



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 MESSENGER 250

ALIGNMENT

Suggested Alignment Tools:

GC ELECTRONICS

T3, T4, Z1A, Z1B#5000, 8290

L6, L7, T12, T13#9300

T1, T2, T7, T8, T9, T10, T11.#9440

SYNTHESIZER

INDICATOR	CHANNEL	ADJUST	REMARKS
HF OSC RF Voltmeter	23	T7	Connect meter between CR14 and CR15. Adjust 1/8 turn beyond peak RF voltage point.
MIXER RF Voltmeter	12	T8, T9, T10, T11	Connect meter to case of Q15. Adjust for maximum.

RECEIVER

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

Note: L6 and L7 should be adjusted before receiver is aligned. See Transmitter Alignment.

Adjustments are made with 14 volt DC input, or 120 volt AC input to power supply.

Adjust volume control to obtain suitable reading.

JOHNSON MODEL MESSENGER 250

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

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4CY174

RECEIVER (CONTINUED)

ALIGNMENT

SIGNAL GENERATOR	CHANNEL	ADJUST	REMARKS
High side thru a .01 uF cap to Base of Q2, low side to ground. Set to 455 kHz, 1000 Hz @ 30% modulation output MINIMUM uV.	Any	Z1A, Z1B, T3, T4	Adjust for maximum.
High side thru .01uF cap to Antenna Jack, low side to ground. Set to 27.105MHz, 1000Hz @ 30% modulation, output 0.5uV.	12	T1, T2	Adjust for maximum.

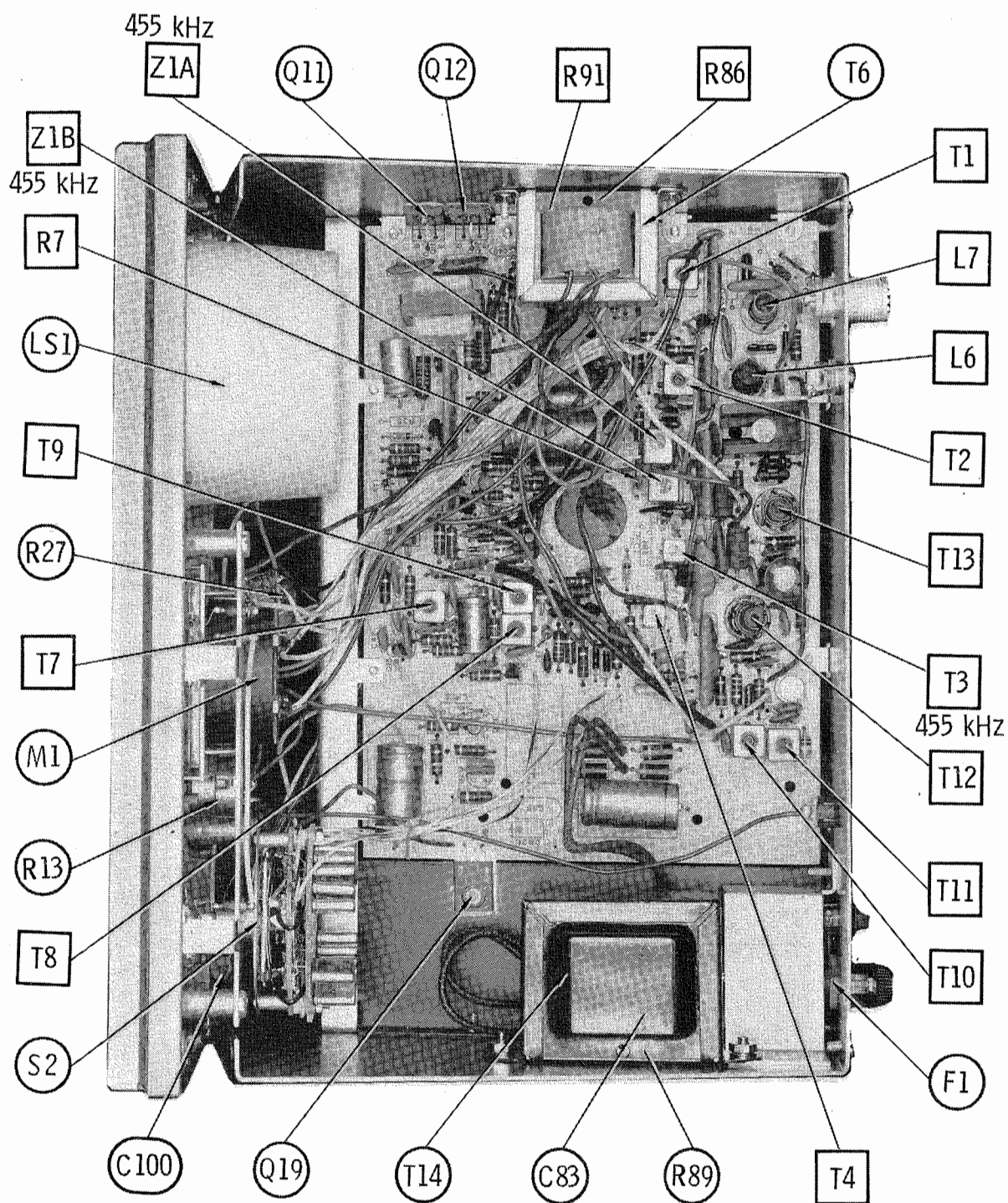
ADJUSTMENT

SIGNAL GENERATOR	CHANNEL	ADJUST	REMARKS
AGC High side thru a .01 uF capacitor to antenna jack, low side to ground. Set to 27.085 MHz, 1000 Hz @ 30% Mod. output: 500 uV.	11	R7	Adjust volume control to obtain 0 dB. Decrease generator to 0.5 uV. Adjust so that signal does not drop more than 17 dB.
"S" METER High side thru a .01 uF capacitor to antenna jack, low side to ground. Set to 27.105 MHz, 1000 Hz @ 30% Mod. output: 50 uV.	12	R91 R86	Adjust for "S9" on panel "S" meter. Adjust for "S1" on "S" meter with a 0.5 uV signal.

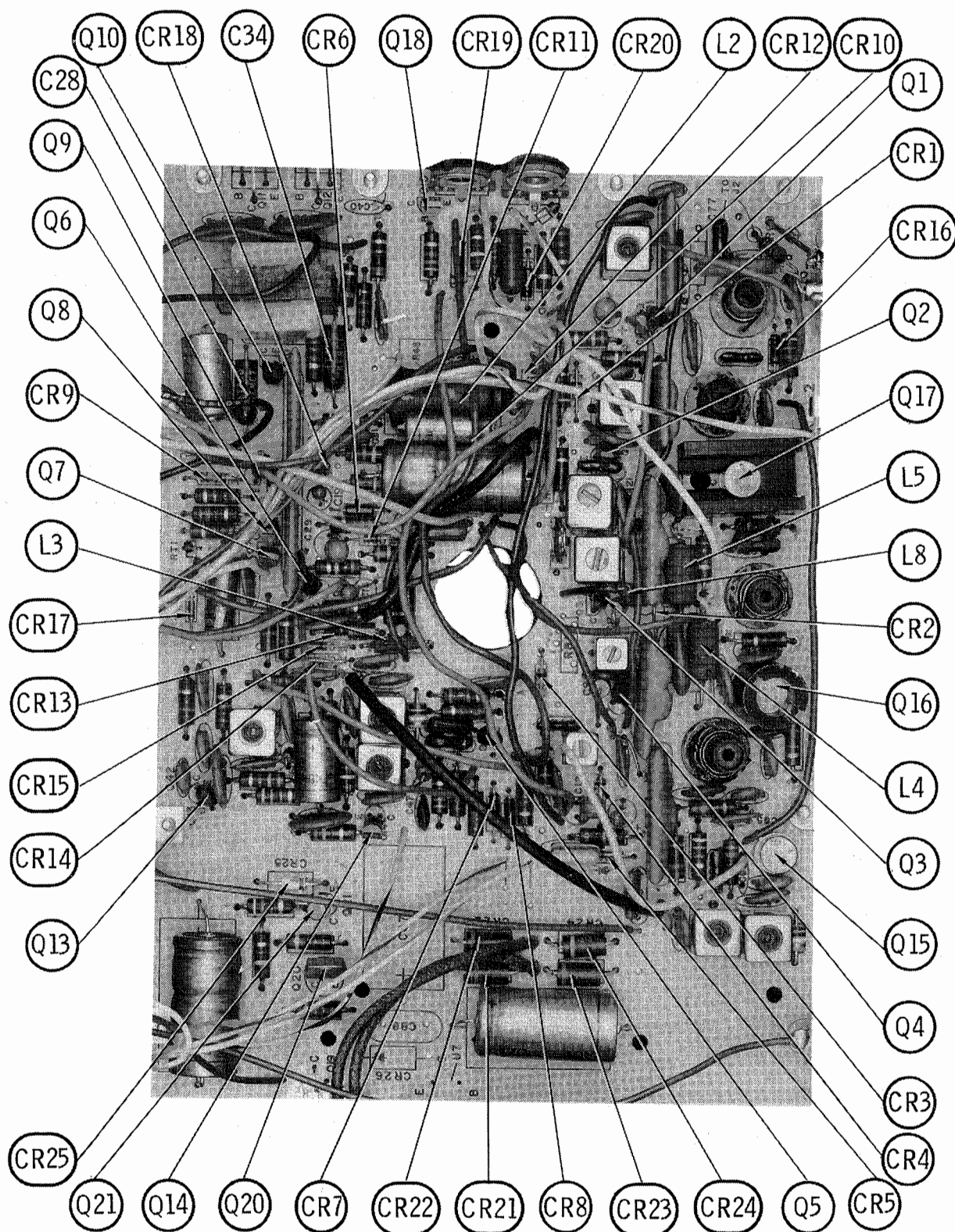
TRANSMITTER

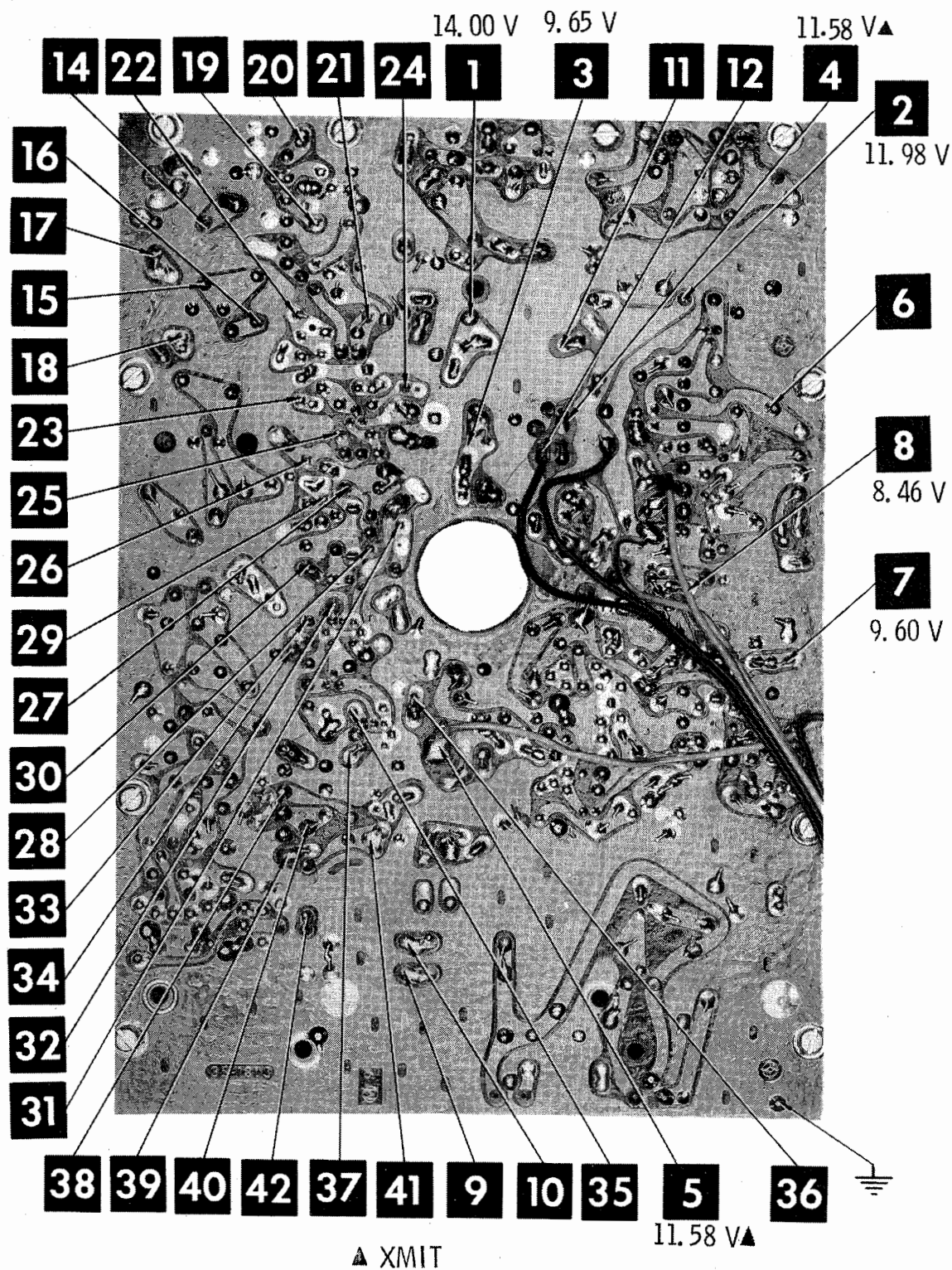
ALIGNMENT

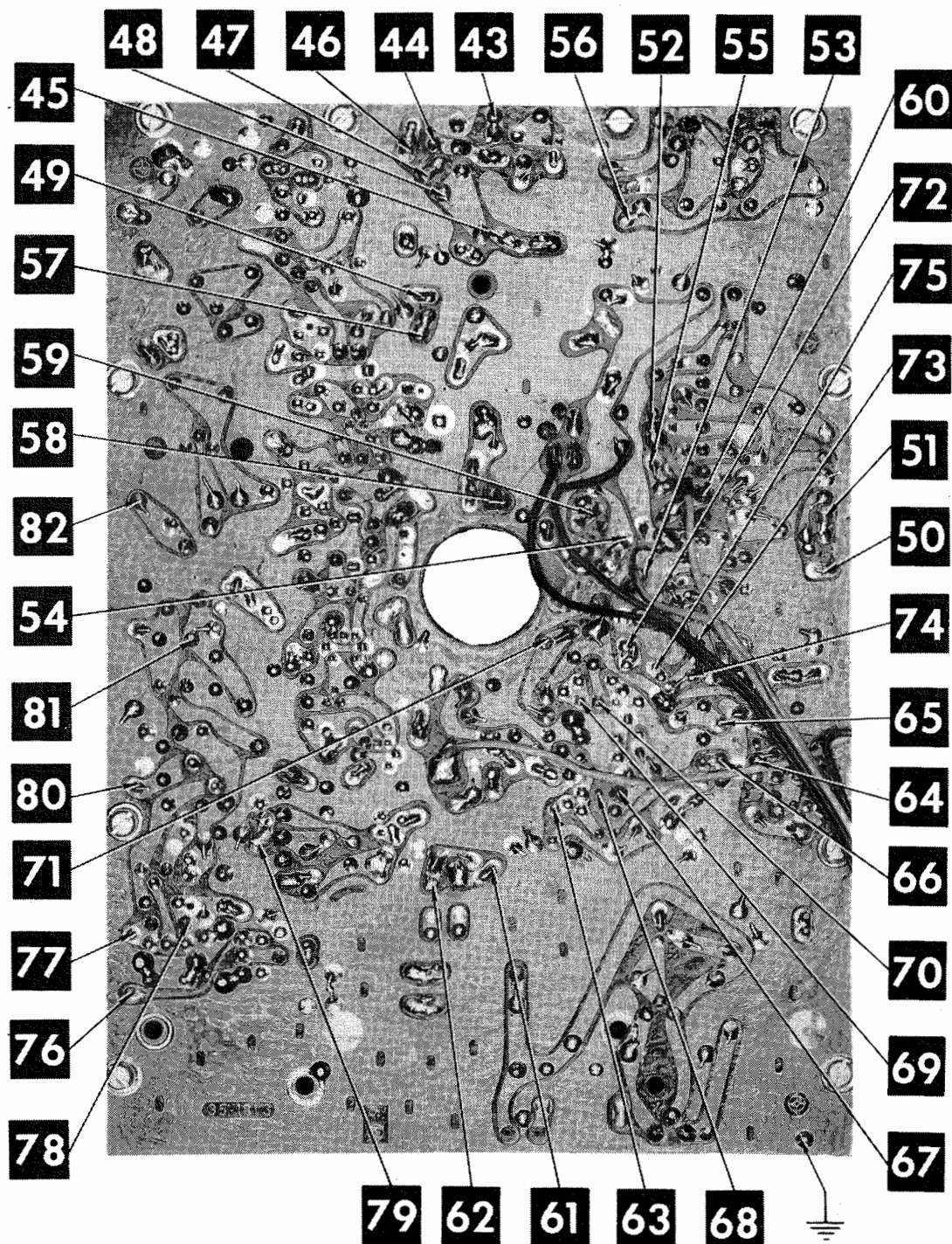
INDICATOR	ADJUST	REMARKS
BUFFER, DRIVER, FINAL: RF Wattmeter or dummy load and RF VTVM.	T10, T11, T12, T13	Connect wattmeter to antenna connector. Chan. Sel. to Ch. 12 key transmitter. Adjust for maximum.
FINAL INPUT POWER 0 - 1 A DC Milliammeter	L6, L7	Insert meter between Emitter of Q17 and ground. Key transmitter. Adjust for no more than 5 watts DC input.



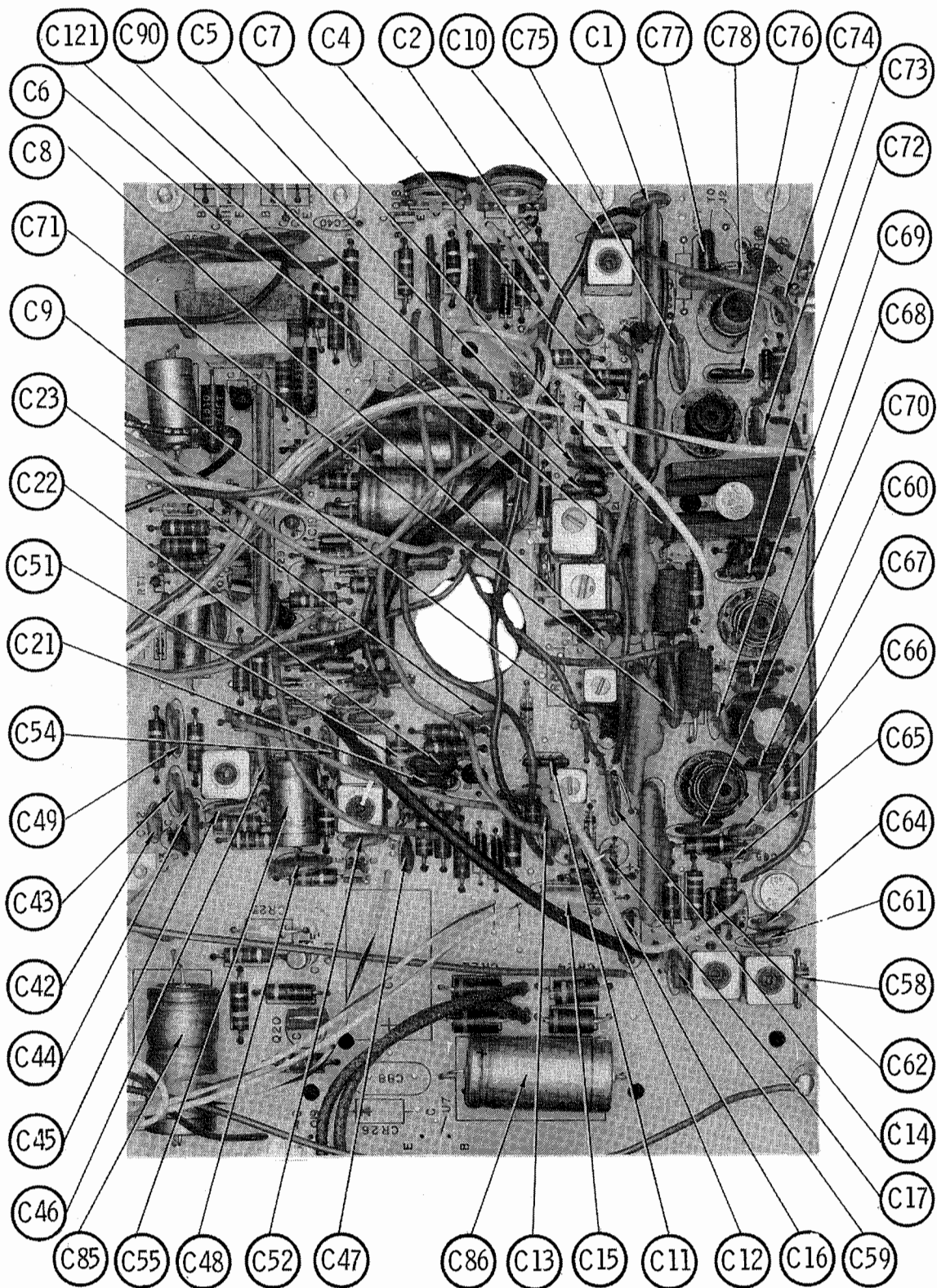


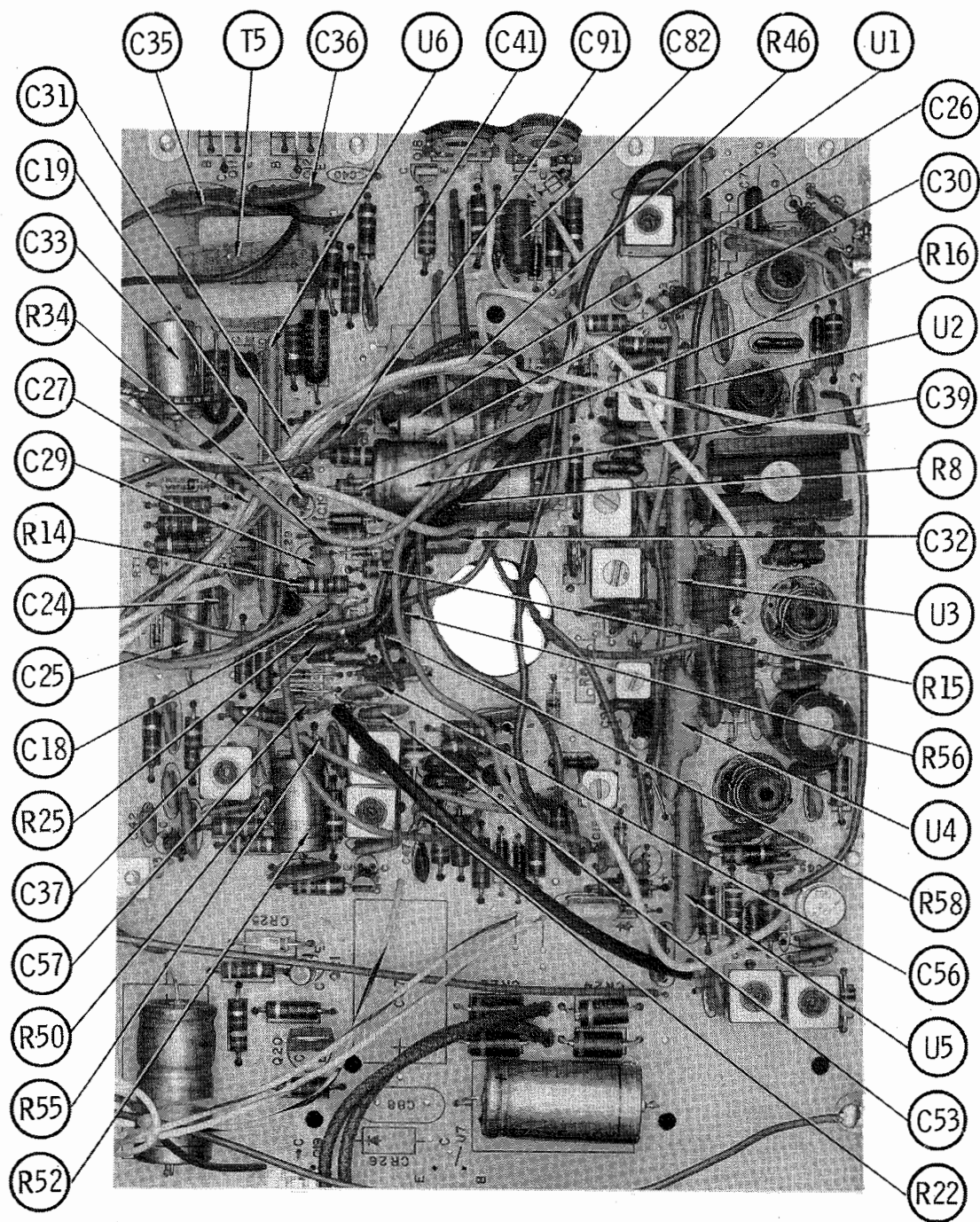


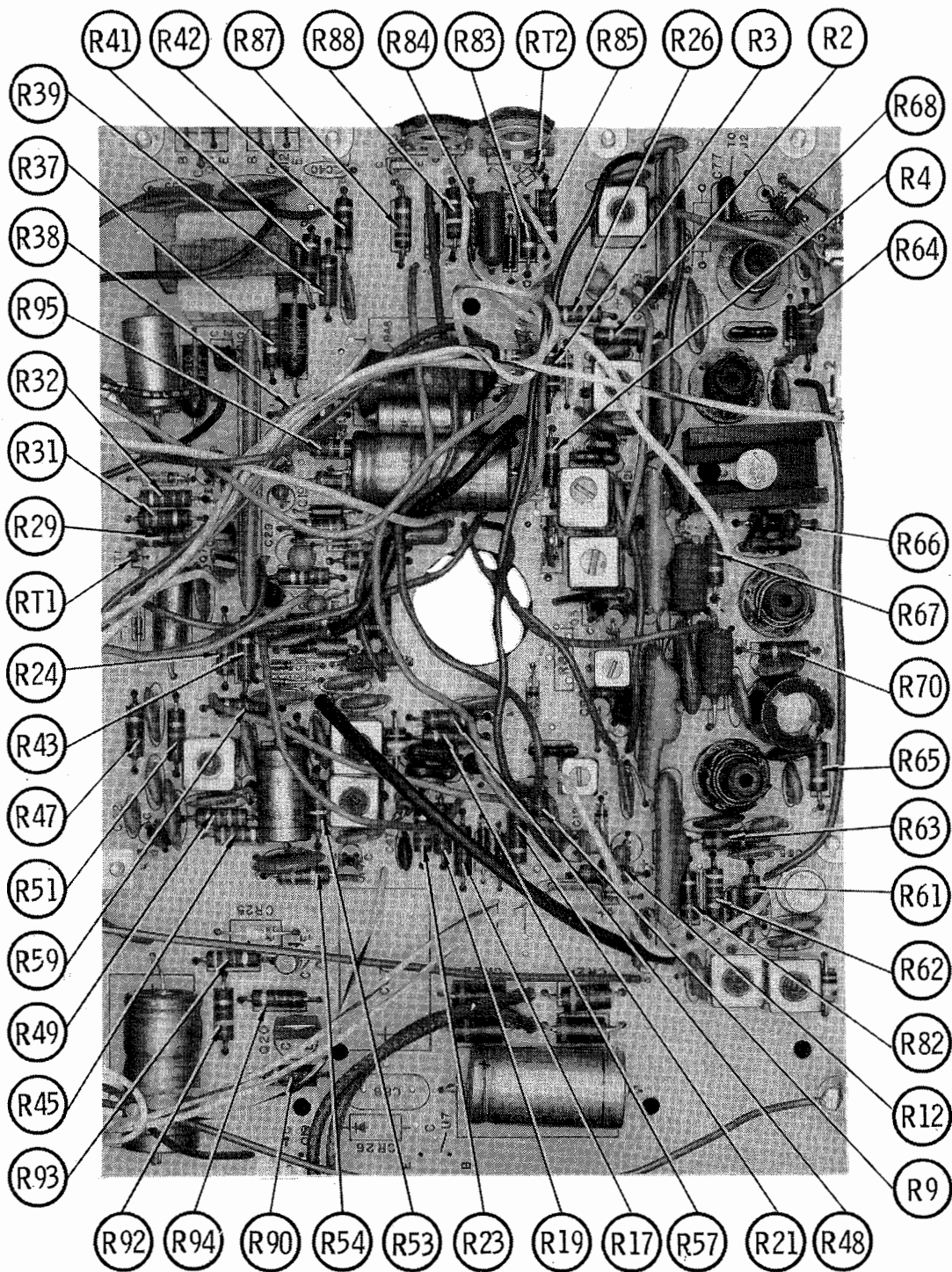




JOHNSON MODEL MESSENGER 250







PARTS LIST AND DESCRIPTION

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

WIRING DATA

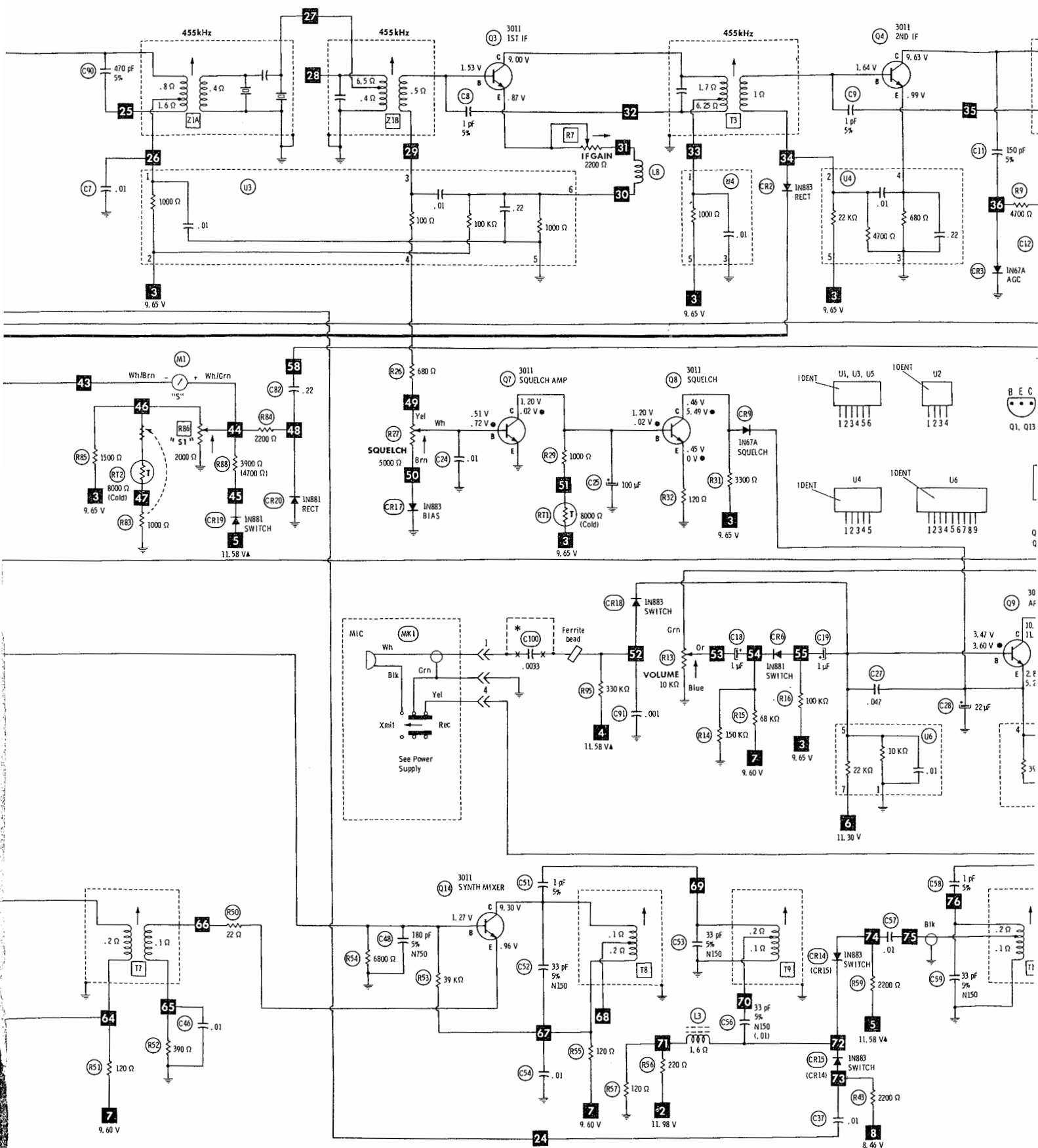
General-use Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors
	8524 (Stranded) Available in 12 Colors
Shielded Antenna Lead	Use BELDEN No. 8214 Lowest-loss (RG-8/U Type)
	8237 Low-loss (RG-8/U)
	8240 (Solid) Miniature (RG-58/U)
	8259 (Stranded) Miniature (RG-58A/U)
Coiled Microphone Cable	Use BELDEN No. 8497 3-Conductor, 1 Shielded for Press-to-Talk (Neoprene)
Ignition Noise Suppression	Use BELOEN No. 7300-Series Spark-Plug Sets
Bonding Strap	Use BELDEN No. 8661 (3/8 In.)

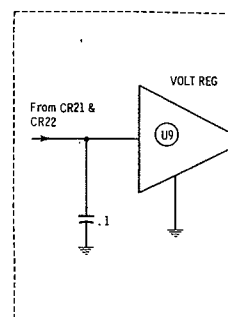
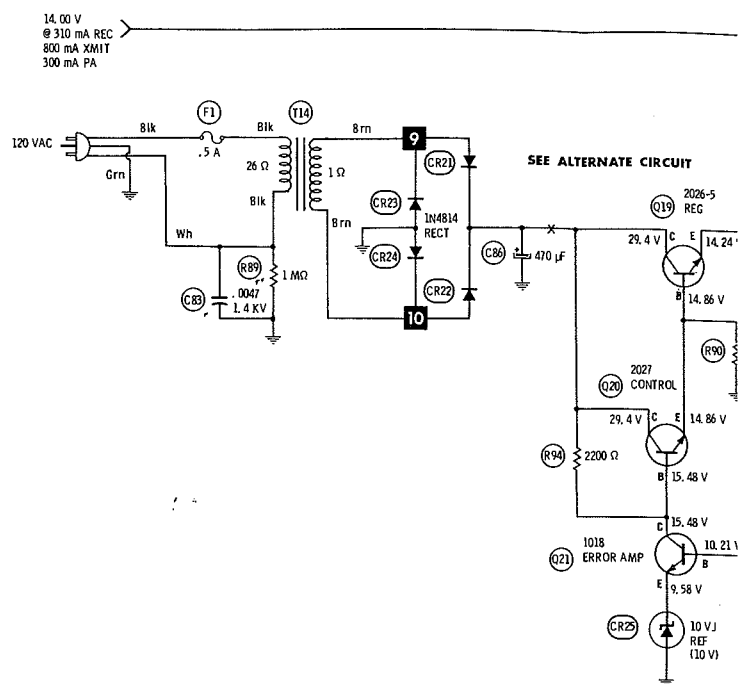
SEMICONDUCTORS (Select replacement transistor for best results)

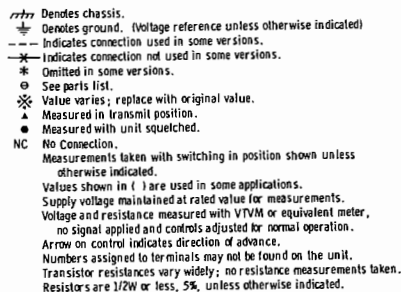
ITEM No.	TYPE / MFR. No. / PART No.	REPLACEMENT DATA						
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	MOTOROLA PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
CR1	1N67A/523-1000-067	1N34AS	1N34A	PTC207	HEP134	SK3087		ECG 109
CR2	1N883/523-1000-883	GE-504A	804 or 5A40	PTC201 or PTC202	HEPR0053	SK3016 or SK3031	RT214 or RT215	ECG 116 or ECG 117
CR3	1N67A/523-1000-067	1N34AS	1N34A	PTC207	HEP134	SK3087		ECG 109
CR4	1N67A/523-1000-067	1N34AS	1N34A	PTC207	HEP134	SK3087		ECG 109
CR5	1N883/523-1000-883	GE-504A	804 or 5A40	PTC201 or PTC202	HEPR0053	SK3016 or SK3031	RT214 or RT215	ECG 116 or ECG 117
CR6	1N881/523-1000-881	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
CR7	1N881/523-1000-881	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
CR8	1N881/523-1000-881	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
CR9	1N67A/523-1000-067	1N34AS	1N34A	PTC207	HEP134	SK3087		ECG 109
CR10	10VJ/523-2003-100 (10 V Zener)	GEZD-10	Z-1210	PTC506	HEPZ0413	SK3061	RT241	ECG 140
CR11	1N883/523-1000-883	GE-504A	804 or 5A40	PTC201 or PTC202	HEPR0053	SK3016 or SK3031	RT214 or RT215	ECG 116 or ECG 117
CR12	1N4003/523-0001-002	GE-504A	804 or 5A40	PTC201 or PTC202	HEPR0052	SK3030 or SK3031	RT213 or RT214	ECG 116 or ECG 117
CR13	10VJ/523-2003-100 (10 V Zener)	GEZD-10	Z-1210	PTC506	HEPZ0413	SK3061	RT241	ECG 140
CR14	1N883/523-1000-883	GE-504A	804 or 5A40	PTC201 or PTC202	HEPR0053	SK3016 or SK3031	RT214 or RT215	ECG 116 or ECG 117
CR15	1N883/523-1000-883	GE-504A	804 or 5A40	PTC201 or PTC202	HEPR0053	SK3016 or SK3031	RT214 or RT215	ECG 116 or ECG 117
CR16	1N881/523-1000-881	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
CR17	1N883/523-1000-883	GE-504A	804 or 5A40	PTC201 or PTC202	HEPR0053	SK3016 or SK3031	RT214 or RT215	ECG 116 or ECG 117
CR18	1N883/523-1000-883	GE-504A	804 or 5A40	PTC201 or PTC202	HEPR0053	SK3016 or SK3031	RT214 or RT215	ECG 116 or ECG 117
CR19	1N881/523-1000-881	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
CR20	1N881/523-1000-881	GE-300	D200	PTC214	HEPR0602	SK3100	RT218	ECG 177
CR21	1N4818/523-0013-201							
CR22	1N4818/523-0013-201							
CR23	1N4818/523-0013-201							
CR24	1N4818/523-0013-201							
CR25	10VJ/523-2003-100 (10 V Zener)	GEZD-10	Z-1210	PTC506	HEPZ0413	SK3061	RT241	ECG 140
Q1	3018/576-0003-018	GE-11	TR-24	PTC115	HEP56	SK3018	RT107	ECG 107
Q2	3011/576-0003-011	GE-20	TR-24	PTC139	HEP724	SK3038	RT102	ECG 123A
Q3	3011/576-0003-011	GE-20	TR-24	PTC139	HEP724	SK3038	RT102	ECG 123A
Q4	3011/576-0003-011	GE-20	TR-24	PTC139	HEP724	SK3038	RT102	ECG 123A
Q5	3011/576-0003-011	GE-20	TR-24	PTC139	HEP724	SK3038	RT102	ECG 123A
Q6	3011/576-0003-011	GE-20	TR-24	PTC139	HEP724	SK3038	RT102	ECG 123A
Q7	3011/576-0003-011	GE-20	TR-24	PTC139	HEP724	SK3038	RT102	ECG 123A
Q8	3011/576-0003-011	GE-20	TR-24	PTC139	HEP724	SK3038	RT102	ECG 123A
Q9	3011/576-0003-011	GE-20	TR-24	PTC139	HEP724	SK3038	RT102	ECG 123A
Q10	3011/576-0003-011	GE-20	TR-24	PTC139	HEP724	SK3038	RT102	ECG 123A
Q11	2026-5/576-0002-026*							ECG 241
Q12	2026-5/576-0002-026*							ECG 241
Q13	3018/576-0003-018	GE-11	TR-24	PTC115	HEP56	SK3018	RT107	ECG 107
Q14	3011/576-0003-011	GE-20	TR-24	PTC139	HEP724	SK3038	RT102	ECG 123A
Q15	4004/576-0004-004		TR-64		HEP75	SK3047		ECG 195
Q16	4004/576-0004-004		TR-64		HEP75	SK3047		ECG 195
Q17	4005/576-0004-005		TR-65		HEPS3001	SK3048		ECG 195
Q18	3017/576-0003-017	GE-21	TR-30	PTC103	HEP715	SK3118	RT126	ECG 106
Q19	2026-5/576-0002-026*	GE-55	TR-66		HEPS5001	SK3534	RT155	ECG 182
Q20	20272006/576-0002-006							
Q21	(1) 10183011/576-0003-011	GE-20	TR-24	PTC139	HEP724	SK3038	RT102	ECG 123A

* Rating 60 Watt @ 4 Amp.
(1) Used in some versions.

(CONTINUED ON PAGE 54)







PARTS LIST AND DESCRIPTION (CONTINUED)

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

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA					
			MFGR. PART No.	ARCO PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	6.8	35 V	510-2045-689					
C12	6.8	35 V	510-2045-689					SD35-6R89
C17	1	35 V	510-2045-109					SD35-6R89
C18	1	35 V	510-2045-109					SD35-19
C19	1	35 V	510-2045-109					SD35-19
C25	100	25 V	510-1004-224	ME-7-G-100	EA30-100	WBR100-25	MTA100F35	TVA-1207
C26	47	25 V	510-4006-012	ME-4-G-050	EA30-50	WBR50-25	MTA50E25	TVA-1206
C28	22	15 V	510-2003-220	ME-2-E-025	EA15-25	WBR25-25	MTA25D20	TVA-1148
C29	6.8	35 V	510-2045-689				TDC685M035FL	SD35-6R89
C31	6.8	35 V	510-2045-689				TDC685M035FL	SD35-6R89
C33	150	25 V	510-4006-006				TC5001C	TL-1212
C34	56	6 V	510-2001-560	ME-2-B-050	EA30-150	WBR150-35	MTA50D6	TVA-1100
C39	1000	16 V	510-4006-005	ME-G1000	EA6-50	WBR50-25	MTA100G25	TVA-1163
C55	220	16 V	510-4006-004	ME-8-E-250	EA15-1000	WBR1000-16	MTA250F15	TVA-1161
C85	1000	16 V	510-4006-005	ME-G1000	EA15-250	WBR250-16	MTA100G25	TVA-1163
C86	470	40 V	510-4009-001	ME-J500	EA15-1000	WBR1000-16	MTA500G50	TVA-1315
					EA50-500	WBR500-50		

CAPACITORS

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.
C1	.001			CCD-102	DD-102	GP1000	SM210	2SS-D10
C4	27	5%		CCT0-270		NP027	CN0427	10TCC-Q27
C5	5.1					NP05		10TCC-V50
C6	.01			CCD-103	CK-103	MGP01	TA110	TG-S10
C7	.01			CCD-103	CK-103	MGP01	TA110	TG-S10
C8	1	5%					CN0510	10TCC-V10
C9	1	5%					CN0510	10TCC-V10
C10	.0047			CCD-472	DD-472G	GP4700	JF247	10TS-D47
C13	.01			CCD-103	CK-103	MGP01	TA110	TG-S10
C14	.01			CCD-103	CK-103	MGP01	TA110	TG-S10
C15	.047			1DP-2-473		DPMS6S47	EWFA147	225P47391WD3
C16	.1			1DP-2-104		DPMS2P1	EWFA1010	225P10491WD3
C21	820	5%		DM-19-821		CD19F821J500	SX382	MS-382
C22	390	5%		DM-15-391	CPR-390J	CD15F391J500	SX339	MS-339
C23	.01			CCD-103	CK-103	MGP01	TA110	TG-S10
C24	.01			CCD-103	CK-103	MGP01	TA110	TG-S10
C27	.047			1DP-2-473		DPMS6S47	EWFA147	225P47391WD3
C30	.0047			CCD-472	DD-472G	GP4700	JF247	10TS-D47
C32	.22			4DP-5-224		DPMS4P22	EWFA022	4PS-P22
C35	.022			1DP-1-223		OPMS6S22	EWFA122	225P22391WD3
C36	.022			1DP-1-223		DPMS6S22	EWFA122	225P22391WD3
C37	.01			CCD-103	CK-103	MGP01	TA110	TG-S10
C41	.01			CCD-103	CK-103	MGP01	TA110	TG-S10
C42	6.8			CCD-103	DTZ-6R8	NP06P8	CN0568	10TCC-V68
C43	22	5% N150		*			*	10TCP-Q22
C44	100	5% N150		*			*	10TCP-T10
C45	.01			CCD-103	CK-103	MGP01	TA110	TG-S10
C46	.01			CCD-103	CK-103	MGP01	TA110	TG-S10
C47	.01			CCD-103	CK-103	MGP01	TA110	TG-S10
C48	180	5% N750			DTN-180			10TCU-T18
C49	.01			CCD-103	CK-103	MGP01	TA110	TG-S10
C51	1	5%		*			CN0510	10TCC-V10
C52	33	5% N150		*			*	10TCP-Q33
C53	33	5% N150		*			*	10TCP-Q33
C54	.01			CCD-103	CK-103	MGP01	TA110	TG-S10
C56	33	5% N150		*			*	10TCP-Q33
C57	.01			CCD-103	CK-103	MGP01	TA110	TG-S10
C58	1			*			CN0510	10TCC-V10
C59	33	5% N150		*			*	10TCP-Q33
C60	.047			*			*	10TCP-Q33
C61	33	5% N150		*			*	10TCP-Q33
C62	.001	5%						
C64	22	5% NPO			DTZ-25		CN0425	10TCC-Q25
C65	.01			CCD-103	CK-103	MGP01	TA110	TG-S10
C66	12	5% N750					CN7412	10TCU-Q12
C67	.001			CCD-102	DD-102	GP1000	SM210	2SS-D10
C68	47	5% N150		*			*	10TCP-Q47
C69	.0047							
C70	.047							
C71	.047							
C72	.001	5%						
C73	27	5%		CCT0-270		NP027	CN0427	10TCC-Q27
C74	.001							
C75	100	5% N150		*			*	10TCP-T10
C76	300	5%		DM-15-391	CPR-390J	CD15F391J500	SX339	MS-339
C77	330	5%		DM-15-391	CPR-390J	CD15F391J500	SX339	MS-339
C78	.0047	1400V DC	510-3001-472					
C82	.22			4DP-5-224		DPMS4P22	EWFA022	4PS-P22
C83	.0047	1400V DC	510-3004-472					
C90	470			DM-16-471	CPR-470J	CD15F471J500	SX347	MS-347
C91	.001			CCD-102	DD-102	GP1000	SM210	2SS-D10
C100	.0033			CCD-332	DD-332	GP3300	JF233	2SS-D33
C121	.01			CCD-103	CK-103	MGP01	TA110	TG-S10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

PARTS LI:

(When or

CONTROL

ITEM No.	FU
R7	IF Gain
R13	Volume/
R27	Squelch
R86	"S" Met
R91	"S" Met

(3) For horizon

RESISTO

ITEM No.	
R42	1 (1
RT1	8000

COILS (F

ITEM No.	
L2	Aud
L3	RF
L4	RF
L5	RF
L6	Fin
L7	Pi
T1	Ant
T2	RF
T3	Inp
T4	Out
T7	Osc
T8	Syn
T9	Syn
T10	Syn
T11	Syn
T12	RF
T13	Fin

TRANSF

ITEM No.	
T14	120 V/ 250 mF

TRANSI

ITEM No.	PR
T5	2

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R7	IF Gain Adjust	2200	562-0019-222	TSV-2.5K (3) or T-2500 (3)	C-252 (3)	X201R252B (3)	MTC252L1 (3)
R13	Volume/Power Switch	10K	562-0001-027	F2-10K, SF014, KR1	A47-10K-Z, FS-3, SWE-12 or [NP-10K-Z, UP-B-400, NWE-12]	BU2, CF61, SS1 GC	UA14A, SF1000, US41 or [RU14A, SL39, SF1000, US41]
R27	Squelch/PA Switch	5000	562-0012-003			BU2, CF60, SS17, K	
R86	"S" Meter Zero	2000	562-0004-202	T-2500 or TSV-25K	C-252	X201R252B	MTC23L1
R91	"S" Meter Adjust	10K	562-0004-103	TSV-10K or T-10K	C-103	X201R103B	MTC14L1

(3) For horizontal mounting, bend the two outside terminals to fit PC board. Use jumper to connect center terminal to PC board.

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.
R42	1 (1/2W WW)		569-2503-109	RT2	8000 (CoId)		569-3001-001
RT1	8000 (CoId)		569-3001-001				

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L2	Audio Choke (20 mH)	542-8001-011		6308	
L3	RF Choke (20 uH)	542-3002-002		6152	
L4	RF Choke (13 uH)	542-3003-001		72P125AP	
L5	RF Choke (13 uH)	542-3003-001		72P125AP	
L6	Final Tank (27 MHz)	542-1005-010			
L7	Pi Network (27 MHz)	542-1005-004			
T1	Antenna Coil (27 MHz)	592-5015-001			
T2	RF (27 MHz)	592-5015-002			
T3	Input IF (455 kHz)	592-5020-004		8811	
T4	Output IF (455 kHz)	592-5020-004		8812	
T7	Osc (32 MHz)	592-5015-004			
T8	Syn. Mixer (27 MHz)	592-5015-005			
T9	Syn. Mixer (27 MHz)	592-5015-005			
T10	Syn. Mixer (27 MHz)	592-5015-005			
T11	Syn. Mixer (27 MHz)	592-5015-005			
T12	RF Driver (27 MHz)	592-5014-001			
T13	Final Tank (27 MHz)	592-5014-002			

TRANSFORMER (Power)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	PRI.	SEC. 1	MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T14	120 VAC @ 250 mA	22 VAC @ 1.3 A	592-3001-001				

TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA				NOTES
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD Part No.	
T5	2	1		592-1007-004				

JOHNSON MODEL MESSENGER 250

PARTS LIST AND DESCRIPTION (CONTINUED)

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

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA				NOTES
	PRI.	SEC.	MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T6	50	8	592-1013-004				

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
LS1	3 1/2" PM 3.2 ohms	589-1004-003	3A070T	

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	1/2 A Slo Blo 2 A Quick-acting	534-0002-014 534-0003-024	534-1002-001 534-1004-005	MDL 1/2 AGC2	HKP HDJ	313500 312002	342012AL 150145	FG2-2

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Meter 250	554-0014-005	"S"/RF
S2	Switch	583-2029-103	Channel Selector
U1	Printed Circuit Unit	544-0003-011	R.F. Amp. Silicon
U2	Printed Circuit Unit	544-0002-011	1st Mixer Silicon
U3	Printed Circuit Unit	544-0003-043	1st I.F. 120 Silicon
U4	Printed Circuit Unit	544-0002-012	2nd I.F. Silicon
U5	Printed Circuit Unit	544-0002-015	Noise Limit. Germ.
U6	Printed Circuit Unit	544-0002-026	Audio Silicon
U7	Printed Circuit Board	035-0181-002	Main Board
U8	Printed Circuit Board	035-0198-001	S Meter Board
Y1	Crystal	519-0023-104	5.7350 MHz, Fundamental HC-18/u
Y2	Crystal	519-0023-103	5.7250 MHz, Fundamental HC-18/u
Y3	Crystal	519-0023-102	5.7150 MHz, Fundamental HC-18/u
Y4	Crystal	519-0023-101	5.6950 MHz, Fundamental HC-18/u
Y5	Crystal	519-0023-108	6.1904 MHz, Fundamental HC-18/u
Y6	Crystal	519-0023-107	6.1804 MHz, Fundamental HC-18/u
Y7	Crystal	519-0023-106	6.1704 MHz, Fundamental HC-18/u
Y8	Crystal	519-0023-105	6.1504 MHz, Fundamental HC-18/u
Y9	Crystal	519-0024-001	32.7000 MHz, Third Overtone HC-18/u
Y10	Crystal	519-0024-002	32.7500 MHz, Third Overtone HC-18/u
Y11	Crystal	519-0024-003	32.8000 MHz, Third Overtone HC-18/u
Y12	Crystal	519-0024-004	32.8500 MHz, Third Overtone HC-18/u
Y13	Crystal	519-0024-005	32.9000 MHz, Third Overtone HC-18/u
Y14	Crystal	519-0024-006	32.9500 MHz, Third Overtone HC-18/u
Z1	Filter	532-1004-001	Mechanical 455 kHz (Pair)

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

ITEM	PART No.	ITEM	PART No.
Bracket	017-1781-001	Overlay Upper	559-2078-001
Rail Chassis	017-1780-002	Overlay Lower	559-2078-010
Cabinet	017-1779-002	Medallion	559-2078-020
Panel	015-0798-006	Knob, Squealch	547-0007-007
Grille Speaker	017-0672-002	Knob, Volume	547-0007-007
Dial Window	559-1007-001	Knob, Channel	547-0007-005

ACCESSORIES

ITEM	MFGR. PART No.	REMARKS
Microphone Assembly	023-2708-011	(Complete)
DC Power Cord	023-1652-001	(Complete)