

# PRESIDENT

## BILLY



### SERVICE MANUAL

# 1. SPECIFICATIONS

## GENERAL

- |  |   |
|--|---|
| 1. Channels                            | : 40  |
| 2. Frequency Range                     | : 26.965 ~ 27.405MHz  |
| 3. IC's                                | : 2   |
| 4. Crystal Oscillator                  | : 1   |
| 5. Microphone                          | : Electret Condenser Type   |
| 6. Speaker                             | : 16 ohm , 5 Watts  |
| 7. Antenna Connector                   | : M-Type  |
| 8. Jacks & Connectors                  | : Microphone 4Pin Modular Jack<br>( 6Pin Size )   |
| 9. Controls                            | : Channel Selector Up/Down , Power Switch ,<br>Volume control , Squelch Control   |
| 10. Illuminations                      | : Channel Readout (LED Red) , TX Indicator (LED Red)  |
| 11. Size                               | : W : 120 mm.<br>H : 42 mm.<br>D : 170 mm.  |
| 12. Weight                             | : 0.45 Kg.  |
| 13. Accessories                        | : Microphone , Microphone Hanger ,<br>Mounting Bracket with Screws  |
| 14. Power Source                       | : 13.8V DC Negative Ground ,<br>Reverse Polarity Protection   |
| 15. Standard Operating Temp.           | : -30 ~ +50° C  |
| 16. Storage Temperature                | : -40 ~ +70° C  |
| 17. Electrostatic Discharge Protection | : All external case and component parts shall withstand<br>the application of 15kV ESD without causing failure or<br>malfunction to the unit. |
| 18. Channel Memory Backup Time         | : Nom. 48 Hrs   |
| <u>REMARK</u>                          | : Exclude Battery   |

## MEASUREMENT CONDITIONS

1. Power Source	: 13.8V ( DC )
2. Antenna Impedance	: 50Ω
3. Test Temperature	: 25° C
4. Modulation Frequency	: 1 KHz ( RX )
5. Mean Signal Input Level	: 1000μV
6. Reference Audio Output Power	: 0.5W
7. Reference Modulation Percentage	: 1 KHz , 30%
8. Audio Output Load	: 8Ω resistive ( connect to inside connector )
9. Measuring Channel	: 19
10. Standard Method of Measurement	: FCC PART 95/15 EIA RS-382
11. ESD Test Condition	: Probe 150pF with 500Ω in series Test Temperature 25° C

NOTE: Limit Specifications are for measurements on all channels.

## TRANSMITTER SECTION

<u>ITEM</u>	<u>UNIT</u>	<u>NOMINAL</u>	<u>LIMIT</u>
1. Frequency Tolerance at 25 °C ( 5 minutes after Switch on )	Hz	± 600	± 900
2. Carrier Power at No Modulation	W	4.0	3.6 to 4.4
3. Spurious Harmonic Emission	dB	-70	-60
4. Microphone sensitivity at 1KHz for 50% Mod	mV	10	20
5. Modulation Frequency Response ( 1KHz , 0dB Reference )			
Lower at 300Hz	dB	-3	0 to -15
Upper at 3.0KHz	dB	-3	0 to -12
6. AMC Range 50 to 100% Mod	dB	45	40
7. Hum and Noise in Transmit	dB	45	40
8. Battery Drain at No Modulation	mA	850	1300
80% Modulation	mA	1300	1700
9. Modulation Distortion	%	4.0	7.0
11. Output Protection		: Shall meet for 5 minutes for all VSWR's ( around the Smith Chart ) of 20:1 without damage.	
12. Output stability		at all VSWR's ( around the Smith Chart ) of up to 5: 1 under continuous operation of a duty cycle of 5 minutes transmitting, and 1 minute receiving.	

## RECEIVER SECTION

<u>ITEM</u>	<u>UNIT</u>	<u>NOMINAL</u>	<u>LIMIT</u>
1. Max. Sensitivity	μV	0.5	1
2. Sensitivity for 10dB S+N/	μV	0.5	1
3. AGC Figure of Merit 50mV for 10dB Change in Audio Output	dB	85	75
4. Overall Audio Fidelity at 6dB down ( refer to 1KHz )			
Upper Frequency	Hz	2500	2000 min.
Lower Frequency	Hz	300	500 max.
5. Adjacent Channel Selectivity ( Two Signal )	dB	55	45
6. Maximum Audio Output Power	W	4.0	2.0
7. Hum and Noise Ratio at 1mV	dB	40	30
8. Squelch Sensitivity at Threshold	μV	0.5	1
9. Squelch Sensitivity at Tight	μV	1000	250 to 4000
10. Image Rejection Ratio ( 900KHz )	dB	70	60
11. IF Rejection Ratio 1st and 2nd	dB	70	60
12. 1/2 IF Rejection Ratio	dB	70	60
13. Spurious response (22.73 MHz 40CH)	dB	50	40
14. Oscillator Dropout Voltage	V	9	11
15. Battery Drain ( at DC Power Jack + 13.8V )			
(a) No Signal	mA	100	200
(b) Max. Power	mA	800	1000
16. Distortion	%	4	7

## 2. ALIGNMENT PROCEDURE

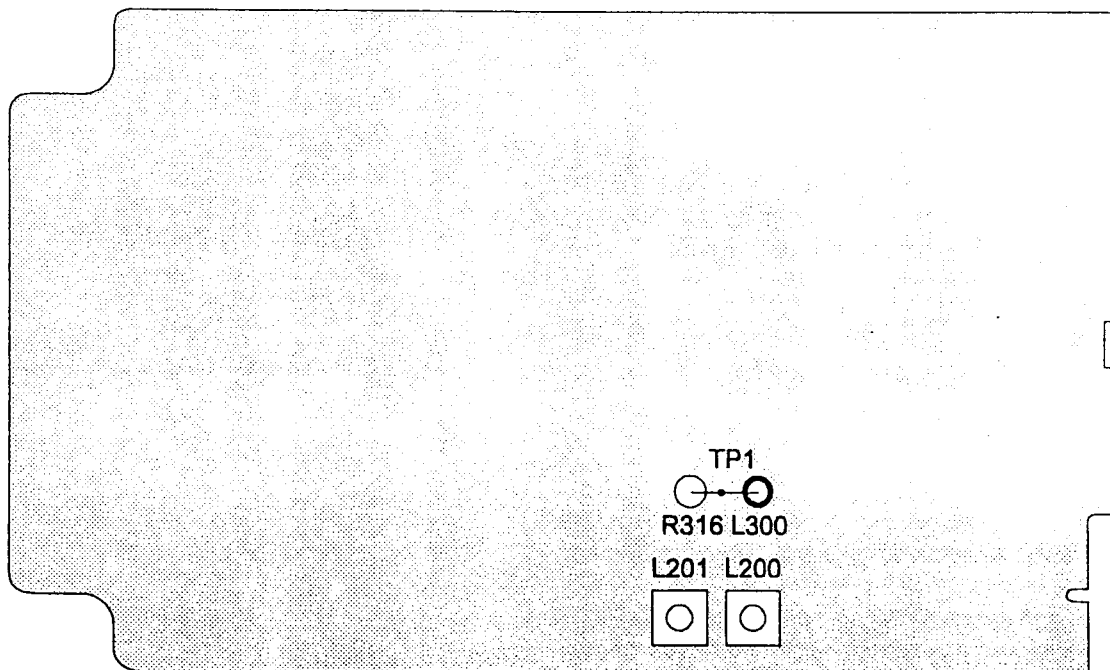
### 1. PLL PORTION

- |              |   |
|--------------|---|
| A) EQUIPMENT | STABILIZED DC POWER SUPPLY<br>DC VOLTMETER<br>RF POWER METER<br>OSCILLOSCOPE<br>FREQUENCY COUNTER<br>DUMMY LOAD ( 50Ω ) |
| B) CONDITION | SUPPLY VOLTAGE : 13.8V ( DC )   |
| C) ALIGNMENT |   |

STEP	CONDITION OF THE DEVICE	EQUIPMENT CONNECTION	ADJUSTMENT	PROCEDURE
1	TX 40CH	DC Voltmeter to TP1	L201	Adjust L201 for $1.5V \pm 0.1V$ as read on DC voltmeter.
2	RX 40CH	Ditto	L200	Similar to step 1
3	TX/RX 1~40 CH	Ditto	-	Check DC voltage of all channels for within 1.4V ~ 3.4V

NOTE 1) Frequency tolerance must meet with specification.

LOCATION OF ADJUSTMENT ( PLL )



## 2. TRANSMITTER PORTION

### A) CONDITION

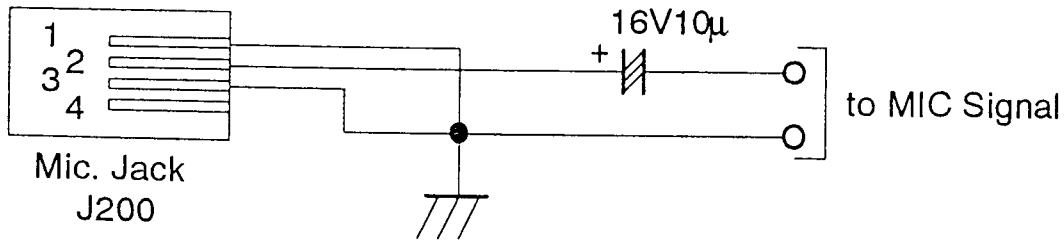
SUPPLY VOLTAGE : 13.8V ( DC )  
 LOAD RESISTANCE : 50 Ω  
 INPUT SIG. FREQ. ( AF ) : 1 kHz  
 CHANNEL SET : 19 CH

Set controls and switches as follows unless otherwise specified.

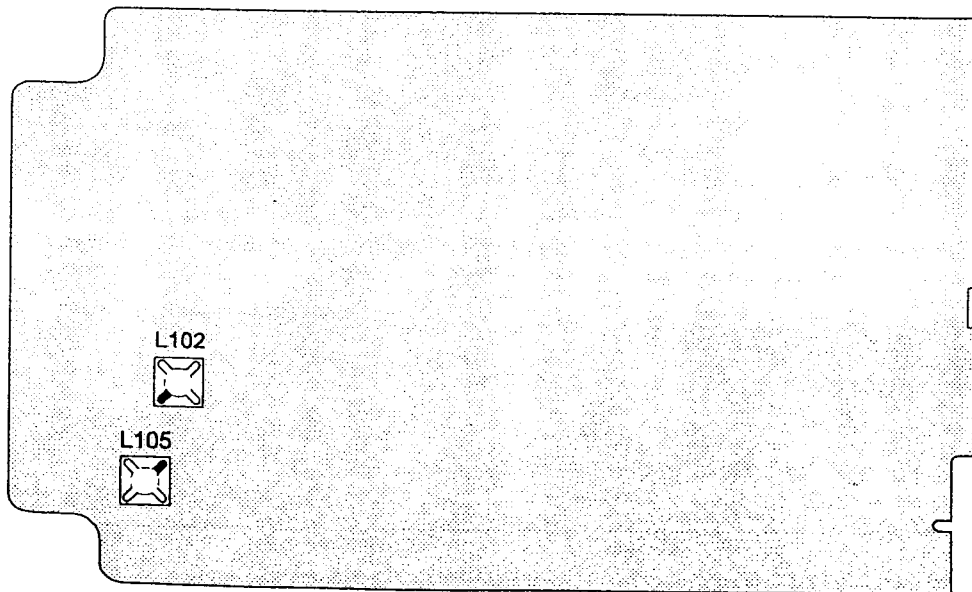
### B) ALIGNMENT

STEP	CONDITION OF THE DEVICE	EQUIPMENT CONNECTION	ADJUSTMENT	PROCEDURE
1	Input 500mV 19 CH	Connect RF PWR meter to ANT. JACK ( J600 )	L102 ( WHT ) L105 ( GRN )	Maximum reading of RF PWR meter.
2	No Input ( No Mod. )	Ditto	L102	Rotate the core of the L102 clockwise to read 4 Watts on RF PWR meter.
3	Ditto	Ditto	-	Confirm frequency of all channels within specification.

NOTE 2) DC stopping capacitor is required for MIC signal input line since DC current appears on Pin No. 2.



### LOCATION OF ADJUSTMENT ( TX )



### 3. RECEIVER PORTION

#### A) CONDITION

SUPPLY VOLTAGE : 13.8V ( DC )      CHANNEL SET : 19 CH  
 ANT. LOAD IMPEDANCE: 50  $\Omega$       RF SIGNAL FREQ. : 27.185MHz  
 MOD. SIGNAL : 1 kHz, 30% Mod.      RF SIG. OUTPUT : 0dB = 0.5 $\mu$ V  
 STANDARD OUTPUT : 500 mW (2.0V)      LOAD IMPEDANCE : 8  $\Omega$

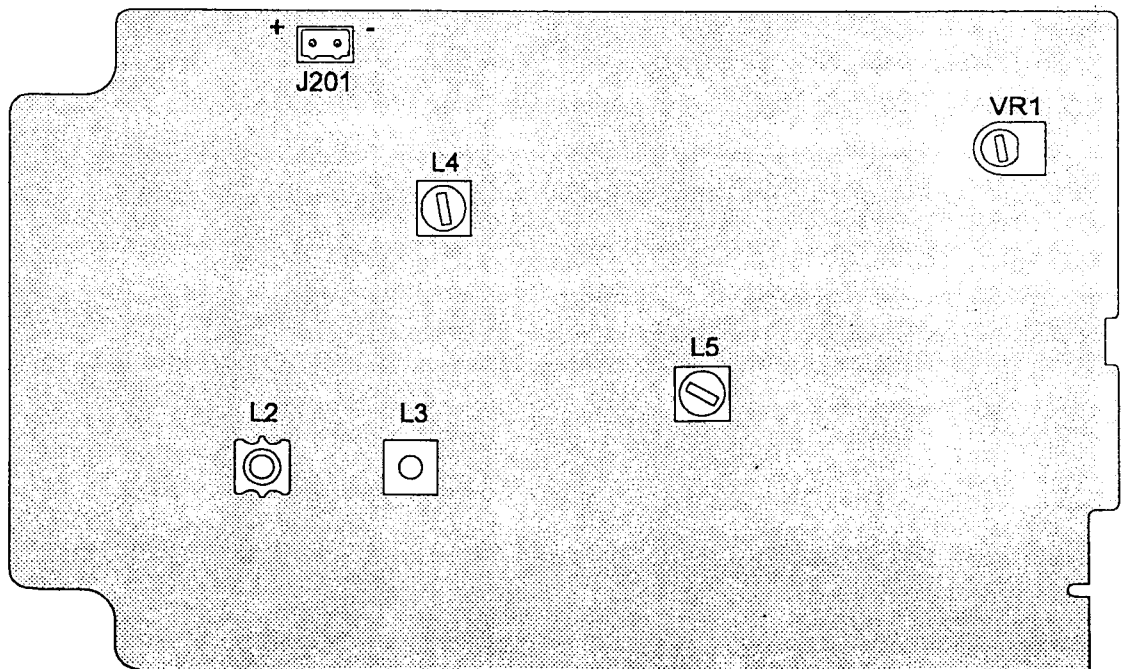
Set all controls and switches as follows unless otherwise specified.

SQUELCH : MIN. ( FULLY CCW )

#### B) ALIGNMENT

STEP	CONDITION OF THE DEVICE	EQUIPMENT CONNECTION	ADJUSTMENT	PROCEDURE
1	19 CH Volume=Max ( fully CW )	Signal Generator to J600.  AC voltmeter to J201.	L2 to L5	Adjust coils to maximum reading of the AC Voltmeter. Keep RF signal level of the sign gen. to meet standard output level slightly less level during this alignme STD output at -2dB input.
2	Volume=Max SQ = Max ( fully CW )	Ditto	VR1	Set RF Signal ouput level of the sign. generator to 66dB, then adjust VR1 t to just "open" squelch.

#### LOCATION OF ADJUSTMENT ( RX )

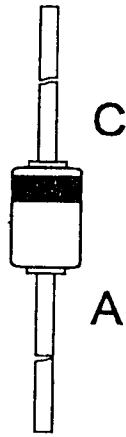


### 3. SEMICONDUCTOR LEAD IDENTIFICATION

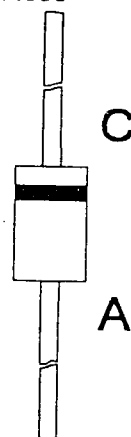
DIODES  
1SV68



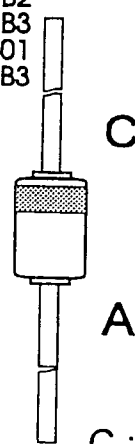
IN4148



IN4003

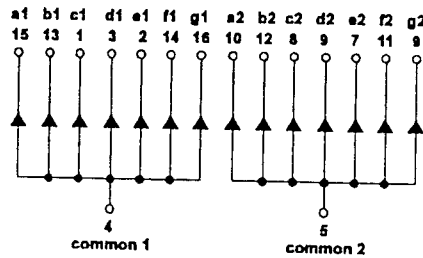
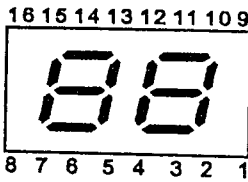


HZ3B2  
HZ5B3  
HZ601  
HZ9B3

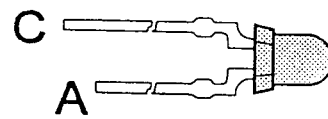


C : Cathode  
A : Anode

LDR-204ALD

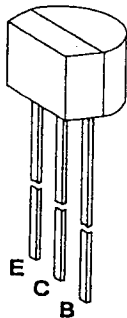


TLR-124

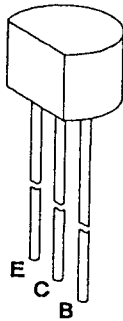


#### TRANSISTORS

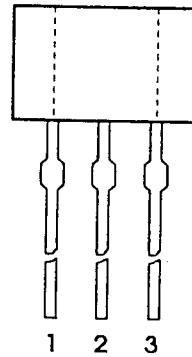
2SC2001  
2SC1675  
2SA733



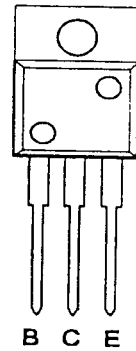
2SC945A  
2SC1674



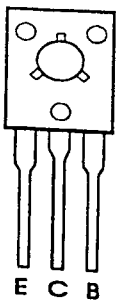
DTC144WS



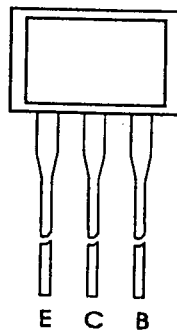
2SC2078



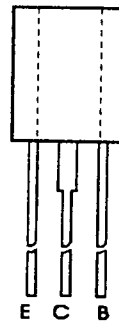
2SC2314



2SC941TM



2SC3242



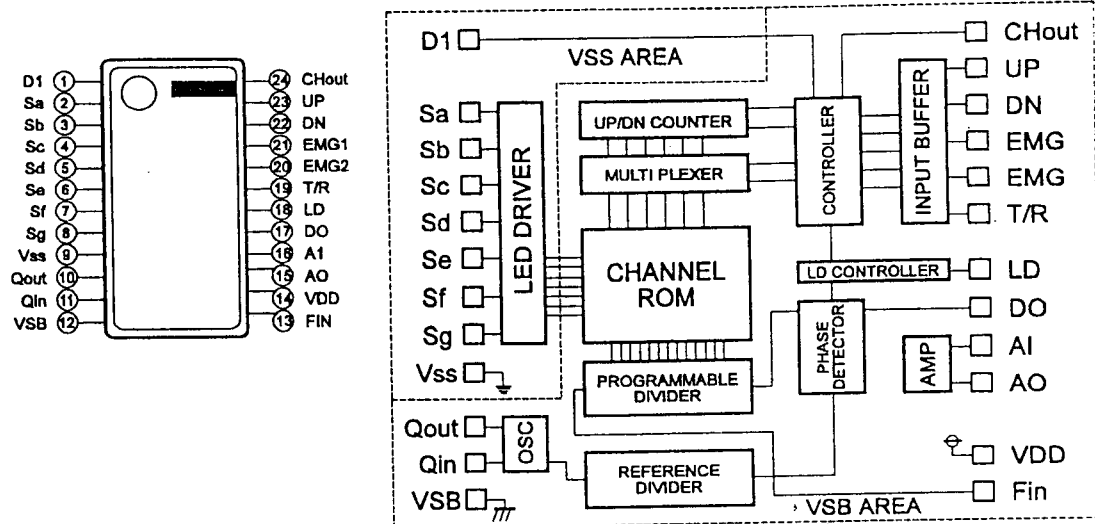
B : BASE  
C : COLLECTOR  
E : EMITTER

1 GND  
2 OUT  
3 IN

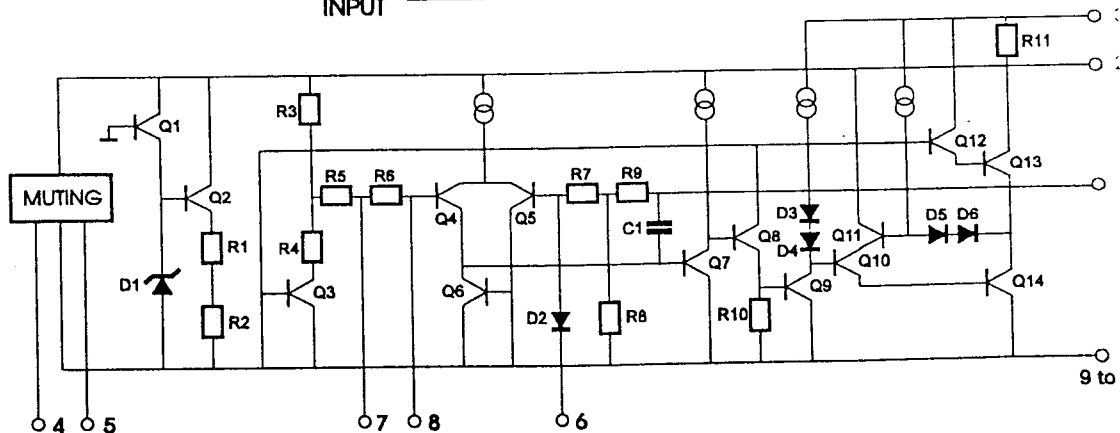
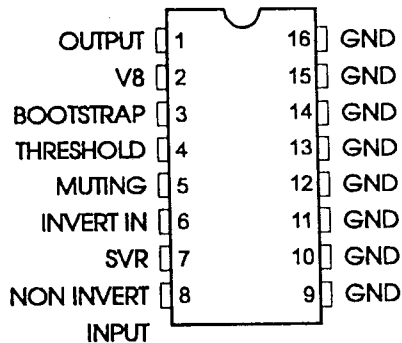


## 4. IC INTERNAL DIAGRAMS

SM5125AM



TDA1905



GYM...

# 5. PARTS LIST

Parts are subject to change without prior notice.

(MODEL)

UT348ZP  
(SYMBOL)

PRO501XL  
(PARTS CODE)

(DESCRIPTION)

C001  
C002  
C003  
C004  
C005  
C007  
C008  
C009  
C010  
C011

GCMB130377Z  
GCMT130376Z  
GHDL330378Z  
GMSC480407Z  
GNBP330379Z  
GNBY330380Z  
HBCT430384Z  
HCSR330381Z  
HHDE430382Z  
HHDP430876Z  
HHDZ430383Z  
HHSK418924B  
HMHG402919Z  
HSDC431235Z  
HSDP430877Z  
KDPT430385Z  
PLBC482147Z  
PLBS431081Z  
PLBZ431181Z  
RCUN405417Z  
RCUN412259Z  
RETC330714Z  
SSCW430050N  
UBUD429900Z  
UTUD01348ZA  
UTYY58000ZB  
VNYL2323758  
VNYL3101500  
VNYL3102500  
VNYL3203000  
WBXC330424Z  
WCTZ430425Z  
WSFC330426Z  
WSLV418706Z  
SSCW193008N  
SSCW295010N  
SSCW343006N  
SSCW540050N  
SSCW803006N  
SSCW803008N  
SSCW803014N  
BCHR811804Z  
BCKM811026Z  
BCKQ811030Z  
BCKM811026Z  
BCAB811006Z  
BCKQ811030Z  
BCHG812214Z  
BCKM811026Z  
BCKQ812230Z  
BCKQ811030Z

CASE:BOTTOM ABS,BLACK  
CASE:TOP ABS,BLACK,SILK  
HOLDER:LED ABS,BLACK  
SCREW:MOUNTING ABS,BLACK  
BUTTON:PUSH ABS,BLACK  
KNOB ABS,BLACK  
MOUNTING BRACKET SPCC,1.2T,MFZN3  
CHASSIS:REAR SECC,1.0T  
HOLDER:IC SECC,1.0T  
HOLDER:PCB SPTE,0.5T  
HOLDER:BUTTON SUS304 OR C7701R,0.2T  
HEAT SINK C5191R, 0.5T  
HANGER:MICROPHONE SPCC,1.0T,NI  
SHIELD CASE SPTE 0.3T  
SHIELD PLATE SPTE,0.3T  
WINDOW PC,1.0T,SILK  
LABEL:WARNING,DC CORD PAPER,PRINT  
LABEL:SERIAL NO PAPER  
INDY 800 LABEL POLYESTER FILM,0.05T  
CUSHION NEOPRENE SP 2T  
SPACER NEOPRENE SP 6T  
PROTECTION COVER COATED BOARD  
HEX NUT M5 NI  
INDY 800 CARD PAPER  
OWNER'S MANUAL \*\*  
FCC RULES PART 95 \*\*  
VINYL BAG 320X370X580X0.07T  
VINYL BAG 100X150X0.1T  
VINYL BAG 100X250X0.1T  
VINYL BAG 200X300X0.1T  
DISPLAY BOX \*\*  
SHIPPING CARTON BOX \*\*  
STYROFOAM PAD \*\*  
SLEEVE \*\*  
SCREW:BIND HD + M3X8 NI  
SCREW:TAPPING ROUND HD + D5X10 NI  
SCREW:TAPTIGHT BIND HD + M3X6 NI  
WASHER:STAR D5 NI  
SCREW:P TIGHT BIND HD + D3X6 NI  
SCREW:P TIGHT BIND HD + D3X8 NI  
SCREW:P TIGHT BIND HD + D3X14 NI  
CAPACITOR:CERAMIC TS 2.5 S 18PF 50V J RH TAPING  
CAPACITOR:CERAMIC TS 2.5 S 0.001UF 50V M YD(D) TAPING  
CAPACITOR:CERAMIC TS 5.0 S 0.01UF 50V Z YF TAPING  
CAPACITOR:CERAMIC TS 2.5 S 0.001UF 50V M YD(D) TAPING  
C:ELCT TS2.5C+ (D5\*11) 10UF 50V M TAPE  
CAPACITOR:CERAMIC TS 5.0 S 0.01UF 50V Z YF TAPING  
CAPACITOR:CERAMIC TS 5.0 S 220PF 50V J SL TAPING  
CAPACITOR:CERAMIC TS 2.5 S 0.001UF 50V M YD(D) TAPING  
CAPACITOR:CERAMIC TS 5.0 S 0.022UF 50V Z YF TAPING  
CAPACITOR:CERAMIC TS 5.0 S 0.01UF 50V Z YF TAPING

(SYMBOL)	(PARTS CODE)	(DESCRIPTION)	
C012	BCKQ814730Z	CAPACITOR:CERAMIC	TS 5.0 S 0.047UF 50V Z YF TAPI
C014	BCGG514735Z	C:SEMI-CONDUCTOR(SR)	TS 5.0 S 0.047UF 25V K TAPING
C015	BCAB814796Z	C:ELCT TS2.5C+ (D5*11)	4.7UF 50V M TAPE
C016	BCKQ814730Z	CAPACITOR:CERAMIC	TS 5.0 S 0.047UF 50V Z YF TAP
C017	BCKM811026Z	CAPACITOR:CERAMIC	TS 2.5 S 0.001UF 50V M YD(D)TA
C018	BCAB811006Z	C:ELCT TS2.5C+ (D5*11)	10UF 50V M TAPE
C019	BCKM811026Z	CAPACITOR:CERAMIC	TS 2.5 S 0.001UF 50V M YD(D)TA
C020	BCAB811096Z	C:ELCT TS2.5C+ (D5*11)	1UF 50V M TAPE
C021	BCKQ811030Z	CAPACITOR:CERAMIC	TS 5.0 S 0.01UF 50V Z YF TAPI
C022	BCKQ814720Z	CAPACITOR:CERAMIC	TS 2.5 S 0.0047UF 50V Z YF TAF
C023	BCGG514725Z	C:SEMI CONDUCTOR(SR)	TS 2.5 S 0.0047UF 25V K TAPING
C024	BCAB812296Z	C:ELCT TS2.5C+ (D5*11)	2.2UF 50V M TAPE
C030	BCKQ811030Z	CAPACITOR:CERAMIC	TS 5.0 S 0.01UF 50V Z YF TAPI
C031	BCAB514706Z	C:ELCT TS2.5C+ (D5*11)	47UF 25V M TAPE
C032	BCKM811026Z	CAPACITOR:CERAMIC	TS 2.5 S 0.001UF 50V M YD(D)TA
C033	BCHC816804Z	CAPACITOR:CERAMIC	TS 5.0 S 68PF 50V J CH TAPIN
C101	BCHC812214Z	CAPACITOR:CERAMIC	TS 5.0 S 220PF 50V J CH TAPE
C102	BCHC815604Z	CAPACITOR:CERAMIC	TS 5.0 S 56PF 50V J CH TAPIN
C103	BCHC812214Z	CAPACITOR:CERAMIC	TS 5.0 S 220PF 50V J CH TAPE
C104	BCKM811026Z	CAPACITOR:CERAMIC	TS 2.5 S 0.001UF 50V M YD(D)TA
C105	BCKM811036Z	CAPACITOR:CERAMIC	TS 5.0S 0.01UF 50V M YD(D)TA
C106	BCHU812704Z	CAPACITOR:CERAMIC	TS 2.5 S 27PF 50V J UJ TAPIN
C108	BCHU812214Z	CAPACITOR:CERAMIC	TS 5.0 S 220PF 50V J UJ TAPIN
C109	BCKQ811030Z	CAPACITOR:CERAMIC	TS 5.0 S 0.01UF 50V Z YF TAPI
C110	BCKQ814720Z	CAPACITOR:CERAMIC	TS 2.5 S 0.0047UF 50V Z YF TAF
C111	BCKM811026Z	CAPACITOR:CERAMIC	TS 2.5 S 0.001UF 50V M YD(D)TA
C112	BCKQ811030Z	CAPACITOR:CERAMIC	TS 5.0 S 0.01UF 50V Z YF TAPI
C113	BCHU814714Z	CAPACITOR:CERAMIC	TS 5.0 S 470PF 50V J UJ
C114	BCKQ811030Z	CAPACITOR:CERAMIC	TS 5.0 S 0.01UF 50V Z YF TAPI
C115	BCKM811026Z	CAPACITOR:CERAMIC	TS 2.5 S 0.001UF 50V M YD(D)TA
C116	BCHU811804Z	CAPACITOR:CERAMIC	TS 2.5 S 18PF 50V J UJ TAPING
C200	BCAW514716Z	C:ELCT TS5.0S+ (D5*11)	470UF 25V M TAPE
C201	BCGG511045Z	C:SEMI-CONDUCTOR(SR)	TS 5.0 S 0.1UF 25V K TAPING
C202	BCAV112216Z	C:ELCT TS2.5S+ (D5*11)	220UF 10V M TAPE
C203	BCAB812296Z	C:ELCT TS2.5C+ (D5*11)	2.2UF 50V M TAPE
C204	BCAP511026Z	CAPACITOR:ELECTROLYTIC	1000UF 25V M C-130
C205	BCAB811096Z	C:ELCT TS2.5C+ (D5*11)	1UF 50V M TAPE
C207	BCGG511045Z	C:SEMI-CONDUCTOR(SR)	TS 5.0 S 0.1UF 25V K TAPING
C208	BCGG514725Z	C:SEMI CONDUCTOR(SR) T	S 2.5 S 0.0047UF 25V K TAPING
C209	BCGG514735Z	C:SEMI-CONDUCTOR(SR)	TS 5.0 S 0.047UF 25V K TAPING
C210	BCKM811026Z	CAPACITOR:CERAMIC	TS 2.5 S 0.001UF 50V M YD(D)T
C212	BCAB513306Z	C:ELCT TS2.5C+ (D5*11)	33UF 25V M TAPE
C213	BCGG512225Z	C:SEMI CONDUCTOR(SR)	TS 2.5 S 0.0022UF 25V K TAPINC
C214	BCGG513325Z	C:SEMI CONDUCTOR(SR)	TS 2.5 S 0.0033UF 25V K TAPING
C215	BCKQ814720Z	CAPACITOR:CERAMIC	TS 2.5 S 0.0047UF 50V Z YF TAF
C217	BCAB514706Z	C:ELCT TS2.5C+ (D5*11)	47UF 25V M TAPE
C218	BCKQ811030Z	CAPACITOR:CERAMIC	TS 5.0 S 0.01UF 50V Z YF TAPI
C219	BCKM811026Z	CAPACITOR:CERAMIC	TS 2.5 S 0.001UF 50V M YD(D)T
C220	"	"	"
C300	B CKQ814720Z	CAPACITOR:CERAMIC	TS 2.5 S 0.0047UF 50V Z YF TAI
C301	BCHC813304Z	CAPACITOR:CERAMIC	TS 2.5 S 33PF 50V J CH TAPIN
C302	BCAB812296Z	C:ELCT TS2.5C+ (D5*11)	2.2UF 50V M TAPE
C303	"	"	"
C304	BCKM811026Z	CAPACITOR:CERAMIC	TS 2.5 S 0.001UF 50V M YD(D)T
C305	BCHC812714Z	CAPACITOR:CERAMIC	TS 5.0 S 270PF 50V J CH TAPE
C306	BCHG813314Z	CAPACITOR:CERAMIC	TS 5.0 S 330PF 50V J SL TAPIN
C307	BCKQ814730Z	CAPACITOR:CERAMIC	TS 5.0 S 0.047UF 50V Z YF TAF
C308	BCGG514735Z	C:SEMI-CONDUCTOR(SR)	TS 5.0 S 0.047UF 25V K TAPING

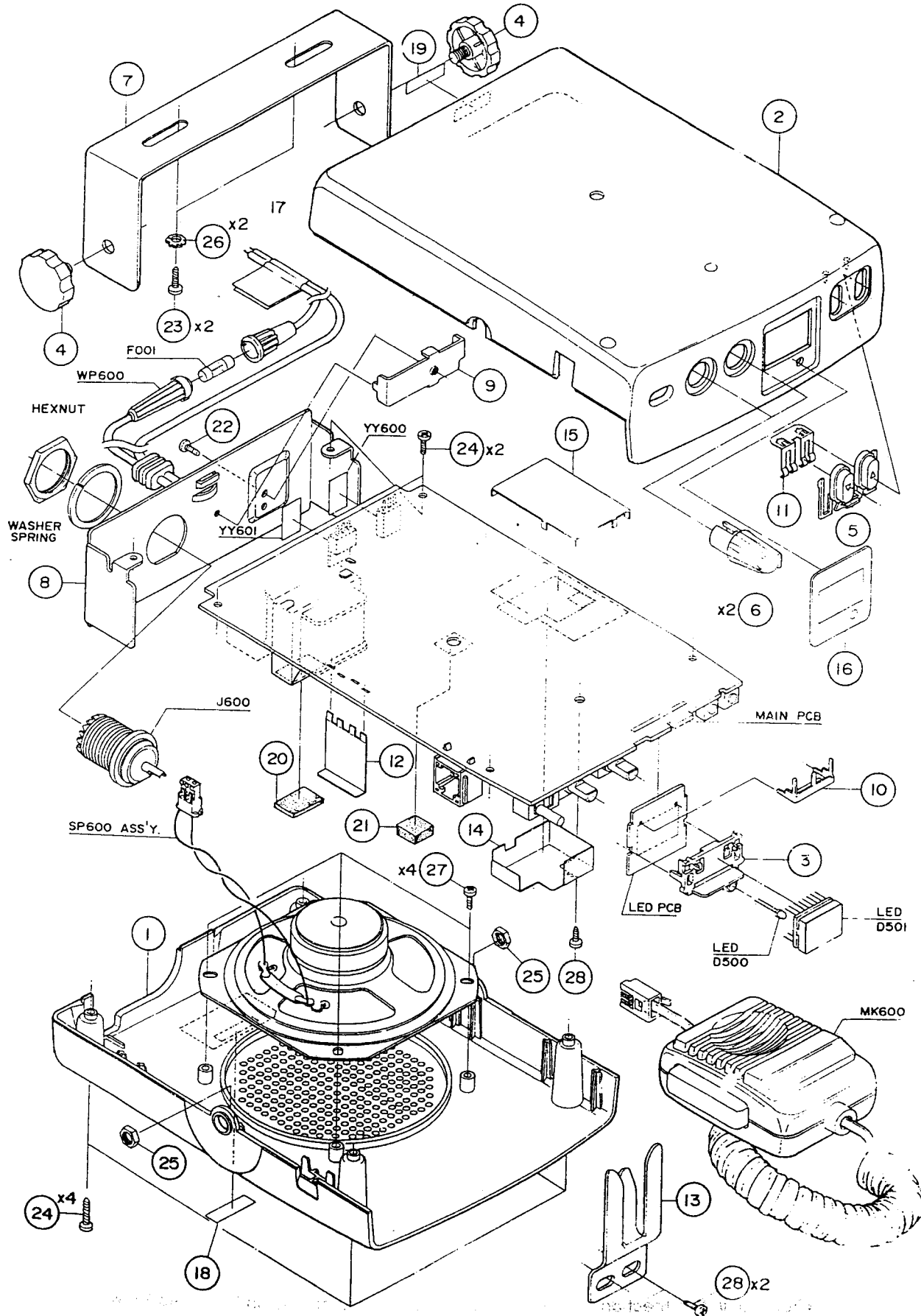
(SYMBOL)	(PARTS CODE)	(DESCRIPTION)	
C309	BCAV903316Z	C:ELCT TS2.5S+ (D5*11)	330UF 6.3V M TAPE
C310	BCKQ811030Z	CAPACITOR:CERAMIC	TS 5.0 S 0.01UF 50V Z YF TAPING
C311			
C312	BCHU814704Z	CAPACITOR:CERAMIC	TS 2.5 S 47PF 50V J UJ TAPE
C313	BCKQ811030Z	CAPACITOR:CERAMIC	TS 5.0 S 0.01UF 50V Z YF TAPING
C314	BCHU813904Z	CAPACITOR:CERAMIC	TS 2.5 S 39PF 50V J UJ TAPING
C315	BCHU813314Z	CAPACITOR:CERAMIC	TS 5.0 S 330PF 50V J UJ TAPING
C316	BCHU811014Z	CAPACITOR:CERAMIC	TS 5.0 S 100PF 50V J UJ TAPING
C317	BCHG816804Z	CAPACITOR:CERAMIC	TS 2.5 S 68PF 50V J SL TAPE
C318	BCHC811504Z	CAPACITOR:CERAMIC	TS 2.5 S 15PF 50V J CH TAPING
C319	BCHG813904Z	CAPACITOR:CERAMIC	TS 2.5 S 39PF 50V J SL TAPING
C320	BCKQ811030Z	CAPACITOR:CERAMIC	TS 5.0 S 0.01UF 50V Z YF TAPING
C322	BCAV112216Z	C:ELCT TS2.5S+ (D5*11)	220UF 10V M TAPE
C400	BCKQ814720Z	CAPACITOR:CERAMIC	TS 2.5 S 0.0047UF 50V Z YF TAPING
C401	BCAB514706Z	C:ELCT TS2.5C+ (D5*11)	47UF 25V M TAPE
C402			
C403	BCAV311016Z	C:ELCT TS2.5S+ (D5*11)	100UF 16V M TAPE
C404	BCKQ811030Z	CAPACITOR:CERAMIC	TS 5.0 S 0.01UF 50V Z YF TAPING
C405	BCKM811026Z	CAPACITOR:CERAMIC	TS 2.5 S 0.001UF 50V M YD(D)TAPING
C600	BCCU811514Z	CAPACITOR:CERAMIC	150PF 50V J UJ
D001	BDAY0246003	DIODE:AXIAL TAPING 26MM	1N4148 T-77
D002			
D005			
D100			
D101			
D200	BDAY0060003	DIODE	1N4003
D201	BDAY0246003	DIODE:AXIAL TAPING 26MM	1N4148 T-77
D301			
D302	BDAY0492019	DIODE:ZENER AX TS 26+	HZ-6C1 TD
D303	BDAY0333001	DIODE:VARICAP	1SV68
D304	BDAY0492001	DIODE:ZENER AX TS 26 +	HZ5B3 TAPING
D305	BDAY0246002	DIODE:AXIAL TAPING 52MM	1N4148 T-72
D400	BDAY0492010	DIODE:ZENER AX TS 26 +	HZ9B3 TD
D401	BDAY0060003	DIODE	1N4003
D500	BDAY0100001	DIODE:LED	TLR-124
D501	BDAY0202001	DIODE:LED	LDR-204ALD
J200	BJKY0458004	JACK:TEL	JK-458 CSK290-623-04-235
J201	BJKY0571002	JACK	JK-571 2P
J600	BJKY0425001	JACK:ANT	JK-425 M-RM-L 102
L002	BLBY1027001	COIL	LB-1027
L003	BLBY1030001	COIL	LB-1030
L004	BLBY1029001	COIL	LB-1029
L005	BLBY1028001	COIL	LB-1028
L100	BLEY0419001	COIL	LE-419 11 1/2T
L101	BLEY0435001	COIL	LE-435 10 1/2T
L102	BLCY0228001	COIL	LC-228 L-1S7-T(R12-J840X)
L103	BLDY0237001	COIL	LD-237 L-2R4W(R22-E563)
L104	BLDY0087001	COIL	LD-087 BF04-3*5*1
L105	BLCY0199001	COIL	LC-199 L-2S7-T(R12E831X)
L106	BLEY0286001	COIL	LE-286 D4 6 1/2T
L107	BLDY0087001	COIL	LD-087 BF04-3*5*1
L200	BLBY0724001	COIL	LB-724 L-2M7-D3
L201	BLBY0723001	COIL	LB-723 L-2M7-D3
L202	BLDY0087001	COIL	LD-087 BF04-3*5*1
L203			
L300			
L301	BLZY0041100	INDUCTOR:MOLDED	LZ-041:10UH
L400	BLDY0087001	COIL	LD-087 BF04-3*5*1

(SYMBOL)	(PARTS CODE)	(DESCRIPTION)	
Q001	BDBX1674111	TRANSISTOR:RH TS +	DB-6009 2SC1674-L TAPIN
Q002	BDBX1675111	TRANSISTOR:RH TS +	DB-259 2SC1675-L TAPINC
Q003	"	"	"
Q005	"	"	"
Q006	BDBX0945507	TRANSISTOR:RH TS +	DB-6008 2SC945A-Q TAPIN
Q007	"	"	"
Q100	BDBC2078105	TRANSISTOR	DB-791 2SC2078E
Q101	BDBC2314106	TRANSISTOR	DB-792 2SC2314F
Q102	BDBX0941523	TRANSISTOR:RH TS +	DB-301 2SC941TM-O TAPI
Q103	BDBX1675111	TRANSISTOR:RH TS +	DB-259 2SC1675-L TAPINC
Q200	BDBX2001111	TRANSISTOR	DB-822 2SC2001-L TAPINC
Q300	BDBX1675111	TRANSISTOR:RH TS +	DB-259 2SC1675-L TAPINC
Q301	"	"	"
Q302	"	"	"
Q303	BDBV0733115	TRANSISTOR:RH TS +	DB-6007 2SA733-P TAPINC
Q304	"	"	"
Q305	BDBX0945507	TRANSISTOR:RH TS +	DB-6008 2SC945A-Q TAPII
Q306	BDBZ0668001	TRANSISTOR	DB-668 DTC144WS TAPE
Q400	BDBV0733115	TRANSISTOR:RH TS +	DB-6007 2SA733-P TAPINC
Q401	BDBC3242536	TRANSISTOR	DB-383 2SC3242A-E
R001	BRFT144714Z	R:CARBON AXIAL LEAD(TAPE)	470 1/4W J
R002	BRPA615624Z	RESISTOR:CARBON AX TS 26	5.6K 1/6W J TAPING
R003	BRPA613324Z	RESISTOR:CARBON AX TS 26	3.3K 1/6W J TAPING
R004	BRPA615614Z	RESISTOR:CARBON AX TS 26	560.1/6W J TAPING
R005	BRFT142214Z	R:CARBON AXIAL LEAD(TAPE)	220 1/4W J
R006	BRPA611024Z	RESISTOR:CARBON AX TS 26	1K 1/6W J TAPING
R007	BRPA613324Z	RESISTOR:CARBON AX TS 26	3.3K 1/6W J TAPING
R008	BRPA613394Z	RESISTOR:CARBON AX TS 26	3.3 1/6W J TAPING
R009	BRPA611024Z	RESISTOR:CARBON AX TS 26	1K 1/6W J TAPING
R010	BRPA614714Z	RESISTOR:CARBON AX TS 26	470 1/6W J TAPING
R011	"	"	"
R012	BRPA613314Z	RESISTOR:CARBON AX TS 26	330 1/6W J TAPING
R013	BRPA611844Z	RESISTOR:CARBON AX TS 26	180K 1/6W J TAPING
R014	BRPA616804Z	RESISTOR:CARBON AX TS 26	68 1/6W J TAPING
R015	BRPA616814Z	RESISTOR:CARBON AX TS 26	680 1/6W J TAPING
R016	BRPA611024Z	RESISTOR:CARBON AX TS 26	1K 1/6W J TAPING
R017	BRPA611834Z	RESISTOR:CARBON AX TS 26	18K 1/6W J TAPING
R018	BRPA612224Z	RESISTOR:CARBON AX TS 26	2.2K 1/6W J TAPING
R019	BRPA611014Z	RESISTOR:CARBON AX TS 26	100 1/6W J TAPING
R020	BRPA613314Z	RESISTOR:CARBON AX TS 26	330 1/6W J TAPING
R021	BRPA611014Z	RESISTOR:CARBON AX TS 26	100 1/6W J TAPING
R022	BRPA611834Z	RESISTOR:CARBON AX TS 26	18K 1/6W J TAPING
R023	BRPA612234Z	RESISTOR:CARBON AX TS 26	22K 1/6W J TAPING
R024	BRFT141034Z	R:CARBON AXIAL LEAD(TAPE)	10K 1/4W J
R025	BRPA613334Z	RESISTOR:CARBON AX TS 26	33K 1/6W J TAPING
R026	BRPA616834Z	RESISTOR:CARBON AX TS 26	68K 1/6W J TAPING
R027	BRPA615634Z	RESISTOR:CARBON AX TS 26	56K 1/6W J TAPING
R028	"	"	"
R029	"	"	"
R030	BRPA616834Z	RESISTOR:CARBON AX TS 26	68K 1/6W J TAPING
R031	BRPA618244Z	RESISTOR:CARBON AX TS 26	820K 1/6W J TAPING
R032	BRPA613314Z	RESISTOR:CARBON AX TS 26	330 1/6W J TAPING
R033	BRPA611524Z	RESISTOR:CARBON AX TS 26	1.5K 1/6W J TAPING
R034	BRPA611034Z	RESISTOR:CARBON AX TS 26	10K 1/6W J TAPING
R035	"	"	"
R036	BRPA612734Z	RESISTOR:CARBON AX TS 26	27K 1/6W J TAPING
R037	BRPA614734Z	RESISTOR:CARBON AX TS 26	47K 1/6W J TAPING

(SYMBOL)	(PARTS CODE)	(DESCRIPTION)	
R038	BRPA611034Z	RESISTOR:CARBON AX TS 26	10K 1/6W J TAPING
R040	BRFT143314Z	R:CARBON AXIAL LEAD(TAPE)	330 1/4W J
R041	BRPA611014Z	RESISTOR:CARBON AX TS 26	100 1/6W J TAPING
R042	BRPA614744Z	RESISTOR:CARBON AX TS 26	470K 1/6W J TAPING
R100	BRPA612224Z	RESISTOR:CARBON AX TS 26	2.2K 1/6W J TAPING
R101	BRSJ002214Z	RESISTOR:METAL OXIDE	220 1WS J
R102	BRPA611804Z	RESISTOR:CARBON AX TS 26	18 1/6W J TAPING
R103	BRPA612294Z	RESISTOR:CARBON AX TS 26	2.2 1/6W J TAPING
R104	BRPA614794Z	RESISTOR:CARBON AX TS 26	4.7 1/6W J TAPING
R105	BRPA612214Z	RESISTOR:CARBON AX TS 26	220 1/6W J TAPING
R106	BRPA611014Z	RESISTOR:CARBON AX TS 26	100 1/6W J TAPING
R107	BRPA613304Z	RESISTOR:CARBON AX TS 26	33 1/6W J TAPING
R108	BRPA618224Z	RESISTOR:CARBON AX TS 26	8.2K 1/6W J TAPING
R109	BRPA611534Z	RESISTOR:CARBON AX TS 26	15K 1/6W J TAPING
R110	BRPA611814Z	RESISTOR:CARBON AX TS 26	180 1/6W J TAPING
R111	"	"	"
R112	BRPA615624Z	RESISTOR:CARBON AX TS 26	5.6K 1/6W J TAPING
R113	BRPA611034Z	RESISTOR:CARBON AX TS 26	10K 1/6W J TAPING
R114	BRPA611534Z	RESISTOR:CARBON AX TS 26	15K 1/6W J TAPING
R116	BRPA611514Z	RESISTOR:CARBON AX TS 26	150 1/6W J TAPING
R200	BRPA611594Z	RESISTOR:CARBON AX TS 26	1.5 1/6W J TAPING
R201	BRPA611044Z	RESISTOR:CARBON AX TS 26	100K 1/6W J TAPING
R202	BRPA611014Z	RESISTOR:CARBON AX TS 26	100 1/6W J TAPING
R204	BRPA615634Z	RESISTOR:CARBON AX TS 26	56K 1/6W J TAPING
R205	BRPA613324Z	RESISTOR:CARBON AX TS 26	3.3K 1/6W J TAPING
R206	BRPA612244Z	RESISTOR:CARBON AX TS 26	220K 1/6W J TAPING
R207	BRPA611834Z	RESISTOR:CARBON AX TS 26	18K 1/6W J TAPING
R208	BRPA612224Z	RESISTOR:CARBON AX TS 26	2.2K 1/6W J TAPING
R209	"	"	"
R210	BRFT142234Z	R:CARBON AXIAL LEAD(TAPE)	22K 1/4W J
R211	BRPA616824Z	RESISTOR:CARBON AX TS 26	6.8K 1/6W J TAPING
R212	BRPA611524Z	RESISTOR:CARBON AX TS 26	1.5K 1/6W J TAPING
R213	BRPA612224Z	RESISTOR:CARBON AX TS 26	2.2K 1/6W J TAPING
R220	BRPA613954Z	RESISTOR:CARBON AX TS 26	3.9M 1/6W J TAPING
R300	BRPA612224Z	RESISTOR:CARBON AX TS 26	2.2K 1/6W J TAPING
R301	BRPA611034Z	RESISTOR:CARBON AX TS 26	10K 1/6W J TAPING
R302	BRPA615614Z	RESISTOR:CARBON AX TS 26	560 1/6W J TAPING
R303	"	"	"
R309	BRPA611514Z	RESISTOR:CARBON AX TS 26	150 1/6W J TAPING
R310	BRPA611034Z	RESISTOR:CARBON AX TS 26	10K 1/6W J TAPING
R311	BRPA611514Z	RESISTOR:CARBON AX TS 26	150 1/6W J TAPING
R312	BRPA616824Z	RESISTOR:CARBON AX TS 26	6.8K 1/6W J TAPING
R313	BRPA611034Z	RESISTOR:CARBON AX TS 26	10K 1/6W J TAPING
R315	BRPA615634Z	RESISTOR:CARBON AX TS 26	56K 1/6W J TAPING
R316	BRFT141034Z	R:CARBON AXIAL LEAD(TAPE)	10K 1/4W J
R317	BRPA613314Z	RESISTOR:CARBON AX TS 26	330 1/6W J TAPING
R318	BRPA611534Z	RESISTOR:CARBON AX TS 26	15K 1/6W J TAPING
R319	BRPA611014Z	RESISTOR:CARBON AX TS 26	100 1/6W J TAPING
R320	BRPA613914Z	RESISTOR:CARBON AX TS 26	390 1/6W J TAPING
R321	BRPA613934Z	RESISTOR:CARBON AX TS 26	39K 1/6W J TAPING
R322	BRPA611014Z	RESISTOR:CARBON AX TS 26	100 1/6W J TAPING
R324	BRPA611024Z	RESISTOR:CARBON AX TS 26	1K 1/6W J TAPING
R325	BRPA611034Z	RESISTOR:CARBON AX TS 26	10K 1/6W J TAPING
R326	BRPA611024Z	RESISTOR:CARBON AX TS 26	1K 1/6W J TAPING
R400	BRPA611014Z	RESISTOR:CARBON AX TS 26	100 1/6W J TAPING
R401	BRPA613324Z	RESISTOR:CARBON AX TS 26	3.3K 1/6W J TAPING
R402	BRPA615614Z	RESISTOR:CARBON AX TS 26	560 1/6W J TAPING
R403	BRPA612214Z	RESISTOR:CARBON AX TS 26	220 1/6W J TAPING

(SYMBOL)	(PARTS CODE)	(DESCRIPTION)	
R404	BRPA611034Z	RESISTOR:CARBON	AX TS 26 10K 1/6W J TAF
S300	BSWY0599001	SWITCH:TACT	SW-599 KHH-905
S301	"	"	"
S400	BSWY0769001	SWITCH:SLIDE	SW-769
T200	BTFY0375001	TRANSFORMER:OUTPUT	TF-375
T400	BTFY0374001	TRANSFORMER	TF-374
	CUFJ003041Z	WIRE	UL 1430 #24 10- 30- 3 WHT
X300	BQXY0308001	CRYSTAL	QX-308 10.2419M
FT001	BFLY0048001	FILTER:CERAMIC	FL-048 SFE10.7MS2-M
FT002	BFLY0231001	FILTER:CERAMIC	FL-231 CFU450HT 450KHZ
IC200	BDEY0603001	INTEGRATED CIRCUIT	TDA1905
IC300	BDEY2519003	INTEGRATED CIRCUIT	SM5125AM-E2
MK600	BMKY0466001	MICROPHONE	MK-466 EMC 556-Z001
PC001	BPAY0362AA1	PC BOARD:MAIN	PA-362AA 1/2
SP600	BSPY0312001	SPEAKER	SP-312 UN-S08F03
VR001	BRTY0552503	RESISTOR:SEMI-FIXED	RT-552 50KB
VR002	BRVY0823001	VOLUME	RV-823 50KA
VR003	BRVY0822001	VOLUME	RV-822 50KB
	CZDZ072028Z	WIRES:ASSEMBLED	W-072028
WP600	BWZY1105001	CORD:DC	WZ-1105 1500 W/P
YY600	BYDY0042001	INSULATION SHEET	YD-042
YY601	BYDY0010003	INSULATION SHEET	YD-010 P101KD

# 6. EXPLODED VIEW & MECHANICAL PARTS LIST





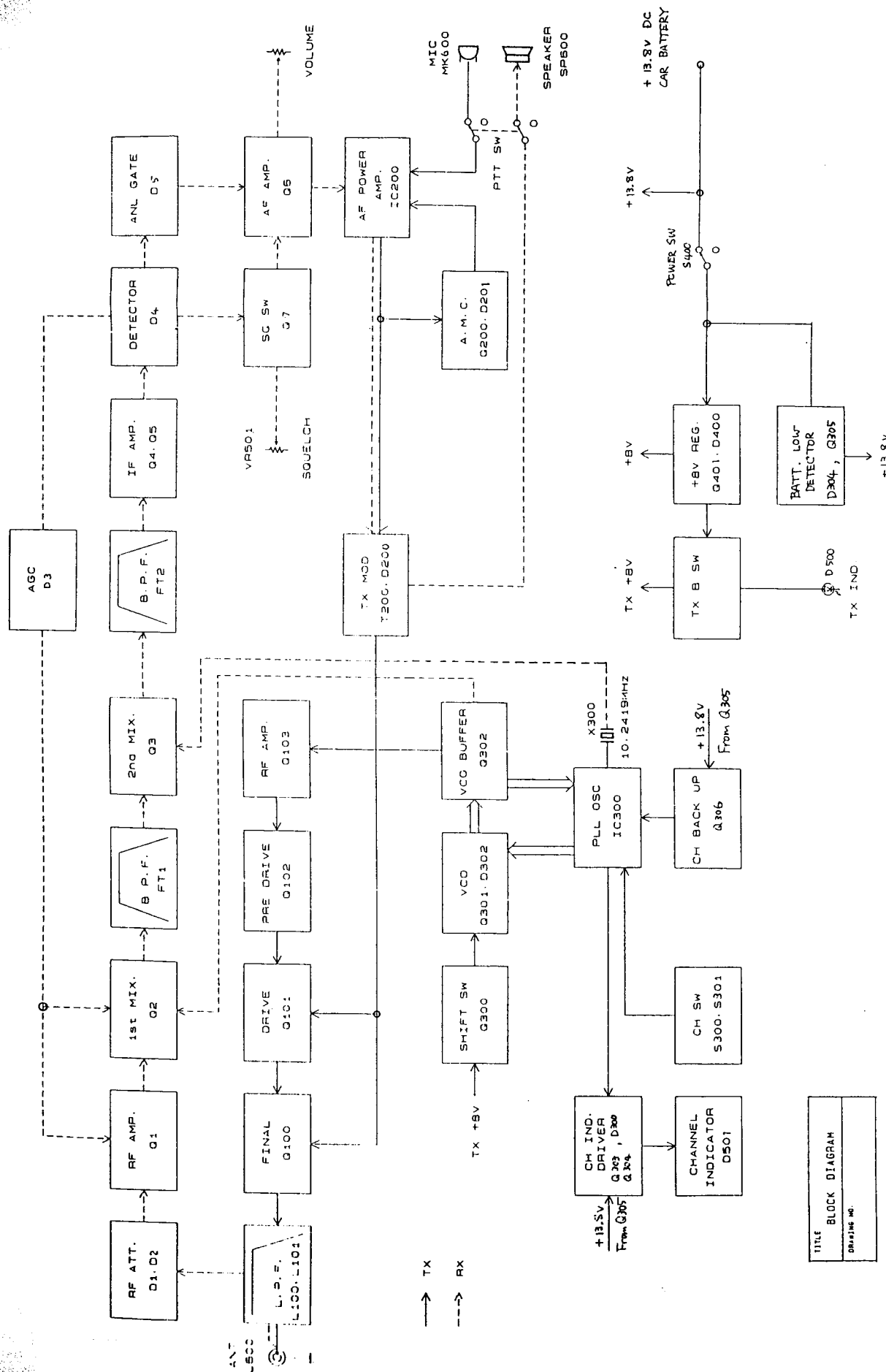
## MECHANICAL PARTS LIST

(REF #)	(PARTSCODE)	(DESCRIPTION)	
1	GCMB130377Z	CASE : BOTTOM	ABS, BLACK
2	GCMT130376Z	CASE : TOP	ABS, BLACK, SILK
3	GHDL330378Z	HOLDER : LED	ABS, BLACK
4	GMSC480407Z	SCREW : MOUNTING	ABS, BLACK
5	GNBP330379Z	BUTTON, PUSH	ABS, BLACK
6	GNBY330380Z	KNOB	ABS, BLACK
7	HBCT430384Z	MOUNTING BRACKET	SPCC, 1.2T, MFZN3
8	HCSR330381Z	CHASSIS : REAR	SECC, 1.0T
9	HHDE430382Z	HOLDER : IC	SECC, 1.0T
10	HHDP430876Z	HOLDER : PCB	SPTTE, 0.5T
11	HHDZ430383Z	HOLDER : BUTTON	SUS304 ORC7701R, C
12	HHSK418924B	HEAT SINK	C5191R, 0.5T
13	HMHG402919Z	HANGER : MICROPHONE	SPCC, 1.0T, NI
14	HSDC431235Z	SHIELD CASE	SPTTE 0.3T
15	HSDP430877Z	SHIELD PLATE	SPTTE 0.3T
16	KDPT430385Z	WINDOW	PC, 1.0T, SILK
17	PLBC482147Z	LABEL : WARNING, DC CORD	PAPER, PRINT
18	PLBS431081Z	LABEL : SERIAL NO.	PAPER
19	PLBZ431181Z	INDY 800 LABEL	POLYESTER FILM, 0.
20	RCUN405417Z	CUSHION	NEOPRENE SP 2T
21	RCUN412259Z	SPACER	NEOPRENE SP 6T
22	SSCW193008N	SCREW : BIND HD +	M3x8 NI
23	SSCW295010N	SCREW : TAPPING ROUND HD +	D5x10 NI
24	SSCW343006N	SCREW : TAPTIGHT BIND HD +	M3x6 NI
25	SSCW430050N	HEX NUT	M5 NI
26	SSCW540050N	WASHER : STAR	D5 NI
27	SSCW803006N	SCREW : P TIGHT BIND HD +	D3x6 NI
28	SSCW803008N	SCREW : P TIGHT BIND HD +	D3x8 NI
29	SSCW803014N	SCREW : P TIGHT BIND HD +	D3x14 NI

(Ref. No. in this Mechanical Parts List corresponds with the no. in Exploded View)

# 7. TECHNICAL DRAWINGS

BLOCK DIAGRAM



TITLE	BLOCK DIAGRAM
DRAWING NO.	

To Q303, Q304 & Q306

301 PAS2 1/2

SCHEMATIC DIAGRAM

(A)

(B)

NOTES:  
 1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED.  
 2. RESISTOR VALUES ARE 1/4W UNLESS OTHERWISE NOTED.  
 3. CAPACITANCE VALUES ARE IN MICROFARADS UNLESS OTHERWISE NOTED.  
 4. ALL CAPACITORS ARE ELECTROLYTIC UNLESS OTHERWISE NOTED.  
 5. ALL CAPACITORS ARE 100PPM UNLESS OTHERWISE NOTED.

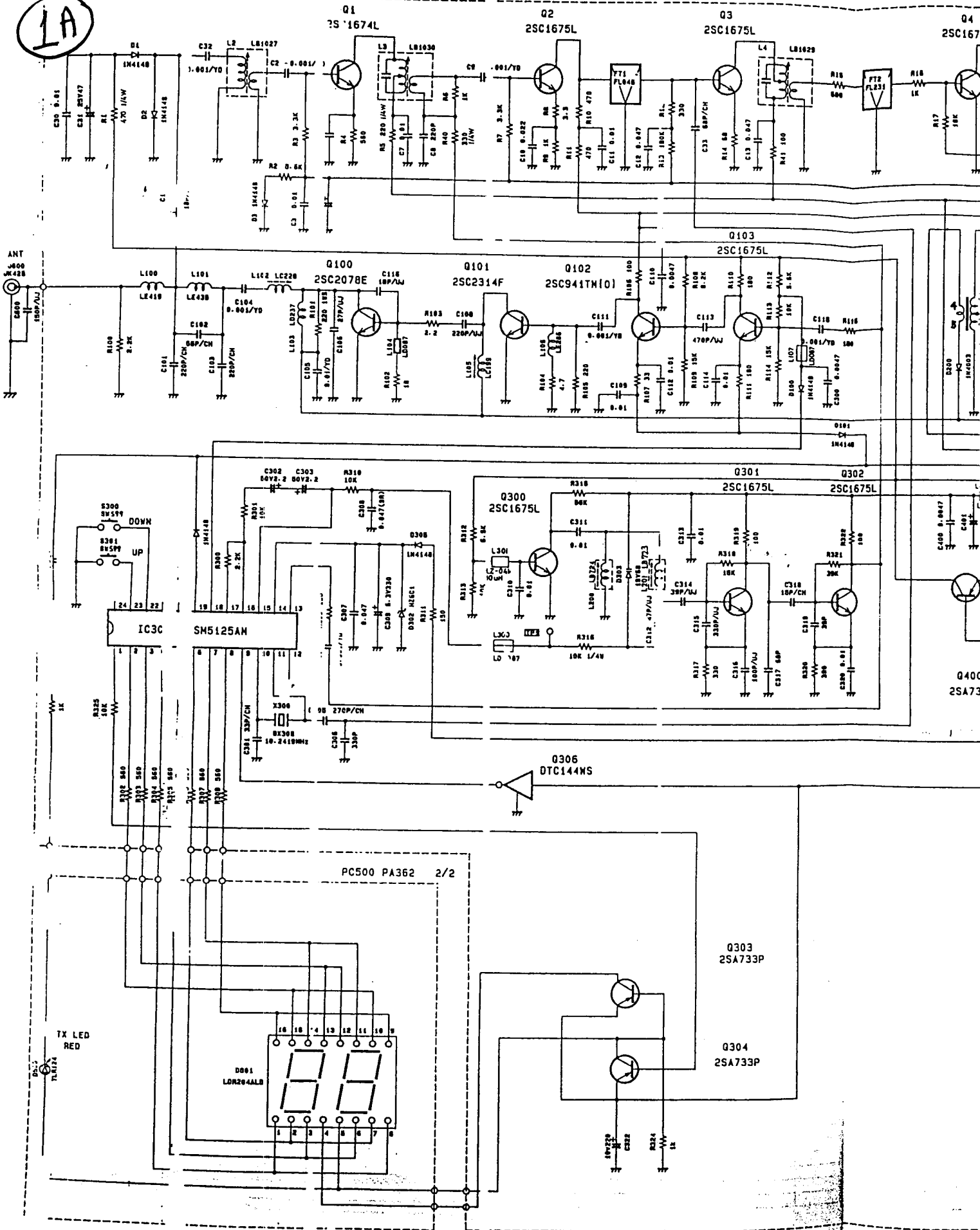
TVA SCHEMATIC DIAGRAM  
 PART NO. E12-3938

19

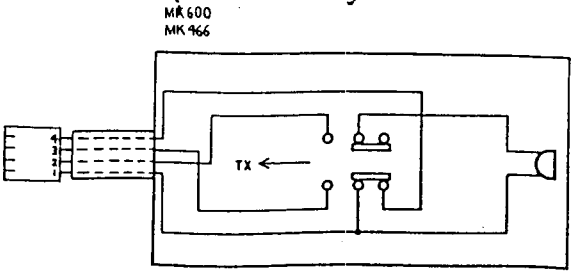
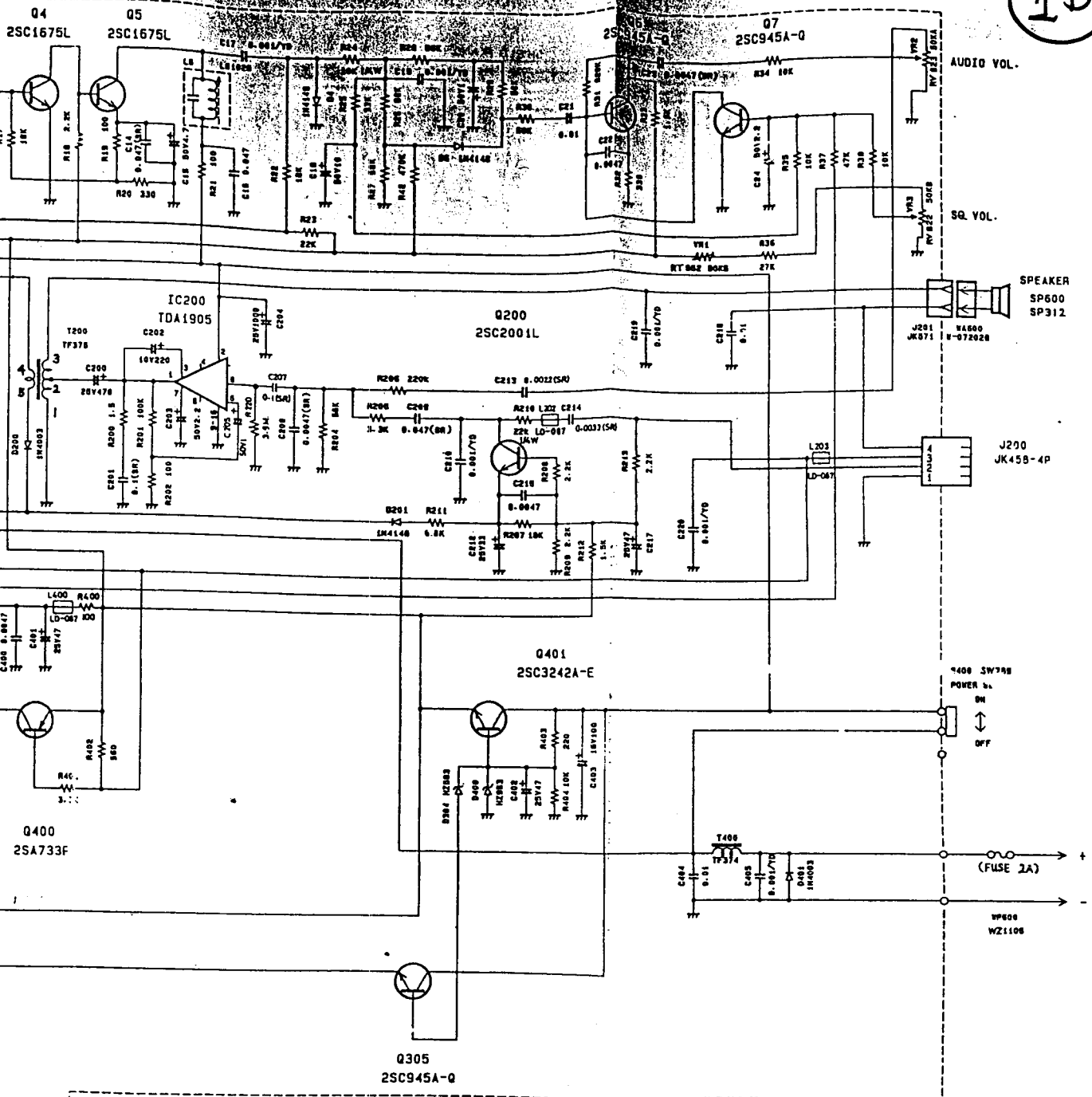
20

# SCHEMATIC DIAGRAM

LA



1B

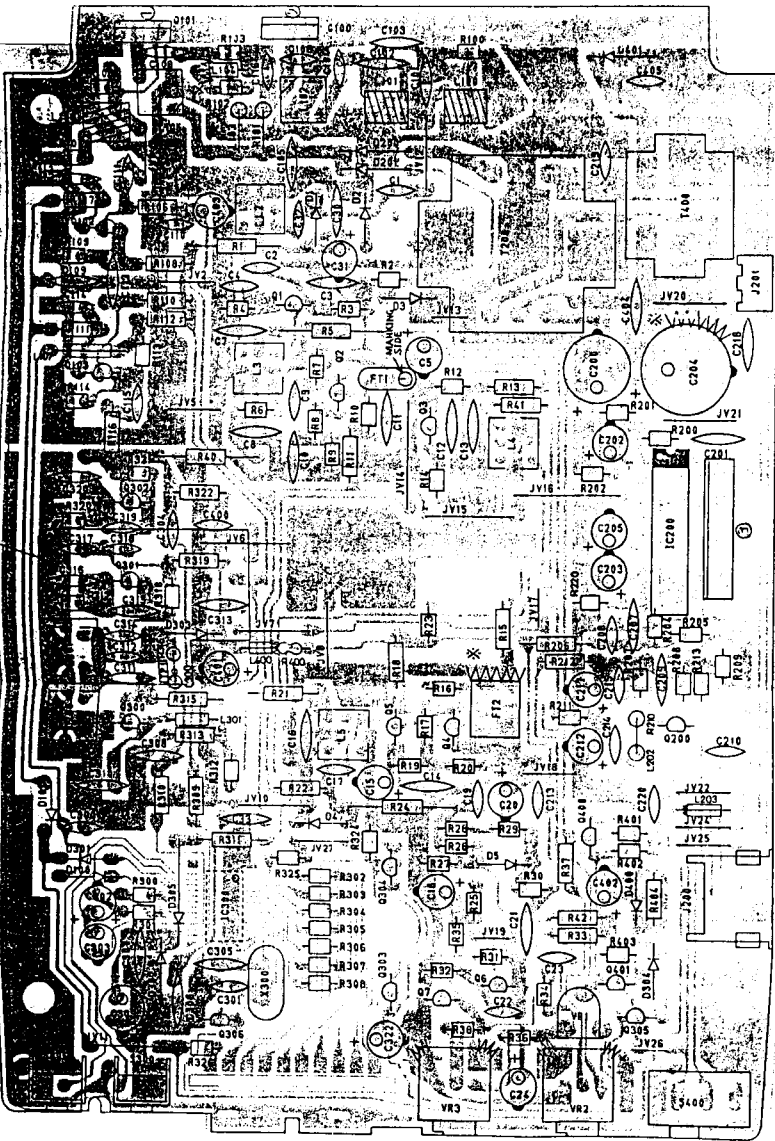


- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED.
  2. RESISTOR WATTAGES ARE 1/6W UNLESS OTHERWISE NOTED.
  3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P= MICRO-MICRO FARAD)
  4. ALL CAPACITORS TEMPERATURE CHARACTERISTICS ARE SP (LESS THAN 100PF) OR YF (MORE THAN 1000PF) UNLESS OTHERWISE NOTED.

TITLE SCHEMATIC DIAGRAM  
 DRAWING NO. E12-3938

COMPONENT LAYOUT

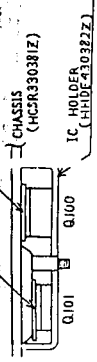
PC001, PL-362A, 1/2" STEP-HIGH



2A

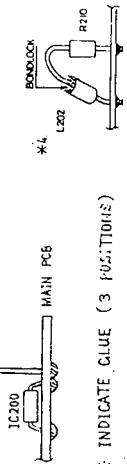
INSULATION SHEET - XY601-YD-010

① D: (TOP VIEW)



2B

②



\* INDICATE GLUE (3 POSITIONS)  
 N/A - WITH BONDLOCK  
 - SOLDERING

\* LOS MOUNTING REVERSE DO FOLLOW PCB SILK PRINT

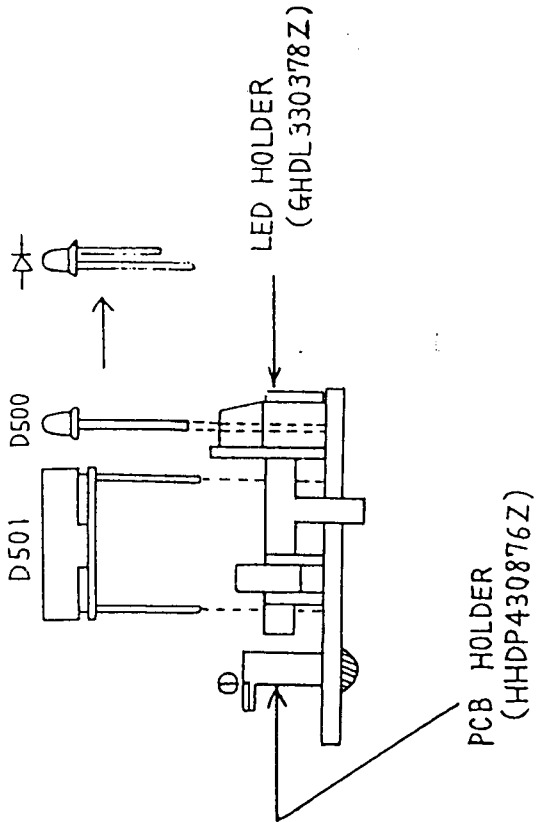
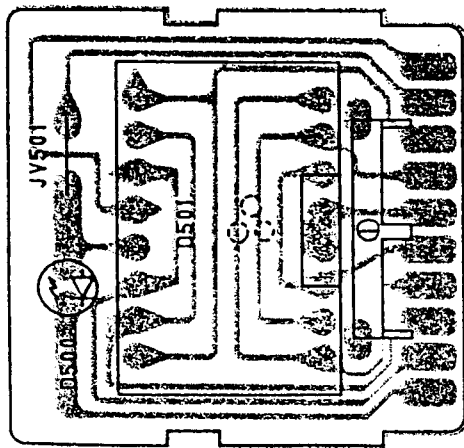
D1	IN4148	JV1	7.5
D2	IN4148	JV2	7.5
D3	IN4148	JV5	7.5
D4	IN4148	JV6	12.5
D5	IN4148	JV7	7.0
D6	IN4148	JV8	7.5
D7	IN4148	JV9	7.5
D8	IN4148	JV10	7.5
D9	IN4148	JV11	7.5
D10	IN4148	JV12	7.5
D11	IN4148	JV13	7.5
D12	IN4148	JV14	7.5
D13	IN4148	JV15	7.5
D14	IN4148	JV16	7.5
D15	IN4148	JV17	7.5
D16	IN4148	JV18	7.5
D17	IN4148	JV19	7.5
D18	IN4148	JV20	7.5
D19	IN4148	JV21	7.5
D20	IN4148	JV22	7.5
D21	IN4148	JV23	7.5
D22	IN4148	JV24	7.5
D23	IN4148	JV25	7.5
D24	IN4148	JV26	7.5
D25	IN4148	JV27	7.5
D26	IN4148	JV28	7.5
D27	IN4148	JV29	7.5
D28	IN4148	JV30	7.5
D29	IN4148	JV31	7.5
D30	IN4148	JV32	7.5
D31	IN4148	JV33	7.5
D32	IN4148	JV34	7.5
D33	IN4148	JV35	7.5
D34	IN4148	JV36	7.5
D35	IN4148	JV37	7.5
D36	IN4148	JV38	7.5
D37	IN4148	JV39	7.5
D38	IN4148	JV40	7.5
D39	IN4148	JV41	7.5
D40	IN4148	JV42	7.5
D41	IN4148	JV43	7.5
D42	IN4148	JV44	7.5
D43	IN4148	JV45	7.5
D44	IN4148	JV46	7.5
D45	IN4148	JV47	7.5
D46	IN4148	JV48	7.5
D47	IN4148	JV49	7.5
D48	IN4148	JV50	7.5
D49	IN4148	JV51	7.5
D50	IN4148	JV52	7.5
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PC500 PA-362AA 2/2 (TOP VIEW)



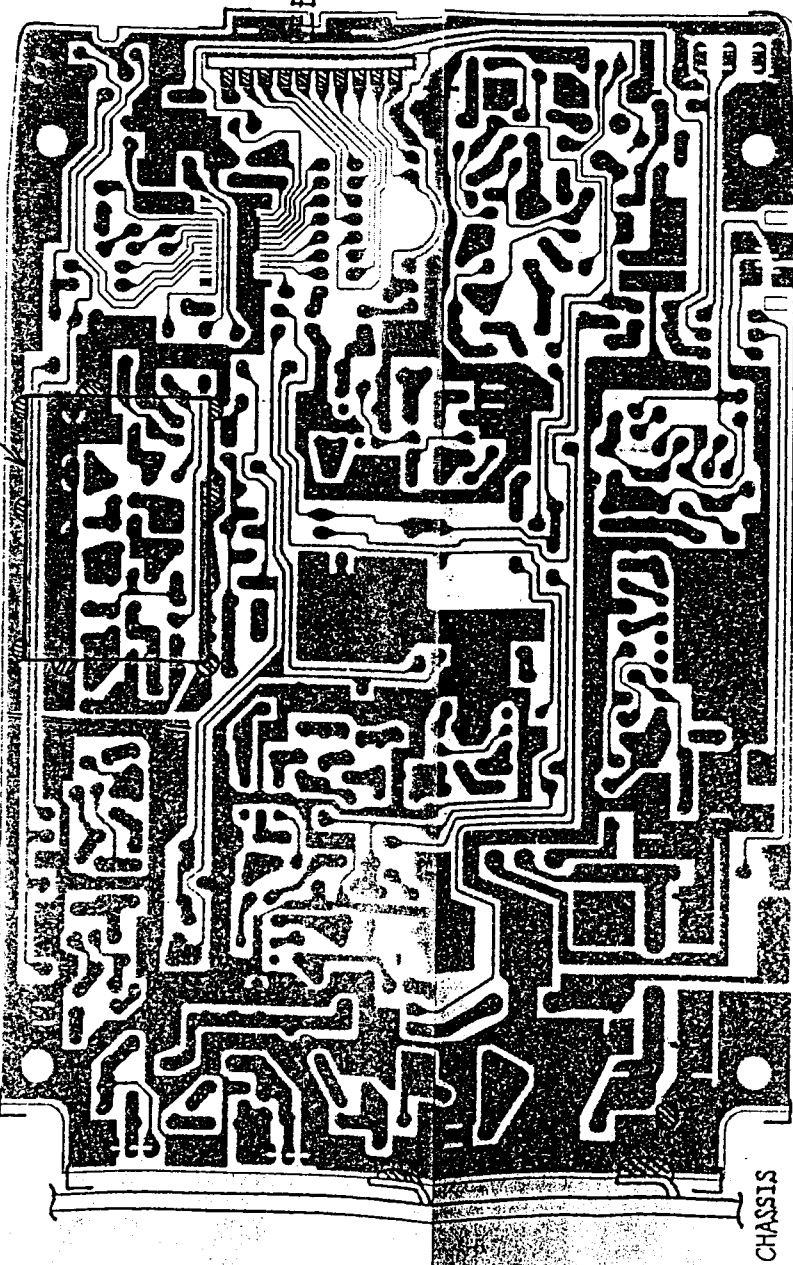
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 PARTS ASSEMBLY TOP VIEW  
 DRAWING NO. E24-10614

SHIELD PLATE : HSDP430877Z

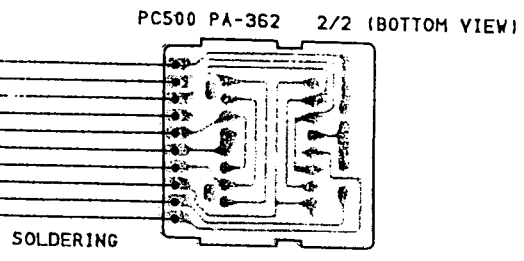
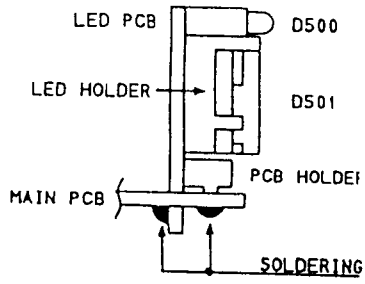
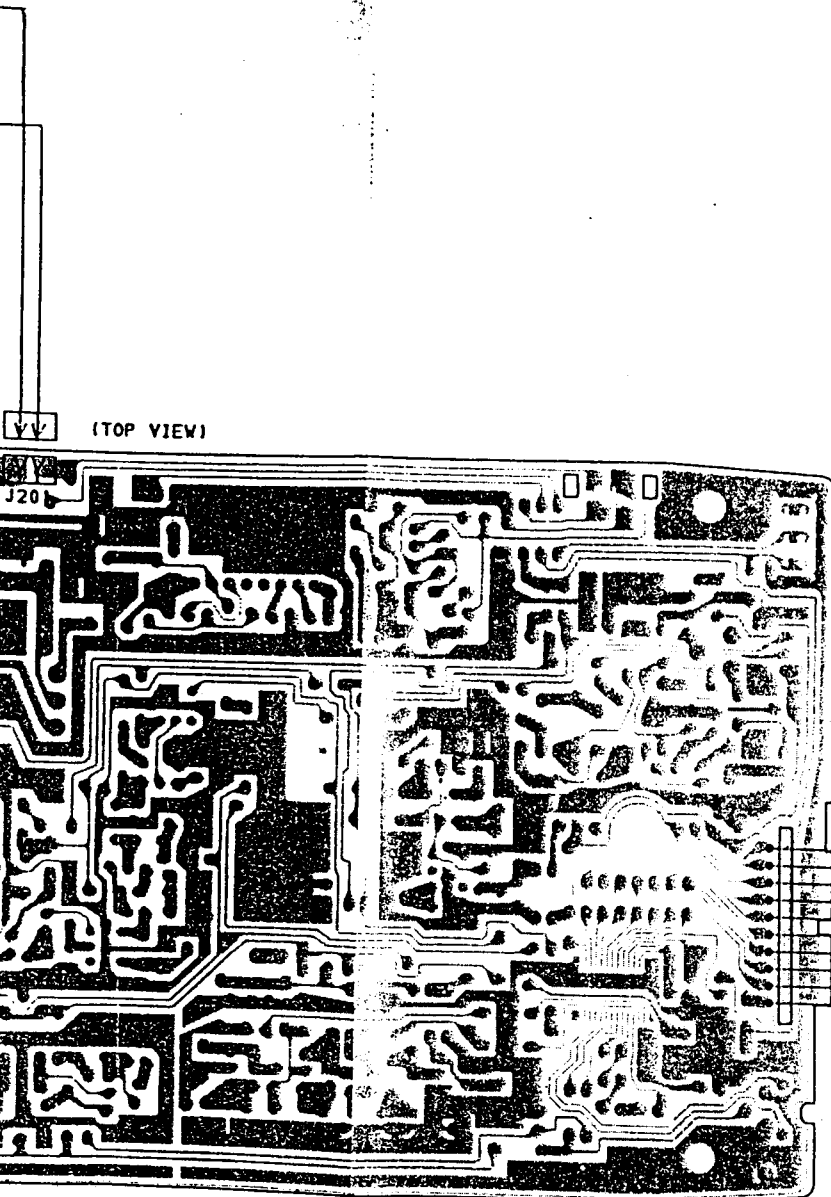
PC001 PA-362 1/2 (BOTTOM VIEW)



 SOLDERING  
 -- PATTERN CUT

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PARTS ASSY BOTTOM	
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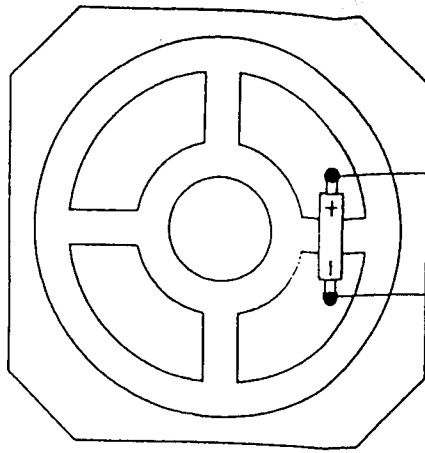
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TITLE	WIRING DIAGRAM
DRAWING NO.	E33-3484

3A

SPEAKER  
SP600 SP-312



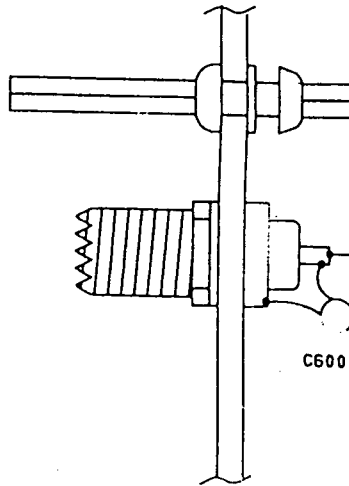
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GRY

PC001 PA-362 1/2 J20 (TOP VIEW)

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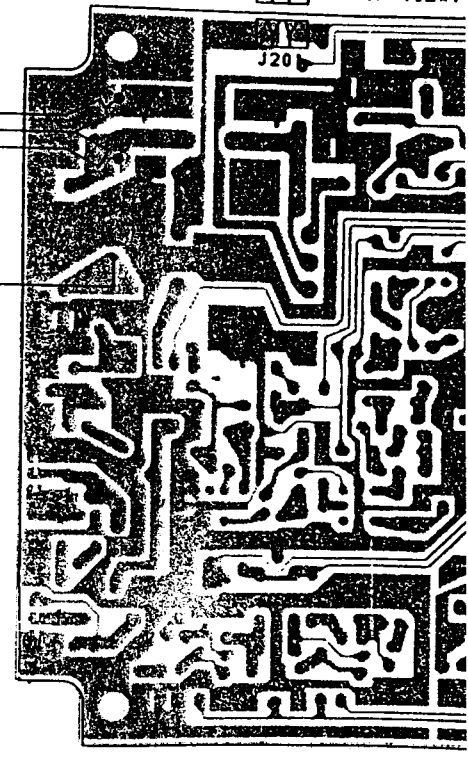
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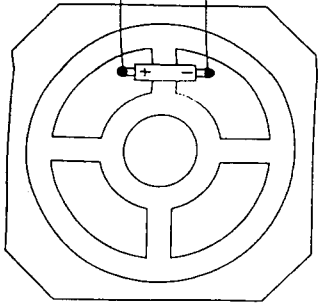
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C600 150P/UJ

CHASSIS

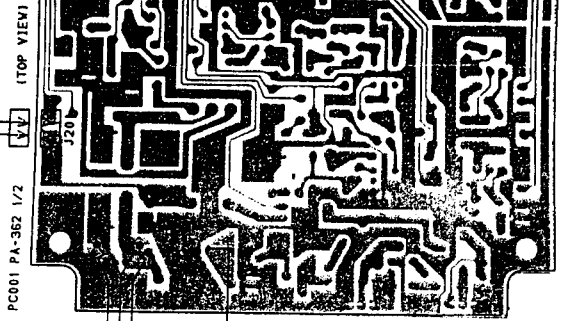


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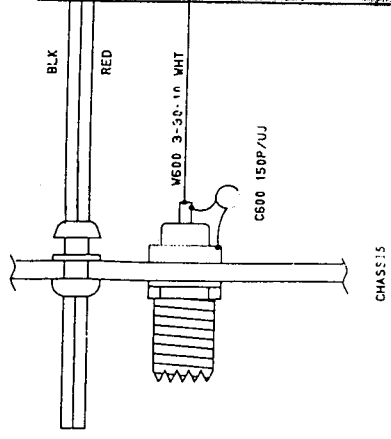


SPEAKER  
 SP600 SP-312

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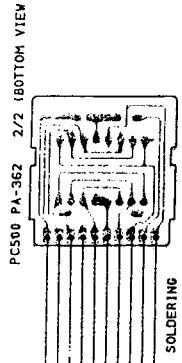
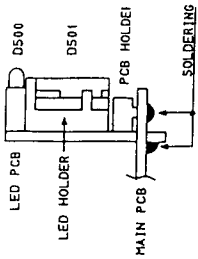
PC001 PA-362 1/2 (TOP VIEW)



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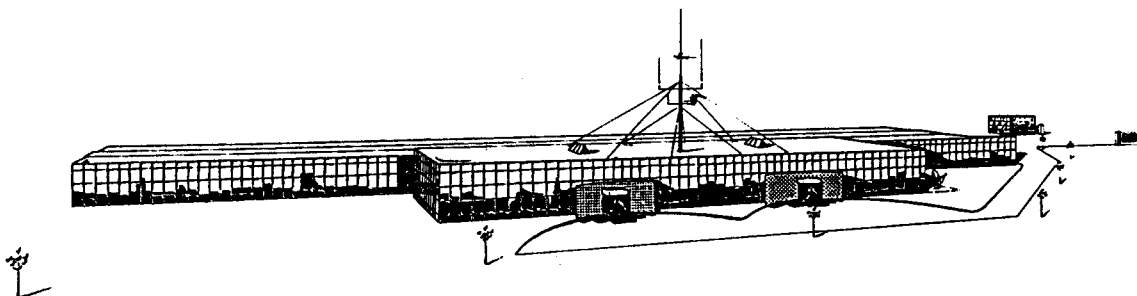
CHASSIS



PC500 PA-362 2/2 (BOTTOM VIEW)

TITLE	WIRING DIAGRAM
DRAWING NO.	E33-3484

Groupe  
**PRESIDENT**  
ELECTRONICS



Siège Social / Head Office – France  
Route de Sète – BP 100 – 34540 BALARUC  
Tél. : 33.(0)4.67.46.27.27 – Fax : 33.(0)4.67.48.48.49  
Site Internet : <http://www.president-electronics.com>  
e-mail : [groupe@president-electronics.com](mailto:groupe@president-electronics.com)



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