

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.



ROYCE MODEL 1-653B

MODEL 1-635B

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

© 1977 Howard W. Sams & Co., Inc.

Printed in U. S. of America

7CY479

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:
L403,L404,T201,T401,T402.....8728
T101,T102.....9440

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of frequency counter to TP2.	Ch. 1		Check for 37.660MHz (26.965MHz +10.695mH) Repeat for all channels. (Channel frequency +10.695MHz = frequency on counter).
Input of frequency counter to TP3.	Ch. 13		Check for 10.240MHz.
Input of frequency counter to TP4.	Ch. 1,Xmit		Check for 26.965MHz. Repeat for all channels. (Should indicate channel frequency).

RECEIVER ALIGNMENT

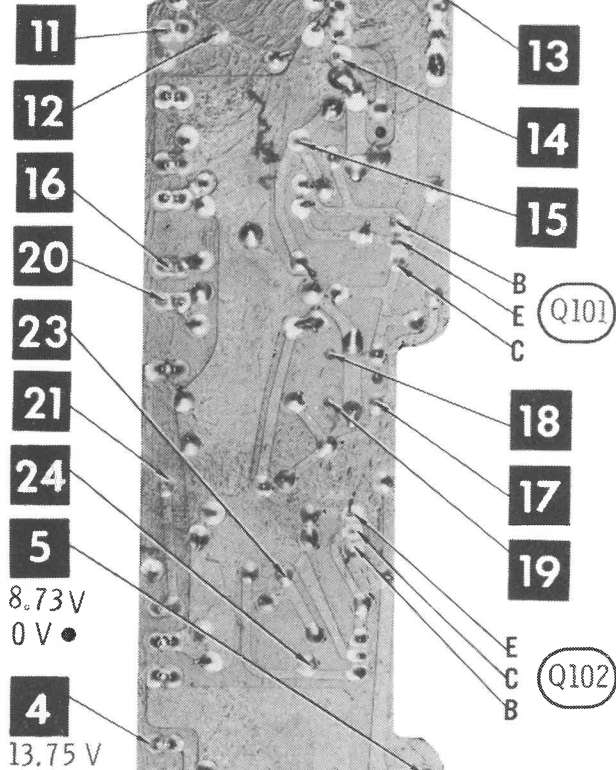
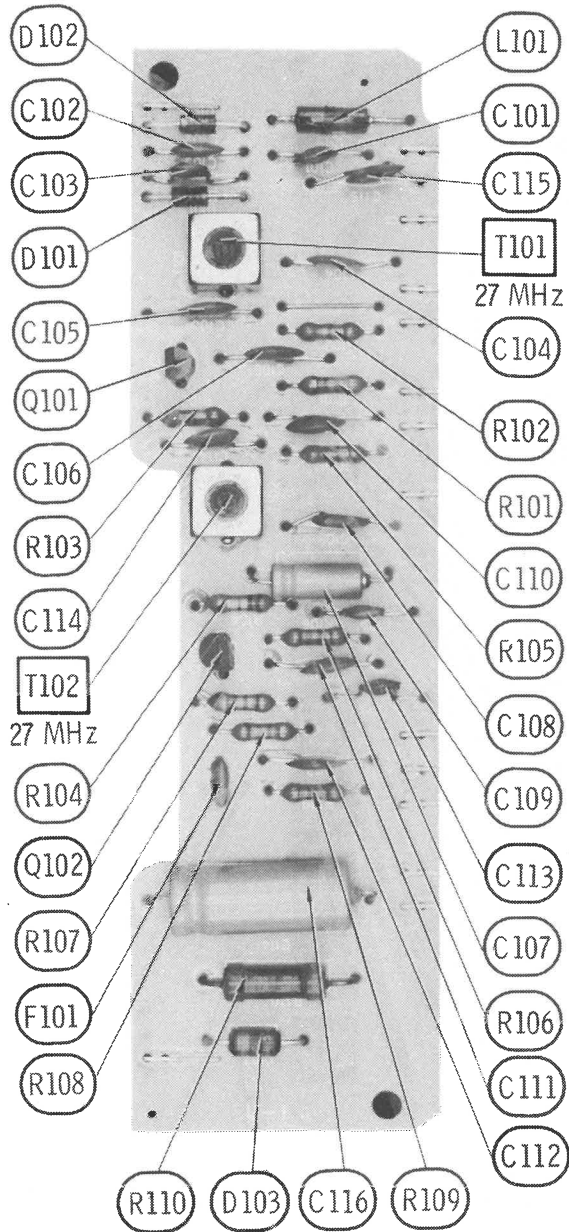
Connect an AC VTVM or AF wattmeter across speaker voice coil. Adjust volume control to obtain a suitable indication. Set generator output low enough to prevent AGC limiting.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP1. 455kHz, 1000Hz @ 30% modulation.	Ch. 13	T201	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.115MHz, 1000Hz @ 30% modulation.	Ch. 13	T102,T101	Adjust for maximum output. Repeat above steps if necessary.

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. See page 4 for channel frequencies.

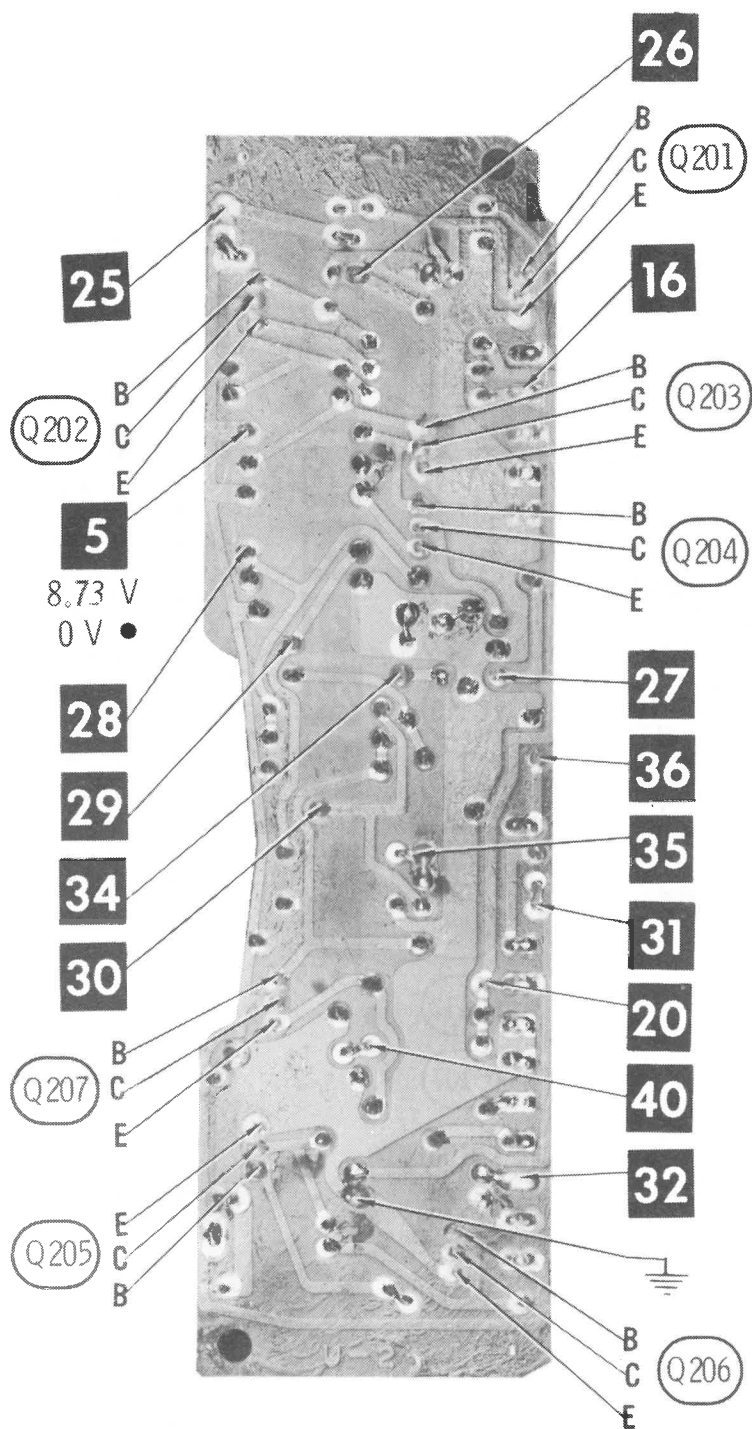
TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
	Ch. 13	T401,T402, L403,L404	Adjust for maximum.
	Ch. 13	L404,L403	Adjust for 4 watts maximum.



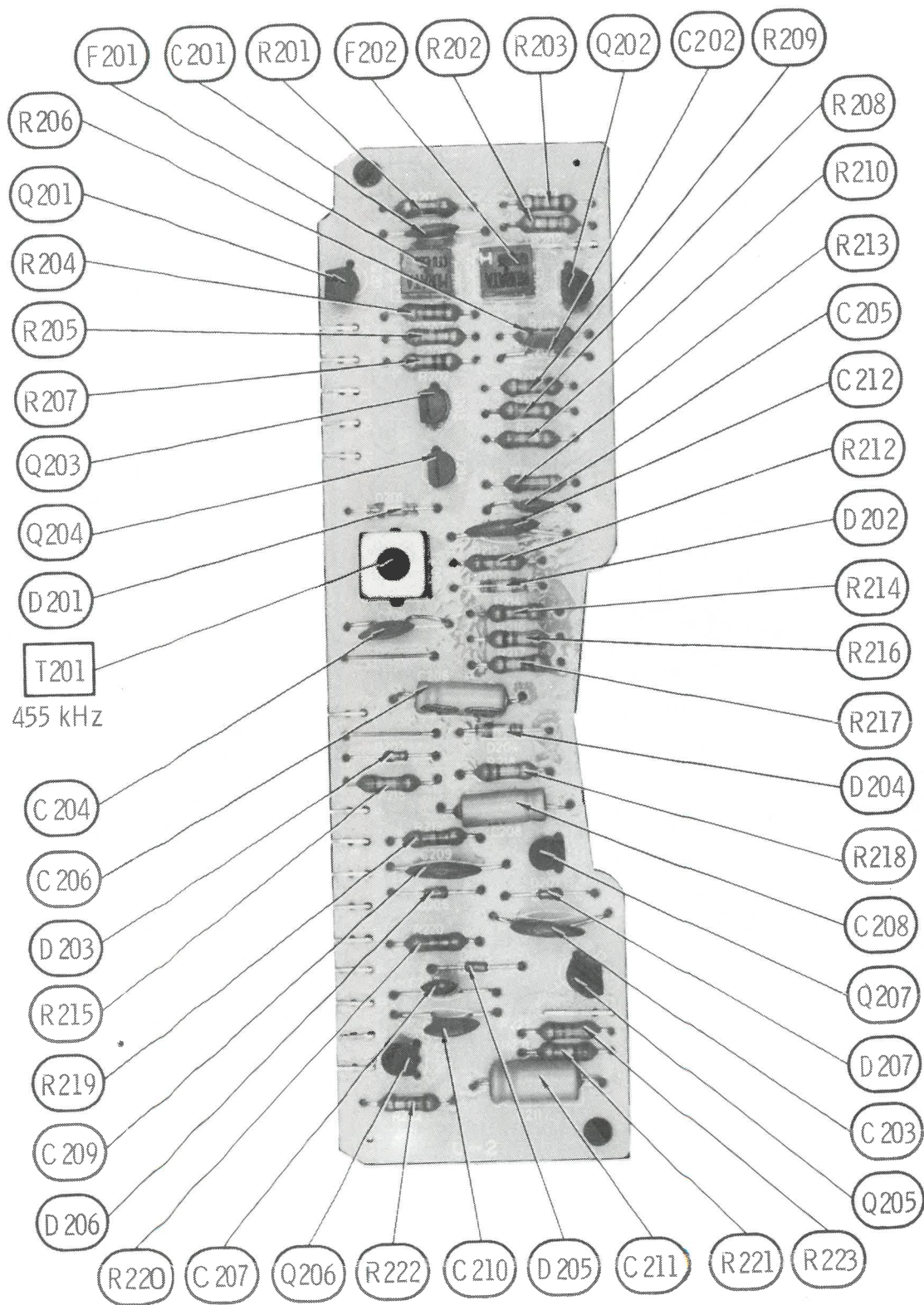
• TRANSMIT

ROYCE MODEL 1-653B

RF BOARD (U-1)

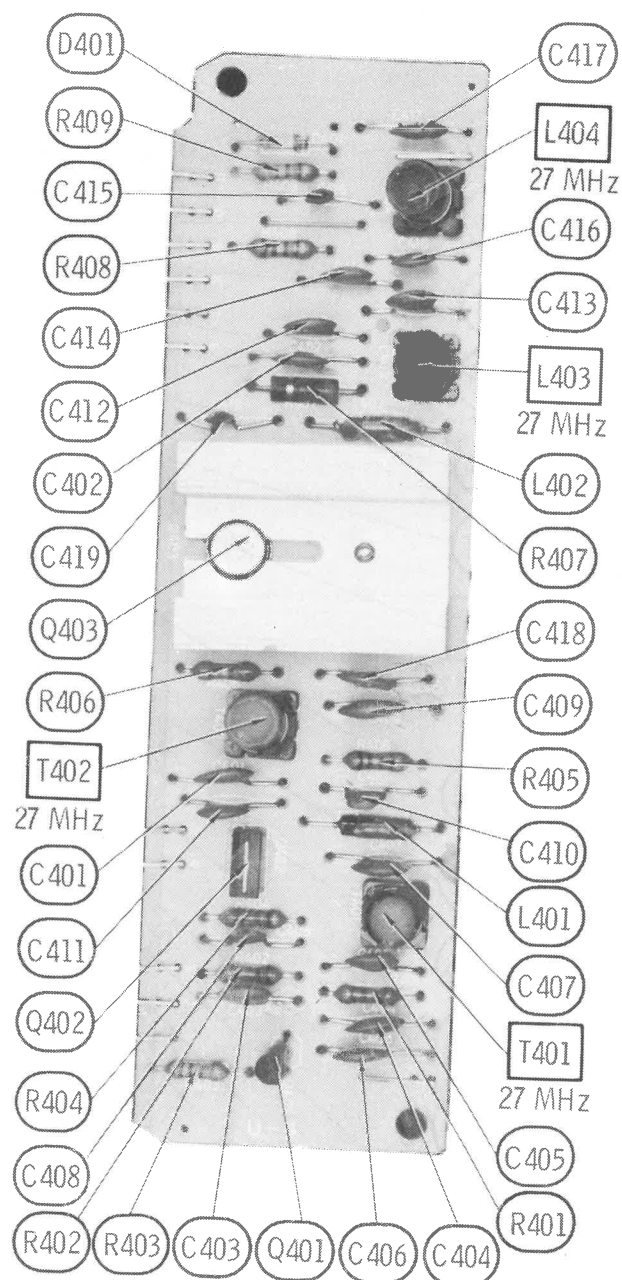
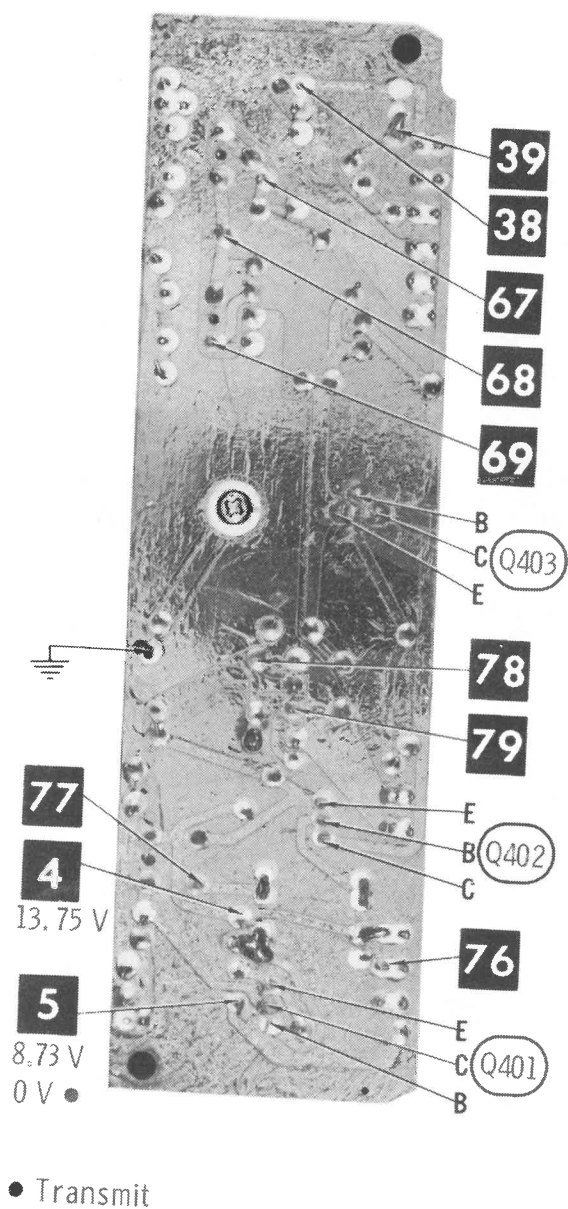


IF BOARD (U-2)

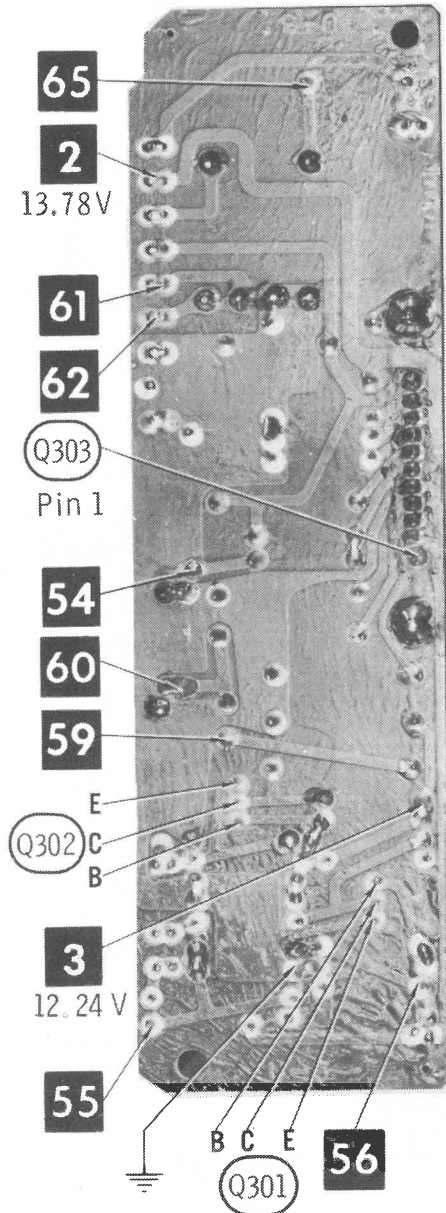
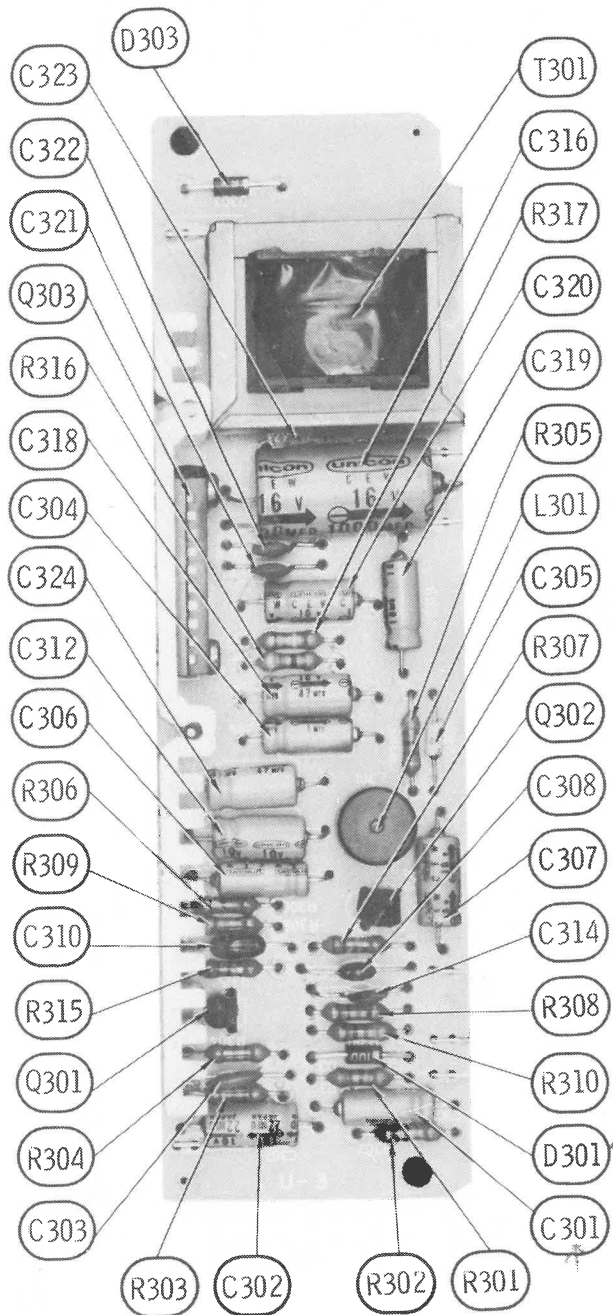


ROYCE MODEL 1-653B

IF BOARD (U-2)

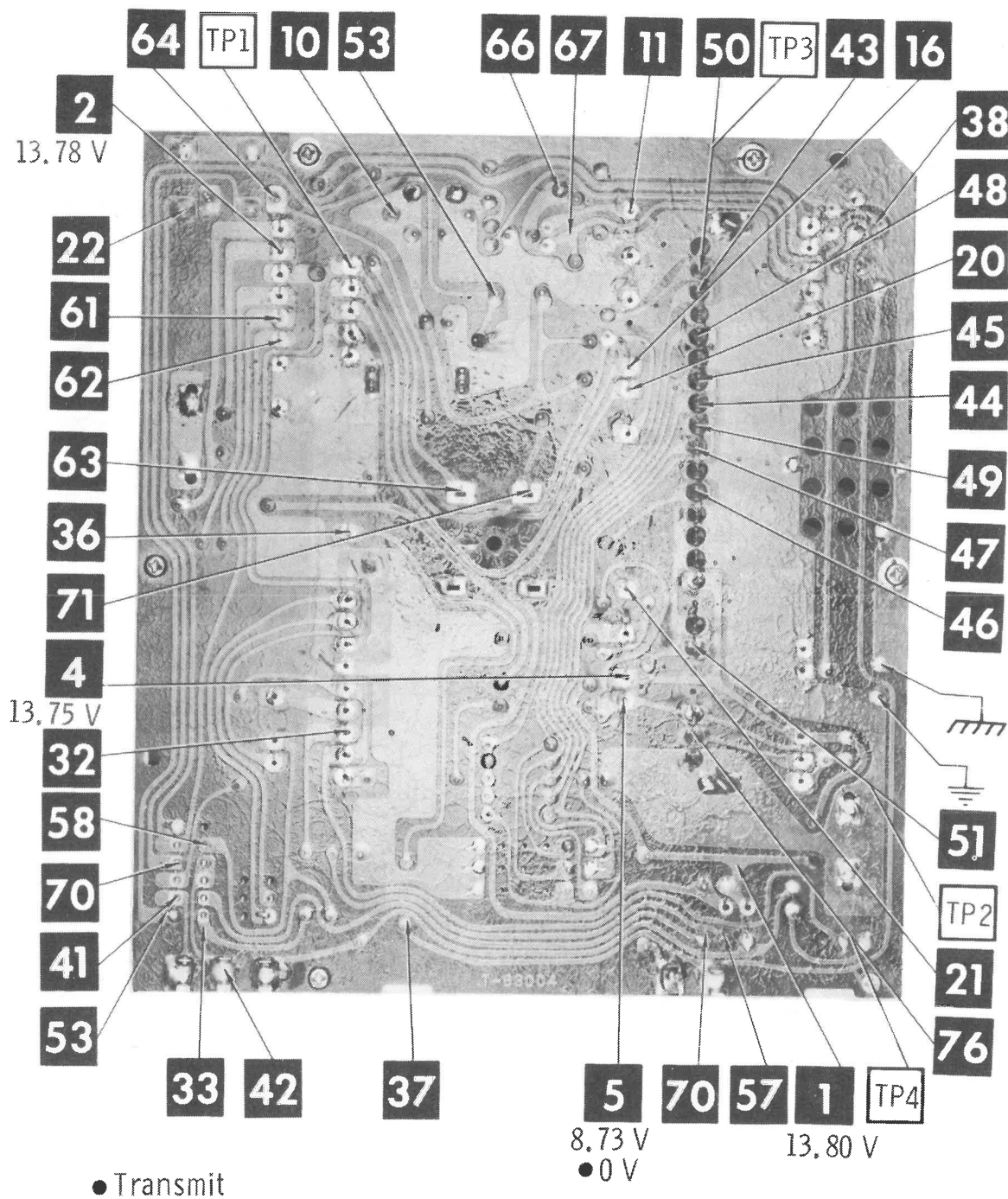


XMIT BOARD (U-4)

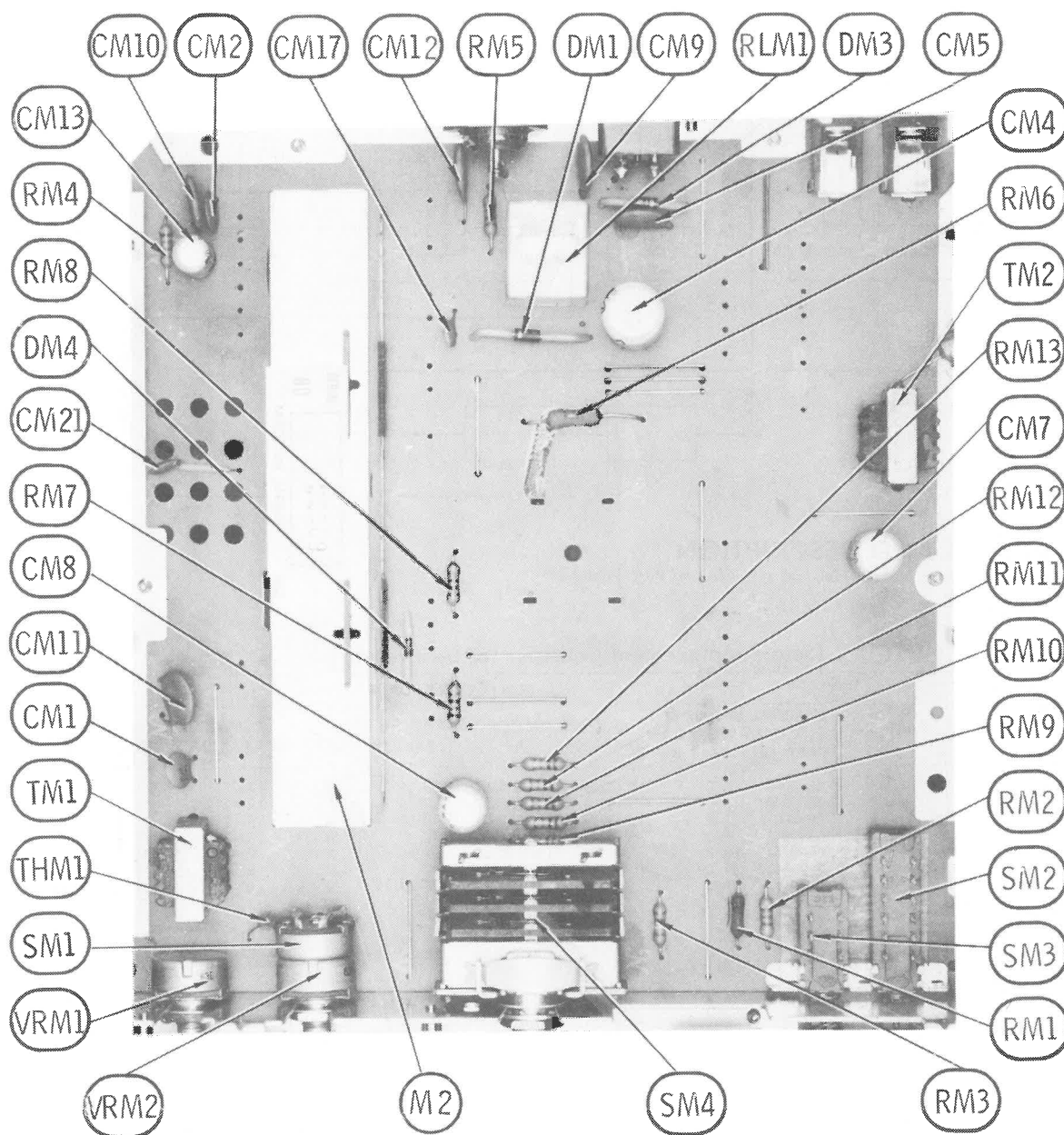


ROYCE MODEL 1-653B

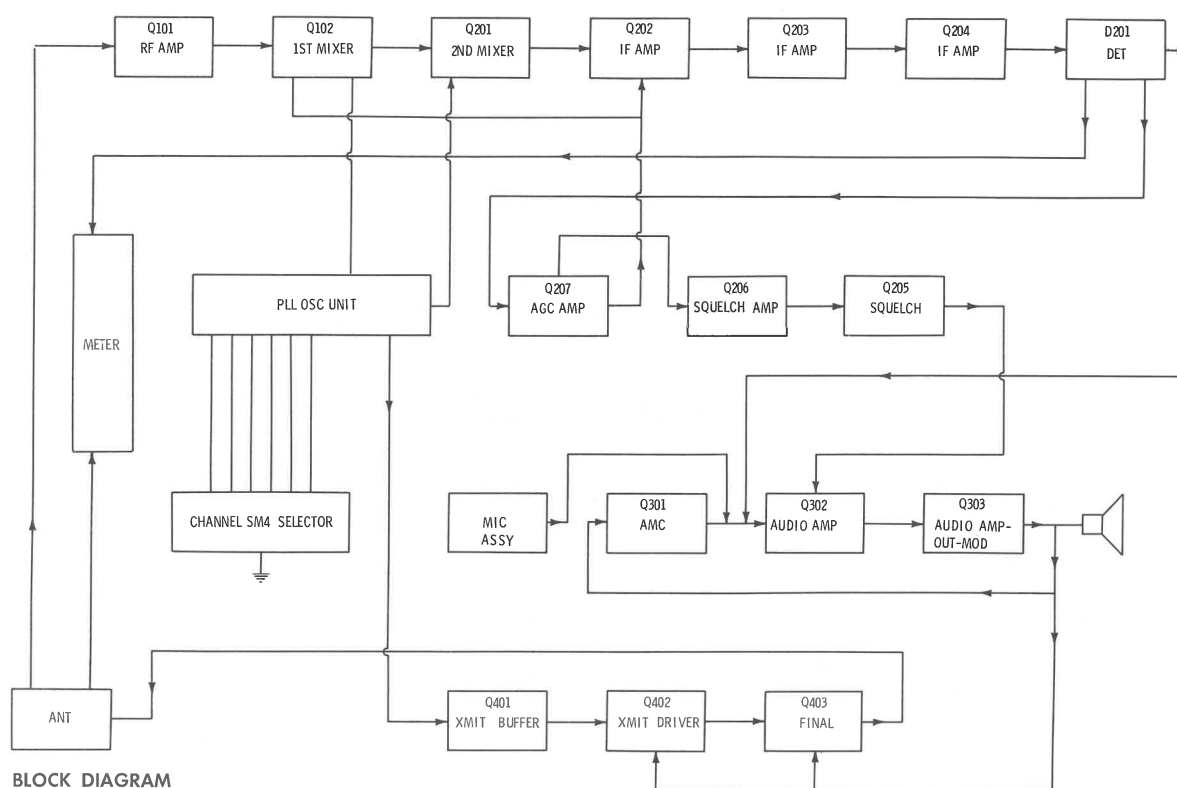
AUDIO BOARD (U-3)



MOTHER BOARD



MOTHER 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.	MFG. 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.
DM1	10D-1	1-001	GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
DM3	10D-1		GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
DM4	1S2075K		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D101	10D-1		GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D102	10D-1		GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D103	EQB01-09		GEZD-9.1	Z1209	ZB9.1A	HEPZ0412	RE 114	SK3060	RT-240	ECG139
D201	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D202	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D203	1S2075		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D204	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D205	WG713		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D206	HV-23				PTC301					
D207	HV-23				PTC301					
D301	10D-1		GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D303	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D401	10D-1		GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
LEDP1										
Q101	2SC1856M		GE-20 *	TR-24 *	PTC132	HEPS0015 *	RE 13 *	SK3018 *	RT-107A *	ECG123 *
Q102	2SC710C		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q201	2SC711E		GE-62 *	(IR)2SC644	PTC121	HEPS0024 *	RE 192 *	SK3124 *	RT-302 *	ECG199 *
Q202	2SC711E		GE-62 *	(IR)2SC644	PTC121	HEPS0024 *	RE 192 *	SK3124 *	RT-302 *	ECG199 *
Q203	2SC711D		GE-62 *	(IR)2SC644	PTC121	HEPS0024 *	RE 192 *	SK3124 *	RT-302 *	ECG199 *
Q204	2SA695D		GE-67 *	TR-88 *	PTC103 *	HEPS5013 *	RE 18 *	SK3025 *	RT-126A *	ECG294 *
Q205	2SC620D		GE-20 *	(IR)2SC644	PTC125 *	HEPS0015 *	RE 13 *	SK3020 *	RT-107A *	ECG123A *
Q206	2SC945Q		GE-212 *	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q207	2SC945Q		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q301	2SB561B		GE-21 *		PTC103 *	HEPS0019 *	RE 26 *	SK3114	RT-126A *	ECG159 *
Q302	2SC711E		GE-62 *	(IR)2SC644	PTC121	HEPS0024 *	RE 192 *	SK3124 *	RT-302 *	ECG199 *
Q303	AN315									
Q401	2SC1908E		GE-20 *	TR-21 *	PTC136 *	HEPS0015 *	RE 9 *	SK3124 *	RT-107A *	ECG107 *
Q402	2SC1728		GE-275				RE 204		RT-310	ECG302
Q403	2SC756A (11)		GE-46		PTC158		RE 206		RT-306F	ECG282

* Lead configuration may vary from original.
(11) Rating, 10 WATT @ 4.0 AMP.

PARTS LIST AND DESCRIPTION (CONTINUED)

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

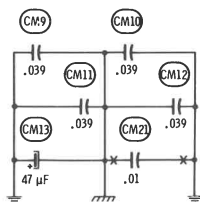
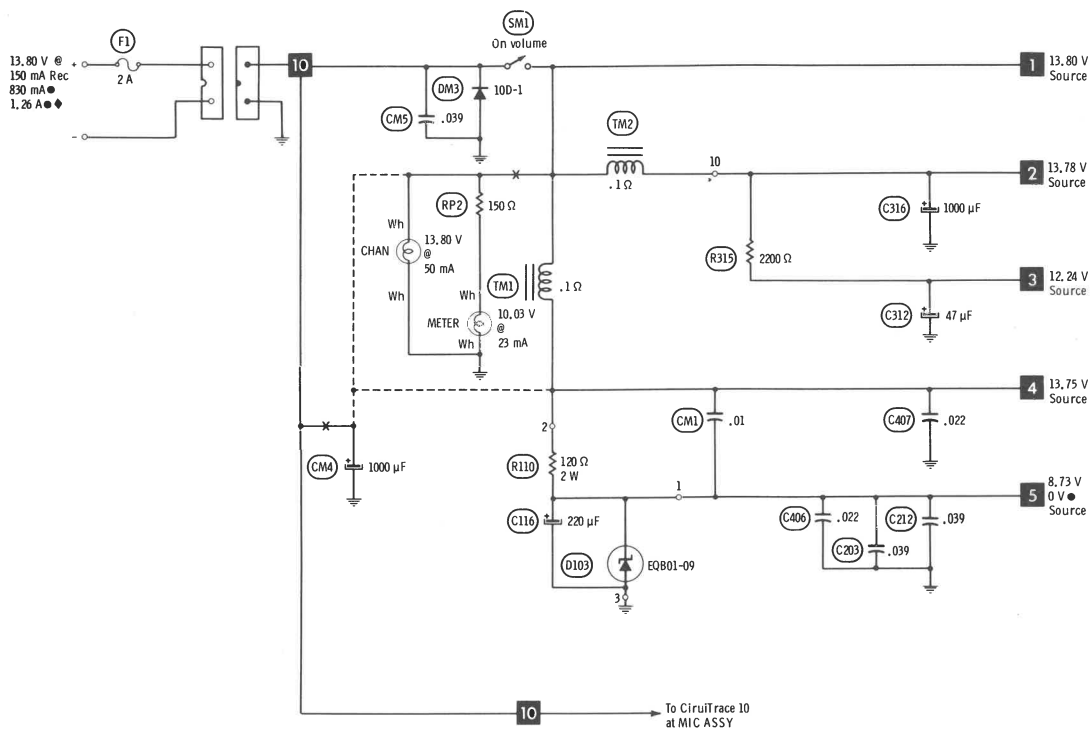
ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
CM4	1000 16V		PC1000-16	VTT1000L16	QV1-183	EV-1260
CM7	220 16V		PC250-25	VTT220G16	QV1-117	EV-1240
CM8	220 16V		PC250-25	VTT220G16	QV1-117	EV-1240
CM13	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C107	10 16V		WBR10-25	TT15X10	QE1-177	TVA-1145
C116	220 16V		WBR250-16	MTA250F15	QE1-495	TVA-1161
C206	.33 50V			TDC334M050EL	QDT1-14	SD50-R339
C208	1 50V		WBR1-50	MTA1D50	QE1-11	TVA-1300
C211	47 10V		WBR50-25	TT10X50A	QE1-351	TVA-1150
C301	1 50V		WBR1-50	MTA1D50	QE1-11	TVA-1300
C302	22 10V		WBR25-25	TT10X25	QE1-291	TVA-1148
C304	1 50V		WBR1-50	MTA1D50	QE1-11	TVA-1300
C305	.22 25V			TDC224M050EL	QDT1-10	SD50-R229
C306	1 50V		WBR1-50	MTA1D50	QE1-11	TVA-1300
C307	47 10V		WBR50-25	TT10X50A	QE1-351	TVA-1150
C312	47 10V		WBR50-25	TT10X50A	QE1-351	TVA-1150
C316	1000 16V		WBR1000-16	TC1501C	QE1-591	TVA-1163
C318	47 10V		WBR50-25	TT10X50A	QE1-351	TVA-1150
C319	10 16V		WBR10-25	TT15X10	QE1-177	TVA-1145
C320	47 10V		WBR50-25	TT10X50A	QE1-351	TVA-1150
C323	1 25V		WBR1-50	TT25X1	QE1-11	TVA-1300
C324	47 10V		WBR50-25	TT10X50A	QE1-351	TVA-1150

ROYCE MODEL 1-653B

CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
CM1	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
CM2	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
CM5	.039						
CM9	.039						
CM10	.039						
CM11	.039						
CM12	.039						
CM17	22 10% N220				*		10TCR-Q22
CM21	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C101	52 10% N750				CN7482		10TCU-Q82
C102	220 10% N750		DTN-220	N220	CN7322		10TCU-T22
C103	22 10% N220				*		10TCR-Q22
C104	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C105	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C106	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C108	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C109	22 10% N220				*		10TCR-Q22
C110	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C111	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C112	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C113	.001 10%		DD-102		GP210		10TS-D10
C114	33 10% N220				*		10TCR-Q33
C115	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C201	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C202	220 10% N750		DTN-220	N220	CN7322		10TCU-T22
C203	.039						
C204	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C205	.001 10%		DD-102		GP210		10TS-D10
C207	.01 10%			WMF1S1	EWF1A110	QF1-91	1PB-S10
C209	.039						
C210	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C212	.039						
C303	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C308	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C310	.039				M192P3939R8		192P3939R8



- ✕ Circuitry not used in some versions
- Circuitry used in some versions
- ⊙ See parts list
- ⊕ Ground
- ⏏ Chassis

Measurements with switching as shown unless noted:

- Squelch fully clockwise ◆ 100% modulation
- Transmit

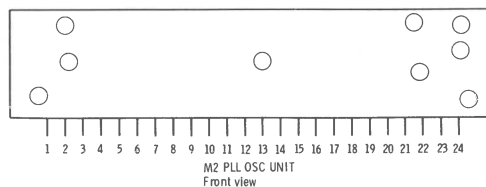
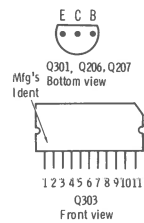
Supply voltage maintained as shown at input.
 Voltages measured with digital meter, no signal.
 Controls adjusted for normal operation.
 Arrow at control indicates direction of advance.
 Terminal identification may not be found on unit.
 Resistors are 1/2W or less, 5% unless noted.
 Value in () used in some versions.

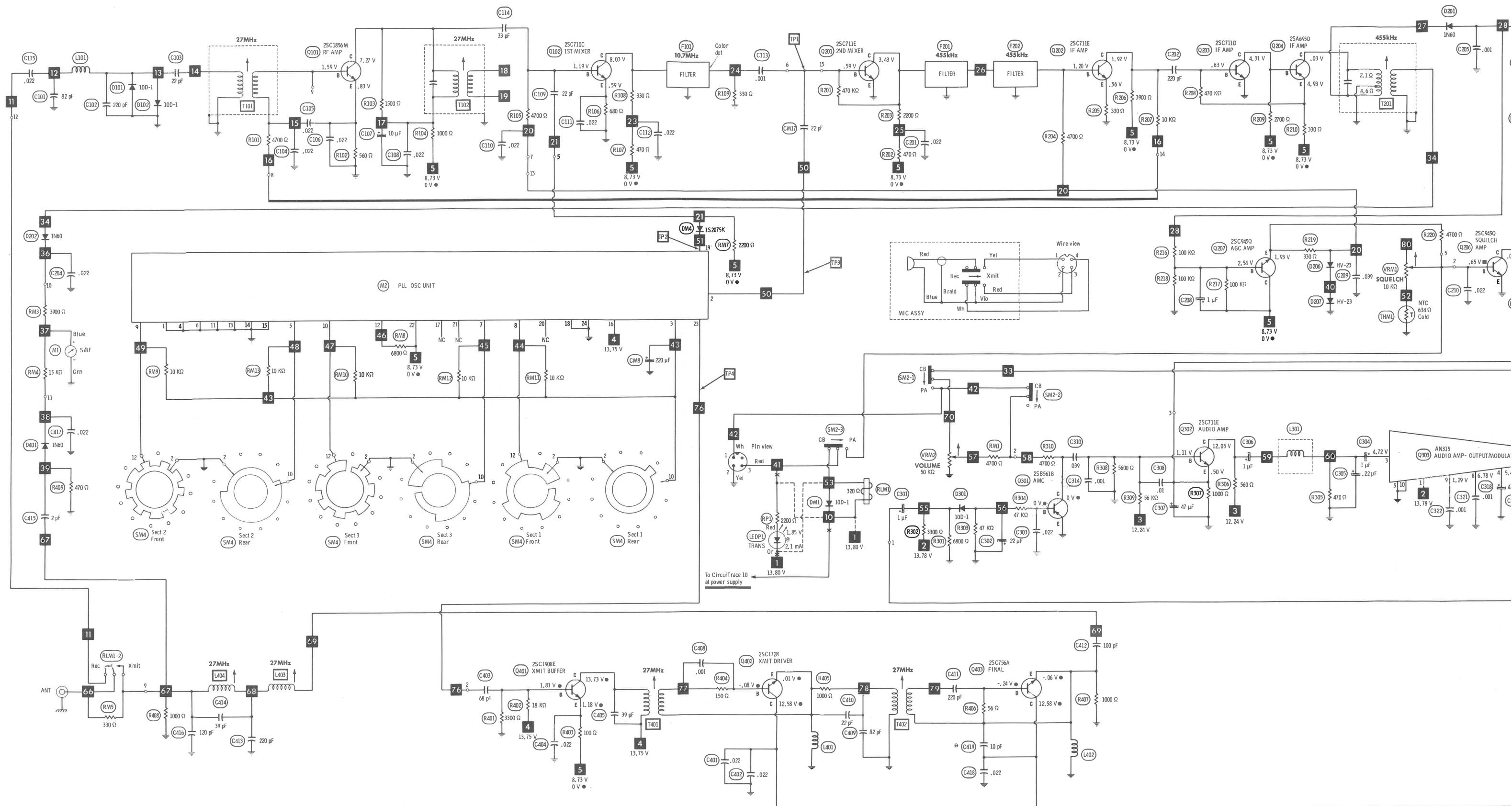
A PHOTOFAC STANDARD NOTATION SCHEMATIC

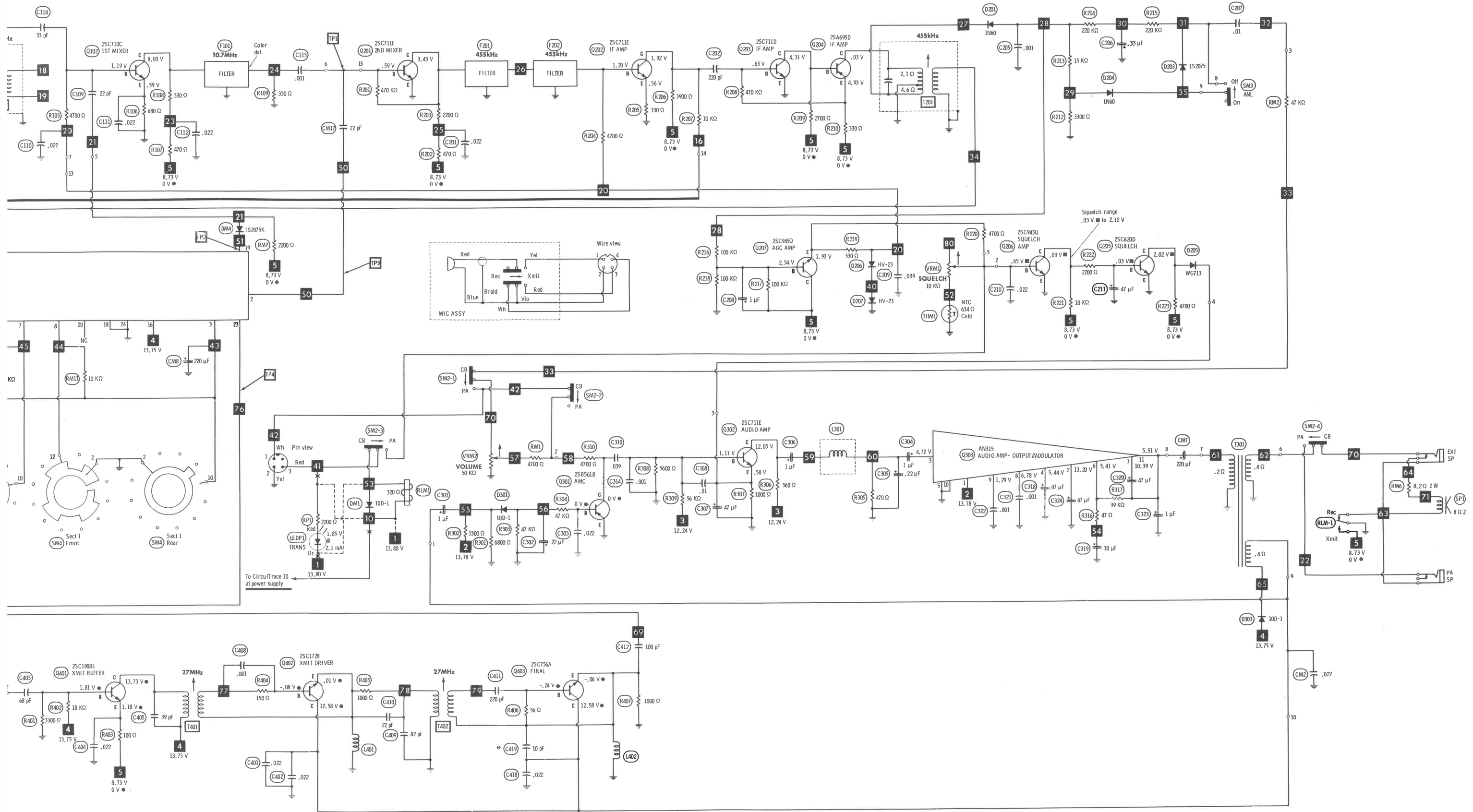
WITH **CIRCUITRACE®**

© Howard W. Sams & Co., Inc. 1977

Terminal Guides







PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFRG. PART No.	REPLACEMENT DATA					
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.		
						Q-LINE	GENERAL LINE	
C314	.001 10%	(1)	DD-102	MGP02	GP210	QC2-157	10TS-D10	
C321	.001 10%		DD-102		GP210		10TS-D10	
C322	.001 10%		DD-102		GP210		10TS-D10	
C401	.022		DC-203		TA120		TG-S20	
C402	.022		DC-203	MGP02	TA120	QC2-157	TG-S20	
C403	68 10% N220		DC-203	MGP02	*	QC2-157	10TCR-Q68	
C404	.022				TA120		TG-S20	
C405	39 10% N220				*		10TCR-Q39	
C406	.022				TA120		TG-S20	
C407	.022		DC-203	MGP02	TA120	QC2-157	TG-S20	
C408	.001 10%		DD-102	MGP02	GP210	QC2-157	10TS-D10	
C409	82 10% N220		DTN-220		*		10TCR-Q32	
C410	22 10% N220				*		10TCR-Q22	
C411	220 10% N750				CN7322		10TCU-T22	
C412	100 10% N470		DTN-220	N220	*		10TCT-T10	
C413	220 10% N750				CN7322		10TCU-T22	
C414	39 10% N220				*		10TCR-Q39	
C415	2 NPO				CN0522		10TCC-V22	
C416	120 10% N750		DTZ-2R2	NP02P2	TA120		10TCU-T12	
C417	.022		DTN-120		QC2-157		TG-S20	
C418	.022		DC-203	MGP02		TA120	TG-S20	
C419	10 NPO		DC-203	MGP02		CN0410	10TCC-Q10	
	.022		DTZ-10	NP010		TA120	QC2-157	TG-S20
			DC-203	MGP02	TA120	QC2-157	TG-S20	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
(1) Used in some versions.

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

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFRG. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
VRM1	Squelch	10K	4-210				
VRM2	Volume/Switch	50K	4-112				

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFRG. PART No.			WORKMAN PART No.	MFRG. PART No.
THM1	634 Cold NTC		TD-5-165				

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L101	RF Choke	ETC49169	ETC150895D34 ETC150615012 ETC150906332		
L301	RF Choke (22mH)	2-0080			
L401	RF Choke	ETC49170			
L402	RF Choke	ETC4056			
L403	Final Amp (27MHz)	ETC49168			
L404	Ant Match (27MHz)	ETC49166			
T101	Rec Antenna (27MHz)	ETC15089			
T102	Rec RF (27MHz)	ETC15061			
T201	IF (455kHz)	ETC15090			
T401	Xmit Buffer (27MHz)	ETC20105			
T402	Xmit Driver (27MHz)	ETC49167			

PARTS LIST AND DESCRIPTION (CONTINUED)

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

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (O CURRENT 1000~)	MFRG. PART No.	THORDARSON PART No.	TRIAD PART No.	
TM1	1060mA	.10	1.45mH	2-0031 1002 (1)	TR409		(1) Number on unit.
TM2	200mA	.01	1.45mH	2-0031 1002 (1)			

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFRG. PART No.	THORDARSON PART No.	TRIAD PART No.	
T301	3.9	1 8 20.5	62017 (1)	TR827		(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFRG. PART No.	QUAM PART No.	
SP1	3" PM 8 Ohms	5-103	30A05Z8R	

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	2A Fast Acting			AGC2	HDJ	312002	150145	FG2-2

PARTS LIST AND DE

(When ordering parts, state Model

MICROPHONE

ITEM No.	REPLACEMENT DATA	
	MFRG. PART No.	GC PART
MIC		18-032

MISCELLANEOUS

ITEM No.	PART NAME
F101	Filter
F201	Filter
F202	Filter
M1	Meter
M2	PLL Osc
RLM1	Relay
SM1	Switch
SM2	Switch
SM3	Switch
SM4	Switch
	Printed Circuit Board
	Printed Circuit Board
	Printed Circuit Board
	Printed Circuit Board
	Printed Circuit Board
	PLL Oscillator Unit

CABINETS & CABIN

ITEM
Cabinet, Main
Knob, Channel Selector
Knob, Volume & Squelch
Module Support, Front (Metal)

WIRING DATA

General-use Hook-up Wire .
Shielded Antenna Lead
Coiled Microphone Cable ..

PARTS LIST AND DESCRIPTION (CONTINUED)
(When ordering parts, state Model, Part Number, and Description.)

PRAGUE PART No.	
LINE	GENERAL LINE
	10TS-D10 10TS-D10 10TS-D10 TG-S20 TG-S20 10TCR-Q68 TG-S20 10TCR-Q39 TG-S20 TG-S20 10TS-D10 10TCR-Q32 10TCR-Q22 10TCU-T22 10TCT-T10 10TCU-T22 10TCR-Q39 10TCC-V22 10TCU-T12 TG-S20 TG-S20 10TCC-Q10 TG-S20

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
TM1	1060mA	.10	1.45mH	2-0031 1002 (1)	TR409		(1) Number on unit.
TM2	200mA	.01	1.45mH	2-0031 1002 (1)			

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T301	3.9	1 8 2 20.5	62017 (1)	TR827		(1) Number on unit.

ORY No.	TRW PART No.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP1	3" PM 8 Ohms	5-103	30A05Z8R	

REPLACEMENT DATA	
MAN No.	MFGR. PART No.

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	2A Fast Acting			AGC2	HDJ	312002	150145	FG2-2

REMARKS

PARTS LIST AND DESCRIPTION (CONTINUED)
(When ordering parts, state Model, Part Number, and Description.)

MICROPHONE

ITEM No.	REPLACEMENT DATA				CONNECTION DATA						
	MFGR. 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		18-032	18-034	18-010	18-092	1	2	3	NC	NC	2

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
F101 F201 F202 M1 M2 RLM1 SM1 SM2 SM3 SM4	Filter Filter Filter Meter PLL Osc Relay Switch Switch Switch Switch Printed Circuit Board Printed Circuit Board Printed Circuit Board Printed Circuit Board Printed Circuit Board PLL Oscillator Unit	5-216 4-607	10.7MHz (SFE10.7mA) 455kHz (CFU455H) 455kHz (CFU455H) S/RF Channel Freq Unit (PLL1-CT2-PAB3-041-603A.1373) Xmit/Rec (320 Ohm) Power (Part of Volume Control) CB/PA ANL Channel Selector Mother (T-63004) Rec RF (U1) IF (U2) Audio (U3) Xmit (U4)

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

ITEM	PART No.	ITEM	PART No.
Cabinet, Main Knob, Channel Selector Knob, Volume & Squelch Module Support, Front (Metal)	3-144 3-331 3-312 6-104	Module Support, Rear (Metal) Bracket, Mounting Hanger, Microphone	6-105 3-412 3-428

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