L10	Ant. Loading	13-090340			
L11	Rec. Ant (27MHz)	13-090341	ETR1944630		
L12	Rec. RF (27MHz)	13-090306	ETR104463E		
L13	1st Mixer (10.7MHz)	13-090342	ETR195		
L14	2nd Mixer (10.7MHz)	13-090342	ETR195		
L15	Input IF (455kHz)	13-090309	ETI17		
L16	Interstage IF (455kHz)	13-090309	ETI17		
L17	Output IF (455kHz)	13-090334			
RFC1	RF Choke	13-178136			
RFC2	RF Choke	13-178136			
RFC3	RF Choke	13-178190			

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	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	2	1		13-096164 ETA-41 (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.	
T2	64	16	13-096172 ETA-54 (1)			(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP	2 3/4" PM, 16 ohms	13-060090	27A05Z16	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF	Ceramic Filter	13-179050	IF (455kHz)
M	Meter	13-200058	
S2	Switch	13-180091	Channel Selector
S3	Switch	13-183166	Rec-Xmit
S4	Switch	13-183173	PA/CB
S5	Switch	13-183163	Power (Hi-Lo)
X1	Crystals	13-128302	37.600MHz
X2	Crystals	13-128303	37.650MHz
X3	Crystals	13-128304	37.700MHz
X4	Crystals	13-128305	37.750MHz
X5	Crystals	13-128306	37.800MHz
X6	Crystals	13-128307	37.850MHz
X7	Crystals	13-128308	10.635MHz
X8	Crystals	13-128309	10.625MHz
X9	Crystals	13-128310	10.615MHz
X10	Crystals	13-128311	10.595MHz
X11	Crystals	13-128312	10.180MHz
X12	Crystals	13-128313	10.170MHz
X13	Crystals	13-128314	10.160MHz
X14	Crystals	13-128315	10.140MHz
	Antenna	13-040072	Telescopic

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

ITEM	PART No.	ITEM	PART No.
Grille, Front	13-010259	Channel Plate	13-020598
Case, Rear	13-013110	Button, Rec-Xmit	13-118088
Front Plate (Aluminum)	13-020600	Knob, Channel	13-115107
Battery Lid	13-018022	Knob, Volume/Squelch	13-110175
Battery Case	13-030121		

ACCESSORIES

ITEM	MFGR. PART No.	REMARKS
Leather Carrying Case	13-035066	
Battery Cord (Black)	13-034075	
Battery Cord (Red)	13-034076	