

PALOMAR 553 500

specifications

GENERAL

Channels	: 40 – AM/Single Sideband
Frequency Range	: 26.965 to 27.405 MHz
Frequency Control	: Phaselock Synthesizer
Frequency Tolerance	: $\pm 0.005\%$
Frequency Stability	: $\pm 0.002\%$
Operating Temperature Range	: -30°C to $+50^{\circ}\text{C}$
Microphone	: Plug-in type dynamic with volume control
Input Voltage	: 13.8V DC (Positive or Negative ground)
Current Drain	: Receive 1.5A at maximum audio output 0.5A standby (no signal).
Size	: 10 - 6/10" L. $\times$ 8" W. $\times$ 2-1/2" H.
Weight	: 6 lbs.
Antenna Connector	: Standard American type
Semiconductors	: 41 Transistors, 7 FETS, 60 Diodes, 7 ICs
Meter	: Illuminated, indicates relative power output and received signal strength
Power Bandwidth	: 10.5 to 16V

TRANSMITTER

Power	: 4 Watts – AM (max. allowed by FCC) 12 Watts PEP-SSB (max. allowed by FCC)
Modulation	: High and low level Class B amplitude modulation (AM)
Modulation Capability	: 95% Typical (AM)
Harmonic Suppression and Spurious Emmissions	: Better than FCC requirement

Frequency Response	: 400 Hz to 2.5 kHz – AM and SSB
Output Impedance	: 50 Ohms, unbalanced
Output Indicators	: Meter shows relative RF output power, Tx red lamp indicates transmit mode.

RECEIVER

Sensitivity – AM	: .7 μ V for 10 db S/N
Sensitivity – SSB	: .25 μ V for 10 db S/N
Selectivity	: 6 db at 4.2 kHz 60 db at 7 kHz (AM and SSB)
Image Rejection	: More than 50 db
Automatic Gain Control (AGC)	: Change in audio output less than 10 db from 10 μ V to .5 volts
Squelch	: Adjustable – threshold less than .5 μ V
Audio Frequency Response	: 400Hz to 2.5 kHz
Distortion	: Less than 10% at 3.0 watts output
Adjacent Channel Rejection	: AM: -60 db, SSB: -65db
Cross Modulation	: More than 55 db
IF Frequency	: AM and SSB, 7.8 MHz
Clarifier	: $\pm$ 1 kHz
Noise Blanker	: RF type, effective on AM and SSB
Audio Output Power	: More than 3 watts into 8 ohms
Built-in Speaker	: 8 ohms, dynamic
External Speaker (optional)	: Disables internal speaker when connected

PUBLIC ADDRESS (PA) SYSTEM

Power Output	: 3 watts into external speaker
External Speaker for PA (optional)	: When PA switch is in PA mode, the unit functions as a public address system.

PALOMAR SSB 500 instruction manual

introduction

The PALOMAR SSB-500 has been designed to provide a high level, trouble-free performance of both AM and SSB modes in the Citizens Band Service which is comprised of the following frequency assignments:

CHANNEL	CHANNEL FREQUENCY [MHZ]	CHANNEL	CHANNEL FREQUENCY [MHZ]
1	26.965	21	27.215
2	26.975	22	27.225
3	26.985	23	27.255
4	27.005	24	27.235
5	27.015	25	27.245
6	27.025	26	27.265
7	27.035	27	27.275
8	27.055	28	27.285
9	27.065 - Emergency	29	27.295
10	27.075	30	27.305
11	27.085	31	27.315
12	27.105	32	27.325
13	27.115	33	27.335
14	27.125	34	27.345
15	27.135	35	27.355
16	27.155	36	27.365
17	27.165	37	27.375
18	27.175	38	27.385
19	27.185	39	27.395
20	27.205	40	27.405

To insure that you obtain the maximum performance from your PALOMAR SSB-500, please read carefully the following control descriptions and operating instructions.

NOTE: This transceiver has been designed for use in Class D operation in the 27 MHz Citizens Band Radio Service. This transceiver is also designed to meet the Federal Communications Commission requirements applicable to equipment operating in Class D service, and is not to be used for any other purpose. Part 95 and Part 15, Sub-part C of the FCC Regulations define operation in this service. You are required to read and understand these Regulations prior to operating this equipment.

A copy of Part 95 of the FCC Rules and Regulations is furnished with your transceiver. (It is also available from the U.S. Government Printing Office, Washington DC., 20402.)

Complete FCC Forms 505 and 555-B which accompany this manual.

You are also required to submit a complete copy of FCC Form 505 prior to operating this transceiver on the air.

It is the user's responsibility to see that this unit is operated at all times in accordance with the FCC Citizens Radio Service regulations.

WARNING: Transmitter section adjustments must be performed only by a qualified technician holding a valid first or second class FCC Radiotelephone License.

section I

installation

Location

Plan the location of the transceiver and microphone bracket before starting the installation. Select a location that is convenient for operation and does not interfere with the driver or passengers in the vehicle. In automobiles, the transceiver is usually mounted to the underneath of the dash panel, with the microphone bracket beside it or directly on the unit.

Mounting and Connection

The PALOMAR SSB-500 is supplied with a universal mounting bracket. The transceiver is held in the bracket by four bolts permitting adjustment at the most convenient angle.

The bracket must be mounted with the machine screws supplied. The mounting must be mechanically strong and also provide a good electrical connection to the chassis of the vehicle. Proceed as follows to mount the SSB-500.

1. After you have determined the most convenient location in your vehicle, hold the PALOMAR SSB-500 with mounting bracket in the exact location desired. If nothing will interfere with mounting it in the desired position, remove the bracket and use it as a template to mark the location for the mounting bolts. Before drilling the holes, make sure nothing will interfere with the installation of the mounting bolts.
2. Connect the antenna cable plug to the standard receptacle on the rear panel. Most CB antennas are terminated with a type PL-259 plug and mate with the receptacle.
3. Connect the power cord plug to the DC power socket on the rear panel of the unit. If you are installing the transceiver in an automobile built in the U.S.A. after 1966, or if you are certain that your vehicle has a Negative Ground System, follow these instructions:
 - A. Connect the DC power input wire with the fuse to +12V DC. In an automobile installation, +12V DC is usually obtained from the accessory contact on the ignition switch. This prevents the set being left on accidentally when the driver leaves the car and also permits operating the unit without

- the engine running. Locate the accessory contact on most ignition switches by tracing the power wire from the AM broadcast receiver in the car.
- B. Connect the black lead to - 12V DC. This is usually the chassis of the car. Any convenient location with good electrical contact (remove paint) may be used.
4. Follow the instructions below if you are certain that your vehicle has a Positive Ground System.
- A. Connect the positive (red) wire to a screw bolt on the metal frame supporting the instrument panel, or to any metal point that is part of the vehicle's metal structure. (Remove any paint or coating to ensure good electrical contact).
- B. Connect black negative lead to - 12V DC. Usually, - 12V is obtained from the accessory contact on the ignition switch or directly on the minus battery terminal.
5. Mount the microphone bracket on the right side of the transceiver or near the transceiver, using four screws supplied. When mounting in an automobile, place the bracket under the dash so the microphone is readily accessible.

Ignition Noise Interference

Use of a Mobile transceiver at low signal level is normally limited by the presence of noise. The primary source of noise in automobile installation is from the generator and ignition system in the vehicle. Under most operating conditions, when signal level is adequate, the background noise does not present a serious problem. Also, when extremely low level signals are being received, the transceiver may be operated with vehicle engine turned off. The unit requires very little current and therefore will not significantly discharge the vehicle battery.

Even though the PALOMAR SSB-500 has a selectable automatic noise limiter, in some installations ignition interference may be high enough to make good communications impossible. The electrical noise may come from several sources. Many possibilities exist and variations between vehicles requires different solutions to reduce the noise. Consult with your PALOMAR dealer or a CB Radio technician for help in locating and correcting the source of severe noise.

Antenna

Since the maximum allowable power output of the transceiver is limited by the FCC, the antenna is one important factor affecting transmission distance. Only a properly matched antenna system will allow maximum power transfer

from the 50 ohms transmission line to the radiating element. In mobile installations (cars, trucks, boats, etc.), an antenna system that is non-directional should be used.

A vertically polarized quarter-wave length whip antenna provides the most reliable operation and greatest range. The shorter, loaded type whip antennas are more attractive, compact and adequate for applications where the maximum possible distance is not required. Also the loaded whips do not present the problems of height imposed by the full quarter wave length whip.

Mobile whip antennas utilize the metal body of the vehicle as a ground plane. When mounted at a corner of the vehicle they are slightly directional, in the direction of the body of the vehicle. For all practical purposes, however, the radiation pattern is non-directional. The slight directional characteristic will be observed only at extreme distances. A standard antenna connector (type SO-239) is provided on the transceiver for easy connection to a standard PL-259 cable termination.

If the transceiver is not mounted on a metal surface, it is necessary to run a separate ground wire from the unit to a good metal electrical ground in the vehicle. When installed in a boat, the transceiver will not operate at maximum efficiency without a ground plane, unless the vessel has a steel hull.

Before installing the transceiver in a boat, consult your dealer for information regarding an adequate grounding system and prevention of electrolysis between fittings in the hull and water.

Remote Speaker

The external speaker jack (EXT. SP) on the rear panel is used for remote receiver monitoring. The external speaker should have 8 ohms impedance and be able to handle at least 3 Watts. When the external speaker is plugged in, the internal (built-in) speaker is disconnected.

Public Address

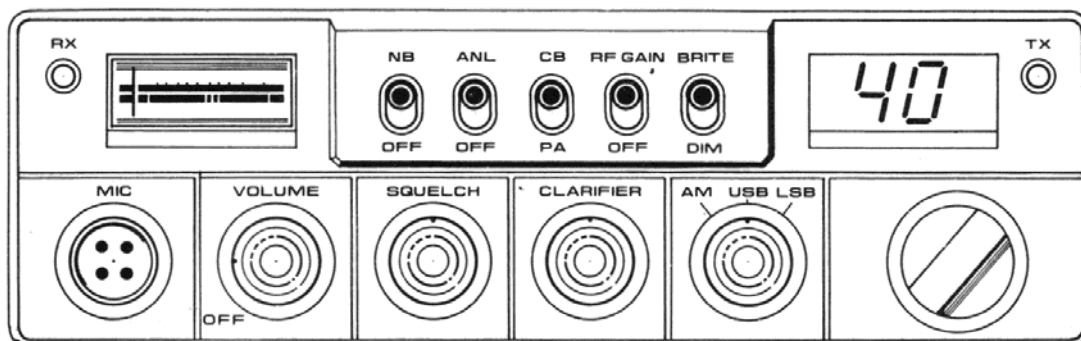
An external 8 ohms, 3 Watts speaker must be connected to the Public Address speaker jack (PA SP) on the rear panel when the transceiver is used as a Public Address system. The speaker should be directed away from the microphone to prevent acoustic feedback. Physical separation or isolation of the microphone and speaker is important when operating the PA at high output levels.

section II

operation

CONTROLS AND INDICATORS

There are ten controls and four indicators on the front panel of your PALOMAR SSB-500.



A.CONTROL FUNCTIONS

1. **OFF/ON VOLUME:** Turn clockwise to apply power to the unit and to set the desired listening level.
2. **SQUELCH:** This control is used to cut off or eliminate receiver background noise in the absence of an incoming signal. For maximum receiver sensitivity it is desired that the control be adjusted only to the point where the receiver background noise or ambient background noise is eliminated. Turn fully counterclockwise then slowly clockwise until the receiver noise disappears. Any signals to be received must now be slightly stronger than the average received noise. Further clockwise rotation will increase the threshold level which a signal must overcome in order to be heard. Only strong signals will be heard at a maximum clockwise setting.
3. **CHANNEL SELECTOR:** This switch selects any one of the 40 channels designated as Citizens Band channels desired. The selected channel is indicated digitally in the Channel Indicator LED (Light Emitting Diode) read-out provided above the Channel Selector switch.

Channel 9 has been reserved by the FCC for emergency communications involving the immediate safety of life of individuals or immediate protection of property. Channel 9 may also be used to render assistance to a Mortarist.

4. **LSB-USB-AM MODE SWITCH:** Selects mode of operation – Lower Sideband, Upper Sideband or standard AM.
5. **NB-OFF SWITCH:** “NB” position selects special RF noise reduction circuit (Noise Blanker) to combat ignition noise.
6. **ANL-OFF SWITCH:** In the ANL position, the Automatic Noise Limiter circuit is activated.
7. **CB-PA SWITCH:** Selects the mode of operation. The PA function should not be used unless an external speaker is connected as described in Section I, Installation Section. In the CB position, the PA function is disabled and the unit will transmit and received on the selected frequency.
8. **RF GAIN-OFF SWITCH:** Place this switch in RF GAIN position when usual operation or receiving weak station. Place this switch in OFF position for strong station.
9. **BRITE-DIM SWITCH:** Controls the brightness of the LED channel indicator for optimum intensity. In the BRITE position for day driving and in DIM position for night time driving.
10. **CLARIFIER:** This control permits slight adjustment of receiver tuning. Used for clarity on SSB reception and fine tuning of stations on AM reception.

B. INDICATOR FUNCTIONS

1. **SIGNAL STRENGTH/POWER OUTPUT METER:** Shows relative incoming signal strength when receiving and relative transmit power when transmitting.
2. **TX (TRANSMIT) LAMP:** This lamp will illuminate during transmit mode of operation.
3. **RX (RECEIVE) LAMP:** This lamp will illuminate during receive mode or PA mode of operation.
4. **CHANNEL INDICATOR:** This is an LED (Light Emitting Diode) which shows the channel selected by Channel Selector switch.

C. PUSH-TO-TALK MICROPHONE WITH REMOTE VOLUME GAIN

The receiver and transmitter are controlled by the Push-to-Talk switch on the microphone. Press the switch and the transmitter is activated; release switch to receive. When transmitting, hold the microphone two inches from the mouth and speak clearly in a normal voice. Rotate the remote volume – gain knob on microphone to increase or decrease your modulation level. The radio comes complete with the low impedance dynamic microphone (supplied).

D. OPERATING PROCEDURE TO RECEIVE:

1. Rotate the Squelch Control to the fully counter clockwise position initially.
2. Set the CB-PA Switch to the CB position.
3. Set the Clarifier Control to the center (12 o'clock) position.
4. Set the LSB-USB-AM Switch to either AM for standard AM reception or LSB or USB, depending on whether signal to be received is on the Upper or Lower sideband.
5. Set the NB-OFF switch in the OFF position initially.
6. Select desired channel (1 – 40) by rotating the Channel Selector switch to the desired position.
7. Rotate the Volume Control with Power Switch clockwise to apply power to the transceiver. Since the transceiver is fully transistorized, operation will be instantaneous. Continue rotating the Volume control clockwise to provide a comfortable listening level.
8. If necessary, adjust RF GAIN-OFF and ANL switches for clearer reception.

E. OPERATING PROCEDURE TO TRANSMIT ON AM AND SSB:

WARNING: NEVER ATTEMPT TO TRANSMIT WITHOUT AN ANTENNA OR DUMMY LOAD CONNECTED TO THE TRANSCEIVER.

Before operating the transceiver, the followings **MUST** be done:

1. Valid Class D Citizens Band equipment license shall be posted at the main control (fixed) station location.

NOTE: Operation under a Temporary Permit, FCC Form 555-B, which is furnished with your SSB-500, is permissible while your regular license application is being processed by the FCC.

2. A properly filled out and signed identification card, FCC Form 452-C which is also furnished with SSB-500 , must be affixed to all units.
3. Part 95 of the FCC Rules and Regulations, which is furnished with your SSB-500 , must be read and understood.

Transmitting with this unit on any of the 40 CB channels requires no unusual procedures except that you must first select one of three modes of operation possible, AM, USB or LSB.

If you are attempting to communicate with a station having a similar transceiver to yours, SSB-500 , you can make initial contact on AM and then arrange to conduct subsequent communications in one of the sideband modes, either USB or LSB. Of course, if the other station is only capable of AM reception, you will also have to transmit in the AM mode.

After you have selected the desired mode of operation by means of the LSB-USB-AM selector switch, simply press the Push-to-Talk Switch on the Microphone to transmit.

Hold the Microphone 3 to 4 inches from your mouth and slightly to one side so that the voice does not project directly into the Microphone (this provides best results). Speak at a normal level — there is no need to raise your voice or shout into the Microphone.

During periods of transmission, the receiver is silenced and reception is therefore impossible. In the same way, your signal cannot be heard by another station when he is transmitting — each must take turns. To receive again, simply release the Microphone Push-to-Talk Button.

section III

maintenance and adjustment

The transceiver is specifically designed for the environment encountered in Mobile installations. The use of all solid state circuitry and its light weight result in high reliability. Should a failure occur, however, replace parts only with identical parts. Do not substitute. Refer to the schematic diagram and parts list.

WARNING

Federal law requires that adjustment of the radio frequency section of this transceiver may not be made by a citizens band operator. Only a United States licensed first or second class commercial license holder may tune the transmitter section of this transceiver, FCC Part 95D, Section 95.97d.

ADJUSTMENT

The transceiver is factory aligned and should not require any adjustments when used with a 50 ohm antenna.

If an antenna other than 50 ohms impedance is used, adjustment of the transmitter output circuit may be made to obtain optimum power transfer to the antenna. This adjustment should be made only by a qualified personnel using a high quality in-line RF watt meter which will not produce standing waves when inserted in the antenna cable.

NOTE: If the performance described in the OPERATION and MAINTENANCE AND ADJUSTMENT sections is not obtained, review the operating instructions to insure that proper procedures were followed. If a problem still exists, refer to WARRANTY SERVICE INSTRUCTIONS on the last page of this instruction manual.

PARTS LIST

Symbol No	Description	Part No.	Symbol No.	Description	Part No.
S-408	Rotary SW	1		Mounting Screw	61
S-402	Rotary SW	2		Instruction Manual	62
S-401	Slide SW	3		FCC Form 505	63
S-403	Slide SW	4		FCC Form 555-B	64
S-404	Slide SW	5		FCC Form 452-C	65
S-405	Slide SW	6		FCC Form 76K	66
S-407	Slide SW	7		FCC Rules Part 95	67
VR-405/	V. R. 10KA	8	IC1	IC TA 7061 AP	68
S-406			IC2	IC MC 1496A	69
VR-404	V. R. 100K B	10	IC3	IC μ PC 592Hz	70
VR-401	V. R. 20K B	11	IC4	IC μ PC 1156H	71
J-401	ANT Connector	12	IC5	IC TA 7310P	72
J-403	3P Jack	13	IC6	IC MC 78L05ACP	73
J-404	3P Jack	14	IC7	IC MC 145106P	74
J-407	DC Jack	15	TR1	2SC 710C	75
J-402	Mic Connector	16	TR2	2SA 628D	76
SP-401	Speaker 8 Ω	17	TR3	2SC 710C	77
M-401	Meter 200 μ A	18	TR4	2SC 710C	78
D-65	LED Red 5 ϕ	19	TR5	2SC 1730L	79
D-66	LED Green 5 ϕ	20	TR6	2SC 710C	80
	Power Cord Ass'y	21	TR7	2SC 710C	81
	Ass'y Wire Kit	22	TR8	2SC 710C	82
	P. C. B. (MAIN)	23	TR9	2SC 710D	83
	P. C. B (A)	24	TR10	2SC 710C	84
	P. C. B (B)	25	TR11	2SC 710C	85
Relay-1	Relay RL-023, 3P	26	TR12	2SC 710C	86
F-401	Fuse 3A	27	TR13	2SC 710C	87
	Frame Ass'y	28	TR14	2SC 710C	88
	Front Panel	29	TR15	2SC 710E	89
	Bracket	30	TR16	2SC 710D	90
	Side Panel	31	TR17	2SA 628D	91
	Rear Panel	32	TR18	2SC 710C	92
	Shield	33	TR19	2SA 628D	93
	Cover A	34	TR20	2SC 710D	94
	Cover B	35	TR21	2SC 710C	95
	Terminal	36	TR22	2SC 710C	96
	Washer	37	TR23	2SC 710C	97
	Ser. No. Plate	38	TR24	2SC 1419C	98
	CH Knob	39	TR25	2SC 1419C	99
	V.R. Knob	40	TR26	2SC 710C	100
	Microphone	41	TR27	2SC 710C	101
	SW Felt	42	TR28	2SC 710C	102
	Meter Cushion	43	TR29	2SC 710C	103
	Jack Insulation Washer	44	TR30	2SC 710C	104
	Speaker Felt	45	TR32	2SA 628D	105
	Empire Tube	46	TR33	2SC 710C	106
	Binding Wire	47	TR34	2SC 710C	107
	Mic Hanger	48	TR38	2SC 710C	108
	Styrol Foam	49	TR39	2SC 710C	109
	LED Filter	50	TR40	2SC 710D	110
	Heat Sink	51	TR41	2SC 710C	111
	SW Bracket	52	TR42	2SC 710C	112
	Test Terminal	53	TR43	2SC 1945A	113
	Pan HD Screw A	54	TR44	2SC 2166C	114
	Pan HD Screw B	55	TR45	2SC 1973	115
	Pan HD Screw C	56	FET1	3SK 45B	116
	Pan HD Screw D	57	FET2	2SK 33F	117
	Pan HD Screw E	58	FET3	2SK 34P	118
	Truss HD Screw	59	FET4	3SK 45B	119
	Flat HD Screw	60	FET5	2SK 34P	120
			FET6	2SK 33F	121

Symbol No.	Description	Part No.	Symbol No.	Description	Part No.
FET7	3SK 45B	122	D61	Diode IS 2473	180
D1	Diode IS 2473	123	D62	Diode IS 2473	181
D2	Diode IS 2473	124	D63	Diode IS 2473	182
D3	Diode IS 2473	125	L1	RFT 23MHz LA029	183
D4	Diode IS 2473	126	L2	RFT 23MHz LA155	184
D5	Diode IS 2473	127	L3	RFT 27MHz LA152	185
D6	Diode IS 2473	128	L4	RFT 27MHz LA156	186
D7	Diode IS 2473	129	L5	IFT 7.8MHz LA179	187
D8	GE Diode IN 60	130	L7	IFT 7.8MHz LA038	188
D9	GE Diode IN 60	131	L8	IFT 7.8MHz LA-096	189
D10	GE Diode IN 60P	132	L9	Micro Inductor 470 μ H	190
D11	GE Diode IN 60	133	L10	Micro Inductor 56mH	191
D12	Diode IS 2473	134	L11	Micro Inductor 68mH	192
D13	Diode IS 2473	135	L12	Micro Inductor 470 μ H	193
D14	Diode IS 2473	136	L13	Micro Inductor 470 μ H	194
D15	Diode IS 2473	137	L14	Micro Inductor 470 μ H	195
D16	Diode IS 2473	138	L16	RFT 34MHz LA160	196
D17	Diode IS 2473	139	L17	RFT 34MHz LA191	197
D18	Diode IS 2473	140	L18	Micro Inductor 470 μ H	298
D19	Diode IS 2473	141	L19	Micro Inductor 100 μ H	299
D20	Diode IS 2473	142	L20	Micro Inductor 470 μ H	200
D21	Diode IS 2473	143	L21	Micro Inductor 470 μ H	201
D22	Diode IS 2473	144	L22	Micro Inductor 470 μ H	202
D23	Diode IS 2473	145	L23	Micro Inductor 470 μ H	203
D24	Zener Diode Mz 409B	146	L24	RFT 33MHz LA190	204
D25	Zener Diode MZ 408A	147	L25	Micro Inductor 470 μ H	205
D26	Zener Diode WZ 050	148	L26	Micro Inductor 470 μ H	206
D27	Rectifier Diode 10DI	149	L27	TX Filter Coil	207
D28	Zener Diode MZ 409B	150	L28	TX Filter Coil	208
D29	Diode IS 2473	151	L29	TX Filter Coil	209
D30	Diode IS 2473	152	L30	TX TANK Coil	210
D31	Zener Diode MZ 306B	153	L31	Choke Coil	211
D32	Zener Diode MZ 306B	154	L32	TX Diver Coil	212
D33	Diode IS 2473	155	L33	Choke Coil	213
D34	Diode IS 2473	156	L34	Choke Coil	214
D35	Diode IS 2473	157	L35	TX Transformer	215
D36	Diode IS 2473	158	L36	TX Transformer	216
D37	Diode IS 2473	159	L37	TX Transformer	217
D38	Diode IS 2473	160	L38	TX Transformer	218
D39	Diode IS 2473	161	L39	IFT 7.8MHz LA-038	219
D40	Diode IS 2473	162	L40	Choke Coil	220
D41	Vari-Cap Diode MV201	163	L43	Micro Inductor 1 μ H	221
D42	Vari-Cap Diode MV201	164	L44	Micro Inductor 1 μ H	222
D43	Vari-Cap Diode MV201	165	L45	Micro Inductor 470 μ H	223
D44	Zener Diode MZ 409B	166	L401	Choke Coil 4.7 μ H	224
D45	Vari-Cap Diode MV-201	167	L403	Choke Coil 4.7 μ H	225
D46	Diode IS 2473	168	L405	Choke Coil 4.7 μ H	226
D47	Diode IS 2473	169	L406	Choke Coil 4.7 μ H	227
D50	GE Diode IN 60 (P.A.)	170	L407	Choke Coil 4.7 μ H	228
D51	Varistor Diode KB 162W	171	L408	Choke Coil 4.7 μ H	229
D52	Varistor Diode KB 162W	172	L410	Choke Coil 4.7 μ H	230
D53	Diode IS 2473	173	L411	Choke Coil 4.7 μ H	231
D54	Rectifier Diode 10DI	174	L412	Choke Coil 4.7 μ H	232
D56	Diode IS 2473	175	T1	OPT TF 106	233
D57	Diode IS 2473	176	X1	X-TAL 7.8025 MHz	234
D58	Diode IS 2473	177	X2	HC-25C/U	235
D59	GE Diode IN 60 (P.A.)	178	X3	X-TAL 7.7975 MHz	236
D60	Diode IS 2473	179		HC-25C/U	237
				X-TAL 11.2858MHz	238
				HC-25C/U	239

Symbol No.	Description	Part No.	Symbol No.	Description	Part No.
X4	X-TAL 11,2842 MHz HC-25C/U	237	R25	Carbon R 47 Ω	285
X5	X-TAL 10,240MHz HC-25C/U	238	R26	Carbon R 22K Ω	286
X6	X-TAL 11,2850MHz HC-25C/U	239	R27	Carbon R 5.6K Ω	287
FT1	X-TAL filter 7.8MHz	240	R28	Carbon R 470 Ω	288
VR1	Semi Fixed R20KB	241	R29	Carbon R 220 Ω	289
VR2	Semi Fixed R20KB	242	R30	Carbon R 47K Ω	290
VR3	Semi Fixed R100 KB	243	R31	Carbon R 3.3K Ω	291
VR4	Semi Fixed 50 KB	244	R32	Carbon R 150 Ω	292
VR5	Semi Fixed 100 KB	245	R33	Carbon R 220 Ω	293
VR7	Semi Fixed 5KB	246	R34	Carbon R 220K Ω	294
VR8	Semi Fixed 10 KB	247	R35	Carbon R 100K Ω	295
VR9	Semi Fixed 5KB	248	R36	Carbon R 470 Ω	296
VR12	Semi Fixed 100 KB	249	R37	Carbon R 18K Ω	297
VR15	Semi Fixed 500 B	250	R38	Carbon R 820K Ω	298
VR16	Semi Fixed 500 B	251	R39	Carbon R 470K Ω	299
CT1	Ceramic Trimmer Cap. 20PF	252	R40	Carbon R 220K Ω	300
CT2	Ceramic Trimmer Cap. 20PF	253	R42	Carbon R 56K Ω	301
CT3	Ceramic Trimmer Cap. 20PF	254	R43	Carbon R 680K Ω	302
CT4	Ceramic Trimmer Cap. 20PF	255	R44	Carbon R 1.5K Ω	303
CT5	Ceramic Trimmer Cap. 20PF	256	R45	Carbon R 5.6 Ω	304
CT6	Ceramic Trimmer Cap. 20PF	257	R46	Carbon R 330 Ω	305
CT7	Ceramic Trimmer Cap. 20PF	258	R47	Carbon R 4.7K Ω	306
CT8	Ceramic Trimmer Cap. 20PF	259	R48	Carbon R 10K Ω	307
VR401	Semi Fixed R20KB	260	R49	Carbon R 10K Ω	308
VR404	Semi Fixed R100 KB	261	R50	Carbon R 220K Ω	309
VR405	Semi Fixed R10KA	262	R51	Carbon R 3.3K Ω	310
R1	Carbon R 220 Ω	263	R52	Carbon R 220 Ω	311
R2	Carbon R 10K Ω	264	R53	Carbon R 100K Ω	312
R3	Carbon R 2.2M Ω	265	R54	Carbon R 10K Ω	313
R4	Carbon R 5.6K Ω	266	R55	Carbon R 1K Ω	314
R5	Carbon R 100K Ω	267	R56	Carbon R 100K Ω	315
R6	Carbon R 22K Ω	268	R57	Carbon R 3.3 K Ω	316
R8	Carbon R 1K Ω	269	R58	Carbon R 100K Ω	317
R9	Carbon R 4.7K Ω	270	R59	Carbon R 3.3K Ω	318
R10	Carbon R 2.7K Ω	271	R60	Carbon R 220 Ω	319
R11	Carbon R 5.6K Ω	272	R61	Carbon R 12K Ω	320
R12	Carbon R 1K Ω	273	R62	Carbon R 3.3K Ω	321
R13	Carbon R 1K Ω	274	R63	Carbon R 56 Ω	322
R14	Carbon R 1K Ω	275	R64	Carbon R 10K Ω	323
R15	Carbon R 220 Ω	276	R65	Carbon R 220 Ω	324
R16	Carbon R 2.2K Ω	277	R66	Carbon R 2.2K Ω	325
R17	Carbon R 470 Ω	278	R67	Carbon R 220 Ω	326
R19	Carbon R 1.5K Ω	279	R68	Carbon R 820 Ω	327
R20	Carbon R 1.5K Ω	280	R69	Carbon R 1K Ω	328
R21	Carbon R 1.5K Ω	281	R70	Carbon R 10K Ω	329
R22	Carbon R 100 Ω	282	R71	Carbon R 220 Ω	330
R23	Carbon R 1.5K Ω	283	R72	Carbon R 470 Ω	331
R24	Carbon R 4.7K Ω	284	R73	Carbon R 220K Ω	332
			R74	Carbon R 220 Ω	333
			R75	Carbon R 100K Ω	334
			R76	Carbon R 10K Ω	335
			R77	Carbon R 3.3K Ω	336
			R78	Carbon R 15K Ω	337
			R80	Carbon R 4.7K Ω	338
			R81	Carbon R 10K Ω	339
			R82	Carbon R 56K Ω	340
			R160	Carbon R 2.7K Ω	341
			R84	Carbon R 4.7K Ω	342
			R86	Carbon R 1K Ω	343
			R87	Carbon R 10K Ω	344
			R88	Carbon R 270K Ω	345

Symbol No.	Description	Part No.
R89	Carbon R 10K Ω	346
R91	Carbon R 4.7K Ω	347
R92	Carbon R 3.3K Ω	348
R93	Carbon R 56K Ω	349
R94	Carbon R 220 Ω	350
R95	Carbon R 330 Ω	351
R96	Carbon R 3.3K Ω	350
R97	Carbon R 10 Ω	353
R98	Carbon R 10K Ω	354
R99	Carbon R 33K Ω	355
R100	Carbon R 1K Ω	356
R101	Carbon R 4.7K Ω	357
R102	Carbon R 2.2K Ω	358
R103	Carbon R 2.2K Ω	359
R104	Carbon R 22K Ω	360
R105	Carbon R 68 Ω	361
R106	Carbon R 56K Ω	362
R107	Cement R 10 Ω /5W	363
R108	Carbon R 330 Ω	364
R110	Carbon R 470 Ω	365
R111	Carbon R 390 Ω	366
R112	Metal Oxide R 33 Ω /1W	367
R113	Metal Oxide R 150 Ω /1W	368
R116	Carbon R 1K Ω	369
R117	Carbon R 2.2K Ω	370
R118	Carbon R 100 Ω	371
R119	Carbon R 100 Ω	372
R120	Carbon R 2.2K Ω	373
R121	Carbon R 5.6K Ω	374
R122	Carbon R 15K Ω	375
R123	Carbon R 1K Ω	376
R124	Carbon R 150K Ω	377
R125	Carbon R 2.7K Ω	378
R126	Carbon R 820 Ω	379
R127	Carbon R 1.5K Ω	380
R128	Carbon R 1.5K Ω	381
R130	Carbon R 1.5K Ω	382
R131	Carbon R 220 Ω	383
R132	Carbon R 100 Ω	384
R133	Carbon R 1K Ω	385
R134	Carbon R 2.2K Ω	386
R135	Carbon R 3.3K Ω	387
R136	Carbon R 22K Ω	388
R137	Carbon R 1.5K Ω	389
R141	Carbon R 100 Ω	390
R142	Carbon R 220 Ω	391
R143	Carbon R 5.6K Ω	392
R144	Carbon R 10K Ω	393
R145	Carbon R 1K Ω	394
R146	Carbon R 470 Ω	395
R150	Carbon R 470 Ω	396
R151	Carbon R 22K Ω	397
R152	Carbon R 10 Ω	398
R153	Carbon R 1.5K Ω	399
R154	Carbon R 220 Ω	400
R155	Carbon R 5.6K Ω	401
R156	Carbon R 10K Ω	402
R157	Carbon R 1K Ω	403
R161	Metal Oxide R 56 Ω /1W	404
R162	Carbon R 1.8K Ω	405
R163	Carbon R 5.6K Ω	406

Symbol No.	Description	Part No.
R164	Carbon R 10K Ω	407
R165	Carbon R 1K Ω	408
R166	Carbon R 100K Ω	409
R167	Carbon R 10K Ω	410
R168	Carbon R 100 Ω	411
R169	Carbon R 100 Ω	412
R170	Carbon R 56K Ω	413
R171	Carbon R 10K Ω	414
R172	Carbon R 22K Ω	415
R173	Carbon R 2.2K Ω	416
R174	Carbon R 560 Ω	417
R175	Carbon R 8.2K Ω	418
R179	Carbon R 15 Ω	419
R180	Metal Oxide R 56 Ω /1W	420
R181	Metal Oxide R 220 Ω /1W	421
R182	Carbon R 10 Ω	422
R183	Carbon R 330 Ω	423
R184	Carbon R 1K Ω	424
R185	Carbon R 1K Ω	425
R186	Carbon R 10 Ω	426
R187	Carbon R 3.3K Ω	427
R188	Carbon R 220 Ω	428
R189	Carbon R 470 Ω	429
R190	Carbon R 39K Ω	430
R191	Carbon R 100 Ω	431
R192	Carbon R 10K Ω	432
R193	Carbon R 10K Ω	433
R194	Carbon R 56K Ω	434
R195	Carbon R 56K Ω	435
R196	Carbon R 220 Ω	436
R199	Carbon R 15 Ω	437
R200	Carbon R 470 Ω	438
R201	Carbon R 10K Ω	439
R202	Carbon R 1K Ω	440
R204	Carbon R 47 Ω	441
R205	Carbon R 4.7 Ω	442
R206	Carbon R 5.6 Ω	443
R207	Carbon R 100K Ω	444
R208	Carbon R 8.2K Ω	445
R209	Carbon R 2.2K Ω	446
R211	Carbon R 1.5K Ω	447
R212	Carbon R 1.5K Ω	448
R213	Carbon R 1.5K Ω	449
R214	Carbon R 1.5K Ω	450
R215	Carbon R 1.5K Ω	451
R216	Carbon R 1.5K Ω	452
R217	Carbon R 1.5K Ω	453
R218	Carbon R 1.5K Ω	454
R219	Carbon R 1.5K Ω	455
R220	Carbon R 1.5K Ω	456
R221	Carbon R 1.5K Ω	457
R222	Carbon R 1.5K Ω	458
R223	Carbon R 1.5K Ω	459
R224	Carbon R 1.5K Ω	460
R225	Carbon R 820 Ω	461
R226	Carbon R 1.5K Ω	462
R227	Carbon R 470 Ω	463
R230	Carbon R 18 Ω / $\frac{1}{2}$ W	464
C1	Ceramic Condenser 33PF CH	465
C2	Ceramic Condenser 0.01 μ	466

Symbol No.	Description	Part No.	Symbol No.	Description	Part No.
C 4	Ceramic Condenser 0.01 μ	467	C 61	Mylar Cap 0.047	524
C 5	Ceramic Condenser 0.01	468	C 62	Mylar Cap 0.047	525
C 6	Ceramic Condenser 0.01	469	C 63	Elyt Cap 10 μ /10V	526
C 7	Ceramic Condenser 0.022	470	C 64	Mylar Cap 0.039	527
C 8	Ceramic Condenser 100P CH	471	C 66	Elyt Cap 47 μ /10V	528
C 9	Ceramic Condenser 0.01	472	C 67	Elyt Cap 4.7 μ /16V	529
C 10	Ceramic Condenser 0.0047	473	C 68	Elyt Cap 4.7 μ /16V	530
C 11	Ceramic Condenser 0.0047	474	C 69	Elyt Cap 10 μ /16V	531
C 12	Ceramic Condenser 0.0047	475	C 71	Mylar Cap 0.068	532
C 13	Ceramic Condenser 0.0047	476	C 72	Mylar Cap 0.022	533
C 14	Elyt Cap 33 μ /16V	477	C 73	Mylar Cap 0.1 μ	534
C 15	Ceramic Cap 0.01 μ	478	C 74	Mylar Cap 0.022	535
C 16	Ceramic Cap 0.01 μ	479	C 75	Mylar Cap 0.1	536
C 17	Mylar Cap 0.01	480	C 76	Elyt Cap 47 μ /10V	537
C 18	Mylar Cap 0.039	481	C 77	Elyt Cap 0.47 μ /50V	538
C 19	Ceramic Cap 0.022	482	C 78	Elyt Cap 0.47 μ /50V	539
C 20	Ceramic Cap 0.022	483	C 79	Elyt Cap 0.47 μ /50V	540
C 21	Ceramic Cap 0.022	484	C 80	Mylar Cap 0.01	541
C 22	Ceramic Cap 0.022	485	C 81	Elyt Cap 220 μ /16V	542
C 23	Mylar Cap 0.022	486	C 82	Mylar Cap 0.047	543
C 24	Ceramic Cap 0.001	487	C 83	Mylar Cap 0.01	544
C 25	Mylar Cap 0.039	488	C 84	Elyt Cap 1 μ /50V	545
C 26	Mylar Cap 0.039	489	C 85	Mylar Cap 0.039	546
C 27	Mylar Cap 0.039	490	C 86	Mylar Cap 0.022	547
C 28	Ceramic Cap 0.022	491	C 87	Elyt Cap 10 μ /16V	548
C 29	Mylar Cap 0.039	492	C 88	Elyt Cap 4.7 μ /25V	549
C 30	Mylar Cap 0.039	493	C 89	Elyt Cap 33 μ /16V	550
C 31	Mylar Cap 0.039	494	C 90	Ceramic 20P CH	551
C 32	Ceramic Cap 59P CH	495	C 91	Mylar Cap 0.1	552
C 33	Ceramic Cap 0.022	496	C 92	Elyt Cap 33 μ /16V	553
C 34	Ceramic Cap 0.022	497	C 93	Ceramic Cap 68P CH	554
C 35	Elyt Cap 1 μ /50V	498	C 94	Elyt Cap 1000 μ /16V	555
C 36	Ceramic Cap 59p CH	499	C 95	Elyt Cap 470 μ /16V	556
C 37	Ceramic Cap 10P CH	500	C 96	Mylar Cap 0.1	557
C 38	Ceramic Cap 33OPSL	501	C 97	Elyt Cap 4.7 μ /25V	558
C 39	Aluminum Solid Elec. Cap 0.1/16V	502	C 98	Elyt Cap 1 μ /50V	559
C 40	Mylar Cap 0.039	503	C 99	Elyt Cap 10 μ /16V	560
C 41	Ceramic Cap 0.022	504	C 100	Ceramic Cap 0.022	561
C 42	Elyt Cap 10 μ /16	505	C 101	Elyt Cap 220 μ /16V	562
C 43	Elyt Cap 4.7 μ /16	506	C 102	Elyt Cap 220 μ /16V	563
C 44	Elyt Cap 2.2 μ /25V	507	C 103	Elyt Cap 470 μ /10V	564
C 45	Ceramic Cap 47P CH	508	C 104	Elyt Cap 330 μ /10V	565
C 46	Ceramic Cap 0.01	509	C 105	Ceramic Cap 0.022	566
C 47	Elyt Cap 47 μ /10V	510	C 106	Ceramic Cap 0.022	567
C 48	Mylar Cap 0.01	511	C 107	Elyt Cap 1000 μ /16V	568
C 49	Elyt Cap 47 μ /10V	512	C 109	Ceramic Cap 0.022	569
C 50	Elyt Cap 47 μ /10V	513	C 110	AL Solid Elec. Cap 0.1 μ /16V	570
C 51	Mylar Cap 0.022	514	C 111	Ceramic Cap 18P CH	571
C 52	AL Solid Elect Cap 0.1 μ /16V	515	C 112	Ceramic Cap 20P CH	572
C 53	Ceramic Cap 0.01	516	C 113	Ceramic Cap 0.001	573
C 54	Ceramic Cap 33P CH	517	C 114	Ceramic Cap 0.001	574
C 55	Elyt Cap 2.2 μ /2.5V	518	C 115	Ceramic Cap 100P CH	575
C 56	Mylar Cap 0.039	519	C 116	Ceramic Cap 10P CH	576
C 57	Ceramic Cap 0.022	520	C 117	Ceramic Cap 2P CH	577
C 58	Elyt Cap 1 μ /50V	521	C 118	Ceramic Cap 0.022	578
C 59	Elyt Cap 47 μ /10V	522	C 119	Ceramic Cap 0.022	579
C 60	AL Solid Elec. Cap 0.1/16V	523	C 120	Elyt Cap 10 μ /16V	580
			C 121	Mylar Cap 0.039	581
			C 122	Ceramic Cap 47P CH	582
			C 123	Ceramic Cap 47P CH	583

Symbol No.	Description	Part No.	Symbol No.	Description	Part No.
C124	Ceramic Cap 0.01	584	C189	Mylar Cap 0.047	645
C125	Ceramic Cap 0.01	585	C190	Ceramic Cap 0.1	646
C126	Ceramic Cap 220P SL	586	C191	Ceramic Cap 33P CH	647
C127	Ceramic Cap 470P SL	587	C192	Ceramic Cap 0.01	648
C128	Ceramic Cap 220P SL	588	C193	Ceramic Cap 0.022	649
C129	Ceramic Cap 0.01	589	C194	Ceramic Cap 18P CH	650
C130	Ceramic Cap 10P CH	590	C195	Ceramic Cap 0.01	651
C131	Ceramic Cap 47P CH	591	C196	Ceramic Cap 0.022	652
C132	Ceramic Cap 100P CH	592	C197	Ceramic Cap 0.022	653
C133	Mylar Cap 0.1	593	C198	Mylar Cap 0.039	654
C134	Mylar Cap 0.1	594	C199	Elyt Cap 1 μ /50V	655
C135	Elyt Cap 220 μ /16V	595	C200	Mylar Cap 0.01	656
C136	Ceramic Cap 470PSL	596	C201	Mylar Cap 0.01	657
C137	Ceramic Cap 220PSL	597	C204	Ceramic Cap 0.01	658
C138	Ceramic Cap 0.01	598	C205	Ceramic Cap 0.01	659
C139	Ceramic Cap 10P CH	599	C206	Ceramic Cap 0.022	660
C140	Elyt Cap 1 μ /50V	600	C207	Ceramic Cap 0.01	661
C141	Elyt Cap 10 μ /16V	601	C208	Ceramic Cap 0.01	662
C142	Ceramic Cap 56P CH	602	C209	Ceramic Cap 0.01	663
C144	Ceramic Cap 0.022	603	C210	Mylar Cap 0.01	664
C145	Ceramic Cap 0.022	604	C211	Elyt Cap 2.2 μ /25V	665
C146	Ceramic Cap 0.022	605	C213	Ceramic Cap 0.1	666
C147	Ceramic Cap 470P SC	606	C214	Ceramic Cap 0.01	667
C148	Ceramic Cap 220P SC	607	C215	Ceramic Cap 0.022	668
C149	Ceramic Cap 0.01	608	C216	Ceramic Cap 0.022	669
C150	Ceramic Cap 10P CH	609	C217	Ceramic Cap 0.022	670
C151	Ceramic Cap 0.01	610	C218	Elyt Cap 4.7 μ /25V	671
C152	Ceramic Cap 0.01	611	C219	Ceramic Cap 0.022	672
C153	Ceramic Cap 68P CH	612	C220	Ceramic Cap 0.022	673
C154	Mylar 0.047	613	C221	Ceramic Cap 0.022	674
C155	Ceramic Cap 2P CH	614	C222	Ceramic Cap 0.022	675
C156	Ceramic Cap 10P CH	615	C223	Ceramic Cap 0.022	676
C157	Mylar Cap 0.039	616	C224	Ceramic Cap 0.022	677
C158	Elyt Cap 1 μ /50V	617	C225	Ceramic Cap 0.022	678
C159	Ceramic Cap 0.0047	618	C226	Ceramic Cap 0.022	679
C160	Ceramic Cap 0.0047	619	C227	Ceramic Cap 0.022	680
C161	Elyt Cap 4.7 μ /25V	620	C228	Ceramic Cap 0.022	681
C162	Ceramic Cap 0.022	621	C229	Ceramic Cap 0.01	682
C163	Ceramic Cap 68P CH	622	C230	Ceramic Cap 0.022	683
C164	Ceramic Cap 150P CH	623	C231	Ceramic Cap 0.022	684
C165	Ceramic Cap 220P SL	624	C241	Mylar Cap 0.039	685
C166	Ceramic Cap 0.0047	625	C242	Ceramic Cap 47P CH	686
C167	Ceramic Cap 330P SL	626	C401	Mylar Cap 0.047	687
C168	Ceramic Cap 1P CH	627	C405	Ceramic Cap 0.01	688
C169	Mylar Cap 0.039	628	C406	Ceramic Cap 0.01	689
C170	Ceramic Cap 47P SL	629	C408	Ceramic Cap 0.01	690
C171	Ceramic Cap 47P CH	630	C410	Ceramic Cap 0.01	691
C172	Ceramic Cap 0.0047	631	C415	Ceramic Cap 0.01	692
C173	Ceramic Cap 180P CH	632	C416	Ceramic Cap 0.01	693
C174	Ceramic Cap 56P CH	633	C417	Ceramic Cap 0.01	694
C175	Mylar Cap 0.1	634	C421	Ceramic Cap 0.01	695
C177	Ceramic Cap 0.0047	635	C422	Ceramic Cap 0.022	696
C178	Ceramic Cap 0.0047	636	C423	Ceramic Cap 0.022	697
C179	Elyt Cap 2.2 μ /25V	637			
C182	Mylar Cap 0.039	638			
C183	Ceramic Cap 0.0047	639			
C184	Ceramic Cap 120P CH	640			
C185	Ceramic Cap 0.0047	641			
C186	Ceramic Cap 0.0047	642			
C187	Ceramic Cap 0.0047	643			
C188	Mylar Cap 0.047	644			

WARRANTY SERVICE INSTRUCTIONS

1. Refer to instruction manual for adjustments that may be applicable.
2. Check common electrical parts. Always check instruction manual for applicable adjustments after such replacement.
3. Defective parts removed from units which are within the warranty period should be sent to the factory prepaid with model and serial number of product from which removed and date of product purchase. These parts will be exchanged at no charge.
4. If the above mentioned procedures do not correct the difficulty, pack the product securely using the same packaging arrangement as supplied by the manufacture. A detailed list of troubles encountered must be enclosed as well as your name and address. Forward prepaid (United Parcel Service is preferred) to PALOMAR ELECTRONICS CORPORATION

SERVICE DEPARTMENT

PALOMAR ELECTRONICS CORPORATION

BOX 2403-665 OPPER ST. EXCONDIDO, CA. 92025 U. S. A.

SCHEMATIC DIAGRAM

