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CARVER

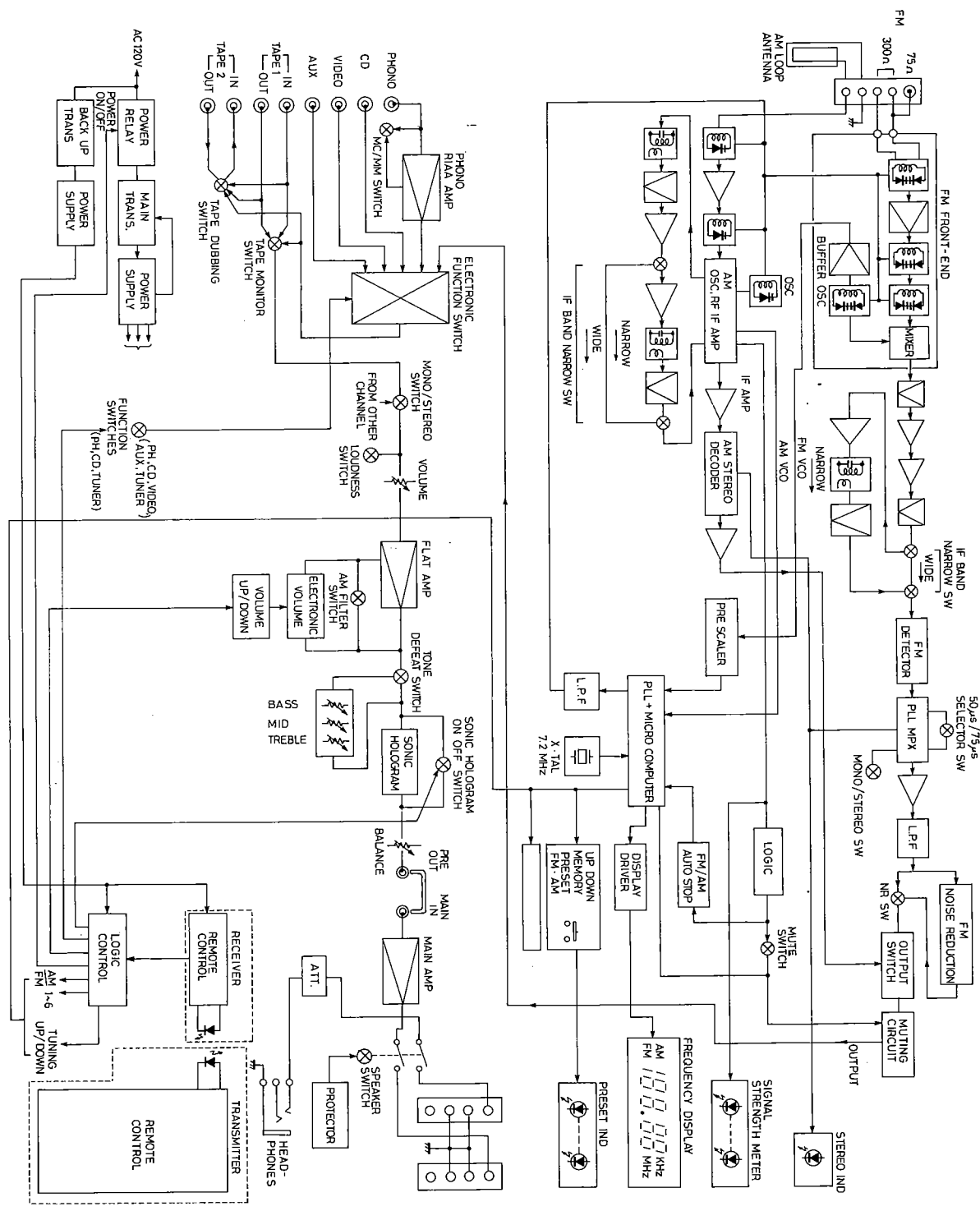
THE CARVER RECEIVER 2000 SERVICE MANUAL

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2000 Carver

BLOCK DIAGRAM



SPECIFICATIONS

PRE-AMPLIFIER & AMPLIFIER

Minimum Audio Output Power at no more than 0.15% Total Harmonic Distortion into 8 ohms, over the audio spectrum 20-20,000 Hz	: 200 watts per channel (RMS power, both channels driven)
Frequency Response (20-20,000 Hz)	: Flat
IM Distortion	: 0.05%
Gain: PHONO	: 35 dB MM
AMPLIFIER	: 26 dB
AUX, TUNER, VIDEO/DAD	: 17 dB
TAPE IN 1, 2	: 17 dB
Tone Control Action BASS (100 Hz)	: ± 8 dB
TREBLE (10 kHz)	: ± 8 dB
MID RANGE (1.5 kHz)	: ± 6 dB
AM Filter (10 kHz)	: - 15 dB
Signal-to-Noise Ratio	
PHONO	: 82 dB MM
AUX and TAPE IN 1, 2	: 90 dB
TAPE OUT 1, 2 Level	: Maximum 4 volts
FM TUNER	
Sensitivity (IHF)	: 1.8 μ V
Sensitivity for 50 dB Quieting Mono, Stereo	: 3.1 μ V, 5.0 μ V
Limiting Sensitivity (- 3 dB)	: 1.5 μ V
Signal-to-Noise Ratio (1000 μ V)	: 77 dB
Image Rejection	: 82 dB
IF Rejection	: 80 dB
Capture Ratio	: 1.0 dB
Harmonic Distortion	
Mono	: 0.15%
Stereo	: 0.2%
AM Supression	: 80 dB
Stereo Separation (1 kHz)	: 40 dB
AM TUNER	
Sensitivity Terminal	: 20 μ V
Radiated	: 250 μ V/m for 20 dB S/N
Distortion (5mV/M)	: 0.9%
Selectivity	: 42 dB
Image Rejection	: 45 dB
IF Rejection	: 34 dB
AGC Figure of Merit	: 50 dB
AM Stereo Separation (1 KHz)	: 30 dB

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

ALIGNMENT PROCEDURES

Amplifier

Step	Set Condition	Output Indicator Connection (+/-)	Adjustment	Adjust for
VOLTAGE ADJUST				
1	Volume Control . . . MINIMUM Speaker Load . . . 8 ohm dummy Input . . . No signal	DC digital volt meter D853/Chassis	SVR801	-69.0 ± 0.1V
IDLING				
2	Same as step (1)	DC digital volt meter L ch: R767/R769 R ch: R768/R770	L ch: SVR701 R ch: SVR702	3.5 ± 1.5mV Preheat for 1 minute 4.5 ± 1.5mV Preheat for 3 minutes

Tuner (AM)

Condition

1. Tuning method: LOCK LED, ON
2. Modulation: 400Hz, 30%
3. TAPE OUT load: A 100kΩ resistor shunted by a 1000pF capacitor
4. Generator output: IRE Loop antenna 24" (60cm) spacing or through IHF dummy (200pF capacitor).
5. CH. STEP switch (SW317): US position
6. MUTE DEFEAT switch: ON position
7. Preheat: More than 1 minute

Step	Signal, Sweep Generator		Reception Frequency	Output Indicator Connection	Adjustment	Adjust for
	Connection	Frequency				
TUNING VOLTAGE						
1	No signal		520kHz	DC digital volt meter	T103	1.55 ± 0.1V
2			1710kHz	TP4	TC103	24.2 ± 0.1V
IF						
3	To TP5 through a 1μF capacitor	450 ± 0.5kHz	Point of non-interference	IF sweep generator TP6 (through a 1μF cap).	T104: IF BAND WIDE T105: IF BAND NARROW	Flat and Max.
TRACKING						
4	To ant. terminal through IHF dummy	600kHz	600kHz	VTVM	T101 T102	Maximum output
5		1400kHz	1400kHz	TAPE OUT jacks	TC101 TC102	
SIGNAL LEVEL METER						
6	Same as step (4)	1000kHz (Input 75dB)	1000kHz	SIGNAL STRENGTH METER	SVR101	Full light up

Tuner (FM)

Condition

1. Tuning method: LOCK LED, ON
2. Generator: Mono Mod. 1kHz, 75kHz dev.
Stereo Mod. 1kHz, 67.5kHz +6.75kHz dev.
3. TAPE OUT load: A 100kΩ resistor shunted by a 1000pF capacitor
4. Input level: 60dB (1mV)
5. CH. STEP switch (SW317): US position
6. De-Emphasis switch (SW051): 75μs position
7. MUTE DEFEAT switch: ON position
8. Preheat: More than 1 minute

Step	Signal, Sweep Generator		Reception Frequency	Output Indicator Connection	Adjustment	Adjust for
	Connection	Frequency				
TUNING VOLTAGE						
1	No signal		87.50MHz	DC digital volt meter	OSC-L (Front-end)	2.5 ~ 3.1
2			108.00MHz	TP4	Check	19 ~ 23
IF (WIDE)						
3	To 300 ohm antenna terminal through a matching dummy	98.00MHz (Input 7 ~ 9dB)	98.00MHz	VTVM TAPE OUT jacks	IFT (Front-end)	Maximum output or Minimum THD
4		98.00MHz (INPUT 60dB)	98.00MHz	DC digital volt meter TP1 ~ TP2	T002 (PRI)	Less than 1mV
5		98.00MHz	98.00MHz	Distortion Meter TAPE OUT jacks	T002 (SEC)	Less than 0.09%
TRACKING						
6	Same as step (3)	98.00MHz (INPUT 7 ~ 9dB)	98.00MHz	Same as step (3)	ANT-L (Front-end) RF1-L RF2-L	Maximum output
PLL REFERENCE FREQUENCY						
7	Set the IF BAND NARROW switch to the ON position.					
8	Same as step (3)	98.00MHz (Input 9dB)	98.00MHz	Same as step (5)	TC301 T001	Minimum THD
MUTING LEVEL						
9	Set the MUTE DEFEAT switch to the OFF position.					
10	Same as step (3)	98.00MHz (Input 30dB)	98.00MHz	Same as step (5)	SVR001	Until output is developed
SIGNAL LEVEL						
11	Set the IF BAND NARROW switch to the ON position.					
12	Same as step (3)	98.00MHz (Input 80dB)	98.00MHz	SIGNAL STRENGTH METER	SVR002	Full light up
SEPARATION						
13	Same as step (3)	98.00MHz Mod: Rch only 98.00MHz Mod: Lch only	98.00MHz	Same as step (3)	SVR051/SVR052 IF BAND NARROW switch OFF/ON	Minimum output, same separation in both channel

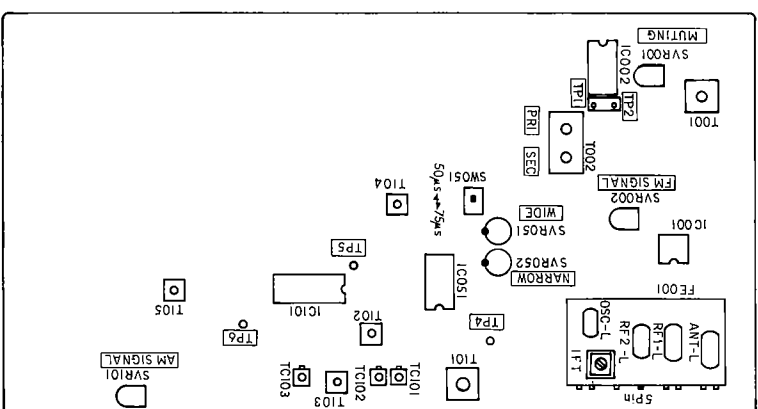
Noise Reduction

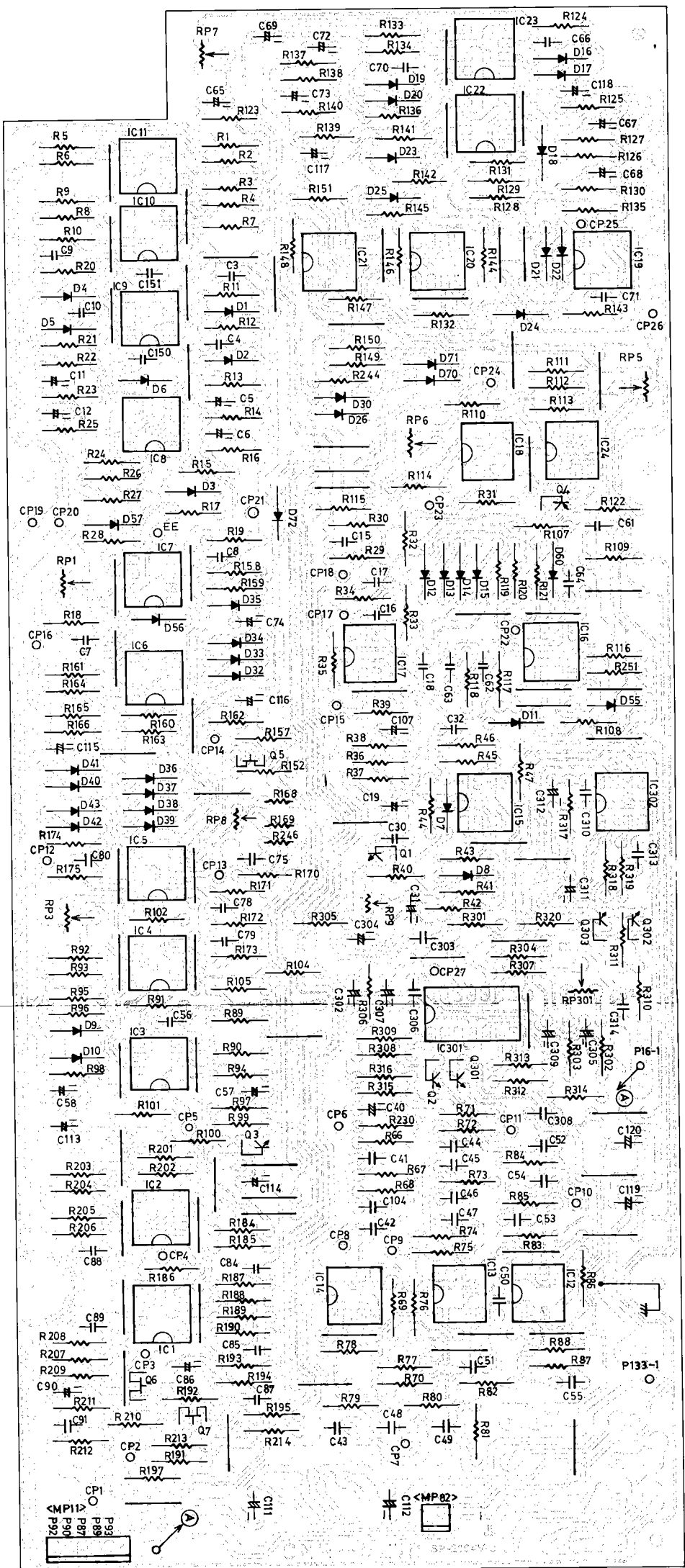
Unless otherwise stated the NR buttons are NOT engaged.

STEP	INPUT SIGNAL	TEST POINT	REMARKS
1	Both audio inputs driven	IC17 pin 1 (CP17)	Ground Junction of C15/R29 (CP18). Measure test point for Fe of 8kHz \pm 1kHz.
2	800Hz, 100% modulation left or right channel only.	IC16 pin 1 (CP22)	Check for $-10Vdc \pm 1.0V$
3	800Hz, 100% modulation left or right channel only.	IC18 pin 1 (CP24)	Adjust RP5 for minimum DC offset.
4	800Hz, 10% modulation left or right channel as required.	IC1 pin 1 (right) (CP3) IC1 pin 7 (left) (CP4)	Adjust RP6 for best separation and left to right balance.
5	Both audio inputs driven 150% modulation at 400Hz.	DELAY IC Junction of R312/R313 or (CP11)	Increase audio input level and adjust RP301 for symmetrical clipping. Less than 1V.
6	Both audio inputs driven, 400Hz, 0.5V RMS.	A: IC17 pin 7 (CP15) B: Junction of R312/R313 or (CP11)	The output level at point A should be within 1.5 DB of test point B \pm 1 DB.
7	Both audio inputs driven, 0.5V RMS	IC13 pin 1 (CP9)	Short Junction of C15/R29 (CP18) to ground. Fe is 2.6 KHz referenced to 8 KHz.
8	Both audio inputs driven, 0.5V RMS.	IC14 pin 1 (CP8)	Short C15/R29 (CP18) to ground. Fe is 2.6 KHz referenced to 8 KHz.
9	Signal Input to Junction of R76/C48 (CP7)	IC12 pin 1 (CP10)	Fe should be 16 KHz
10	Both audio inputs driven 800 Hz, 0.5V RMS	A: IC18 pin 7 (CP23) B: IC3 pin 7 (CP5)	Tracking between test point A and test point B adjust RP9 for ± 1 DB. Tracking between test point A and test point B should be within 2.5 DB as the input signal is reduced 50 DB in 10 DB steps. Adjust RP9 to correct tracking error at -30 DB.
11	Both CH Driven 400 Hz, 0.5V RMS	IC7 pin 7 (CP21)	Voltage should be $-13V \pm 1$
12	Left or Right CH Only 400 Hz 0.5V	IC7 pin 7 (CP21)	Reduce the Input Level of the Left or Right CH 5 DB and Adjust RP1 for -4 Volts $\pm 100mV$ Voltage should be -1 to $-1.5V \pm 0.5V$
13	Both Audio Inputs Driven 800Hz, 0.5V RMS	IC19 pin 1 (CP25)	Adjust RP7 for $0V \pm 10mV$
14	Both Audio Inputs Driven 800Hz, 0.5V RMS	A: Left Audio Out (CP2) B: Right Audio Out (CP1)	Reduce the Input Level to the Left Channel. The Left Ch Mute FET Should Switch On When the Left Input is Down 28 DB ± 3 DB. Repeat for Right Ch and Trim RP7 to Obtain Proper Balance
15	Left or Right CH Driven 800Hz, 0.5V RMS	IC5 pin 7 (CP13)	Check Test Point for Zero Audio Output When Only One Ch is Driven
16	Both Inputs Driven 600 Hz	IC5 pin 7 (CP13)	AGC AMPLIFIER 1. Note the Output Level at the Test Point. 2. Reduce the Left or Right Drive Signal 20 DB. 3. Compare the level to Step 1 and adjust RP8 for 14 ± 1 DB.
17	Signal Side of R162 (CP14)	IC5 pin 1 (CP12)	SPECTRAL SHAPE AMPLIFIER Check Response Against That Listed Below $\pm 1.5dB$: 20 Hz $-4.6DB$ 30 Hz $-1.6DB$ 40 Hz $-0.2DB$ 80 Hz $+1.6DB$ 100 Hz $+1.7DB$ 150 Hz $+1.4DB$ 200 Hz $+1.0DB$ 400 Hz 0 800 Hz $-0.7DB$ 1.5 KHz $+0.1DB$ 2.5 KHz $+2.2DB$ 4 KHz $+5$ DB 8 KHz $+9$ DB 10 KHz $+10.1DB$
18	Left or Right Audio Input	A: Left Audio Output B: Right Audio Output	OUTPUT EQUALIZATION MR Button MUST Be Engaged. Check Output Eq for $+0.8DB$ at $10kHz$, $0DB$ at $1kHz$; $+0.9DB$ at $20Hz \pm 0.5DB$.
19	None	IC302 Pins 2 and 4	CLOCK FREQUENCY Clock Frequency is 20 KHz ± 1 KHz.
20	None	IC302 Pin 2 or 4	CLOCK GATING Check to See the Clock is Operating ONLY When Receiver is in the FM Mode.
21	None	Audio Outputs	NOISE MEASUREMENT Less than $500\mu V$ Excluding residual clock component. Less than $800\mu V$ noise and clock noise.
22	None		

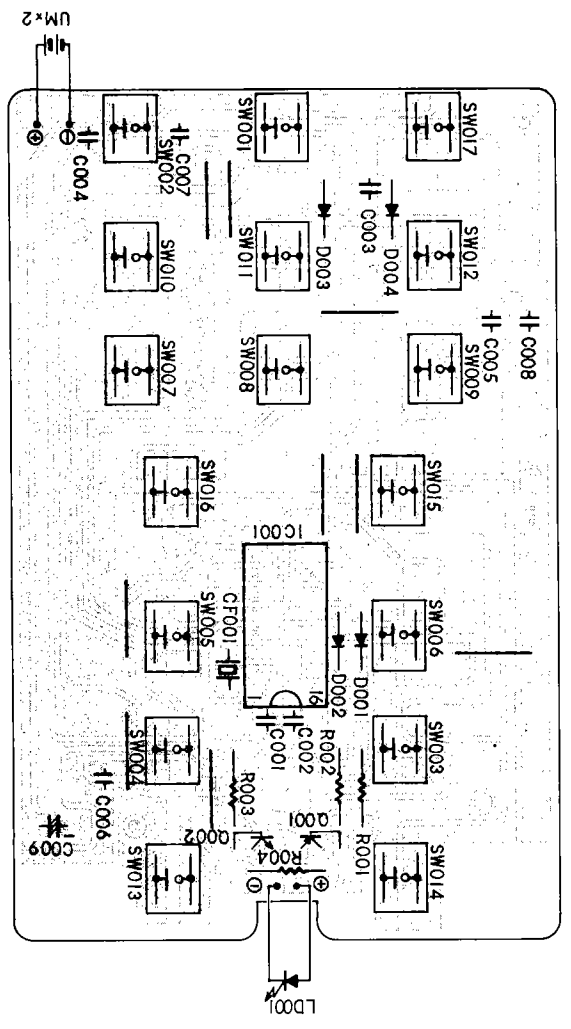
ALIGNMENT POINTS

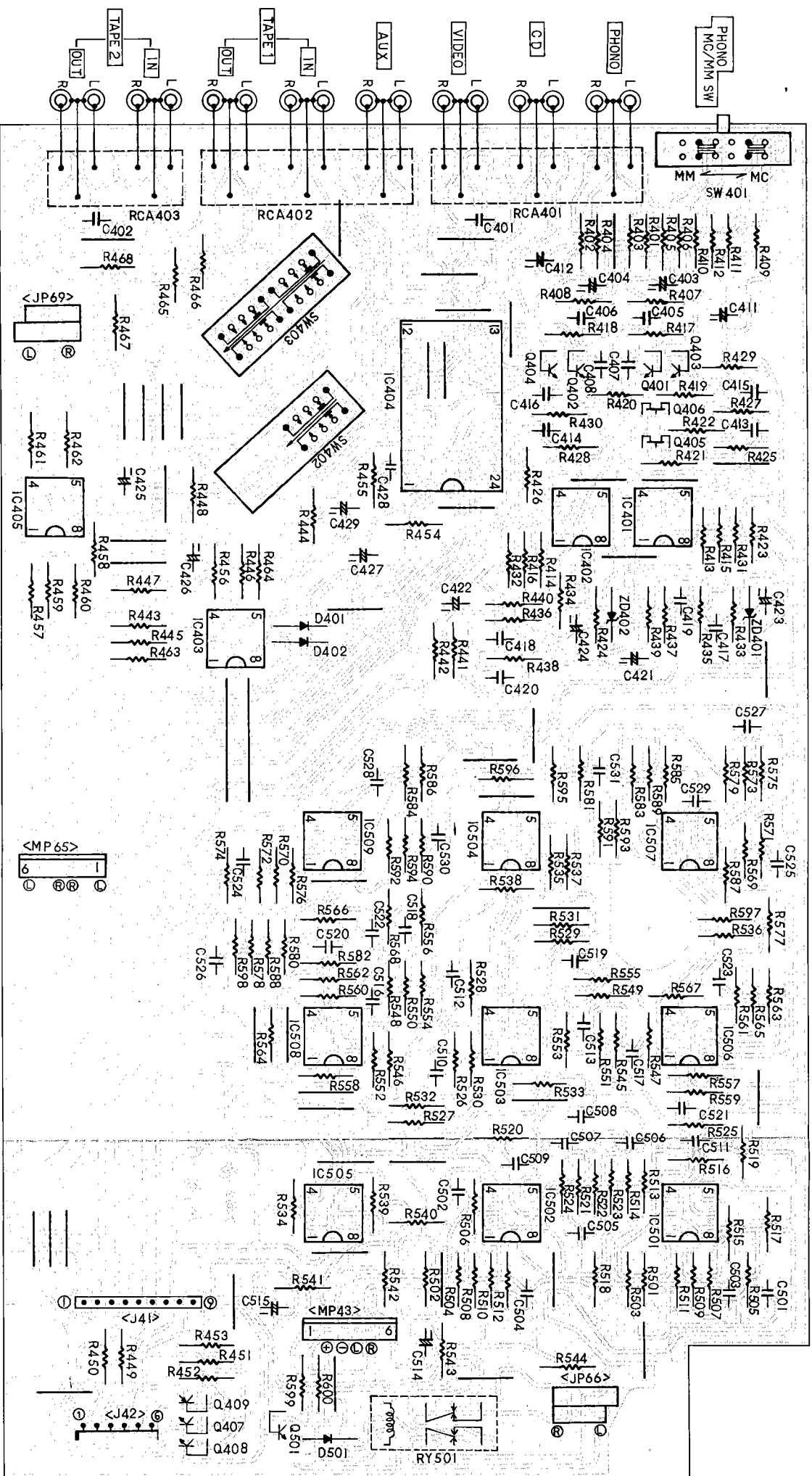
Tuner P.C. Board TIM-612B



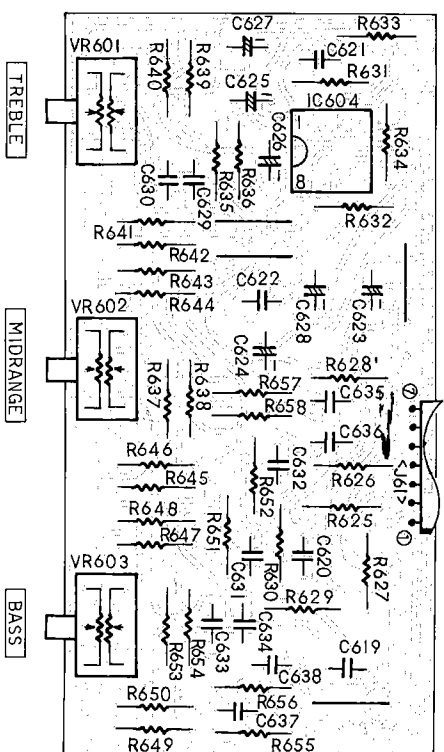
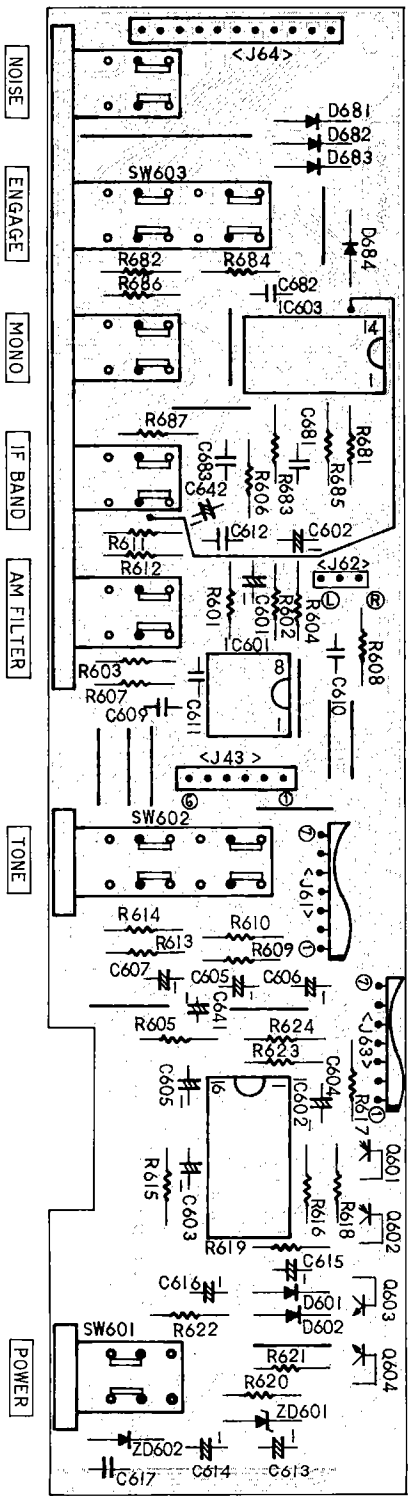


RMC-6111 Remote Control P.C. Board

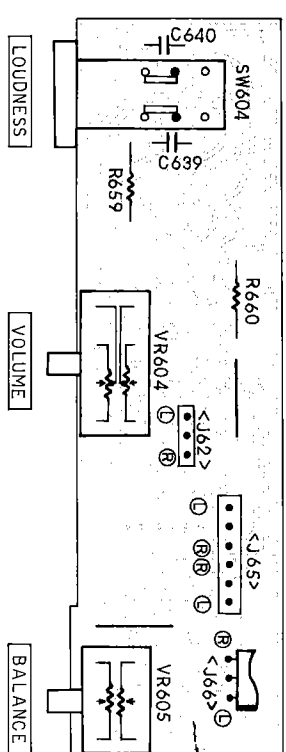




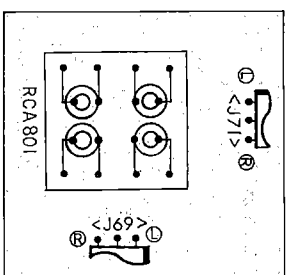
ASW-616A Audio Accessory Switch P.C. Board

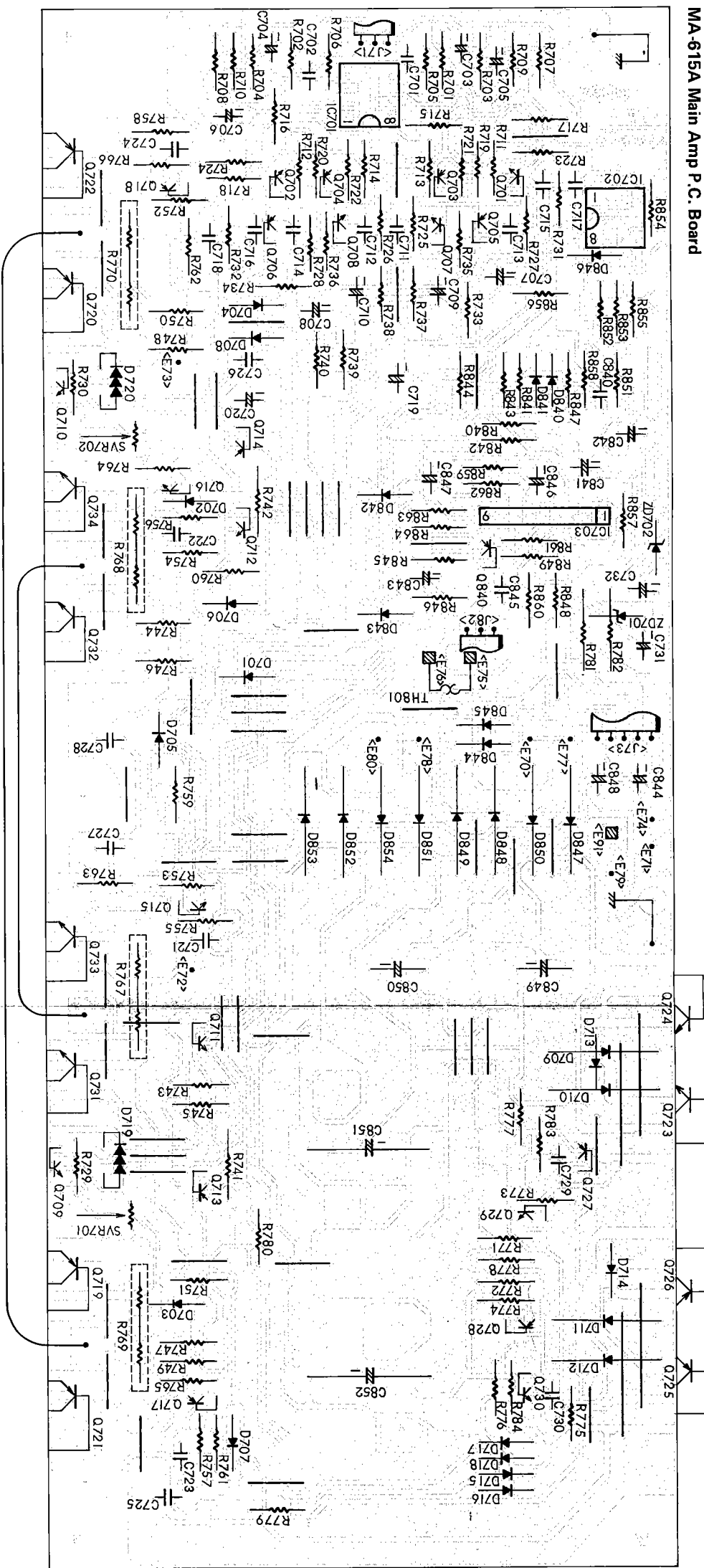


VR-616A Volume Control P.C. Board

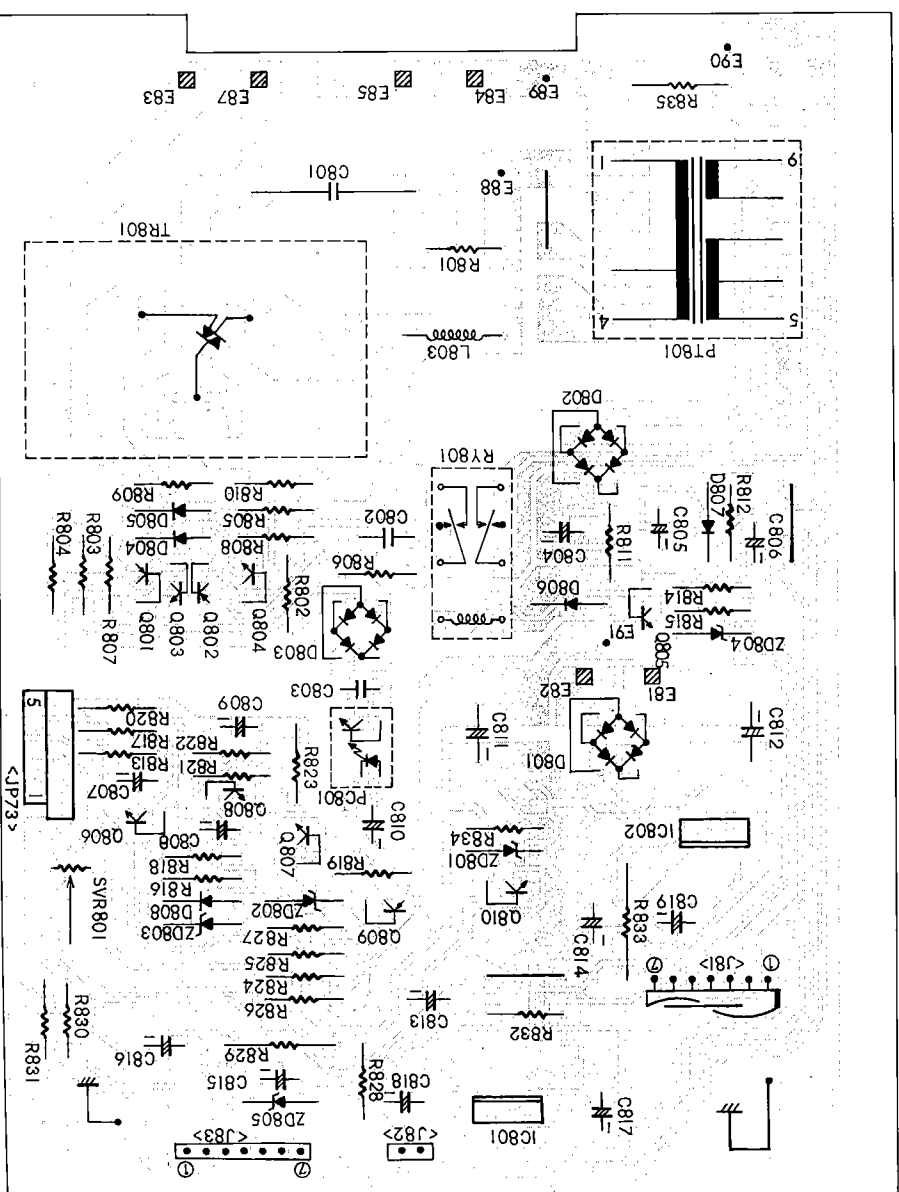


PMR-615A
Pre-Main RCA Jack P.C. Board

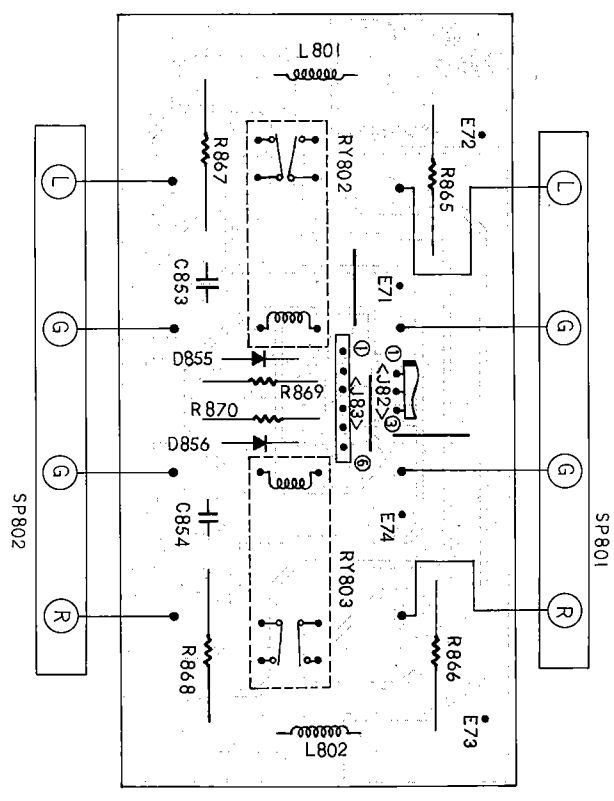


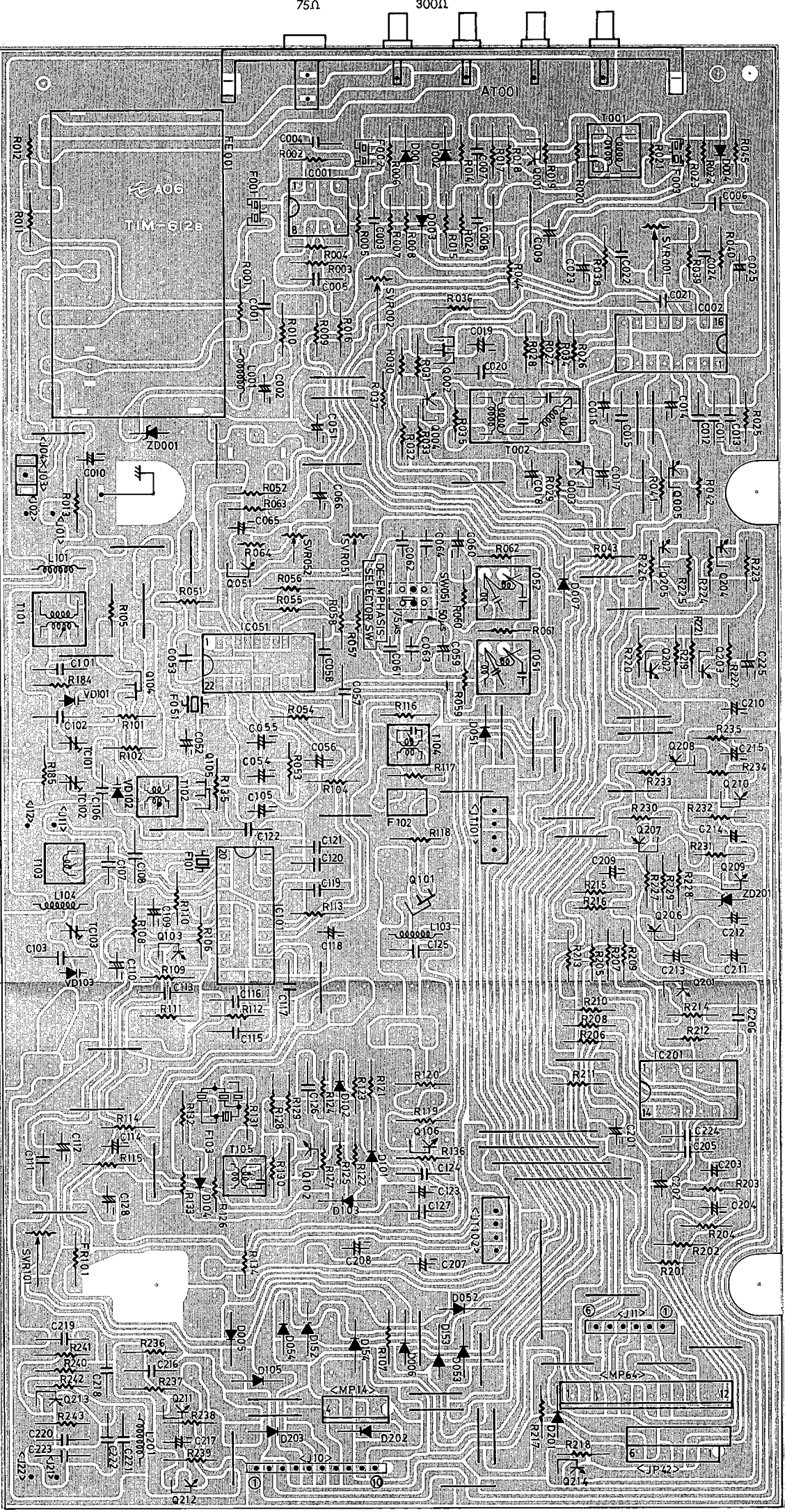


PS-615A Power Supply P.C. Board

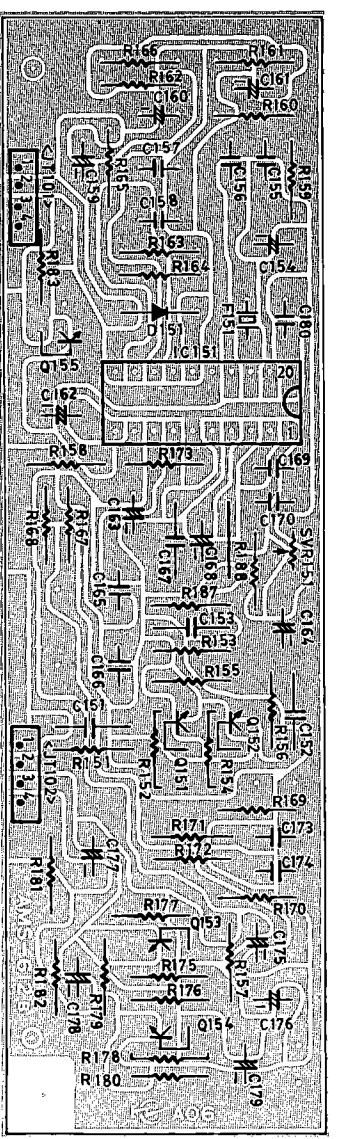


SP-615A Speaker Terminal P.C. Board

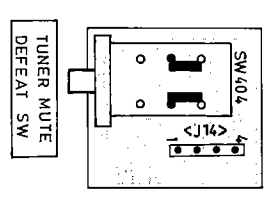


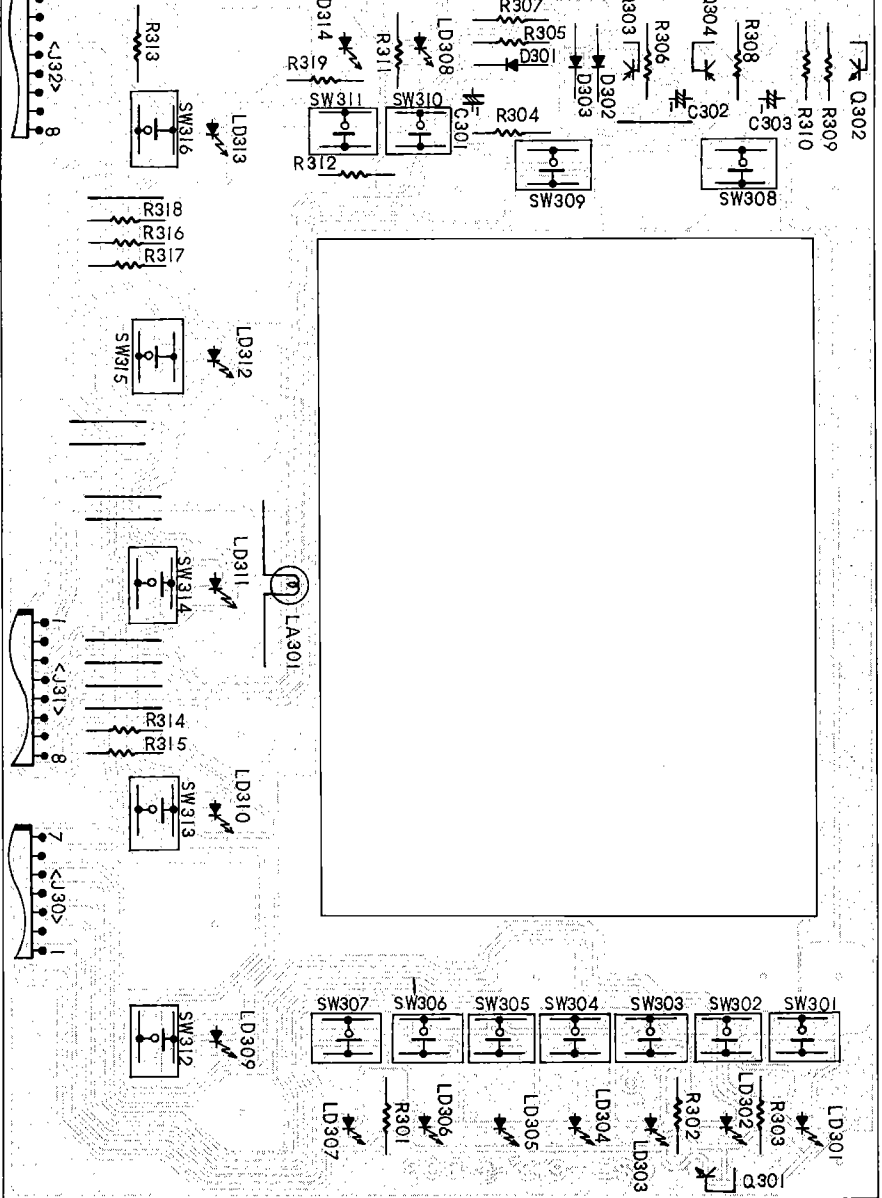


AMS-612B AM Stereo Decoder P.C. Board

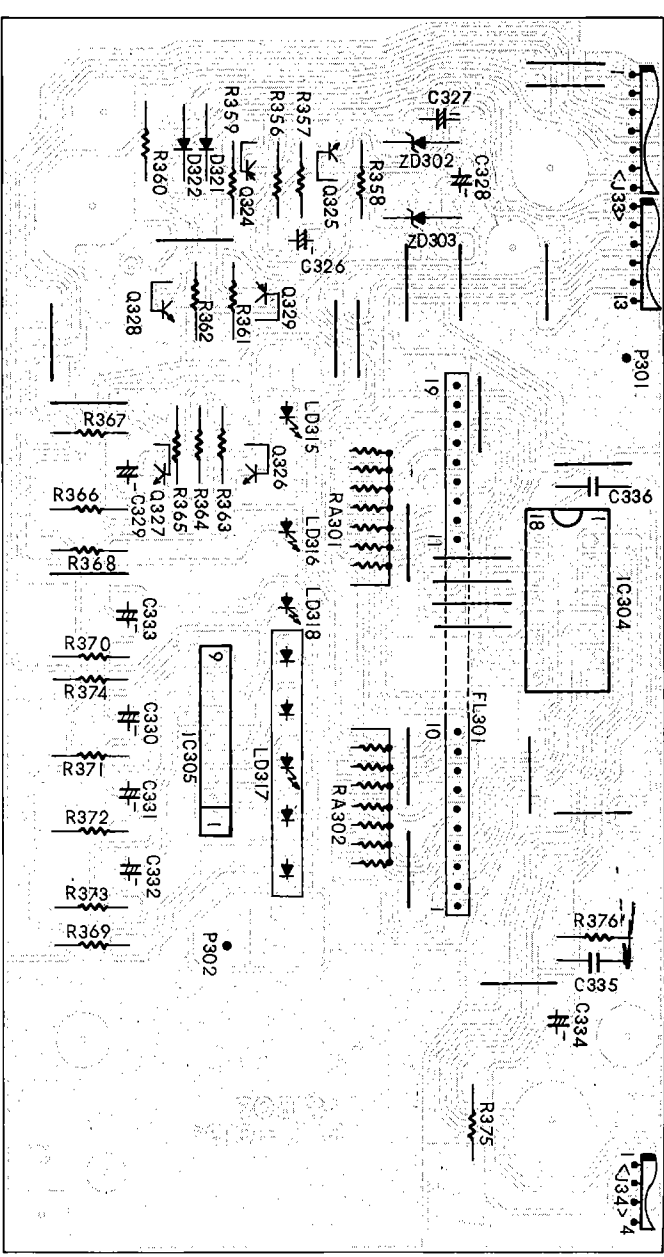
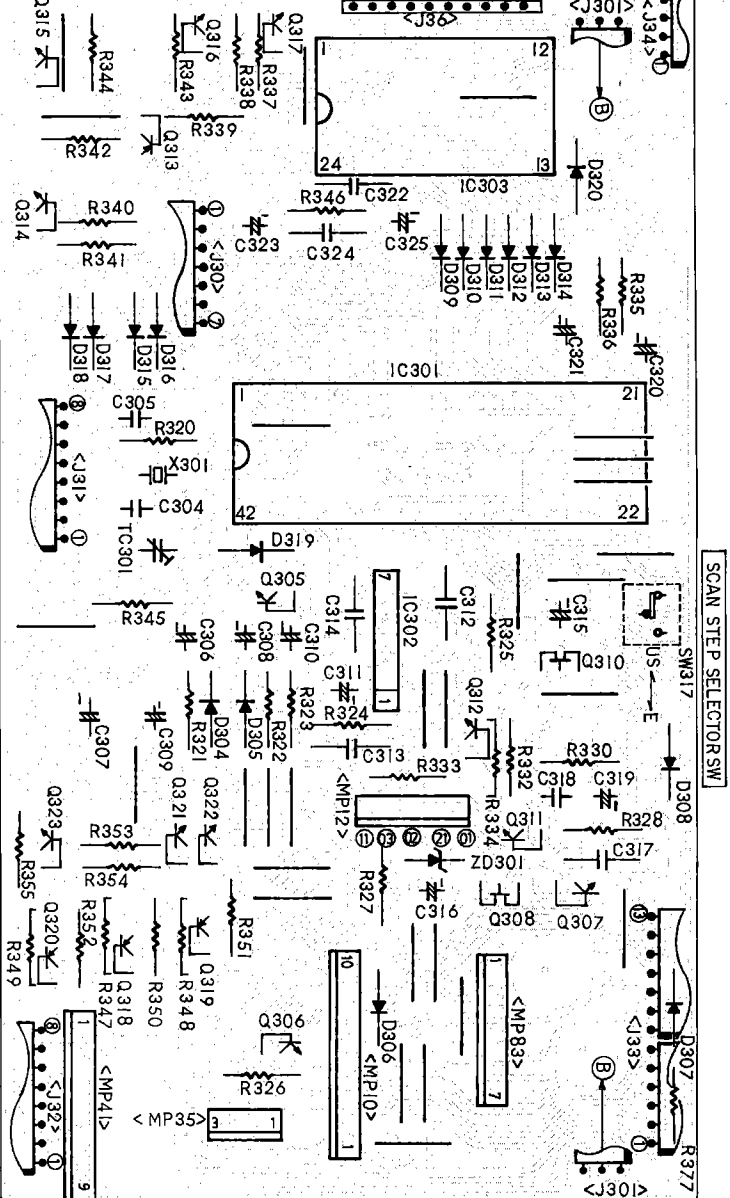


MSW-614 Mute Defeat Switch P.C. Board

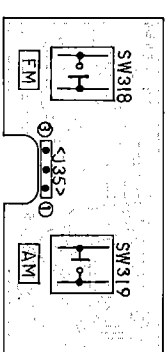




L-613A PLL P.C. Board

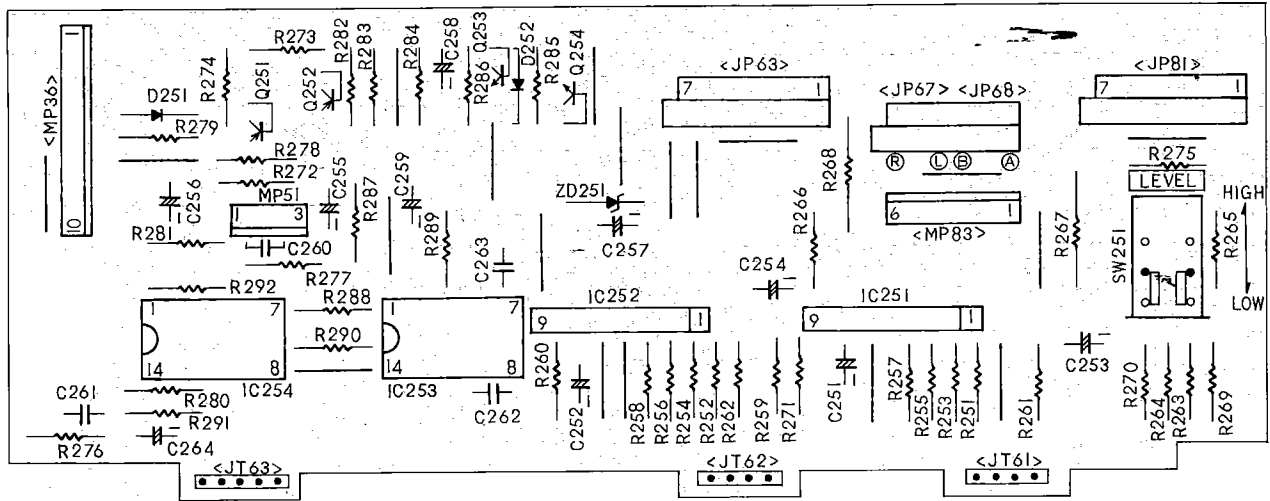


AF-616A Tuner Band Selector P.C. Board

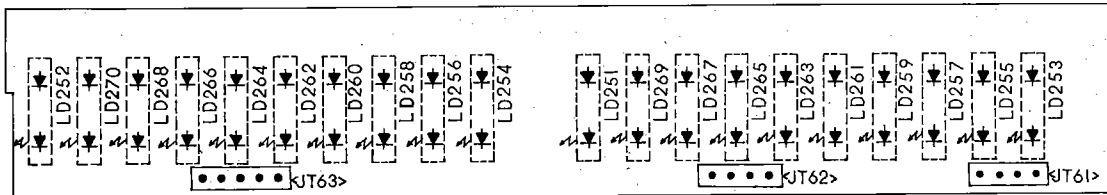


SLD-613A Shield P.C. Board

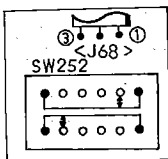
PMD-615A Power Meter Driver P.C. Board



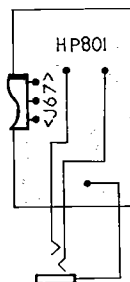
PLD-615A Power Meter P.C. Board



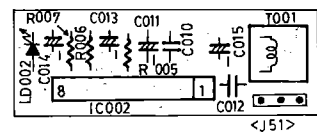
**SPS-615A
Speaker Selector P.C. Board**



**HP-615A
Headphone Jack P.C. Board**




**R-617
Remote Control Receiver P.C. Board**



PARTS LISTS

1. AF-616A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Switches				
SW318,319	2		KHH10910	Tact Switch 
Miscellaneous				
J035	1		MC03-389	Micro Socket Ass'y

2. AMS-612A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Semiconductors				
D151	1		1S1588	Diode
Q151~155	5		2SC1815-GR,Y	Transistor
IC151	1		MC13020P	IC
Capacitors				
C151	1		TP125X103N	Ceramic Capacitor
C152	1		EP125Y223N	Ceramic Capacitor
C153	1		TP125X103N	Ceramic Capacitor
C154	1		LL-16TW470M	Low Leak. Electrolytic Cap.
C155	1		MY-50VS332K	Mylar Capacitor
C156	1		HE60SJCH470K	Ceramic Capacitor
C157,158	2		ECQV1H474JZ	Metallized Film Capacitor
C159	1		NS-16TW100M	Electrolytic Capacitor
C160	1		NS-50TW2R2M	Electrolytic Capacitor
C161	1		NS-25TW4R7M	Electrolytic Capacitor
C162	1		LL-50TW2R2M	Low Leak. Electrolytic Cap.
C163	1		LL-25TW4R7M	Low Leak. Electrolytic Cap.
C164	1		NS-16TW101M	Electrolytic Capacitor
C165,166	2		MY-50VU823J	Mylar Capacitor
C167	1		UP125B102K	Ceramic Capacitor
C168	1		LL-16TW100M	Low Leak. Electrolytic Cap.
C169,170	2		MY-50VS332K	Mylar Capacitor
C173,174	2		MY-50VU332J	Mylar Capacitor
C175,176	2		NS-50TW1R0M	Electrolytic Capacitor
C177,178	2		NS-25TW4R7M	Electrolytic Capacitor
C179	1		NS-16TW221M	Electrolytic Capacitor
C180	1		MY-50VS332K	Mylar Capacitor
C181	1		UP125V222K	Ceramic Capacitor
Resistors				
R151	1		KA25ST221J	Carbon Resistor
R152	1		KA25ST184J	Carbon Resistor
R153	1		KA25ST183J	Carbon Resistor
R154	1		KA25ST223J	Carbon Resistor
R155	1		KA25ST222J	Carbon Resistor
R156	1		KA25ST103J	Carbon Resistor
R157,158	2		KA25ST221J	Carbon Resistor
R159	1		KA25ST271J	Carbon Resistor
R160	1		KA25ST911J	Carbon Resistor
R161	1		KA25ST392J	Carbon Resistor
R162	1		KA25ST152J	Carbon Resistor
R163	1		KA25ST224J	Carbon Resistor
R164	1		KA25ST563J	Carbon Resistor
R165	1		KA25ST272J	Carbon Resistor
R166	1		KA25ST431J	Carbon Resistor
R167,168	2		KA25ST472J	Carbon Resistor
R169,170	2		KA25ST104J	Carbon Resistor
R171,172	2		KA25ST223J	Carbon Resistor
R173	1		KA25ST334J	Carbon Resistor
R175,176	2		KA25ST822J	Carbon Resistor
R177,178	2		KA25ST185J	Carbon Resistor
R179,180	2		KA25ST152J	Carbon Resistor
R181,182	2		KA25ST104J	Carbon Resistor
R183	1		KA25ST473J	Carbon Resistor
R187	1		KA25ST106J	Carbon Resistor
Miscellaneous				
F151	1		KBR-3.6M1	Ceramic Oscillator
JT101,102	2		IMSA-1068-04D	Mini Terminal Plate

3. ASW-616A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Semiconductors				
D601,602	1		1S1588	Diode
D681~684	4		1S1588	Diode
Q601,602	2		2SA1015-Y,GR	Transistor
Q603,604	2		2SC1815-Y,GR	Transistor
IC601	1		M5218PR	IC
			or NJM4560DX	IC
IC602	1		TC9155P	IC
IC603	1		MN4001B	IC
			or M4001B	IC
			or TC4001BP	IC
ZD601,602	2		ZD50-060	Zener Diode, 1/2W, 6.0V
Capacitors				
C601~608	8		LL-25TW4R7M	Low Leak. Electrolytic Cap.
C609,610	2		HE40SJSL180K	Ceramic Capacitor
C611,612	2		MY-50VU102J	Mylar Capacitor
C613,614	2		NS-16TW470M	Electrolytic Capacitor
C615,616	2		NS-50TW100M	Electrolytic Capacitor
C617	1		ECQV1H104JZ	Metallized Film Capacitor
C641,642	2		NS-25TW220M	Electrolytic Capacitor
C681,682	2		ECQV1H224JZ	Metallized Film Capacitor
C683	1		MY-50VU223J	Mylar Capacitor
Resistors				
R601,602	2		KA25ST221J	Carbon Resistor
R603,604	2		KA25ST104J	Carbon Resistor
R605,606	2		KA25ST433J	Carbon Resistor
R607,608	2		KA25ST474J	Carbon Resistor
R609~612	4		KA25ST473J	Carbon Resistor
R613,614	2		KA25ST271J	Carbon Resistor
R615,616	2		KA25ST302J	Carbon Resistor
R617,618	2		KA25ST473J	Carbon Resistor
R619,620	2		KA25ST104J	Carbon Resistor
R621	1		KA25ST223J	Carbon Resistor
R622	1		KA25ST683J	Carbon Resistor
R623,624	2		KA25ST102J	Carbon Resistor
R681~684	4		KA25ST103J	Carbon Resistor
R685,686	2		KA25ST225J	Carbon Resistor
R687	1		KA25ST102J	Carbon Resistor
Switches				
SW601	1		SW-1100164	Push Switch
SW602	1		SW-1100165	Push Switch
SW603	1		SW-1500163	Push Switch
Miscellaneous				
J043	2		09-#18B01	UL Type Tube
J064	1		MC06-395	Micro Socket Ass'y
	1		MC12-400	Micro Socket Ass'y

4. CNR-527D P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Semiconductors				
ND001~026	26		1S1588	Diode
ND030	1		1S1588	Diode
ND032~043	13		1S1588	Diode
ND055,056	2		1S1588	Diode
ND057	1		1N4004	Diode
ND060	1		1S1588	Diode
ND070~072	3		1S1588	Diode
NQ001~003	3		2SC1815-Y,GR	Transistor
NQ004	1		2SA1015-Y,GR	Transistor
NQ005~007	3		2SK381-D	Transistor
NQ301~303	3		2SC1815-Y,GR	Transistor
NIC001~023	23		M5218P	IC
			or NJM4560D	IC

4. CNR-527D P.C. Board Assembly (cont'd)

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
NIC024	1		LM3080N or RCA3080E	IC
NIC301	1		MN3010	IC
NIC302	1		MN3101	IC
Capacitors				
NC003	1		MY-50VU823K	Mylar Capacitor
NC004	1		MY-50VU102K	Mylar Capacitor
NC005,006	2		LL-16TW4R7M	Low Leak. Electrolytic Cap.
NC007,008	2		HE50SJSL101K	Ceramic Capacitor
NC009	1		MY-50VU823K	Mylar Capacitor
NC010	1		MY-50VU102K	Mylar Capacitor
NC011,012	2		LL-16TW4R7M	Low Leak. Electrolytic Cap.
NC015	1		MY-50VU222K	Mylar Capacitor
NC016	1		MY-50VU103K	Mylar Capacitor
NC017	1		HE95SJSL561K	Ceramic Capacitor
NC018	1		MY-50VU392K	Mylar Capacitor
NC019	1		LL-16TW100M	Low Leak. Electrolytic Cap.
NC030	1		HE50SJSL101K	Ceramic Capacitor
NC031	1		LL-16TW4R7M	Low Leak. Electrolytic Cap.
NC032	1		MY-50VU683K	Mylar Capacitor
NC040	1		LL-16TW4R7M	Low Leak. Electrolytic Cap.
NC041	1		MY-50VU123K	Mylar Capacitor
NC042	1		MY-50VU333K	Mylar Capacitor
NC043	1		MY-50VU223K	Mylar Capacitor
NC044	1		MY-50VU822K	Mylar Capacitor
NC045~047	3		MY-50VU332K	Mylar Capacitor
NC048	1		MY-50VU272K	Mylar Capacitor
NC049	1		MY-50VU182K	Mylar Capacitor
NC050	1		MY-50VU472K	Mylar Capacitor
NC051	1		HE11SJSL681K	Ceramic Capacitor
NC052	1		MY-50VU472K	Mylar Capacitor
NC053	1		HE11SJSL681K	Ceramic Capacitor
NC054	1		MY-50VU122K	Mylar Capacitor
NC055	1		MY-50VU222K	Mylar Capacitor
NC056	1		MY-50VU683K	Mylar Capacitor
NC057	1		LL-16TW100M	Low Leak. Electrolytic Cap.
NC058	1		LL-16TW4R7M	Low Leak. Electrolytic Cap.
NC061	1		MY-50VU223K	Mylar Capacitor
NC062	1		ECQV1H224JZ	Metallized Film Capacitor
NC063,064	2		MY-50VU104K	Mylar Capacitor
NC065	1		LL-16TW4R7M	Low Leak. Electrolytic Cap.
NC066	1		HE50SJSL121K	Ceramic Capacitor
NC067~069	3		LL-16TW4R7M	Low Leak. Electrolytic Cap.
NC070	1		HE50SJSL121K	Ceramic Capacitor
NC071	1		HE50SJSL101K	Ceramic Capacitor
NC072,073	2		LL-16TW4R7M	Low Leak. Electrolytic Cap.
NC074	1		LL-16TW100M	Low Leak. Electrolytic Cap.
NC075	1		MY-50VU124K	Mylar Capacitor
NC078	1		MY-50VU473K	Mylar Capacitor
NC079	1		MY-50VU123K	Mylar Capacitor
NC080	1		MY-50VU682K	Mylar Capacitor
NC084	1		HE95SJSL561K	Ceramic Capacitor
NC085	1		MY-50VU393K	Mylar Capacitor
NC086	1		LL-16TW220M	Low Leak. Electrolytic Cap.
NC087	1		MY-50VU102K	Mylar Capacitor
NC088	1		HE11SJSL751K	Ceramic Capacitor
NC089	1		MY-50VU393K	Mylar Capacitor
NC090	1		LL-16TW220M	Low Leak. Electrolytic Cap.
NC091	1		MY-50VU102K	Mylar Capacitor
NC104	1		MY-50VU182K	Mylar Capacitor
NC107	1		LL-16TW100M	Low Leak. Electrolytic Cap.
NC111,112	2		NS-16TW331M	Electrolytic Capacitor
NC113~120	8		NS-50TW2R2M	Electrolytic Capacitor
NC150,151	2		MY-50VU104K	Mylar Capacitor
NC302	1		NS-25TW470M	Electrolytic Capacitor
NC303	1		HE70SJYF103Z	Ceramic Capacitor
NC304	1		LL-50TW3R3M	Low Leak. Electrolytic Cap.
NC305	1		NS-50TW100M	Electrolytic Capacitor
NC306	1		HE11SJSL681K	Ceramic Capacitor
NC307	1		LL-50TW3R3M	Low Leak. Electrolytic Cap.
NC308	1		MY-50VU122K	Mylar Capacitor
NC309	1		NS-50TW2R2M	Electrolytic Capacitor
NC310	1		HE70SJYF103Z	Ceramic Capacitor
NC311	1		NS-50TW100M	Electrolytic Capacitor

4. CNR-527D P.C. Board Assembly (cont'd)

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
NC312	1		NS-25TW470M	Electrolytic Capacitor
NC313	1		HE12SJCH241J	Ceramic Capacitor
NC314	1		HE70SJYF103Z	Ceramic Capacitor
Resistors				
NR001	1		KA25ST513J	Carbon Resistor
NR002	1		KA25ST222J	Carbon Resistor
NR003,004	2		KA25ST103J	Carbon Resistor
NR005	1		KA25ST513J	Carbon Resistor
NR006	1		KA25ST222J	Carbon Resistor
NR007	1		KA25ST472J	Carbon Resistor
NR008,009	2		KA25ST103J	Carbon Resistor
NR010	1		KA25ST472J	Carbon Resistor
NR011	1		KA25ST223J	Carbon Resistor
NR012	1		KA25ST224J	Carbon Resistor
NR013,014	2		KA25ST222J	Carbon Resistor
NR015	1		KA25ST223J	Carbon Resistor
NR016	1		KA25ST104J	Carbon Resistor
NR017,018	2		KA25ST472J	Carbon Resistor
NR019,020	2		KA25ST223J	Carbon Resistor
NR021	1		KA25ST224J	Carbon Resistor
NR022,023	2		KA25ST222J	Carbon Resistor
NR024	1		KA25ST223J	Carbon Resistor
NR025	1		KA25ST104J	Carbon Resistor
NR026,027	2		KA25ST472J	Carbon Resistor
NR028	1		KA25ST203J	Carbon Resistor
NR029	1		KA25ST562J	Carbon Resistor
NR030	1		KA25ST203J	Carbon Resistor
NR031	1		KA25ST822J	Carbon Resistor
NR032~034	3		KA25ST113J	Carbon Resistor
NR035	1		KA25ST333J	Carbon Resistor
NR036	1		KA25ST153J	Carbon Resistor
NR037	1		KA25ST821J	Carbon Resistor
NR038	1		KA25ST302J	Carbon Resistor
NR039	1		KA25ST104J	Carbon Resistor
NR040	1		KA20ST103J	Carbon Resistor
NR041	1		KA25ST181J	Carbon Resistor
NR042	1		KA25ST224J	Carbon Resistor
NR043,044	2		KA25ST562J	Carbon Resistor
NR045	1		KA25ST224J	Carbon Resistor
NR046	1		KA25ST243J	Carbon Resistor
NR047	1		KA25ST565J	Carbon Resistor
NR066~068	3		KA25ST752J	Carbon Resistor
NR069	1		KA25ST202J	Carbon Resistor
NR070	1		KA25ST183J	Carbon Resistor
NR071,072	2		KA25ST202J	Carbon Resistor
NR073	1		KA25ST103J	Carbon Resistor
NR074	1		KA25ST683J	Carbon Resistor
NR075	1		KA25ST392J	Carbon Resistor
NR076	1		KA25ST202J	Carbon Resistor
NR077	1		KA25ST163J	Carbon Resistor
NR078	1		KA25ST203J	Carbon Resistor
NR079	1		KA25ST303J	Carbon Resistor
NR080	1		KA25ST392J	Carbon Resistor
NR081,82	2		KA25ST752J	Carbon Resistor
NR083	1		KA25ST272J	Carbon Resistor
NR084,85	2		KA25ST302J	Carbon Resistor
NR086	1		KA25ST183J	Carbon Resistor
NR087	1		KA25ST562J	Carbon Resistor
NR088	1		KA25ST203J	Carbon Resistor
NR089	1		KA25ST104J	Carbon Resistor
NR090	1		KA25ST302J	Carbon Resistor
NR091	1		KA25ST243J	Carbon Resistor
NR092	1		KA25ST335J	Carbon Resistor
NR093	1		KA25ST224J	Carbon Resistor
NR094	1		KA25ST333J	Carbon Resistor
NR095,96	2		KA25ST562J	Carbon Resistor
NR097	1		KA25ST153J	Carbon Resistor
NR098	1		KA25ST181J	Carbon Resistor
NR099	1		KA25ST821J	Carbon Resistor
NR100	1		KA25ST434J	Carbon Resistor
NR101	1		KA25ST224J	Carbon Resistor
NR102	1		KA25ST242J	Carbon Resistor
NR104	1		KA25ST183J	Carbon Resistor
NR105	1		KA25ST203J	Carbon Resistor

4. CNR-527D P.C. Board Assembly (cont'd)

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
NR107,108	2		KA25ST912J	Carbon Resistor
NR109	1		KA25ST101J	Carbon Resistor
NR110	1		KA25ST752J	Carbon Resistor
NR111,112	2		KA25ST470J	Carbon Resistor
NR113	1		KA25ST104J	Carbon Resistor
NR114	1		KA25ST103J	Carbon Resistor
NR115	1		KA25ST202J	Carbon Resistor
NR116	1		KA25ST124J	Carbon Resistor
NR117	1		KA25ST102J	Carbon Resistor
NR118	1		KA25ST113J	Carbon Resistor
NR119	1		KA25ST134J	Carbon Resistor
NR120	1		KA25ST515J	Carbon Resistor
NR121	1		KA25ST102J	Carbon Resistor
NR122	1		KA25ST433J	Carbon Resistor
NR123	1		KA25ST102J	Carbon Resistor
NR124	1		KA25ST563J	Carbon Resistor
NR125,126	2		KA25ST242J	Carbon Resistor
NR127	1		KA25ST912J	Carbon Resistor
NR128	1		KA25ST106J	Carbon Resistor
NR129	1		KA25ST223J	Carbon Resistor
NR130	1		KA25ST912J	Carbon Resistor
NR131	1		KA25ST123J	Carbon Resistor
NR132	1		KA25ST104J	Carbon Resistor
NR133	1		KA25ST562J	Carbon Resistor
NR134	1		KA25ST563J	Carbon Resistor
NR135	1		KA25ST433J	Carbon Resistor
NR136	1		KA25ST242J	Carbon Resistor
NR137	1		KA25ST912J	Carbon Resistor
NR138	1		KA25ST242J	Carbon Resistor
NR139	1		KA25ST106J	Carbon Resistor
NR140	1		KA25ST912J	Carbon Resistor
NR141	1		KA25ST223J	Carbon Resistor
NR142,143	2		KA25ST123J	Carbon Resistor
NR144,145	2		KA25ST393J	Carbon Resistor
NR146,147	2		KA25ST203J	Carbon Resistor
NR148	1		KA25ST104J	Carbon Resistor
NR149,150	2		KA25ST203J	Carbon Resistor
NR151	1		KA25ST104J	Carbon Resistor
NR152	1		KA25ST225J	Carbon Resistor
NR157	1		KA25ST124J	Carbon Resistor
NR158	1		KA25ST561J	Carbon Resistor
NR159	1		KA25ST104J	Carbon Resistor
NR160,161	2		KA25ST223J	Carbon Resistor
NR162	1		KA25ST103J	Carbon Resistor
NR163,164	2		KA25ST133J	Carbon Resistor
NR165,166	2		KA25ST392J	Carbon Resistor
NR168	1		KA20ST682J	Carbon Resistor
NR169	1		KA20ST103J	Carbon Resistor
NR170	1		KA25ST123J	Carbon Resistor
NR171	1		KA25ST223J	Carbon Resistor
NR172,173	2		KA25ST183J	Carbon Resistor
NR174	1		KA25ST222J	Carbon Resistor
NR175	1		KA25ST113J	Carbon Resistor
NR184	1		KA25ST512J	Carbon Resistor
NR185	1		KA25ST103J	Carbon Resistor
NR186	1		KA25ST512J	Carbon Resistor
NR187	1		KA25ST243J	Carbon Resistor
NR188	1		KA25ST753J	Carbon Resistor
NR189	1		KA25ST243J	Carbon Resistor
NR190	1		KA25ST203J	Carbon Resistor
NR191	1		KA25ST104J	Carbon Resistor
NR192	1		KA25ST121J	Carbon Resistor
NR193	1		KA25ST222J	Carbon Resistor
NR194	1		KA25ST183J	Carbon Resistor
NR195	1		KA25ST472J	Carbon Resistor
NR197	1		KA25ST621J	Carbon Resistor
NR201	1		KA25ST512J	Carbon Resistor
NR202	1		KA25ST303J	Carbon Resistor
NR203	1		KA25ST103J	Carbon Resistor
NR204	1		KA25ST512J	Carbon Resistor
NR205	1		KA25ST243J	Carbon Resistor
NR206	1		KA25ST473J	Carbon Resistor
NR207	1		KA25ST243J	Carbon Resistor
NR208	1		KA25ST203J	Carbon Resistor
NR209	1		KA25ST222J	Carbon Resistor
NR210	1		KA25ST121J	Carbon Resistor

4. CNR-527D P.C. Board Assembly (cont'd)

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
NR211	1		KA25ST183J	Carbon Resistor
NR212	1		KA25ST621J	Carbon Resistor
NR213	1		KA25ST104J	Carbon Resistor
NR214	1		KA25ST472J	Carbon Resistor
NR230	1		KA25ST303J	Carbon Resistor
NR244	1		KA25ST152J	Carbon Resistor
NR246	1		KA20ST242J	Carbon Resistor
NR251	1		KA25ST184J	Carbon Resistor
NR301	1		KA25ST510J-LP	Carbon Resistor
NR302,303	2		KA25ST242J	Carbon Resistor
NR304	1		KA25ST104J	Carbon Resistor
NR305	1		KA25ST102J	Carbon Resistor
NR306,307	2		KA25ST104J	Carbon Resistor
NR308,309	2		KA25ST562J	Carbon Resistor
NR310	1		KA25ST104J	Carbon Resistor
NR311	1		KA25ST513J	Carbon Resistor
NR312,312	2		KA25ST512J	Carbon Resistor
NR314	1		KA25ST513J	Carbon Resistor
NR315	1		KA25ST911J	Carbon Resistor
NR316	1		KA25ST202J	Carbon Resistor
NR317	1		KA25ST510J-LP	Carbon Resistor
NR318	1		KA25ST223J	Carbon Resistor
NR319,320	2		KA25ST513J	Carbon Resistor
NRP001	1		SVR-10T3B104CK	Semi-Variable Resistor
NRP003	1		SVR-10T3B225CK	Semi-Variable Resistor
NRP005	1		SVR-10T3B224CK	Semi-Variable Resistor
NRP006	1		SVR-10T3B104CK	Semi-Variable Resistor
NRP007	1		SVR-10T3B203CK	Semi-Variable Resistor
NRP008	1		SVR-06T3B204CK	Semi-Variable Resistor
NRP009	1		SVR-06T3B105CK	Semi-Variable Resistor
NRP301	1		SVR-10T3B472CK	Semi-Variable Resistor
Miscellaneous				
CP013,021	1		59BS1692	GND Lug
MP011	2		RP-003	Terminal Pin
MP082	1		171826-6	Micro Plug
	1		171826-2	Micro Plug

5. CSF-613A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Semiconductors				
D301~303	3		1S1588	Diode
Q301,302	2		2SC2021-R,S	Transistor
Q303,304	2		2SA937-R,S	Transistor
LD301~306	6		TLR205	LED
LD307	1		TLY205	LED
LD308~313	6		TLR205	LED
LD314	1		TLY205	LED
Capacitors				
C301	1		NS-10TW101M	Electrolytic Capacitor
C302,303	2		NS-16TW100M	Electrolytic Capacitor
Resistors				
R301	1		KA25ST431J	Carbon Resistor
R302	1		KA25ST102J	Carbon Resistor
R303	1		KA25ST103J	Carbon Resistor
R304	1		KA25ST472J	Carbon Resistor
R305	1		KA25ST223J	Carbon Resistor
R306	1		KA25ST104J	Carbon Resistor
R307	1		KA25ST124J	Carbon Resistor
R308	1		KA25ST104J	Carbon Resistor
R309	1		KA25ST473J	Carbon Resistor
R310	1		KA25ST104J	Carbon Resistor
R311	1		KA25ST102J	Carbon Resistor
R312	1		KA25ST682J	Carbon Resistor
R313	1		KA25ST102J	Carbon Resistor
R314~318	4		KA25ST472J	Carbon Resistor
R319	1		KA25ST182J	Carbon Resistor

5. CSF-613A P.C. Board Assembly (cont'd)

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Switches				
SW301~316	16		KHH10910	Tact Switch
Miscellaneous				
LA301	1 1		N44377 BQ141-35853A	Shield Paper Lamp, 12V, 0.07A

6. FEQ-614 P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Semiconductors				
D401,402	2		1S1588	Diode
D501	1		1S1588	Diode
Q401~404	4		2SC3329-GR	Transistor
Q405,406	2		2SK381-D	Transistor
Q407,408	2		2SC2878-A,B	Transistor
Q409	1		2SA1015-Y,GR	Transistor
Q501	1		2SC1815-GR,BL	Transistor
IC401~403	3		M5218PR	IC
			or NJM4560DX	IC
IC404	1		TC9152P	IC
IC405	1		M5218PR	IC
			or NJM4560DX	IC
IC501~509	9		M5218PR	IC
			or NJM4560DX	IC
ZD401,402	2		ZD50-060	Zener Diode, 1/2W, 6.0V
Capacitors				
C401,402	2		HC10SJZF473Z	Ceramic Capacitor
C403,404	2		LL-25TW4R7M	Low Leak. Electrolytic Cap.
C405,406	2		HE50SJS101K	Ceramic Capacitor
C407,408	2		MY-50VU222J	Mylar Capacitor
C411,412	2		NS-6R3TW222M	Electrolytic Capacitor
C413,414	2		MY-50VU563J	Mylar Capacitor
C415,416	2		MY-50VU183J	Mylar Capacitor
C417~420	4		MY-50VU473J	Mylar Capacitor
C421,422	2		LL-25TW4R7M	Low Leak. Electrolytic Cap.
C423,424	2		NS-16TW470M	Electrolytic Capacitor
C425,426	2		LL-25TW4R7M	Low Leak. Electrolytic Cap.
C427	1		NS-16TW102M	Electrolytic Capacitor
C428	1		MY-50VU683J	Mylar Capacitor
C429	1		NS-16TW470M	Electrolytic Capacitor
C501~504	4		MY-50VU223J	Mylar Capacitor
C505	1		MY-50VU272J	Mylar Capacitor
C506,507	2		MY-50VU122J	Mylar Capacitor
C508	1		HE40SJYB681K	Ceramic Capacitor
C509	1		ECQV1H124JZ	Metallized Film Capacitor
C510	1		MY-50VU683J	Mylar Capacitor
C511	1		MY-50VU823J	Mylar Capacitor
C512,513	2		MY-50VU562J	Mylar Capacitor
C514,515	2		LL-25TW4R7M	Low Leak. Electrolytic Cap.
C516~531	16		MY-50VU102J	Mylar Capacitor
Resistors				
R401,402	2		KA25ST100J	Carbon Resistor
R403,404	2		KA25ST104J	Carbon Resistor
R405,406	2		KA25ST101J	Carbon Resistor
R407,408	2		KA25ST104J	Carbon Resistor
R409,410	2		KA25ST4R3J	Carbon Resistor
R411,412	2		KA25ST820J	Carbon Resistor
R413~416	4		KA25ST242J	Carbon Resistor
R417,418	2		KA25ST181J	Carbon Resistor
R419,420	2		KA25ST332J	Carbon Resistor
R421,422	2		KA25ST561J	Carbon Resistor
R423,424	2		KA25ST432J	Carbon Resistor
R425,426	2		KA25ST101J	Carbon Resistor
R427,428	2		KA25ST513J	Carbon Resistor
R429,430	2		KA25ST392J	Carbon Resistor
R431,432	2		KA25ST391J	Carbon Resistor
R433,434	2		KA25ST513J	Carbon Resistor

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
R435,436	2		KA25ST104J	Carbon Resistor
R437,438	2		KA25ST334J	Carbon Resistor
R439,440	2		KA25ST271J	Carbon Resistor
R441,442	2		KA25ST223J	Carbon Resistor
R443,444	2		KA25ST561J	Carbon Resistor
R445,446	2		KA25ST104J	Carbon Resistor
R447,448	2		KA25ST220J	Carbon Resistor
R449,450	2		KA25ST222J	Carbon Resistor
R451~453	3		KA25ST103J	Carbon Resistor
R454	1		KA25ST471J	Carbon Resistor
R455	1		KA25ST104J	Carbon Resistor
R456	1		KA25ST101J	Carbon Resistor
R457,458	2		KA25ST102J	Carbon Resistor
R459,460	2		KA25ST513J	Carbon Resistor
R461,462	2		KA25ST621J	Carbon Resistor
R463,464	2		KA25ST104J	Carbon Resistor
R465~468	4		KA25ST222J	Carbon Resistor
R501,502	2		KA25ST203J	Carbon Resistor
R503,504	2		KA25ST362J	Carbon Resistor
R505,506	2		KA25ST911J	Carbon Resistor
R507,508	2		KA25ST362J	Carbon Resistor
R509,510	2		KA25ST392J	Carbon Resistor
R511,512	2		KA25ST273J	Carbon Resistor
R513~517	5		KA25ST392J	Carbon Resistor
R518	1		KA25ST622J	Carbon Resistor
R519	1		KA25ST392J	Carbon Resistor
R520	1		KA25ST112J	Carbon Resistor
R521	1		KA25ST512J	Carbon Resistor
R522	1		KA25ST103J	Carbon Resistor
R523,524	2		KA25ST203J	Carbon Resistor
R525	1		KA25ST183J	Carbon Resistor
R526	1		KA25ST392J	Carbon Resistor
R527	1		KA25ST362J	Carbon Resistor
R528	1		KA25ST183J	Carbon Resistor
R529,530	2		KA25ST392J	Carbon Resistor
R531	1		KA25ST302J	Carbon Resistor
R532,533	2		KA25ST162J	Carbon Resistor
R534	1		KA25ST682J	Carbon Resistor
R535	1		KA25ST392J	Carbon Resistor
R536	1		KA25ST372J	Carbon Resistor
R537	1		KA25ST392J	Carbon Resistor
R538	1		KA25ST302J	Carbon Resistor
R539	1		KA25ST682J	Carbon Resistor
R540	1		KA25ST273J	Carbon Resistor
R541,542	2		KA25ST470J	Carbon Resistor
R543,544	2		KA25ST473J	Carbon Resistor
R545,546	2		KA25ST512J	Carbon Resistor
R547~550	4		KA25ST752J	Carbon Resistor
R551,552	2		KA25ST203J	Carbon Resistor
R553,554	2		KA25ST122J	Carbon Resistor
R555,556	2		KA25ST361J	Carbon Resistor
R557,558	2		KA25ST512J	Carbon Resistor
R559~562	4		KA25ST752J	Carbon Resistor
R563,564	2		KA25ST203J	Carbon Resistor
R565,566	2		KA25ST122J	Carbon Resistor
R567,568	2		KA25ST301J	Carbon Resistor
R569,570	2		KA25ST512J	Carbon Resistor
R571~574	4		KA25ST752J	Carbon Resistor
R575,576	2		KA25ST203J	Carbon Resistor
R577,578	2		KA25ST103J	Carbon Resistor
R579,580	2		KA25ST122J	Carbon Resistor
R581,582	2		KA25ST361J	Carbon Resistor
R583,584	2		KA25ST512J	Carbon Resistor
R585,586	2		KA25ST752J	Carbon Resistor
R587,588	2		KA25ST103J	Carbon Resistor
R589,590	2		KA25ST752J	Carbon Resistor
R591,592	2		KA25ST203J	Carbon Resistor
R593,594	2		KA25ST122J	Carbon Resistor
R595,596	2		KA25ST361J	Carbon Resistor
R597,598	2		KA25ST752J	Carbon Resistor
R599	1		KA25ST473J	Carbon Resistor
R600	1		KA25ST181J	Carbon Resistor
Switches				
SW401	1		SW-5422161	Slide Switch

6. FEQ-614 P.C. Board Assembly (cont'd)

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
SW402	1		SW-5230128	Slide Switch
SW403	1		SW-5430129	Slide Switch
Miscellaneous				
J041	1		MC09-399	Micro Socket Ass'y
JP066,069	2		W-D0603	Connector
MP043,065	2		171825-6	Micro Plug
RY501	1		AG2333	Relay
			or KX2-12K	Relay
RCA401	1		T6001-ABAA	RCA Jack 6P
RCA402	1		T5916-ABAA	RCA Jack 6P
RCA403	1		T5858-AB	RCA Jack 4P

7. HP-615A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
HP801	1		N44376A	Shield Plate
	1		HLJ0540-01-010	H.P Jack

8. MA-615A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Semiconductors				
D701~706	4		1S5144	Diode
D705~708	4		1S1588	Diode
D709~712	4		30DF2FC	Diode
D713,714	2		1N4002	Diode
			or 1SR35-100A	Diode
D715~718	4		1S5144	Diode
D719,720	2		KB362M	Diode
D840,841	2		1S1588	Diode
D842,843	2		1S5144	Diode
D844,845	2		1N4002	Diode
			or 1SR35-100A	Diode
D846	1		1S1588	Diode
D847~854	8		P300DL	Diode
			or 1N5402-F	Diode
Q701,702	2		2SC1815-GR,BL	Transistor
Q703,704	2		2SA1015-GR,BL	Transistor
Q705,706	2		2SA1360-O,Y	Transistor
Q707,708	2		2SC3423-O,Y	Transistor
Q709,710	2		2SC1815-GR,BL	Transistor
Q711,712	2		2SC3298-O,Y	Transistor
Q713,714	2		2SA1306-O,Y	Transistor
Q715,716	2		2SC1815-GR,BL	Transistor
Q717,718	2		2SA1015-GR,BL	Transistor
Q719~722	4		2SA1265-R,O	Transistor
Q723,724	2		2SC3181-R,O	Transistor
Q725,726	2		2SA1264-R,O	Transistor
Q727	1		2SA1306-O,Y	Transistor
Q728	1		2SA970-GR,BL	Transistor
Q729	1		2SC2240-GR,BL	Transistor
Q730	1		2SC3298-O,Y	Transistor
Q731~734	4		2SC3182-R,O	Transistor
Q840	1		2SA970-GR,BL	Transistor
IC701	1		NJM072DE	IC
IC702	1		M5218P	IC
			or NJM4558D	IC
IC703	1		TA7317P	IC
ZD701,702	2		ZD50-157	Zener Diode, 1/2W, 15.7V
Capacitors				
C701,702	2		HE90SJSL471K	Ceramic Capacitor
C703,704	2		LL-25TW4R7M	Low Leak. Electrolytic Cap.
C705,706	2		NS-10TW101M	Electrolytic Capacitor
C707~710	4		MS100TW1R0M	Electrolytic Capacitor
C711~714	4		HE40SJSL330K	Ceramic Capacitor
C715,716	2		HE40SJSL100K	Ceramic Capacitor
C717,718	2		HE40SJSL560K	Ceramic Capacitor
C719,720	2		NS-50TW1R0M	Electrolytic Capacitor
C721~724	4		HE70SJYF103Z	Ceramic Capacitor

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
C725~728	4		MY100VS473K	Mylar Capacitor
C729,730	2		HM60SJYB102K	Ceramic Capcitor
C731,732	2		NS-16TW470M	Electrolytic Capacitor
C840	1		HE70SJYF103Z	Ceramic Capacitor
C841	1		NS-10TW101M	Electrolytic Capacitor
C842	1		NS-16TW471M	Electrolytic Capacitor
C843	1		NS-50TW100M	Electrolytic Capacitor
C844	1		NS-50TW1R0M	Electrolytic Capacitor
C845	1		HE13SJYF473Z	Ceramic Capacitor
C846	1		NS-50TWR47M	Electrolytic Capacitor
C847	1		NS-25TW330M	Electrolytic Capacitor
C848	1		NS-50TW1R0M	Electrolytic Capacitor
C849,850	2		BC50822MA50CC3	Electrolytic Capacitor
C851,852	2		BC71123MH63GH4 or BC71123YH60GH4	Electrolytic Capacitor
Resistors				
R701,702	2		KA25ST102J	Carbon Resistor
R703,704	2		KA25ST104J	Carbon Resistor
R705,706	2		KA25ST473J	Carbon Resistor
R707,708	2		KA25ST751J	Carbon Resistor
R709,710	2		KA25ST393J	Carbon Resistor
R711~714	4		KA25ST103J	Carbon Resistor
R715,716	2		KA25ST102J	Carbon Resistor
R717~724	8		KA25ST272J	Carbon Resistor
R725~730	6		KA25ST102J	Carbon Resistor
R731,732	2		MF25ST223J	Metal Film Resistor
R733~736	4		FR25ST680J-LP	Flame Proof Resistor
R737~740	4		FR25ST100J-LP	Flame Proof Resistor
R741,742	2		FR50ST331J-LP	Flame Proof Resistor
R743~750	8		FR25ST4R7J-LP	Flame Proof Resistor
R751~754	4		KA25ST361J	Carbon Resistor
R755~758	4		KA25ST111J	Carbon Resistor
R759~762	4		KA25ST562J	Carbon Resistor
R763~766	4		KA25ST151J	Carbon Resistor
R767~770	4		MPC725R22KX2LF	Cement Resistor
R771,772	2		KA25ST362J	Carbon Resistor
R773~776	4		KA25ST103J	Carbon Resistor
R777,778	2		KA25ST152J	Carbon Resistor
R779,780	2		KA25ST101J	Carbon Resistor
R781,782	2		SA-1WT222J-LP	Metal Oxide Resistor
R783,784	2		KA25ST331J	Carbon Resistor
R840,841	2		KA25ST102J	Carbon Resistor
R842,843	2		KA25ST563J	Carbon Resistor
R844	1		KA25ST273J	Carbon Resistor
R845,846	2		KA25ST153J	Carbon Resistor
R847,848	2		KA25ST104J	Carbon Resistor
R849	1		KA25ST473J	Carbon Resistor
R851	1		KA25ST105J	Carbon Resistor
R852	1		KA25ST224J	Carbon Resistor
R853,854	2		KA25ST104J	Carbon Resistor
R855	1		KA25ST123J	Carbon Resistor
R856	1		KA25ST103J	Carbon Resistor
R857~859	3		KA25ST563J	Carbon Resistor
R860	1		KA25ST153J	Carbon Resistor
R861	1		KA25ST473J	Carbon Resistor
R862	1		KA25ST333J	Carbon Resistor
R863	1		KA25ST224J	Carbon Resistor
R864	1		KA25ST153J	Carbon Resistor
SVR701,702	2		SVR-08T3B502	Semi-Variable Resistor
Miscellaneous				
	12		AC238	Mica
	4		GT-M01W025	Glass Tube
	4		RP-003	Terminal Pin
	2		59BS1692	GND Lug
E075,076,091	3		RP-001	Terminal Pin
TH801	1		UI2-10005-200A	Thermal Relay
Switches				
SW404	1		SW-1100162	Push Switch

9. MSW-614 P.C. Board Assembly (cont'd)

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Miscellaneous				
J014	1		MC04-393	Micro Socket Ass'y

10. PLD-615A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Semiconductors				
LD251,252 LD253~270	2 18		SLP471D SLP171D	LED LED
Miscellaneous				
JT061,062 JT063	2 1		IMSA-1068-04D IMSA-1068-05D	Mini Terminal Plate Mini Terminal Plate

11. PLF-613A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Semiconductor				
D321,322 Q324 Q325~328 Q329 IC304 IC305 LD315,316 LD317 LD318 ZD302 ZD303	2 1 4 1 1 1 2 1 1 1 1		1S1588 2SA937-R,S 2SC2021-R,S 2SA937-R,S TC9158P LB1423 TLR205 TLY205-5 TLR205 ZD50-035 ZD50-235	Diode Transistor Transistor Transistor IC IC LED LED LED Zener Diode, 1/2W, 3.5V Zener Diode, 1/2W, 23.5V
Capacitors				
C326 C327 C328 C329 C330~332 C333 C334 C335 C336	1 1 1 1 3 1 1 1 1		NS-10TW220M NS-16TW100M NS-25TW470M NS-10TW470M NS-16TW100M NS-16TW101M NS6R3TW331M UP125V332K EP125Y223N	Electrolytic Capacitor Electrolytic Capacitor Electrolytic Capacitor Electrolytic Capacitor Electrolytic Capacitor Electrolytic Capacitor Electrolytic Capacitor Ceramic Capacitor Ceramic Capacitor
Resistors				
R356 R357 R358 R359 R360 R361 R362 R363 R364 R365 R366 R367 R369 R370 R371 R372 R373 R374 R375 R376 RA301,302	1 2		KA25ST223J KA25ST104J KA25ST223J KA25ST103J KA25ST473J KA25ST104J KA25ST103J KA25ST222J KA25ST104J KA25ST103J KA25ST223J KA25ST152J KA25ST181J KA25ST681J KA25ST103J KA25ST223J KA25ST152J KA25ST473J KA25ST470J KA25ST223J RA-IP-07104K	Carbon Resistor Networks Resistor
Miscellaneous				
	4 1		KGLS-10R N43748	Spacer Fittings (LED)

11. PLF-613A P.C. Board Assembly (cont'd)

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
FL301	2 1		N43808 FG710E1	Spacer Fluorescence Lamp

12. PLL-613A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Semiconductors				
D304~320	17		1S1588	Diode
Q305~307	3		2SC1815-Y,GR	Transistor
Q308	1		2SK381-D,E	Transistor
Q310	1		2SK222-E	Transistor
Q311,312	2		2SC1815-Y,GR	Transistor
Q313	1		2SA1015-Y,GR	Transistor
Q314~317	4		2SC1815-Y,GR	Transistor
Q318~320	3		2SA1015-Y,GR	Transistor
Q321~323	3		2SC1815-Y,GR	Transistor
IC301	1		TC9147BP	IC
IC302	1		TD6104P	IC
IC303	1		TC9150P	IC
ZD301	1		ZD50-295	Zener Diode, 1/2W, 29.5V
Capacitors				
C304	1		HE40SJCH020D	Ceramic Capacitor
C305	1		HE40SJCH220K	Ceramic Capacitor
C306	1		NS-10TW101M	Electrolytic Capacitor
C307	1		NS6R3TW102M	Electrolytic Capacitor
C308	1		NS-16TW100M	Electrolytic Capacitor
C309	1		NS-10TW101M	Electrolytic Capacitor
C310	1		NS-50TW1R0M	Electrolytic Capacitor
C311	1		NS-10TW470M	Electrolytic Capacitor
C312~314	3		TP125X103N	Ceramic Capacitor
C315,316	2		NS-35TW470M	Electrolytic Capacitor
C317	1		TP125X103N	Ceramic Capacitor
C318	1		ECQV1H104JZ	Metallized Film Capacitor
C319	1		LL-50TWR47M	Low Leak. Electrolytic Cap.
C320,321	2		NS-50TW1R0M	Electrolytic Capacitor
C322	1		EP125Y223N	Ceramic Capacitor
C323	1		NS-10TW470M	Electrolytic Capacitor
C324	1		UP125B102K	Ceramic Capacitor
C325	1		NS-16TW100M	Electrolytic Capacitor
TC301	1		CTC-6H-030	Trimmer Capacitor
Resistors				
R320	1		KA25ST223J	Carbon Resistor
R321	1		KA25ST471J	Carbon Resistor
R322	1		KA25ST472J	Carbon Resistor
R323	1		KA25ST124J	Carbon Resistor
R324	1		KA25ST470J	Carbon Resistor
R325	1		KA25ST103J	Carbon Resistor
R326	1		KA25ST102J	Carbon Resistor
R327	1		KA25ST473J	Carbon Resistor
R328,330	2		KA25ST103J	Carbon Resistor
R332	1		KA25ST471J	Carbon Resistor
R333,334	2		KA25ST222J	Carbon Resistor
R335	1		KA25ST104J	Carbon Resistor
R336	1		KA25ST473J	Carbon Resistor
R337,338	2		KA25ST103J	Carbon Resistor
R339	1		KA25ST104J	Carbon Resistor
R340~342	3		KA25ST103J	Carbon Resistor
R343,344	2		KA25ST104J	Carbon Resistor
R345	1		KA25ST471J	Carbon Resistor
R346	1		KA25ST393J	Carbon Resistor
R347~349	3		KA25ST104J	Carbon Resistor
R350~355	6		KA25ST103J	Carbon Resistor
R368	1		KA25ST182J	Carbon Resistor
R377	1		KA25ST124J	Carbon Resistor
Switches				
SW317	1		SSS212A	Slide Switch

12. PLL-613A P.C. Board Assembly (cont'd)

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Miscellaneous				
J036	1		MC10-401	Micro Socket Ass'y
X301	1		EYX-TE725S17T	Quartz Oscillator Unit
MP010	1		171825-10	Micro Plug
MP012	1		171825-5	Micro Plug
MP035	1		171825-3	Micro Plug
MP041	1		171825-9	Micro Plug
MP083	1		171825-7	Micro Plug

13. PMD-615A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Semiconductors				
D251,252	2		1S1588	Diode
Q251	1		2SA1015-GR,BL	Transistor
Q252	1		2SA1282-F,G	Transistor
Q253,254	2		2SC1815-GR,BL	Transistor
IC251,252	2		LB1423	IC
IC253	1		MN4013B	IC
			or TC4013	IC
IC254	1		MN4011B	IC
			or M4011B	IC
			or TC4011BP	IC
ZD251	1		ZD50-053	Zener Diode, 1/2W, 5.3V
Capacitors				
C251,252	2		NS-50TW100M	Electrolytic Capacitor
C253,254	2		NS-50TW1R0M	Electrolytic Capacitor
C255	1		NS-16TW470M	Electrolytic Capacitor
C256	1		NS-50TW1R0M	Electrolytic Capacitor
C257	1		NS-10TW101M	Electrolytic Capacitor
C258	1		NS-10TW221M	Electrolytic Capacitor
C259	1		LL-25TW4R7M	Low Leak. Electrolytic Cap.
C260,261	2		HE70SJYF103Z	Ceramic Capacitor
C262,263	2		HE50SJYB102K	Ceramic Capacitor
C264	1		NS-50TW1R0M	Electrolytic Capacitor
Resistors				
R251~258	8		KA25ST102J	Carbon Resistor
R259,260	2		KA25ST153J	Carbon Resistor
R261,262	2		KA25ST473J	Carbon Resistor
R263,264	2		KA25ST392J	Carbon Resistor
R265,266	2		KA25ST124J	Carbon Resistor
R267,268	2		SA-1WT152J	Metal Oxide Resistor
R269,270	2		KA25ST561J	Carbon Resistor
R271,272	2		KA25ST102J	Carbon Resistor
R273,274	2		KA25ST103J	Carbon Resistor
R275	1		KA25ST561J	Carbon Resistor
R276~278	3		KA25ST223J	Carbon Resistor
R279~281	3		KA25ST563J	Carbon Resistor
R282	1		KA25ST103J	Carbon Resistor
R283	1		KA25ST222J	Carbon Resistor
R284	1		KA25ST154J	Carbon Resistor
R285	1		KA25ST153J	Carbon Resistor
R286	1		KA25ST220J	Carbon Resistor
R287	1		KA25ST104J	Carbon Resistor
R288~290	3		KA25ST103J	Carbon Resistor
R291,292	2		KA25ST334J	Carbon Resistor
Switches				
SW251	1		SW-1100166	Push Switch
Miscellaneous				
JP063	1		W-D0607	Connector
JP067,068	2		W-D0606	Connector
JP081	1		W-D0607	Connector
MP036	1		171825-10	Micro Plug
MP051	1		171825-3	Micro Plug
MP083	1		171825-6	Micro Plug

14. PMR-615A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
RCA801	2 1		SK-501202 T5765-AB	Short Pin RCA Jack 4P

15. PS-615A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Semiconductors				
D801~803	3		1B4B42	Diode
D804~808	5		1N4002	Diode
Q801~808	8		or 1SR35-100A	Diode
Q809	1		2SA1015-GR	Transistor
Q810	1		2SA970-GR,BL	Transistor
IC801	1		2SB1015-D,Y	Transistor
IC802	1		AN78M12	IC
PC801	1		AN78M15	IC
TR801	1		TLP631	Photo Coupler
ZD801	1		SM16GZ41	Triac
ZD802	1		ZD50-157	Zener Diode, 1/2W, 15.7V
ZD803	1		ZD50-225	Zener Diode, 1/2W, 22.5V
ZD804,805	2		ZD50-100	Zener Diode, 1/2W, 10.0V
			ZD50-122	Zener Diode, 1/2W, 12.2V
Capacitors				
C801	1		MMS104M	Metalized Film Capacitor
C802	1		MY100VS184J	Mylar Capacitor
C803	1		ECQV1H393JZ	Metallized Film Capacitor
C804	1		NS-25TW101M	Electrolytic Capacitor
C805	1		NS-25TW471M	Electrolytic Capacitor
C806	1		NS-16TW101M	Electrolytic Capacitor
C807	1		NS-16TW470M	Electrolytic Capacitor
C808	1		NS-50TW100M	Electrolytic Capacitor
C809	1		NS-50TW4R7M	Electrolytic Capacitor
C810	1		NS-25TW101M	Electrolytic Capacitor
C811,812	2		NS-25TW472M	Electrolytic Capacitor
C813	1		NS-50TW1R0M	Electrolytic Capacitor
C814	1		NS-50TW100M	Electrolytic Capacitor
C815	1		NS-16TW470M	Electrolytic Capacitor
C816	1		NS-50TW470M	Electrolytic Capacitor
C817~819	3		NS-16TW470M	Electrolytic Capacitor
Resistors				
R801	1		KA50XT180J	Carbon Resistor
R802	1		KA25ST153J	Carbon Resistor
R803	1		KA50XT823J	Carbon Resistor
R804	1		KA50XT274J	Carbon Resistor
R805	1		KA25ST273J	Carbon Resistor
R806	1		KA25ST100J	Carbon Resistor
R807,808	2		KA25ST104J	Carbon Resistor
R809	1		KA25ST4R7J	Carbon Resistor
R810	1		KA25ST102J	Carbon Resistor
R811	1		KA25ST331J	Carbon Resistor
R812	1		KA25ST301J	Carbon Resistor
R813	1		KA25ST223J	Carbon Resistor
R814	1		KA25ST473J	Carbon Resistor
R815~817	3		KA25ST103J	Carbon Resistor
R818	1		KA25ST224J	Carbon Resistor
R819	1		KA25ST363J	Carbon Resistor
R820	1		KA25ST122J	Carbon Resistor
R821,822	2		KA25ST101J	Carbon Resistor
R823	1		KA25ST222J	Carbon Resistor
R824	1		KA25ST274J	Carbon Resistor
R825,826	2		KA25ST363J	Carbon Resistor
R827	1		KA50XT332J	Carbon Resistor
R828	1		KA50XT330J-LP	Carbon Resistor
R829	1		SA-1WT151J-LP	Metal Oxide Resistor
R830	1		KA25ST222J-LP	Carbon Resistor
R831	1		KA25ST561J-LP	Carbon Resistor
R832	1		KA25ST223J	Carbon Resistor
R833	1		SA-1WT150J-LP	Metal Oxide Resistor
R834	1		KA25ST102J	Carbon Resistor
R835	1		KA50XT335J	Carbon Resistor
SVR801	1		SVR-08T3B503	Semi-variable Resistor

15. PS-615A P.C. Board Assembly (cont'd)

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Coils				
L803 PT801	1 1		SF-HP-6A-01 NPT-2014	Choke Coil Power Transformer
Miscellaneous				
E081~087 J082 J083 JP073 RY801	1 3 5 2 7 1 1 1 1		N44372-40 SE-25-BSB TSC+30X08-Y 59BS1692 RP-001 MC02-392 MC07-398 W-D0605 AG23339	Heat Sink Heat Sink Tap Screw S, Washer Faced, Y GND Lug Terminal Pin Micro Socket Ass'y Micro Socket Ass'y Connector Relay


16. R-617 P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Semiconductors				
RIC002 RLD002	1 1		BA6340 HP-5FR3 or TPS703A	IC Photo Diode Photo Diode
Capacitors				
RC010 RC011 RC012 RC013 RC014 RC015	1 1 1 1 1 1		MY-50VU332J S7-16TW100M MY-50VU103J S7-25TW4R7M S7-16TW100M S7-10TW470M	Mylar Capacitor Electrolytic Capacitor Mylar Capacitor Electrolytic Capacitor Electrolytic Capacitor Electrolytic Capacitor
Resistors				
RR005 RR006 RR007	1 1 1		KA20ST274J KA20ST220J KA20ST102J	Carbon Resistor Carbon Resistor Carbon Resistor
Coils				
RT001	1		4304-028	Filter Coil
Miscellaneous				
J051	1 1 1		N44358 N44359 MC03-391	Shield Cover Shield Case Micro Socket Ass'y

17. RMC-611 P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Semiconductors				
RD001~004 RQ001 RQ002 RIC001 RLD001	4 1 1 1 1		1S1588 2SA937-R,S 2SC2021-R,S TC9148P EL-1L2 or TLN105A	Diode Transistor Transistor IC LED LED
Capacitors				
RC001~008 RC009	8 1		HE40SJYB101K NS6R3TW101M	Ceramic Capacitor Electrolytic Capacitor
Resistors				
RR001 RR002 RR003 RR004	1 1 1 1		KA25ST1R0J KA25ST332J KA25ST470J KA25ST223J	Carbon Resistor Carbon Resistor Carbon Resistor Carbon Resistor

17. RMC-611 P.C. Board Assembly (cont'd)

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Switches				
RSW001~017	17		KHH10910	Tact Switch 
Miscellaneous				
RCF001	1		KBR-455BA	Ceramic Oscillator

18. SLD-613A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
P301,302	2		MK-7095	Terminal Pin

19. SP-615A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Semiconductors				
D855,856	2		1N4002 or 1SR35-100A	Diode Diode
Capacitors				
C853,854	2		MY100VS473K	Mylar Capacitor
Resistors				
R865~868 R869,870	4 2		SA-2WT100J-LP SA-1WT561J-LP	Metal Oxide Resistor Metal Oxide Resistor
Coils				
L801,802	2		104001	Air-core Coil
Miscellaneous				
J083 RY802,803	1 2		MC06-403 AJR39040 or FBR623D024 or VB24MBU-UL	Micro Socket Ass'y Relay Relay
SP801,802	2		YKD31-0214	Relay Socket 4P (S.P.)

20. SPS-615A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Switches				
SW252	1		SW-2246137	Rotary Switch

21. TIM-612A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Semiconductors				
D001~007	7		1S1588	Diode
D051~054	4		1S1588	Diode
D101~105	5		1S1588	Diode
D152~154	3		1S1588	Diode
D201~203	3		1S1588	Diode
Q001	1		2SC2668-D,Y	Transistor
Q002	1		2SK381-D,E	Transistor
Q003~5	3		2SC1815-GR,Y	Transistor
Q051	1		2SC1815-GR,Y	Transistor
Q101	1		3SK107-F	Transistor
Q102,103	2		2SC1815-GR,Y	Transistor
Q104	1		2SK161-GR	Transistor
Q201~205	5		2SC1815-GR,Y	Transistor
Q206	1		2SC3242A-E,F,G	Transistor
Q207,208	2		2SA1282A-E,F,G	Transistor
Q209~214	6		2SC1815-GR,Y	Transistor
IC001	1		LA1222	IC
IC002	1		LA1235	IC

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
IC051	1		LA3401	IC
IC101	1		LA1247	IC
IC201	1		MN4066B or TC4066B	IC
VD101~103	3		SVC333-A	Diode
ZD001	1		ZD50-122	Zener Diode, 1/2W, 12.2V
ZD201	1		ZD50-062	Zener Diode, 1/2W, 6.2V
Capacitors				
C001	1		EP125Y223N	Ceramic Capacitor
C002	1		NS-16TW101M	Electrolytic Capacitor
C003~008	6		EP125Y223N	Ceramic Capacitor
C009	1		NS-16TW470M	Electrolytic Capacitor
C010	1		LL-50TW1R0M	Low Leak. Electrolytic Cap.
C011~013	3		EP125Y223N	Ceramic Capacitor
C014	1		NS-50TW1R0M	Electrolytic Capacitor
C015	1		UP125SL560J	Ceramic Capacitor
C016	1		NS-50TW1R0M	Electrolytic Capacitor
C017	1		NS-50TWR47M	Electrolytic Capacitor
C018	1		NS-10TW101M	Electrolytic Capacitor
C019	1		NS-16TW221M	Electrolytic Capacitor
C020~022	3		EP125Y223N	Ceramic Capacitor
C023	1		NS-50TWR22M	Electrolytic Capacitor
C024	1		EP125Y223N	Ceramic Capacitor
C025	1		NS-50TW1R0M	Electrolytic Capacitor
C051	1		NS-16TW100M	Electrolytic Capacitor
C052	1		NS-16TW221M	Electrolytic Capacitor
C053	1		MY-50VS473K	Mylar Capacitor
C054	1		LL-50TW3R3M	Low Leak. Electrolytic Cap.
C055	1		LL-50TWR22M	Low Leak. Electrolytic Cap.
C056	1		LL-25TW4R7M	Low Leak. Electrolytic Cap.
C057,058	2		EP125Y223N	Ceramic Capacitor
C059,060	2		NS-25TW4R7M	Electrolytic Capacitor
C061,062	2		MY-50VS102J	Mylar Capacitor
C063,064	2		HE95SJSLS61J	Ceramic Capacitor
C065	1		NS-16TW100M	Electrolytic Capacitor
C066	1		LL-16TW100M	Low Leak. Electrolytic Cap.
C101	1		UP125SL6R8K	Ceramic Capacitor
C102	1		EP125Y223N	Ceramic Capacitor
C103	1		UP125SL150J	Ceramic Capacitor
C104	1		UP125SL6R8K	Ceramic Capacitor
C105	1		NS-16TW100M	Electrolytic Capacitor
C106	1		EP125Y223N	Ceramic Capacitor
C107	1		ST-50VS481J	Styrol Capacitor
C108	1		EP125Y223N	Ceramic Capacitor
C109,110	2		NS-16TW220M	Electrolytic Capacitor
C111	1		EP125Y223N	Ceramic Capacitor
C112	1		NS-50TWR47M	Electrolytic Capacitor
C113	1		TP125X103N	Ceramic Capacitor
C114	1		NS-16TW101M	Electrolytic Capacitor
C115	1		UP125B102K	Ceramic Capacitor
C116,117	2		EP125Y223N	Ceramic Capacitor
C118	1		NS-16TW100M	Electrolytic Capacitor
C119,120	2		EP125Y223N	Ceramic Capacitor
C121	1		UP125B102K	Ceramic Capacitor
C122	1		EP125Y223N	Ceramic Capacitor
C123	1		NS-16TW100M	Electrolytic Capacitor
C124~127	4		EP125Y223N	Ceramic Capacitor
C128	1		NS-16TW101M	Electrolytic Capacitor
C201~204	4		NS-25TW4R7M	Electrolytic Capacitor
C205,206	2		TP125X103N	Ceramic Capacitor
C207,208	2		NS-25TW4R7M	Electrolytic Capacitor
C209	1		NS-10TW101M	Electrolytic Capacitor
C210	1		NS-16TW221M	Electrolytic Capacitor
C211	1		NS-16TW470M	Electrolytic Capacitor
C212	1		NS-10TW470M	Electrolytic Capacitor
C213	1		NS-10TW101M	Electrolytic Capacitor
C214,215	2		NS-10TW470M	Electrolytic Capacitor
C216	1		EP125Y223N	Ceramic Capacitor
C217	1		NS-16TW100M	Electrolytic Capacitor
C218	1		EP125Y223N	Ceramic Capacitor
C219	1		TP125X103N	Ceramic Capacitor
C220	1		EP125Y223N	Ceramic Capacitor
C221	1		UP125SL121J	Ceramic Capacitor
C222~224	3		EP125Y223N	Ceramic Capacitor

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
C225	1		NS-10TW470M-RT	Electrolytic Capacitor
TC101	1		CTC-6U-010	Trimmer Capacitor
TC102	1		CTC-6U-030	Trimmer Capacitor
TC103	1		CTZ51C135	Trimmer Capacitor
Resistors				
R001	1		KA25ST470J	Carbon Resistor
R002~005	4		KA25ST331J	Carbon Resistor
R006~008	3		KA25ST472J	Carbon Resistor
R009,010	2		KA25ST390J	Carbon Resistor
R011	1		KA25ST473J	Carbon Resistor
R012	1		KA25ST333J	Carbon Resistor
R013	1		KA25ST151J	Carbon Resistor
R014	1		KA25ST103J	Carbon Resistor
R015	1		KA25ST182J	Carbon Resistor
R016	1		KA25ST221J	Carbon Resistor
R017,018	2		KA25ST473J	Carbon Resistor
R019	1		KA25ST331J	Carbon Resistor
R020	1		KA25ST103J	Carbon Resistor
R021	1		KA25ST101J	Carbon Resistor
R022	1		KA25ST103J	Carbon Resistor
R023	1		KA25ST182J	Carbon Resistor
R024	1		KA25ST104J	Carbon Resistor
R025	1		KA25ST561J	Carbon Resistor
R026	1		KA25ST391J	Carbon Resistor
R027	1		KA25ST153J	Carbon Resistor
R028	1		KA25ST822J	Carbon Resistor
R029	1		KA25ST104J	Carbon Resistor
R030	1		KA25ST333J	Carbon Resistor
R031	1		KA25ST225J	Carbon Resistor
R032,033	2		KA25ST473J	Carbon Resistor
R034	1		KA25ST472J	Carbon Resistor
R035	1		KA25ST222J	Carbon Resistor
R036,037	2		KA25ST680J	Carbon Resistor
R038	1		KA25ST333J	Carbon Resistor
R039	1		KA25ST102J	Carbon Resistor
R040	1		KA25ST104J	Carbon Resistor
R041	1		KA25ST823J	Carbon Resistor
R042,043	2		KA25ST103J	Carbon Resistor
R044	1		KA25ST561J	Carbon Resistor
R045	1		KA25ST472J	Carbon Resistor
R051,052	2		KA25ST470J	Carbon Resistor
R053	1		KA25ST332J	Carbon Resistor
R054	1		KA25ST273J	Carbon Resistor
R055~058	4		KA25ST823J	Carbon Resistor
R059,060	2		KA25ST332J	Carbon Resistor
R061,062	2		KA25ST123J	Carbon Resistor
R063	1		KA25ST104J	Carbon Resistor
R064	1		KA20ST473J	Carbon Resistor
R101,102	2		KA25ST104J	Carbon Resistor
R104	1		KA25ST101J	Carbon Resistor
R105	1		KA25ST105J	Carbon Resistor
R106	1		KA25ST102J	Carbon Resistor
R107	1		KS25ST104J	Carbon Resistor
R108,109	2		KA25ST103J	Carbon Resistor
R110	1		KA25ST820J	Carbon Resistor
R111	1		KA25ST101J	Carbon Resistor
R112	1		KA25ST391J	Carbon Resistor
R113	1		KA25ST152J	Carbon Resistor
R114,115	2		KA25ST121J	Carbon Resistor
R116	1		KA25ST473J	Carbon Resistor
R117	1		KA25ST102J	Carbon Resistor
R118	1		KA25ST472J	Carbon Resistor
R119	1		KA25ST224J	Carbon Resistor
R120	1		KA25ST104J	Carbon Resistor
R121	1		KA25ST103J	Carbon Resistor
R122	1		KA25ST123J	Carbon Resistor
R123	1		KA25ST103J	Carbon Resistor
R124	1		KA25ST104J	Carbon Resistor
R125	1		KA25ST822J	Carbon Resistor
R126	1		KA25ST103J	Carbon Resistor
R127,128	2		KA25ST393J	Carbon Resistor
R129	1		KA25ST561J	Carbon Resistor
R130	1		KA25ST104J	Carbon Resistor
R131	1		KA25ST222J	Carbon Resistor

21. TIM-612A P.C. Board Assembly (cont'd)

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
R132	1		KA25ST104J	Carbon Resistor
R133	1		KA25ST822J	Carbon Resistor
R134	1		KA25ST221J	Carbon Resistor
R184,185	2		KA25ST333J	Carbon Resistor
R186	1		KA25ST512J	Carbon Resistor
R201~212	12		KA25ST104J	Carbon Resistor
R213	1		KA25ST103J	Carbon Resistor
R214	1		KA25ST104J	Carbon Resistor
R215,216	2		KA25ST222J	Carbon Resistor
R217	1		KA25ST472J	Carbon Resistor
R218~221	4		KA25ST473J	Carbon Resistor
R222	1		KA25ST220J	Carbon Resistor
R223	1		KA25ST224J	Carbon Resistor
R224	1		KA25ST472J	Carbon Resistor
R225	1		KA25ST473J	Carbon Resistor
R226	1		KA25ST103J	Carbon Resistor
R227,228	2		KA25ST271J	Carbon Resistor
R229	1		KA25ST122J	Carbon Resistor
R230	1		KA25ST104J	Carbon Resistor
R231,232	2		KA25ST103J	Carbon Resistor
R233	1		KA25ST104J	Carbon Resistor
R234,235	2		KA25ST103J	Carbon Resistor
R236	1		KA25ST274J	Carbon Resistor
R237	1		KA25ST473J	Carbon Resistor
R238	1		KA25ST333J	Carbon Resistor
R239	1		KA25ST272J	Carbon Resistor
R240	1		KA25ST104J	Carbon Resistor
R241,242	2		KA25ST223J	Carbon Resistor
R243	1		KA25ST222J	Carbon Resistor
FR101	1		FR25SX220J	Fusible Resistor
SVR001	1		SVR-08T3B502	Semi-variable Resistor
SVR002	1		SVR-08T3B303	Semi-variable Resistor
SVR051,052	2		SVR-10T3B104CM	Semi-variable Resistor
SVR101	1		SVR-08T3B103	Semi-variable Resistor
Coils				
L001,101	2		LAL03100K	Inductor
L102	1		LAL03102K	Inductor
L103	1		LAL03471K	Inductor
L104,201	2		LAL03102K	Inductor
T001	1		141027	FM IFT
T002	1		141026	FM DET Coil
T051,052	2		184018	Filter Block
T101	1		126042	MW ANT Coil
T102	1		126041	MW RF Coil
T103	1		135020	MW OSC Coil
T104,105	2		140048	AM IFT
Switches				
SW051	1		SW-5220157	Slide Switch
Miscellaneous				
	1		U9-#07B07	UL Tube
	4		U9-#18B01	UL Type Tube
	1		59BS1692	GND Lug
F001,002	2		SFE10.7MX-A	Ceramic Filter
F003	1		SFE10.7MZ1-A	Ceramic Filter
F051	1		KBR-457HS	Ceramic Filter 457KHz
F101	1		KBR-450AH8	Ceramic Filter 450KHz
F102	1		KBF-450P-10A	Ceramic Filter 450KHz
F103	1		KBF-450P-6AS	Ceramic Filter 450KHz
J010	1		MC10-402	Micro Socket Ass'y
J011	1		MC06-397	Micro Socket Ass'y
J012	1		MC05-394	Micro Socket Ass'y
AT001	1		YKD31-0201	ANT. Terminal
FE001	1		FE407-A12	FM Front-end
JP042	1		W-D0606	Connector
MP014	1		171825-4	Micro Plug
MP064	1		171825-12	Micro Plug
TP002	1		WE-2	Terminal Pin
TP003~006	4		RP-001	Terminal Pin

22. TON-616A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Semiconductors				
IC604	1		M5218PR or NJM4560DX	IC IC
Capacitors				
C619,620	2		ECQV1H334JZ	Metallized Film Capacitor
C621,622	2		HE70SJSL221K	Ceramic Capacitor
C623~628	6		LL-25TW4R7M	Low Leak. Electrolytic Cap.
C629,610	2		MY-50VU272J	Mylar Capacitor
C631~634	4		MY-50VU123J	Mylar Capacitor
C635,636	2		MY-50VU823J	Mylar Capacitor
C637,638	2		ECQV1H334JZ	Metallied Film Capacitor
Resistors				
R625,626	2		KA25ST471J	Carbon Resistor
R627,628	2		KA25ST473J	Carbon Resistor
R629,630	2		KA25ST562J	Carbon Resistor
R631,632	2		KA25ST274J	Carbon Resistor
R633,634	2		KA25ST474J	Carbon Resistor
R635~638	4		KA25ST103J	Carbon Resistor
R639~650	12		KA25ST152J	Carbon Resistor
R651~656	6		KA25ST562J	Carbon Resistor
R657,658	2		KA25ST222J	Carbon Resistor
VR601~603	3		EWG-G0A337B24	Potentiometer

23. VR-616A P.C. Board Assembly

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Capacitors				
C639,640	2		ECQV1H1543JZ	Metallized Film Capacitor
Resistors				
R659,660	2		KA25ST103J	Carbon Resistor
VR604	1		EWK-8JA337BC5	Rotary Potentiometer
VR605	1		EWG-H0A337751	Potentiometer
Switches				
SW604	1		SW-1100162	Push Switch
Miscellaneous				
J065	1		MC06-396	Micro socket Ass'y


24. Remote Control Parts

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
45E26	2		UM-4	Battery
46E27	1		26R1P18B	P.C.Board Ass'y (R-617)
10M1	1		N21270	Top Panel (Remocon.)
10M2	1		N21271	Bottom Case (Remocon.)
10M3	1		N44288	Battery Cover
10M6	1		N21272-1	Decoration Plate
10M8	1		N43769	Filter
10M11	1		N43770	Battery Terminal 1
10M12	1		N43771	Battery Terminal 2
10M13	1		N43772	Battery Terminal 3
10M16	1		ZS+STR26X16-2B	Tap Screw, Flat Head
10M21	1		N44361	Label, Rating
10M23	1		N44130	Tape, Packing Material
10M26	1		N42171	Polyethylene Bag
10M28	1		N44261	Packing Pad

25. Inner Construction Parts

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Coils				
PT802	1		NPT-2024S	Power Transformer

25. Inner Construction Parts (cont't)

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
Switches				
SWC402	1		SW-2X36135	Rotary Switch 
SWC403	1		SW-2X36136	Rotary Switch
P.C.Board Assembly				
24E29	1		26R1P13B	P.C.Board Ass'y (CNR-527D)
46E1	1		26R1P17B	P.C.Board Ass'y (RMC-611)
46E3	1		26R1P03B	P.C.Board Ass'y (TIM-612B)
46E4	1		26R1P03B-1	P.C.Board Ass'y (AMS-612B)
46E6	1		26R1P07B	P.C.Board Ass'y (PLL-613A)
46E7	1		26R1P07B-1	P.C.Board Ass'y (CSF-613A)
46E8	1		26R1P07B-2	P.C.Board Ass'y (PLF-613A)
46E9	1		26R1P07B-3	P.C.Board Ass'y (SLD-613A)
46E11	1		26R1P15B	P.C.Board Ass'y (FEQ-614)
46E12	1		26R1P15B-1	P.C.Board Ass'y (MSW-614)
46E14	1		26R1P01B	P.C.Board Ass'y (MA-615B)
46E15	1		26R1P01B-1	P.C.Board Ass'y (PS-615B)
46E16	1		26R1P01B-2	P.C.Board Ass'y (SP-615B)
46E17	1		26R1P01B-3	P.C.Board Ass'y (SPS-615B)
46E18	1		26R1P01B-4	P.C.Board Ass'y (HP-615B)
46E19	1		26R1P01B-5	P.C.Board Ass'y (PMD-615B)
46E20	1		26R1P01B-6	P.C.Board Ass'y (PLD-615B)
46E21	1		26R1P01B-7	P.C.Board Ass'y (PMR-615B)
46E22	1		26R1P05B	P.C.Board Ass'y (TON-616A)
46E23	1		26R1P05B-1	P.C.Board Ass'y (ASW-616A)
46E24	1		26R1P05B-2	P.C.Board Ass'y (VR-616A)
46E25	1		26R1P05B-3	P.C.Board Ass'y (AF-616A)
Miscellaneous				
FH801	1		FH-032C	Fuse Holder
FU801	1		FU-621034T-C	Fuse 250V 1A
LF801	1		ZCB2206-11	Line Filter
ACO801	1		AC-T05SB09	AC Outlet
34E5	8		AC238	Mica
34E6	4		AC238	Mica
35E13	1		HLJ0999-01-480	Snap Plate
35E14	2		SK-501202	Short Pin
41E13	2		TB-1116	Bush
3M1	1		N21251A	Front Chassis
3M2	2		N21305	Side Chassis
3M3	1		N21252	Center Chassis
3M5	1		N30747A	Support Chassis(P.T.)
3M6	2		N21134	Shield Box (ANGLE)
3M7	1		N21134-1	Shield Box (TOP)
3M9	1		N44255	Fittings (P.T.)
3M10	1		N44254	Fittings (HEADPHONE JACK)
3M11	1		N30729B	Angle L (P.C.B.)
3M12	1		N30734B	Angle R (P.C.B.)
3M15	1		N43989	Fittings S (HEAT SINK)
3M16	1		N44256	Fittings F (HEAT SINK)
3M17	1		N44257	Fittings R (HEAT SINK)
3M18	1		N44376A	Shield Plate
3M19	1		N43748	Fittings (LED)
3M20	1		N42222	Fittings (THERMAL RELAY)
3M21	1		N44358	Shield Cover
3M22	1		N44359	Shield Case
3M23	4		N44258	Stud 50
3M24	3		N44259	Stud 11.5
3M27	1		N30825	Heat Sink
3M28	1		N30826	Heat Sink
3M29	1		N44372-40	Heat Sink
4M1	1		N43724A	Glass Holder
4M6	1		N44377	Shield Paper
4M9	1		N43852	Shield Cushion
4M10	1		N43850	Cushion (P.T.)
4M14	2		N43851	Cushion (P.T.)
4M15	2		N44148	Spacer
4M16	1		N44368	Spacer
4M17	2		N44375	Insulation Fiber
4M18	2		N43808	Spacer
6M1	1		ZS+STR26X08-1Y	Tap Screw, Flat Head, Y
6M4~6	9		TSS+30X06-Y	Tap Screw S, Flat Head, Y

25. Inner Construction Parts (cont'd)

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
6M8~13	12		TSB+30X06-B	Tap Screw S, Bind Head, B
6M18,21~30	22		TSB+30X06-Y	Tap Screw S, Bind Head, Y
7M6~15	23		TSB+30X08-Y	Tap Screw S, Bind Head, Y
7M20	2		TSB+30X08-B	Tap Screw S, Bind Head, B
7M23,24	12		TBB+30X12-Y	Tap Screw B, Bind Head, Y
7M28	4		TSB+40X12-Y	Tap Screw S, Bind Head, Y
8M1	8		TSB+40X20-B	Tap Screw S, Bind Head, B
8M6~15	25		TSC+30X06-Y	Tap Screw S, Washer Faced, Y
8M17,18	5		TSC+30X08-Y	Tap Screw S, Washer Faced, Y
8M20	4		TST+40X08-Y	Tap Screw S, Truss, Y
8M24	4		TSP+40X16-Y	Tap Screw S, Pan Head, Y
8M27~29	10		TPM+30X08-B	Tap Screw P, Round Head, B
9M4~10	17		TPM+30X08-Y	Tap Screw P, Round Head, Y
9M12	1		TPM+30X10-Y	Tap Screw P, Round Head, Y
9M14	2		ZB+STR35X08-1B	Tap Screw, Bind Head, B
9M15	4		TAP/D(42)BS	Blind Rivet
9M17~19	13		2AWX0830-05-B	Plain Washer, B
9M21	4		2AWX0830-05-N	Plain Washer, N
9M22	4		2DSX40	Spring Washer
9M26~30	7		59BS1692	GND Lug

26. Appearance Parts

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
41E4	1		ACC-022D5-4EE1	Line Cord
41E5	1		SR-4N-4	Cord Stopper
41E7	1		UB-0027	Binding Post
1M1	1		N21248-1	Front Panel
1M2	1		N30820	SVB Panel
1M3	1		N43749	Tinted Window
1M4	1		N43725	Display Window
1M5	1		N43717	AI.Display
1M6	1		N21107-1	Display Frame
1M7	1		N43721A-7	Push Button
1M8	1		N43722A	Push Button
1M9	1		N43723A	Push Button
1M10	1		N43774-1	Push Button
1M12	7		N43866-T-BR	Push Button
1M13	1		N43093-T-BR2	Push Button
1M14	1		N30831	Button Guide
1M16	1		N42819A-BR2	Tuning Knob Guide
1M17	2		N42864	Knob Base
1M18	2		N42865	Knob Base
1M19	1		N44033-GY3-1	Knob Cap (FM)
1M20	1		N44033-GY3-2	Knob Cap (AM)
1M21	1		N44033-GY3-3	Knob Cap (MUTE)
1M22	1		N44033-GY3-4	Knob Cap (LOUDNESS)
1M23	2		N44031	Knob Spring
1M24	1		N21249A	LED Frame
1M25	1		N44030	Filter
1M26	4		N42797-BK1	Decoration Screw
1M27	1		N44260	Knob 12
1M28	3		N30733A	Knob 19
1M29	3		N43720	Knob 19
1M30	1		N43719	Knob 38
2M2	1		N10355A-1	Rear Panel
2M3	1		N30821	Bottom Board
2M4	4		NO.7108	Foot
2M6	2		N44091A-GY3	Handle
2M7	4		N44092-GY3	Handle Spacer
2M11	2		N30823A	Side Wood
2M12	8		390625901	Bush
2M16	1		N21250-1	Cabinet

27. Packing Parts

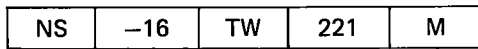
Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
L100	1		171001	Loop Antenna
41E9	1		ANT-039	AM Lead Antenna
41E10	1		TANT-031	FM Antenna (cord)
41E11	1		N1-461	Ant. Holder Kit
5M1	2		SL.1024	Label, Serial No.
5M2	2		N44043	Label, SA1965 (Lightning Flash)
5M6	1		OM-555B	Instruction Manual

27. Packing Parts (cont'd)

Ref. No	Q'ty	Carver Part No.	Supplier Part No.	Description
5M8	1		N44095A	Card, Warranty Registration
5M9	1		N42235	Sheet, Seial Number
5M13	1		N40612A-1	Polyethylene Bag (Unit)
5M14	1		N40487	Polyethylene Bag (Accessories)
5M16	2		N21254A-1	Packing Pad
5M19	1		N44253	Shipping Carton
5M20	1		N44252	Packing Pad
5M21	1		N44619	Packing Pad (Front)

Capacitors description

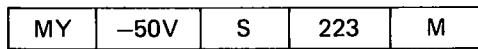
• Electrolytic Capacitor



Tolerance (%);
Value (μ F);
Voltage (V);

M = ± 20
R22=0.22, 100=10, 1R0=1.0, 221=220, 3R3=3.3, 102=1000
-16 = 16, 6R3 = 6.3

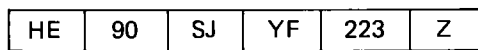
• Mylar Capacitor



Tolerance (%);
Value (μ F);
Voltage (V);

J = 5, K = 10, M = 20
122 = 1200, 104 = 100000 = 0.1 (μ F), 223 = 22000
-50 = 50

• Ceramic Capacitor

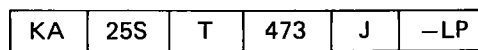


Tolerance (%);
Value (μ F);
Voltage (V);

D = $\pm 0.5\mu$ F, J = ± 5 (%), K = ± 10 (%), Z = ± 20 (%)
050 = 5, 102 = 1000, 560 = 56, 223 = 22000, 821 = 820
HC = 25, HE = 50, HK = 250, HM = 500, H = 100

Resistors description

• Fixed Resistors



Tolerance (%);
Value (Ω);
Wattage (W);
Type;

D = ± 0.5 , F = ± 1 , G = ± 2 , J = ± 5
2R2 = 2.2, 682 = 6.8k, 125 = 1.2M, 470 = 47, 473 = 47k,
221 = 220, 394 = 390k
25S = 1/4, 50S or 50X = 1/2, -2W = 2
KA = Carbon, FR = Flame Proof, SA = Metal Oxide,
RF = Fusible, MF = Metal Film

VOLTAGE CONVERSION

220V/50Hz Version

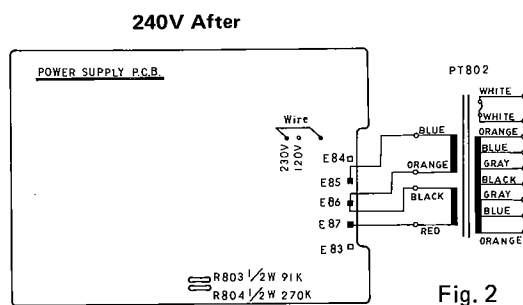
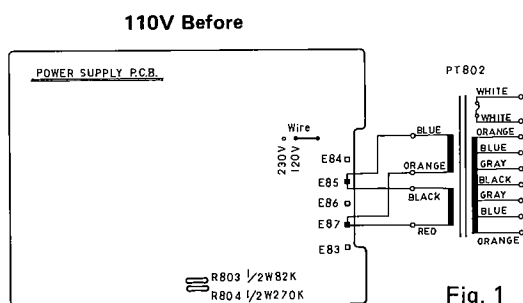
Bill of Materials

Q'ty	Part No.	Description
1	5117	RCVR 2000 FINISHED GOODS
1	251-10117-03	RES CFILM 91K 1/2W UNPREP
1	251-10128-03	RES CFILM 270K 1/2W UNPREP
1	315-10506-00	FUSE AGC5
1	530-10052-00	LABEL FUSE AGC5
1	530-10053-00	LABEL 240V AC 50HZ
1	530-10051-00	LABEL VOLTAGE CONVERSION
1	530-10012-00	LABEL MILITARY IMPORT DUTY
1	530-10013-00	LABEL MILITARY CONVERSION

Directions for Change

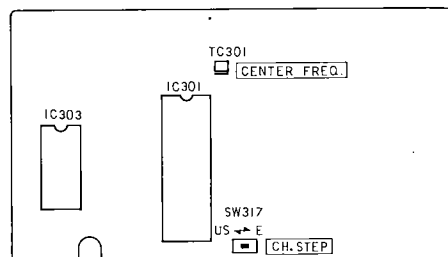
- Locate power supply circuit board from topview, board is in the center of unit on the left side.
 - Move orange wire from E87 terminal to E86.
 - Move black wire from E85 terminal to E86.
 - Change bare jumper wire from 120V to 230V.
 - Change R803 from 82K 1/2W to 91K 1/2W.
 - Change R804 from 270K 1/2W to 270K 1/2W.

Power Supply P.C. Board PS-615A



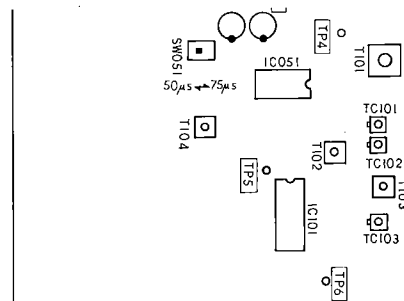
- Front controller P.C. Board (PLL P.C. Board PLL-613A) Set small slide switch SW317 to "E" for 240V Europe frequency stepping. (See Fig. 3)

PLL P.C. Board PLL-613A



- AM/FM P.C. Board (Tuner P.C. Board TIM-612B) Set small slide switch SW051 to "50μs" for 240V de-emphasis. (See Fig. 4)

Tuner P.C. Board TIM-612B



- Change fuse on back panel from AGC10 to AGC5.
- Apply label 530-10052-00 (AGC5) in place of existing label AGE10.
- Apply label 530-10055-00 (240V AC 50HZ) in place of existing label.
- Using spray adhesive, mount label 530-10051-00 (VOLTAGE CONVERSION) to inside top cover.
- Apply label 530-10012-00 (MILITARY IMPORT DUTY) and label 530-10013-00 (MILITARY CONVERSION) to bottom of unit.

