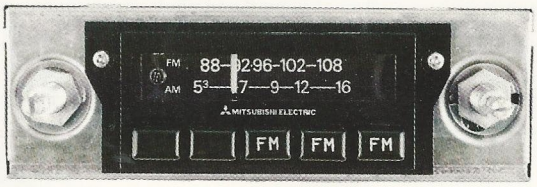
MITSUBISHI

SERVICE MANUAL

AM/FM CAR RADIO

MODEL : AR-2774SUB-Y2

PART NO. : MB 171773



SPECIFICATIONS

Circuit System:
Superheterodyne with RF amplifier

Tuning Range:
FM 88 – 108 MHz
AM 530 – 1605 KHz

Intermediate Frequency:
FM 10.7 MHz
AM 262.5 KHz

Power Output:
Undistorted 4W Maximum 6W

Output impedance:
4Ω

Power Source:
11V~16V Negative ground only

Current Consumption:
0.16 ~ 0.8A at 13.2V

IC:
2

Transistors:
4

Diodes:
5

Shaft Distance:
5-1/8″

Size:
W 6-1/2″
H 2″
D 5″

Weights:
2.9 lb

Antenna and Tuner:

Item \ Model	AR-2774SUB-Y2
Antenna Type	Trunkilid
Tuning Capacitance	485 PF

AR-2774SUB-Y2 is marked with [LA] on the upper cover.

MITSUBISHI ELECTRIC CORPORATION

Head Office : 2-3 Marunouchi 2-Chome, Chiyodaku, Tokyo, Japan Cable Address : MELCO TOKYO

ALIGNMENT PROCEDURES

1. AM SECTION

Procedures	Circuit	Signal generator connection	Signal generator frequency	Radio dial setting	Indicator connection	Adjust	Remarks
1	IF circuit	Fig. 1	262.5 KHz (400 Hz Mod.)	Point of noninterference near 1600 KHz	Fig. 2	T_2, T_4	Try to equalize the degree of diminution near ±3 KHz
2						T_1	
3						Repeat procedures 1 – 2	
4	Oscillation circuit and RF circuit	Fig. 3	1630 KHz	High freq. end stop	"	VC_3	Tune in
5			510 KHz	Low freq. end stop	"	T_3	Tune in
6					"	Repeat procedures 4 – 5	
7			1400 KHz	1400 KHz		VC_2 VC_1	Adjust VC_1, VC_2 and get the maximum voltage of the output.
8			600 KHz	600 KHz	"	T_3	Turn T_3 gradually and find the maximum sensitivity near 600 KHz.
9					"	Repeat procedures 7 – 8	Check the range of the frequency of the received wave. This is the end of the adjustment.

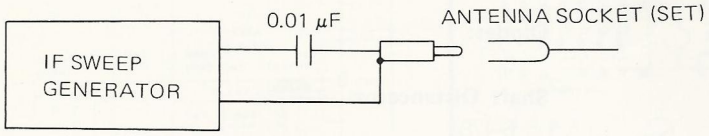


Fig. 1

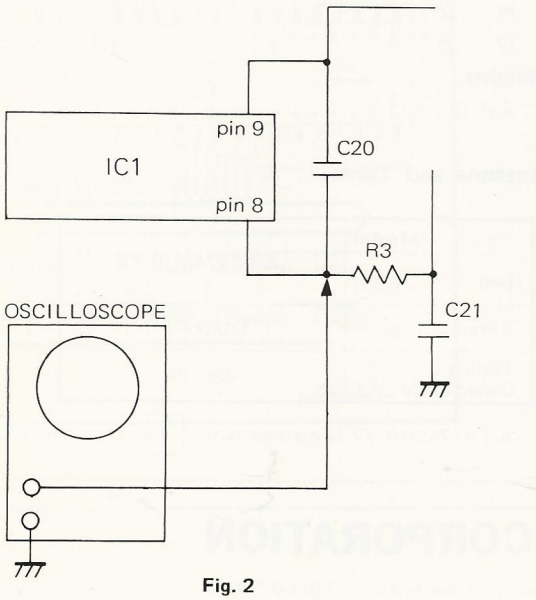


Fig. 2

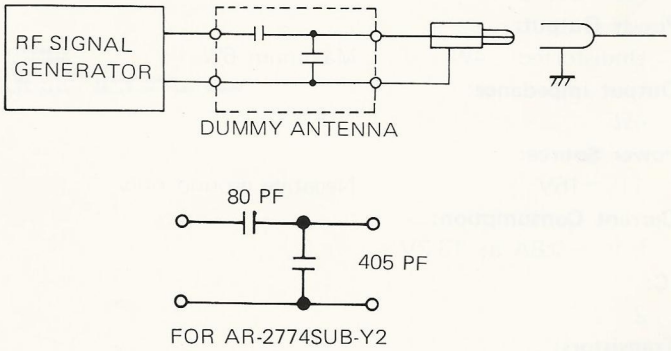


Fig. 3

2. FM SECTION

1) IF & Discriminator Adjustment

Step	Adjusting Circuit	Connections		Frequency	Position of tuning dial	Adjustment	VTVM, Scope & Distortion meter
		Output	Input				
1	IF	Fig. 4	Connect Scope to IC152 (Pin 13)	Sweep generator 10.7 MHz 40 dB (μV) ~50 dB (μV) output	98 MHz	T101	Maximum wave
2	Discriminator	Fig. 5	Fig. 6	98 MHz 400 Hz 100% modulation 20 dB (μV) output	98 MHz	T151	VTVM voltage 0 ± 80 mV
3				98 MHz 400 Hz 100% modulation 60 dB (μV) output	98 MHz	T152	Minimum distortion

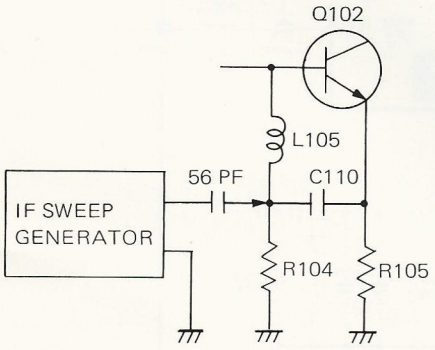


Fig. 4

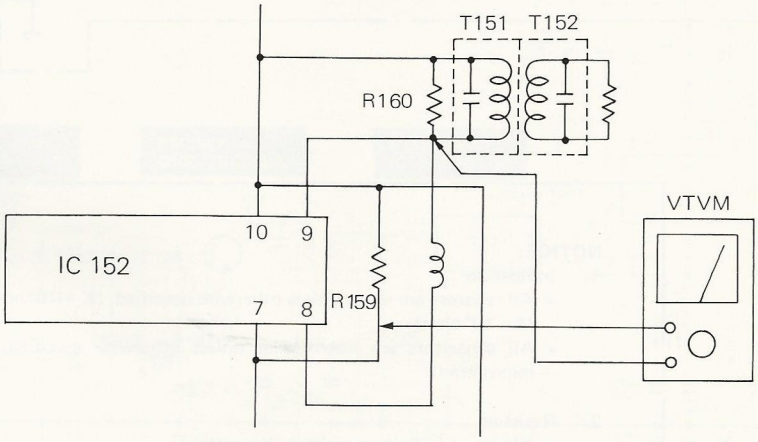


Fig. 6

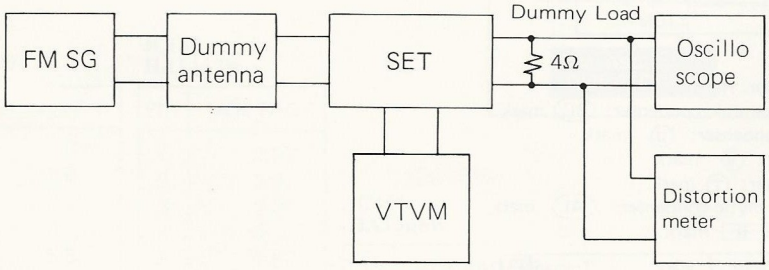
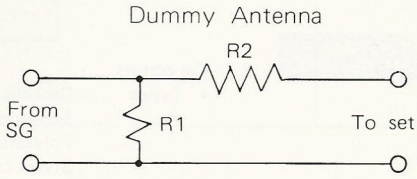


Fig. 5



Open circuit	R1: ——
	R2: 25Ω
Close circuit	R1: 75Ω
	R2: 62.5Ω

2) RF Adjustment

Step	Adjusting Circuit	Connection		Frequency	Position of tuning dial	Adjustment	Remarks
		Output	Input				
1	Oscillation	Fig. 5	Fig. 6	86.5 MHz	Low freq. end stop High freq. end stop	VC103	Tuning range 88 ~ 108 MHz
2	RF amp.			98 MHz	98 MHz	VC101 VC102	Maximum output

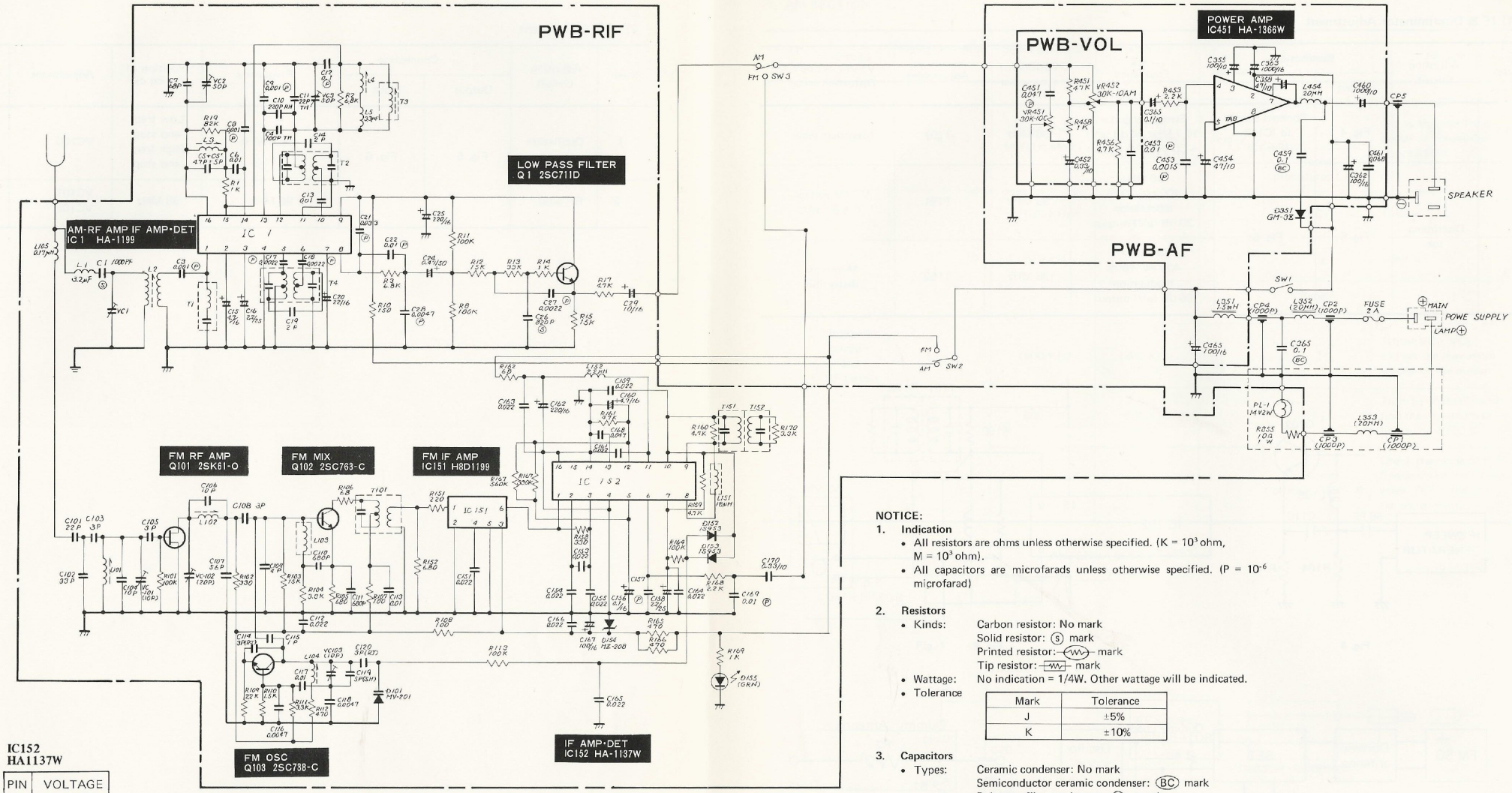
PARTS LIST

REF. No.	PART No.	DESCRIPTION
	RESISTORS	
VR451, 452	122L06602	VR-DOUBLE SHAFT 30KΩ x 2
	CAPACITORS	
CP4	141P02001	1000PF Lead through type
2, 5, 6	141P02003	1000PF "
VC103	202L00301	TRIMMER
1	202L00701	"
2, 3	202P10401	" 48PF
102	202P10702	" 20PF
101	202P10703	" 10PF
	SEMICONDUCTORS	
Q103	260P05403	TR 2SC738-C
1	260P17503	" 2SC711-D
102	260P17603	" 2SC763-C
101	260P23702	" 2SK61-O
D154	264P02502	DIODE MZ208
101	264P05502	" MV-201
152, 153	264P11701	" IS953
351	264P13201	" GM-3Z
155	264P14101	LED SLP-214B
IC451	266P32401	IC HA-1366W
152	266P32801	" HA-1137W
1	266P33301	" HA-1199
151	267P30206	" H8D1199
	TRANSFORMERS AND COILS	
	295K05203	"
L103	320D04601	COIL TRAP
5	351D02102	COIL CHOKE
1	351L00101	"
354, 353	351M00201	"
152	351M00602	"
151	351M00901	COIL IF
351	351P00108	TRANS CHOKE
105	361M00101	COIL RF
T3	373M00201	TRANS OSC
101	374L00201	TRANS IF
2	374L00901	"
4	374L00902	"
151	374L01101	"
152	374L01102	"
1	374M00401	"

REF. No.	PART No.	DESCRIPTION
	OTHRS	
	242L21201	LEAD CONNECTOR-4P
L1	253L00805	ASSY LAMP
	449L02501	SOCKET ANT
	452L01604	PIN CONNECTOR-4P
	452L04201	CONNECTOR
	480P32206	SPEAKER P-1303
	480P34603	"
	704M26201	KNOB-A
	704L07901	KNOB-B
	923L40103	ASSY PWB VOL
	986L01401	ASSY POINTER
	943L41904	ASSY PANEL
	560K06502	CHASSIS
CR251	149L00501	CR-MULTIPLE
CR252	149L00601	CR-MULTIPLE

SCHEMATIC DIAGRAM

MODEL : AR–2774SUB-Y2



NOTICE:

1. **Indication**
   - All resistors are ohms unless otherwise specified. (K = 10^3 ohm, M = 10^3 ohm).
   - All capacitors are microfarads unless otherwise specified. (P = 10^{-6} microfarad)

2. **Resistors**
   - Kinds: Carbon resistor: No mark
     Solid resistor: (S) mark
     Printed resistor: mark
     Tip resistor: mark
   - Wattage: No indication = 1/4W. Other wattage will be indicated.
   - Tolerance

Mark	Tolerance
J	±5%
K	±10%

3. **Capacitors**
   - Types: Ceramic condenser: No mark
     Semiconductor ceramic condenser: (BC) mark
     Polyester film condenser: (D) mark
     Styrol condenser: (S) mark
     Tantalic condenser: (T) mark
     Aluminum electrolytic condenser: (Al) mark
     Tip condenser: mark
   - Tolerance

Mark	Tolerance	Mark	Tolerance
C	±0.25PF	M	±20%
D	±0.5PF	Z	+80% −20%
J	±5%	No mark	+100% −0
K	±10%		

4. **Voltage Measurements**
   Voltage measurment made with D.C. voltmeter (20 KΩ/V DC) to chassis ground with no signal input (Source voltage 13.2V).

5. **This circuit is subject to change for improvement without notice.**

IC1
HA1199

PIN	VOLTAGE
1	1.8V
2	1.0
3	0.2
4	0
5	5.5
6	0.8
7	1.6
8	1.8
9	11.0
10	2.0
11	0
12	9.4
13	3.5
14	1.4
15	10.0
16	8.2

IC152
HA1137W

PIN	VOLTAGE
1	2.0V
2	2.0
3	2.0
4	0
5	1.5
6	5.6
7	5.6
8	5.6
9	5.6
10	5.6
11	9.0
12	3.2
13	0.1
14	0
15	5.0
16	0

IC451
HA1366W

PIN	VOLTAGE
1	0 V
2	12.0
3	7.8
4	0
5	1.3
6	1.3
7	12.0
8	0
9	0
10	1.2

IC151
H8D1199

PIN	VOLTAGE
1	2.0V
2	0
3	9.0
4	1.0
5	0
6	2.0

Q1
2SC711-D

PIN	VOLTAGE
C	5.6V
B	4.0
E	10.0

Q101
2SK61-O

PIN	VOLTAGE
D	6.5V
S	0
G	0

Q102
2SC763-C

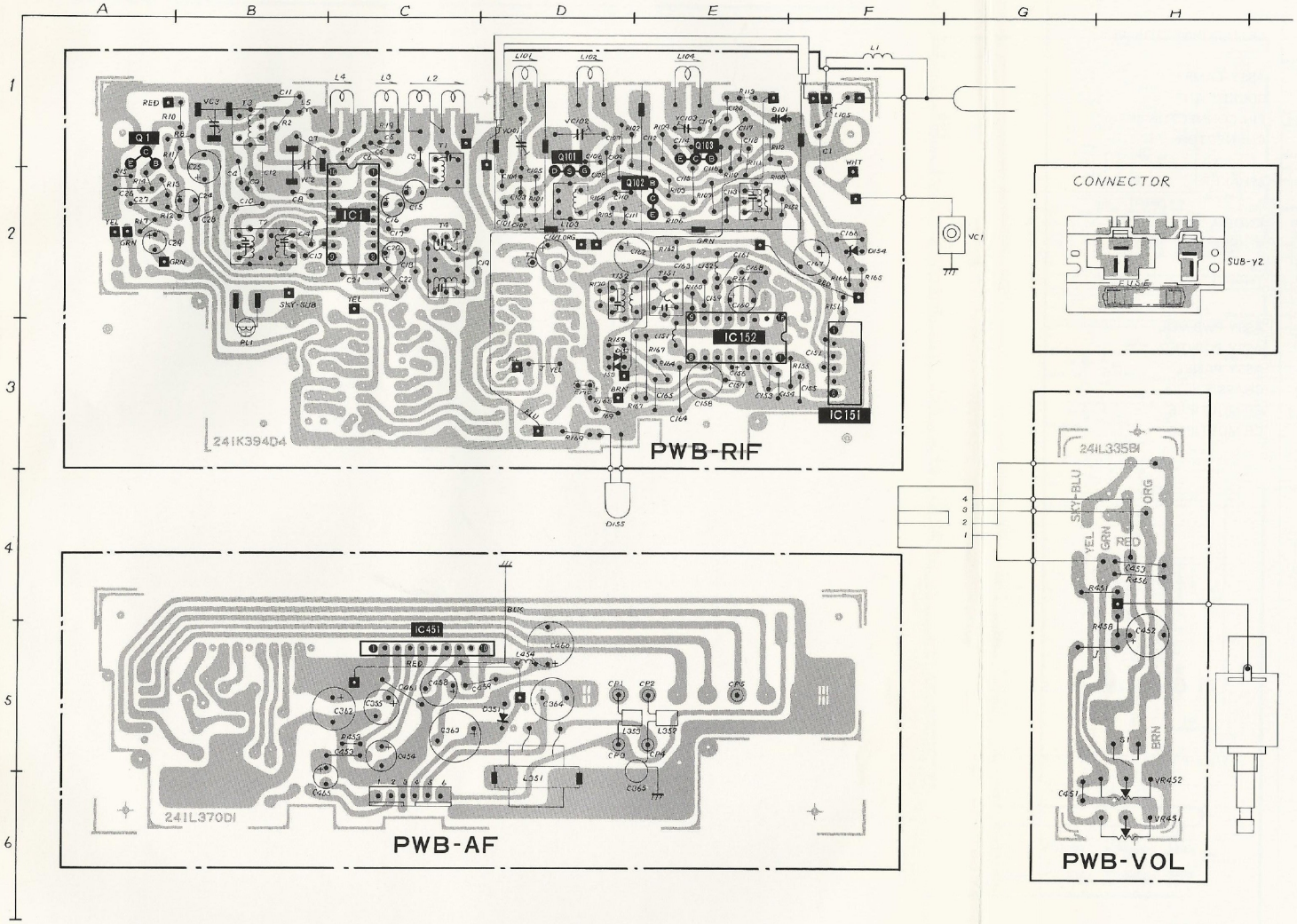
PIN	VOLTAGE
C	7.2V
B	1.4
E	0.7

Q103
2SC738-C

PIN	VOLTAGE
C	7.0V
B	2.3
E	2.2

PRINTED CIRCUIT BOARD (Printed Side)

MODEL : AR–2774SUB-Y2



PWB–RIF

REF. No	INDEX
IC	
IC1	C – 2
IC151	F – 3
IC152	E – 3
TRANSISTOR	
Q 1	A – 1
Q101	D – 1
Q102	E – 2
Q103	E – 1
DIODE	
D101	E – 1
D152	D – 3
D153	D – 3
D154	F – 2
D155	D – 4
COIL	
L 1	F – 1
L 5	B – 1
L103	D – 2
L105	F – 1
L151	E – 3
L162	E – 2
TRANSFORMER	
T 1	C – 1
T 2	B – 2
T 3	B – 1
T 4	C – 2
T101	E – 2
T151	E – 2
T152	D – 2
CAPACITOR	
C 1	F – 1
C 2	C – 1
C 4	B – 1
C 5	C – 1
C 6	C – 1
C 7	B – 1
C 8	B – 2
C 9	B – 2
C 10	B – 2
C 11	B – 1
C 12	B – 1
C 13	B – 2
C 14	B – 2
C 15	C – 2
C 16	C – 2
C 17	C – 2
C 18	C – 2
C 19	D – 2
C 20	C – 2

REF. No	INDEX
C 21	C – 2
C 22	C – 2
C 24	B – 2
C 25	B – 1
C 26	A – 1
C 27	A – 2
C 28	B – 2
C 29	A – 2
C101	D – 2
C102	D – 2
C103	D – 2
C104	D – 2
C105	D – 2
C106	D – 1
C107	D – 1
C108	D – 2
C109	D – 1
C110	D – 2
C111	D – 2
C112	E – 1
C113	E – 2
C114	E – 1
C115	E – 2
C116	E – 1
C117	E – 1
C118	E – 1
C119	E – 1
C120	E – 1
C151	F – 3
C153	E – 3
C154	F – 3
C155	F – 3
C156	E – 3
C157	E – 3
C158	E – 3
C159	E – 2
C160	E – 2
C161	E – 2
C162	E – 2
C163	E – 2
C164	E – 3
C165	E – 3
C166	F – 2
C167	F – 2
C168	E – 2
C169	D–2, D–3
C170	D – 3
C210	A – 2
C211	A – 2
RESISTOR	
R 1	C – 1
R 2	B – 1
R 3	C – 2

REF. No	INDEX
R 8	A – 1
R 10	A – 1
R 11	A – 1
R 12	A – 2
R 13	A – 2
R 14	A – 2
R 15	A – 2
R 17	A – 2
R 19	C – 1
R102	D – 1
R103	E – 2
R104	D – 2
R105	D – 2
R106	E – 2
R107	E – 2
R108	F – 1
R109	E – 1
R110	E – 1
R111	E – 1
R112	F – 1
R151	F – 2
R152	F – 2
R158	F – 3
R159	D – 3
R160	E – 2
R161	E – 2
R162	E – 2
R164	E – 3
R165	F – 2
R166	F – 2
R167	E – 3
R168	D – 3
R169	D – 3
R170	D – 2
VC	
VC 1	G – 2
VC 2	B – 1
VC 3	B – 1
VC102	D – 1
VC103	E – 1
PL 1	B – 3

PWB–AF

REF. No	INDEX
IC	
IC451	C – 5
DIODE	
D351	D – 5
COIL	
L351	D – 6
L352	E – 5
L353	E – 5
L454	D – 5
CAPACTOR	
C355	C – 5
C362	C – 5
C363	C – 5
C364	D – 5
C365	E – 6
C453	C – 5
C454	C – 5
C458	C – 5
C459	D – 5
C460	D – 5
C461	C – 5

PWB–VOL

REF. No	INDEX
CAPACITOR	
C451	G – 6
C452	H – 4
C453	H – 4
RESISTOR	
R451	H – 4
R456	H – 4
R458	H – 4
VR451	H – 6
VR452	H – 6