



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 13-729

ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools: GC ELECTRONICS
 L104, L105, L106.....5000 8290
 ALL other tunable Coils and Transformers.....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 Q102 base, low side to ground.	455kHz, 1000Hz @ 30% modulation	Any	L104, L105, L106	Set generator output to maintain 1V across speaker voice coil. Adjust for maximum.
High side thru .01uF to external antenna jack, low side to ground.	27.085MHz, 1000Hz @ 30% modulation, output 2uV.	11	L102, L103	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 external antenna jack, low side to ground.	27,025MHz, 1000Hz @ 30% modulation, output 1000uV.	11	VR101	Set squelch control fully clockwise. Adjust so that squelch just breaks.

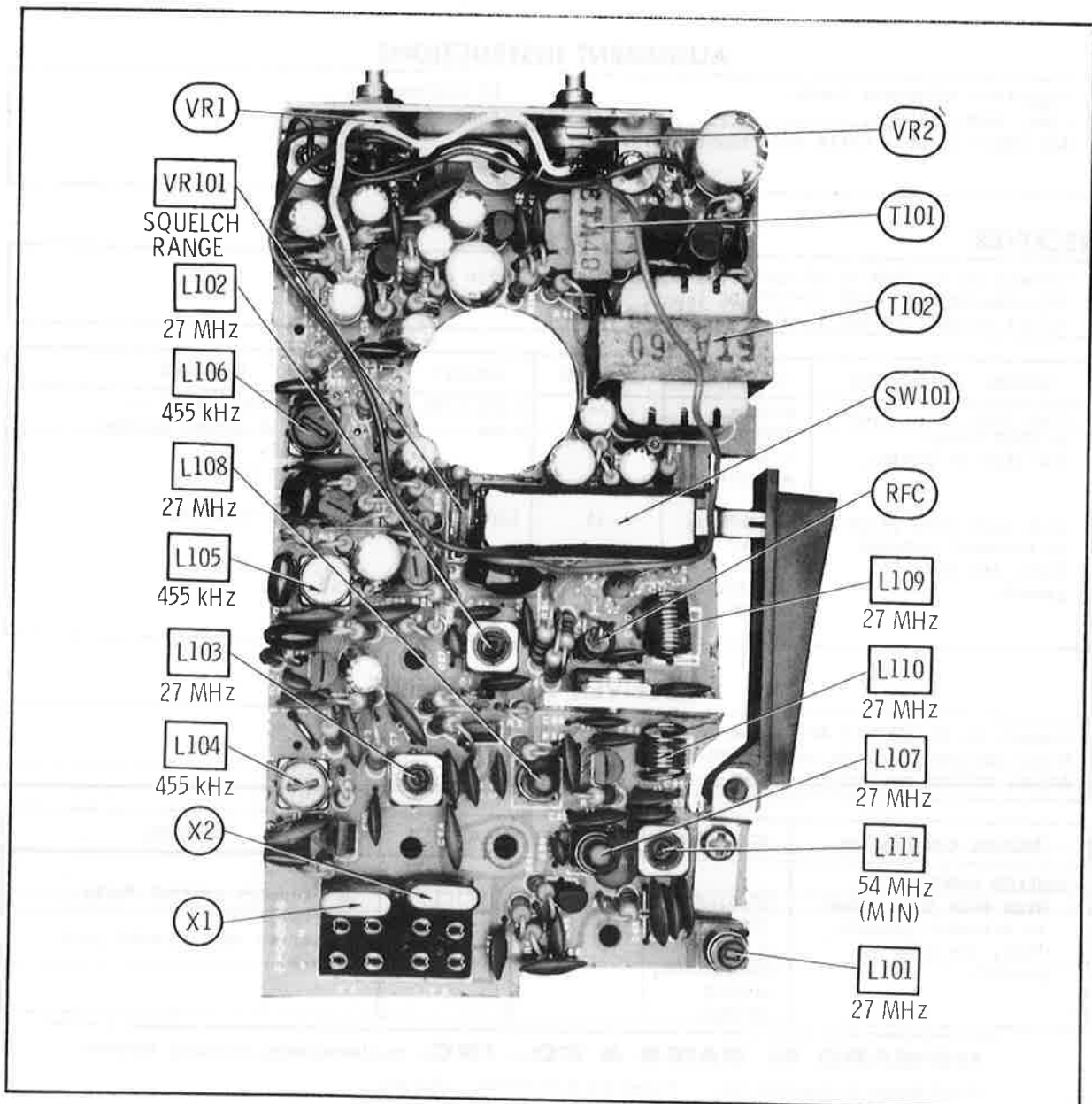
HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

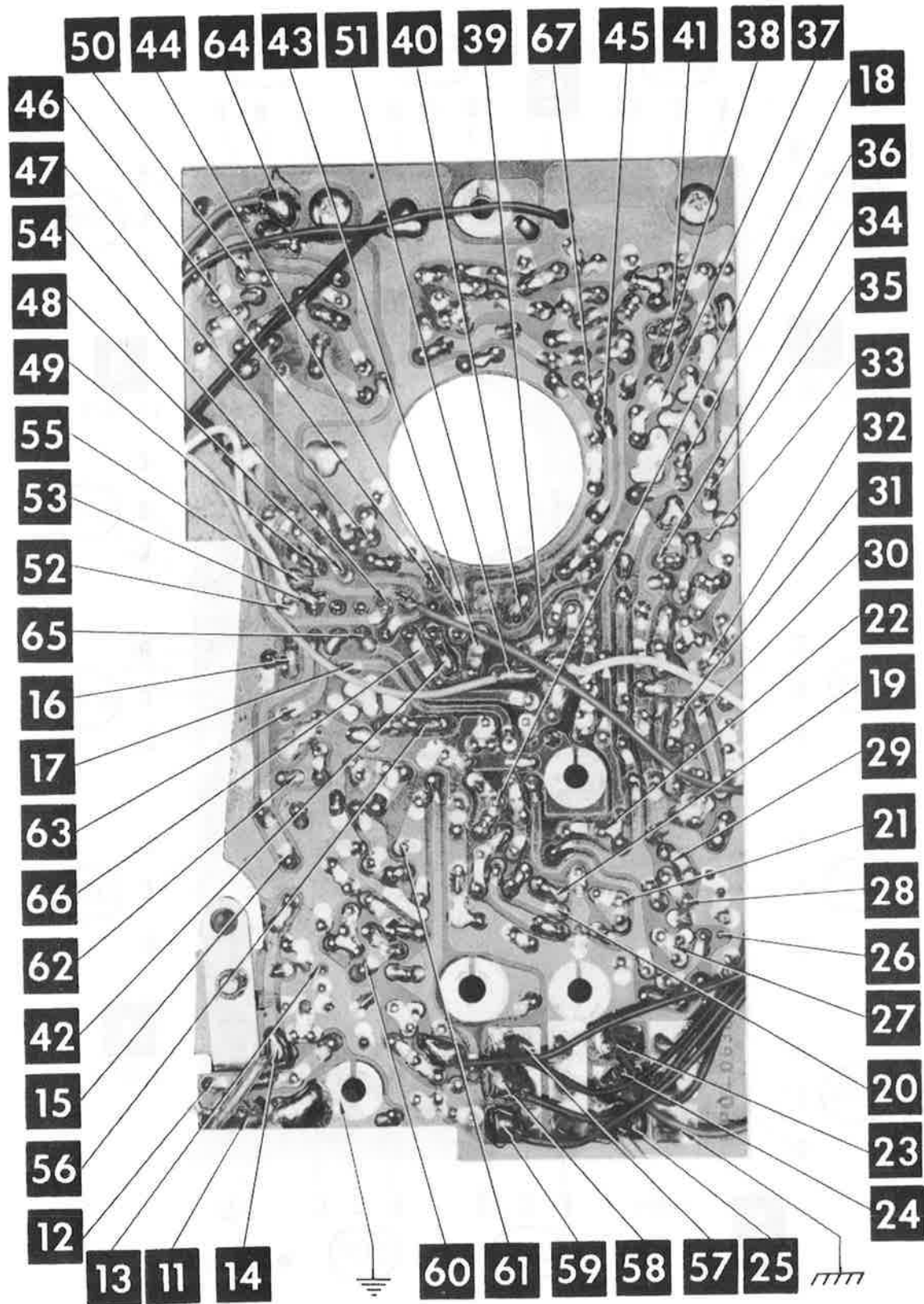
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MIDLAND MODEL 13-729

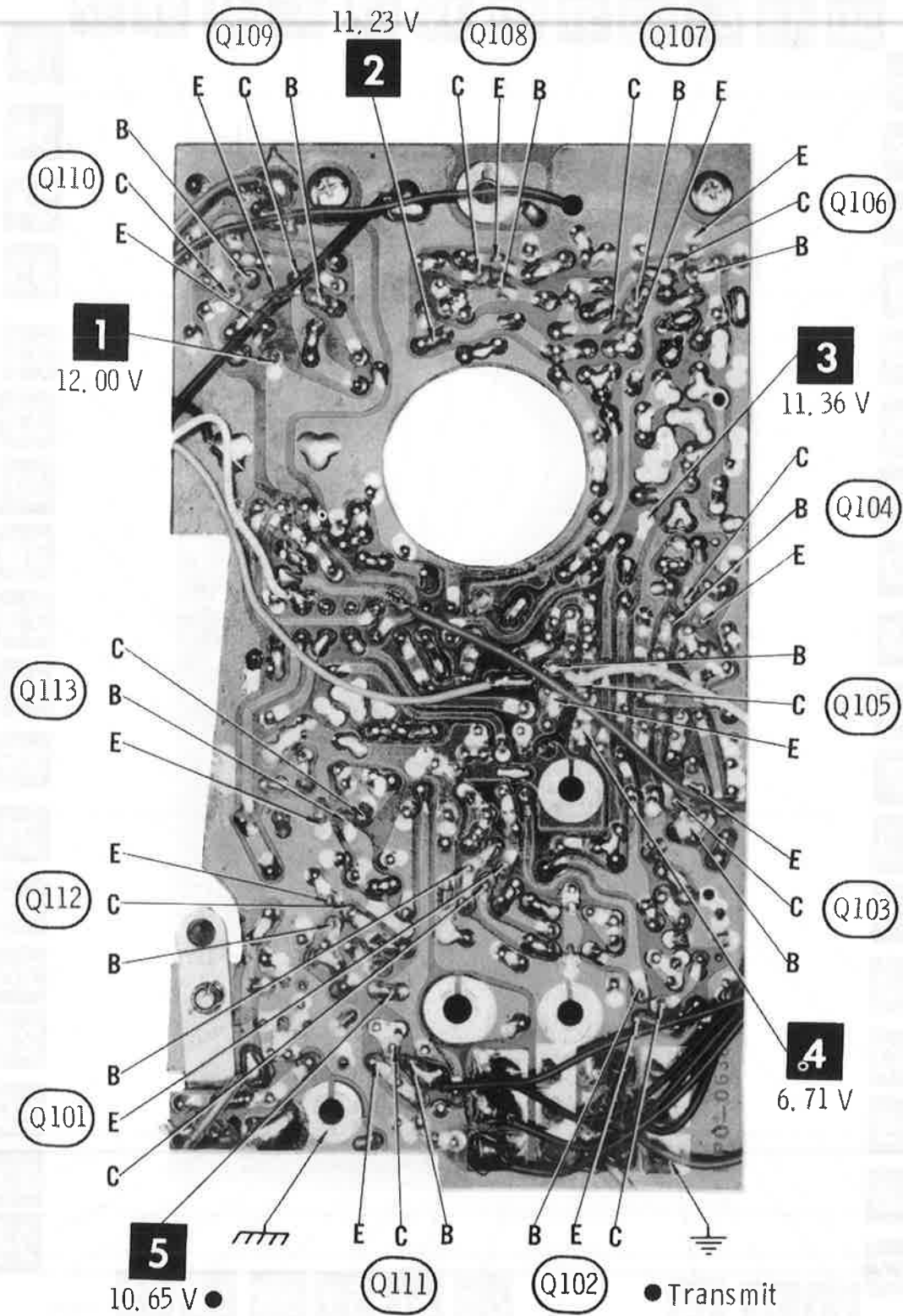
TRANSMITTER

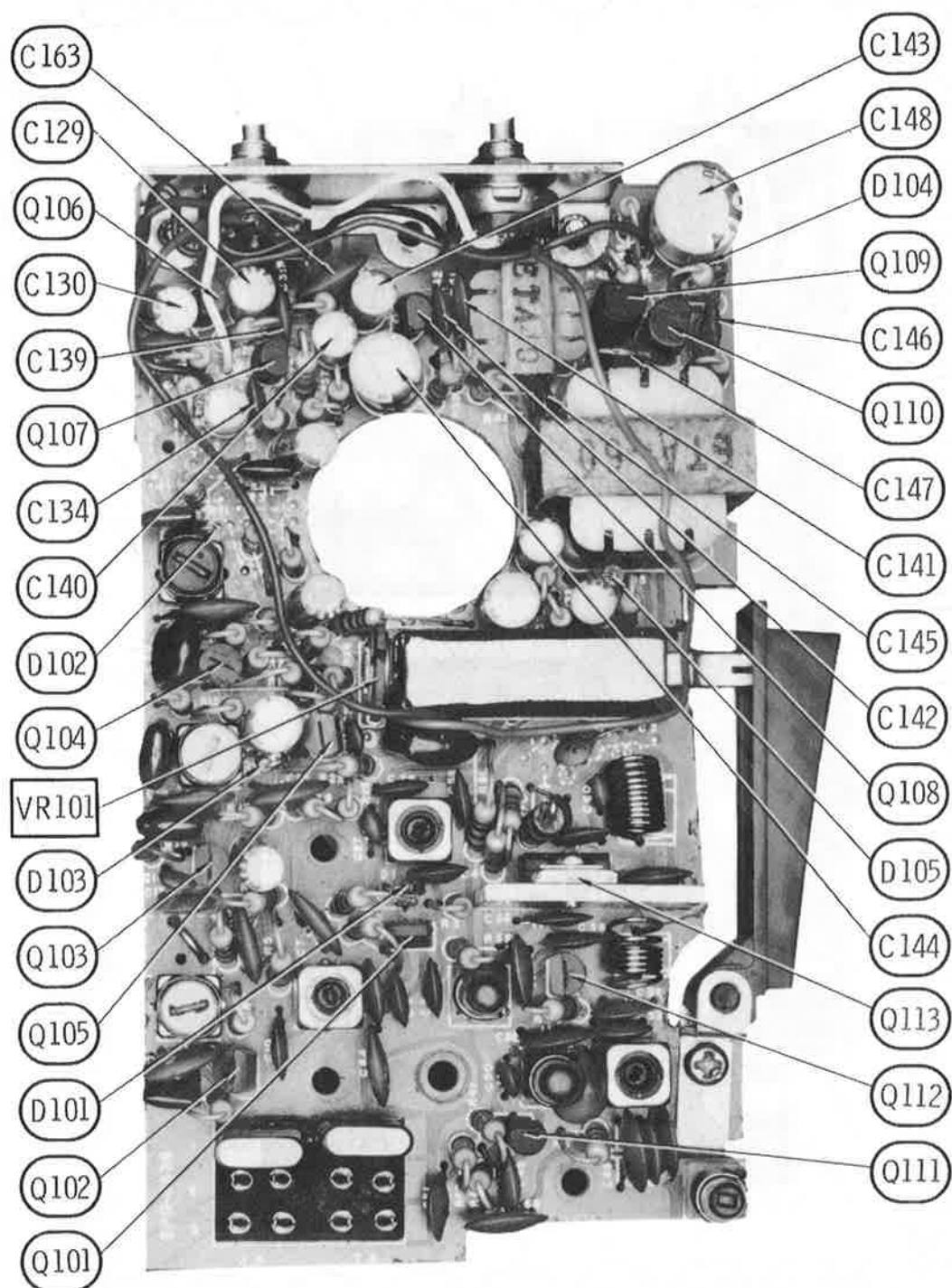
Connect an RF Wattmeter or 50-ohm, 25-watt dummy load to antenna connector. Adjustments made with 12-volt DC input.		
INDICATOR	ADJUST	REMARKS
OSCILLATOR, DRIVER, FINAL RF Wattmeter	L107, L108, L109, L110	Channel selector to channel 11. Key transmitter. Adjust for maximum.
OUTPUT POWER RF Wattmeter	L101	Extend antenna fully, Key transmitter. Adjust for maximum watts output.
TVI TRAP TV (Ch. 2)	L111	Key transmitter. Adjust for MINIMUM interference on TV.
FINAL INPUT POWER 0-500 DC milliammeter in power supply.		Note that total current is less than 200mA.
FREQUENCY CHECK Frequency Counter		Inductively couple counter to fully extended antenna and check all transmitter frequencies.

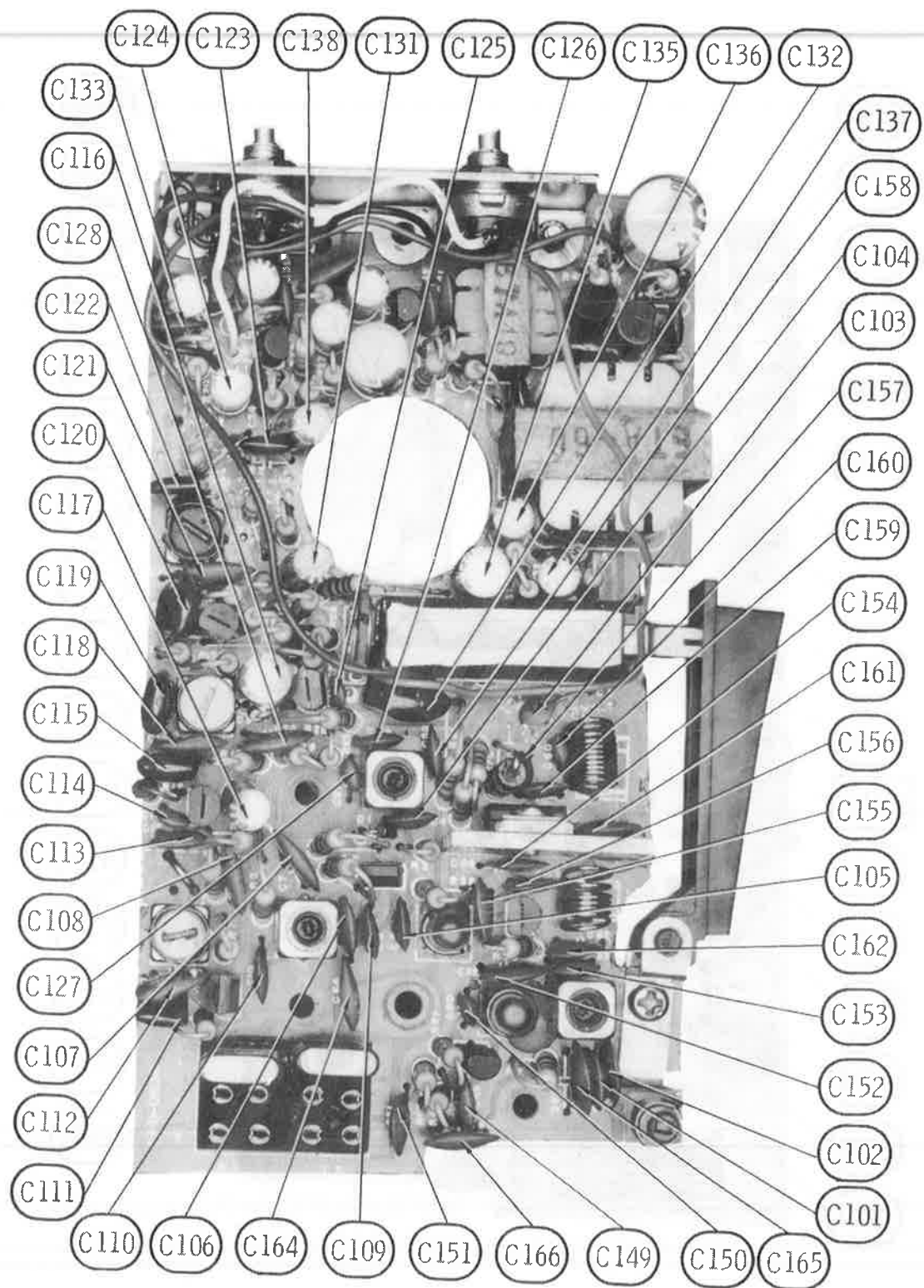


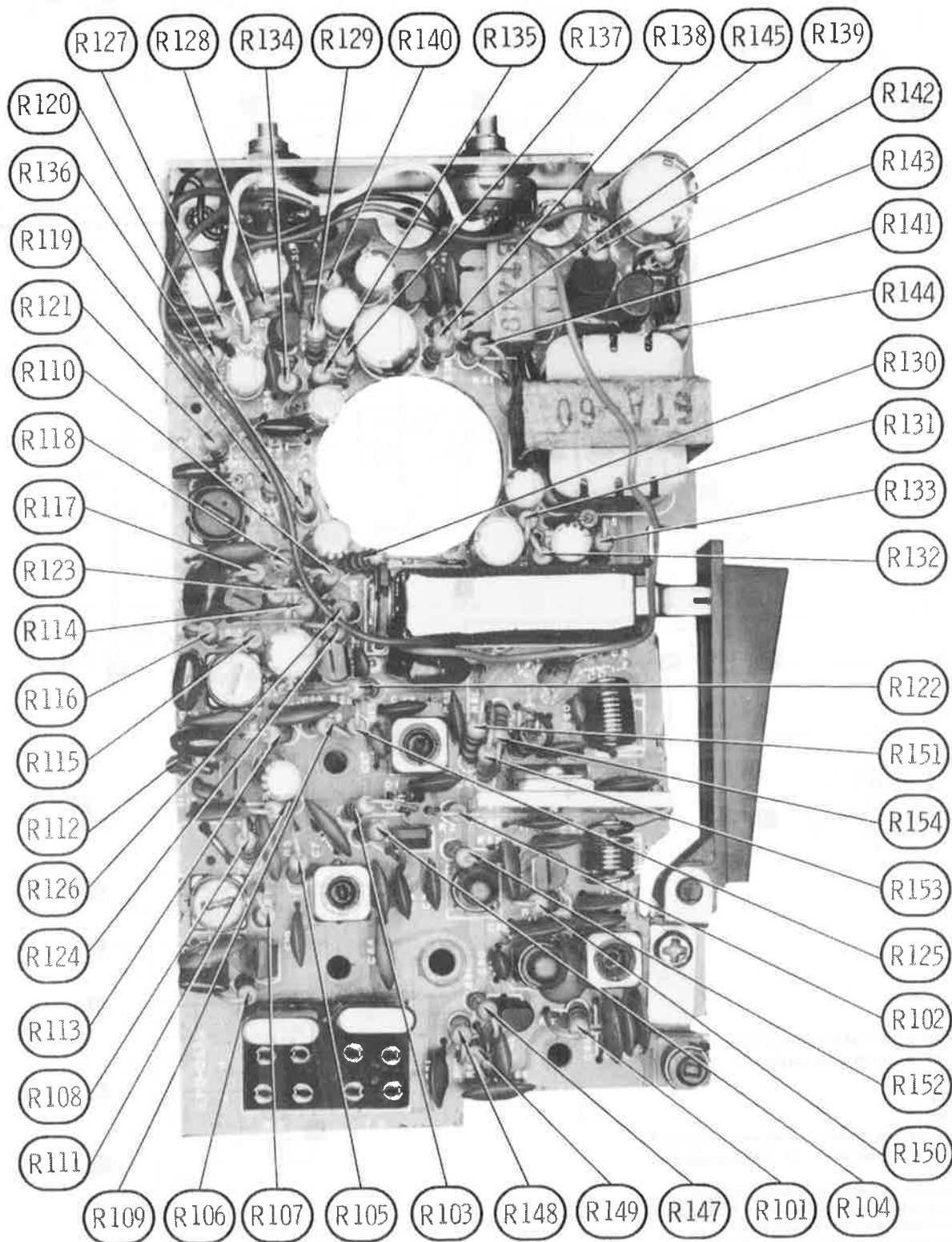


MIDLAND MODEL 13-729

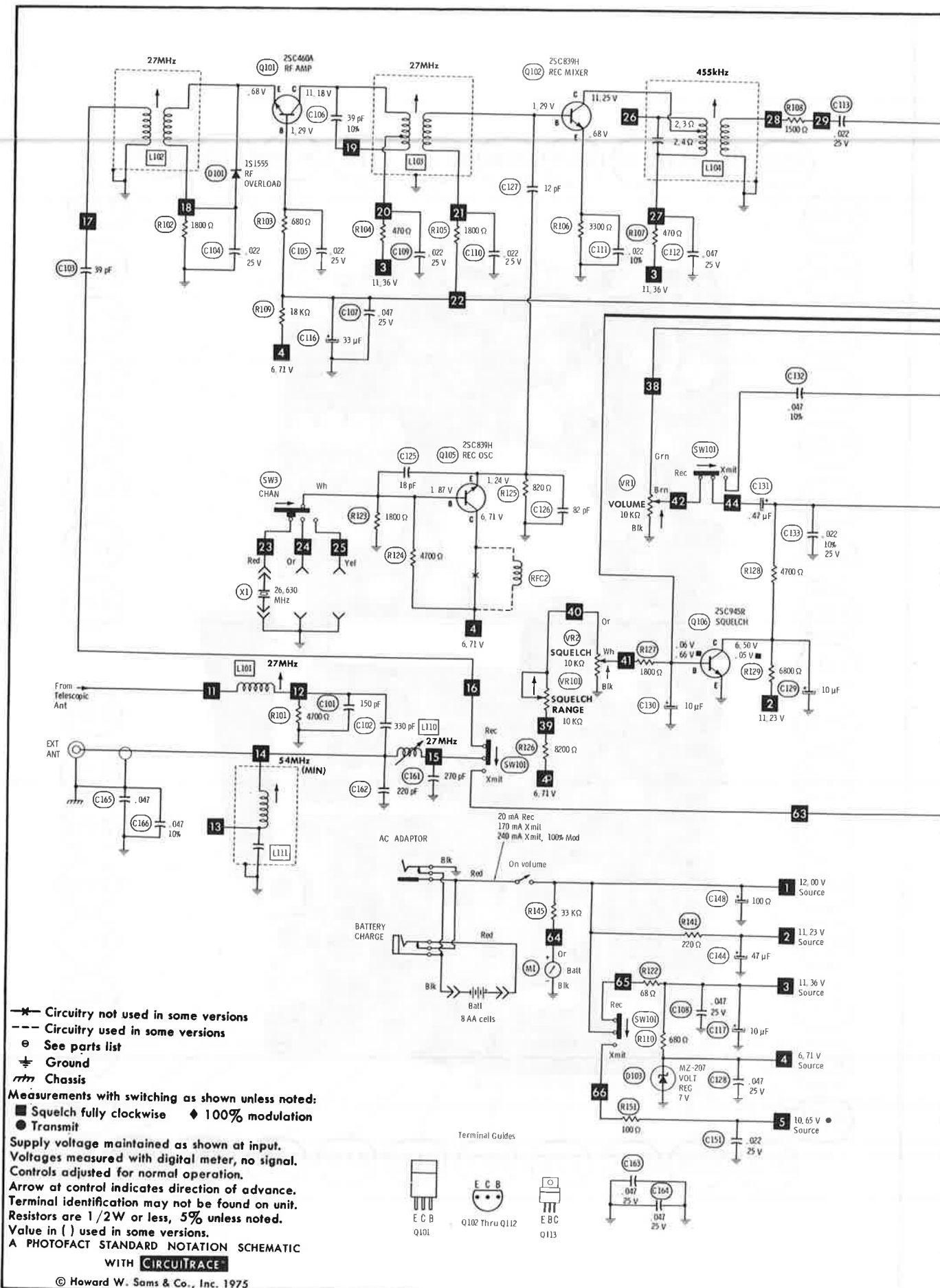


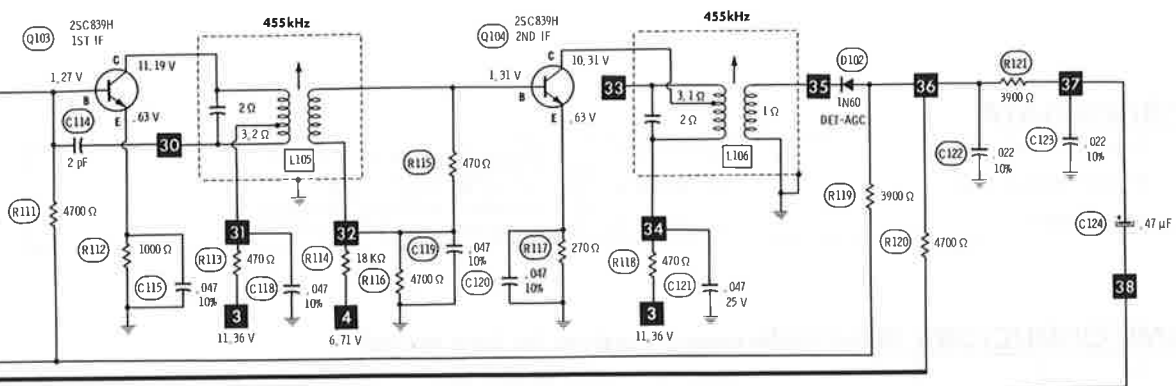






MIDLAND MODEL 13-729





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
Shielded Antenna Lead	8524 (Stranded) Available in 12 Colors
Shielded Cable	Use BELDEN No. 8240 (Solid) Miniature (RG-58/U)
	8259 (Stranded) Miniature (RG-58A/U)
	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.
D101	1S1555	09-306154	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D102	1N60	09-306019	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D103	MZ-207 7V Zener	09-306325	GEZD-6.8	Z1206	ZB6.8	HEPZ0409	RE 110	SK3058	RT-238	ECG5071
D104	MA26	09-306223	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D105	1N60	09-306019	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
Q101	2SC460A	09-302004	GE-17	TR-24	PTC101	HEPS0020	RE 10	SK3039	RT-187	ECG108
Q102	2SC839H	09-302124	GE-20	TR-24	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q103	2SC839H	09-302124	GE-20	TR-24	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q104	2SC839H	09-302124	GE-20	TR-24	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q105	2SC839H	09-302124	GE-20	TR-24	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q106	2SC945R	09-302125	GE-20	TR-24	PTC136	HEPS0015	RE 13	SK3124	RT-107A	ECG199
Q107	2SC945R	09-302125	GE-20	TR-24	PTC136	HEPS0015	RE 13	SK3124	RT-107A	ECG199
Q108	2SC945Q(1)	09-302125	GE-20	TR-21	PTC139	HEPS0015	RE 13	SK3124	RT-107A	ECG199
Q109	2SC1383Q (1)	09-302155	GE-45	TR-25	PTC178	HEPS5014	RE 17	SK3024	RT-114	ECG128
Q110	2SC1383Q (1)	09-302155	GE-45	TR-25	PTC178	HEPS5014	RE 17	SK3024	RT-114	ECG128
Q111	2SC945R	09-302125	GE-20	TR-24	PTC136	HEPS0015	RE 13	SK3124	RT-107A	ECG199
Q112	2SC815L	09-302062	GE-18	TR-25	PTC123	HEPS0015	RE 13	SK3024	RT-172	ECG123A
Q113	2SC1728	09-302219								ECG302

(1) Rating 750MW @ 1.5 amps.

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.
C116	33 10V	77-336336	ME-3-D-035	EP15-25	PC30-25	VTT33A10	EV-1125
C117	10 16V	77-337106	RME-B-G-010	EP15-10	PC10-25	VTT10A25	EV-1222
C124	.47 50V	77-333474	RME-A-J-001	EP50-1	PC1-50	VTT47B63	EV-1610
C129	10 16V	77-337106	RME-B-G-010	EP15-10	PC10-25	VTT10A25	EV-1222
C130	10 16V	77-337106	RME-B-G-010	EP15-10	PC10-25	VTT10A25	EV-1222
C131	.47 50V	77-333474	RME-A-J-001	EP50-1	PC1-50	VTT47B63	EV-1610
C135	33 10V	77-336336	ME-3-D-035	EP15-25	PC30-25	VTT33A10	EV-1125
C136	10 16V	77-337106	RME-B-G-010	EP15-10	PC10-25	VTT10A25	EV-1222
C137	1 50V	77-333105	RME-A-J-001	EP50-1	PC1-50	MTV1CB50	EV-1615
C138	10 16V	77-337106	RME-B-G-010	EP15-10	PC10-25	VTT10A25	EV-1222
C140	.47 50V	77-333474	RME-A-J-001	EP50-1	PC1-50	VTT47B63	EV-1610
C143	10 16V	77-337106	RME-B-G-010	EP15-10	PC10-25	VTT10A25	EV-1222
C144	47 16V	77-337476	RME-C-B-050	EP6-50	PC50-10	VTT47A6	EV-1026
C148	100 16V	77-337107	RME-E-E-100	EP15-100	PC100-16	VTT100F16	EV-1230

CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			ARCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C101	150		CCD-151	DD-151		CN0315	10TCC-T15
C102	330		CCD-331	DD-331		GP333	10TS-T33
C103	39		CCO-390			CN0439	10TCC-Q39
C104	.022 25V		CCD-203	DC-203		MAG5012	2SS-S20
C105	.022 25V		CCD-203	DC-203		MAG5012	2SS-S20
C106	39 10% N150		*			*	10TCP-Q39
C107	.047		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C108	.047		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C109	.022 25V		CCD-203	DC-203		MAG5012	2SS-S20
C110	.022 25V		CCD-203	DC-203		MAG5012	2SS-S20
C111	.022 10%		1MDF-1-223	CPJ-223	DPMS2S22	EW1A122	1PB-S22

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			ARCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C112	.047 25V		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C113	.022 25V		CCD-203	DC-203		MAG5012	2SS-S20
C114	2		CCTO-2R2	DTZ-2R2	NP02P2	CNO522	10TCC-V22
C115	.047 10%		1MDF-2-473		DPMS2S47	EWFA1A147	1PB-S47
C118	.047 25V		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C119	.047 10%		1MDF-2-473		DPMS2S47	EWFA1A147	1PB-S47
C120	.047 10%		1MDF-2-473		DPMS2S47	EWFA1A147	1PB-S47
C121	.047 25V		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C122	.022 10%		1MDF-1-223	CPJ-223	DPMS2S22	EWFA1A122	1PB-S22
C123	.022 10%		1MDF-1-223	CPJ-223	DPMS2S22	EWFA1A122	1PB-S22
C125	18		CCTO-180			CNO418	10TCC-Q18
C126	82		CCD-820	DD-820		GP482	10TS-Q82
C127	12		CCTO-120			CNO412	10TCC-Q12
C128	.047 25V		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C132	.047 10%		1MDF-2-473		DPMS2S47	EWFA1A147	1PB-S47
C133	.022 25V		CCD-203	DC-203		MAG5012	2SS-S20
C134	.01 25V		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C139	.01 25V		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C141	100		CCD-101	DD-101	GP100	GP310	10TS-T10
C142	.01 25V		CCD-103	DC-103	GP10000	MAG5011	2SS-S10
C145	.01 10%		1MDF-1-103	CPJ-103	DPMS4S1	EWFA1A110	1PB-S10
C146	.01 10%		1MDF-1-103	CPJ-103	DPMS4S1	EWFA1A110	1PB-S10
C147	.047 10%		1MDF-2-473		DPMS2S47	EWFA1A147	1PB-S47
C149	150		CCD-151	DD-151		CNO315	10TCC-T15
C150	39		CCTO-390			CNO439	10TCC-Q39
C151	.022 25V		CCD-222	DD-222		GP222	2SS-D22
C152	330		CCD-331	DD-331	GP330	GP333	10TS-T33
C153	100		CCD-101	DD-101	GP100	GP310	10TS-T10
C154	.022 25V		CCD-222	DD-222		GP222	2SS-D22
C155	270		CCD-271	DD-271	GP270	GP327	10TS-T27
C156	220		CCD-221	DD-221		GP322	10TS-T22
C157	12		CCTO-120			CNO412	10TCC-Q12
C158	.022		CCD-222	DD-222		GP222	2SS-D22
C159	100		CCD-101	DD-101	GP100	GP310	10TS-T10
C160	30		CCTO-300				10TCC-Q30
C161	270		CCD-271	DD-271	GP270	GP327	10TS-T27
C162	220		CCD-221	DD-221		GP322	10TS-T22
C163	.047 25V		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C164	.047		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C165	.047		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C166	.047 25V		CCD-503	DC-503	MGP05	MAG5015	TGL-S50
C167	.047		CCD-503	DC-503	MGP05	MAG5015	TGL-S50

MIDLAND MODEL 13-729

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.	MALLORY PART No.	TRW PART No.
VR1	Volume/Switch	10K	13-160122				
VR2	Squelch	10K	13-160123				
VR101	Squelch Range	10K	13-164103	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.	
L101	Antenna Loading (27MHz)	13-094222			
L102	RF Input (27MHz)	13-090341	ETR-194		
L103	Mixer Input (27MHz)	13-094209	ETR-246		
L104	Input IF (455kHz)	13-090344	ETI-134		
L105	Interstage IF (455kHz)	13-090345	ETI-105		
L106	Output IF (455kHz)	13-090334	ETI-106		
L107	Xmit. Osc. (27MHz)	13-170210			
L108	Driver Output (27MHz)	13-o76482			
L109	Final Amp Output (27MHz)	13-178200			
L110	Pi Filter (27MHz)	13-178200			
L111	TVI Trap (54MHz)	13-090339	ETR-98		
RFC	RF Choke	13-178136			
RFC-2	RF Choke	13-178198			

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.	
T101	2	1		13-096190 ETA-49 (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.	
T102	256	16	13-096191 ETA-60 (1)			(1) Number on unit

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP	2 1/4" PM, 16 ohms	13-063001	22A05Z16	

CRYSTALS

CHANNEL	CTS KNIGHTS PART No.	
	RECEIVE	TRANSMIT
1	B20M26.510	A20M26.965
2	B20M26.520	A20M26.975
3	B20M26.530	A20M26.985
4	B20M26.550	A20M27.005
5	B20M26.560	A20M27.015
6	B20M26.570	A20M27.025
7	B20M26.580	A20M27.035
8	B20M26.600	A20M27.055

CHANNEL	CTS KNIGHTS PART No.	
	RECEIVE	TRANSMIT
9	B20M26.610	A20M27.065
10	B20M26.620	A20M27.075
11 (1)	B20M26.630	A20M27.085
12	B20M26.650	A20M27.105
13	B20M26.660	A20M27.115
14	B20M26.670	A20M27.125
15	B20M26.680	A20M27.135
16	B20M26.700	A20M27.155

CHANNEL	CTS KNIGHTS PART No.	
	RECEIVE	TRANSMIT
17	B30M26.710	A20M27.165
18	B20M26.720	A20M27.175
19	B20M26.730	A20M27.185
20	B20M26.750	A20M27.205
21	B20M26.760	A20M27.215
22	B20M26.770	A20M27.225
23	B20M26.800	A20M27.255

(1) Midland Part Number - Receiver 13028362, Transmit 13-128363.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
MT	Meter	13-200064	Battery Level
SW2	Switch	13-183172	Hi-Lo Power
SW3	Switch	13-183175	Channel
ST01	Antenna	13-183174	Push-To-Talk
	Socket	13-040082	Telescopic
		13-159202	Crystals

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

ITEM	PART No.	ITEM	PART No.
Case, Front	13-010279	Case, Battery	13-030119
Cover, Rear	13-013123	Knob, Volume/Squelch	13-110186
Top Plate	13-020630	Button, Push-To-Talk	13-115117
Panel, Side	13-010278		