ORDER NO. TD98090617C2

Service Manual

FM-MW-SW 1~14 16-Band Receiver

Radio

RF-B33

Colour

(K).....Black

Area

Suffix for Model No.	Area	Colour
[EG]	Europe	(K)

■SPECIFICATIONS

Frequency range:

FM; 87.50-108.00MHz
MW; 522-1,710kHz (at 9 kHz step)
520-1,710kHz (at 10 kHz step)
SW; SW1 (120m): 2.300-2.495MHz
SW2 (90m): 3.200-3.400MHz
SW3 (75m): 3.850-4.000MHz
SW4 (60m): 4.750-5.060MHz
SW5 (49m): 5.900-6.200MHz
SW6 (41m): 7.100-7.350MHz
SW7 (31m): 9.400-9.990MHz
SW8 (25m): 11.600-12.100MHz
SW9 (21m): 13.570-13.870MHz
SW10 (19m): 15.100-15.800MHz
SW11 (16m): 17.480-17.900MHz
SW12 (15m): 18.900-19.020MHz
SW13 (13m): 21.450-21.750MHz
SW14 (11m): 25.600-26.100MHz

Intermediate Frequency:

FM:10.7MHz
MW:456kHz

Dimensions: 167.7(W)x104.5(H)x36.8(D)mm
Weight: 376 g (without batteries)

Sensitivity:

FM; 5.0 μV/ 50 mW SP output (30dB)
MW; 631.0 μV/ 50 mW SP output (20dB)
SW1; 44.7μV/ 50 mW SP output (20dB)
SW2; 17.8μV/ 50 mW SP output (20dB)
SW3; 12.6 μV/ 50 mW SP output (20dB)
SW4; 10.0 μV/ 50 mW SP output (20dB)
SW5; 7.1 μV/ 50 mW SP output (20dB)
SW6; 6.7 μV/ 50 mW SP output (20dB)
SW7; 11.2 μV/ 50 mW SP output (20dB)
SW8; 12.6 μV/ 50 mW SP output (20dB)
SW9; 11.9 μV/ 50 mW SP output (20dB)
SW10; 7.9μV/ 50 mW SP output (20dB)
SW11; 7.1μV/ 50 mW SP output (20dB)
SW12; 7.1μV/ 50 mW SP output (20dB)
SW13; 7.9 μV/ 50 mW SP output (20dB)
SW14; 7.5 μV/ 50 mW SP output (20dB)

Power requirement:

Battery; 6 V (4 R6 / LR6, UM-3 batteries)
AC; DC IN 6 V with AC adaptor
(6 V / 300 mA center negative)

Speaker: 6.5 cm,8Ω
Power output: 150 mW (RMS...max.)
Output jack: PHONES ϕ 3.5 30Ω

Notes:

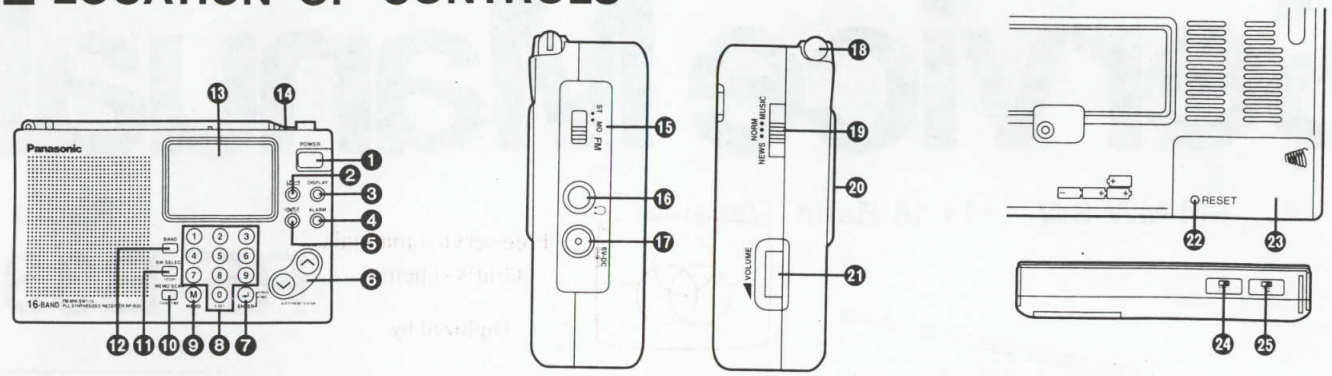
1.Weights and dimensions shown are approximate.
2.Design and specifications are subject to change without notice.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic®

■ LOCATION OF CONTROLS



1. Power on/off button (POWER)
2. Sleep button ( )
3. Display button (DISPLAY)
4. Standby button (ALARM)
5. Alarm by radio or buzzer select button ( )
6. Manual/auto scan tuning buttons (TUNING)
7. Enter command button for frequency/time (ENTER/FREQ, TIME)
8. Numbered buttons for frequency/time
9. Memory set button (M, MEMO)
10. Memory scan/dual time button (MEMO SCAN, DUAL TIME)
11. SW meter band/12/24 Hour select button (SW SELECT, 12/24H)
12. Radio band select button (BAND)
13. LCD display
14. Light button (LIGHT)
15. FM stereo/mono switch (ST, MO, FM)
16. Earphones jack ( )
17. DC IN jack (6V-DC)
18. Telescopic Antenna
19. Music/norm/News switch (MUSIC, NORM, NEWS)
20. Folding stand
21. Volume control (VOLUME)
22. Reset button (RESET)
23. Battery compartment
24. 9 K/10 K MW step switch (MW STEP)
25. Hold switch ( )

■ DISASSEMBLY INSTRUCTIONS

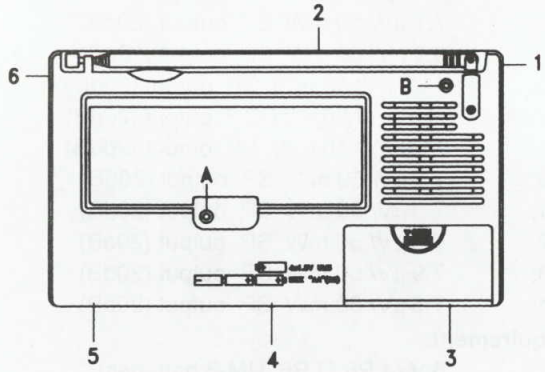


Fig.1

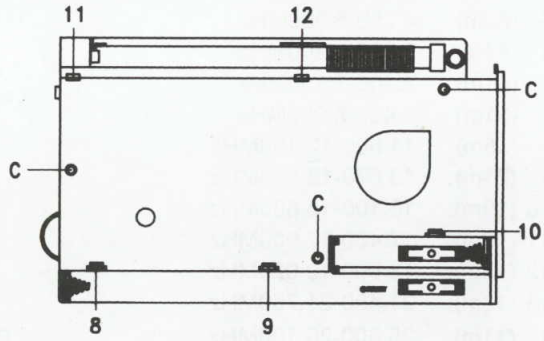


Fig.2

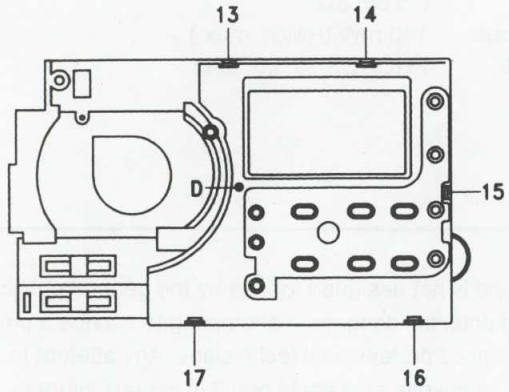


Fig.3

■TO REMOVE BACK COVER (See Fig.1)

a. Unscrew 2 PTP screw A(2.6x16), B(2.6x28) & release back cover from hooks 1~6.
b. Separate front and back cabinet.

■TO REMOVE MAIN PCB (See Fig.2)

a. Unscrew 3 PTP screw C(2x6).
b. Release Main PCB from hooks 8~12 to remove it.

■TO REMOVE CONTROL PCB (See Fig.2)

a. Unscrew 1 PTP screw D(2x6).
b. Release Control PCB from hooks 13~17 to remove it.

■ Measurements and Adjustments

● ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

- Set power source voltage to 6 V DC.
- Set operation switch to ON.
- Set band selector switch to FM,MW or SW1-14.
- Set volume control to maximum.
- Output of signal generator should be no higher than necessary to obtain an output reading.

(The parts other than ones listed below are aligned at the factory before they are supplied. Therefore,alignment of those parts is unnecessary when used for replacement.)

●FM ALIGNMEN

	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONIC VOLTMETER or OSCILLOSCOPE)	ADJUSTMENT (Refer to Fig.1)	REMARKS
	CONNECTIONS	FREQUENCY				
	FM-RF ALIGNMENT					
(1)	Connect to test point TP1 through FM dummy antenna. Negative side to test point TP2 .	108MHz	Tuning capacitor fully open.	Phones Jack (30 Ω) Fabricate the plug as shown in Fig.2 and then connect the lead wires of the plug to the measuring instrument.	L4 (FM OSC Coil)	Adjust for VT (JW 1 Pin 6) to 8.2V.
(2)	〃	90MHz	Tune to signal.	〃	L2 (FM ANT Coil)	Adjust for maximum output.
(3)	〃	106MHz	〃	〃	VT5 (FM ANT Trimmer)	1.Adjust for maximum output. 2.Repeat steps (2)～(3)

● AM ALIGNMENT

	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONIC VOLTMETER or OSCILLOSCOPE)	ADJUSTMENT (Refer to Fig.1)	REMARKS
	CONNECTIONS	FREQUENCY				
	AM-IF ALIGNMENT					
(4)	IC3 Pin 1 connect to test point TP1 through FM dummy antenna. Negative side to test point TP2 .	455kHz	Point of non-interference. (on/about 600kHz)	Phones Jack (30 Ω) Fabricate the plug as shown in Fig.2 and then connect the lead wires of the plug to the measuring instrument.	T5 (AM IFT)	Adjust for maximum output.
	MW-RF ALIGNMENT					
(5)	Fashion a loop of several turns of wire and radiate a signal into the loop ant. of receiver.	520kHz	Tuning capacitor fully closed.	〃	T4 (MW OSC Coil)	Adjust for VT (JW 1 Pin 6) to 1.2V.
(6)	〃	1710kHz	Tuning capacitor fully open.	〃	VT2 (MW OSC Trimmer)	Adjust for VT to 8.2V.
(7)	〃	600kHz	Tune to signal.	〃	(*1) T11 (MW ANT Coil)	Adjust for maximum output. Adjust T11 by moving coil along the ferrite core.
(8)	〃	1400kHz	〃	〃	VT4 (MW ANT Trimmer)	Adjust for maximum output. Repeat steps (9)～(10)
	(*1) Fix antenna coil with wax after completing alignment.					

NOTE:

Before SW-RF alignment,be sure to prepare the following;

1.Set the output frequency of signal generator to 1000 kHz.

2.Turn the set to MW-band.

3.Adjust the tuning capacitor so that it receives 1000kHz of output frequency and its output becomes maximum .

4.Fix tuning capacitor as this position, and make alignment of SW1-SW2 on the following table.

	BAND	SIGNAL GENERATOR or SWEEP GENERATOR		INDICATOR (ELECTRONIC VOLTMETER or OSCILLOSCOPE)	ADJUSTMENT (Refer to Fig.1 and Fig.2)	REMARKS
		CONNECTIONS	FREQUENCY			
		SW-RF ALIGNMENT				
(9)	SW1	Connect to test point TP1 through ceramic capacitor (0.001μ F). Negative side to test point TP2 .	2.3MHz	Phones Jack (30 Ω) Fabricate the plug as shown in Fig.2 and then connect the lead wires of the plug to the measuring instrument.	T3 (SW1 OSC Coil)	Adjust for VT to 1.2 V
(10)	〃	〃	7.35MHz	〃	VT3 (SW1 OSC Trimmer)	Adjust for VT to 9 V
(11)	〃	〃	3.2MHz	〃	T8 (SW1 ANT Coil)	Adjust for maximum output.
(12)	〃	〃	7.1MHz	〃	VT6 (SW1 ANT Trimmer)	Adjust for maximum output. Repeat steps (11)～(12)
(13)	SW2	〃	7.355MHz	〃	T6 (SW2 OSC Coil)	Adjust for VT to 1.0 V
(14)	〃	〃	26.1MHz	〃	VT1 (SW2 OSC Trimmer)	Adjust for VT to 9 V
(15)	〃	〃	9.4MHz	〃	T9 (SW2 ANT Coil)	Adjust for maximum output.
(16)	〃	〃	21.45MHz	〃	VT7 (SW1 ANT Trimmer)	Adjust for maximum output. Repeat steps (15)～(16)

●ALIGNMENT POINTS

Please refer to the Circuit Board and Wiring Connection Diagram to locate test Points .

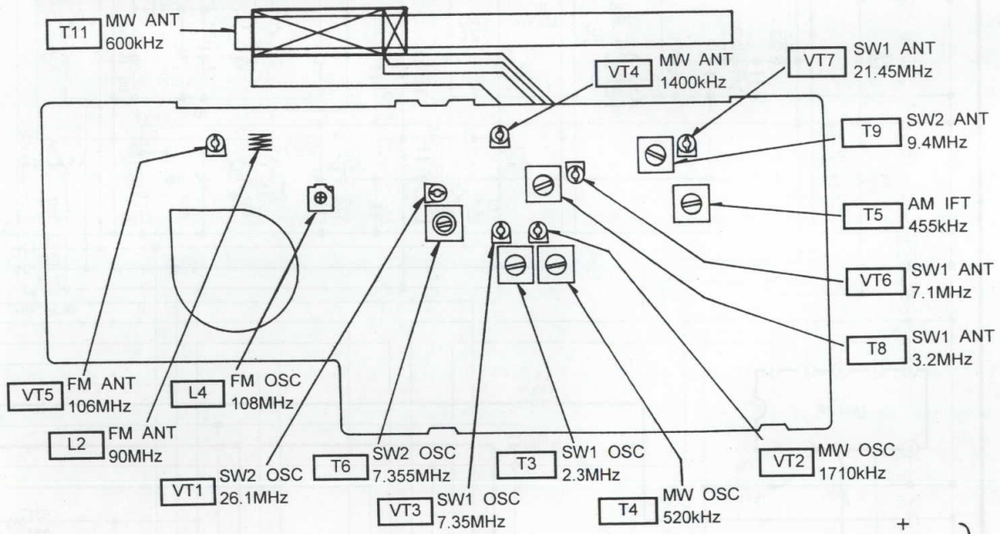


Fig.1

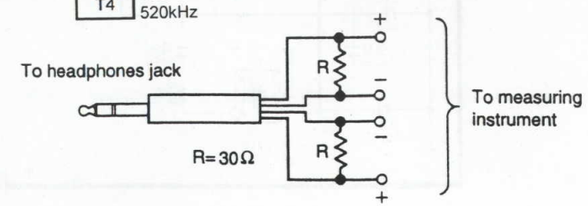
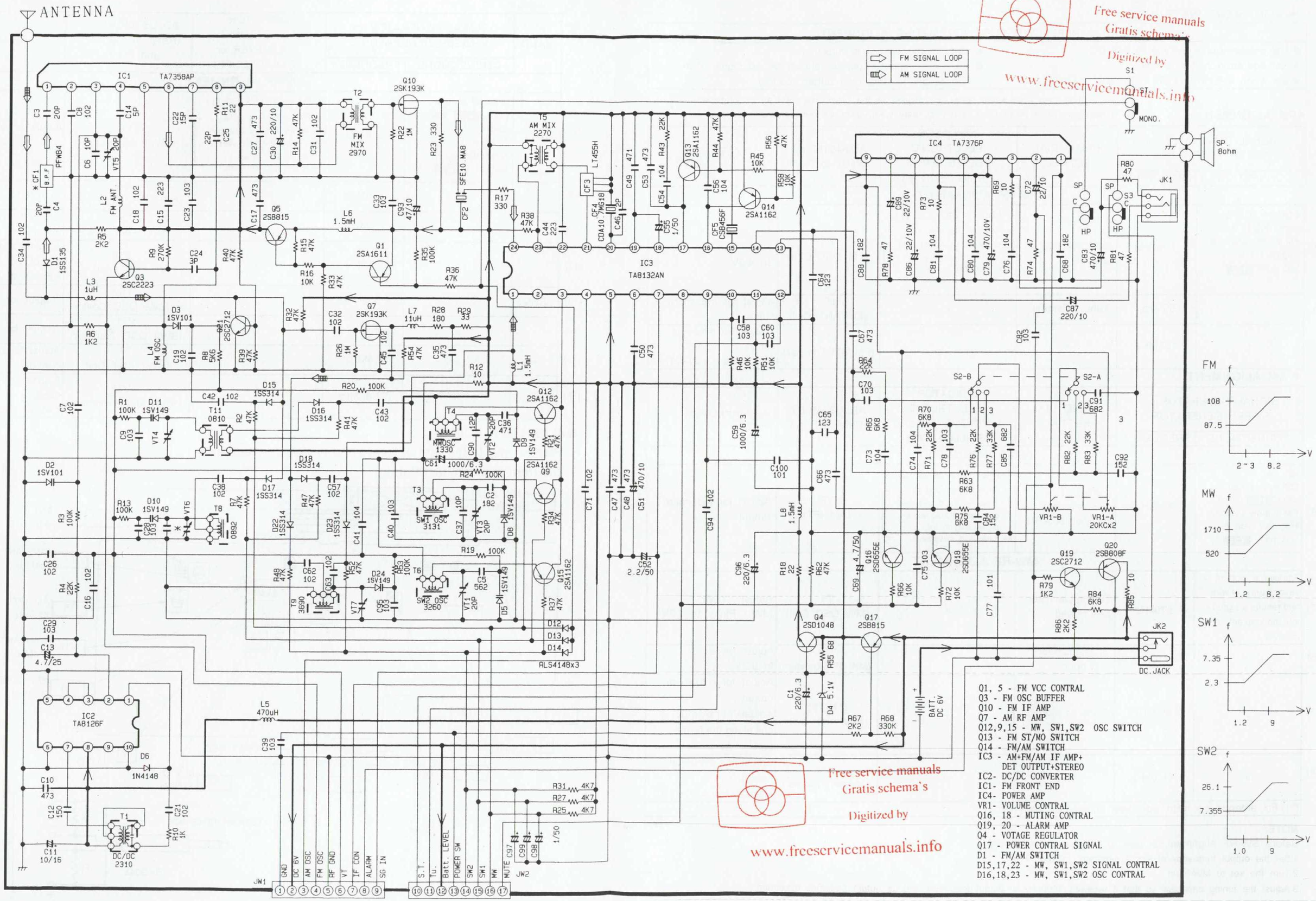
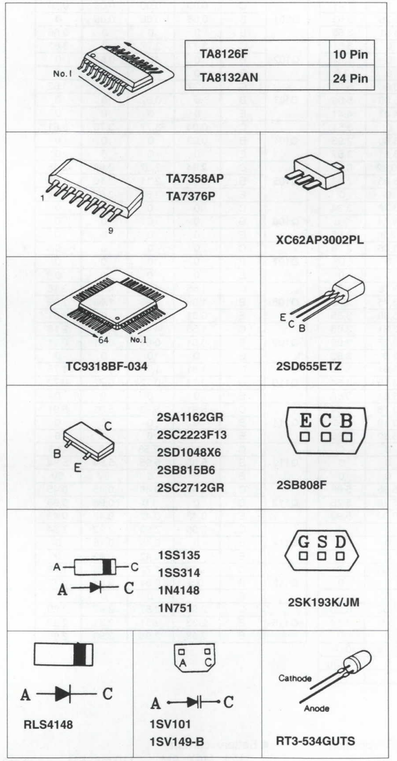


Fig.2

■ SCHEMATIC DIAGRAM (Main Circuit)



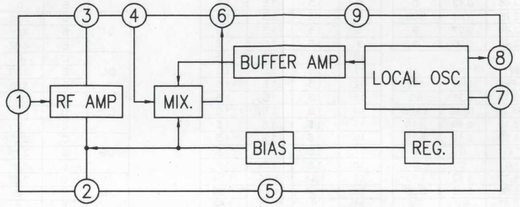
■ Type Illustration of IC's, Transistors and Diodes



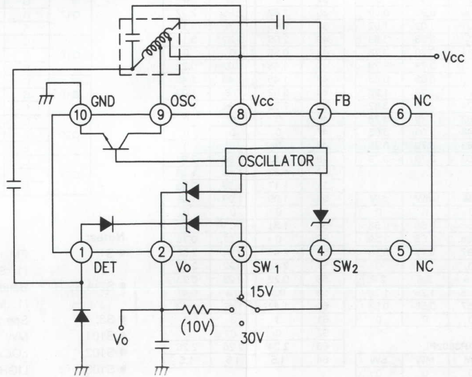
(E:Emitter C:Collector B:Base)
(S:Source G:Gate D:Drain)
(A:Anode C:Cathode)

■ IC CIRCUIT BLOCK DIAGRAM

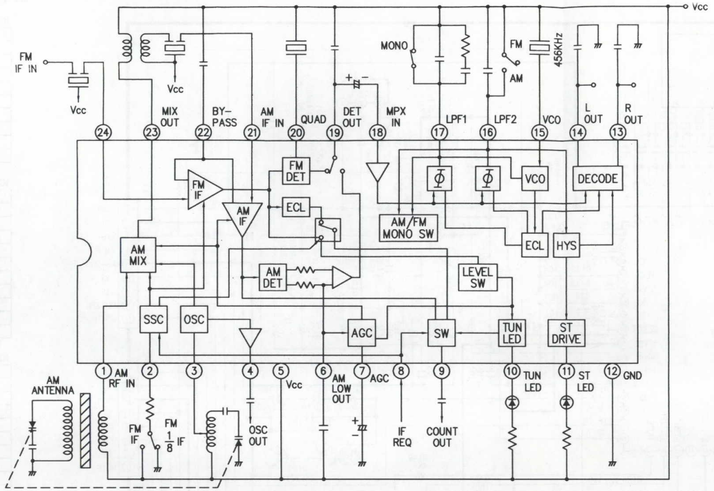
IC1-TA7358AP



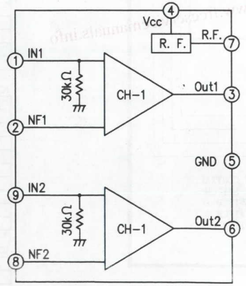
IC2-TA8126F



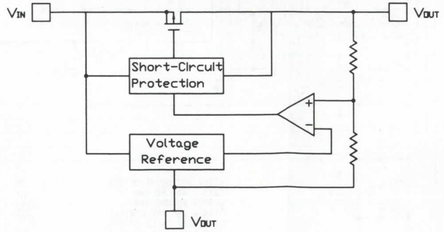
IC3-TA8132AN



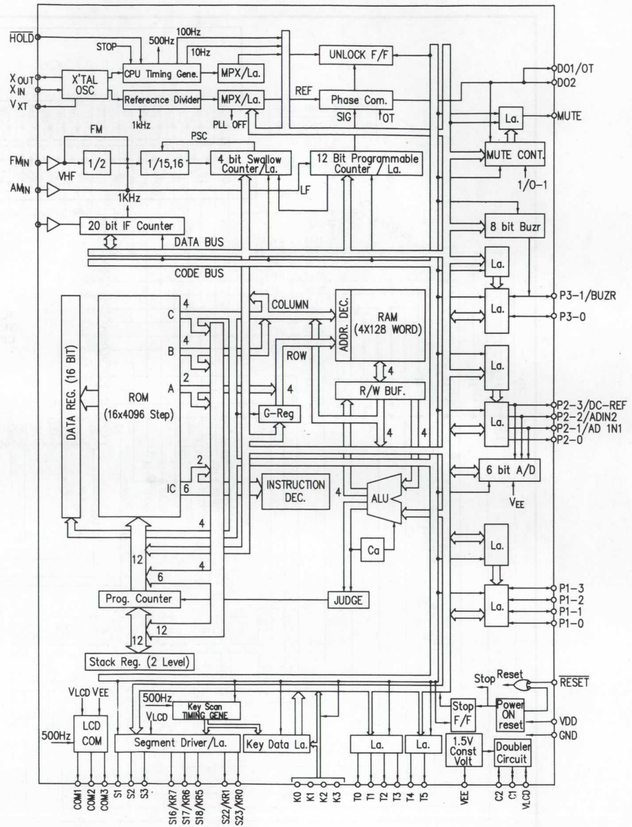
IC4-TA7376P



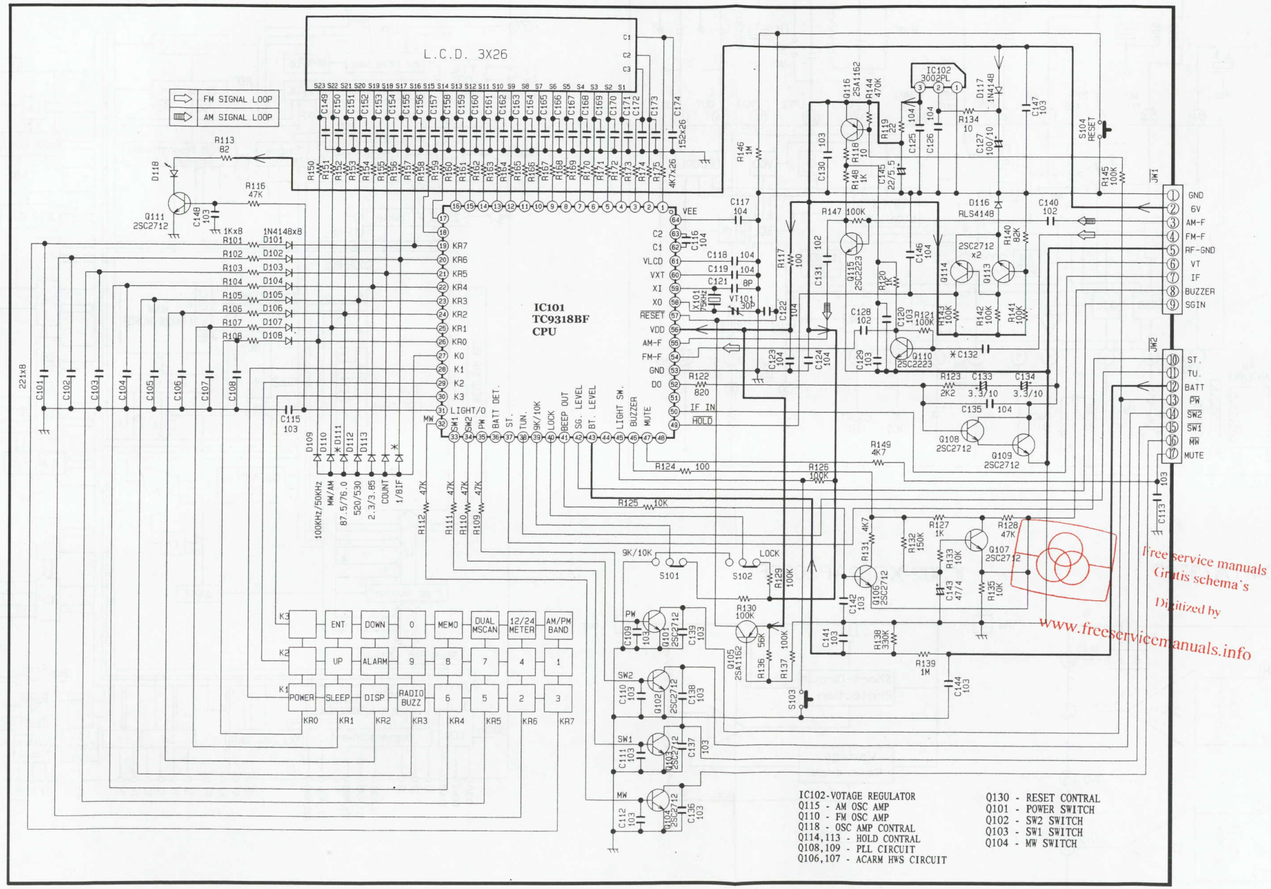
IC102-XC62AP3002PL



IC101-TC9318



■ SCHEMATIC DIAGRAM (PLL Circuit)



■ ICS' & TRANSISTORS' VOLTAGE LIST

IC1-TA7358AP

PIN	FM	MW	SW
1	0.83	0	0
2	1.54	0.05	0.06
3	3.48	0.25	0
4	1.52	0.06	0.05
5	0	0	0
6	3.48	0.12	0
7	2.76	0.08	0.03
8	3.46	0.07	0
9	3.48	0.05	0

IC2-TA8126F

PIN	FM	MW	SW
1	8.19	8.21	8.2
2	15.67	15.66	15.66
3	8.19	8.19	8.19
4	8.19	8.19	8.19
5	0	0	0
6	0	0	0
7	1.12	1.12	1.12
8	5.89	5.85	5.85
9	5.87	5.8	5.8
10	0	0	0

IC3-TA8132AN

PIN	FM	MW	SW
1	3.62	3.79	3.79
2	0.98	0.97	0.88
3	3.4	3.77	3.69
4	3.63	3.43	3.43
5	3.63	3.79	3.79
6	3.63	3.17	3.17
7	0.44	0.28	0.27
8	0	0	0
9	3.62	3.79	3.79
10	3	3.43	3.18
11	3	3.43	3.18
12	0	0	0
13	0.99	0.99	0.99
14	1.01	1.02	1.02
15	3	3.56	3.56
16	3.31	3.79	3.78
17	3.62	3.79	3.78
18	0.63	0.63	0.63
19	1	1.28	1.28
20	2.74	3.64	3.62
21	3.62	3.79	3.78
22	3.44	3.05	3.05
23	3.63	3.79	3.79
24	3.62	3.79	3.79

IC4-TA7376P

PIN	FM	MW	SW
1	0	0	0
2	0.58	0.58	0.58
3	2.66	2.58	2.59
4	5.97	5.77	5.78
5	0	0	0
6	2.6	2.6	2.6
7	1.25	1.26	1.26
8	0.57	0.58	0.58
9	0	0	0

IC102-XC62AP3002PL

PIN	FM	MW	SW
1	0	0	0
2	5.2	5.29	5.15
3	3	3	3.01

IC101-TC9318BF

PIN	FM	MW	SW
1	1.5	1.5	1.5
2	1.5	1.5	1.5
3	1.5	1.5	1.5
4	1.5	1.5	1.5
5	1.5	1.5	1.5
6	1.5	1.5	1.5
7	1.5	1.5	1.5
8	1.5	1.5	1.5
9	1.5	1.5	1.5
10	1.5	1.5	1.5
11	1.5	1.5	1.5
12	1.5	1.5	1.5
13	1.5	1.5	1.5
14	1.5	1.5	1.5
15	1.5	1.5	1.5
16	1.5	1.5	1.5
17	1.5	1.5	1.5
18	1.5	1.5	1.5
19	1.54	1.54	1.54
20	1.54	1.54	1.54
21	1.54	1.54	1.54
22	1.54	1.54	1.54
23	1.54	1.54	1.54
24	1.54	1.54	1.54
25	1.54	1.54	1.54
26	1.54	1.54	1.54
27	1.07	1.24	1.1
28	1.3	1.24	1.22
29	1.25	1.25	1.17
30	1.25	1.17	1.18
31	0	0	0
32	0	2.92	0
33	0	0	0
34	0	0	2.65
35	2.47	2.92	2.65
36	0	0	0
37	0	0	0
38	2.82	2.96	2.92
39	2.96	3.39	3.14
40	2.96	3.39	3.14
41	0.39	0	0
42	1.48	0.02	0.22
43	1.45	1.45	1.45
44	0.62	0.6	1.07
45	2.82	2.96	2.92
46	0	0	0
47	0	0	0
48	0	0	0
49	2.82	2.96	2.92
50	1.33	1.49	1.38
51	1.17	1.33	0.53
52	1.09	1.09	1.08
53	0	0	0
54	1.31	0	0
55	0	1.21	0.78
56	2.48	2.94	2.66
57	2.48	0.22	2.66
58	0.22	0.23	0.23
59	0.5	0.4	0.47
60	1.42	1.42	1.42
61	3	3	3
62	0	0	0
63	2.24	2.26	2.26
64	1.5	1.5	1.5

Transistors

	PIN	MW	SW1	SW2	FM
Q1	C	3.81	3.81	3.81	2.41
	B	3.20	3.20	3.20	3.63
	E	3.81	3.81	3.81	3.65
Q3	C	0	0	0	3.51
	B	0	0	0	1.61
	E	0	0	0	0.9
Q4	C	5.95	5.96	5.96	5.94
	B	5.06	5.06	5.06	5.06
	E	4.42	4.42	4.42	4.41
Q5	C	0	0	0	3.51
	B	3.80	3.80	3.80	2.93
	E	3.81	3.81	3.81	3.57
Q7	C	-0.22	0	-0.22	0.16
	B	3.03	3.03	3.03	2.87
	E	0	0	0	0
Q9	C	3.80	3.79	3.76	3.34
	B	3.75	3.18	3.74	3.6
	E	3.81	3.80	3.8	3.65
Q10	C	2.87	2.87	2.86	2.76
	B	0	0	0	0
	E	0	0	0	0
Q12	C	3.80	3.79	3.76	3.35
	B	3.19	3.75	3.75	3.6
	E	3.81	3.81	3.80	3.65
Q13	C	3.81	3.81	3.81	3.65
	B	3.15	3.15	3.15	2.99
	E	3.82	3.81	3.81	3.65
Q14	C	3.81	3.81	3.81	3.35
	B	3.16	3.16	3.16	3.64
	E	3.81	3.81	3.81	3.65
Q15	C	3.79	3.79	3.76	3.34
	B	3.75	3.75	3.16	3.6
	E	3.81	3.81	3.80	3.65
Q16	C	0	0	0	0
	B	0	0	0	0
	E	0	0	0	0
Q17	C	5.96	5.96	5.96	5.95
	B	5.26	5.26	5.26	5.25
	E	6.00	6.00	6.00	5.99
Q18	C	0	0	0	0
	B	0	0	0	0
	E	0	0	0	0
Q19	C	6.04	5.85	6.06	5.61
	B	0	0	0	0
	E	0	0	0	0
Q20	C	6.02	6.02	6.02	6.00
	B	7.80	5.49	8.5	6.14
	E	0	0	0	0
Q21	C	2.25	2.26	3.79	0.07
	B	0	0	0	0.64
	E	0	0	0	0

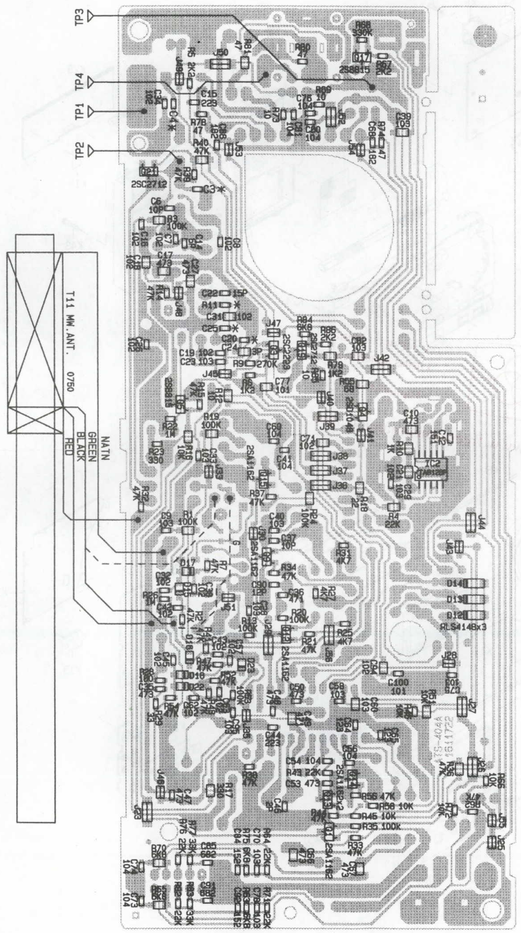
	PIN	MW	SW1	SW2	FM
Q101	C	0.09	0.09	0.09	0.10
	B	0.66	0.66	0.66	0
	E	0	0	0	0.66
Q102	C	3.77	3.77	0	3.62
	B	0	0	0.62	0
	E	0	0	0	0
Q103	C	3.77	0	3.76	3.62
	B	0	0.62	0	0
	E	0	0	0	0
Q104	C	0.04	3.77	3.76	3.61
	B	0.62	0	0	0
	E	0	0	0	0
Q105	C	2.94	2.67	2.66	2.48
	B	2.37	2.11	2.10	1.93
	E	2.94	2.67	2.67	2.48
Q106	C	0	0	0	0
	B	0	0	0	0
	E	0	0	0	0
Q107	C	0	0	0	0
	B	0	0	0	0
	E	0	0	0	0
Q108	C	1.55	4.46	4.08	2.18
	B	1.09	1.08	1.08	1.09
	E	0.61	0.61	0	0.61
Q109	C	1.55	4.46	4.08	2.18
	B	0.61	0.61	0.61	0.61
	E	0	0	0	0
Q110	C	1.81	1.79	1.79	1.78
	B	0.73	0.72	0.72	0.72
	E	0	0	0	0
Q111	C	5.91	5.92	5.92	5.91
	B	0	0	0	0
	E	0	0	0	0
Q112	C	-3.3	-2.55	-5	-3.3
	B	5.95	5.95	5.94	5.94
	E	6	6	6V	6V
Q113	C	0.46	0.46	0.45	0.45
	B	0	1.0	0.98	0.98
	E	0.43	0.42	0.42	0.42
Q114	C	2.96	2.93	2.93	2.84
	B	0	0.46	0.46	0
	E	0	0.42	0.42	0
Q115	C	1.76	1.72	1.75	1.78
	B	0.5	0.64	0.65	0.72
	E	0	0	0	0
Q116	C	2.90	2.87	2.87	2.85
	B	2.33	2.31	2.31	2.29
	E	2.99	2.96	2.96	2.95

Notes:

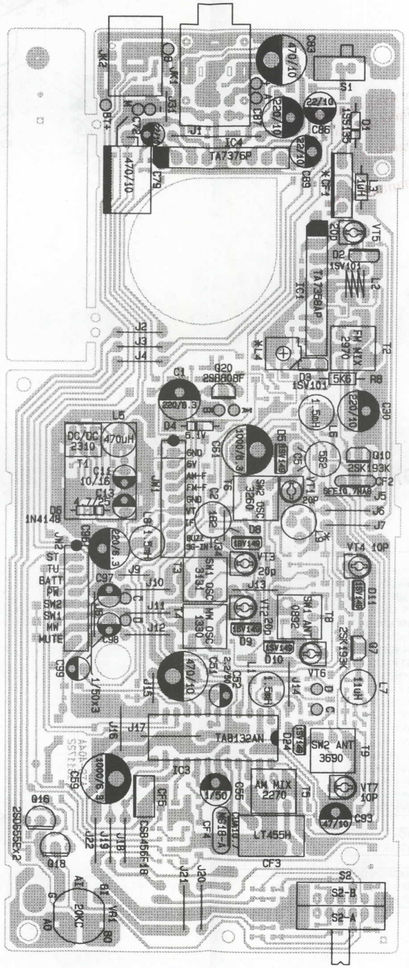
- S1: FM mode switch in "ST" position. (1...ST, 2...MONO).
- S2-A,S2-B: Band select switch in "MUSIC" position. (1...MUSIC, 2...NORM, 3...NEWS)
- S3: Speaker/Phones select switch.
- S101: MW select switch in "10K" position
- S102: LOCK switch in "LOCK" position
- S103: LIGHT switch in "OFF" position.
- S104: RESET switch in "OFF" position
- VR1-A,VR1-B: Volume control VR.
- Battery current:
  Vol, MAX AM.....110 mA, FM.....128 mA
  Vol, MIN AM.....58 mA, FM.....67 mA
  Measurement instruction
  AM (MW/SW): 74 dB/m, 30% Mod
  FM: 60 dB, 30% Mod.
- →+ B Voltage Line.
- FM Signal Line.
- AM Signal Line.
- **This schematic diagram may be modified at any time with the development of new technology.**

■ CIRCUIT BOARD CONNECTION DIAGRAM

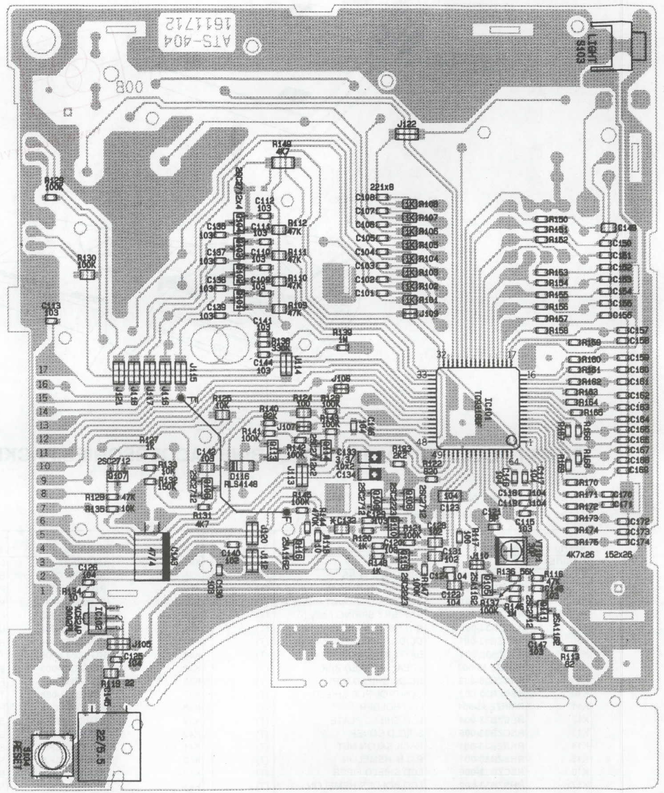
A MAIN P.C.B.(SIDE : A)



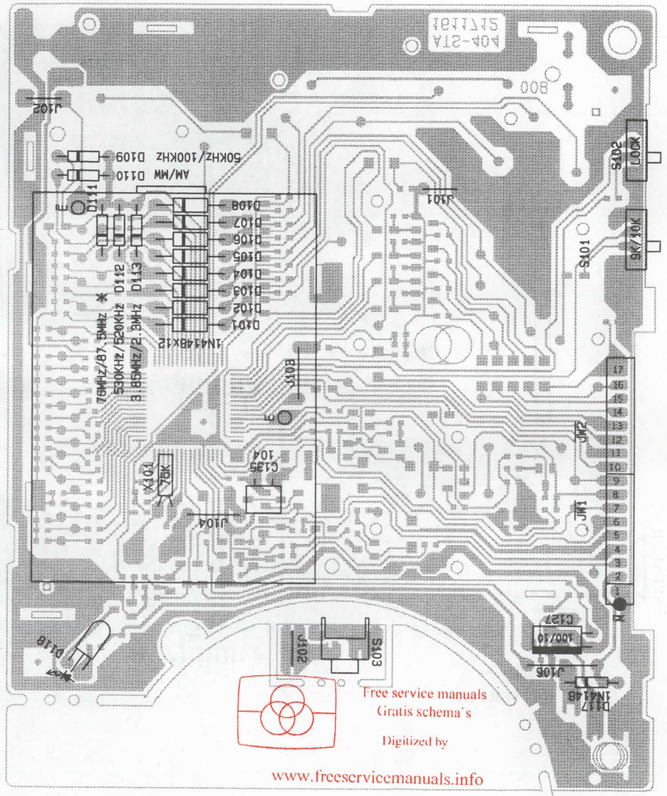
A MAIN P.C.B.(SIDE : B)



B PLL P.C.B.(SIDE : A)

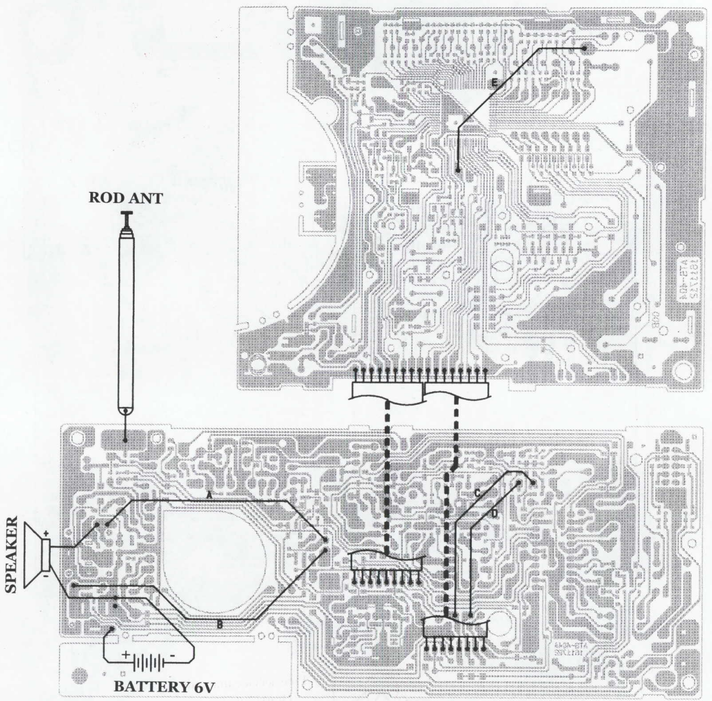


B PLL P.C.B.(SIDE : B)

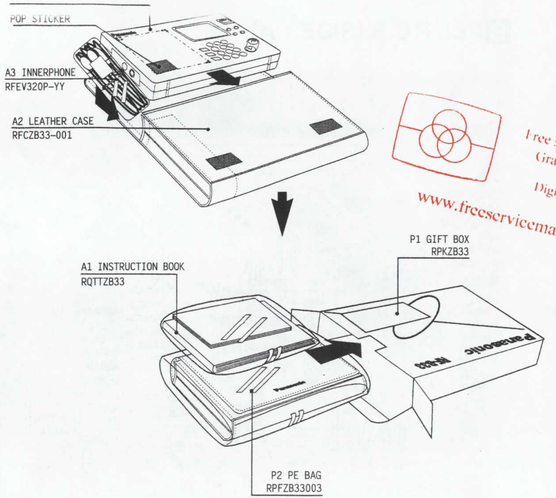


RF-B33

■ WIRING DIAGRAM



■ PACKAGING



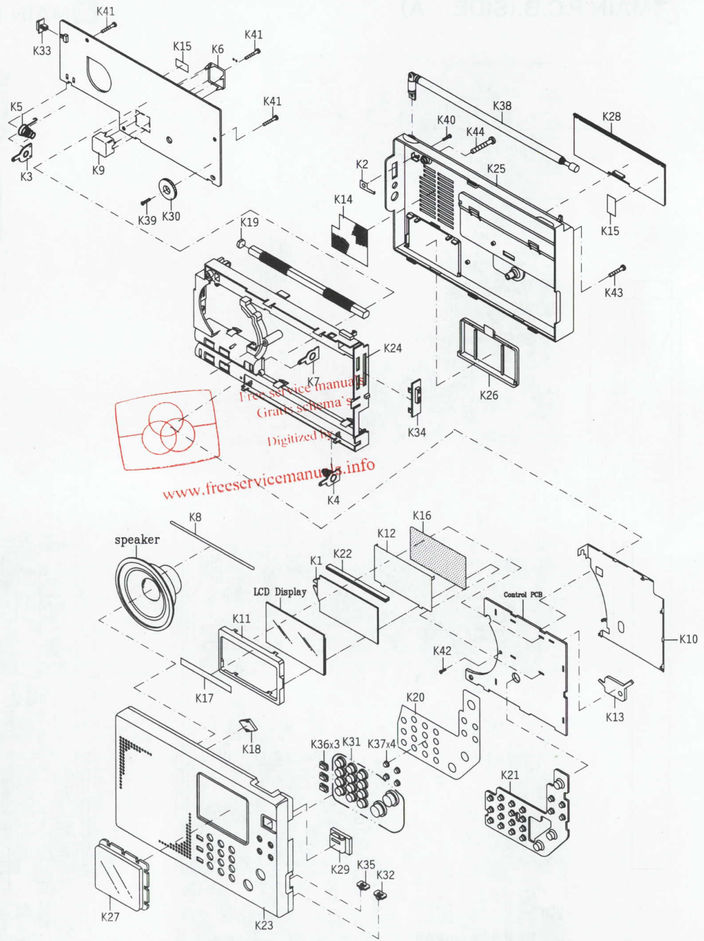
■ REPLACEMENT PARTS LIST(CABINET,ACCESSORIES,PACKING)

Notes:
1. The (T) Indicates parts that are supplied **TAMACO**
2. The (M) Indicates parts that are supplied **MESA**

Ref No.	Parts No.	Parts Name & Description	Values & Remarks
CABINET PARTS			
K1	**RMRZB33-001**	LCD LIGHT LENS	(T)
K2	**RJHZB33-001**	ROD ANT TERMINAL	(T)
K3	**RJCZB33-001**	BATTERY CONDUCT PLATE (+)	(T)
K4	**RJCZB33-002**	BATTERY SPRING Ass'y (-)	(T)
K5	**RJCZB33-003**	BATTERY SPRING (-)	(T)
K6	**RSCZB33-001**	DC/DC SHIELD (DOWN)	(T)
K7	**RJCZB33-004**	BATTERY CONTACT (+)	(T)
K8	**RMNZB33-002**	SPEAKER FIXED BAR	(T)
K9	**RSCZB33-002**	DC/DC SHIELD (UP)	(T)
K10	**RSCZB33-003**	CONTROL PCB SHIELD	(T)
K11	**RMNZB33-001**	LCD HOLDER	(T)
K12	**RSCZB33-004**	LCD SHIELD PLATE	(T)
K13	**RSCZB33-005**	SHIELD COVER	(T)
K14	**RKNZB33-001**	BACK SALON NET	(T)
K15	**RHSZB33-001**	P.C.B. HEMELON	(T)
K16	**RSCZB33-006**	LCD SHIELD FIBER	(T)
K17	**RHSZB33-002**	LCD HOLDER HEMELON	(T)
K18	**RMXZB33-001**	EVA SPACER (A)	(T)
K19	**RMXZB33-002**	BAR ANT SPACER II	(T)
K20	**RMXZB33-004**	KEYBOARD SPACER	(T)
K21	**RSQZB33-001**	KEYBOARD RUBBER	(T)
K22	**RSQZB33-002**	CONDUCT RUBBER	(T)
K23	**RFKGFB33EG-K**	FRONT CABINET	(T)
K24	**RFKJFB33-K**	MIDDLE CHASSIS	(T)
K25	**RFKHFB33EG-K**	REAR CABINET	(T)
K26	**RFKMFB33-K**	BATTERY COVER	(T)

Ref No.	Parts No.	Parts Name & Description	Values & Remarks
K27	**RKWZB33-001**	LCD WINDOWS	(T)
K28	**RFKNFB33-K**	BACK SUPPORTER	(T)
K29	**RGVZB33-001**	POWER KNOB	(T)
K30	**RGXZB33-001**	VOLUME KNOB	(T)
K31	**RGVZB33-002**	FUNCTION KNOB Ass'y	(T)
K32	**RGVZB33-003**	LOCK KNOB	(T)
K33	**RGVZB33-004**	ADJUST KNOB	(T)
K34	**RGVZB33-005**	TONE KNOB	(T)
K35	**RGVZB33-006**	9K/10K KNOB	(T)
K36	**RGVZB33-007**	FUNCTION KNOB	(T)
K37	**RGVZB33-008**	TIME SET KNOB	(T)
K38	**XEAZB33-001**	ROD ANT	(T)
K39	**XTNR14+5CFN**	SCREW (VR)	(T)
K40	**XTNR26+5CFZ**	SCREW (ROD ANT)	(T)
K41	**XTNR2+6CFN**	SCREW (CHASSIS)	(T)
K42	**XTNR2+6CFZ**	SCREW (CHASSIS)	(T)
K43	**XTNR26+16CFZ**	SCREW (CABINET)	(T)
K44	**XTNR26+28CFZ**	SCREW (CABINET)	(T)
PACKING MATERIALS			
P1	**RPKZB33**	GIFT BOX	(T)
P2	**RPFZB33003**	PE BAG (SET)	(T)
ACCESSORIES			
A1	**RQTTZB33**	INSTRUCTION BOOK	(T)
A2	**RFCZB33-001**	LEATHER CASE	(T)
A3	**RFEV320P-YY**	INNERPHONES	(T)

■ CABINET PARTS LOCATION



■ REPLACEMENT PARTS LIST(ELECTRICAL)

Notes:
1. The (T) Indicates parts that are supplied **TAMACO**
2. The (M) Indicates parts that are supplied **MESA**

Ref No.	Parts No.	Parts Name & Description	Values & Remarks
INTEGRATED CIRCUITS, TRANSISTORS AND DIODES			
IC1	**TA7358AP**	I.C.	(T)
IC2	**TA8126F**	I.C.	(T)
IC3	**TA8132AN**	I.C.	(T)
IC4	**TA7376P**	I.C.	(T)
IC101	**TC9318BF-034**	I.C.	(T)
IC102	**XC62AP3002PL**	I.C.	(T)
Q1,9,12,13, 14,15,105, 116	**2SA1162GR**	Transistor	(T)
Q3,110,115	**2SC2223F13**	Transistor	(T)
Q4	**2SD1048X6**	Transistor	(T)
Q5,17	**2SB815B6**	Transistor	(T)
Q7,10	**2SK193K/JM**	Transistor	(T)
Q16,18	**2SD655ETZ**	Transistor	(T)
Q19,21,101, 102,103, 104,106, 107,108, 109,111, 113,114,	**2SC2712GR**	Transistor	(T)
Q20	**2SB808F**	Transistor	(T)
D1	**1SS135**	Diode	(T)
D2,3	**1SV101**	Diode	(T)
D4	**1N751**	Diode	(T)
D5,8,9,10 ,11,24	**1SV149-B**	Diode	(T)
D6,101~108 ,117	**1N4148T/R**	Diode	(T)
D12,13,14, 116	**RLS4148**	Diode	(T)
D15~18,22, 23	**1SS314**	Diode	(T)
D118	**RT3-534YGTS**	LED	(T)
COILS AND TRANSFORMERS			
T1	**RLOZB33001**	ADJ COIL	(T)
T2	**RLIZB33002**	ADJ COIL	(T)
T3	**RLOZB33003**	ADJ COIL	(T)
T4	**RLOZB33004**	ADJ COIL	(T)
T5	**RLIZB33005**	ADJ COIL	(T)
T6	**RLOZB33006**	ADJ COIL	(T)
T8	**RLAZB33007**	ADJ COIL	(T)
T9	**RLAZB33008**	ADJ COIL	(T)
T11	**RLVZB33009**	BAR & COIL	(T)
L1,6,8	**RLQZB33010**	COIL	(T)
L2	**RLAZB33011**	COIL	(T)
L3	**RLQZB33012**	COIL	(T)
L4	**RLOZB33013**	COIL	(T)
L5	**RLQZB33014**	COIL	(T)
L7	**RLQZB33015**	COIL	(T)

Ref No.	Parts No.	Parts Name & Description	Values & Remarks
TRIMMER CAPACITOR			
VT1~3,5~7	**RCVZB33001**	Trimmer CAP	(T)
VT4	**RCVZB33002**	Trimmer CAP	(T)
VT101	**RCVZB33003**	Trimmer CAP	(T)
VARIABLE RESISTORS			
VR1	**RRVZB33001**	V.R. Volume	(T)
LCD			
LCD	**RSLZB33001**	LCD	(T)
SPEAKER			
SP	**RASZB33001**	SPEAKER	(T)
SWITCHES			
SW1	**RSSZB33001**	Switch	(T)
SW2	**RSSZB33002**	Slide Switch	(T)
SW101,102	**RSSZB33003**	Switch	(T)
SW103	**RSSZB33004**	Switch	(T)
SW104	**RSSZB33005**	Tact Switch	(T)
Jacks			
JK1	**RJJZB33001**	Headphones Jack	(T)
JK2	**RJJZB33002**	DC IN Jack	(T)
CERAMIC FILTERS AND CRYSTAL			
CF1	**RLFZB33001**	CERAMIC FILTERS	(T)
CF2	**RLFZB33002**	CERAMIC FILTERS	(T)
CF3	**RLFZB33003**	CERAMIC FILTERS	(T)
CF4	**RLFZB33004**	CERAMIC FILTERS	(T)
CF5	**RLFZB33005**	CERAMIC FILTERS	(T)
X101	**RSXZB33001**	CRYSTAL	(T)

■ REPLACEMENT PARTS LIST(RESISTORS AND CAPACITORS)

Notes:
1. The (T) Indicates parts that are supplied **TAMACO**
2. The (M) Indicates parts that are supplied **MESA**

Ref No.	Parts No.	Values & Remarks
CAPACITORS		
C1,96	**ECEA0JKA221**	(T)
C2	**ECQS1H182J**	(T)
C3,4	**ECUV1H200JCV**	(T)
C5	**ECQS1H562J**	(T)
C6,37	**ECUV1H100DCV**	(M)
C7,16,19,26,32,34, 38,42,43,45,57, 62,63,140	**ECUV1H102KBV**	(M)
C8,15,44	**ECUV1E223KBV**	(T)
C9,23,28,29,33,40, 58,70,75,78,95, 109~113,115,120, 129,130,136~139, 141,144,147,148	**ECUV1H103KBV**	(T)
C10,17,27,	**ECUV1E473ZBN**	(T)
C11	**ECEA1CKA100**	(T)
C12	**ECUV1H151JCV**	(M)
C13	**ECEA1EKA4R7**	(T)
C14	**ECUV1H050CCV**	(M)
C18,21,31,71,94, 128,131	**ECUV1H102KBN**	(M)
C20	**ECUV1H180JCV**	(M)
C22	**ECUV1H150JCV**	(M)
C24	**ECUV1H030CCN**	(M)
C25	**ECUV1H220JCV**	(M)
C30	**ECEA1AU221**	(T)
C35,47,48,50,53	**ECUV1C473MV**	(T)
C36	**ECUV1H471JCV**	(T)
C39,60,82,142	**ECUV1E103MBN**	(M)
C41,54,56,73,74,76 ,80,81,116~119, 124,125,126,146	**ECUV1E104ZBV**	(T)
C46	**ECUV1H020CCV**	(M)
C49	**ECUV1H471JCN**	(M)
C51,79,83	**ECEA1AU471**	(T)
C52	**ECEA1HKA2R2**	(T)
C55,66,67	**ECEA1HU010**	(T)
C59,61	**ECEA0JU102**	(T)
C64,65	**ECUV1H123KBV**	(M)
C68,88	**ECUV1H182KBV**	(M)
C69,122	**ECUV1E104KBN**	(M)
C72,86,89	**ECEA1AKA220**	(T)
C77	**ECUV1H101JCN**	(M)
C84,92	**ECUV1H152KBV**	(M)
C85,91	**ECUV1H682MV**	(T)
C90	**ECUV1H060CCV**	(M)
C93	**ECEA1AU470**	(T)
C97,98,99	**ECEA1HKA010**	(T)
C100	**ECUV1H101JCV**	(M)
C101~108	**ECUV1H221JCV**	(M)
C121	**ECUV1H080DCN**	(M)
C123	**ECUV1E104ZBM**	(T)
C127	**ECEA0GKA101**	(T)
C132	**ECUV1H100DCN**	(M)
C133,134	**ECST1A335RR**	(T)
C135	**RCUZB33001**	(T)
C143	**ECEA0GKA470**	(T)
C145	**EECFZB33001**	(T)

Ref No.	Parts No.	Values & Remarks
RESISTORS		
R1,3,19,24,130	**ERJ6GEYJ104V**	(M)
R2,7,14,15,21,32,33 ,34,37,38,39,41,44 ,47,48,52,54,56,62 ,116,128	**ERJ3GEYJ473V**	(M)
R4	**ERJ6GEYJ223V**	(M)
R5,67,86,123	**ERJ3GEYJ222V**	(M)
R6	**ERJ3GEYJ122V**	(M)
R8	**ERDS2TJ562T**	(T)
R9	**ERJ3GEYJ274V**	(M)
R10,101~108	**ERJ6GEYJ102V**	(M)
R11	**ERJ3GEYJ220V**	(M)
R12	**ERJ6GEYJ100V**	(M)
R13,20,35,53,121, 126,129,137, 141~143,145,147	**ERJ3GEYJ104V**	(M)
R16,51,125	**ERJ6GEYJ103V**	(M)
R18,119	**ERJ6GEYJ220V**	(M)
R22,26,139,146	**ERJ3GEYJ105V**	(M)
R23	**ERJ3GEYJ331V**	(M)
R25,27,31,131	**ERJ3GEYJ472V**	(M)
R28	**ERJ3GEYJ181V**	(M)
R29	**ERJ3GEYJ330V**	(M)
R36,40,109,110, 111,112	**ERJ6GEYJ473V**	(M)
R43,64,71	**ERJ3GEYJ223V**	(M)
R45,46,58,66,72, 133,135	**ERJ6GEYJ103V**	(M)
R55	**ERJ6GEYJ680V**	(M)
R63,75,84	**ERJ3GEYJ682V**	(M)
R65,70	**ERJ6GEYJ682V**	(M)
R68	**ERJ3GEYJ334V**	(M)
R69,73,85,118,134	**ERJ3GEYJ100V**	(M)
R74,78,80	**ERJ3GEYJ470V**	(M)
R76,77,82,83	**ERJ3GEYJ333V**	(M)
R79	**ERJ6GEYJ122V**	(M)
R81	**ERJ6GEYJ470V**	(M)
R113	**ERJ3GEYJ820V**	(T)
R117	**ERJ3GEYJ101V**	(M)
R120,127,148	**ERJ3GEYJ102V**	(M)
R122	**ERJ3GEYJ821V**	(M)
R124	**ERJ6GEYJ101V**	(M)
R132	**ERJ3GEYJ154V**	(M)
R136	**ERJ3GEYJ563V**	(M)
R140	**ERJ3GEYJ823V**	(M)
R144	**ERJ3GEYJ474V**	(M)
R149	**ERJ8GEYJ472V**	(M)
CHIP JUMPERS		
J23,26,27,29,36~39 ,42,44,50,52,56, 105,112~118, 120~122	**ERJ8GEY0R00V**	(M)
J24,25,28,30,33,35, 40,41,43,45~49, 51,53~55,107~110	**ERJ6GEY0R00V**	(M)