danita maxon

SERVICE MANUAL

0510

MAXON CP-0510/0511
GENERAL SPECIFICATIONS

Power Source	Self-contained nickel-cadmium battery, 11 VDC 450 mAh
Temperature	-30°C to 60°C
Antenna Impedance (external)	50 ohms unbalanced
Microphone	Self-contained or an optional speaker/microphone
Speaker	8 ohm
Frequency control	Quartz crystal
Frequencies of operation	148 MHz — 174 MHz
Receiver and transmitter performance bandwith without adjustment	2.0 MHz
Frequency tolerance and stability	± 0.0005%
High humidity	90%
Vibration stability	EIA RS-388, Sec. 3, 2, 4
Shock stability	EIA RS-388, Sec. 3, 2, 5
Channel capability	up to 4 channels transmit/receive
Nominal dimensions	125mm(H) x 63mm(W) x 44mm(D)
Weight	500g (with battery)

RECEIVER PERFORMANCE SPECIFICATIONS

Refer to EIA RS-388, EIA RS-204A and EIA RS-316A for method of measurement and standard of performance.

Sensitivity	12 dB SINAD 0.35 uV
Sensitivity noise quieting	20 dB 0.5 uV
Squelch sensitivity	Threshold...0.25 uV Max. or 6 dB SINAD Tight...within + 10 dB to 20 dB from the threshold
Squelch blocking	10 dB
Receiver attack time	150 m/s
Receiver squelch closing time	250 m/s
Modulation acceptance band width	7.5 KHz Min.
Adjacent channel two signal selectivity and desensitization	70 dB
Spurious response attenuation	75 dB
Intermodulation spurious response attenuation	70 dB
Audio power output	500 mW at 10% THD Max.
Audio frequency response	per EIA specification
Hum and Noise (Unsquelched)	45 dB
Undesired conducted RF power (chassis)	
0 — 9 MHz	100 uV
10 MHz	200 uV Max.
10 — 25 MHz	200 uV Max.
Undesired radiated power	
25 MHz — 1 GHz	50 — 150 uV/m
Standby current (squelched)	15 ma Max.
Standby current (receive)	100 ma Max.

MAXON CP-0510/0511
TRANSMITTER PERFORMANCE SPECIFICATIONS

Refer to EIA RS-152A, EIA RS-388 and EIA RS-316A for method of measurement and standard of performance.

Carrier power output	5 W ± 10%
Modulation system	FM
Audio frequency response	per EIA specifications
Audio frequency harmonic distortion	5% at 1 KHz for ± 3.0 KHz deviation
System deviation	±5 KHz Maximum
Modulation limiting	Instantanous peak clipping with low pass audio filter
Occupied bandwidth	Less than -60 dB from carrier power ±25 KHz
Conducted spurious emissions	−60 dB
Radiated harmonic emissions	−60 dB
Output protection	Shall withstand for 5 minutes all VSWR around Smith chart of 20:1 without failure or damage.
Output stability	Shall not exceed spurious emission requirements when operated into a mis-match load with 5:1 VSWR at any point on the Smith chart.
Current	900 ma

CTCSS SPECIFICATIONS

(Optional, not supplied with unit) refer to EIA RS-220A for method of measurement and standard of performance.

Code frequencies	All EIA standard from 67 Hz to 250.3 Hz
Modulation limits	500 — 1000 Hz
Decode sensitivity	Less than 6 dB SINAD
Receive response time	250ms Max.
Encode response time	75ms Max.
Transmit tone distortion	5% Max.
Transmit intermodulation distortion	15% Max.

MAXON CP-0510/0511
CRYSTAL SPECIFICATIONS

Transmitter

Holder	HC-18/u wire lead
Mode of oscillation	Fundamental
Load capacity	32 pF parallel
Series resistance	Less than 20 ohms
Drive level	Less than 2 mW
Holder capacity	7 pF Max.
Motional Capacity	0.0025pF ± 10%
Temperature range (operating)	-30°C to 60°C
Frequency tolerance at 25°C	± 5 ppm
Frequency tolerance vs temperature	± 5 ppm, -10°C to 60°C (± 10 ppm,-30°C to 60°C)
Frequency calculation	Operating frequency divided by 9

Receiver

Holder	HC-18/u wire lead
Mode of oscillation	Fundamental
Load capacity	32pF parallel
Series resistance	Less than 20 ohms
Drive level	Less than 2 mW
Holder capacity	7pF Max.
Temperature range (operating)	-30°C to 60°C
Frequency tolerance at 25°C	± 10 ppm
Frequency calculation	(Fo — 10.7)/9
Frequency tolerance vs temperature	± 10 ppm – 10°C to 50°C

MAXON CP-0510/0511
THEORY OF OPERATION

RECEIVER

1. RF AMPLIFIER

Q1 is an RF amplifier. A MOSFET is used to ensure excellent sensitivity. Its input and output are tuned by a total of four tuning elements to obtain good band pass quality.

2. MIXER AND 10.7 MHz IF

Q2 is a JFET used as a mixer to minimize intermodulation. Q2's output is filtered by a four pole monolithic filter and then amplified by Q3.

3. LOCAL OSCILLATOR AND MULTIPLIER

Q5 is a fundamental mode crystal oscillator. Its output is tuned to the third harmonic of the crystal by T8 and drives tripler Q6. The output of Q6 is double-tuned to minimize spurious response of the receiver. The filtered local output is injected into the source of Q2, a JFET mixer. C-143 and TH-3 compensate for crystal temperature drift.

4. SECOND MIXER AND 455 KHz IF

IC1 (MC3359) converts Q3's 10.7 MHz output into a 455 KHz signal by means of its internal mixer and crystal oscillator. This 455 KHz output comes out on pin 3 and is filtered by CF-1, IC1 also has a high-gain amplifier, a limiter and a quadrature detector, the latter tuned by T7. The detected audio appears on pin 10 and a portion of the noise therein is filtered and fed back into the internal noise amplifier, whose output is rectified by D1 and D2. This DC voltage is used to control the squelch circuit which turns on Q4.

5. AUDIO AMPLIFIER

IC2 (LM386) is an audio amplifier which produces 500 mW of power into the 8-ohm speaker. Q4 disables IC2 to reduce stand-by current while no signal is present.

6. RECEIVER SWITCHING

Q9 is a voltage regulator to supply a stable voltage to all receiver circuitry. D3 is a switching diode to disable Q9 during transmit. D7 is a PIN diode which protects Q1 input in the transmit mode.

TRANSMITTER

1. CRYSTAL OSCILLATOR

Q10 is a fundamental mode crystal oscillator. A varactor D5 is in series with the crystal for direct frequency modulation. Negative coefficient capacitors and thermister TH-1 are used in the oscillator circuit to compensate for positive temperature drift.

2. MODULATOR

Q17 is a microphone amplifier, the output of which is differentiated to result in 6 dB per octave pre-emphasis. IC3 (LM386) is an amplifier and limiter. Limiting is accomplished in its complimentary output circuitry. At normal speech levels audio frequencies above 1 KHz are clipped to prevent overmodulation. C106, CH 15, R65 and C107 make up a splatter filter. Better than 18 dB per octave rolloff is attained. RV1 sets the deviation level.

MAXON CP-0510/0511
THEORY OF OPERATION (continued)

3. MULTIPLIERS

Q11 multiplies by three times the frequency of the crystal. Its output is then double-tuned. Q12 triples Q11's output and is also double-tuned to eliminate unwanted signals.

4. RF AMPLIFIERS

The output of Q12 is on the operating frequency, but at a very low level. Q14 is a buffer amplifier which drives Q15, boosting the power to the 500 mW level. Q16 is the final amplifier. Its output is filtered to suppress harmonics and provides a 50-ohm output.

5. SWITCHING

Q20 is the transmit switching transistor. It is normally off in the receive mode, becoming forward biased on transmit. Q13 is a voltage regulator to supply a stable voltage to Q10, Q11, Q17 and IC3. Q18 and Q19 are DC switching transistors which pull the PTT line to ground when a low impedance is applied to the EXT MIC jack.

CTCSS

MX315 and MX335 ICs are utilized in the CA-1112 (Encode only) and CA-1111 (Encode-Decode) CTCSS boards, respectively. In the transmit mode, audio of the programmed frequency is digitally generated in a step approximation of a sine wave, consisting of 122 steps per cycle. This results in a signal virtually indistinguishable from one of analog origin with an unfiltered distortion of less than 1.5%. All harmonics are down 30 dB from the fundamental, 50 dB in the 5 KHz band. Signal rise time to 90% of peak amplitude is less than 50ms.

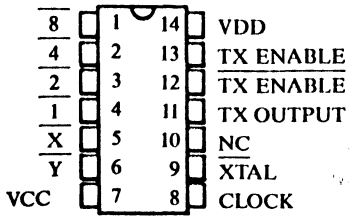
The detected tone is first processed by a programmable fourth-order bandpass filter and then again by a digital decoder with a logic level output that switches high on detection of the desired CTCSS tone. In the receive mode, the bandpass filter has a Q of 13; in the transmit mode, Q = 6.

In CTCSS operation, the tone is detected with a speech-to-tone ratio of 37 dB and a noise (Gaussian 6 KHz bandwidth) to tone ratio of 15 dB. Operation that meets or exceeds EIA RS-220A recommendations is achieved from a 1 MHz clock reference. The tone detect bandwidth is 3.2%, resulting in alternate frequencies (EIA B group from A group tones) being rejected 60 dB.

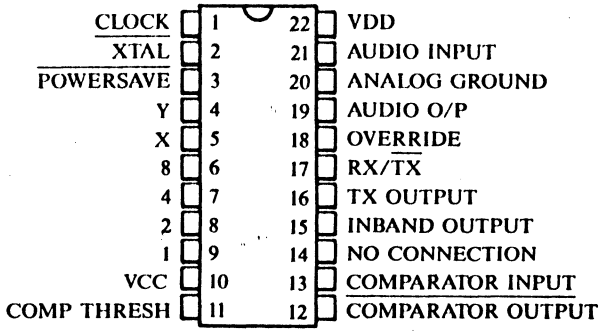
The INBAND OUTPUT (pin 15) is integrated through an RC network and fed to the comparator for control of the analog switch enabling speaker audio when tone is present. The MX-335's power consumption is typically 4 mA transmitting, for the MX-315 approximately 1.5 mA.

PIN OUT DIAGRAMS

MX-315



MX-335



MAXON CP-0510/0511
ALIGNMENT INSTRUCTIONS

Pre-alignment note

Observe the following before attempting to tune T1, T2, T3, T4, T8, T9, T10, T11, T12, T13 and T14:

If crystals to be installed are for operation:

1. 148-160 MHz — No special instructions
2. 160-174 MHz — See table at bottom of schematic diagram. (page 18) for capacitor value changes in Receiver RF Section, Receiver OSC Section, and Transmitter Tripler Stages.

RECEIVER

1. CRYSTAL INSTALLATION

Install crystals at proper channel locations (switch positions A through D). Soldering of the crystals must be accomplished quickly to avoid damage to the crystal itself.

2. OSCILLATOR TUNING

Connect a VOM (0-3V range) at TP-1; tune T8 for maximum. Disconnect VOM.

3. FRONT END TUNING

Set the signal generator to the channel frequency, with 1 KHz modulation and 3 KHz deviation. Increase the RF level until a signal can be heard. Tune T8, T9 and T10 for best SINAD. Tune T1 through T4 for maximum, reducing the signal generator output to avoid saturation. Retune T1 through T4, T8, T9, and T10 for best SINAD indication.

4. CHANNEL SETTING

Adjust the relevant RX crystal trimmers for best SINAD.

RECEIVER PERFORMANCE TESTS

1.SINAD SENSITIVITY

Adjust the signal generator output to the lowest level which will provide a good sinusoidal pattern on the oscilloscope. At 12 dB SINAD the signal generator output should be less than 0.35uV.

2. NOISE QUIETING SENSITIVITY

With the signal generator disconnected from the radio and the squelch open, adjust the volume control to obtain a noise reading of 1V RMS on an AC VTVM connected to the speaker terminals. Reconnect the signal generator to the radio with no modulation and adjust the RF attenuator so that a reading of 0.1V is obtained. This is the 20 dB quieting point and it should be approximately 0.5uV.

MAXON CP-0510/0511
ALIGNMENT INSTRUCTIONS (continued)

3. SQUELCH SENSITIVITY

With the signal generator set for 1 KHz modulation, 3KHz deviation and the RF attenuator at minimum, adjust the squelch control at its threshold. The squelch should open as the output of the signal generator is increased to 0.25uV. Set the squelch control to its maximum clockwise position. Increase the RF attenuator setting until the squelch opens. The point of opening should be 10 to 20 dB greater than 0.25uV. Increase the deviation setting to 7 KHz, at which point the squelch should reclose.

4. AUDIO OUTPUT

With the signal generator set a 1000uV output, adjust the radio's volume control to display a clean sine wave on the oscilloscope just below the point at which clipping occurs. The AC VTVM connected across the speaker leads should read 2V (500 mW at 1 KHz into the 8-ohm load). The distortion analyzer should read 10% or less at this volume control setting.

5. STAND BY CURRENT

Squelch the receiver and connect a VOM (0-30mA scale) in one of the supply leads. The meter reading should be less than 20mA at a supply voltage of 11 volts.

TRANSMITTER

1. CRYSTAL INSTALLATION

Install crystals at proper channel locations (switch positions A through D). Soldering of the crystals must be accomplished quickly to avoid damage to the crystal itself.

2. POWER SUPPLY VOLTAGE

Set the power supply voltage to 11 volts, measured at the radio, not at the power supply. If measured at the power supply, voltage drop in the connecting leads will result in erroneous readings.

3. MULTIPLIER TUNING

Connect a VOM (0-3V scale) to TP-3. Tune T11 and T12 for maximum meter deflection. Connect the VOM to TP-4 and tune T13 and T14 for maximum. Disconnect VOM.

4. AMPLIFIER TUNING

As T14 is adjusted, some deflection of the RF power output (and DC ammeter) should be apparent. Tune TC9 through TC11 for maximum power output with minimum DC ammeter indication. If the radio is to be tuned for frequencies within the 162-174 MHz range, it may be necessary to spread the turns of the airwound coils associated with the above mentioned trimmer capacitors to achieve resonance.

5. CHANNEL SETTING

Adjust the trimmer for each transmitter crystal to the desired exact channel frequency, using a suitable frequency counter or a communications monitor.

MAXON CP-0510/0511
ALIGNMENT INSTRUCTIONS (continued)

6. DEVIATION ADJUSTMENT

Using an external audio generator connected to the radio's external mike jack, set the deviation control (RV1) to ± 5 KHz, as observed on an oscilloscope so that peak deviation and positive and negative deviations can be checked. Note that when the modulation limiter is overdriven, slight carrier shift will result. This will not occur at normal speech levels. Also note that when crystals for more than one channel are installed, there will be a slight difference in maximum deviation for a given setting of RV1 caused by variations in individual crystal parameters. Always adjust RV1 for 5 KHz deviation on the channel which shows maximum deviation. It is recommended that crystals from the same manufacturer be used to minimize this deviation variation.

TRANSMITTER PERFORMANCE TESTS

1. POWER OUTPUT

Power output should be in excess of 5 watts with a power supply input voltage of 11 volts and total DC ammeter reading of one Ampere or less. Reducing the supply voltage to 9 volts should produce a power output of not less than 2.5 watts.

2. AUDIO RESPONSE

Connect an audio generator set up for 1 KHz to the EXT MIC jack and key the PTT switch. Adjust the generator output to 1 KHz deviation on the deviation meter. Retune the generator to 500 Hz. The deviation should be approximately 500 Hz. Tune the generator to 2 KHz. The deviation should now be approximately 1 KHz.

3. LIMITING TEST

Adjust the audio generator output to 1 KHz deviation at 1 KHz and observe the oscilloscope connected to the deviation meter. Set the attenuator on the audio generator to show slight clipping on the scope. Increase the generator output by 20 dB and sweep across the band 300 Hz to 3 KHz. At any frequency within this band the deviation should not exceed plus/minus 5 KHz.

4. SPLATTER FILTER TEST

With the test equipment set up as for the LIMITING TEST, note the reading of the AC VTVM connected across the audio output of the deviation meter at 3 KHz deviation. Tune the audio generator to 6 KHz. The AC VTVM reading should decrease more than 18 dB.

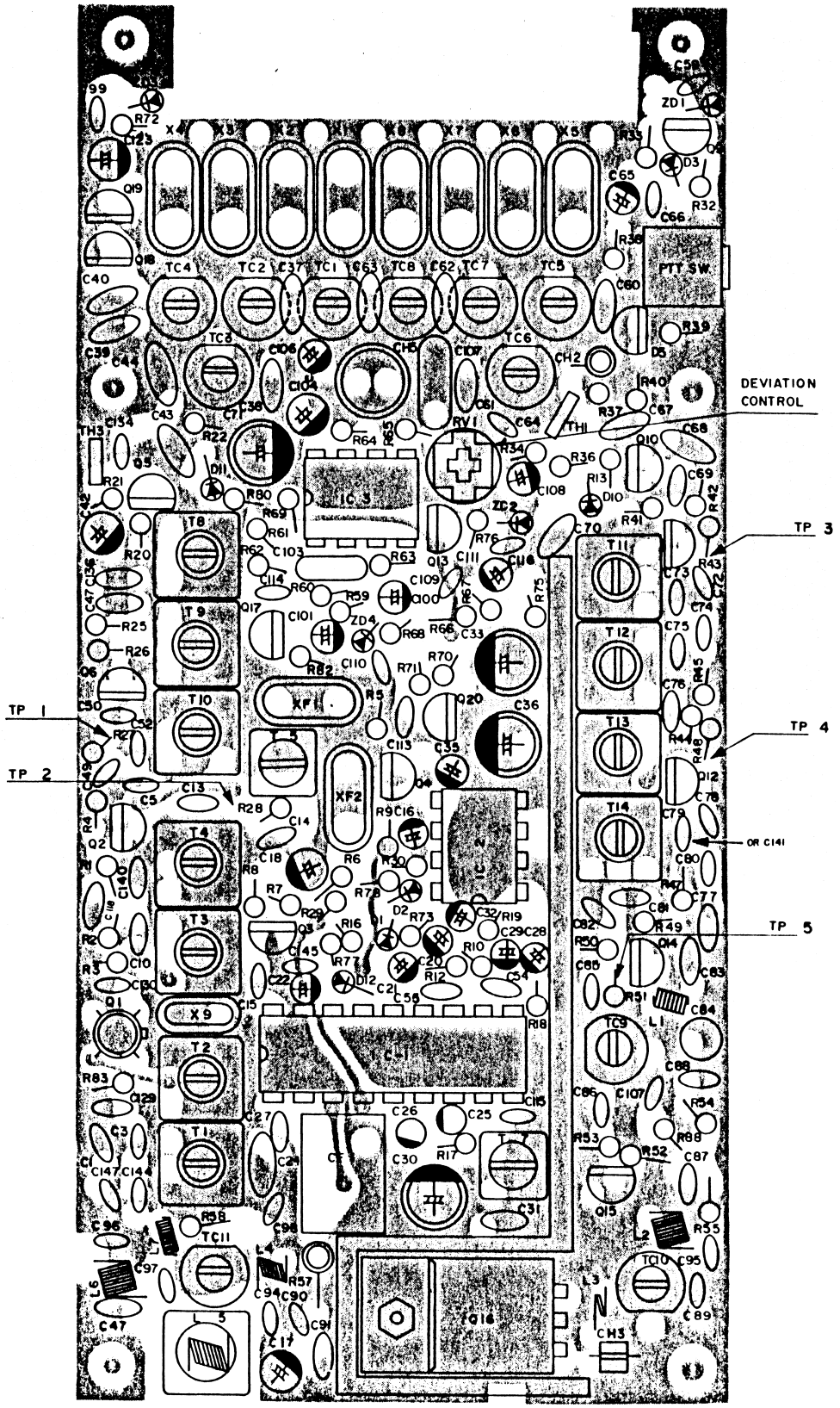
5. SPECTRUM TEST

With the input attenuator of the spectrum analyzer protected by 30 to 40 dB of attenuation, all spurious and harmonics should be down more than 55 dB out of band and more than 60 dB in band.

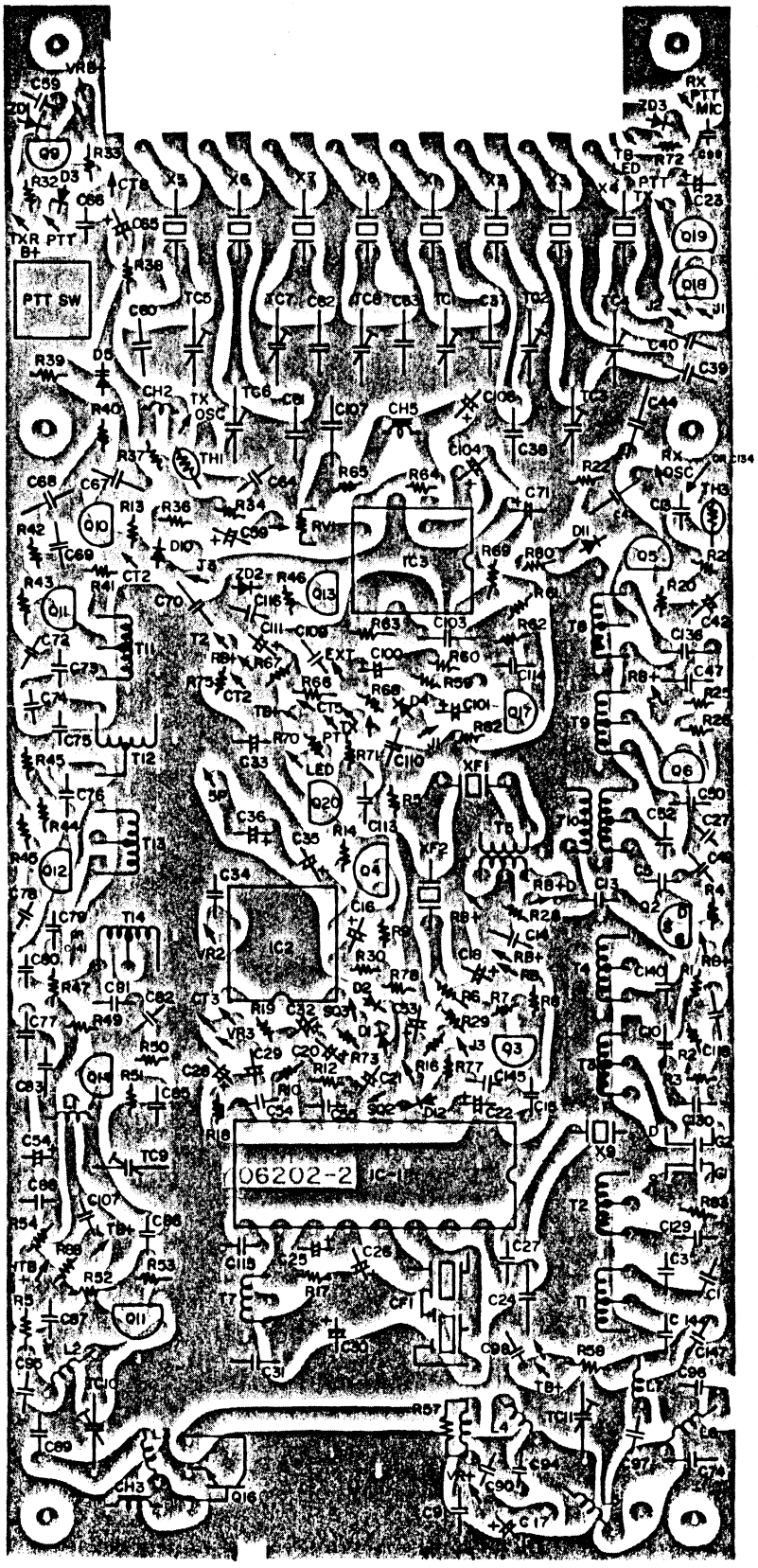
6. ANTENNA TEST

Reassemble the radio into its case and install a full-charged battery pack. Connect a properly trimmed (to frequency) flexible antenna. Key to transmit and check the frequency, deviation and spectral purity. All should be the same as tested with the 50-ohm dummy load.

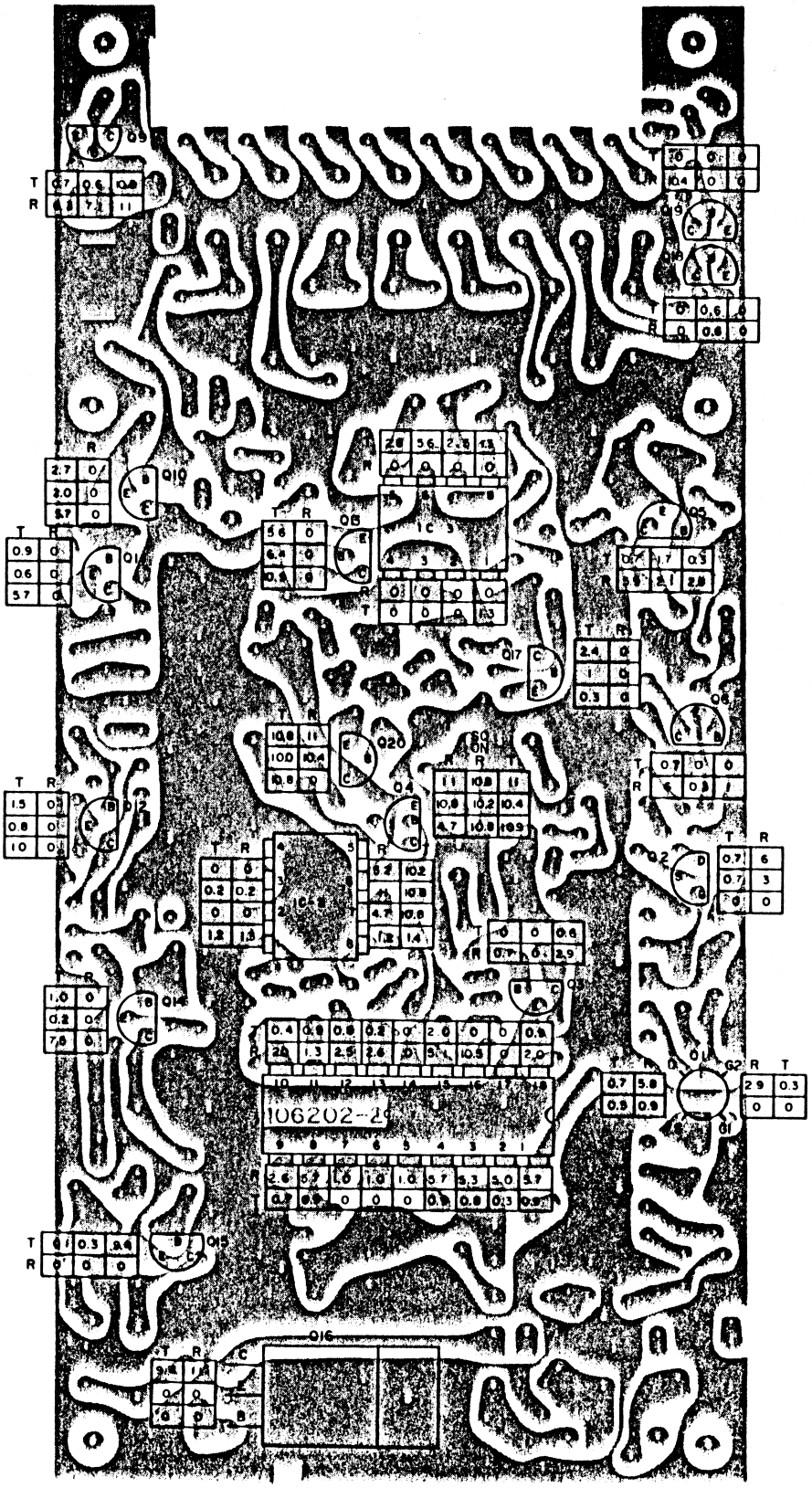
MAXON CP-0510/0511
TOP VIEW WITH TEST POINTS



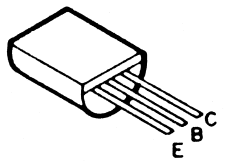
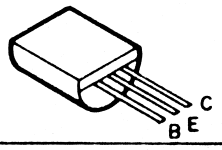
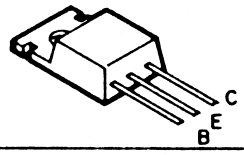
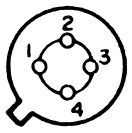
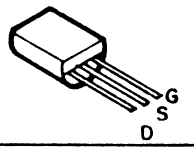
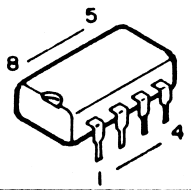
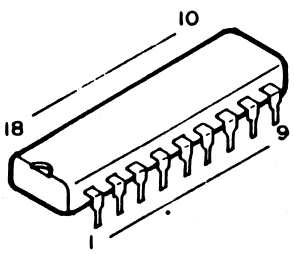
MAXON CP-0510/0511
BOTTOM VIEW



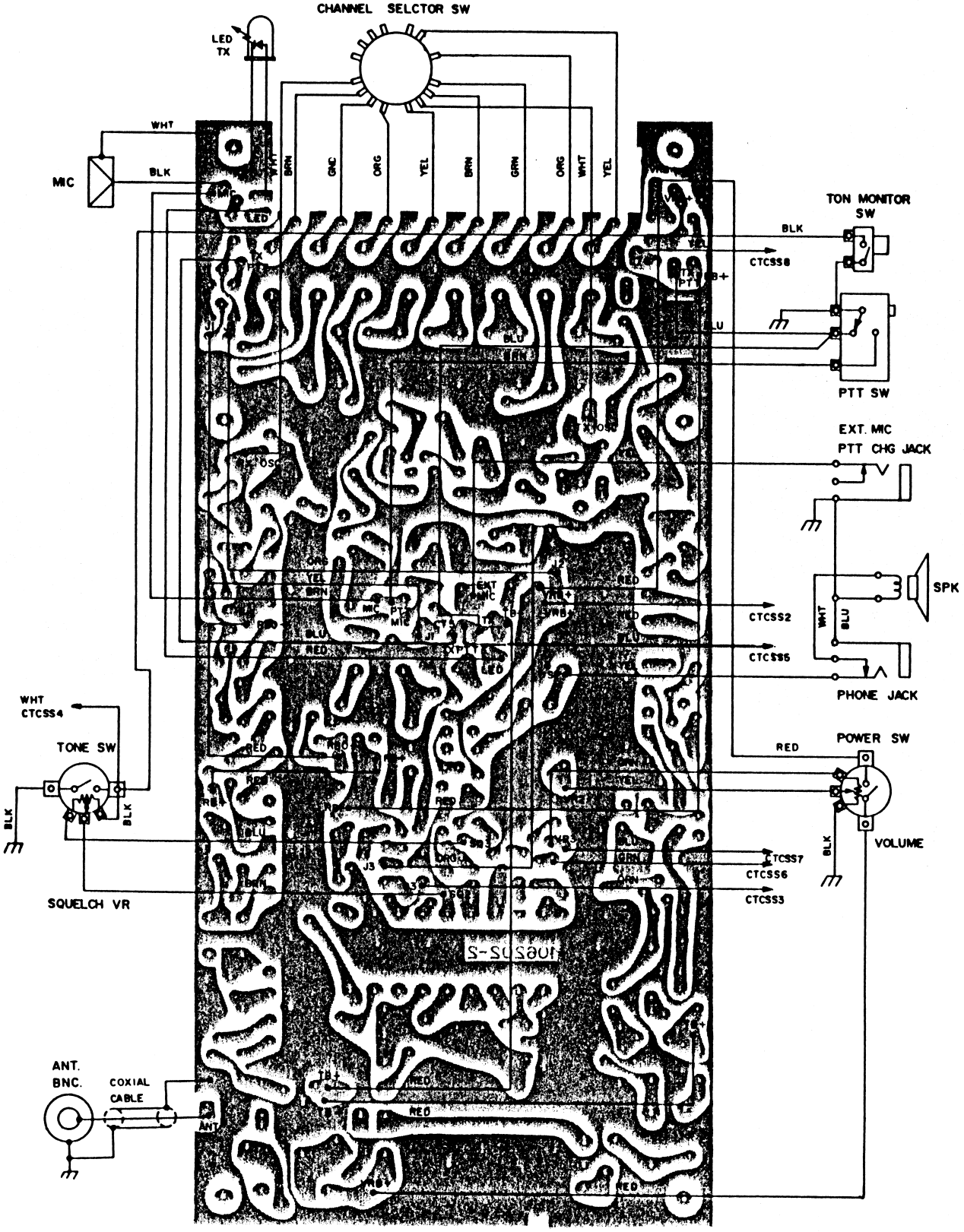
MAXON CP-0510/0511
VOLTAGE CHART



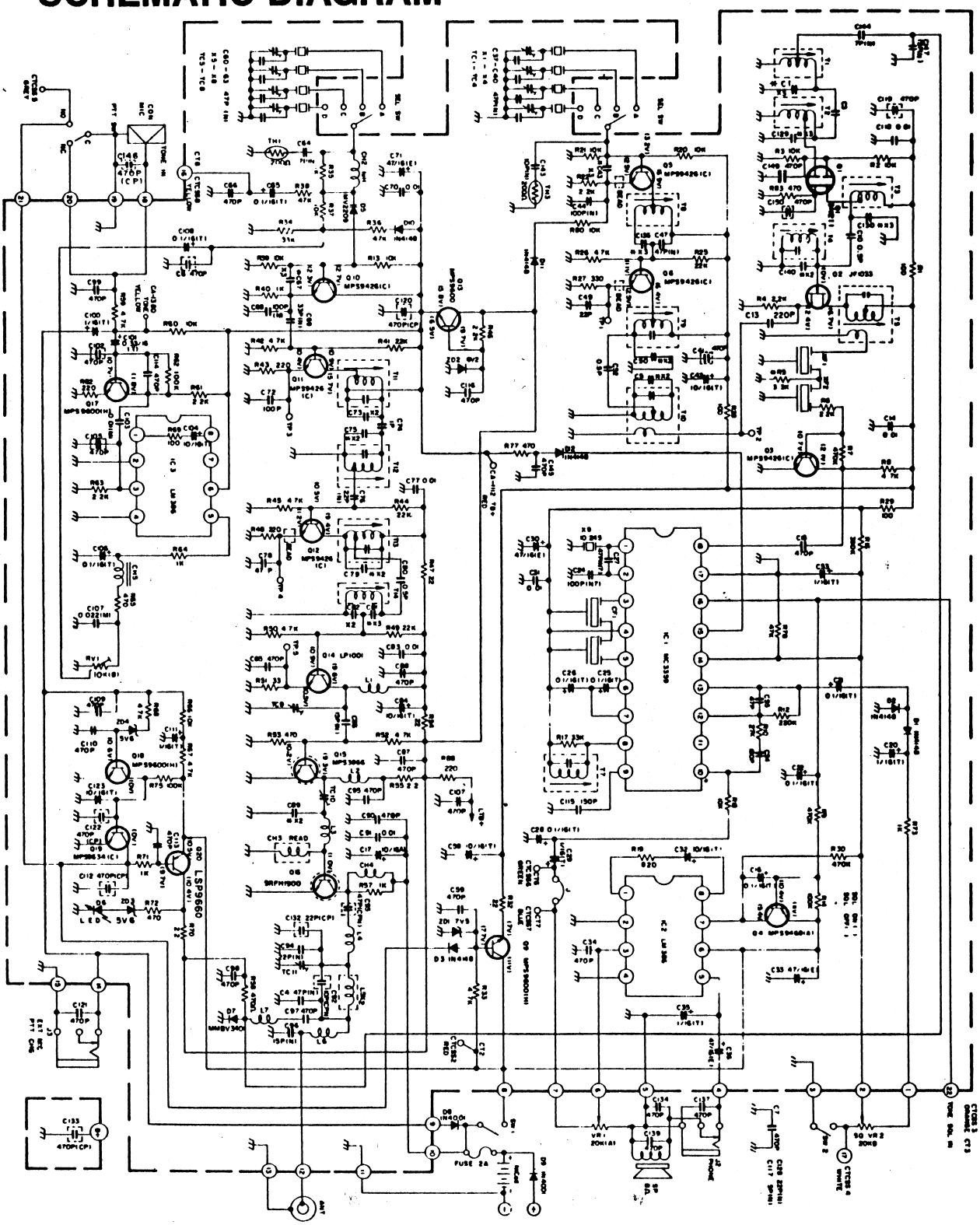
MAXON CP-0510/0511
TRANSISTOR and IC PINOUT INFORMATION

SCHEMATIC REF NBR	MAXON PART NBR	MANUFACTURER'S NBR	BASE DIAGRAM
Q9,13,17,18	203006-3	MPS9600(H)	
Q19	203002-9	MPS9634(C)	
Q4	203041-4	MPS9468A(T)	
Q20	203054-6	LSP9660	
Q15	203042-5	MPS3866	
Q14	203040-3	LP1001	
Q3,5,6,10 Q11,12	203005-2	MPS9426(C)	
Q16	203043-6	SRFH1900	
Q1	203064-5	3N211	  1. DRAIN 2.GATE 2 3.GATE1 4. SOURCE, SUBSTRATE AND CASE
Q2	203027-2	JF1033S	
IC2,IC3	231008-4	LM386N-3	
IC 1	223010-2	MC3359P	

MAXON CP-0510/0511
WIRING DIAGRAM



MAXON CP-0510/0511
SCHEMATIC DIAGRAM



* NOTE: SELECTION OF TUNNING CAPACITOR (ALL NPO TYPE)

BAND / REF NO	C1	C129	C130	C140	C136	C50	C5	C73	C75	C79	C81			C89	C43	C67	L5	C82
LOW BAND 136-148MHZ	15P	12P	12P	4P	47P	4P	4P	4P	4P	4P	22P				100P	100P		
MID BAND 148-160MHZ	12P	10P	10P	2P	39P	2P	2P	2P	2P	2P	15P			22P	82P	82P	MK-11	33P
HIGH BAND 160-174MHZ	10P	8P	8P		33P						10P			15P	47P	47P	MK-22	15P

NOTE: REMOVE JUMPER "J" WHEN INSTALLING CTCSS MODULE

MAXON CP-0510/0511
PARTS LIST

Seq.	Part-No.	Part Name & Description	Q'ty	Reference-No.
1	56101C-A	Cover Ass'y	1	
	1310171	Capacitor Ceramic Monolithic 10pF 50WV (GR40COG10J50)	1	C92
	1322071	Capacitor Ceramic Monolithic 22pF 50WV (GR40CH 220J50)	1	C132
	1347076	Capacitor Ceramic Monolithic GR50CH 470J50	1	C93
	1347119	Capacitor Ceramic Monolithic (GR40SL 471J50) 470pF 50WV	12	C6, 41, 102, 105, 112, 119, 120, 122, 133, 146, 149, 150
	2450131	Diode 1N 4001	2	D9, 13
	2510079	L.E.D Lamp KLR124	1	D6
	2600516	Crystal 10.245Mhz UM-1	1	X9
	2601096	Crystal 16.84055 (151.565)MHz TXHC18/U	1	XX.
	2601109	Crystal 15.65166 (151.565) MHz RXHC18/U	1	XX.
	2800172	Fuse FEW-2A/125V	1	
	4066017	P.C.B SW 17x15x0.8T 1/0 FR-4	1	
	4069029	P.C.B MT 4x10.4x1T	1	
	4201151	Speaker 40MM 90HM 0.3W MS40C01	1	
	4202060	Condenser MIC 6& WM-063T	1	
	4320146	PTT S.W AH 1112	1	
	4340036	Touch S.W EVQ-QSR-05K	1	
	612179	(+) Machine Screw (F.H) M2x15 ZN-Plat	4	
	612188	(+) Machine Screw (P.H) M2x8 ZN-Plat	2	
	651015	Nut BSBM M2	2	
	660545	Washer Fiber &8x&3.2x0.4T	1	
	661212	Washer Flat M2 ZN-P	1	
	711306	Cover (Upper) GE-Noryl-7229	1	
	711315	Cover (Bottom) GE-Noryl-7229	1	
	711324	Cover (Battery) GE-Noryl-7229	1	
	730699	Holder (Belt Loop MTG) SPC ZN-Plat 50x24x1T	1	
	730972	Holder (P.T.T SW MTG) SPTE 41x13x0.3T	1	
	740160	Lever (MIC) GE-Noryl-7229	1	
	760634	Heat Sink Cup SN-Plat 44x34x1.5T	1	
	770220	Shield Plate (Upper Cover MTG) Cup 67x50x0.1T	1	
	770450	Shield Plate PBST 54x27x0.3T	1	
	770460	Shield Plate SPTE 91x62x0.3T CP0510.20	1	
	783671	Plate FCC ALP3 43x23x0.5T	1	
	821461	Knob (Channel) W/M3x4 Wrench Bolt ALB (A5056E) &12x12	1	
	821470	Knob (Control) W/M3x3 Wrench Bolt ALB (A5056E) &12x12	2	
	830292	CAP (C.T.C.S.S SW Hole MTG) Noryl7229 PR N190J7021	1	
	850784	Insert (A) (Upper Cover) BSBM & 4.5x10.5	2	
	850793	Insert (B) (Upper Cover) BSBM & 4.5x3	2	
	850809	Bushing (A) (+ Charge) BSBM Ni-Plat &6x5	1	
	850818	Bushing (B) (– Charge) BSBM Ni-Plat &6x4.2	1	
	862103	Terminal (Fuse) PBSP Ni-Plat 25x13x0.3T	1	
	862130	Terminal (+ Charge Bushing) BSP Ni-Plat 13x9x0.5T	1	
	862194	Terminal (+) Battery PBSP 58x27x0.4T Ni-P	1	
	862200	Terminal (–) Battery PBSP 64x28x0.4T Ni-P	1	
	862219	Terminal (Ground) PBSP 33x13x0.3T Ni-P	1	
	880330	Spring (Lever MTG) PWR2A BLK	1	
	890722	Rubber Ring Rubber &39.6x&33.6x1T BLK	1	
	890731	Sponge (Battery Cover MTG) Sponge Gray 50x22x71	1	
	890810	Rubber Bushing Rubber BLK	1	
	890980	Rubber Holder (MIC) Rubber BLK	1	
	901305	Insulation Plate Fiber 67x50x0.25T	1	

MAXON CP-0510/0511
PARTS LIST

Seq.	Part-No.	Part Name & Description	Q'ty	Reference-No.
	901314	Speaker Felt Felt &38x0.4T	1	
	901475	Insulation Plate Fiber 50x23x0.25T	1	
	901633	Insulation Plate Fiber 42&x0.25T(SPK MTG)	1	
	902000	Insulation Plate Fiber 14x23x0.25T	1	
	902150	Insulation Plate Fiber 51x15x0.25T LMR	1	
	951957	Serial No. Label (CP-0510) Sticker WHT 14x5	2	
	967215	Wire Tie T18S	4	
	967233	80 Column Printer Sheet	3	
2	56101F-B	Front Body Ass'y	1	
	1347108	Capacitor Ceramic 470pF SL 4&D	3	C134, 137, 139
	2450131	Diode 1N 4001	1	D8
	4207175	Jack Connector HCY3505	1	
	4207186	Jack Connector HCY2505	1	
	4207252	Connector Jack BNC	1	
	4300157	Rotary S.W JRE3-4 Shaft 12MM	1	
	4505015	Volume 20KB W/S V-12MM-1 (6&x5) S	1	
		(SJ 15PH Shaft 12MM)	1	
	4505060	Resistor Variable V12M4-1S (SJ) 12R 15C 20K ohm	1	
	770239	Shield Plate (Main Plate) Cup 52x27x0.1T Ni Plating	1	
	783680	Main Plate GE-Noryl-7229	1	
	891320	Cap (Ear Phone, MIC) Neoprene BLK	1	
	891350	Rubber Spacer Neoprene BLK CP-0510 0520	2	
3	56101H-B	High Band	1	
	1310115	Capacitor Ceramic 10pF (NPO) 4&D	2	C1, 81
	1315088	Capacitor Ceramic 15pF (NPO) 4&D	2	C82, 89
	1333039	Capacitor Ceramic 33pF (NPO) 5&D	1	C136
	1340066	Capacitor Ceramic 4pF (NPO) 4&D	1	C129
	1347087	Capacitor Ceramic 47pF (NPO) 4&D	2	C43, 67
	1350072	Capacitor Ceramic 5pF (NPO) 4&D	1	C130
4	56101L-B	Low Band	1	
	1310115	Capacitor Ceramic 10pF (NPO) 4&D	1	C130
	1310203	Capacitor Ceramic 100pF (NPO) 8&D	2	C43, 67
	1315088	Capacitor Ceramic 15pF (NPO) 4&D	1	C1
	1322060	Capacitor Ceramic 22pF (NPO) 5&D	2	C81, 89
	1340066	Capacitor Ceramic 4pF (NPO) 4&D	6	C5, 50, 73, 75, 140, 141
	1347087	Capacitor Ceramic 47pF (NPO) 4&D	1	C136
	1380033	Capacitor Ceramic 8pF (NPO) 4&D	1	C129
5	56101M-B	Middle Band	1	
	1312043	Capacitor Ceramic 12pF (NPO) 4&D	1	C1
	1315088	Capacitor Ceramic 15pF (NPO) 4&D	1	C81
	1320088	Capacitor Ceramic 2pF (NPO) 4&D	6	C5, 50, 73, 75, 140, 141
	1333039	Capacitor Ceramic 33pF (NPO) 5&D	1	C82
	1339053	Capacitor Ceramic 39pF NPO 5&xD	1	C136
	1360044	Capacitor Ceramic 6pF (NPO) 4&D	1	C129
	1370027	Capacitor Ceramic 7pF NPO 4&D	1	C130
	1382048	Capacitor Ceramic 82pF 50WV NPO	2	C43, 67
6	56101M-P	Main PCB Ass'y	1	
	0021018	Resistor Carbon Film 100 ohm 1/16W +5% "S"	4	R1, 28, 29, 69
	0021029	Resistor Carbon Film 1K ohm 1/16W +5% "S"	4	R40, 64, 71, 73
	0021030	Resistor Carbon Film 10K ohm 1/16W +5% "S"	11	R2, 3, 13, 18, 20, 21, 37, 39, 60, 66, 80
	0021041	Resistor Carbon Film 100K ohm 1/16W +5% "S"	3	R14, 62, 75
	0022202	Resistor Carbon Film 22 ohm 1/16W +5% "S"	3	R32, 47, 54
	0022213	Resistor Carbon Film 220 ohm 1/16W +5% "S"	4	R43, 48, 82, 88
	0022224	Resistor Carbon Film 2.2K ohm 1/16W +5% "S"	6	R4, 6, 22, 46, 61, 63
	0022235	Resistor Carbon Film 22K ohm 1/16W +5% "S"	4	R25, 41, 44, 49
	0022246	Resistor Carbon Film 220K ohm 1/16W +5% "S"	1	R12

MAXON CP-0510/0511
PARTS LIST

Seq.	Part-No.	Part Name & Description	Q'ty	Reference-No.
	0022291	Resistor Carbon Film 2.2 ohm 1/16W +5% "S"	2	R55, 70
	0022730	Resistor Carbon Film 27K ohm 1/16W +5% "S"	1	R10
	0023308	Resistor Carbon Film 33 ohm 1/16W +5% "S"	1	R51
	0023319	Resistor Carbon Film 3300 ohm 1/16W +5% "S"	1	R27
	0023320	Resistor Carbon Film 3.3K ohm 1/16W +5% "S"	1	R5
	0023331	Resistor Carbon Film 33K ohm 1/16W +5% "S"	2	R17, 34
	0023946	Resistor Carbon Film 390K ohm 1/16W +5% "S"	1	R16
	0024712	Resistor Carbon Film 470 ohm 1/16W +5% "S"	6	R53, 58, 65, 72, 77, 83
	0024723	Resistor Carbon Film 4.7K ohm 1/16W +5% "S"	10	R8, 26, 33, 45, 50, 52, 59, 67, 68
	0024734	Resistor Carbon Film 47K ohm 1/16W +5% "S"	3	R36, 38, 78
	0024745	Resistor Carbon Film 470K ohm 1/16W +5% "S"	3	R7, 9, 30
	0028215	Resistor Carbon Film 820 ohm 1/16W +5% "S"	1	R19
	0721031	Resistor Semifixed H0621A-10K ohm 6Dia "H-M"	1	RV1
	0982012	Thermistor 200 ohm	2	TH1, 3
	1010424	Capacitor Al. Elect 10uf 16WV 4mm x 8mm	1	C17
	1047396	Capacitor Elect 47μF 16WV 6.5& x8	4	C30, 33, 36, 71
	1110076	Capacitor Mylar 0.01μF 25WV	1	C103
	1122086	Capacitor Mylar 0.022μF 25WV	1	C107
	1301106	Capacitor Ceramic 0.01μFZ 5& x7	7	C14, 31, 70, 77, 83, 91, 118
	1305027	Capacitor Ceramic 0.5pF SL 4&D	3	C10, 52, 80
	1310115	Capacitor Ceramic 10pF (NPO) 4&D	1	C143
	1310126	Capacitor Ceramic 100pF SL 5&DJ	1	C72
	1310137	Capacitor Ceramic 100pF (N750) 6&D	1	C24
	1310160	Capacitor Ceramic 1pF 50WV SL4&D	2	C3, 74
	1310203	Capacitor Ceramic 100pF NPO 8&D	2	C44, 68
	1315077	Capacitor Ceramic 150pF YB 4&D	1	C115
	1315088	Capacitor Ceramic 15pF (NPO) 4&D	3	C86, 96, 147
	1318056	Capacitor Ceramic 180pF 50WV (SL) 4&D	1	C54
	1322015	Capacitor Ceramic 22pF 50WV SL	1	C49
	1322060	Capacitor Ceramic 22pF (NPO) 5&D	3	C76, 94, 128
	1322103	Capacitor Ceramic 220pF 50WV (SL) 4&D	1	C13
	1333039	Capacitor Ceramic 33pF (NPO) 5&D	1	C69
	1347087	Capacitor Ceramic 47pF (NPO) 4&D	10	C4, 37, 39, 40, 47, 60, 61, 62, 63
	1347098	Capacitor Ceramic 47pF (N750) 5&D	1	C27
	1347108	Capacitor Ceramic 470pF SL 4&D	21	C7, 15, 34, 59, 66, 85, 87, 88, 90, 95, 97, 98, 99, 107, 109, 110, 113, 114, 116, 121,145
	1347164	Capacitor Ceramic 47pF SL5&	2	C55, 78
	1350072	Capacitor Ceramic 5pF (NPO) 4&D	1	C117
	1370027	Capacitor Ceramic 7pF NPO 4&D	2	C64, 144
	1401011	Capacitor Tantalum 0.1μF 16WV Da1Corim	9	C16, 21, 22, 25, 26, 28, 65, 106, 108
	1410031	Capacitor Tantalum 10μF 16WV (DN1C100MIS)	5	42, 58, 84, 104, 123
	1410086	Capacitor Tantalum 1μF 16WV (MDS105R)	7	C20, 29, 32, 35, 53, 100, 111
	1433021	Capacitor Tantalum 0.33μF 16WV	1	C101
	1720024	Capacitor Trimmer 20pF TZ03R200E	11	TC1-11
	2030029	Transistor MPS9634 (C)	1	Q19
	2030052	Transistor MPS9426 (C)	6	Q3, 5, 6, 10, 11, 12
	2030063	Transistor MPS9600 (H)	4	Q9, 13, 17, 18
	2030272	FET JF 1033S	1	Q2
	2030403	Transistor LP1001	1	Q14
	2030414	Transistor MPS9468A (T)	1	Q4,
	2030425	Transistor MPS3866	1	Q15
	2030436	Transistor SRF H1900	1	Q16
	2030546	Transistor LSP 9660	1	Q20
	2030645	Fet 3N211	1	Q1

MAXON CP-0510/0511
PARTS LIST

Seq.	Part-No.	Part Name & Description	Q'ty	Reference-No.
	2230102	I.C. MC3359P	1	IC1
	2310084	I.C LM386 (803-N-3)	2	IC2, 3
	2410153	Diode Zener BZX83-C7V5	1	ZD1
	2410164	Diode BZX83-C6V2	1	ZD2
	2410175	Diode BZX83-C5V6	2	ZD3, 4
	2420060	Diode Varicap MV2209	1	D5
	2430087	Diode 1N 4148	6	D1, 2, 3, 10, 11, 12
	2430120	Diode MMBV3401	1	D7
	2700092	Ceramic Filter CFW455E	1	CF1
	2710019	Crystal Filter 10M 15B	2	XF1, 2
	3100853	Coil Choke MK-8	1	CH3
	3100875	Coil Choke MK-13	1	CH5
	3100886	Coil Choke MK-1	1	L1
	3100897	Coil Choke MK-5	1	L2
	3100918	Coil Choke MK-7	1	L6
	3100929	Coil Choke MK-4	1	L7
	3100952	Coil Choke 8T ON 1K	1	CH4
	3101081	Coil Choke MK-16 1UH/1K ohm	1	CH2
	3101092	Coil Choke MK-11	2	L4, 5
	3101245	Choke Coil MK-2 (L)	1	L3
	3202290	Coil ANT & TX MUL	4	T1, 2, 3, 14
	3202300	Coil TX MUL	1	T12
	3202322	Coil 155 KHz Defector	1	T7
	3202333	Coil RX OSC	1	T8
	3202344	Coil RX OSC MUL	1	T9
	3202355	Coil RX OSC MUL	1	T10
	3202531	Bead Core FC 3x2	3	
	3202597	Coil TX OSC	1	T11
	3202607	Coil RX RF	1	T13
	3202618	Coil RX RF & TX MUL (B)	1	T4
	3203527	IFT 10.7MHz-B	1	T5

MAXON CP-0510/0511
PARTS LIST

Seq.	Part-No.	Part Name & Description	Q'ty	Reference-No.
	4062022	P.C.B Main 114x54x1T	1	
	613527	(+) Machine Screw (B.H) M3x11 ZN Plating	1	
	651024	Nut SS41 M3-1S ZN-Plat	1	
	660730	Washer Cup 9.8x6x1.5T CP-220S	2	
	760546	Heat Sink (Power TR MTG) Cup 116x12x1.5T	1	
	760555	Heat Sink (Drive TR MTG) SPTE 23x18x0.3T	1	
	770196	Shield Case 7x7MM (Metal Case) No. 7	1	
	901828	Insulation Plate (X-Tal Filter) Fiber 10x4x0.25T	2	
	901837	Insulation Plate (X-Tal Filter) Fiber 7.8x3x0.25T	1	
	902140	Insulation Plate Fiber 6.2x5.6x0.25T CP-0520.21	2	
7	56101P-A	Packing Ass'y	1	
	4205115	Ni-Ca Battery 9N 450AR AA-368 (With Fuse)	1	
	503064	Wall Charger Ass'y (CA-1410) 120VAC/60Hz 11VDC/50MA	1	
	613299	(+) Machine Screw (B.H) M3x6 Ni Plating	2	
	721821	Belt Clip Plate SUS304 BLK 128x45x0.6T CP-220S	1	
	821540	Button (C.T.C.S.S. SW MTG) Noryl7229 or N190J7021	1	
	840880	Soft Leather Case (Ca-1430) Leather 1T 128x64x46	1	
	931915	Owner's Manual	1	
8	0091024	Resistor Carbon 1K ohm 1/4W +5% "S"	2	R35, 57

MAXON CP-0510/0511
CA-1475A Two Tone Sequential Decoder (continued)

THEORY OF OPERATION

IC1-A acts as an amplifier/limiter for audio input. IC1-B and IC-2 form a state variable active filter, with the band pass output delivered to IC3-A. IC3-A and B detects the tone and produces a high output on pin 14. If the tone is present for more than 7 seconds, C6 discharges through R20 raising the voltage on pin 2 above the reference voltage on pin 3 and decode occurs and is latched by D3. If the tone duration is less than 7 seconds, pin 14 goes low causing a negative going pulse at pin 9. This causes pin 8 to go high, turning Q_3 on, Q_1 off, Q_2 on, and tries to pull up pin 2 of IC-3 through D9. The circuit waits in this state until one of two things happens. If tone 2 is detected, pin 14 goes high removing forward bias on D4 allowing D9 to immediately pull up pin 2 of IC3, resulting in latched decode. If tone 2 is not detected, C7 will charge through R22 raising pin 9 higher than pin 10, turning Q_2 and Q_3 off and Q_1 on (looking for tone 1). Time duration is determined by C7 and R22 (for "A" model 330 ms for "B" 150 ms).

Once the decoder is latched it can be reset by grounding the monitor lead which forces IC-3 pin 2 low.

WIRING INSTRUCTIONS

1. Red to CT2.
2. Black to ground.
3. Green to CT6-CT7.
4. Orange to CT3.
5. White to CT4 (monitor pb). Remove any other wires to monitor pb.
6. Brown to squelch switch terminal closest to mic. If grounded, remove ground.

OPERATION: WITH SQUELCH CONTROL AT "TONE" POSITION

Turn on the radio. Noise should be heard. Push the monitor button and release—radio should quiet. The tone board is now reset. When the proper tones are received, the radio will unsquelch and the end of the second tone should be heard as the alert tone. If conversation is desired, rotate to carrier squelch. If carrier squelch is desired in conjunction with two-tone decoding, use alternate wiring scheme.

ALTERNATE WIRING FOR DUAL SQUELCH

If noise is objectionable after paging tones are received, disconnect brown wire from squelch switch. When the radio is turned on, rotate squelch knob to activate carrier squelch. To enable two-tone decoder, push reset. To return to carrier squelch only, turn the radio off, then on. If automatic disabling of the tone board with "push-to-talk" is desired, connect brown wire through an isolating diode to CT5 (cathode to CT5). Tapping P-T-T will now cause the radio to revert to carrier squelch.

ALIGNMENT PROCEDURE

(already installed in radio.)

1. Apply unmodulated carrier to quiet receiver.
2. Install test jumpers J1 and J2 on tone board.
3. Connect frequency counter to speaker wires.
4. Adjust R3 for tone 2 frequency.
5. Remove J2, hold in monitor button.
6. Adjust R2 for tone 1 frequency.
7. Remove J1. Tuning is complete.

Four variables are present in the two-tone sequential signaling format.

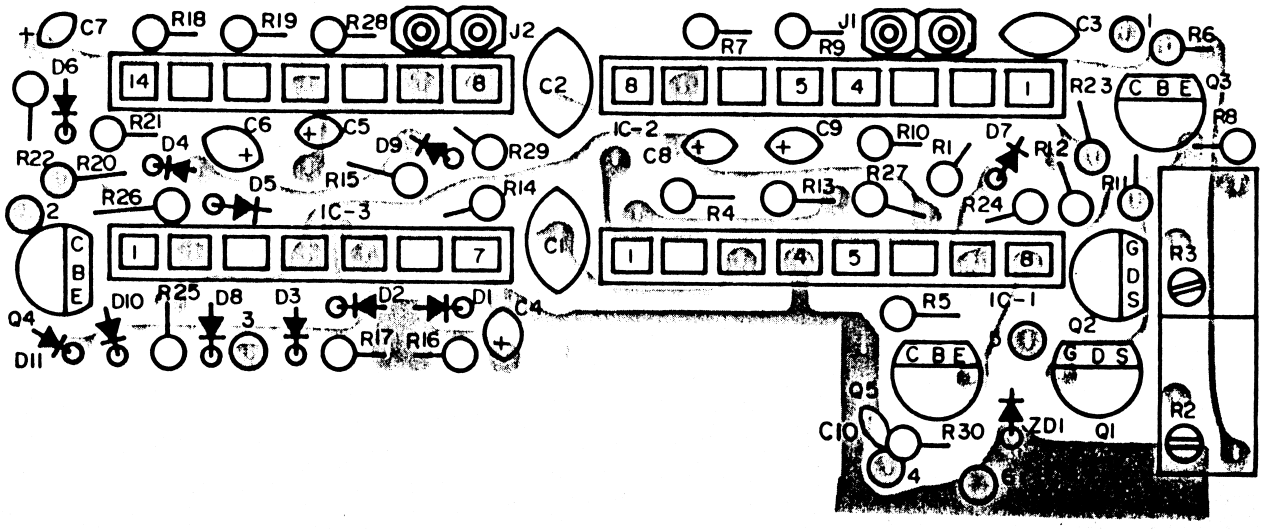
1. Tone frequency (typically from 300 Hz to 3,000 Hz).
2. First tone duration (typically 1 second or less).
3. Intertone duration or space (typically zero to 250 ms).
4. Second tone duration (typically 2 seconds or less).

Maxon uses a "state variable active filter" for tone recognition. Slight variations of the circuits are necessary to recognize different timing parameters and tone frequencies. Two standard versions are supplied:

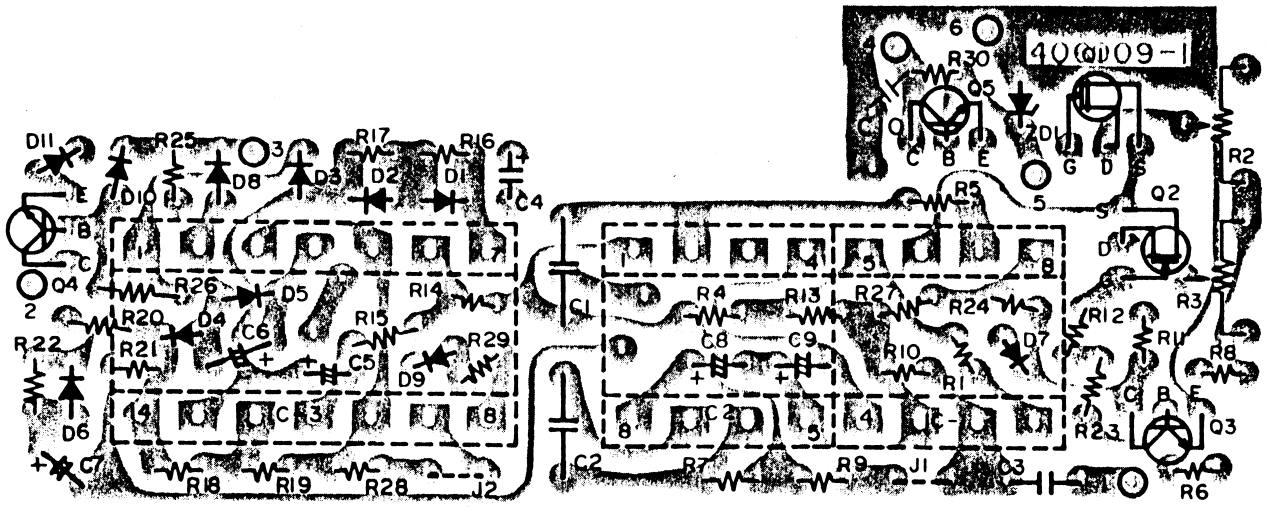
1. Slow: low frequencies (300-1,500 Hz) long duration ($\geq$250 ms).
2. Fast: high frequencies (800-3,000 Hz) short duration ($\geq$50 ms).

The above versions will accommodate most customer requirements.

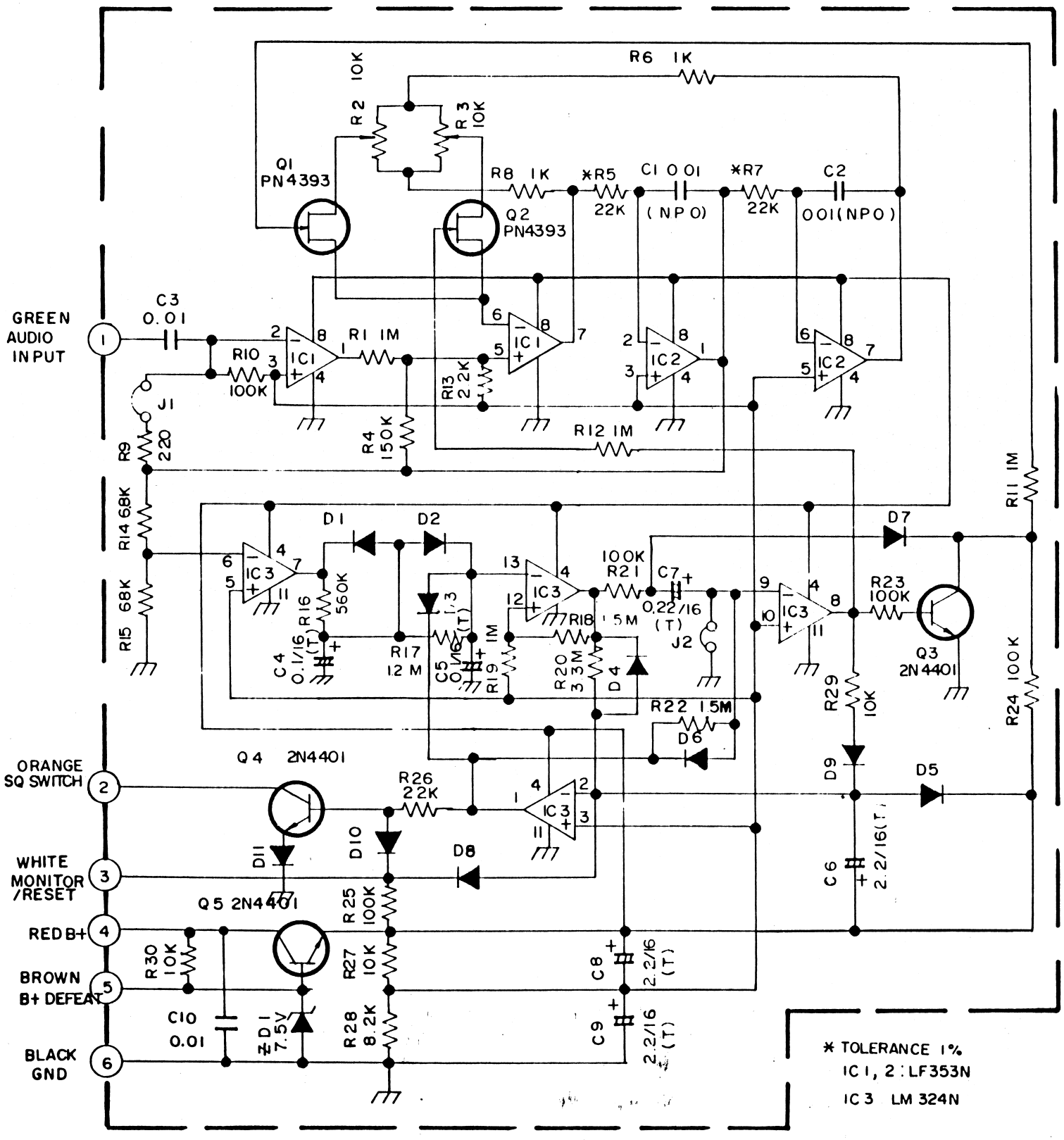
MAXON CP-0510/0511
CA-1475A Component Layout Top View



CA-1475A Component Layout Bottom View



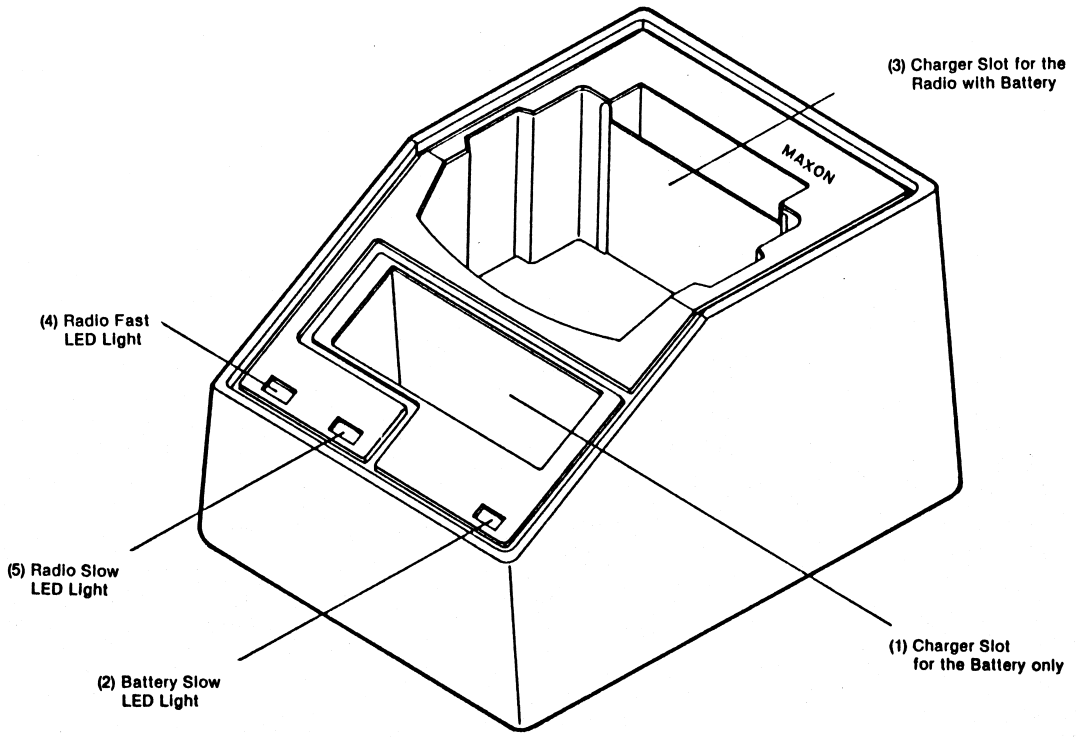
MAXON CP-0510/0511
CA-1475A SCHEMATIC DIAGRAM



MAXON CP-0510/0511
CA-1475A PARTS LIST

Seq.	Part-No.	Part Name & Description	Q'ty	Reference-No.
1	51918M-P	Main PCB Ass'y	1	
	0021029	Resistor Carbon Film 1K ohm 1/16W +5% "S"	2	R6, 8
	0021030	Resistor Carbon Film 10K ohm 1/16W +5% "S"	3	R27, 29, 30
	0021041	Resistor Carbon Film 100K ohm 1/16W +5% "S"	5	R10, 21, 23, 24, 25
	0021052	Resistor Carbon Film 1M ohm 1/16W +5% "S"	4	R1, 11, 12, 19
	0021250	Resistor Carbon Film 1.2M ohm 1/16W +5% "S"	1	R17
	0021546	Resistor Carbon Film 150K ohm 1/16W +5% "S"	1	R4
	0021557	Resistor Carbon Film 1.5M ohm 1/16W +5% "S"	2	R18, 22
	0022213	Resistor Carbon Film 220 ohm 1/16W +5% "S"	1	R9
	0022224	Resistor Carbon Film 2.2K ohm 1/16W +5% "S"	1	R13
	0022235	Resistor Carbon Film 22K ohm 1/16W +5% "S"	1	R26
	0025643	Resistor Carbon Film 560K ohm 1/16W +5% "S"	1	R16
	0026826	Resistor Carbon Film 6.8K ohm 1/16W +5% "S"	1	R14
	0026837	Resistor Carbon Film 68K ohm 1/16W +5% "S"	1	R15
	0028226	Resistor Carbon Film 8.2K ohm 1/16W +5% "S"	1	R28
	0043353	Resistor Carbon Film 3.3M ohm 1/8W +5% "S"	1	R20
	0062235	Resistor Carbon Film 22K ohm 1/8W +1% "F"	2	R5, 7
	1110076	Capacitor Mylar 0.01 F 25WV	1	C3
	1301106	Capacitor Ceramic 0.01μFZ 5& X7	1	C10
	1301195	Capacitor Ceramic 0.01μF RPE113COG103K	2	C1, 2
	1401011	Capacitor Tantalum 0.1μF 16WV DA1C0RIM	2	C4, 5
	1402018	Capacitor Tantalum 0.22μF 16WV	1	C7
	1422018	Capacitor Tantalum 2.2μF 16WV	3	C6, 8, 9
	2030216	Transistor 2N4401	3	Q3, 4, 5
	2110014	Fet PN4393	2	Q1, 2
	2230223	IC MC34002P (LF353N)	2	IC1, 2
	2310017	I.C LM324N	1	IC3
	2410153	Diode Zener BZ x83-C7V5	1	D1
	2430087	Diode 1N 4148	11	D1-11
	4060091	PCB Main –1/1 FR-4 SN/PB 55x22x0.8T	1	
	4215165	IC Socket IC30-0700-S4	2	
	4215187	IC Socket IC30-0800-S4	2	
	4215219	IC Socket Pic-FS22-T	2	
	4800145	Potentio Meter (Sqare) 10K (3266W-1-103)	2	R2, 3
2	51918P-A	Packing Ass'y	1	
	914330	Box Out DW1S 290(W)x130(D)x124(H)	0.01	
	914349	Box Inner SW1S 286(W)x126(D)x60(H)	0.02	
	920032	Poly Bag Accessory Vinyl 65x85x0.03T	1	
	920670	Bubble Pack Vinyl 250x56	1	
3	4272153	Wire 1007 AWG 28 (7/0.12) BLK	0.25	
4	4272164	Wire 1007 AWG 28 (7/01.2) BRN	0.25	
5	4272175	Wire 1007 AWG 29 (7/0.12) RED	0.25	
6	4272186	Wire 1007 AWG 28 (7/0.12) ORG	0.35	
7	4272207	Wire 1007 AWG 28 (7/0.12) GRN	0.25	
8	4272241	Wire 1007 AWG 28 (7/0.12) WHT	0.25	
9	966016	Solder Rosin Core Wire 60:40 0.01"-0.05"	20	
10	966098	Flux Thinner For T.M.C.	15	

CA-1110 Battery Charger



(1) Battery Charging Slot: This slot is provided so that a battery may be charged independently. Dual positive contacts are wired so that positioning of the battery is not relevant.
(2) Slow LED light: will be illuminated as long as a battery is positioned in the Battery Charging Slot.
(3) Radio Charging Slot: For insertion of a Maxon CP-0510 or CP-0520 radio, without case, but with a battery inside.
(4) Fast Radio LED light: Illuminated when a Maxon radio with battery is inserted into the Radio Charging Slot. Remains "ON" for the initial 3-hour charging period and extinguishes automatically at the end of that period.
(5) Slow Radio LED light: Remains illuminated for the second 3-hour slow charging period, extinguishing itself automatically at the end of six hours. This LED remains dark, however the charging process continues indefinitely at a 10mA rate.

—Caution—

Never insert a radio into the charger without a battery. The higher voltage of the charger can damage the circuitry of the radio.

Operation

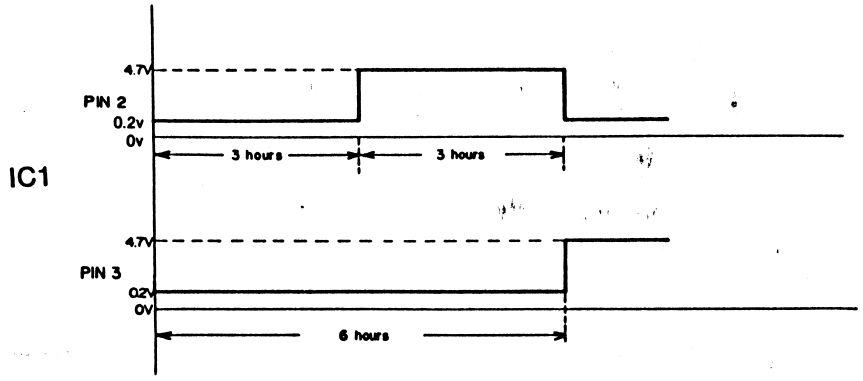
1) Radio with battery
   With a battery inside the radio, insert the radio into the Radio Charge Slot. The Radio Fast LED will illuminate and the battery will commence charging at a rapid rate for approximately 3 hours. At the end of the 3-hour period, the battery will have reached approximately 85% of full charge and the charger will switch automatically to the slow rate. At this point, the fast LED will go out and the slow LED will glow. After a 3-hour period at the slow charge rate the charger will automatically switch to a trickle rate and the slow LED will go out.
   The trickle rate will maintain the battery at full charge, provided the radio is turned off.
2) Battery only
   Insert a Maxon CA-1450 (or equivalent) battery into the Battery Charge Slot, contacts down. Dual positive contacts are provided so that battery polarity will be correct regardless of battery orientation.
   After approximately 14 hours the battery will be fully charged. The Battery Slow LED will remain illuminated as long as the battery remains in the charger. Prolonged charging in this mode will not cause battery damage. The battery in a radio and a battery in the Battery Charger Slot can be charged simultaneously without degradation of charger performance.

Theory of Operation

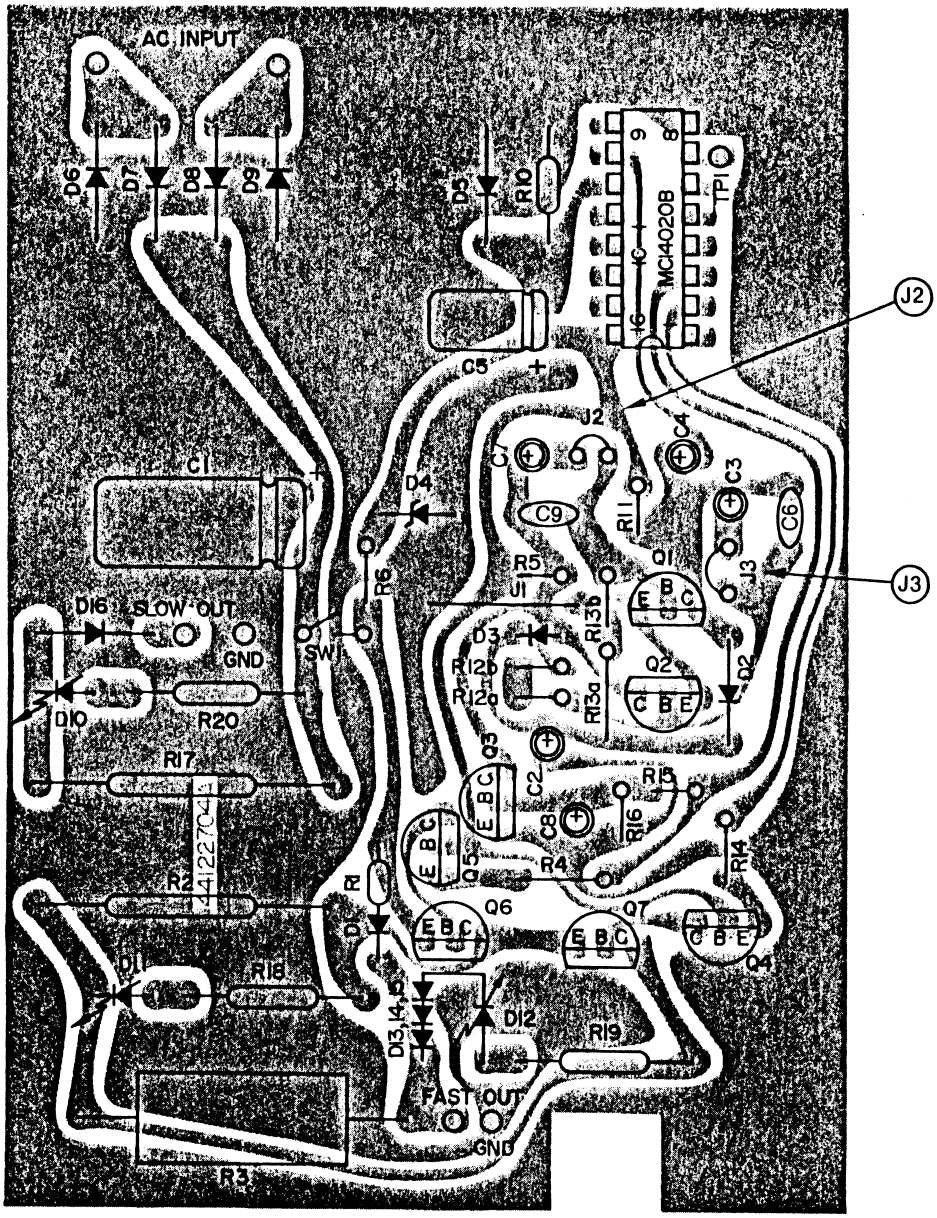
The CA-1110 Charger is designed for use on 120VAC or 240VAC (both nominal). It is shipped set up for 120VAC operation unless 240VAC operation is specified. To convert from 120VAC to 240VAC operation in the field, simply remove the 150 mA fuse from the internal fuse holder and install a 100 mA fuse in the 240VAC position.
When a battery is inserted into the Battery Charge Slot the battery will be charged at a 50 mA rate for 14 hours, through R17 and D16. During this period the Battery Slow LED will remain on. When SW1 is in the "ON" position (this occurs automatically when a radio with battery is in the radio Charging Slot), Q6 and Q7 will be turned on for the initial 3-hour charging period.
During this period the total charger current is 150 mA, 140 mA of which flows through Q6, Q7 and R3 and the remaining 10 mA flows through R1 and D1. The Radio Fast LED D12 will remain illuminated and the battery will reach approximately 85% of full charge at the end of 3 hours. At this point, Q7 will be switched off by Q4 because of a high level on pin 2 of IC1. Q6, however, will remain switched on by a low level on pin 3 of IC1. During this second 3-hour period the total charger current is 50 mA, 40 mA flowing through Q6, R2 and R3 and the remaining 10 mA via R1.
After a total charging time of 6 hours, Q7 is again turned on by a low from pin 2 of IC1 and Q6 is turned off by a high from pin 3 of IC1, thus no current can flow through the Q6/Q7 path because Q6 is an open circuit. The only current still flowing to the battery is 10 mA through R1. Also, at the end of the 6-hour period pin 3 of IC1 goes high causing Q3 to conduct, which in turn prevents Q1 and Q2 (forming a 0.727 Hz multivibrator) from oscillating.

For test purposes, J2 and J3 can be cut to decrease the cycle time to about 2 seconds. Be sure to reconnect both jumpers to restore normal cycling time.

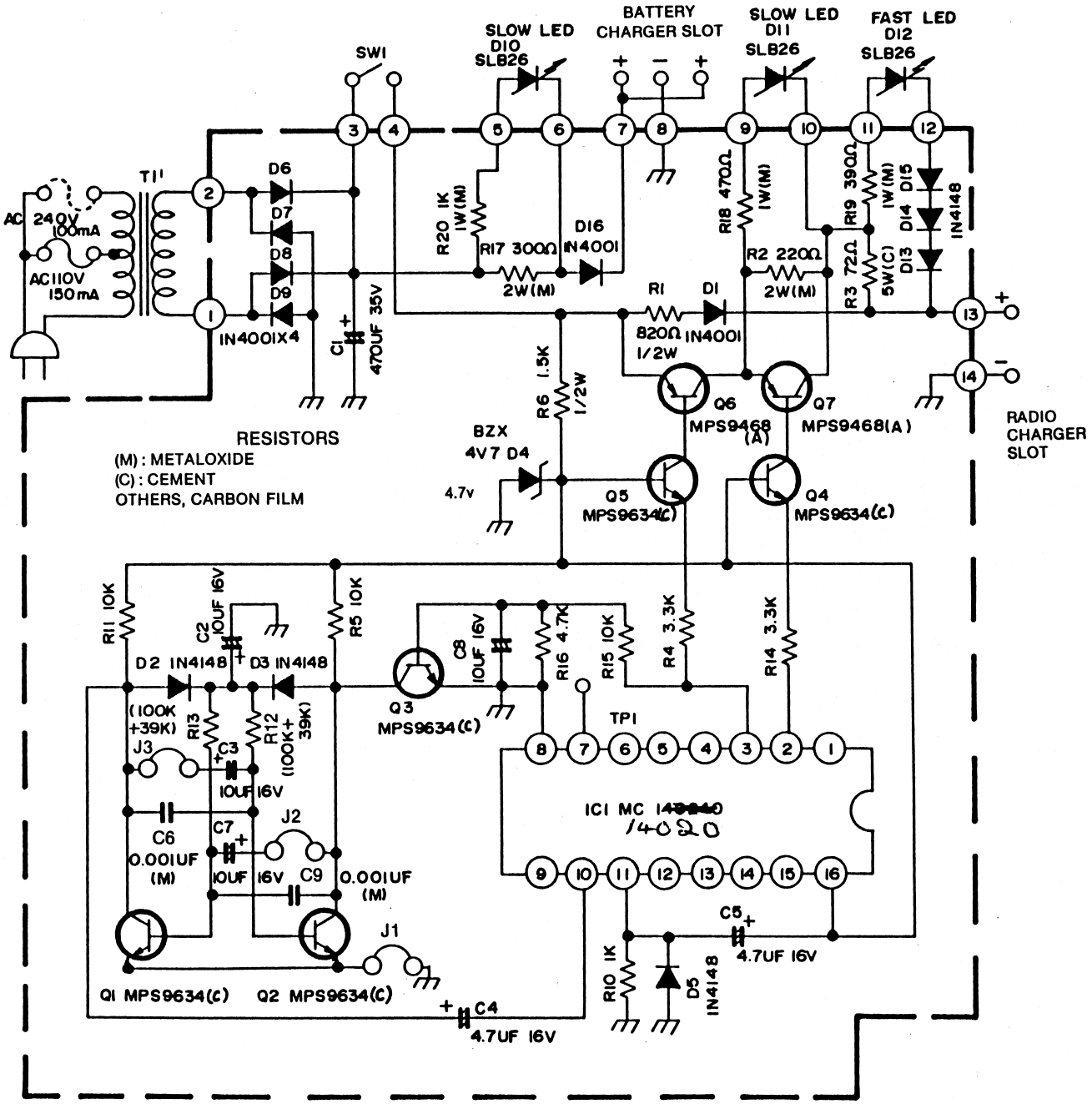
TP1 (pin 7 of IC1) can be checked for high-low switching every 22 seconds in the normal mode.
R10 and D5 ensure fast turn-on of the Q1/Q2 multivibrator circuit. Q3 is a switch for the multivibrator. D6, D7, D8 and D9 form a bridge rectifier with an output voltage of 20 VDC. Zener D4 provides a regulated 4.7 volts for the multivibrator and counter (IC1) circuitry.



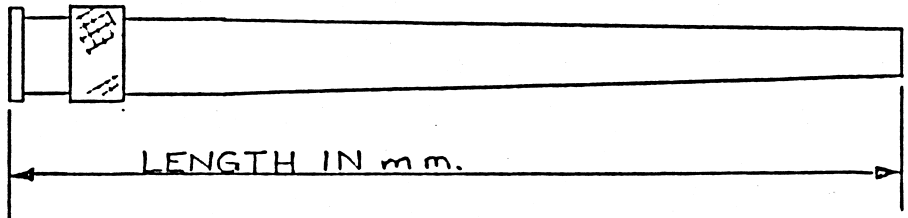
Top View


AC INPUT
D6
D7
D8
D9
D5
R10
MC14020B
TP1
J2
C5
C4
C1
D4
C9
R11
C3
C6
R5
J1
Q1
J3
R6
SW1
D16
SLOW OUT
GND
R13b
D3
R12b
R12a
R13a
Q2
D2
D10
R20
C2
Q3
R15
R17
C8
R16
Q5
R4
R14
R2
R1
Q6
Q7
Q4
D1
R18
D12
R19
D13,14,15
FAST OUT
GND
R3

Schematic Diagram



ZSPHBNC ANTENNA CUTTING CHART



MEASURED FROM FACE OF BNC CONNECTOR TO ANTENNA TIP

– CAP NOT FITTED

LENGTH (m m.) V.H.F.

180
170
160
150
140
130
125

140 145 150 155 160 165 170 175 180

FREQ. (MHz.) V. H.F.

LENGTH (mm) U.H.F

66
65
64
63
62
61
60
59

400 410 420 430 440 450 460 470

FREQ. (MHz.) U.H.F.

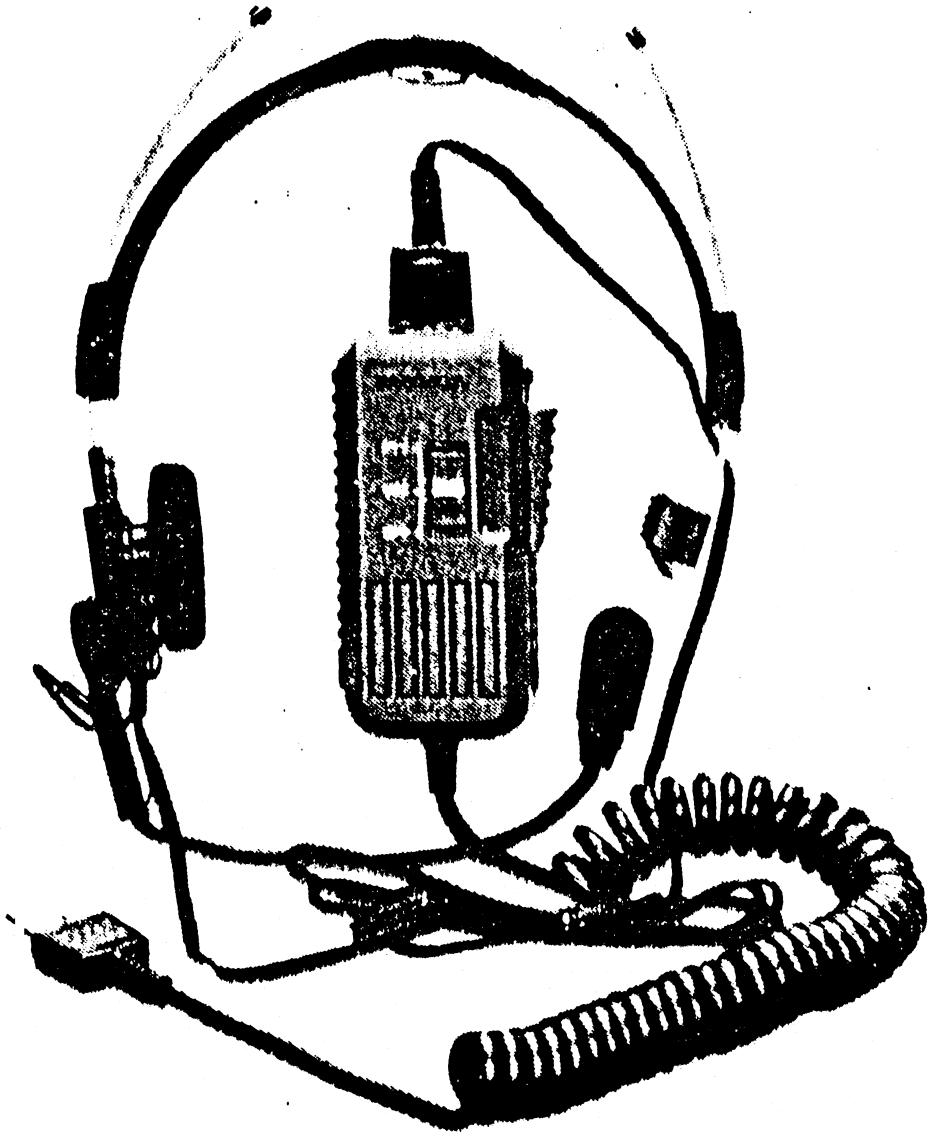
cm.mål.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

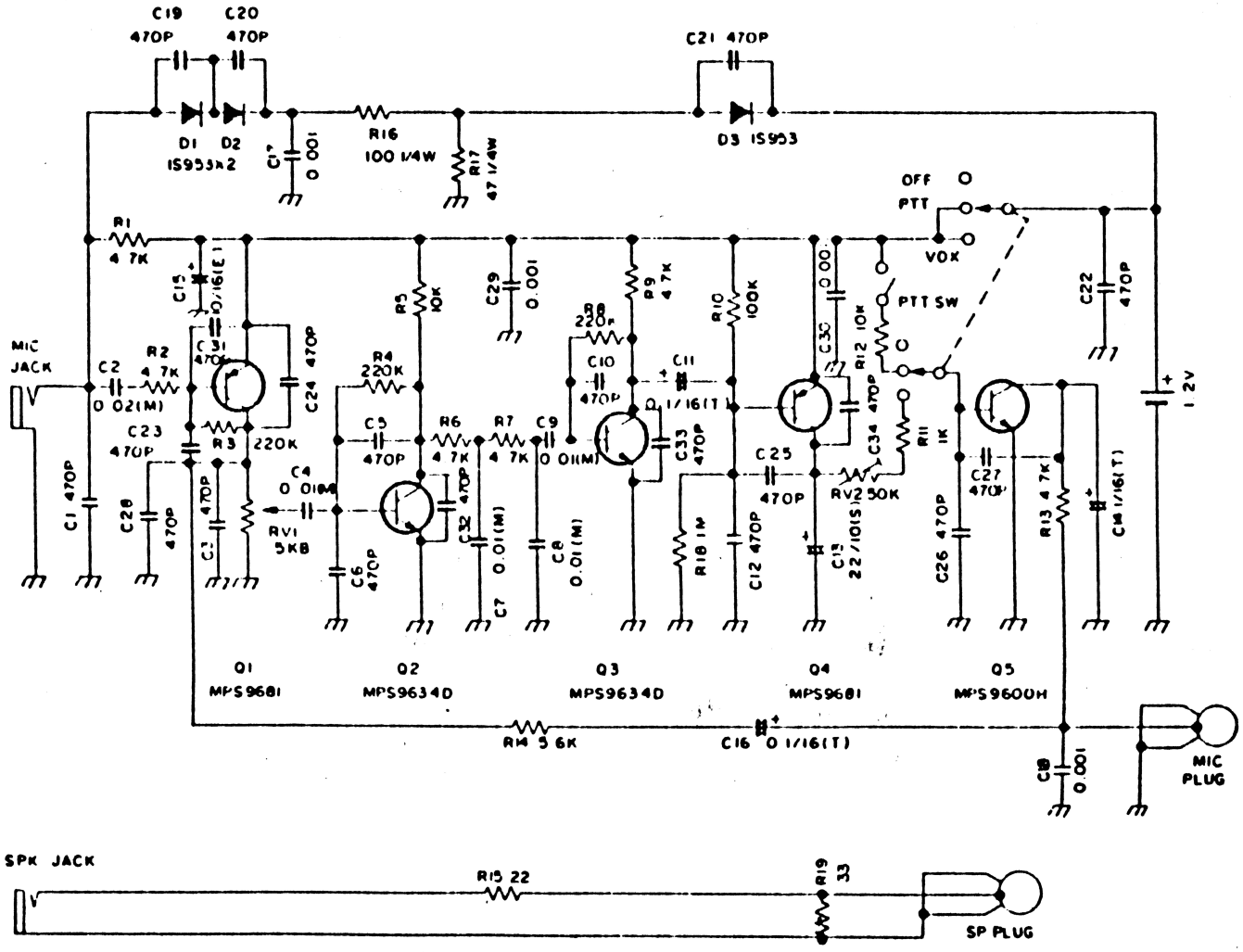
MAXON EUROPE 8-5-85

maxon

Model CA-1480



Voice Operated/PTT Mini-Vox


C19 470P
C20 470P
C21 470P
D1 D2 1S953x2
D3 1S953
C14 0.001
R16 100 1/4W
R17 47 1/4W
OFF
PTT
VOX
PTT SW
R1 4.7K
C15 0.1/16(T)
C31 470P
R5 10K
C29 0.001
R8 220P
R9 4.7K
R10 100K
C30 0.001
R12 10K
C22 470P
MIC JACK
C2 0.02(M)
R2 4.7K
C24 470P
R4 220K
C10 470P
C11 0.1/16(T)
C34 470P
R11 1K
1.2V
C23 470P
R3 220K
C5 470P
R6 4.7K
R7 4.7K
C9 0.01(M)
C33 470P
C25 470P
RV2 50K
C1 470P
C28 470P
C4 0.01(M)
RV1 5KB
C32 470P
C7 0.01(M)
C8 0.01(M)
R18 1M
C12 470P
C13 22/10(S)
C26 470P
C27 470P
R13 4.7K
C18 0.1/16(T)
C6 470P
Q1 MPS9681
Q2 MPS9634D
Q3 MPS9634D
Q4 MPS9681
Q5 MPS9600H
R14 5.6K
C16 0.1/16(T)
C17 0.001
MIC PLUG
SPK JACK
R15 22
R19 33
SP PLUG

GENERAL

Your Maxon Voice Operated/PTT headset is the latest innovation in micro-circuitry design, and is ideally suited for any low-to-moderate noise industry environment. The unit is especially designed for Maxon's "C" Series 5-watt business radios and permits either "hands free"voice transmission, or conventional push-to-talk operation. Take a few minutes to become familiar with the operating features of your Maxon headset.

NOTE: FOR MAXIMUM PERFORMANCE CHARGE BATTERY BEFORE USING.

SPECFICATIONS

Power Source	270 mAH, 1.2V Nicad battery
Battery Life	7-14 days (typical)
Standby Current	.5 mA
VOX Current Drain	.75 mA
Charge Rate with CA-1410	25 mA
VOX Sensitivity (Max.)	2 mV
Delay Range	250 ms to 1.5 sec.
Distortion (1 KHz, 6 mV)	Less than 3%
Operating Temperature	- 30° to 60°C

Nominal specfications subject to change without notice.

Show line drawing of headset, vox control unit and "C" series radio. Show plugs "poised" above jacks on control unit and radio.

CONNECTION

Insert the headset cord plug in the VOX control unit jack as shown in the illustration. Next, insert the control unit cord plug in the "C" series radio jack.

VOICE OPERATION

1. Turn your "C" series radio on.
2. Ajust the radio's squelch and volume controls to a comfortable listening level.
3. Move the VOX-PTT-OFF switch on the VOX control unit to the "VOX" position.
4. Adjust the headset so that it is comfortable, and position the boom microphone approximately one inch from your mouth.
5. Speak in a normal conversational voice. You should be able to be heard clearly by a companion radio user.

VOX DELAY & SENSITIVITY ADJUSTMENTS

Both adjustments are pre-set by the factory for a low ambient noise environment and a normal ¼ second VOX delay. If more adjustment is required, the controls are located behind the belt clip on the back of the VOX control unit.

To remove the belt clip, depress the small release button at the top of the metal slide and push the clip down.

Adjustments are made by inserting a small screwdriver blade through the access holes.

PUSH TO TALK OPERATION

Move the VOX-PTT-OFF switch on the VOX control unit to the "PTT" position.

To transmit, depress and hold down the push-to talk bar on the side of the control unit. Release the bar when transmission is complete.

LOCKING P-T-T DEFEAT

Should you wish to "lock" the push-to-talk bar in place you must first remove the rubber blocking plug inside of the VOX control unit. Remove the two screws on the back of the control unit and lift the back off. Remove the rubber plug blocking the P-T-T bar lever and replace the back of the control unit. To lock the push-to-talk bar, in place push the bar in and upward until it catches. To release, simply slide the bar down.

CHARGING BATTERY

To charge the VOX control unit battery remove the plug from the jack on top of the unit, and the control unit cord from the radio. Insert the CA-1410 wall charger plug into the smaller jack on top of the VOX control unit. Connect the charger to a 120-volt AC outlet. An overnight charge should provide 7 to 14 days of normal use.