

**4.0 REQUIRED TEST EQUIPMENT**

- |                                  |                                 |
|----------------------------------|---------------------------------|
| ① DC Power Supply (13.8VDC, 10A) | ⑥ Frequency Counter (100 MHz)   |
| ② RF Watt meter (25~60 MHz, 50W) | ⑦ RF Signal Generator (100 MHz) |
| ③ Multimeter (Digital)           | ⑧ Automatic Distortion Meter    |
| ④ Automatic Modulation Meter     | ⑨ Oscilloscope (50 MHz)         |
| ⑤ Audio Signal Generator         | ⑩ Sinad Meter                   |

**4.1 ALIGNMENT PROCEDURES**

This transceiver has been aligned at the factory and does not require any adjustments at installation. The required test equipment listed are used for the test setup or alignment shown in Figure 4-1 Transmitter Test Setup and Figure 4-2 Receiver Test Setup. These test setup are used in part or total during the following adjustments and refer to Figure 4-3 for adjustment location.

**4.1.1 PLL ALIGNMENT**

ITEM	U.U.T. SETTING	ADJUST POINT	MEASUREMENT
VCO Voltage	Set radio to G BAND, CH 40 AM RX mode. Connect Voltage meter to TP2. Connect Oscilloscope to TP3	L14 L15	6.5 VDC ± 0.1 Maximum Output and Balance ( HI Frequency & LO Frequency)
AM Frequency	Set radio to G Band, CH 40 AM RX mode. Set radio to E Band, CH 1 AM RX mode. Connect Frequency counter to TP3	L17 L20	18.890 MHz ± 20Hz 17.5500MHz ± 20Hz
TX Frequency	Set radio to G Band, CH 1 AM TX mode. Connect Frequency counter to TP3	VR7	18.8900MHz ± 20Hz
AM OSC	Set radio to G Band, CH 1 AM TX. mode. Connect Frequency Counter to TP5.	L23	10.6950 MHz ± 20Hz

#### 4.1.2 TRANSMITTER ALIGNMENT

ITEM	U.U.T. SETTING	ADJUST POINT	MEASUREMENT
TX Power	Set radio to F Band, CH 19 AM TX mode. Connect RF power meter to antenna jack. Set POWER switch to H position. Set E-TONE to OFF position	L40,L42, L43,L44  L40,L42	Power Max. Spurious emission Min.  Balance Power between HI frequency and LO frequency.
AM TX Power	Set radio to F Band, CH 19 AM TX mode. MOD OFF Set POWER switch to L position.	VR14  VR18	7.5W (CX-4400) 10W (CX-4400HP) 1W (CX-4400 / CX- 4400 HP)
RF Power Meter	Set radio to F Band, CH 19 AM TX mode.	VR9	Adjust RF Power meter needle until it is in-between the green bar on TX PWR scale.
AM Modulation	Set radio to F Band, CH 19 AM TX mode. Set Mic Gain fully clockwise. AF signal 30 mV, 1 KHz to microphone.	VR16	95%
FM Deviation	Set radio to F Band, CH 19 FM TX mode. Set Mic Gain fully clockwise. AF signal 30 mV, 1 KHz to microphone.	VR5	4 KHz

#### 4.1.3 RECEIVER ALIGNMENT

ITEM	SETTINGS	ADJUST POINT	MEASUREMENT
AM Sensitivity	Set radio to F Band, CH 19 AM RX mode. Set RF Gain fully clockwise. Set SQ fully counter clockwise. Set VOL. control at 12 o'clock. Set NB-ANL/OFF switch to OFF position. Connect RF SG to antenna jack Frequency 28.915 MHz, 1 $\mu$ V, 30% Mod. Change radio to E Band, CH1 AM RX mode RF SG setting 28.245 MHz. Set radio to G Band, CH40 AM RX mode RF SG setting 29.585 MHz.	L2,3,5,6,7, 8,9,10      L5,L6  L5,L6	Audio output > 2V S/N > 10 dB.       For Balance between HI frequency and LO frequency.
FM Sensitivity	Set radio to F Band, CH 19 FM RX mode. Set MODE switch to FM mode. RF SG setting 28.915 MHz., 0.5uV, 3K Mod.	L4	Audio output Max. S/N > 20 dB.
NB Adjust	Set radio to F Band, CH 19 AM RX mode RF SG setting 28.915 MHz,100uV, OFF Mod. Set NB-ANL/OFF switch to NB/ANL position. Connect Voltmeter to TP1.	L1	DC voltage to max. ( >2.0V )
AM Squelch	Set radio to F Band, CH 19 AM RX mode Set SQ control fully clockwise Set RF Gain control fully clockwise RF SG setting 28.915 MHz, 1 mV, 30% Mod.	VR4	Adjust very slowly until squelch just open
AM S/Rf Meter	Set radio to Band, CH 19 AM mode Set RF Gain control fully clockwise RF SG setting 28.915 MHz, 100 $\mu$ V, 30% Mod.	VR1	Meter needle to S9 on the S scale

Figure 4-1 Transmitter test setup

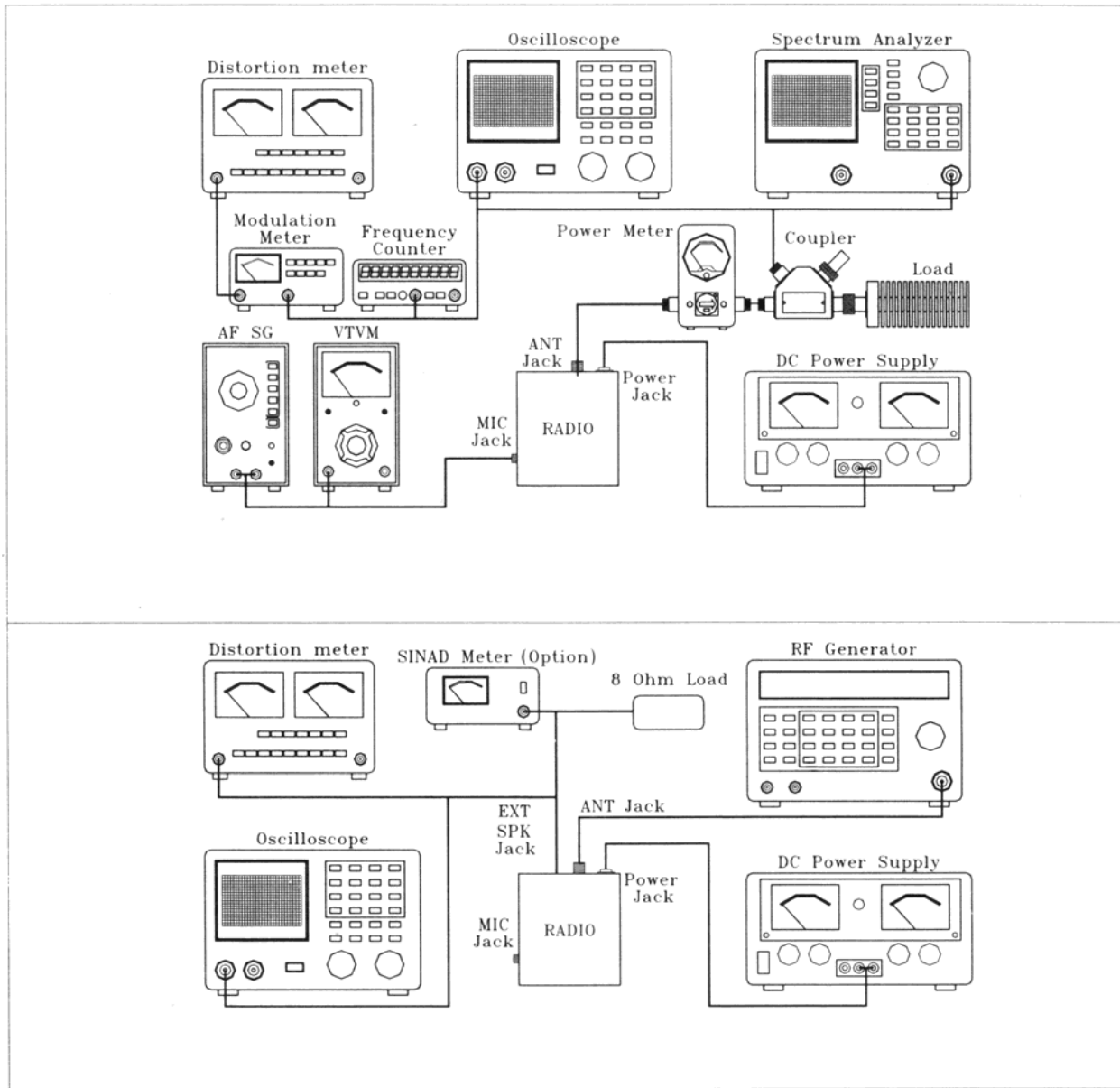


Figure 4-2 Receiver test setup

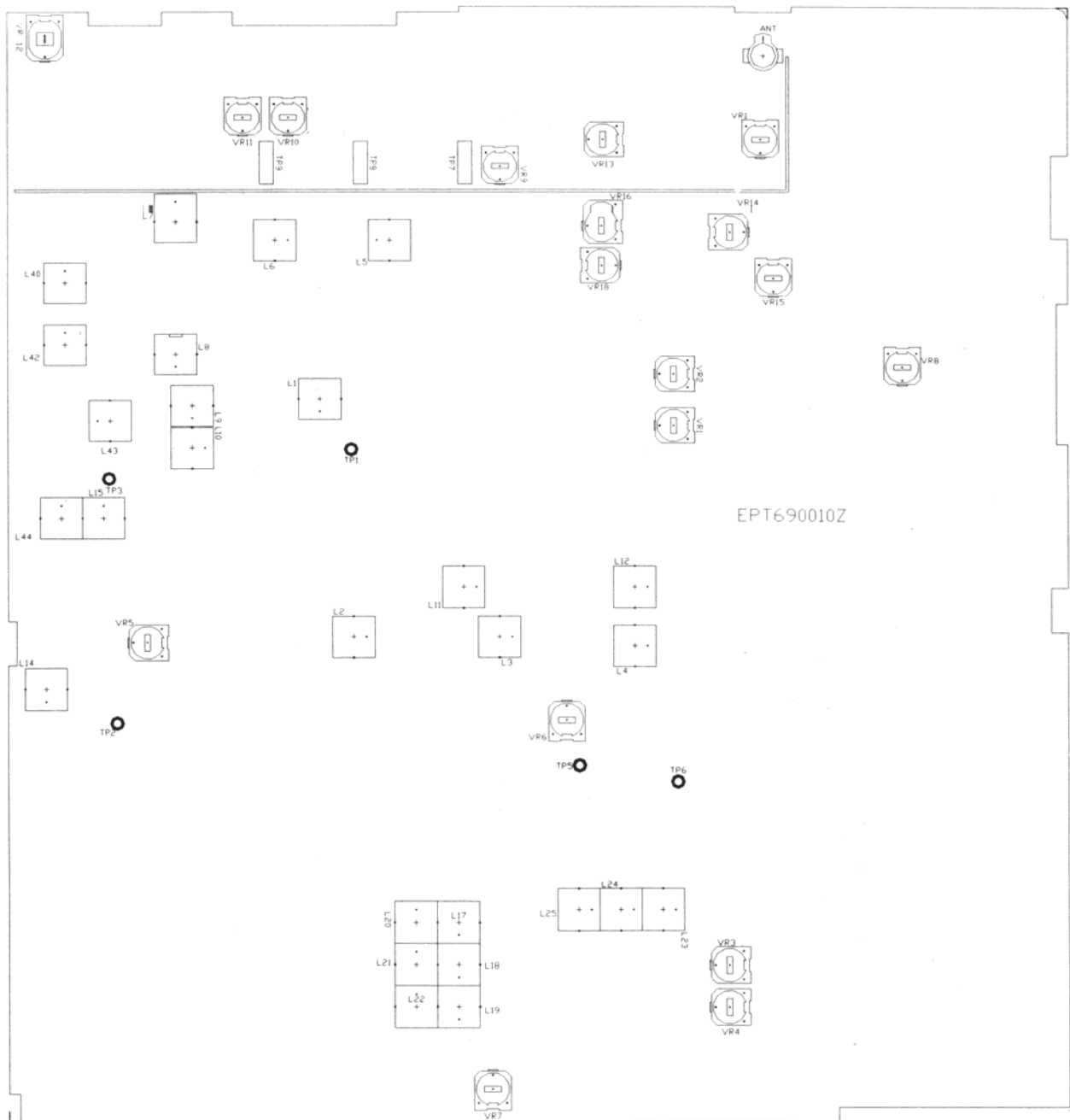


Figure 4-3 Main PCB Adjustment Location

**5.0 PRECAUTIONS**

The inherent quality of the solid-state components used in this transceiver will provide many years of continuous use. Taking the following precautions will prevent damage to the transceiver.

- (i) Never key the transmitter unless an antenna or suitable dummy load is connected to the antenna receptacle.
- (ii) Ensure that the input voltage does not exceed 16 VDC or fall below 11 VDC.
- (iii) During alignment, do not transmit for more than 10 seconds at a time. Transmitting over long periods can cause heat built-up and cause transmitter damage.

**5.1 PERIODIC INSPECTION**

This unit is aligned at the factory to deliver maximum performance. However, continued performance cannot be expected without periodic inspection and maintenance. Important points to be checked regularly are as follows;

Check Item	Action
Whip antenna (option)	If cracked or broken, replace it.
Coaxial cable	If sheath is cracked, seal with vinyl tape. If immersed with water, install new coaxial cable.
Coaxial & power plug connections	If loosened, reconnect. If corroded, clean contacts.
Battery connection	If corroded, clean power terminals.
Ground terminal	If corroded, clean terminal.

**5.2 FUSE REPLACEMENT**

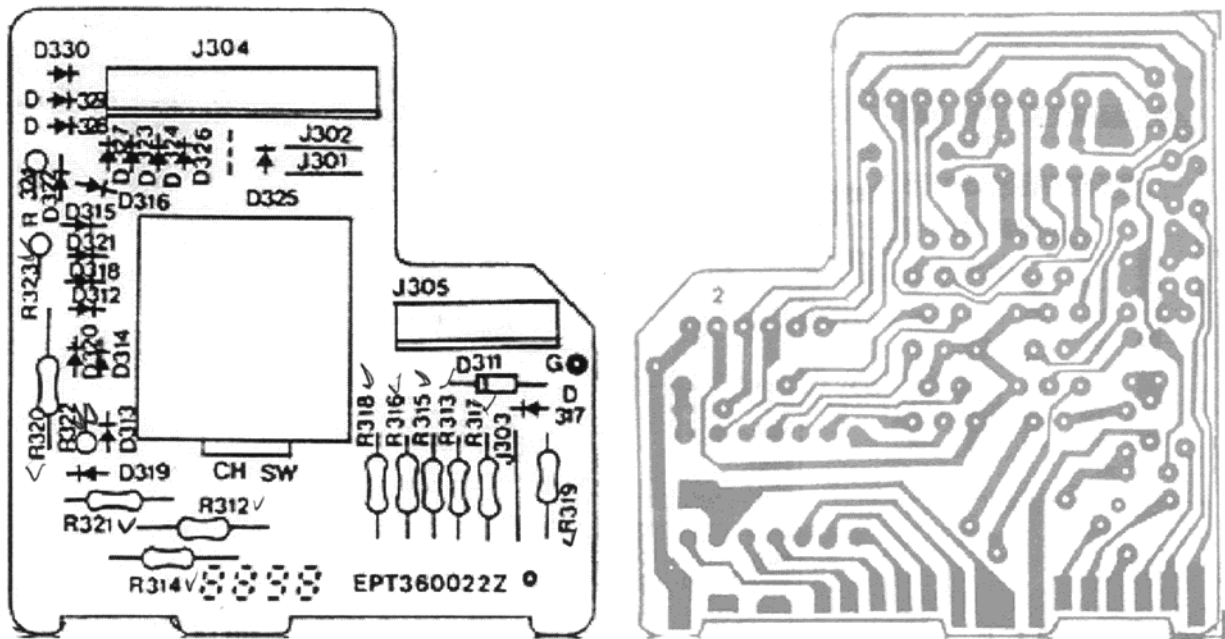
To protect the equipment from serious damage, a fuse is provided on the power supply lines. The fuse protect against over voltage / reverse polarity of the vehicle's mains or internal fault of the equipment. If the fuse has blown, first find out the cause of the trouble before replacing it. A fuse rated for more than the transceivers requirement should not be used, since it may permanently damage the equipment. Damage due to over fusing is not covered by the warranty.

**CX-4400/4400 HP**

**CHAPTER 6  
DIAGRAMS &  
PARTS LIST**

**6.0 GENERAL**

Information on most electrical and mechanical parts is included in the parts list. The reference designators are in alphanumeric order.



PART LIST :

CX-4400/4400 HP ROTARY SW P.C.B

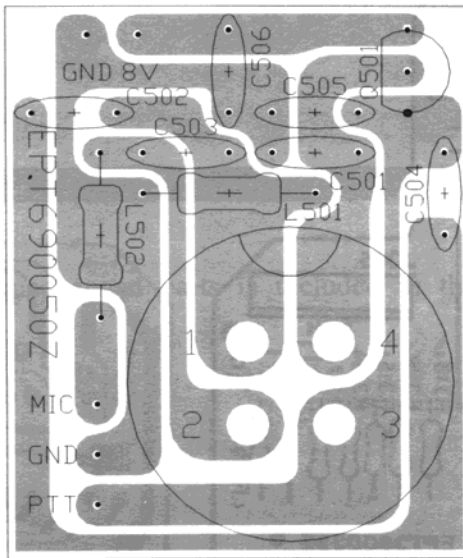
ITEM	REFERENCE NUMBER	RANGER PART NUMBER	DESCRIPTION
1		EPT360022Z	ROTATRY SW PCB
2	R322,323,324	RCU141024Z	1K OHM 1/4 W
3	R315	RCM144714A	470 OHM 1/4 W
4	R313,316,317,319,321,318	RCM141024A	1K OHM 1/4 W
5	R312,314,320	RCM141024B	1K OHM 1/4 W
6	CH SW	EWRT32000S	GPS-0501
7	J304	EX07N40014	PCB CONN/S
8	D312,313,314,323,324,326,J305	WX01070703	JUMPER WIRE
9	D315,316,325	WX01070705	JUMPER WIRE
10	J302	WX01070708	JUMPER WIRE
11	D311,J303	WX01070710	JUMPER WIRE

REMARK :

LEFT : COMPONENT SIDE

RIGHT : COPPER SIDE (BLUE)





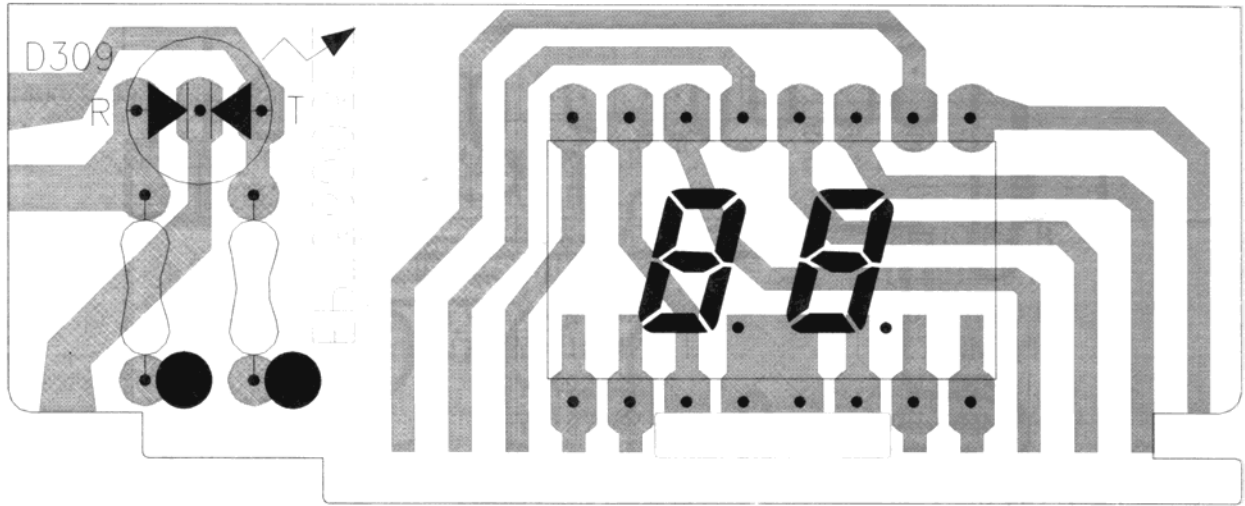
PART LIST :

CX-4400/4400 HP MIC P.C.B

ITEM	REFERENCE NUMBER	RANGER PART NUMBER	DESCRIPTION
1		EPT690050Z	MIC PCB
2	C502,C503,C504	CC0501027L	0.001uF 50WV
3	L501	ECCHK16001	CHOKE COIL 5.6uH
4	L502	ECBAD18526	BEAD COIL
5	MIC PCB	EX06N41020	MIC JACK
6	MIC/GND/PTT	EX07N48903	WIRE CONN/H 3P

REMARK :

COPPER SIDE (BLUE)



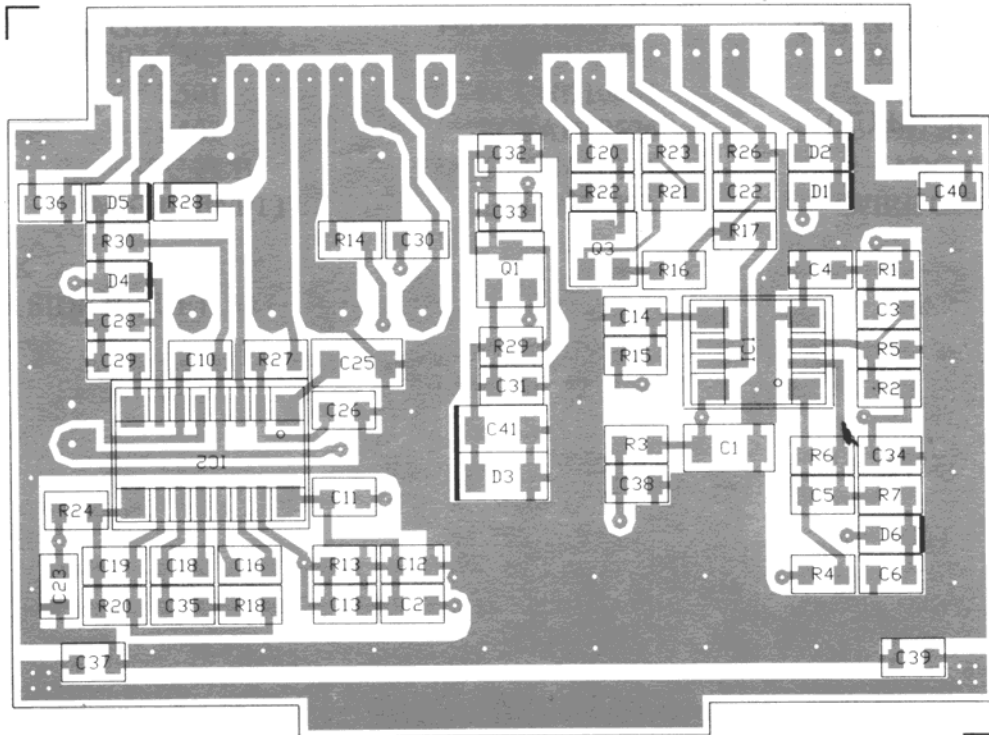
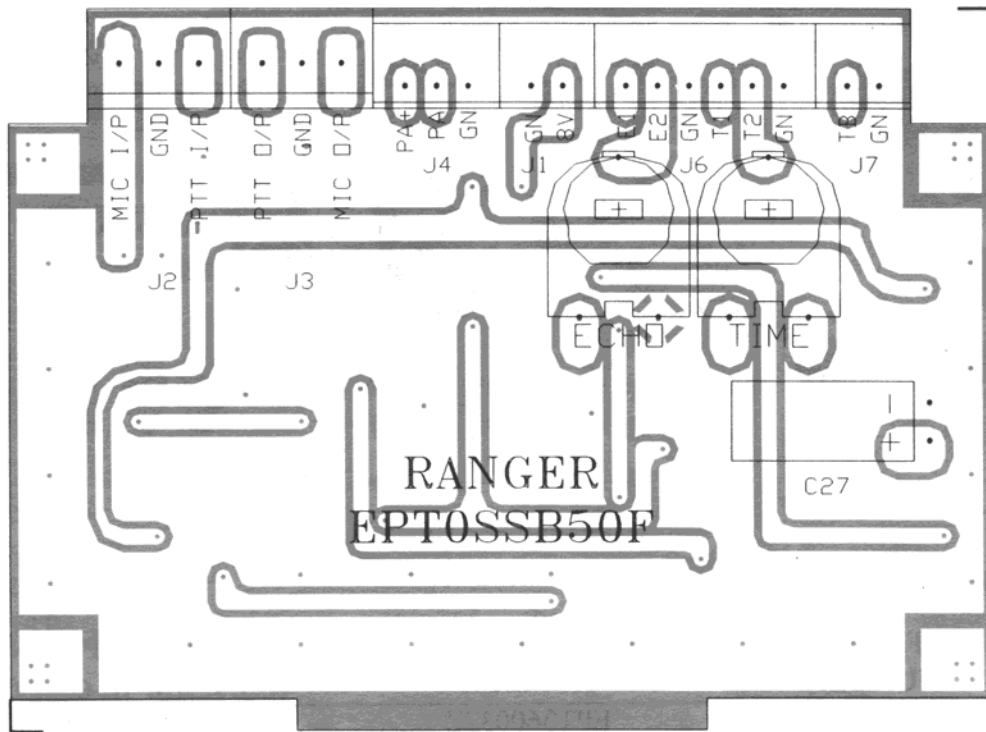
PART LIST :

CX-4400/4400 HP LED DISPLAY P.C.B

ITEM	REFERENCE NUMBER	RANGER PART NUMBER	DESCRIPTION
1		EPT360032Z	LED DISPLAY P.C.B
2	LED DISPLAY PCB	EX03N40419	LED DISPLAY (RED)
3	D309 (T/R)	EX01N40004	LED (RED &GREEN)

REMARK:

COPPER SIDE (BLUE)



## PART LIST :

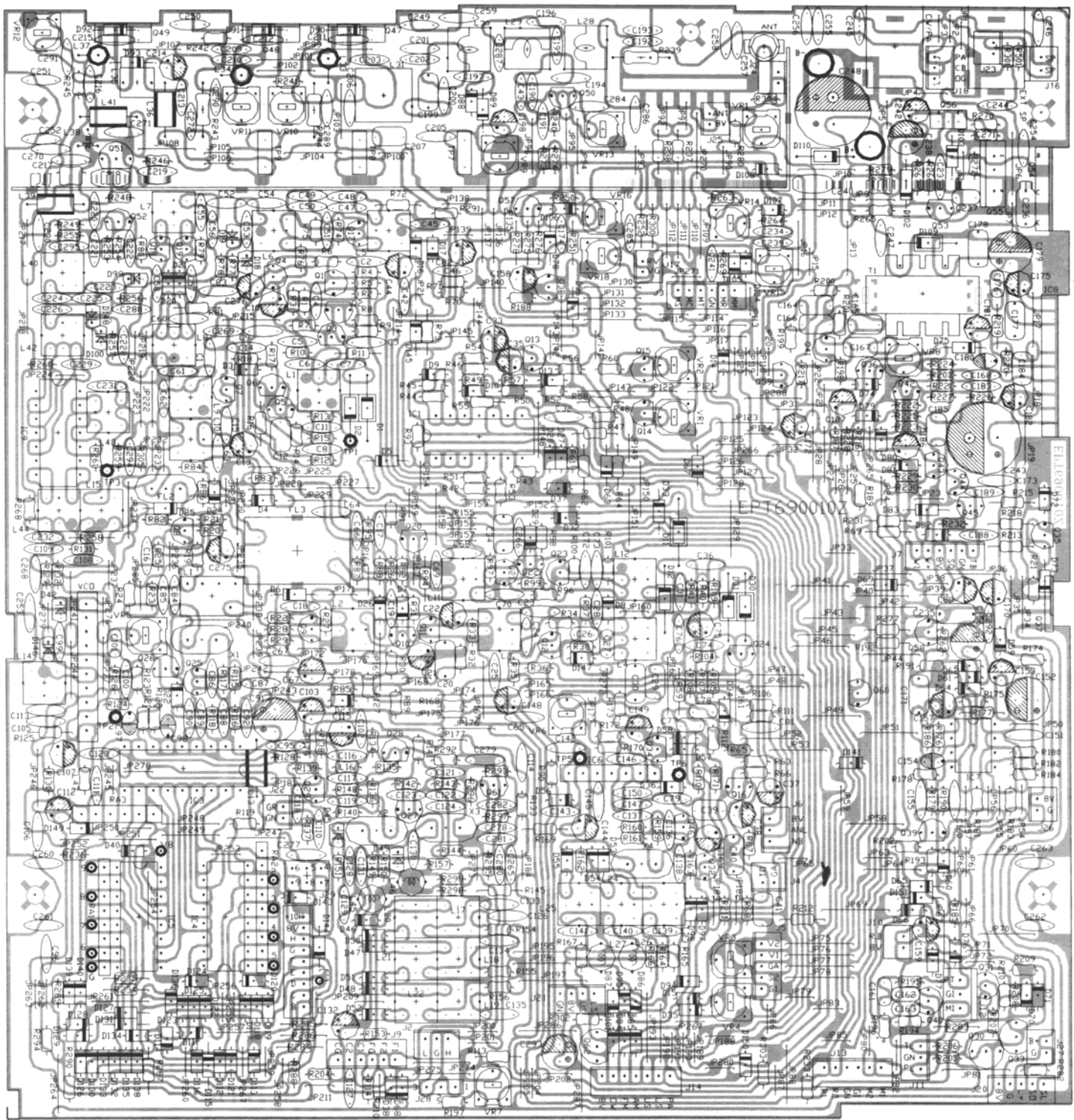
CX-4400/4400 HP ECHO P.C.B (EB-99)

ITEM	REFERENCE NUMBER	RANGER PART NUMBER	DESCRIPTION
1		EPT0SSB50F	ECHO P.C.B.
2	R3,R16	RCY011014Z	10 OHM 0.1W
3	R28	RCY014714Z	470 OHM 0.1W
4	R27	RCY011024Z	1K OHM 0.1W
5	R7	RCY012224Z	2.2K OHM 0.1W
6	R17,R29	RCY014724Z	4.7K OHM 0.1W
7	R1,23,24,30,26	RCY011034Z	10K OHM 0.1W
8	R18	RCY012234Z	22K OHM 0.1W
9	R2,R5,R6,R13,R15,R2 2	RCY013334Z	33K OHM 0.1W
10	R14,R20,R4	RCY014734Z	47K OHM 0.1W
11	R21	RCY011044Z	100K OHM 0.1W
12	C26	CK1331AB5A	330PF 50WV
13	C5	CK1561AB5A	560P 50WV
14	C12,C14	CK1102AB7L	0.001uF 50WV
15	C4,11,23,34	CK2103AB7R	0.01uF 25WV
16	C2,C3,C10,C16,C28, C29,C30,C32,C33, C36,C37,C38,C39, C40,C18,C35	CK2104AB7R	0.1uF 25WV
17	C6,C31,C20,C22	CK510AB7R	1uF 16WV
18	C13	CK1152AB7R	0.0015uF 50WV
19	C19	CK1472AB6U	.0047uF 50WV
20	C25	CK5105ZZ7R	1uF 16WV
21	C1	CK5225AA7R	2.2uF 16WV
22	IC1	YNJR04558M	IC NJM4558M 8PIN
23	IC2	YNES56033S	IC ES56033S 16PIN
24	Q1,Q3	TY2SC2712G	TR 2SC2712GR
25	D1,D2,D4,D5,D6	EDSS00355Y	DIODE 1SS355
26	D3	EDZD05569Y	ZENER DIODE 5.6V
27	C27	CE0164767Z	47uF 16WV
28	J3	EX07N41216	PCB CONN/S 3P
29	J2	EX07N41227	PCB CONN/S 3P
30	J1	EX07N48223	PCB CONN/S 2P

## REMARK:

TOP : COMPONENT SIDE (WHITE)

BOTTOM : COPPER SIDE (BLUE)



CX-4400/4400 HP MAIN PCB.

REMARK:  
SOLDER SIDE (WHITE)

# PART LIST

## CX-4400 MAIN PCB

REFERENCE NUMBER	RANGER PART NO.	DESCRIPTION
	EPT690010Z	MAIN P.C.B
R246	RCP164794Z	4.7 Ω 1/16W
R267	RCP161504Z	15 Ω 1/16W
R241	RCP162204Z	22 Ω 1/16W
R133, 213, 253, 282, VR10	RCP164704Z	47 Ω 1/16W
R130, 215, 220	RCP165604Z	56 Ω 1/16W
R11	RCP166804Z	68 Ω 1/16W
R3, 5, 8, 30, 33, 76, 81, 259, 260, 263, JP237	RCP161014Z	100 Ω 1/16W
R32, 249	RCP161514Z	150 Ω 1/16W
R23	RCP161814Z	180 Ω 1/16W
R140, 163, 177	RCP162214Z	220 Ω 1/16W
R31	RCP162714Z	270 Ω 1/16W
R6, 10, 16, 24, 248, 254, 300	RCP163314Z	330 Ω 1/16W
R141, 188, 268, 293	RCP164714Z	470 Ω 1/16W
R258, 266	RCP165614Z	560 Ω 1/16W
R4, 50	RCP166814Z	680 Ω 1/16W
R74	RCP168214Z	820 Ω 1/16W
R36, 62, 64, 67, 72, 115, 116, 118, 123, 136-138, 143, 144, 160, 164, 179, 186, 189, 205, 214, 232, 261, 291, 292, 295, 303, 206, 154	RCP161024Z	1KΩ 1/16W
R192	RCP161224Z	1.2KΩ 1/16W
R132, 207, 233, 247, 255, 273, 79, 80, 251	RCP161524Z	1.5KΩ 1/16W
R226	RCP161824Z	1.8KΩ 1/16W
R20, 27, 71, 73, 75, 134, 162, 122, 283, 93	RCP162224Z	2.2KΩ 1/16W
R9, 25, 28	RCP162724Z	2.7KΩ 1/16W
R18, 22, 58, 66, 128, 129, 191, 219, 274, 277	RCP163324Z	3.3KΩ 1/16W
R52, 57	RCP163924Z	3.9KΩ 1/16W
R26, 35, 131, 165, 190, 195, 196	RCP164724Z	4.7KΩ 1/16W
R264, 265	RCP165624Z	5.6KΩ 1/16W
R14, 40, 41, 82, 127, 148, 297, 70	RCP166824Z	6.8KΩ 1/16W
R275	RCP168224Z	8.2KΩ 1/16W
R1, 13, 17, 37, 38, 65, 142, 159, 161, 168, 175, 181, 202, 210, 216, 227-231, 272, 276, 294, 296, 262, 68	RCP161034Z	10KΩ 1/16W
R178	RCP161234Z	12KΩ 1/16W
R180	RCP161534Z	15KΩ 1/16W
R187, 208	RCP162234Z	22KΩ 1/16W
R121	RCP162734Z	27KΩ 1/16W
R2	RCP163334Z	33KΩ 1/16W
R46	RCP163934Z	39KΩ 1/16W
R7, 29, 61, 63, 126, 185, 218, 234, 235, 236, 224, 222, 151	RCP164734Z	47KΩ 1/16W
R21, 85, 105, 107	RCP166834Z	68KΩ 1/16W
R45	RCP168234Z	82KΩ 1/16W
R12, 42-44, 51, 53, 77, 78, 104, 108, 112, 182, 184, 225, 256, 257, 278, 221	RCP161044Z	100KΩ 1/16W
R47, 59, 117, 135, 139, 194	RCP162244Z	220KΩ 1/16W
R49, 55, 176	RCP162744Z	270KΩ 1/16W
R15, 34, 111, 183	RCP164744Z	470KΩ 1/16W
R48	RCP168244Z	820KΩ 1/16W
R106	RCP161054Z	1MΩ 1/16W
R193	RCP161554Z	1.5MΩ 1/16W
R124	RCP161064Z	10MΩ 1/16W
JP264	RCP142204Z	22 Ω 1/4W
R244	RCP121514Z	150 Ω 1/2W
R239	RCP121034Z	10KΩ 1/2W
C1, 49, 108, 119, 122,	CC0501004L	10PF 50WV

279, 147		
C224	CC0501504L	15PF 50WV
C195	CC0501804L	18PF 50WV
C24, 287	CC0503304L	33PF 50WV
C8	CC0508204L	82PF 50WV
C4, 53	CC0501015L	100PF 50WV
C137	CC0501515L	150PF 50WV
C56, 222	CC0501815L	180PF 50WV
C28, 220	CC0502215L	220PF 50WV
C31, 136	CC0502715L	270PF 50WV
C11, 14	CC0503315L	330PF 50WV
C23	CC0505615L	560PF 50WV
C197	CC0500101A	1PF 50WV
C218	CC0500101A	1PF 50WV
C225	CC0500201A	2PF 50WV
C286	CC0500301A	3PF 50WV
C61, 62, 90, 226	CC0500501A	5PF 50WV
C89	CC0501504A	15PF 50WV
C43	CC0501804A	18PF 50WV
C84	CC0502704A	17PF 50WV
C202	CC0504704A	47PF 50WV
C88, 116, 117	CC0506804A	68PF 50WV
C192	CC0508204A	82PF 50WV
C191	CC0501015A	100PF 50WV
C194	CC0501515A	150PF 50WV
C196, 295	CC0501815A	180PF 50WV
C139	CC0503904D	39PF 50WV
C281	CC0501015G	100PF 50WV
C282	CC0501815G	180PF 50WV
C210	CC0501815G	180PF 50WV
C124	CC0506804G	68PF 50WV
C123	CC0501215G	120PF 50WV
C220	CC0502215G	220PF 50WV
C86	CC0502715G	270PF 50WV
C85, 201, 203	CC0503915G	390PF 50WV
C209	CC0504715G	470PF 50WV
C199	CD3005614Z	560P 300WV
C7, 47, 50, 74, 95, 99, 100, 110, 118, 120, 174, 183, 244, 246, 245,	CC0501027L	0.001UF 50WV
C161	CC0501537L	0.015UF 50WV
C81, 83, 111, 113, 126, 173, 193, 206, 207, 211-213, 228, 234, 236, 249, 250, 256, 259, 268, 272, 280, 288, 292, 296 (COPPER SIDE), C270, C177, R302	CC0501047L	0.1UF 50WV
C5, 18, 20, 48, 65, 87, 92, 96, 102, 105, 106, 151, 160, 233, 251-253, 257, 258, 260-263, 240	CC0504737L	0.047uF 50WV
C32, 42, 45, 46, 221, 162, 163	CC0504727L	0.0047UF 50WV
C155	CC0502237L	0.022UF 50WV
C200	CC1001037L	0.01UF 100WV
C2, 3, 6, 9, 15-17, 19, 25, 51, 57, 58, 60, 109, 114, 138, 188, 189, 205, 216, 133, 217, 219, 223, 229, 230, 232, 247, 254, 255, 265, 267, 269, 271, 277, 278, 285, 184	CC0501037L	0.01UF 50WV
C154	CT0162246Z	0.22UF 16WV
C161	CC0501537L	0.015UF 50MV
C97	CT0164746Z	T/CO.47UF 16WV
C98	CT0162256Z	2.2UF 16WV
C112	CT0161056Z	1UF 16WV
C40, 178, 171, 235	CM0501045Z	0.1UF 50WV
C26, 27, 237	CM0501025Z	0.001UF 50WV
C29, 78, 185, 41	CM0501035Z	0.01UF 50WV
C39	CM0502235Z	0.022UF 50WV
C176	CM0504725Z	0.0047UF 50WV

C34	CM0504735Z	.047UF 50WV	T1	ECCHK16004	CHOKE COIL
C12,30,101	CM0502225Z	.0022UF 50WV	L34,37	ECCHK16070	CHOKE COIL
C10	CE0504747Z	.0.47UF 50WV	L47	ECCHK16176	CHOKE COIL
C67,75,153,157,170, 186,187,198	CE0501057Z	1UF 50WV	L16	ECCHK16246	CHOKE COIL
C159,214,148	CE0502257Z	2.2UF 50WV	L28	ECSPG18003	SPRING COIL
C38,103,182	CE0504757Z	4.7UF 50WV	L30	ECSPG18077	SPRING COIL
C13,21,22,44,82,115, 158,275,276	CE0251067Z	10UF 25WV	L29	ECSPG18075	SPRING COIL
C80,181	CE0252267Z	22UF 25WV	L31	ECSPG18365	SPRING COIL
C37,175	CE0254767Z	47UF 25WV	L35	ECSPG18001	SPRING COIL
C107,156,238,293	CE0161077Z	100UF 16WV	L38	ECRFZ10048	RF COIL
C152,179	CE0163377Z	330UF 16WV	L13,39,41	ECBAD18526	BEAD COIL
C91	CE0104777Z	470UF 10WV	VR16	RE10200041	S/F/R 1K
C243,248	CE0251087Z	1000UF 25WV	VR14,18	RE50200042	S/F/R 5K
C35	CEM254767Z	47UF 25WV	VR1,5	RE10300031	S/F/R 10K
FL1	EFCFW455HT	C/FILTER 455HT	VR9	RE10400043	S/F/R 100K
FL2	EFCFE107MX	C/FILTER 10.7MX RED	VR4	RE50400087	S/F/R 500K
X1	EYCAB10240	CRYSTAL 10.240MHZ	RA1	RCS0870014	R/ARRAY
X2	EYCAA15360	CRYSTAL 15.360MHZ	RA2	RCS0970015	R/ARRAY
X3	EYBAA12660	CRYSTAL 12.660MHZ	RA3	RCS0670025	R/ARRAY
X4	EYBAE10697	CRYSTAL 10.6975MHZ	R201-223	WLO007009Z	LEAD WIRE
IC1	ENJR00324D	NJM324D	R223-R198	WLO207009Z	LEAD WIRE
IC3	ENMC45106P	MC145106	J29	WX01070703	J/W 7x3x7
IC4,5	ENMC14008B	MC14008BCP	JP1-3,4,7,9,23,24-26	WX01060605	J/W 6x5x6
IC7	ENJR04558D	NJM4558D	,32,33,38,39,50,54-		
IC9	ENSM06130Z	TDA6130	57,59,61,62,63,83,		
Q8,17	T2SC01674L	2SC1674L	66,71,72,79,80,82,		
Q51	T2SC02538Z	2SC2538	85,86,87,93,100,105,		
Q52	T2SC01906Z	2SC1906	106,114,115,118122,		
Q26,36	TDTC0124ES	DTC124ES	124-126,190,135,125,		
Q24,43	TDTC0114ES	DTC114S	138-140,144,145,152,		
Q30,33,62	T2SA01282E	2SA1282AE	153,156,157,159,160,		
Q1,2,9,10-12,25,27, 28,29,46,61	T2SC01675L	2SC1675	128,165,166,168,170,		
Q60	TDTA0124ES	DTA124ES	172,174,175,177-179,		
Q3-5,7,14,16,31,35, 39,42,44,53,57,58,40	T2SC00945P	2SC945P	181,184,188,91,190		
Q6,38	T2SA00733P	2SA733P	JP200-202,204,205,	WX01070705	J/W 7x5x7
Q55	T2SA01869Z	2SA1869	209-211,212,214,217,		
Q18,19	FMOJ00310Z	F.E.T J310	219,220,224,226,231-		
D3,5,7-10,13,14,20- 23,27,33,34,35,37, 40,53,60-65,69,75- 82,84,85,88-91,97, 102,106,107,111-141, 143,144,147,149,150, JP191	ED1N04148Z	DIODE 1N4148	233,235,236,238,239, 242,243,245,250,252, 253,255-260,262,263, 265,271-273,276,278- 280,285,267x2,R119, R305,R89,R19,C142, C291,C128,C129,D26, D46,D50,D95,D49- L46,Q45,TP8,JP240 D237,D25	WX01070708	J/W 7x8x7
D1,2,11,12,30,31	ED1N00060P	1N60P	JP6,11,12,16-19,34-	WX01060610	J/W 6x10x6
D110	ED1N04003Z	1N4003	37,40-49,51-53,58,60		
D109	ED1N04007Z	1N4007	,67,70,88,96,101-104		
D16,17	EDSS00053Z	ISS53	,107-109,116,117,127		
D59,72	EDMA00027W	MA27W-A	,129,133,136,137,143		
D71,145	EDMA00027T	MA27T-A	,147,148,151,161,167		
D18,19,42,99,100, 146,148	EDSV00251Z	SVC-251SPA	,169,176,131,132,111		
D70	EDZD05519Z	5.1V 0.5W	,130		
D73	EDZD05759Z	7.5V 0.5W	JP215,218,222,223,	WX01070710	J/W 7x10x7
L2,3	ECIFT12002	I.F.T	225,227,228,230,234,		
L6	ECIFT12290	I.F.T	241,244,246-249,251,		
L17,20	ECIFT12012	I.F.T	254,261,266,277,286,		
L23	ECIFT12016	I.F.T	287,240,IC6,L36		
L1	ECIFT12252	I.F.T	JP69,75-78,81	WX01070712	J/W 7x12x7
L44	ECIFT12255	I.F.T	JP99	WX01070713	J/W 7x13x7
L9,10	ECIFT12256	I.F.T	FL3	WX01070715	J/W 7x15x7
L15,43	ECIFT12258	I.F.T	TP7-TP8,TP8-TP9	WX01070718	J/W 7x18x7
L40	ECIFT12262	I.F.T	J7x2,10,17,22,Q41	EX07N48223	P/C/S 3P
L14	ECIFT12558	I.F.T	J2,6,11,18	EX07N48350	P/C/S 3P
L5	ECIFT12253	I.F.T	J21	EX07N48490	P/C/S 4P
L7,42	ECIFT12440	I.F.T	J5,20	EX07N48222	P/C/S 5P
L8	ECIFT12492	I.F.T	J13	EX07N48331	P/C/S 6P
L4	ECIFT12526	I.F.T	J14	EX07N48224	P/C/S 7P
L503,504	ECCHK16000	CHOKE COIL	J1	EX07N48543	P/C/S 9P
			J28,4	EX07N48244	P/C/S 3P
			J12	EX07N41227	P/C/S 3P
			J16	EX07N41330	P/C/S 2P
			J4	EX07N49140	P/C/S 2P
			J29	EX07N48884	PCB CONNS
			J28,29	EX07N48151	P/C/H
			TP2,3,5	EX07N48612	P/C/S 1PIN
			CW/PA,EXT SP	EX06N41045	EAR JACK
			J304	EX07N48886	W/C/S 10P
			J16-SPK	EX07N48041	W/C/S 2P

J1	EX07N48899	W/C/S 9P
J13	EX07N48877	W/C/S 6P
J6, 11	EX07N48880	W/C/S 3P
J10	EX07N48888	W/C/S 2P
J14	EX07N48897	W/C/S 7P
J5	EX07N48881	W/C/S 5P
J20	EX07N48885	W/C/S 5P
J2	EX07N48882	W/C/S 3P
F.C	EX07N48887	W/C/S 6P
J17, Q41, J9-METER	EX07N48896	W/C/S 2P
J18	EX07N48898	W/C/S 3P
J7	EX07N48993	W/C/S 2P
DC(2)	CC0501037L	0.01UF 50WV
IC8	ENTA07222A	TA7222AP
Q54	T2SB00754Y	TR 2SB754Y
Q49	T2SC021660	TR 2SC2166C
Q47	T2SC023120	TR 2SC2312C
DC SOCKET	EDLT6A400Z	DIODE LT6A400

## PART LIST CX-4400 HP MAIN PCB

REFERENCE NUMBER	RANGER PART NO.	DESCRIPTION
	EPT690010Z	MAIN P.C.B
R246	RCP164794Z	4.7 Ω 1/16W
R267	RCP161504Z	15 Ω 1/16W
R241, 242	RCP162204Z	22 Ω 1/16W
R133, 213, 253, 282, VR10, VR11	RCP164704Z	47 Ω 1/16W
R130, 215, 220,	RCP165604Z	56 Ω 1/16W
R11	RCP166804Z	68 Ω 1/16W
R3, 5, 8, 30, 33, 76, 81, 174, 260, 263, JP237	RCP161014Z	100 Ω 1/16W
R32, 249	RCP161514Z	150 Ω 1/16W
R23	RCP161814Z	180 Ω 1/16W
R140, 163, 177	RCP162214Z	220 Ω 1/16W
R31	RCP162714Z	270 Ω 1/16W
R6, 10, 16, 24, 248, 254, 300	RCP163314Z	330 Ω 1/16W
R141, 188, 268, 293	RCP164714Z	470 Ω 1/16W
R258, 266	RCP165614Z	560 Ω 1/16W
R4, 50, 209	RCP166814Z	680 Ω 1/16W
R74	RCP168214Z	820 Ω 1/16W
R36, 62, 64, 67, 72, 115, 116, 118, 123, 136-138, 143, 144, 160, 164, 179, 186, 189, 205, 214, 154, 261, 291, 292, 295, 303, 206, 232	RCP161024Z	1KΩ 1/16W
R192	RCP161224Z	1.2KΩ 1/16W
R132, 207, 233, 247, 255, 273, 79, 80	RCP161524Z	1.5KΩ 1/16W
R226	RCP161824Z	1.8KΩ 1/16W
L7	RCP162024Z	2KΩ 1/16W
R20, 27, 71, 73, 75, 134, 162, 122, 283, 93	RCP162224Z	2.2KΩ 1/16W
R9, 25, 28	RCP162724Z	2.7KΩ 1/16W
R18, 22, 58, 66, 128, 129, 191, 219, 274, 277	RCP163324Z	3.3KΩ 1/16W
R52, 57	RCP163924Z	3.9KΩ 1/16W
R26, 35, 131, 165, 190, 195, 196	RCP164724Z	4.7KΩ 1/16W
R264, 265	RCP165624Z	5.6KΩ 1/16W
R14, 40, 41, 82, 127, 148, 297, 70	RCP166824Z	6.8KΩ 1/16W
R275	RCP168224Z	8.2KΩ 1/16W
R1, 13, 17, 37, 38, 65, 142, 145, 159, 161, 168, 175, 181, 202, 216, 227-231, 272, 276, 294, 296, 262, 68	RCP161034Z	10KΩ 1/16W
R178	RCP161234Z	12KΩ 1/16W
R180	RCP161534Z	15KΩ 1/16W
R187, 208	RCP162234Z	22KΩ 1/16W
R121	RCP162734Z	27KΩ 1/16W
R2	RCP163334Z	33KΩ 1/16W
R46	RCP163934Z	39KΩ 1/16W
R7, 29, 61, 63, 126, 185, 218, 234, 235, 236, 224, 222, 151	RCP164734Z	47KΩ 1/16W
R21, 85, 105, 107	RCP166834Z	68KΩ 1/16W
R45	RCP168234Z	82KΩ 1/16W
R12, 42-4 <sup>H</sup> 51, 53, 77, 78, 104, 108, 112, 182, 184, 225, 256, 257, 278, 221		
R47, 59, 117, 135, 139, 194	RCP162244Z	220KΩ 1/16W
R49, 55, 176	RCP162744Z	270KΩ 1/16W
R15, 34, 111, 183	RCP164744Z	470KΩ 1/16W
R48	RCP168244Z	820KΩ 1/16W
R106	RCP161054Z	1MΩ 1/16W



R193	RCP161554Z	1.5MΩ 1/16W	C34	CM0504735Z	.047UF 50WV
R124	RCP161064Z	10MΩ 1/16W	C12,30,101	CM0502225Z	.0022UF
JP264	RCP142204Z	22 Ω 1/4W			50WV
R244,243	RCP121514Z	150 Ω 1/2W	C10	CE0504747Z	0.47UF 50WV
R239	RCP121034Z	10KΩ 1/2W	C67,75,153,157,170, 186,187,198	CE0501057Z	1UF 50WV
C1,49,108,119,122, 279,147	CC0501004L	10PF 50WV	C159,214,148	CE0502257Z	2.2UF 50WV
C224	CC0501504L	15PF 50WV	C38,103,182	CE0504757Z	4.7UF 50WV
C195	CC0501804L	18PF 50WV	C13,21,22,44,82,115, 158,275,276	CE0251067Z	10UF 25WV
C24,287	CC0503304L	33PF 50WV	C80,181	CE0252267Z	22UF 25WV
C8	CC0508204L	82PF 50WV	C37,175	CE0254767Z	47UF 25WV
C4,53	CC0501015L	100PF 50WV	C107,156,238,293	CE0161077Z	100UF 16WV
C137	CC0501515L	150PF 50WV	C152,179	CE0163377Z	330UF 16WV
C56,222	CC0501815L	180PF 50WV	C91	CE0104777Z	470UF 10WV
C28	CC0502215L	220PF 50WV	C243,248	CE0251087Z	1000UF 25WV
C31,136	CC0502715L	270PF 50WV	C35	CEM254767Z	47UF 25WV
C11,14	CC0503315L	330PF 50WV	FL1	EFCFW455HT	C/FILTER 455HT
C23	CC0505615L	560PF 50WV	FL2	EFCFE107MX	C/FILTER 10.7MX RED
C218	CC0500101A	1PF 50WV	X1	EYCAB10240	CRYSTAL 10.240MHZ
C225,52	CC0500201A	2PF 50WV	X2	EYCAA15360	CRYSTAL 15.360MHZ
C286	CC0500301A	2PF 50WV	X3	EYBAA12660	CRYSTAL 12.660MHZ
C61,62,90,226	CC0500501A	5PF 50WV	X4	EYBAE10697	CRYSTAL 10.6975MHZ
C89	CC0501504A	15PF 50WV	IC1	ENJR00324D	I.C.NJM324D
C43	CC0501804A	18PF 50WV	IC3	ENMC45106P	MC145106
C84	CC0502704A	17PF 50WV	IC4,5	ENMC14008B	MC14008BCP
C202	CC0504704A	47PF 50WV	IC7	ENJR04558D	NJM4558D
C88,116,117	CC0506804A	68PF 50WV	IC9	ENSM06130Z	TDA6130
C192	CC0508204A	82PF 50WV	Q8,17	T2SC01674L	2SC1674L
C191	CC0501015A	100PF 50WV	Q51	T2SC02538Z	2SC2538
C194	CC0501515A	150PF 50WV	Q52	T2SC01906Z	2SC1906
C196,295	CC0501815A	180PF 50WV	Q26,36	TDTC0124ES	DTC124ES
C139	CC0503904D	39PF 50WV	Q24,43	TDTC0114ES	DTC114S
C281	CC0501015G	100PF 50WV	Q30,33,62	T2SA01282E	2SA1282AE
C282	CC0501815G	180PF 50WV	Q1,2,9,10-12,25,27, 28,29,46,61	T2SC01675L	2SC1675
C124	CC0506804G	68PF 50WV	Q60	TDTA0124ES	DTA124ES
C123	CC0501215G	120PF 50WV	Q3-5,7,14,16,31,35, 39,42,44,53,57,58,40	T2SC00945P	2SC945P
C86	CC0502715G	270PF 50WV	Q6,38	T2SA00733P	2SA733P
C85,201,203	CC0503915G	390PF 50WV	Q55	T2SA01869Z	2SA1869
C209,210	CC0504715G	470PF 50WV	Q18,19	FMOJ00310Z	F.E.T J310
C199	CD3005614Z	560P 300WV	D3,5,7-10,13,14,20- 23,27,33,34,35,37,40 ,53,60-65,69,75-82, 85,88-91,97,102, 106,107,111-141,143, 144,147,149,150,151, 28,95,66,96,84,JP191	ED1N04148Z	DIODE 1N4148
C7,47,50,74,95,99, 100,110,118,120,174, 183,244,246,245	CC0501027L	0.001UF 50WV	D1,2,11,12,30,31	ED1N00060P	1N60P
C81,83,111,113,126, 173,193,206,207,228, 234,236,249,250,256, 259,268,272,280,288, 292,296,211-213 (COPPER SIDE),270, C177,R302	CC0501047L	0.1UF 50WV	D110	ED1N04003Z	1N4003
C5,18,20,48,65,87,92 ,96,102,105,106,151, 160,233,251-253,257, 258,260-263,240	CC0504737L	0.047uF 50WV	D109	ED1N04007Z	1N4007
C32,42,45,46,221,162 ,163	CC0504727L	0.0047UF 50WV	D16,17	EDSS00053Z	ISS53
C155	CC0502237L	0.022UF 50WV	D59,72	EDMA00027W	MA27W-A
C200	CC1001037L	0.01UF 100WV	D71,145	EDMA00027T	MA27T-A
C2,3,6,9,15-17,19,25 ,51,57,58,60,109,114 ,121,138,188,189,205 ,216,217,219,223,229 ,230,232,247,254,255 ,265,267,269,271,277 ,278,285,184	CC0501037L	0.01UF 50WV	D18,19,42,99,100,146 ,148	EDSV00251Z	SVC-251SPA
C161	CC0501537L	0.015UF 50WV	D70	EDZD05519Z	5.1V 0.5W
C154	CT0162246Z	0.22UF 16WV	D73	EDZD05759Z	7.5V 0.5W
C97	CT0164746Z	0.47UF 16WV	L2,3	ECIFT12002	I.F.T
C98	CT0162256Z	2.2UF 16WV	L6	ECIFT12290	I.F.T
C112	CT0161056Z	1UF 16WV	L17,20	ECIFT12012	I.F.T
C40,178,171,235 C26,27,237	CM0501045Z	0.1UF 50WV	L23	ECIFT12016	I.F.T
C29,78,185,41 C39	CM0501025Z	0.001UF 50WV	L1	ECIFT12252	I.F.T
C176	CM0501035Z	0.01UF 50WV	L44	ECIFT12255	I.F.T
	CM0502235Z	0.022UF 50WV	L9,10	ECIFT12256	I.F.T
	CM0504725Z	0.0047UF 50WV	L15,43	ECIFT12258	I.F.T
			L40	ECIFT12262	I.F.T
			L14	ECIFT12558	I.F.T
			L5	ECIFT12253	I.F.T
			L7,42	ECIFT12440	I.F.T
			L8	ECIFT12492	I.F.T
			L4	ECIFT12526	I.F.T
			L503,504	ECCHK16000	CHOKE COIL

T1	ECCHK16004	CHOKO COIL	J10	EX07N48888	W/C/S 2P
L37, 33, 34	ECCHK16070	CHOKO COIL	J14	EX07N48897	W/C/S 7P
L47	ECCHK16176	CHOKO COIL	J5	EX07N48881	W/C/S 5P
L16	ECCHK16246	CHOKO COIL	J20	EX07N48885	W/C/S 5P
L28	ECSPG18003	SPRING COIL	J2	EX07N48882	W/C/S 3P
L30	ECSPG18077	SPRING COIL	F.C	EX07N48887	W/C/S 6P
L29	ECSPG18075	SPRING COIL	J17, Q41, J9-METER	EX07N48896	W/C/S 2P
L31	ECSPG18365	SPRING COIL	J18	EX07N48898	W/C/S 3P
L35	ECSPG18001	SPRING COIL	J7	EX07N48993	W/C/S 2P
L38	ECRFZ10048	RF COIL	DC (2)	CC0501037L	0.01UF 50WV
L13, 39, 41	ECBAD18526	BEAD COIL	IC8	ENTA07222A	IC TA7222AP
VR16	RE10200041	S/F/R 1K	Q54	T2SB00754Y	TR 2SB754Y
VR14, 18	RE50200042	S/F/R 5K	Q49	T2SC02166C	TR 2SC2166C
VR1, 5	RE10300031	S/F/R 10K	Q47, 48	T2SC02312C	TR 2SC2312C
VR9	RE10400043	S/F/R 100K	Q37	T2SA01869Z	TR 2SA1869
VR4	RE50400087	S/F/R 500K	DC SOCKET	EDLT6A400Z	DIODE
RA2	RCS0870014	R/ARRAY			LT6A400
RA1	RCS0970015	R/ARRAY			
RA3	RCS0670025	R/ARRAY			
R201-R223	WL0007009Z	LEAD WIRE			
R223-R198	WL0207009Z	LEAD WIRE			
JP1-3, 4, 7, 9, 23, 24-26	WX01060605	J/W 6x5x6			
, 32, 33, 38, 39, 50, 54-					
57, 59, 61, 62, 63, 66, 71					
, 72, 79, 80, 82, 85, 83,					
86, 87, 93, 100, 105, 106					
, 114, 115, 118-122,					
124-126, 128, 135,					
138-140, 144, 145, 152,					
153, 156, 157, 159, 160,					
125, 165, 166, 168, 170,					
172, 174, 175, 177- 179					
, 181, 184, 188, 125, 190					
, 91, 195, 142					
JP200-202, 204, 205,	WX01070705	J/W 7x5x7			
209, 211, 212, 214, 217,					
219, 220, 224, 226, 231-					
233, 235, 236, 238, 239,					
242, 243, 245, 250, 252,					
253, 255-260, 262, 263,					
265, 271-273, 276, 278-					
280, 285, 267x2, R119,					
R305, R89, R19, C142,					
C291, C128, C129, D26,					
D46, D50, D49-L46, TP8,					
D95, D49-L46, JP240					
D25, 237	WX01070708	J/W 7x8x7			
JP6, 11, 12, 16-19, 34-	WX01060610	J/W 6x10x6			
37, 40-49, 51-3, 58, 60,					
67, 70, 88, 96, 101-104,					
107-109, 116, 117, 127,					
129, 133, 136, 137, 143,					
147, 148, 151, 161, 167,					
169, 176, 131, 132, 240					
JP215, 218, 222, 223,	WX01070710	J/W 7x10x7			
225, 227, 228, 230, 234,					
241, 244, 246-249, 251,					
254, 261, 266, 277, 286,					
287, IC6, L36					
JP75-78, 81, 69	WX01070712	J/W 7x12x7			
JP99	WX01070713	J/W 7x13x7			
FL3	WX01070715	J/W 7x15x7			
TP7-TP8, TP8-TP9	WX01070718	J/W 7x18x7			
J7x2, 10, 17, 22, Q41	EX07N48223	P/C/S 3P			
J2, 3, 6, 11, 18	EX07N48350	P/C/S 3P			
J21	EX07N48490	P/C/S 4P			
J5, 20	EX07N48222	P/C/S 5P			
J13	EX07N48331	P/C/S 6P			
J14	EX07N48224	P/C/S 7P			
J1	EX07N48543	P/C/S 9P			
J28, 4	EX07N48244	P/C/S 3P			
J12	EX07N41227	P/C/S 3P			
J15	EX07N48884	P/C/S 6P			
J16	EX07N41330	P/C/S 2P			
J28, 29	EX07N48151	P/C/H			
TP2, 3, 5	EX07N48612	P/C/S 1PIN			
CW/PA, EXT SP	EX06N41045	EAR JACK			
J304-MAIN	EX07N48886	W/C/S 10P			
J16-SPK	EX07N48041	W/C/S 2P			
J1	EX07N48899	W/C/S 9P			
J6, 11	EX07N48880	W/C/S 3P			