CARVER

Model TFM-6C

SERVICE MANUAL

For TFM-6CB
Use TFM-6CB Schematic
Diagram Insert

CONTENTS

1. IMPORTANT SAFETY INFORMATION

WARNING.

Any person performing the procedures described in this manual will be exposed to hazardous voltages and the risk of electric shock.

Carver Corporation assumes that any person who removes the cover from the unit has been properly trained in protecting against avoidable injury and shock.

Therefore, the procedures described here are to be performed by qualified electronics service personnel only.

We recommend that the unit be tested only when line isolation is provided by an isolation transformer. The line cord of the unit must be disconnected and the power supply capacitors fully discharged before any components are replaced. Failure to do so may result in severe damage to the unit and the risk of electric shock.

CAUTION:

Before returning the unit to the customer, one of the following safety tests must be performed.

1. Check the leakage current. Connect the unit to 120 VAC supply and turn the power switch "ON". Using an ammeter, measure the current between each side of the linecord and chassis ground of the unit under test. If leakage current exceeds 0.5mA, the unit is defective.
2. Measure the resistance from either side of the linecord to chassis ground. If it is less than 500k ohms, the unit is defective.

WARNING: DO NOT return the unit to the customer if it fails one of these tests until the problem is located and corrected.

2. SPECIFICATIONS

Power:

65 100 watts RMS per channel into 8 ohms both channels driven 20-20KHz with no more than 0.1% THD.
100 140 watts RMS per channel into 4 ohms both channels driven 20-20KHz with no more than 0.1% THD.
160 200 watts dynamic power into 2 ohms

Frequency Response:
+0, –0.3dB 20-20KHz

Noise:
110dB A-weighted referenced to rated power

Gain:
30dB (with input level controls fully clockwise)

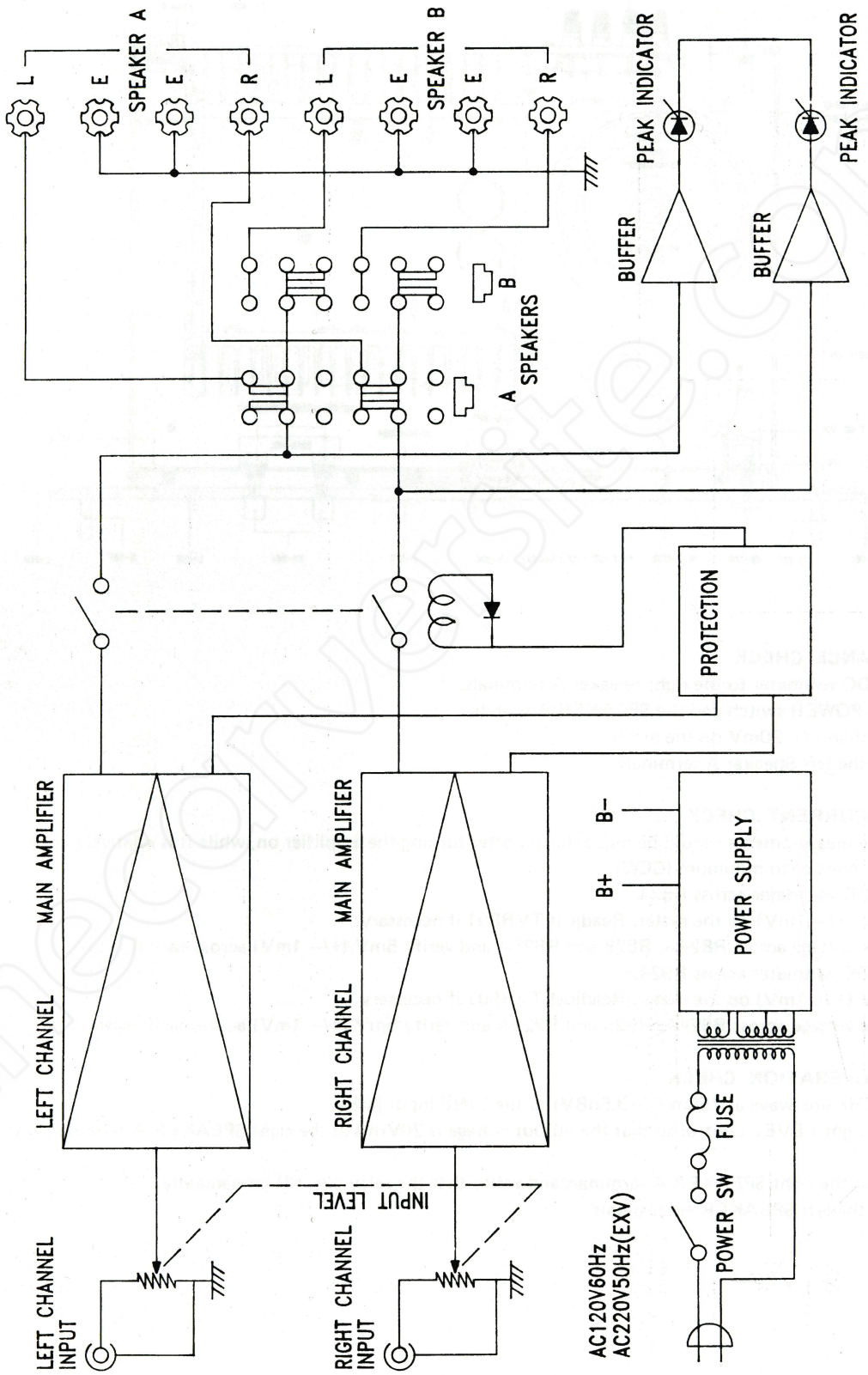
Input impedance:
30K ohms

Power Requirements:
120 VAC, 60Hz, USA & Canada
220 VAC, 50Hz, Europe

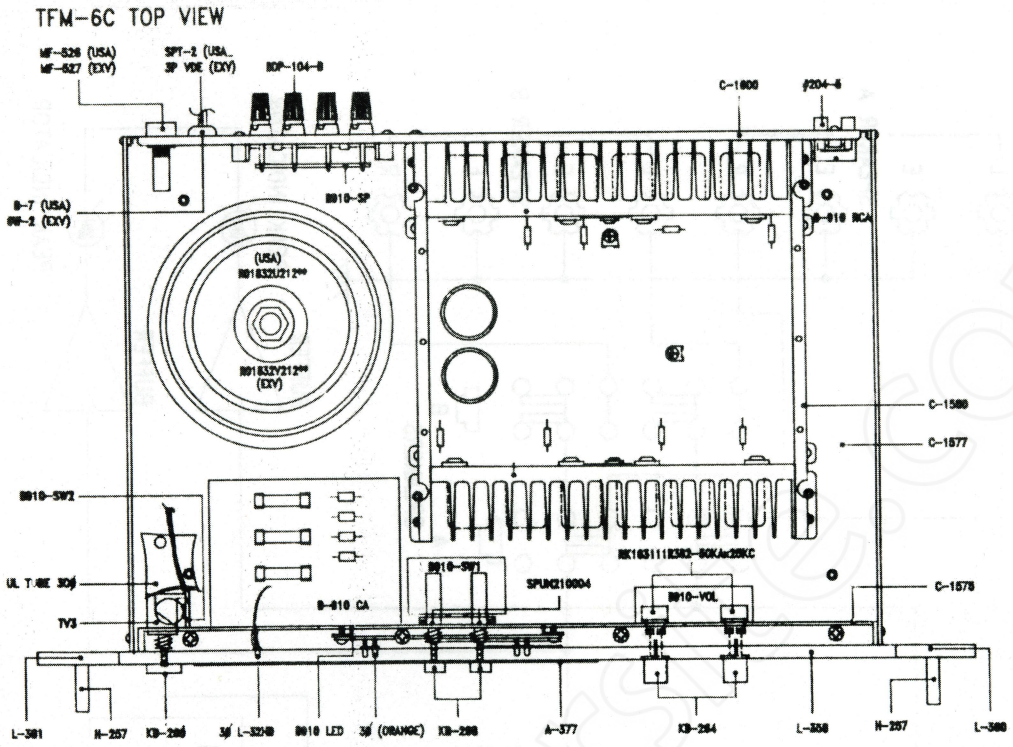
Dimensions:
2"x19"x13"
51m/mx483m/mx330m/m

Weight:
12.5lbs
5.7kg

3. BLOCK DIAGRAM



4. ALIGNMENT PROCEDURES



1-1 DC BALANCE CHECK

1. Connect a DC voltmeter to the right Speaker A terminals.
2. Push in the POWER switch and the SPEAKER A switch.
3. Verify less than +/– 20mV on the meter.
4. Repeat for the left Speaker A terminals.

1-2 IDLING CURRENT CHECK

Note: These measurements should be made shortly after turning the amplifier on, while it is relatively cool.

1. Set LEVEL control to minimum (CCW).
2. Connect a DC voltmeter across R824.
3. Verify 5mV (+/– 1mV) on the meter. Readjust TVR801 if necessary.
4. Measure the voltage across R824A, R825 and R825A and verify 5mV (+/– 1mV) across each resistor.
5. Connect a DC voltmeter across R924.
6. Verify 5mV (+/– 1mV) on the meter. Readjust TVR901 if necessary.
7. Measure the voltage across R924A, R925 and R925A and verify 5mV (+/– 1mV) across each resistor.

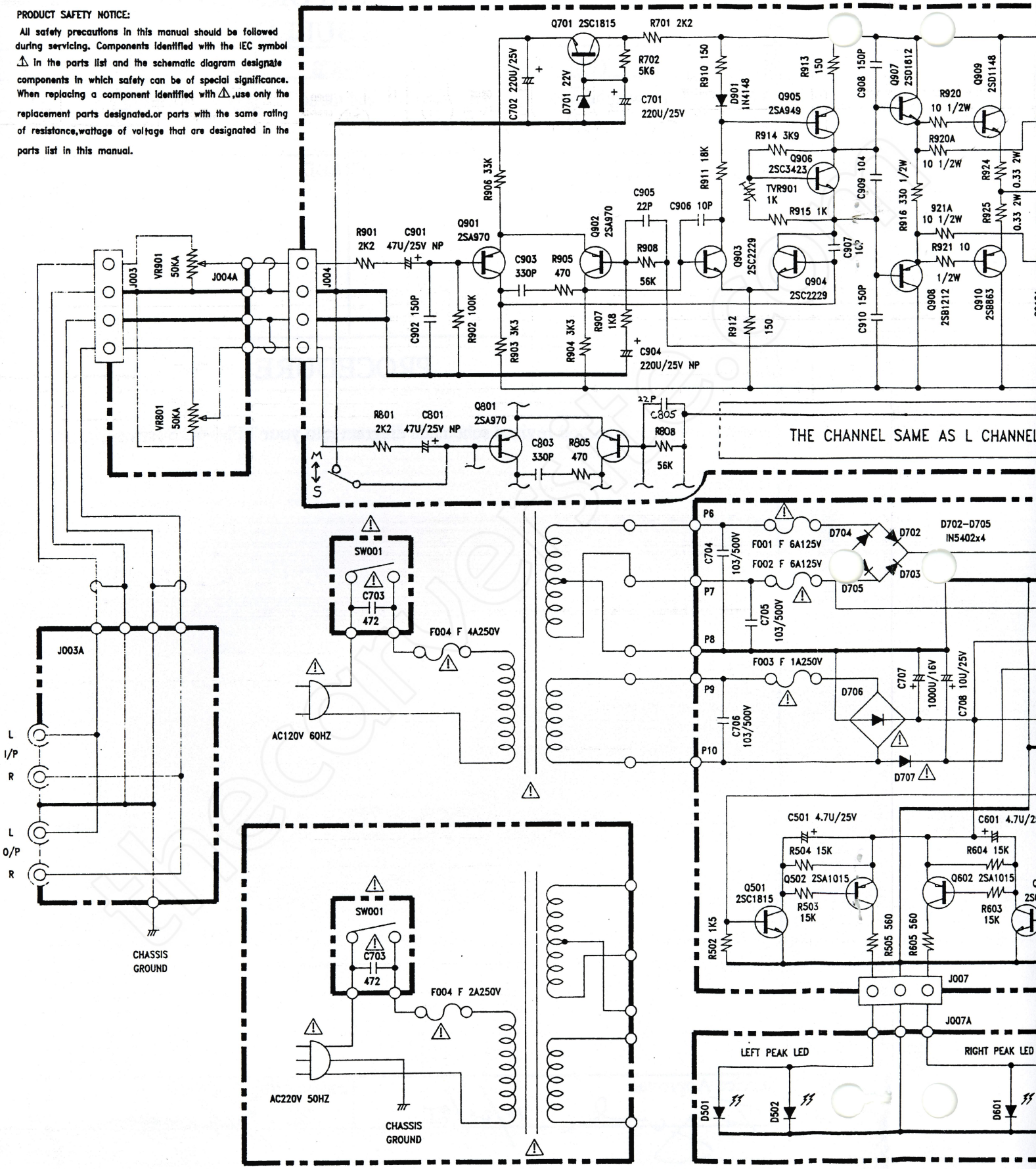
1-3 RELAY OPERATION CHECK

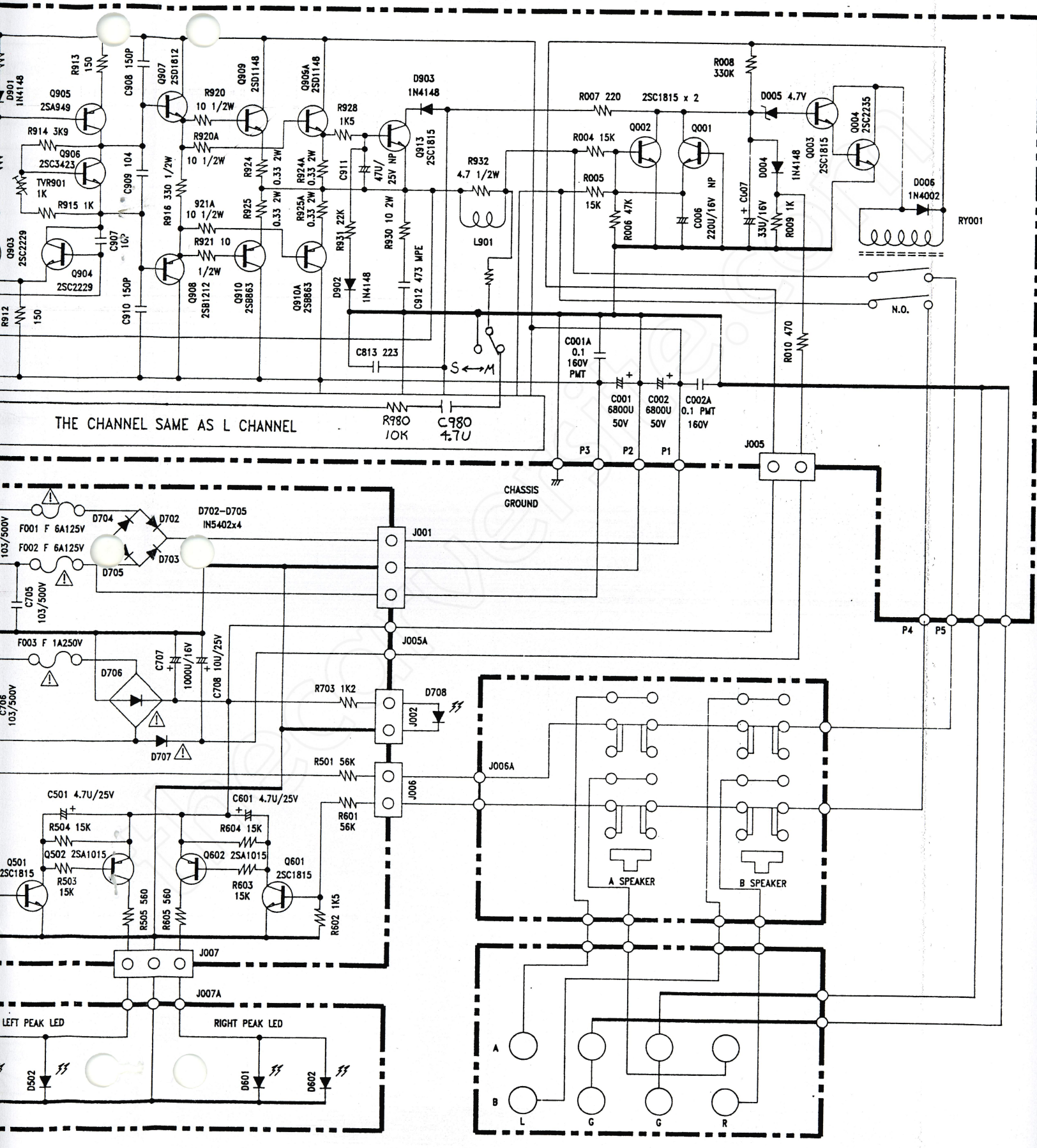
1. Apply a 1KHz sine wave at 750mV (–3.5dBV) to the LINE input jacks.
2. Adjust the right LEVEL control so that the output voltage is 20Vrms at the right SPEAKER A terminal, with an 8 ohm load.
3. Short circuit the right SPEAKER A terminals and verify that the relay cuts off immediately.
4. Repeat for the left SPEAKER A terminals.

5. SCHEMATIC DIAGRAMS

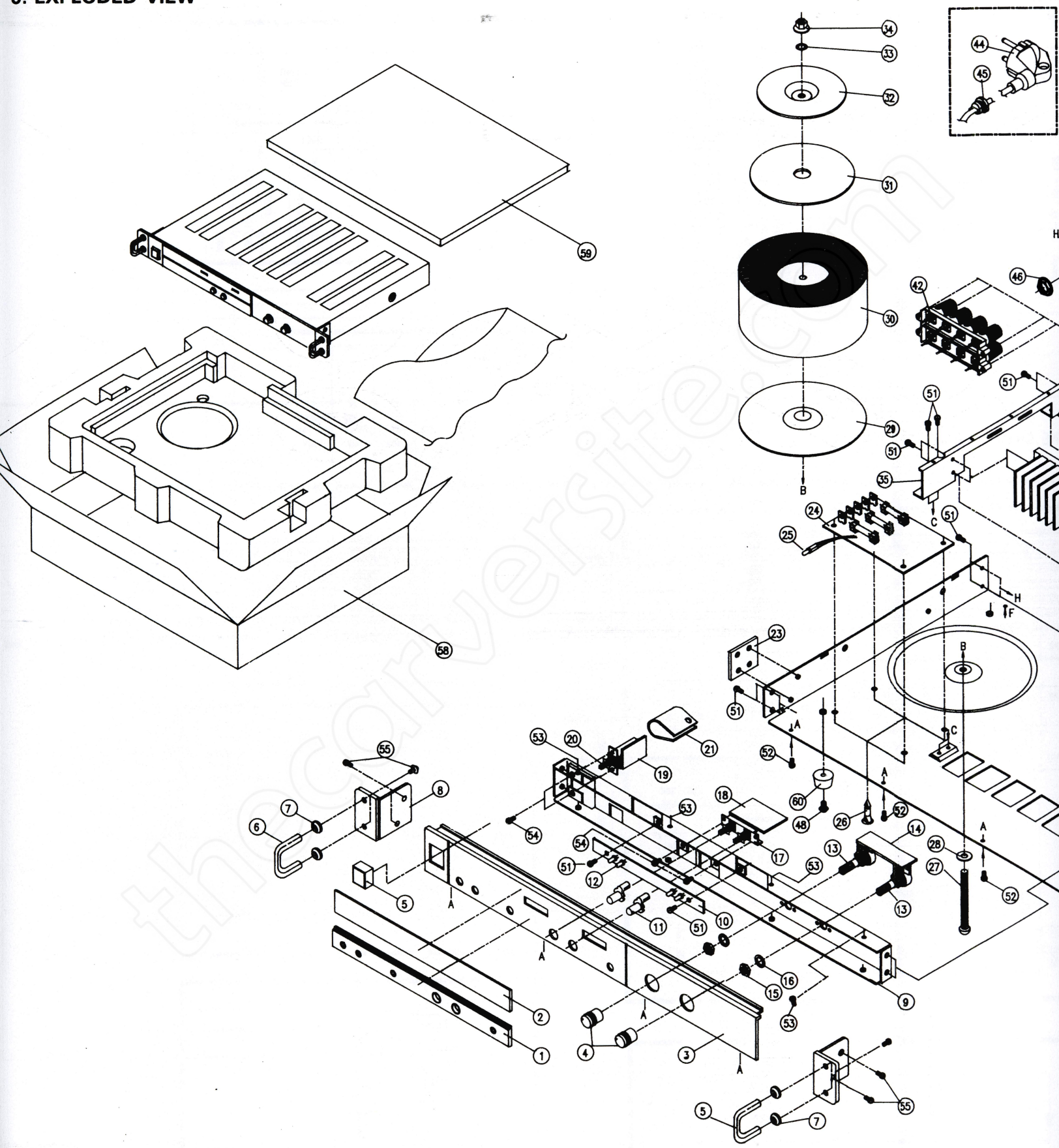
PRODUCT SAFETY NOTICE:

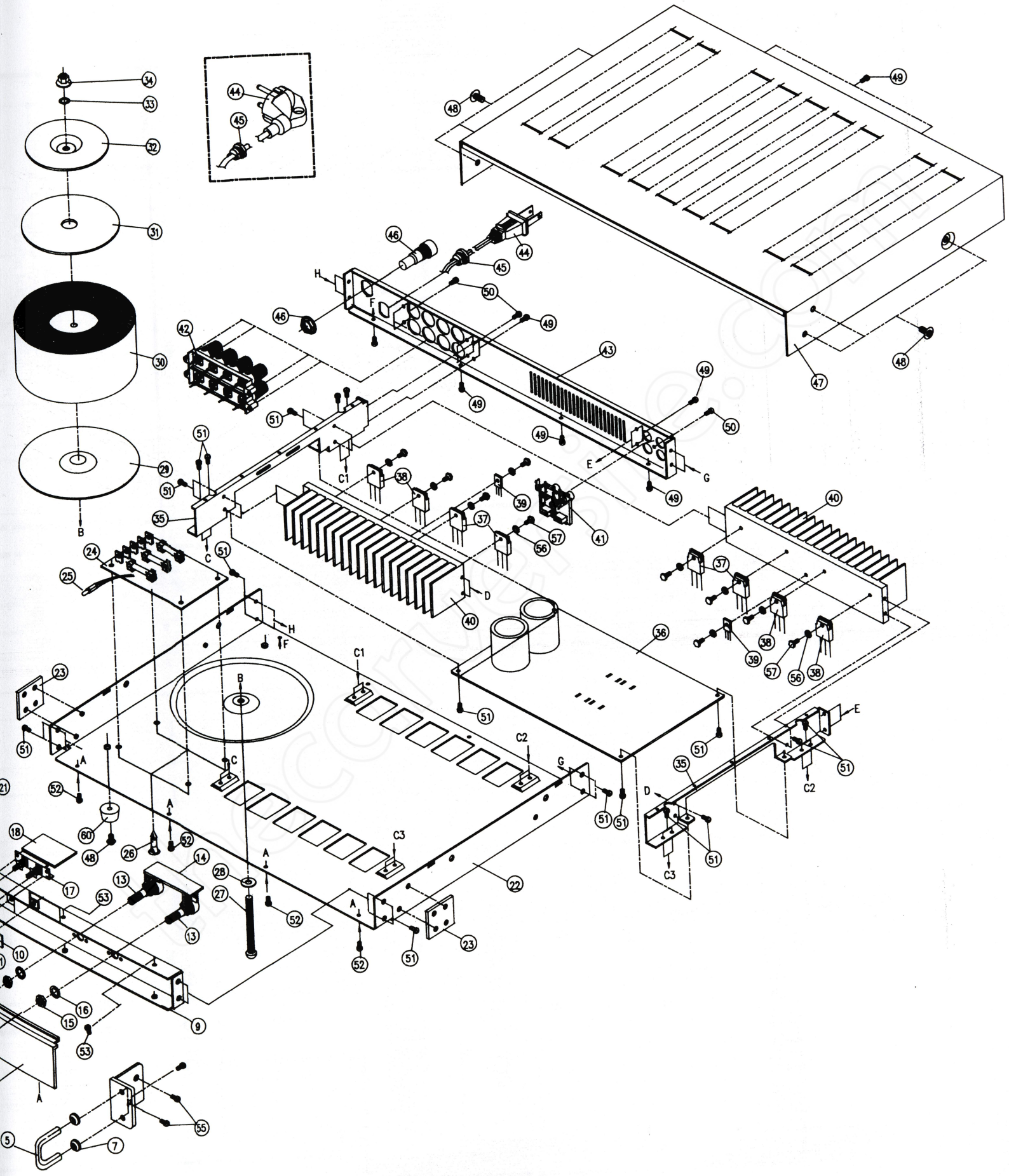
All safety precautions in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated.or parts with the same rating of resistance,wattage of voltage that are designated in the parts list in this manual.




THE CHANNEL SAME AS L CHANNEL
R980 10K
C980 4.7U
CHASSIS GROUND
D702–D705 IN5402x4
F001 F 6A125V
F002 F 6A125V
F003 F 1A250V
J001
J002
J005
J005A
J006
J006A
J007
J007A
P1
P2
P3
P4
P5
A SPEAKER
B SPEAKER
LEFT PEAK LED
RIGHT PEAK LED
N.O.
RY001
L901
Q901 1N4148
Q905 2SA949
Q906 2SC3423
Q907 2SD1812
Q908 2SB1212
Q909 2SD1148
Q910 2SB863
Q910A 2SB863
Q903 2SC2229
Q904 2SC2229
Q001
Q002
Q003 2SC1815
Q004 2SC2235
Q501 2SC1815
Q502 2SA1015
Q602 2SA1015
Q601 2SC1815
D901 1N4148
D902 1N4148
D903 1N4148
D004 1N4148
D005 4.7V
D006 1N4002
D502
D601
D602
D702
D703
D704
D705
D706
D707
D708
R913 150
R914 3K9
R915 1K
R916 330 1/2W
R920 10 1/2W
R920A 10 1/2W
921A 10 1/2W
R921 10 1/2W
R924 0.33 2W
R925 0.33 2W
R924A 0.33 2W
R925A 0.33 2W
R928 1K5
R930 10 2W
R931 22K
R932 4.7 1/2W
R912 150
R007 220
R004 15K
R005 15K
R006 47K
R008 330K
R009 1K
R010 470
R503 15K
R504 15K
R505 560
R601 56K
R602 1K5
R603 15K
R604 15K
R605 560
R703 1K2
C908 150P
C909 104
C910 150P
C907 10
C911 47U/25V NP
C912 473 MPE
C813 223
C001A 0.1 160V PMT
C001 6800U 50V
C002 6800U 50V
C002A 0.1 PMT 160V
C006 220U/16V NP
C607 33U/16V
C705 103/500V
C706 103/500V
C707 1000U/16V
C708 10U/25V
C501 4.7U/25V
C601 4.7U/25V
2SC1815 x 2
S ↔ M
A
B
L
G
G
R

6. EXPLODED VIEW



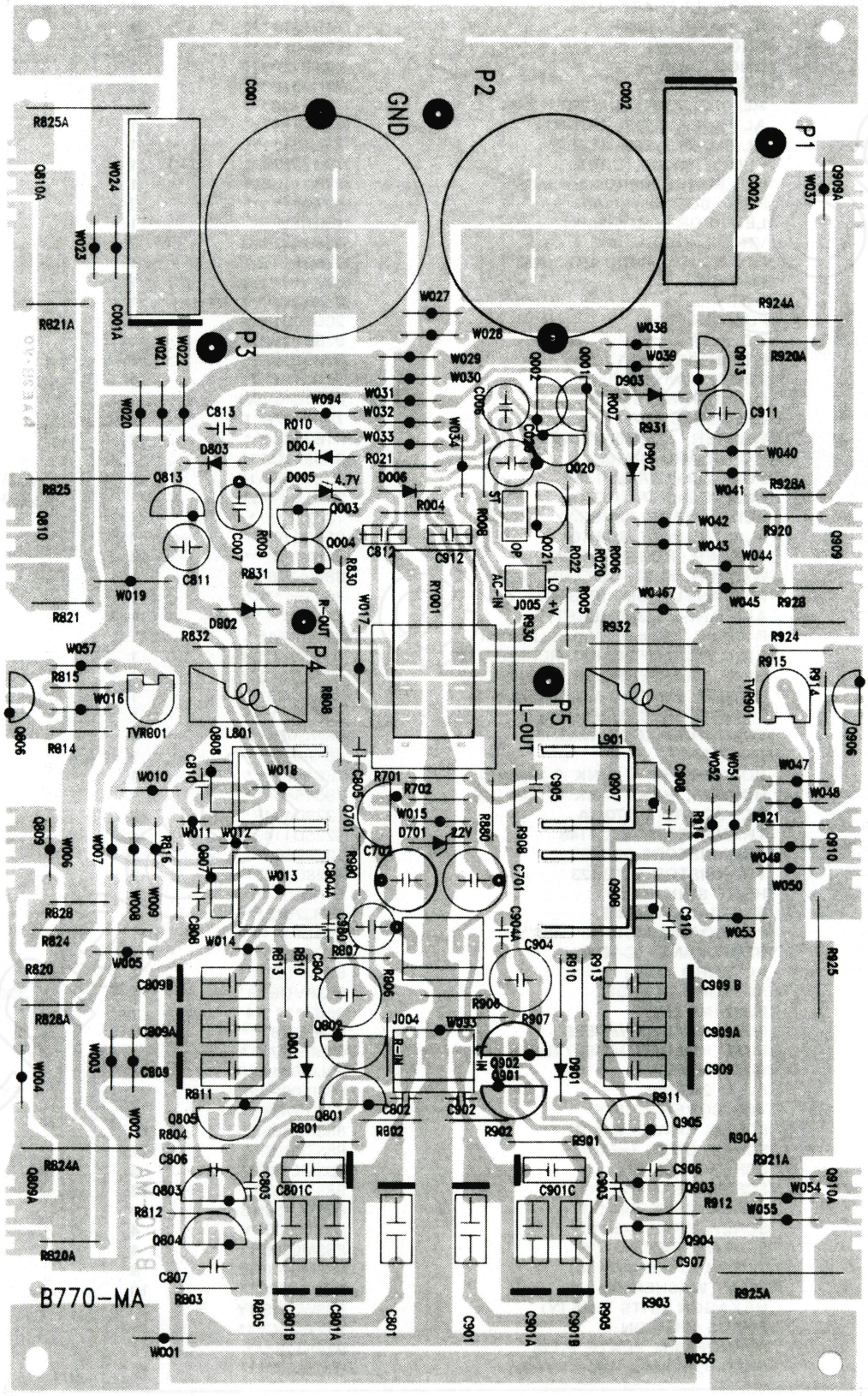


7. EXPLODED VIEW PARTS LIST

REF. NO.	DESCRIPTION	P/N	Q'TY	REMARK
1.	FRAME, PUSH BOTTON A-378	78LA378***	1	
2.	ACRYLIC PLATE A-377	85A377****	1	
3.	AL PANEL L-358	78L358B***	1	
4.	KNOB KB-264	80264B****	1	
5.	KNOB K-260	80KB260***	1	
6.	HANDLE H-257	76H257B***	2	
7.	AL PAD FOR HOLDER H-214	76H214B***	4	
8.	AL PANEL L-361 (RIGHT)	75L361****	1	
	AL PANEL L-360 (LEFT)	75L360****	1	
9.	FRONT PANEL C-1575	78C1575B**	1	
10.	P.C. BOARD B-910 LED ASS'Y	97B910LED*	1	
11.	PUSH BOTTOM K-24B	8024B*****	2	
12.	LED (FOR LED ASS'Y)	16030*****	1	
13.	VR 50KAx25kc	3250KA25KC	2	
14.	P.C. BOARD B-910 VOL ASS'Y	97B910VOL*	1	
15.	WASHER 7	88WF07P14W	1	
16.	NUT 7	88N607W***	1	
17.	PUSH SWITCH	20UN21C004	2	
18.	P.C. BOARD B-910 SW1	97B910SW1*	1	
19.	P.C. BOARD B-910 SW2	97B910SW2*	1	
20.	POWER SWITCH TV-3	20DLB1027*	1	⚠
21.	UL BUSHING 30ϕ (B)	6230L40VW1	1	
22.	CHASSIS C-1577	78C1577B**	1	
23.	WASHER, RUBBER E-242	81E242B***	2	
24.	P.C. BOARD B-910CA	97B910CA**	1	
	FUSE 6.3x31.7x6A 125V	59UL006A1F	2	⚠ 910-CA
	FUSE 6.3x31.7x1A 250V	59UL001A2F	1	⚠ 910-CA
25.	LED 3ϕ (FOR B-910CA)	16032*****	1	
26.	PLASTIC POST SCB-10	96SCB10***	4	
	WASHER, RUBBER E-243	81E243B***	3	
27.	WASHER, PUSH BOTTOM A-376	88WA376***	1	
28.	AL PANEL L-361 (RIGHT)	75L361****	1	
	AL PANEL L-360 (LEFT)	75L360****	1	
29.	RUBBER 116m/mx14m/mx1.5m/m	841161415*	1	
30.	RING TRANSFORMER R01832U212**	70TFM6C120	1	⚠
	RING TRANSFORMER R01832V212**	70TFM6C220	1	⚠
31.	RUBBER 96m/mx14m/mx1.5m/m	84961415**	1	
32.	CHASSIS SPEC. 83m/mx2m/m	7883x2T***	1	
33.	TOOTHHED LOCK WASHER	88WG0306**	1	
34.	NUT M6	88N606W***	1	
35.	HOLDER, HEAT SINK C-1579 (L)	78C1579***	1	
	HOLDER, HEAT SINK C-1580 (R)	78C1580***	1	
36.	P.C. BOARD B-770MA	122SD1148*	1	
37.	TRANSISTORS 2SD1148	122SD1148*	4	
38.	TRANSISTORS 2SB863	122SB863**	4	
39.	TRANSISTOR 2SC3423	122SC3423*	2	
40.	HEAT SINK H-250	76H250****	2	
41.	RCA JACK #204-5	55RJ2045**	1	
42.	P.C. BOARD B-910 SP ASS'Y	55BDP104B*	1	
43.	REAR PANEL C-1600	78C1600B**	1	
44.	AC CORD SDP-2	682xPT22B*	1	⚠
	AC CORD 3P VDE	683PVDE2B*	1	EXV ⚠
45.	BUSHING B-7	96B7*****4	1	
46.	FUSE HOLDER MF-526	67MF526***	1	⚠
	FUSE HOLDER MF-527 (EXV)	67MF527***	1	⚠
	FUSE 4A250V	59UL004A2F	1	⚠
	FUSE 2A250V	59UL002A2F	1	EXV ⚠
47.	TOP COVER C-1578	78C1578B**	1	
48.	SCREW CRWMS 4x8 (B)	88SM0408RB	10	
49.	SCREW CRTS 3x6 (B)	88ST0306RB	7	
50.	SCREW 1/8x9 (B)	88SME809RB	5	
51.	SCREW CRTS 3x6 (Y)	88ST0306RY	18	
52.	SCREW CRTS 3x8 (B)	88ST0308RB	4	
53.	SCREW CFTS 3x6 (Y)	88ST0306FY	4	
54.	SCREW CRMS 3x6 (Y)	88SM0306RY	4	
55.	SCREW CRMS 4x10 (B)	88SM0410RB	8	
56.	GEAR WASHER 3ϕ	88WG03P6**	10	
57.	HEXAGON CRTS 3x15 (Y)	88SW0315RY	10	
58.	INSIDE CARTON	91TEM6C***	1	
59.	STYROFOAM PLATE P-128	97PF128***	1	
60.	FOOT CUSHING 16ϕ x 7.7m/m	81016x07**	4	

8. PCB COMPONENT SIDE VIEWS AND PARTS LIST

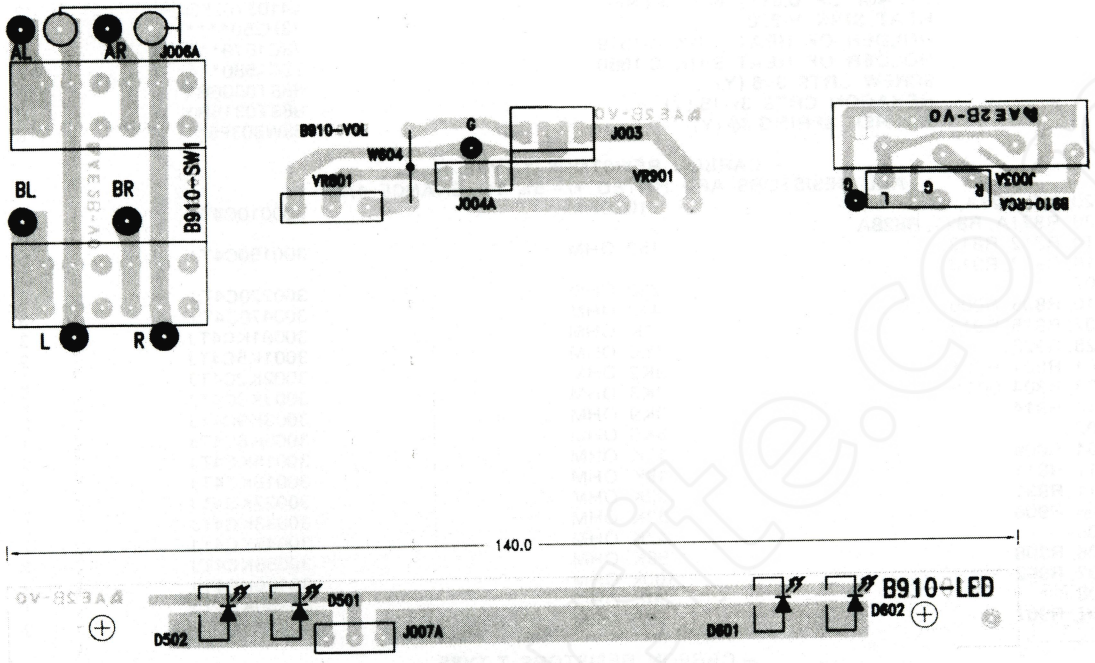
8-1. PC BOARD B770-MA



P.C. BOARD B770-MA ASS'Y

REF. NO.	DESCRIPTION		P/N	Q'TY
	RELAY 12V 5A 2P2C		6112052P2C	1
	CAPACITOR 6800U/50V, ELEC.		406K8U50RM	2
	P.C. BOARD B770-MA		97B770MA**	1
	CONNECTOR E-D333		66ED333***	1
	CAPACITOR 0.01K/160V D-TYPE		44103160PD	2
	HEAT SINK H-250		78H250****	2
	HOLDER OF HEAT SINK C-1579		78C1579***	1
	HOLDER OF HEAT SINK C-1580		78C1580***	1
	SCREW CRTS 3x6 (Y)		88ST0306RY	12
	HEXAGON CRTS 3x 15 (Y)		88ST0315RY	8
	WASHER, SPRING 3ϕ (Y)		88WS03P6**	8
	– CARBON RESISTORS T-TYPE –			
	ALL RESISTORS ARE RATED +/– 5% TOLERANCE 1/4W			
R920, 921, 921A, 925A R820, R821A, R821, R828A	10 OHM		300010C4TJ	8
R810, R812, R813, R910, R912, R913	150 OHM		300150C4TJ	6
R007	220 OHM		300220C4TJ	1
R010, R805, R905,	470 OHM		300470C4TJ	3
R007, R815, R915,	1K OHM		30001KC4TJ	3
R828, R928,	1K5 OHM		3001K5C4TJ	2
R701, R801, R901	2K2 OHM		3002K2C4TJ	3
R803, R804, 903,	3K3 OHM		3003K3C4TJ	4
R814, R914	3K9 OHM		3003K9C4TJ	2
R702	5K6 OHM		3005K6C4TJ	1
R004, R005	15K OHM		30015KC4TJ	2
R911, R811	18K OHM		30018KC4TJ	2
R831, R931	22K OHM		30022KC4TJ	2
R806, R906	33K OHM		30033KC4TJ	2
R006	47K OHM		30047KC4TJ	1
R708, R808	56K OHM		30056KC4TJ	2
R802, R902	100k OHM		30100KC4TJ	2
R008	330K OHM		30330KC4TJ	1
R807, R907	1K8 OHM		3001K8C4TJ	2
	– CARBON RESISTORS T-TYPE –			
	ALL RESISTORS ARE RATED +/– 5% TOLERANNCE AND 1/2W			
R832, R932	4.7 OHM		3004P7C2TJ	2
R816, R916	330 OHM		300330C2TJ	2
	– CARBON RESISTORS T-TYPE –			
	ALL RESISTORS ARE RATED +/– 5% TOLERANNCE AND 2W			
R830, R930	10 OHM		300010M2TJ	1
R824, R824A, R825, R924 R825A, R924A, R925, R925A	0.33 OHM		300P33M2TJ	8
	– DIODE –			
D005	4.7V/0.5W		13Z047P5TO	1
D004, D801, D802, D803,	22V/0.5W		13Z220P5TO	1
D901, D902, D903	1N4148		131N4148TO	7
	– CAPACITORS –			
C806, C807, C906, C907	10P/500V	CERAMIC	42010P5ARJ	4
C805, C905	22P/500V	CERAMIC	42022P5ARJ	2
C808, C810, C908, C910	150P/500V	CERAMIC	42150P5ARJ	4
C803, C903	330P/500V	CERAMIC	42330P5ARJ	2
C802, C902	0.15/50V	J MYLAR	41153U50RJ	2
C007	33U/16V	ELEC	40033U16RM	1
C701, C702	220U/25V	ELEC	40220U25RM	2
C891B, C811, C901B, C91	47U/25V	ELEC NP	40047U25NP	4
C006, C804, C904	220U/16V	ELEC NP	40220U25NP	2
C812, C912	0.047K/160V	MPE D-TYPE	45473U53MD	2
C809, C903	0.1K/160V	PMT T-TYPE	46104U53PT	2
	0.01K/100V	PS	43103U52RM	
	– TRANSISTORS –			
Q801, Q802, Q901, Q902	2SA970		122SA970**	4
Q803, Q804, Q903, Q904	2SC2229		122SC2229*	4
Q805, Q905	2SA949		122SA949**	2
Q004	2SD468		122SD468**	1
Q808, Q908	2SB1212		122SB1212*	2
Q807, Q907	2SD1812		122SD1812*	2
Q001, Q002, Q003, Q701, Q813, Q913	2SC1815		122SC1815*	6
Q810, Q810A, Q910, Q910	2SB863		122SB863**	4
Q809, Q809A, Q909, Q909	2SD1148		122SD1148*	4
Q806, Q906	2SC3423		122SC3423*	2
	– OTHERS –			
	17-1/2T x 6ϕ x 1m/m		73C17P5061	2
	WAFER 5045-2		6650452***	1
	WAFER 5045-4		6650454***	1
	TVR IK 5ϕ, H-TYPE		3110283HS*	2
	PIN 1 x 1 x 19		65010119**	3

8-2. PC BOARD B-910 SW1, B-910 VOL, B-910 RCA, B-910 LED.



P.C. BOARD B-910 SW1 ASS'Y

REF. NO.	DESCRIPTION	P/N	Q'TY	REMARK
	PIN 1x1x19	65010119**	4	
	CONNECTOR E-D311	66ED311***	1	
	PUSH SWITCH	20UN21C004	2	
	P.C. BOARD B-910 SW1	97B910SW1*	1	

P.C. BOARD B-910 VOL ASS'Y

REF. NO.	DESCRIPTION	P/N	Q'TY	REMARK
	VR 50KAx25KC	3250KA25KC	2	
	CONNECTOR E-D316	66ED316***	1	
	P.C. BOARD B-910 VOL	97B910VOL*	1	

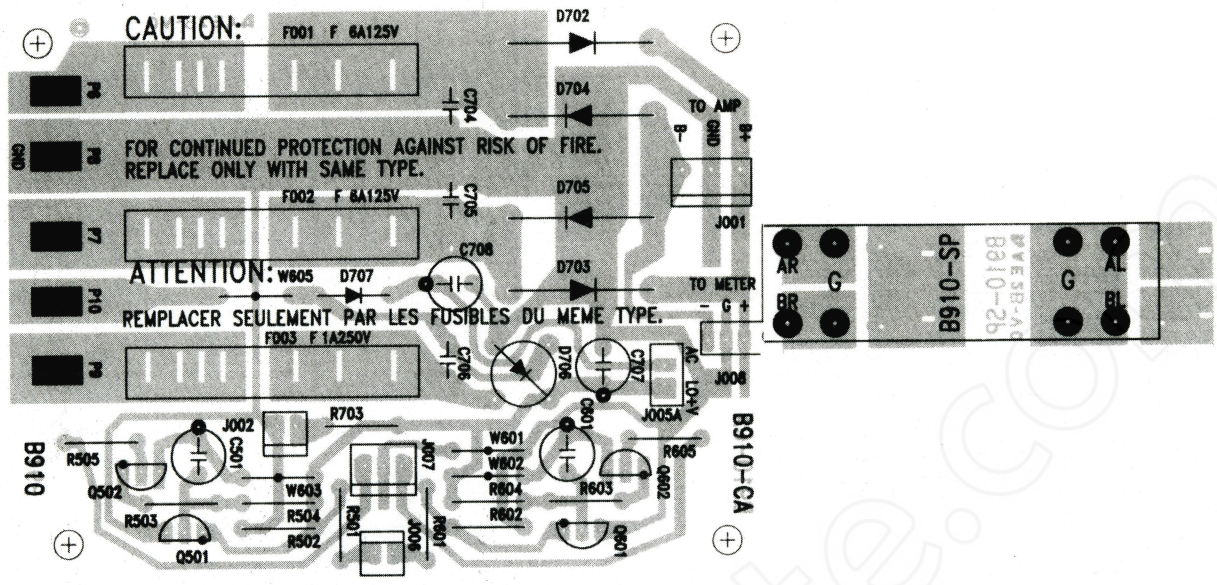
P.C. BOARD B-910 RCA ASS'Y

REF. NO.	DESCRIPTION	P/N	Q'TY	REMARK
	RCA JACK #204-5	55RJ2045**	1	
	P.C. BOARD B-910 RCA	97B910RCA*	1	

P.C. BOARD B-910 LED ASS'Y

REF. NO.	DESCRIPTION	P/N	Q'TY	REMARK
	P.C. BOARD B-910 LED	97B910LED*	1	
	CONNECTOR E-D114	66ED114***	1	
	LED, 3ϕ (ORNG)	16030*****	4	

8-3. PC BOARD B-910 CA, B-910 SP.



P.C. BOARD B-910CA ASS'Y

REF. NO.	DESCRIPTION	P/N	Q'TY	REMARK
	PIN 5x1x15	65050115**	5	
	WAFER 5045-2	6050452***	1	
	WAFER 5045-3	6650453***	1	
	WAFER 5273-3	6652733***	1	
	LED L-32DH, RED	16032*****	1	
	P.C. BOARD B-910CA	97B910CA**	1	
	CONNECTOR E-D324	66ED324***	1	
	– CARBON RESISTORS T-TYPE –			
	ALL RESISTORS ARE RATED +/– 5% TOLERANCE 1/4W			
R505, R605	560 OHM	300560C4TJ	2	
R703	1K2 OHM	3001K2C4TJ	1	
R502, R602	1K5 OHM	3001K5C4TJ	2	
R503, R504, R603, R604	15K OHM	30015KC4TJ	4	
R501, R601	56K OHM	30056KC4TJ	2	
	– CAPACITORS –			
C704, C705, C706	130P/500V CERAMIC	42130P5ARJ	3	⚠
C708	10U/25V ELEC	40010U25RM	1	
C501	4.7U/25V ELEC	404P7U25RM	1	⚠
	– DIODE –			
D707	1N4002	131N4002TO	1	⚠
D702, D703, D704, D705	1N5402	131N5402TO	4	⚠
D706	RB-152	13RB152***	1	⚠
	– TRANSISTORS –			
Q502, Q602	2SA1015	122SA1015*	2	
Q501, Q601	2SC1815	122SC1815*	2	
	– FUSE HOLDER –			
F001, F002, F003	FUSE CLIP 6ϕ	67FH036***	3	⚠
	FUSE CLIP 5ϕ (EXV)	67FH035***		⚠

P.C. BOARD B-910 SP ASS'Y

REF. NO.	DESCRIPTION	P/N	Q'TY	REMARK
	SPEAKER TERMINAL BDP-104-B	55BDP104B*	2	
	P.C. BOARD B-910 SP	97B910SP**	1	

CARVER CORPORATION
SERVICE BULLETIN

Service Bulletin # TFM-6c-2	Model: TFM-6c	Serial Nos. ———
REASON: To correct errors in the Service Manual		Date: 4/16/92

DELETE	ADD

PROCEDURE

On page 7 of the TFM-6c Service Manual:

1. The right handle should be labeled Ref. Number ⑥.

On page 9:

1. The P/N of Ref. Numbers 6, 7 and 8 should begin with **78**, not 76 as shown.
2. The descriptions for Ref. Numbers 15 and 16 are switched; number 15 is a nut and number 16 is a washer.
3. Change the DESCRIPTION, P/N and Q'TY of Number 27, as shown below.
4. Delete Ref. Number 28 DESCRIPTION, P/N and Q'TY, which is a duplication of Ref. Number 8. Number 28 should be as shown below.

REF. NO.	DESCRIPTION	P/N	Q'TY	REMARK
6.	HANDLE H-257	78H257B***	2	
7.	AL PAD FOR HOLDER H-214	78H214B***	4	
8.	AL PANEL L-361 (RIGHT)	78L361****	1	
	AL PANEL L-360 (LEFT)	78L360****	1	
15.	NUT 7	88N607W***	1	
16.	WASHER 7	88WF07P14W	1	
27.	CROSS RECESSED HEAD BOLT M65m/m	88SM0665RB	1	
28.	WASHER, 8 x 14 x 1.5	88WF08014*	1	

On page 11:

1. Change the description and P/N for C802, C902 to:
   C802, C902 150pF/50V P.S. 43150050TJ 2

Service Approval	Engineering Approval
B Cofer 4/17/92	Thiel Technical Services 4-17-92