

CITIZENS BAND FREQUENCIES

Your transceiver is capable of operation on all available U.S. and Canadian Citizens Band channels, frequencies for which are listed as on the opposite page:

SERVICING THE TRANSCEIVER

The transceiver has been fully aligned at the factory before shipment and will not usually require any further adjustments.

Any unit requiring service should be returned to a Unimetrics Service Center or to any service organization qualified to make repairs or internal adjustments to the complex circuits in this unit.

NOTE: It should be noted that under the terms of the Warranty, units which show evidence of having been serviced by unauthorized personnel will be ineligible for warranty service.

WARNING

As prescribed in Part 95.58, paragraph [e] of the FCC Rules and Regulations, Unimetrics the manufacturer of this transceiver, is required to issue the following warnings:

1. Certain repairs and adjustments to this transceiver may be made legally only by a person in possession of a valid First or Second Class FCC Radiotelephone Operators License [or equivalent in Canada], or by a person under the direct supervision of a holder of such a license. This applies particularly to those repairs or adjustments, such as replacement of crystals and transmitter oscillator components, which might affect the transmitter's ability to comply with FCC regulations.
2. Use only Unimetrics approved replacement parts when servicing the transmitter. The use of a component [such as a crystal, semiconductor, capacitor, etc.] having different electrical characteristics and ratings than that originally used could result in a violation of the FCC Regulations and is therefore prohibited.

CRYSTAL SYNTHESIZING SYSTEM

This transceiver incorporates a frequency synthesizing system which employs 14 crystals to produce 23 transmitting channels and 23 receiving channels. This represents a great reduction in the number of crystals required when compared to systems which employ one transmit crystal and one receive crystal for each channel [this system would require 46 crystals for 23 channel coverage].

Refer to the following table which shows the operating mode [Transmit or Receive] and number of channels for which each of the 14 crystals is used. By using this table, you will be able to pinpoint the failure of a crystal. For example, failure of crystal 11 will cause the receiver to be inoperative on channels 1, 5, 9, 13, 17, 21, although the transmitter will function normally on these same channels. When malfunctions occur on a selective number of channels in this manner, failure of a crystal or its associated wiring should be suspected initially.

XTAL NO.	FREQUENCY [MHz]	CHANNELS FOR WHICH USED	
		TRANSMIT	RECEIVE
1	37.600	1, 2, 3, 4	1, 2, 3, 4
2	37.650	5, 6, 7, 8	5, 6, 7, 8
3	37.700	9, 10, 11, 12	9, 10, 11, 12
4	37.750	13, 14, 15, 16	13, 14, 15, 16
5	37.800	17, 18, 19, 20	17, 18, 19, 20
6	37.850	21, 22, 23	21, 22, 23
7	10.635	1, 5, 9, 13, 17, 21	-----
8	10.625	2, 6, 10, 14, 18, 22	-----
9	10.615	3, 7, 11, 15, 19	-----
10	10.595	4, 8, 12, 16, 20, 23	-----
11	10.180	-----	1, 5, 9, 13, 17, 21
12	10.170	-----	2, 6, 10, 14, 18, 22
13	10.160	-----	3, 7, 11, 15, 19
14	10.140	-----	4, 8, 12, 16, 20, 23

ALIGNMENT INSTRUCTIONS

The transceiver has been fully aligned at the factory before shipment to you and does not normally require further adjustment. When necessary, however, the receiver and transmitter may be aligned as indicated:

COVER REMOVAL

Turn the transceiver upside down and remove the 4 Phillips Head screws [1 in each corner of the unit] holding the bottom cover, then remove bottom cover.

CAUTION: All coil cores in this unit have been sealed with wax so as to permit free movement. Failure to do this may result in damaged cores.

The power supply to the transceiver should be adjusted to 12.6 volts DC. Connect an RF wattmeter [50 ohms] to the antenna connector and set the transceiver to channel 13. Refer to the following figure showing transceiver interior Parts Location for the following adjustments.

TRANSMITTER ADJUSTMENTS

37 MHz OSCILLATOR (Q1)

This oscillator is used for both receive and transmit functions of the transceiver.

1. Connect a DC VTVM between the emitter of Q1 and ground.
2. Depress handset push-to-talk bar and rotate the core of L1 counter-clockwise to the top of the coil (maximum inductance).
3. Now rotate the core of L1 in a clockwise direction until oscillation begins. This will be indicated by a reading on the VTVM.
4. Turn the core 1/2 turn more in a clockwise direction. VTVM should now read approximately 3.0 volts.

10 MHz OSCILLATOR (Q2)

This adjustment is fixed at the factory. Therefore, no adjustment is necessary.

27 MHz TRANSMITTER STAGES

1. Depress handset push-to-talk bar and adjust cores of L2, L3, L4, L5, L6 for maximum on the wattmeter.

NOTE: Adjustment of L2 through L4 is fairly critical. Misadjustment of this coil can reduce the transmitter output to zero.

2. Check power output on all channels. If low on some channels, readjust L2, L3, L4, L5 and L6 for equal output on channels 1 and 23.

3. Adjust L7 and L8 for maximum output on the wattmeter.

NOTE: L7 is adjusted by either compressing or expanding the coil turns. Use a non-metallic tuning tool to spread the wire turns.

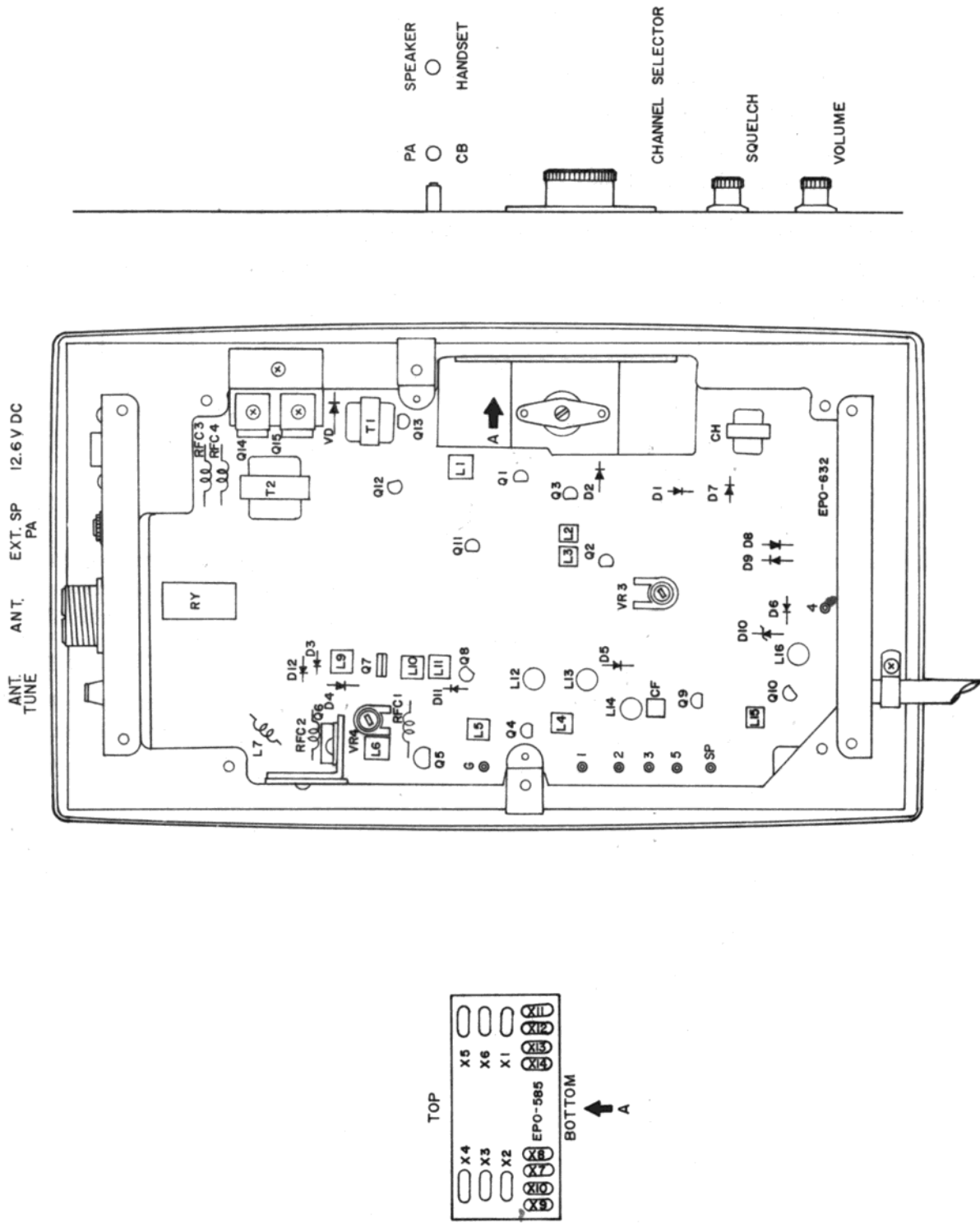


FIGURE 9. INTERIOR ADJUSTMENTS (Bottom View)

RECEIVER ADJUSTMENTS

Set volume to maximum, and selector to channel 13. Connect an AC voltmeter across speaker terminals and attach an antenna to the transceiver.

455 KHz IF ALIGNMENT

1. Connect signal generator to cathode of D5.
2. Connect AC VTVM to speaker terminals.
3. Set signal generator to 455 KHz \pm 0.5 KHz.
4. Apply power to unit and adjust signal generator output to produce a reading of 0.5 volts on the AC VTVM.
5. Adjust L14, L15 and L16 for maximum output on VTVM.

NOTE: Reduce output of signal generator as necessary to keep VTVM reading around 0.5 volts.

RECEIVE OSCILLATOR ALIGNMENT (Q2)

This adjustment is fixed at the factory. Therefore, no adjustment is necessary.

10.595 MHz to 10.635 MHz IF ALIGNMENT

1. Connect signal generator to the base of transistor Q8.
2. Connect AC VTVM to speaker terminals.
3. Set signal generator to 10.625 MHz (\pm 1 KHz).
4. Adjust L12 and L13 for maximum output as read on VTVM. Reduce signal generator output as necessary to keep the VTVM reading around 0.5 volts.

RF ALIGNMENT

1. Connect signal generator to antenna connector.
2. Connect AC VTVM across speaker terminals.
3. Set signal generator to 27.115 MHz, modulated 30% with a 1 KHz tone. Set signal generator output to 10 μ V.
4. Set transceiver to channel 13 and vary signal generator frequency around 27.115 MHz to produce a maximum reading on the AC VTVM. Leave generator at this point.
5. Adjust L9, L10 and L11 to produce maximum output on AC VTVM.
6. Reduce generator output to approximately 1 μ V. Adjust L9, L10, L11, L12, L13, L14, L15, and L16 for maximum reading on VTVM. Repeat until no further improvement is noted.
7. Squelch alignment.
Receive signal with signal strength of 80 dB from signal generator, and turn squelch control full clockwise then adjust VR-3 until signal is heard.

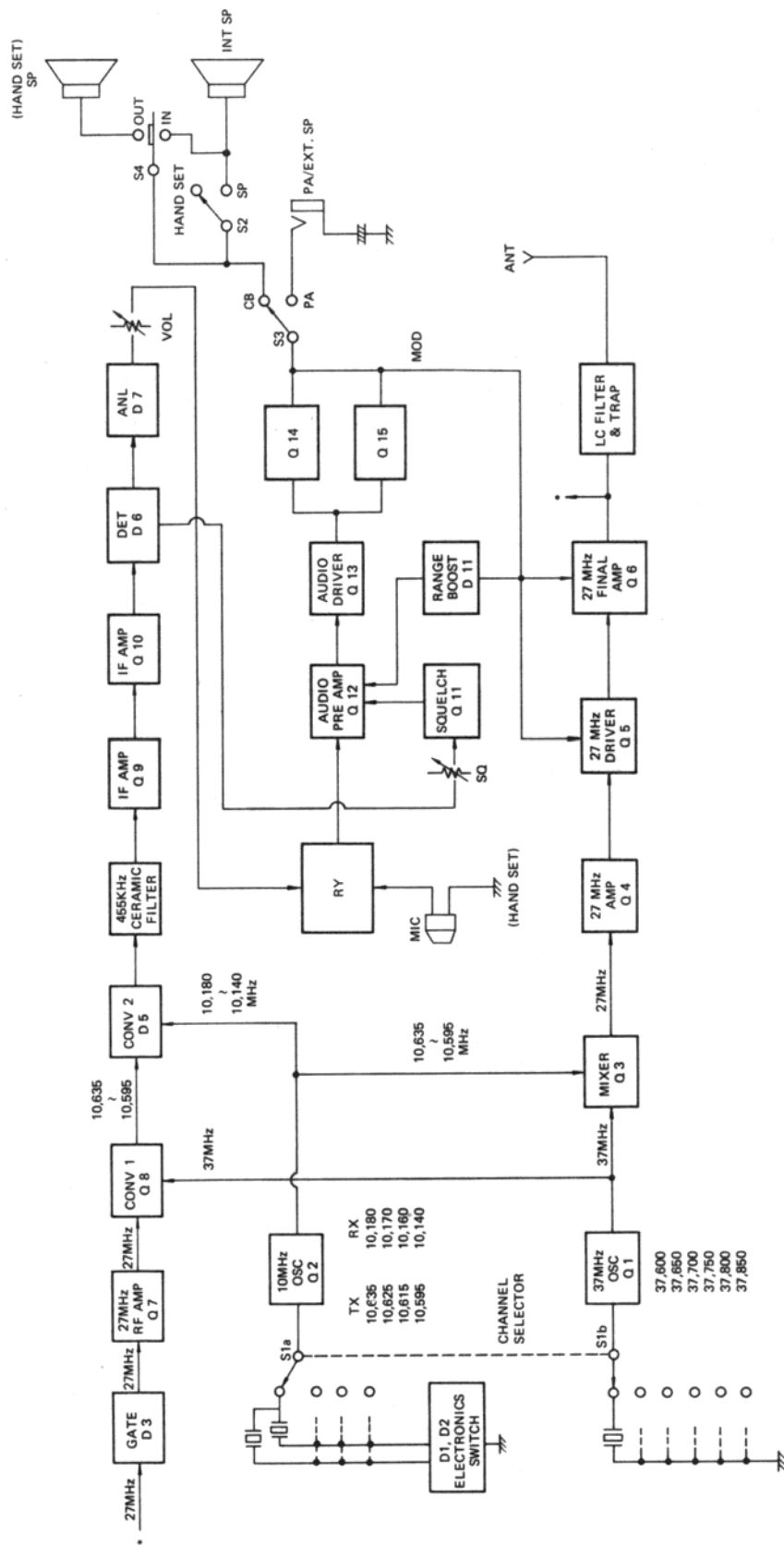
RETURNING UNIT FOR SERVICE

In the event that repair is necessary [either in or out of warranty], we recommend that you return the unit to the store from which it was purchased. In most cases, this will be your fastest and most efficient method of obtaining service.

If you wish to ship the unit to our main service center, please read the instructions which follow. First-Write or Telephone for Authorization to return the unit.

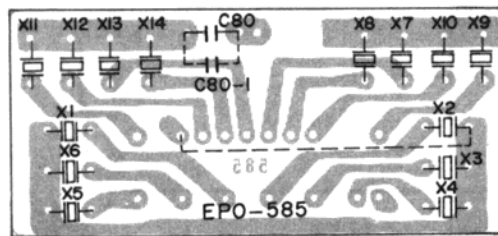
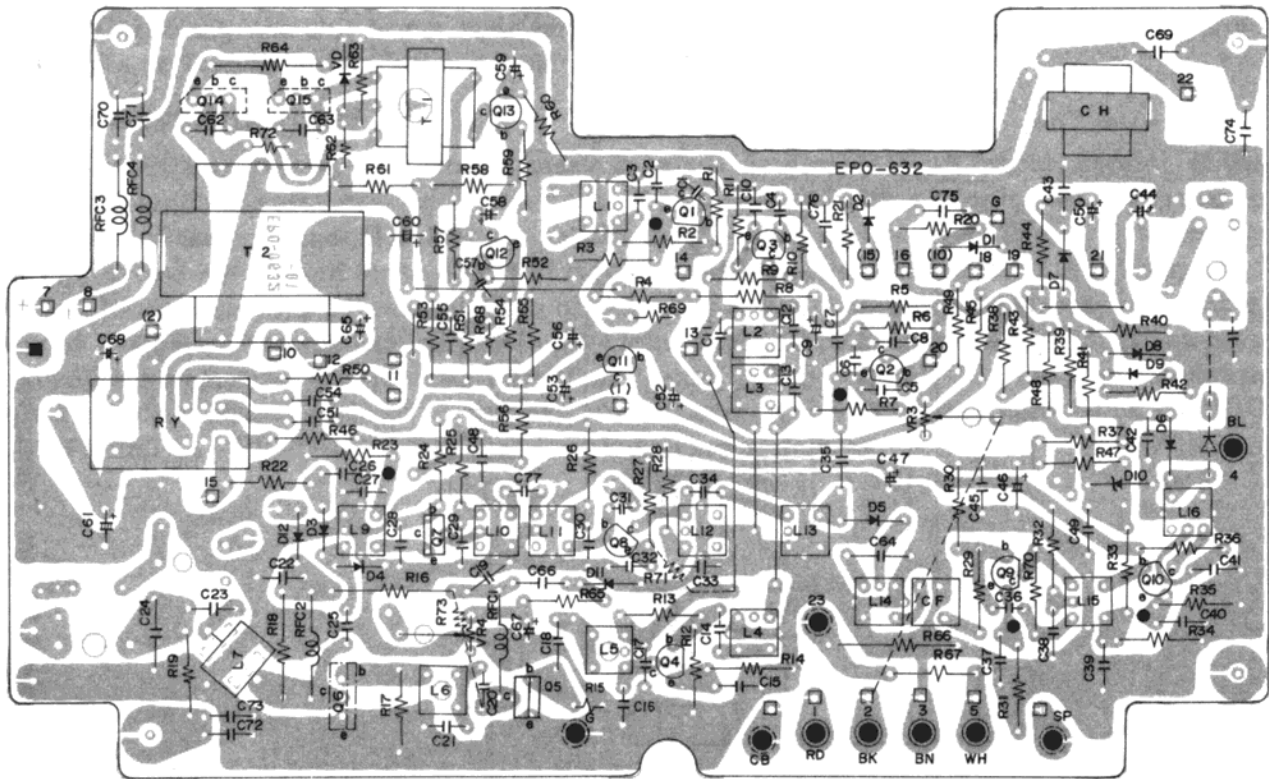
SHIPPING INSTRUCTIONS

Pack the unit very carefully to avoid damage in transit, preferably in its original carton. If the original carton is not available, use a sturdy carton with at least 6 inches of crumpled newspaper or other packing material packed tightly around the unit to avoid any chance of damage in shipment. Be sure to use strong cord on tape around carton. If this unit is being returned under warranty, it must be accompanied by a copy of the original sales ticket or shipping documents to establish date of purchase. Also, include with the unit a letter explaining exactly what difficulties you have encountered [remember to add extra First Class postage and indicate on the outside of the carton that First Class Mail is enclosed]. Ship by prepaid express if possible and mark ELECTRONIC EQUIPMENT . . . FRAGILE. Clearly address the carton as follows:



Block Diagram of Synthesized System Transceiver

PRINTED CIRCUIT BOARD PARTS LOCATION DIAGRAM



DOLPHONE PARTS LIST

Description	Designation	Unimetrics Parts #
Transistor	Q6	90-450
"	Q14, 15	90-451
ANT Jack	J1	60-1050
Power Jack	J2	60-1051
Earphone Jack	J3	60-1052
Slide Switch	S2, 3	40-585
Push Switch	S4	40-586
Control (Volume)	VR1	40-587
" (SQ)	VR2	40-588
Speaker	SP	60-1053
Pilot Lamp	PL1, 2	60-1054
ANT Tune	L17	50-538
Hand Mike unit Ass.		40-589
Ceramic Capacitor	C81, 82	80-997
" "	C78	80-998
" "	C79	80-999
Metal Oxide Resistor	R75	70-993
Lead Wire		40-590
" "		40-591
" "		40-592
" "		40-593
Elyt. Capacitor	C83	80-1000
Carbon Resistor	R48	80-1001
 CASE PARTS		
Top Case	MC078P002	60-1055
Bottom Case	MC078P003	60-1056
Hand set holder	MC078P004	40-594
Chassis	MC071P004	60-1057
Switch Mtg. bracket	MC071P005	40-595
Chassis support	MC071P006A	40-596
" "	MC071P006B	40-597
Bottom Case Stiffner	MC071P007	60-1058

Description	Designation	Unimetrics Parts #
Heat Sink	MC071P008	40-598
Name Plate	MC071P009	40-599
Channel Dial	MC071P010	60-1059
Channel Dial Base	MC071P011	60-1060
Reef Sw. Mtg. Bracket	MC071P012	40-600
Screw Plate	MC071P013	40-601
Hand Unit Hold Spring	MC071P014	40-602
Indicator Panel	MC078P001	60-1061
Screw Plate	MC071P016	40-603
Serial Number label	MC078B001	60-1062
Plastic Rollar Shaft	MHO-0130	60-1063
Rollar Shaft Nut	MHO-0131	40-604
Channel Sel. Knob	MNO-0172	40-605
VR Knob	MNO-0173	40-606
Plastic Roller	MMO-0198	60-1064
Plastic Indicator	MMO-0176R	60-1065
Cap for Jack	MMO-0018	60-1066
Cap for SPKR	MMO-0022	60-1067
Lamp Holder	MMO-0257	40-607
Nut	MWO-0334	40-608
Slide Sw. Mask	MWO-0414	60-1068
Insulator (Fiber)	MWO-0355	60-1069
Insulator	MWO-0357	60-1070
Sheet (Channel Dial)	MC060P008	60-1072
Vinyl Clamper	EZZ-0040A	60-1073
Holder (SPKR)	MC014P052	40-609
Heat Sink	MM015P006	40-610
Spacer	MWO-0415	60-1074
Washer	MYO-0036A	60-1075
Warning Card	EBP-0172	60-1076
FCC Card	EBP-0026	60-1077
Warranty Card	EBP-0147U	60-1078
FCC Application Sheet	EBP-0098	60-1079
Instruction Manual	EBP-0302U	60-1080
Inner Carton Box	KC078P001	60-1081
Partitioner	KC071P002	60-1082

Description	Designation	Unimetrics Parts #
Partitioner	KC071P003	60-1083
”	KC071P004	60-1084
Master Cartons Box	KC078P006	60-1085
Poly Bag (Manual)	MWO-0016	60-1086
Poly Bag (Accessory)	MWO-0200	60-1087
” ” (Unit)	MWO-0352	60-1088
” ” (Mike)	MWO-0413	60-1089
ACCESSORY		
Unit Mtg. Bracket	MC071P030	40-611
Mobile Mtg. Bracket	MC071P031	40-612
Wall Hanger Bracket	MC071P032	40-613
Thumb Screw	MMO-0108A	40-614
Trass. Tap Screw M5 x 13	STPT50132SZ	40-615
Outside toothed sp washer	ZTS050000SX	40-616
Brassiere Tap Screw M3 x 8	STPW30082SZ	40-617
Case Screw Black M4 x 8	EZB-0007B	40-618
DC Cord	ENO-0062	60-1090
Screw M3 x 12	SMPM3125RSN	40-619
Mike Cartridge	MIC	60-1091
SPKR Cartridge	SP	60-1092
Push to Talk Switch	SW	40-620
Cems Screw M3 x 6	SRPC3006RSN	40-621
Pan Head Screw 2 x 5	SRPN2005RSN	40-622
” ” ” 2 x 8	SRPN2008RSN	40-623
” ” ” 3 x 5	SRPN3005RSN	40-624
” ” ” 3 x 6	SRPN3006RSN	40-625
Bind Screw 2.6 x 10	SRPB26110RSN	40-626
Pan Head Screw 3 x 8	SRPN3008RSN	40-627
Flat Head Screw 3 x 6	SRPS3006RSN	40-628
Bind Screw 2.6 x 6	SRPB2606RSN	40-629
” ” 3 x 6	SPRB3006RSN	40-630
Pan Head Tap Screw M3 x 6	STPN30062SN	40-631
” ” 3 x 8	STPN30082SN	40-632

Description	Designation	Unimetrics Parts #
Plastic Screw M3 x 6	SRPN3006RPO	40-633
Inside Toothed Spring Washer M3	ZHM030800SN	40-634
Bind Screw M3 x 5	EZB-0015	40-635
Flat Head Screw M2 x 5	SRPS2005RSN	40-636
P. C. Board Complete	EPA-0623A	60-1093
P. C. Board	EPO-0632	60-1094
Transistor	Q1, 2	90-452
"	Q3, 4	90-453
"	Q5	90-454
"	Q7	90-455
"	Q8	90-456
"	Q9, 10	90-457
"	Q11	90-458
"	Q12, 13	90-459
Diode	D1-4, 13	100-435
"	D5-9	100-436
Zener Diode	D10	100-437
Diode	D12	100-438
"	D11	100-439
Varistor	VD	80-1059
RF Coil	L1	50-539
RF Coil	L2, 3	50-540
RF Coil	L4	50-541
RF Coil	L5	50-542
RF Coil	L6	50-543
RF Coil	L7	50-544
RF Coil	L9	50-546
RF Coil	L10, 11	50-547
RF Coil	L12, 13	50-548
I. F. Coil	L14	50-549
I. F. Coil	L15	50-550
I. F. Coil	L16	50-551
Input Transformer	T1	50-552
Output Transformer	T2	50-553

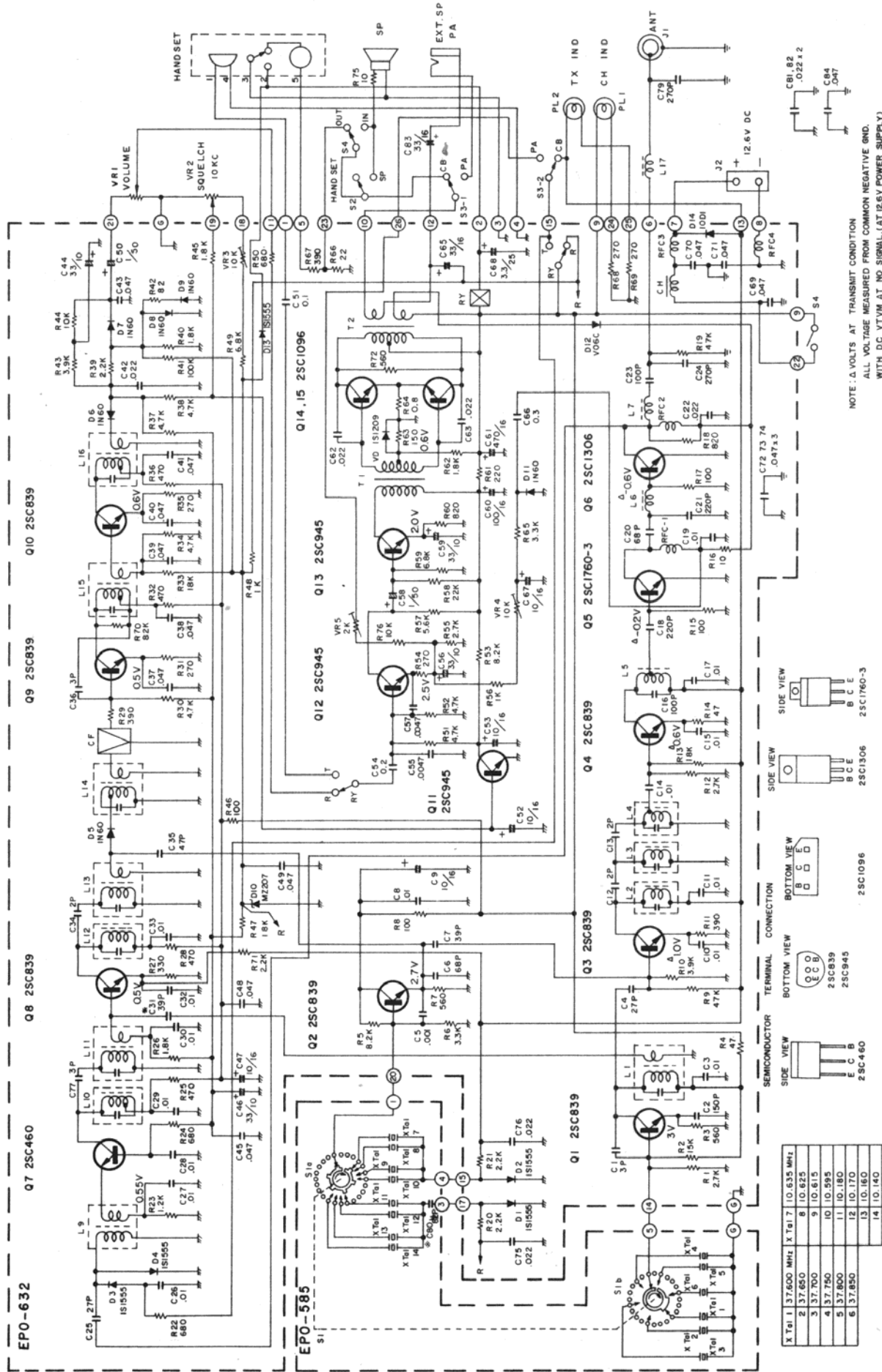
Description	Designation	Unimetrics Parts #
Audio Choke Coil	CH	50-554
RF Choke Coil	RFC-1	50-555
RF Choke Coil	RFC2	50-556
RF Choke Coil	RFC3, 4	50-557
Ceramic Filter	CF	60-1095
Potentiometer	VR3, 4	70-994
Relay	RY	60-1096
Carbon Resistor	R1	70-995
Carbon Resistor	R2	70-996
Carbon Resistor	R3	70-997
Carbon Resistor	R4	70-998
Carbon Resistor	R5	70-999
Carbon Resistor	R6	70-1000
Carbon Resistor	R7	70-1001
Carbon Resistor	R8	70-1002
Carbon Resistor	R9	70-1003
Carbon Resistor	R10	70-1004
Carbon Resistor	R11	70-1005
Carbon Resistor	R12	70-1006
Carbon Resistor	R13	70-1007
Carbon Resistor	R14	70-1008
Carbon Resistor	R15	70-1009
Solid Resistor	R16	70-1010
Carbon Resistor	R17	70-1011
Solid Resistor	R18	70-1012
Carbon Resistor	R19	70-1013
Carbon Resistor	R20, 21	70-1014
Carbon Resistor	R22	70-1015
Carbon Resistor	R23	70-1016
Carbon Resistor	R24	70-1017
Carbon Resistor	R25	70-1018
Carbon Resistor	R26	70-1019
Carbon Resistor	R27	70-1020
Carbon Resistor	R28	70-1021
Carbon Resistor	R29	70-1022
Carbon Resistor	R30	70-1023

Description	Designation	Unimetrics Parts #
Carbon Resistor	R31	70-1024
Carbon Resistor	R32	70-1025
Carbon Resistor	R33	70-1026
Carbon Resistor	R34	70-1027
Carbon Resistor	R35	70-1028
Carbon Resistor	R36	70-1029
Carbon Resistor	R37, 38	70-1030
Carbon Resistor	R39	70-1031
Carbon Resistor	R40	70-1032
Carbon Resistor	R41	70-1033
Carbon Resistor	R42	70-1034
Carbon Resistor	R43	70-1035
Carbon Resistor	R44, 76	70-1036
Carbon Resistor	R45	70-1037
Carbon Resistor	R46	70-1038
Carbon Resistor	R47	70-1039
Carbon Resistor		70-1040
Carbon Resistor	R49	70-1041
Carbon Resistor	R50	70-1042
Carbon Resistor	R51, 52	70-1043
Carbon Resistor	R53	70-1044
Carbon Resistor	R54	70-1045
Carbon Resistor	R55	70-1046
Carbon Resistor	R56	70-1047
Carbon Resistor	R57	70-1048
Carbon Resistor	R58	70-1049
Carbon Resistor	R59	70-1050
Carbon Resistor	R60	70-1051
Carbon Resistor	R61	70-1052
Carbon Resistor	R62	70-1053
Carbon Resistor	R63	70-1054
Metal Oxide Resistor	R64	70-1055
Carbon Resistor	R65	70-1056
Metal Oxide Resistor	R66	70-1057
Carbon Resistor	R67	70-1058
Solid Resistor	R68, 69	70-1059

Description	Designation	Unimetrics Parts #
Carbon Resistor	R70	70-1060
Solid Resistor	R71	70-1061
Carbon Resistor	R72	70-1062
Solid Resistor	R73	70-1063
Solid Resistor		70-1064
Ceramic Capacitor	C1	80-1002
Ceramic Capacitor	C2	80-1003
Ceramic Capacitor	C3	80-1004
Ceramic Capacitor	C4	80-1005
Ceramic Capacitor	C5	80-1006
Ceramic Capacitor	C6	80-1007
Ceramic Capacitor	C7	80-1008
Ceramic Capacitor	C8	80-1009
Elyt. Capacitor	C9	80-1010
Ceramic Capacitor	C10, 11	80-1011
Ceramic Capacitor	C12, 13	80-1012
Ceramic Capacitor	C14, 15	80-1013
Ceramic Capacitor	C16	80-1014
Ceramic Capacitor	C17	80-1015
Ceramic Capacitor	C18	80-1016
Ceramic Capacitor	C19	80-1017
Ceramic Capacitor	C20	80-1018
Ceramic Capacitor	C21	80-1019
Ceramic Capacitor	C22, 23	80-1020
Ceramic Capacitor	C24	80-1021
Ceramic Capacitor	C25	80-1022
Ceramic Capacitor	C26 — 30	80-1023
Ceramic Capacitor	C31	80-1024
Ceramic Capacitor	C32, 33	80-1025
Ceramic Capacitor	C34	80-1026
Ceramic Capacitor	C35	80-1027
Ceramic Capacitor	C36	80-1028
Ceramic Capacitor	C37 — 41	80-1029
Ceramic Capacitor	C42	80-1030
Ceramic Capacitor	C43	80-1031
Elyt. Capacitor	C44	80-1032

Description	Designation	Unimetrics Parts #
Ceramic Capacitor	C45	80-1033
Elyt. Capacitor	C46	80-1034
Elyt. Capacitor	C47	80-1035
Ceramic Capacitor	C48, 49	80-1036
Elyt. Capacitor	C50	80-1037
Elyt. Capacitor	C51	80-1038
Elyt. Capacitor	C52, 53	80-1039
Ceramic Capacitor	C54	80-1040
Ceramic Capacitor	C55	80-1041
Elyt. Capacitor	C56	80-1042
Ceramic Capacitor	C57	80-1043
Elyt. Capacitor	C58	80-1044
Elyt. Capacitor	C59	80-1045
Elyt. Capacitor	C60	80-1046
Elyt. Capacitor	C61	80-1047
Ceramic Capacitor	C62, 63	80-1048
Styroflex Capacitor	C64	80-1049
Elyt. Capacitor	C65	80-1050
Ceramic Capacitor	C66	80-1051
Elyt. Capacitor	C67	80-1052
Elyt. Capacitor	C68	80-1053
Ceramic Capacitor	C69 — 74	80-1054
Ceramic Capacitor	C75, 76	80-1055
Ceramic Capacitor	C77	80-1056
Point (Female)		40-637
Point (Female)		40-638
Point (Female)		40-639
Point (Female)		40-640
*P. C. Board Complete	EPA-0585B	60-1098
*P. C. Board	EPO-0585	60-1099
Rotary Switch (CH Select)		40-641
Crystal 37.600 MHz	Xtal 1	60-1100
Crystal 37.650 MHz	Xtal 2	60-1101
Crystal 37.700 MHz	Xtal 3	60-1102
Crystal 37.750 MHz	Xtal 4 [†]	60-1103
Crystal 37.800 MHz	Xtal 5	60-1104

Description	Designation	Unimetrics Parts #
Crystal 37.850 MHz	Xtal 6	60-1105
Crystal 10.635 MHz	Xtal 7	60-1106
Crystal 10.625 MHz	Xtal 8	60-1107
Crystal 10.615 MHz	Xtal 9	60-1108
Crystal 10.595 MHz	Xtal 10	60-1109
Crystal 10.180 MHz	Xtal 11	60-1110
Crystal 10.170 MHz	Xtal 12	60-1111
Crystal 10.160 MHz	Xtal 13	60-1112
Crystal 10.140 MHz	Xtal 14	60-1113
Ceramic Capacitor	C37	80-1057
Ceramic Capacitor	C80	80-1058



SCHEMATIC DIAGRAM

UNIMETRICS, INC.

1534 OLD COUNTRY ROAD, PLAINVIEW, N.Y., U.S.A. 11803

(KTDPHONEXU) Printed in Japan