

# CFM-D1

## SERVICE MANUAL

E Model

Ver 1.1 2002.02



Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	MF-D1

### SPECIFICATIONS

#### Frequency range

FM : Saudi Arabia model  
87.6-107MHz

EXCEPT Saudi Arabia model  
87.6-108MHz

MW : 530-1,605kHz

SW 1 : 2.3-7MHz

SW 2 : 7-22MHz

#### Aerials

FM/SW : Telescopic aerial

MW : Built-in ferrite aerial

#### Recording system

2-track, mono

#### Frequency response

50-12,000Hz

#### Speakers

Approx. 7.7 cm (3<sup>1</sup>/<sub>8</sub> inches) dia.

Woofer x2

#### Maximum power output

2W

#### Output

Earphone jack (minijack) for  
32 ohms impedance earphone

#### Power requirements

110-120 V, 220-240 V AC selectable, 50/60Hz

6V DC, four R 20 (size D) batteries

#### Power consumption

6W AC operation

#### Battery life

Battery	FM recording	Tape Playback
Sony R20P	Approx. 20 hours	Approx. 18 hours
Sony LR20 alkaline	Approx. 48 hours	Approx. 30 hours

#### Dimensions

Approx 330x147x120 mm

(w/h/d)

(13x5<sup>7</sup>/<sub>8</sub>x4<sup>3</sup>/<sub>4</sub> inches) including  
projecting parts

#### Mass

Approx. 2.2kg (4lb 9 oz) including  
batteries

#### Accessory supplied

Mains lead (1)

Design and specifications are subject to change without notice.

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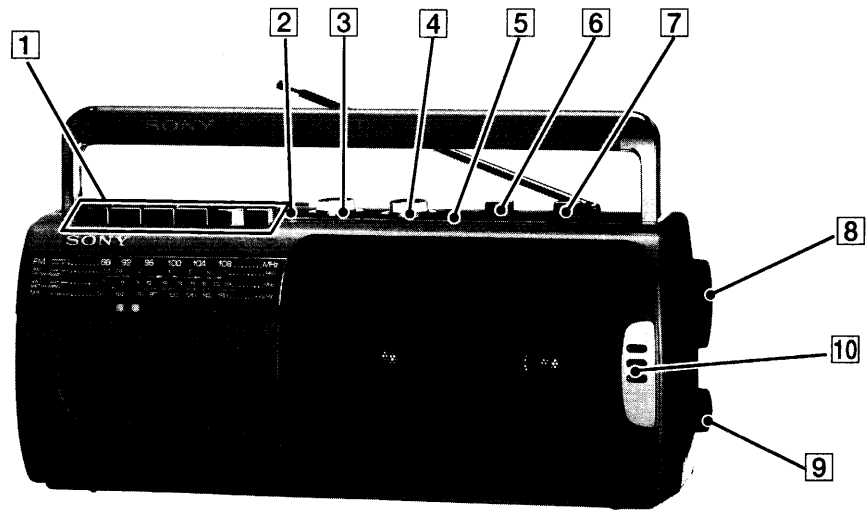
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### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  $\triangle$  OR DOTTED LINE WITH MARK  $\triangle$  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

# SECTION 1 GENERAL

## LOCATION AND FUNCTION OF CONTROLS



**1** TAPE OPERATION BUTTONS

- || PAUSE
- ▲ STOP/EJECT
- ▶▶ FF (fast-forward)
- ◀◀ REW (rewind)
- ▶▲ PLAY (Play back)
- REC (Record)

**2** EARPHONE 

**3** VOLUME control

**4** TONE control

**5** OPR/BATT indicator

**6** FUNCTION SELECTOR (Radio/TAPE (Radio off))

**7** BAND SELECTOR (FM/SW1/SW2/MW)

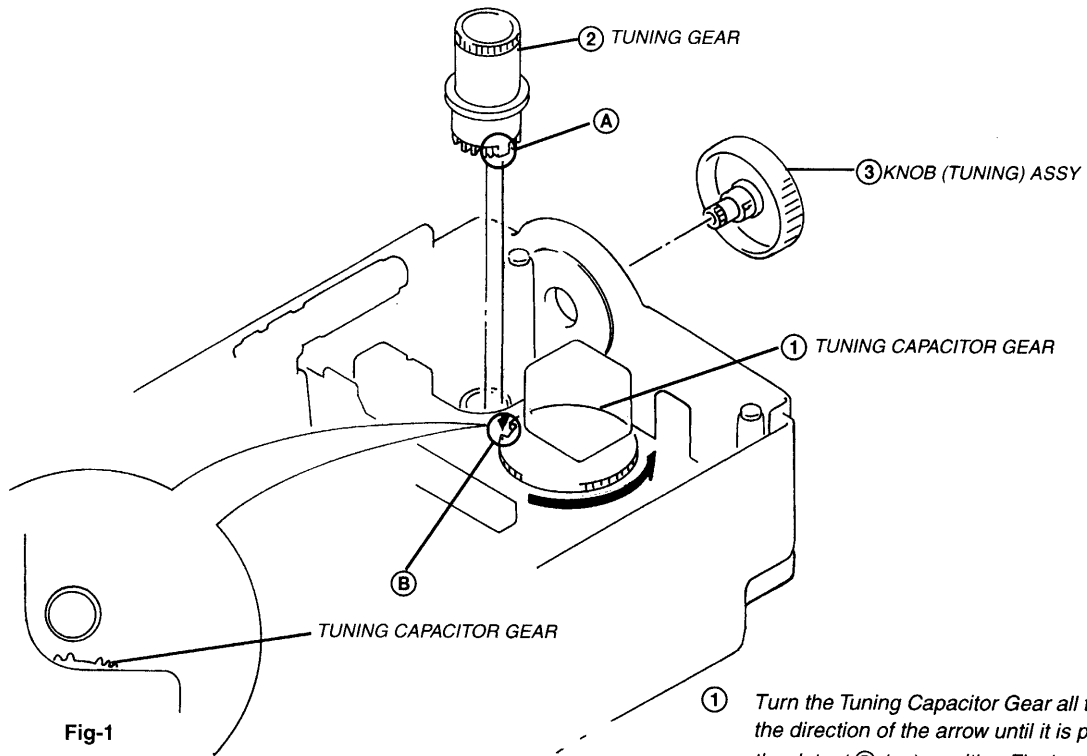
**8** TUNING control

**9** FINE TUNING control

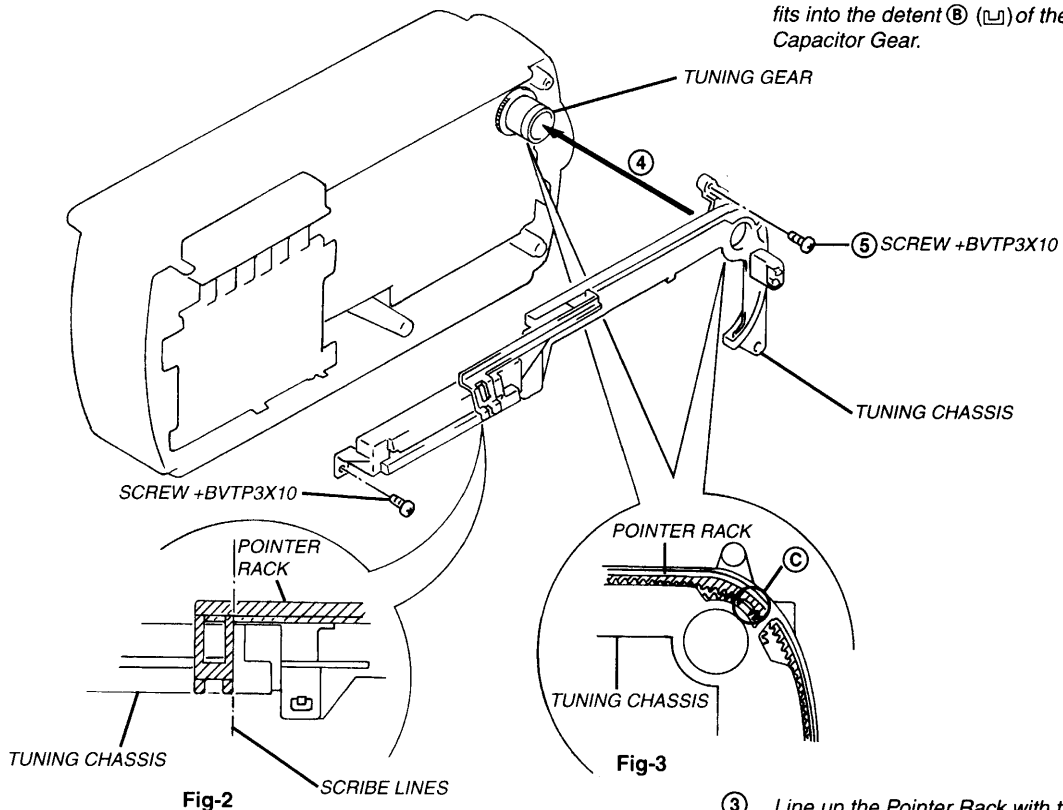
**10** MIC (built-in)

## SECTION 2 DIAL POINTER SETTING

**Note :** Follow the installation procedure in the numerical order given.



- ① Turn the Tuning Capacitor Gear all the way in the direction of the arrow until it is positioned at the detent (B) (⊥) position Fig-1.
- ② Turn the Tuning Gear until its protrusion (A) (⊏) fits into the detent (B) (⊥) of the Tuning Capacitor Gear.



- ③ Line up the Pointer Rack with the scribe lines as shown in Fig-2.
- ④ Install so that the Tuning Chassis intermeshes with the Pointer Rack as shown in (C) of Fig-3.
- ⑤ Fasten the Tuning Chassis to the cabinet (Rear) with the screw.

## SECTION 3 ADJUSTMENTS

### 3-1. MECHANICAL ADJUSTMENTS AND MEASUREMENTS

#### PRECAUTION

- Clean the following parts with a denatured-alcohol-moistened swab :
  - record/playback head    pinch roller
  - erase head                rubber belts
  - capstan                    idlers
- Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
- Do not use a magnetized screwdriver for the adjustments.
- After the adjustments, apply suitable locking compound to the parts adjusted.
- The adjustments should be performed with the rated power supply voltage unless otherwise noted.

#### Torque Measurement

Torque	Torque Meter	Meter Reading
Playback	CQ-102C	30 - 70g•cm
Rewind	CQ-201B	90 - 150g•cm
Fast Forward	CQ-201B	90 - 150g•cm
Back Tention	CQ-102C	1.5 - 5.5g•cm

#### Tape Tension Measurement

Torque Meter	Meter Reading
CQ-403A	more than 170g (5.99 oz)

### 3-2. ELECTRICAL ADJUSTMENTS

#### CASSETTE SECTION

**Note :** The adjustment should be performed in the order given in this service manual.

- Switches and controls should be set as follows unless otherwise specified.

FUNCTION : TAPE (RADIO OFF)  
VOLUME : max  
TONE : mechanical mid.

#### Standard Output Level

	SP OUT	EARPHONE
load impedance	4Ω	32Ω
output level	0.775V (0dB)	0.25V (-10dB)

#### Test Tape

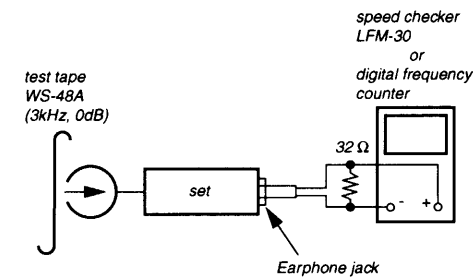
Type	Signal	Used for
WS-48A	3kHz, 0dB	Tape Speed Adjustment
P-4-A063	6.3kHz, -10dB	Azimuth Adjustment

0 dB=0.775V

#### Tape Speed Adjustment

##### Procedure :

Mode : playback

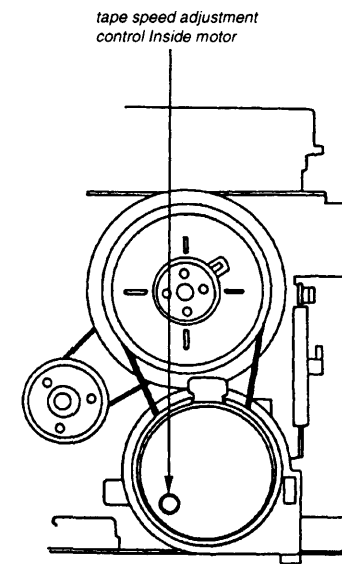


##### Adjustment Value :

Speed checker	Digital frequency counter
-1 to +1%	2,970 - 3,030 Hz

Frequency difference between the beginning and the end of the tape should be within 0.35% (10.5Hz).

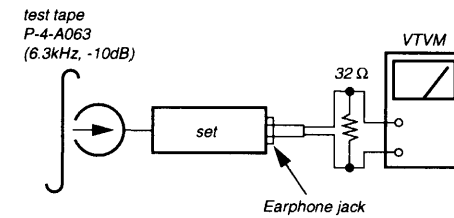
#### Adjustment Location :



#### Record/Playback Head Azimuth Adjustment

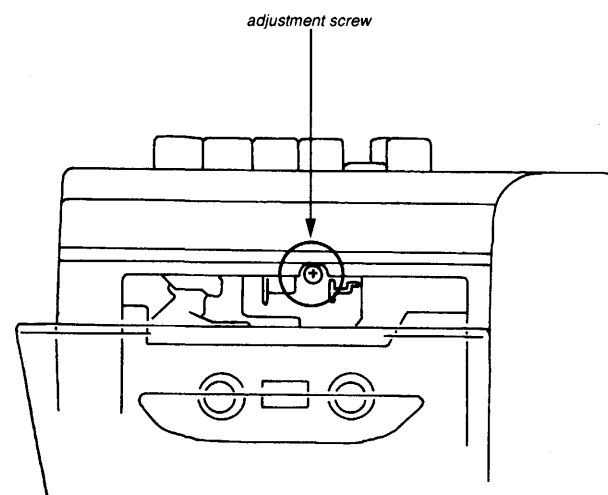
##### Procedure :

Mode : playback



Turn the adjustment screw for the maximum output levels.

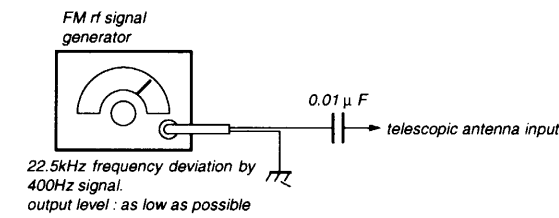
##### Adjustment Location :



#### RADIO SECTION

##### ● FM Section

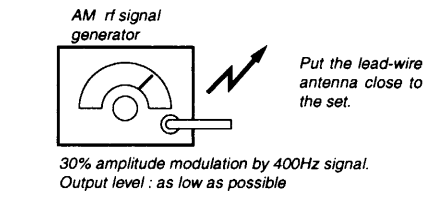
BAND switch : FM



##### ● MW Section

BAND switch : MW

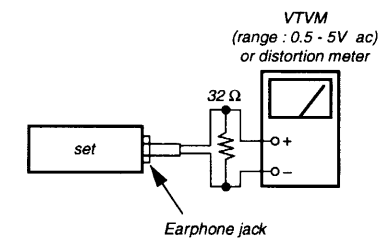
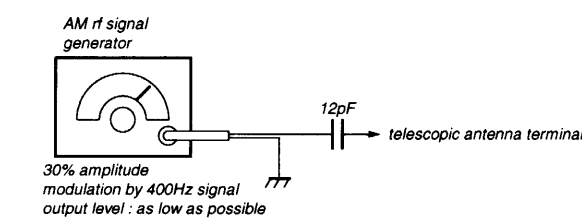
FINE TUNING control : mechanical center



##### ● SW Section

BAND switch : SW

FINE TUNING control : mechanical center



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

REVISED

no mark : EXCEPT Saudi Arabia model  
< > : Saudi Arabia model

FM IF ALIGNMENT	
T1	: Adjust for a maximum reading on VTVM.
T3	: Adjust for a minimum reading on distortion meter.

FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L2	CT2
86.50MHz	109.5MHz
<87.35MHz>	<107.8MHz>

FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L1	CT1
86.50MHz	109.5MHz
<87.35MHz>	<107.8MHz>

AM (MW/SW) IF ALIGNMENT	
Adjust for a maximum reading on VTVM.	
T2	
455kHz	<455kHz>

MW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L6	CT4
520kHz	1,680kHz
<516kHz>	<1,630kHz>

MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L5	CT3
600kHz	1,400kHz
<600kHz>	<1,400kHz>

SW1 FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L8	CT5
2.2MHz	7.3MHz
<2.2MHz>	<7.3MHz>

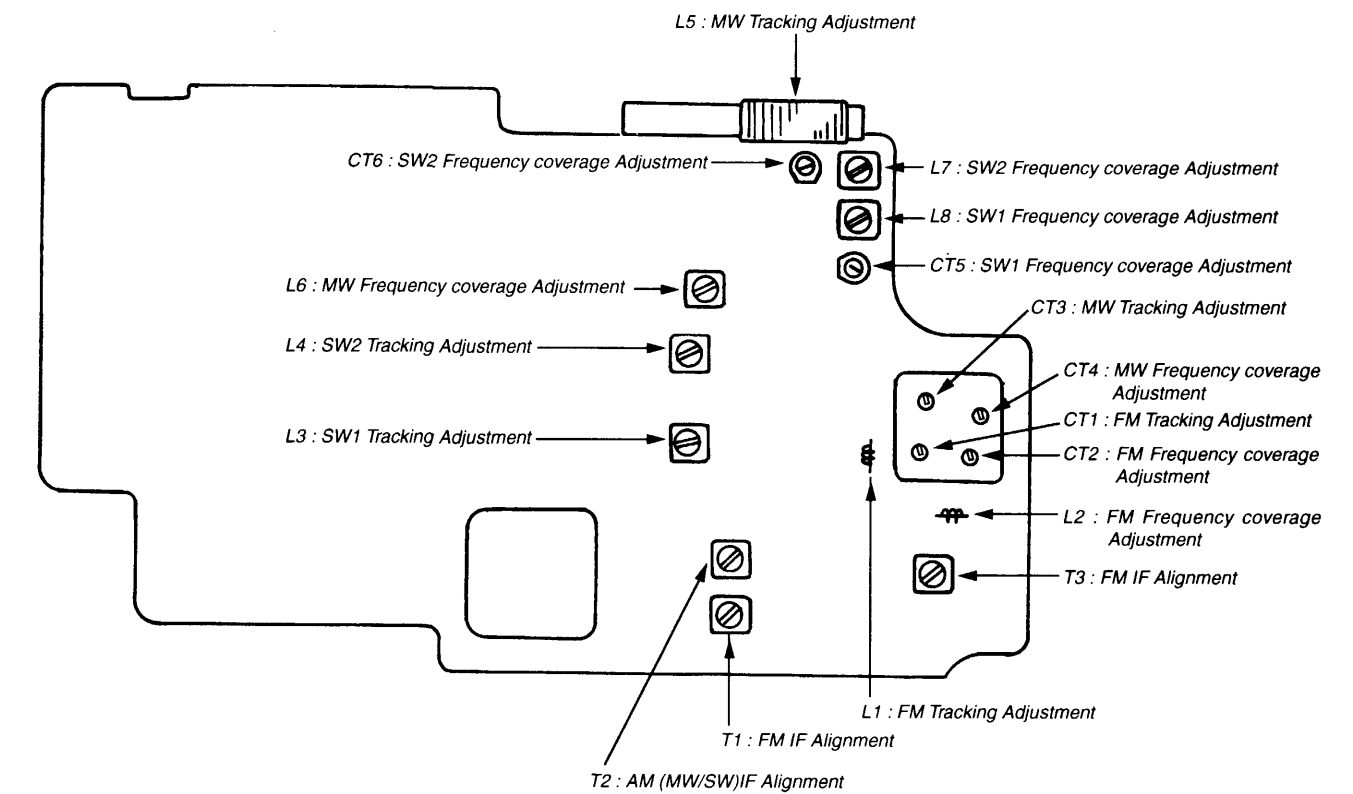
SW1 TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L3	
2.2MHz	<2.2MHz>

SW2 FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L7	CT6
6.8MHz	22.5MHz
<6.8MHz>	<22.5MHz>

SW2 TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L4	
6.8MHz	<6.8MHz>

#### Adjustment Location :

[TUNER BOARD] - COMPONENT SIDE -

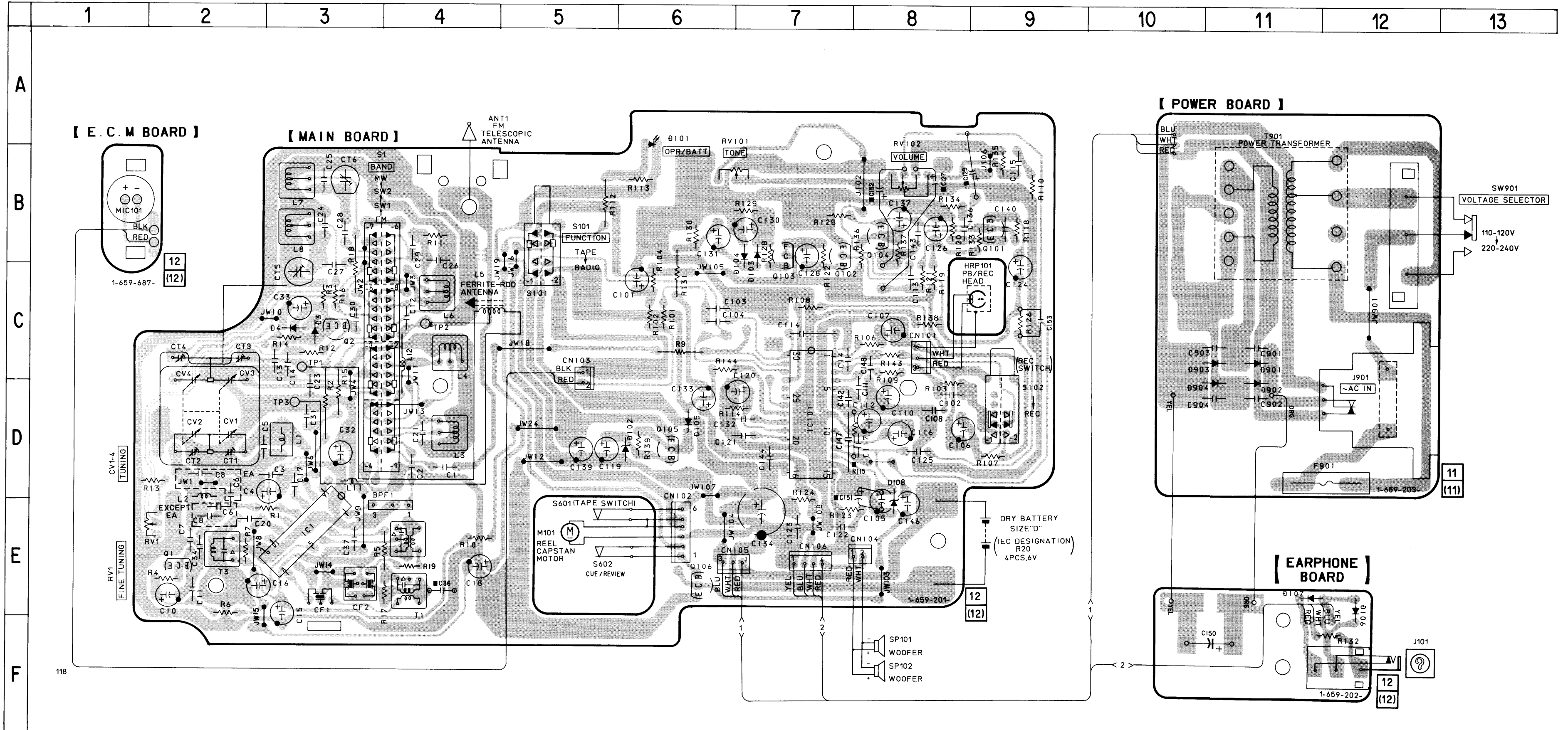


SECTION 4  
DIAGRAMS

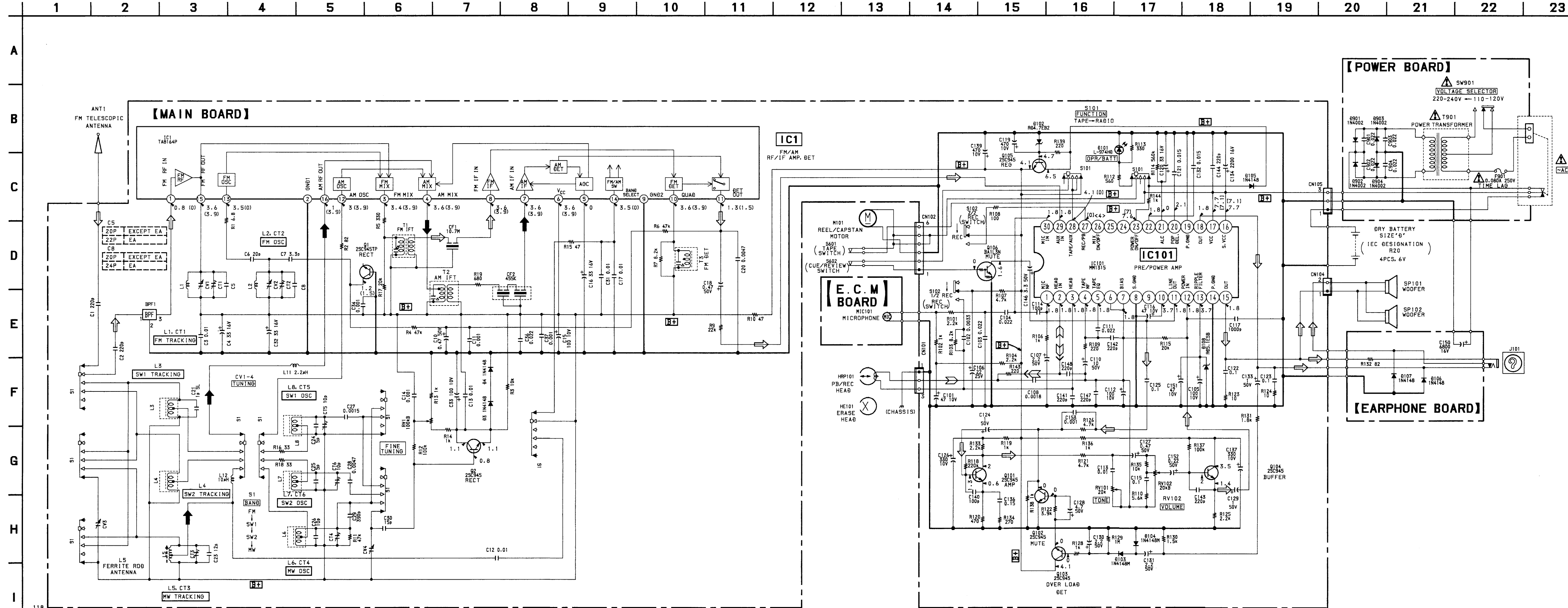
4-1. PRINTED WIRING BOARDS

• SEMICONDUCTOR LOCATION

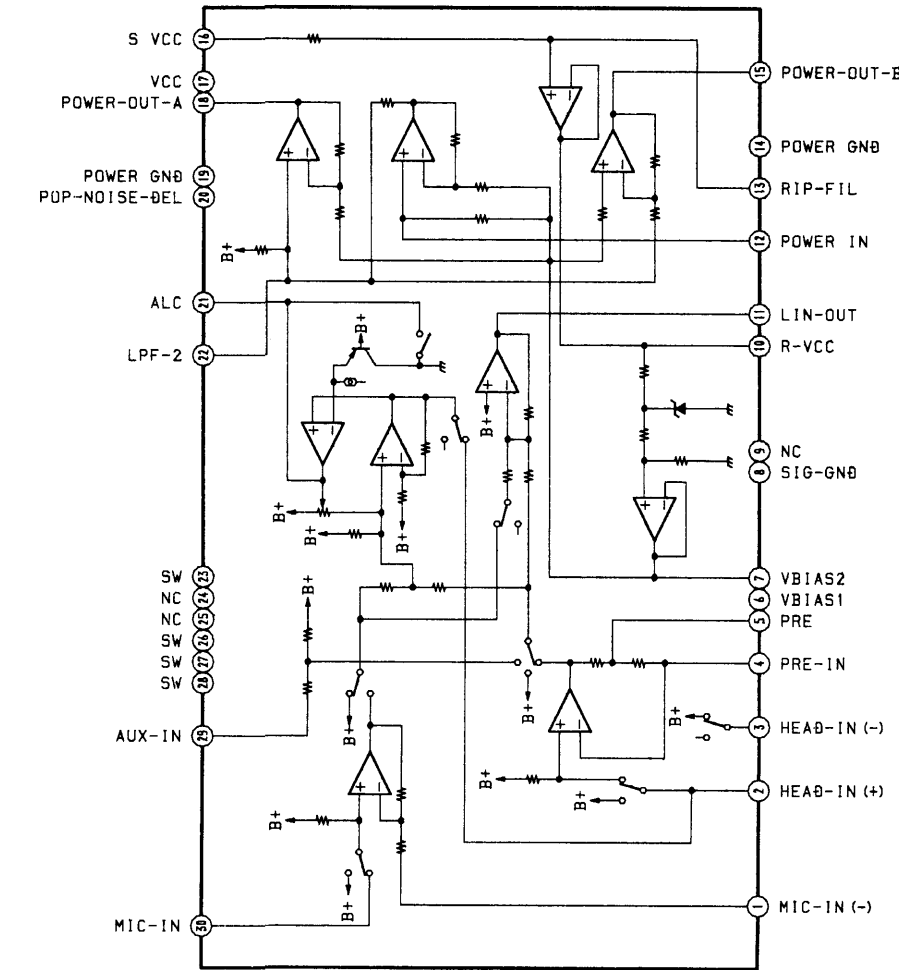
Ref. No.	Location
D1	B-4
D2	B-4
D3	C-4
D4	C-3
D101	A-6
D102	D-6
D103	B-7
D104	B-7
D105	D-6
D106	E-10
D107	F-10
D901	C-11
D902	C-11
D903	C-11
D904	C-11
IC1	E-3
IC101	D-7
Q1	E-2
Q2	C-3
Q101	B-9
Q102	B-7
Q103	B-7
Q104	B-8
Q105	D-6
Q106	E-6



Note :  
 • Δ : internal component.  
 • [Pattern] : Pattern from the side which enables seeing.  
 • Abbreviation  
 EA : Saudi Arabia  
 UAE : United Arab Emirates  
 SP : Singapore  
 E23 : 110-120V AC, Area  
 E15 : 220-240V AC, Area



IC BLOCK DIAGRAM  
IC101 MM1315



**Note :**

- All capacitors are in  $\mu\text{F}$  unless otherwise noted. pF:  $\mu\text{F}$  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $\frac{1}{2}\text{W}$  or less unless otherwise specified.
- $\Delta$  : internal component.

**Note :** The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

**[B+]** : B+ Line

- Voltages are dc with respect to ground under no-signal (detuned) conditions.

no mark : FM  
( ) : MW  
< > : REC  
[ ] : PLAY

- Voltages are taken with a VOM (10M $\Omega$ V).
- Voltage variations may be noted due to normal production tolerances.

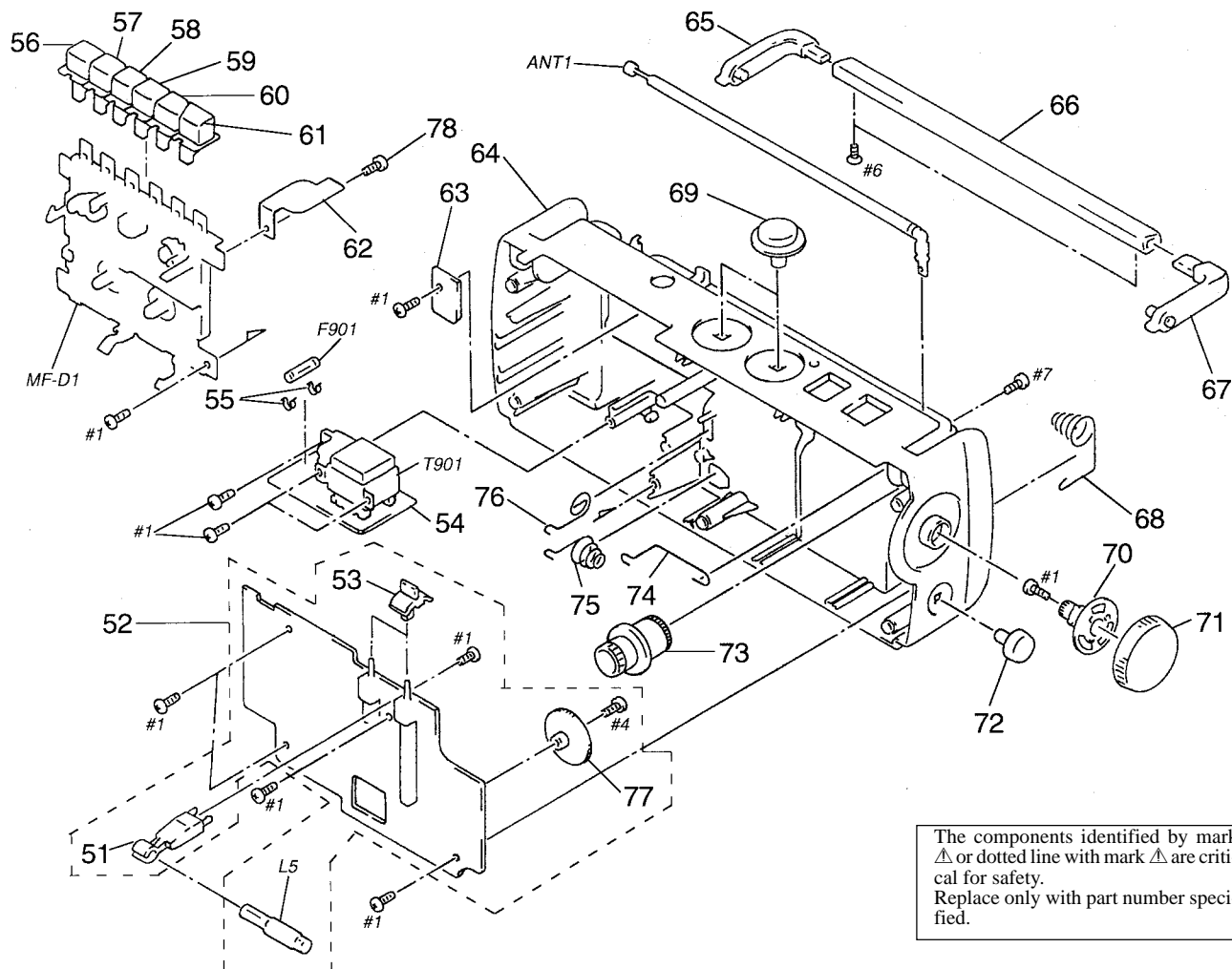
• Signal path:  
 : FM  
 : PB  
 : REC  
 : MW

• Abbreviation  
 EA : Saudi Arabia  
 UAE : United Arab Emirates  
 SP : Singapore  
 E23 : 110-120V AC, Area  
 E15 : 220-240V AC, Area



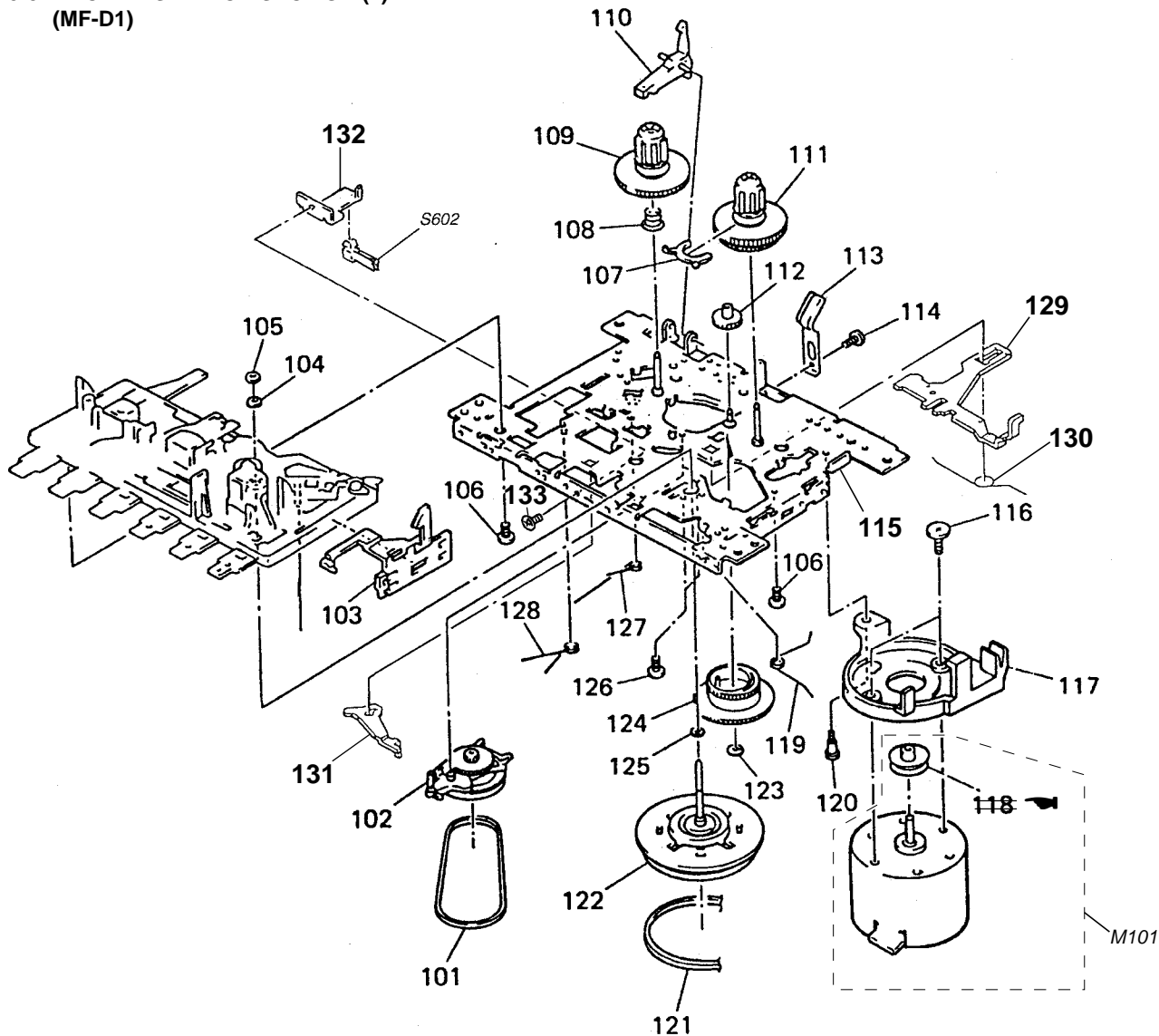


5-2. REAR CABINET SECTION



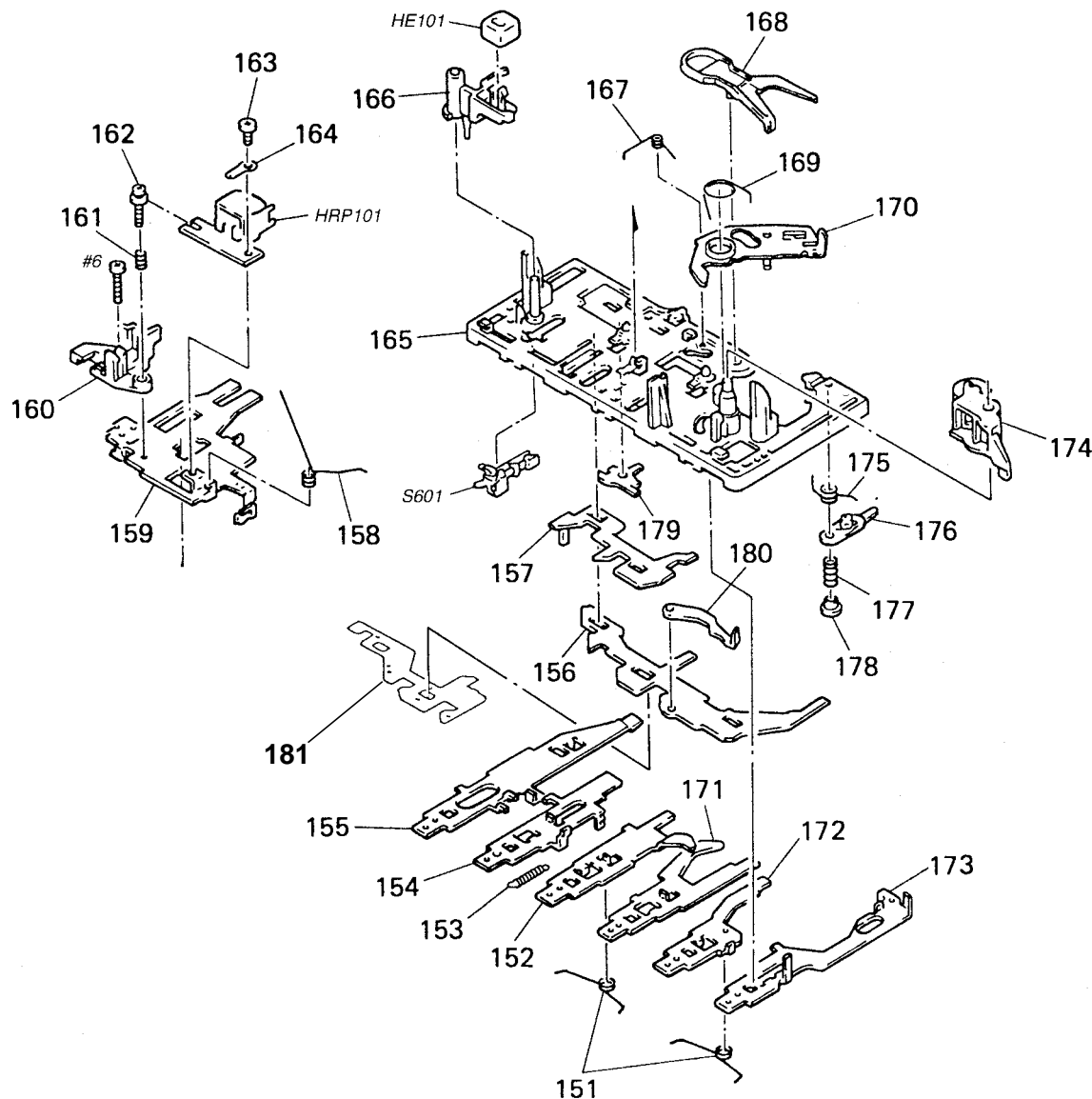
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 51	3-928-688-01	HOLDER, ANT		67	3-918-198-01	PLATE (R), SIDE, HANDLE	
* 52	A-3305-528-A	MAIN BOARD, COMPLETE (EA)		68	3-911-268-01	SPRING (+-), BATTERY	
* 52	A-3305-531-A	MAIN BOARD, COMPLETE (EXCEPT EA)		69	3-929-835-01	KNOB (VOLUME)	
53	3-911-282-21	KNOB (FUNC)		70	3-928-333-01	GEAR, SLIP	
* 54	1-659-203-11	POWER BOARD		71	3-938-563-01	KNOB, TUNING (BLACK)	
55	1-533-233-31	HOLDER, FUSE		71	3-938-563-11	KNOB, TUNING (RED)	
56	3-928-343-01	BUTTON, PAUSE		72	3-928-334-01	KNOB, FINE TUNING (BLACK)	
57	3-928-339-01	BUTTON, STOP		72	3-928-334-11	KNOB, FINE TUNING (RED)	
58	3-928-341-01	BUTTON, FF		73	3-928-332-01	GEAR, TUNING	
59	3-928-342-01	BUTTON, REW		* 74	3-928-325-01	TERMINAL, ANTENNA	
60	3-928-338-01	BUTTON, PLAY		75	3-928-324-01	SPRING (MINUS), BATTERY	
61	3-928-340-01	BUTTON, RECORD		76	3-928-323-01	SPRING (PLUS), BATTERY	
* 62	3-928-327-01	SPRING, REC		77	3-928-331-01	GEAR, TUNING CAPACITOR	
* 63	1-659-202-11	EARPHONE BOARD		78	3-348-369-01	SCREW (M2X3), C TIGHT	
64	3-928-319-01	CABINET (REAR) (BLACK)		ANT1	1-501-668-11	ANTENNA, TELESCOPIC	
64	3-928-319-11	CABINET (REAR) (RED) (E15,EA,UAE)		Δ F901	1-532-234-31	FUSE, TIME-LAG (0.080A 250V)	
65	3-918-197-01	PLATE (L), SIDE, HANDLE		L5	1-501-705-11	ANTENNA, FERRITE-ROD (MW)	
66	3-928-322-01	HANDLE (BLACK)		Δ T901	1-429-346-11	TRANSFORMER, POWER	
66	3-928-322-11	HANDLE (RED) (E15,EA,UAE)					

5-3. MECHANISM DECK SECTION (1)  
(MF-D1)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	3-596-931-01	BELT, RF		119	3-915-758-01	SPRING	
102	3-913-441-01	CLUTCH ASSY, RF		120	3-395-995-01	SCREW, MB	
103	3-933-845-01	LEVER, EJECT SLIDE		121	3-933-843-01	BELT, MAIN	
104	3-913-442-01	WASHER, POLY-SLIDER		122	3-348-356-01	FLYWHEEL ASSY	
105	3-913-434-01	WASHER, POLY-SLIDER		123	3-348-373-01	WASHER, POLYETHYLENE SLIDER	
106	3-348-370-01	SCREW (M2X5), P TIGHT BIND		124	3-348-353-01	GEAR, CAM	
107	3-915-797-01	SENSOR		125	3-913-433-01	WASHER, POLY-SLIDER	
108	3-913-429-01	SPRING, BACK TENSION		126	3-348-371-01	SCREW (M2X4.5), CAMERA TAPPING	
109	3-913-430-01	REEL ASSY, SUPPLY		127	3-348-341-01	SPRING	
110	3-348-368-01	LEVER, REC SAFETY		128	3-915-759-01	SPRING	
111	3-913-431-01	REEL ASSY, TAKE-UP		129	3-936-902-01	RC SLIDE LEVER	
112	3-348-357-01	GEAR, FF		130	3-936-900-01	RC SLIDE LEVER SPRING	
113	3-348-367-01	PLATE, SP, PACK RETAINER		131	3-936-903-01	RC LEVER	
114	3-913-444-01	SCREW (2X3)		*	132	3-916-519-01	BRACKET, SW
115	3-348-335-01	CHASSIS ASSY		133	3-936-898-01	CAMERA SCREW M2x2.5	
116	3-598-855-01	MOTOR COLLER SCREW		M101	X-3372-889-1	MOTOR ASSY (including PULLEY)	
117	3-913-435-01	BRACKET, MOTOR		S602	1-692-978-11	SWITCH, LEAF (CUE/REVIEW)	
<del>118</del>	<del>3-395-984-01</del>	<del>PULLEY, MOTOR</del>					

5-4. MECHANISM DECK SECTION (2)  
(MF-D1)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
151	3-915-756-01	SPRING (A)		168	3-913-439-01	LEVER, SENSING	
* 152	3-394-739-01	LEVER, REW BUTTON		169	3-348-351-01	SPRING	
153	3-936-901-01	RC SPRING		* 170	3-913-440-01	PLATE ASSY, GEAR	
* 154	3-394-738-01	LEVER, PLAY BUTTON		* 171	3-933-802-01	LEVER, FF BUTTON	
* 155	3-394-737-01	LEVER, REC BUTTON		* 172	3-394-741-01	LEVER, STOP BUTTON	
* 156	3-936-896-01	PLATE, FUNCTION, PUSH BUTTON		* 173	3-394-742-01	LEVER, PAUSE BUTTON	
* 157	3-936-895-01	PLATE, FUNCTION, SWITCH		174	3-913-438-01	ARM ASSY, PINCH ROLLER	
158	3-915-780-01	SPRING		175	3-348-330-11	SPRING	
* 159	3-915-776-01	PANEL, HEAD		176	3-348-331-02	LEVER, PAUSE	
160	3-348-344-11	BASE, HEAD		177	3-915-754-01	SPRING	
161	3-598-845-01	SPRING		178	3-348-333-01	STOPPER, PAUSE	
162	3-394-749-01	SCREW (M2X7), AZIMUTH		179	3-348-340-01	STOPPER, PR	
163	3-348-372-01	SCREW (M2X3), + BIND		* 180	3-915-760-01	LEVER, E KICK	
164	3-394-748-01	LUG (B3)		181	3-936-899-01	SACTUATOR	
165	3-348-347-01	CHASSIS (MOLD) ASSY		HE101	1-500-232-11	HEAD, MAGNETIC (ERASE)	
166	3-348-346-01	ARM, MG		HRP101	1-500-310-11	HEAD, MAGNETIC (RECORD/PLAYBACK)	
167	3-913-437-01	SPRING, M CONTROLLER		S601	1-692-978-11	SWITCH, LEAF (TAPE SWITCH)	

SECTION 6

EARPHONE

ECM

MAIN

ELECTRICAL PARTS LIST

NOTE :

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS  
All resistors are in ohms  
METAL : Metal-film resistor  
METAL OXIDE :Metal oxide-film resistor  
F : nonflammable

- Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS  
In each case, u :  $\mu$ , for example :  
uA..... :  $\mu$  A..... , uPA..... :  $\mu$  PA.....  
uPB..... :  $\mu$  PB..... , uPC..... :  $\mu$  PC.....  
uPD..... :  $\mu$  PD.....
- CAPACITORS  
uF :  $\mu$  F
- COILS  
uH :  $\mu$  H

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

When indicating parts by reference number, please include the board.

- Abbreviation  
EA : Saudi Arabia  
UAE : United Arab Emirates
- SP : Singapore  
E23 : 110-120V AC, Area  
E15 : 220-240V AC, Area

Ref. No.	Part No.	Description	Remark
*	1-659-202-11	EARPHONE BOARD *****	
		< DIODE >	
D106	8-719-987-63	DIODE 1N4148M	
D107	8-719-987-63	DIODE 1N4148M	
		< JACK >	
* J101	1-764-188-11	JACK (SMALL TYPE) (DIA. 3.5) (EARPHONE)	
		< RESISTOR >	
R132	1-249-404-00	CARBON 82 5% 1/4W	
*****			
*	1-659-687-11	ECM BOARD *****	
		< MICROPHONE >	
MIC101	1-542-118-11	MICROPHONE, ELECTRET CONDENSER	
*****			
*	A-3305-528-A	MAIN BOARD, COMPLETE (EA)	
*	A-3305-531-A	MAIN BOARD, COMPLETE (E,SP,UAE)	
*****			
*	3-911-281-01	CUSHION, MIC	
	3-911-282-21	KNOB (FUNC)	
*	3-915-126-01	CAP, SHIELD COIL	
	3-928-331-01	GEAR, TUNING CAPACITOR	
*	3-928-688-01	HOLDER, ANT	
	7-621-770-87	SCREW +B 2.6X5	
	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3	
		< FILTER >	
BPF1	1-236-022-11	FILTER, BAND PASS	
		< CAPACITOR >	
C1	1-162-286-31	CERAMIC 220PF 10% 50V	
C2	1-162-286-31	CERAMIC 220PF 10% 50V (E,SP,UAE)	
C3	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C4	1-104-663-11	ELECT 33uF 20% 16V	

Ref. No.	Part No.	Description	Remark
C5	1-162-207-31	CERAMIC 22PF 5% 50V (EA)	
C5	1-162-206-31	CERAMIC 20PF 5% 50V (E,SP,UAE)	
C6	1-162-206-31	CERAMIC 20PF 5% 50V	
C7	1-162-193-31	CERAMIC 3.3PF 10% 50V	
C8	1-102-960-00	CERAMIC 24PF 5% 50V (EA)	
C8	1-162-206-31	CERAMIC 20PF 5% 50V (E,SP,UAE)	
C9	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C10	1-124-902-00	ELECT 0.47uF 20% 50V	
C11	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C12	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C13	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C14	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C15	1-124-443-00	ELECT 100uF 20% 10V	
C16	1-104-663-11	ELECT 33uF 20% 16V	
C17	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C18	1-124-902-00	ELECT 0.47uF 20% 50V	
C20	1-162-600-11	CERAMIC 0.0047uF 20% 16V	
C21	1-162-187-31	CERAMIC 1PF 20% 50V	
C22	1-162-193-31	CERAMIC 3.3PF 10% 50V	
C23	1-162-201-31	CERAMIC 12PF 5% 50V	
C24	1-102-942-00	CERAMIC 5PF 5% 50V	
C25	1-102-945-00	CERAMIC 8.0PF $\pm 0.5PF$ 50V	
C26	1-102-945-00	CERAMIC 8.0PF $\pm 0.5PF$ 50V	
C27	1-130-726-00	FILM 0.0015uF 5% 63V	
C28	1-137-015-11	FILM 0.0047uF 5% 63V	
C29	1-110-342-11	FILM 390PF 5% 63V	
C30	1-162-203-31	CERAMIC 15PF 5% 50V	
C31	1-162-306-11	CERAMIC 0.01uF 10% 50V	
C32	1-104-663-11	ELECT 33uF 20% 16V	
C33	1-124-443-00	ELECT 100uF 20% 10V	
C34	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C36	1-161-055-00	CERAMIC 0.022uF 10% 25V	
C37	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C101	1-104-664-11	ELECT 47uF 20% 10V	
C102	1-162-303-11	CERAMIC 0.0033uF 20% 16V	
C103	1-161-494-00	CERAMIC 0.022uF 10% 25V	
C104	1-161-494-00	CERAMIC 0.022uF 10% 25V	
C105	1-124-443-00	ELECT 100uF 20% 10V	
C106	1-126-233-11	ELECT 22uF 20% 50V	

# MAIN

Ref. No.	Part No.	Description	Remark
C107	1-126-961-11	ELECT	2.2uF 20% 50V
C108	1-162-830-11	CERAMIC	0.0018uF 10% 16V
C110	1-124-907-11	ELECT	10uF 20% 50V
C111	1-161-494-00	CERAMIC	0.022uF 25V
C112	1-124-443-00	ELECT	100uF 20% 10V
C113	1-161-060-00	CERAMIC	0.056uF 10% 25V
C114	1-162-282-31	CERAMIC	100PF 10% 50V
C115	1-161-772-11	CERAMIC	0.1uF 10% 25V
C116	1-104-664-11	ELECT	47uF 20% 10V
C117	1-162-294-31	CERAMIC	0.001uF 10% 50V
C119	1-124-472-11	ELECT	470uF 20% 10V
C120	1-104-663-11	ELECT	33uF 20% 16V
C121	1-162-841-11	CERAMIC	0.015uF 10% 16V
C122	1-136-165-00	FILM	0.1uF 5% 50V
C123	1-136-165-00	FILM	0.1uF 5% 50V
C124	1-124-903-11	ELECT	1uF 20% 50V
C125	1-161-772-11	CERAMIC	0.1uF 10% 25V
C126	1-126-940-11	ELECT	330uF 20% 10V
C127	1-124-464-11	ELECT	0.22uF 20% 50V
C128	1-126-963-11	ELECT	4.7uF 20% 50V
C129	1-124-464-11	ELECT	0.22uF 20% 50V
C130	1-126-961-11	ELECT	2.2uF 20% 50V
C131	1-126-961-11	ELECT	2.2uF 20% 50V
C132	1-162-841-11	CERAMIC	0.015uF 10% 16V
C133	1-124-903-11	ELECT	1uF 20% 50V
C134	1-124-556-11	ELECT	2200uF 20% 16V
C136	1-136-167-00	FILM	0.15uF 5% 50V
C137	1-126-940-11	ELECT	330uF 20% 10V
C139	1-124-472-11	ELECT	470uF 20% 10V
C140	1-162-282-31	CERAMIC	100PF 10% 50V
C141	1-162-286-31	CERAMIC	220PF 10% 50V
C142	1-162-286-31	CERAMIC	220PF 10% 50V
C143	1-162-286-31	CERAMIC	220PF 10% 50V
C144	1-162-286-31	CERAMIC	220PF 10% 50V
C146	1-126-962-11	ELECT	3.3uF 20% 50V
C147	1-162-286-31	CERAMIC	220PF 10% 50V
C148	1-162-286-31	CERAMIC	220PF 10% 50V
C150	1-126-930-11	ELECT	6,800uF 20% 16V
C151	1-104-664-11	ELECT	47uF 10V
C152	1-124-464-11	ELECT	0.22uF 20% 50V
C153	1-162-294-31	CERAMIC	1,000PF 10% 50V
< FILTER >			
CF1	1-567-390-11	FILTER, CERAMIC (10.7MHz)	
CF2	1-567-670-11	FILTER, CERAMIC	
< CONNECTOR >			
* CN101	1-580-155-11	PIN, CONNECTOR (PC BOARD) 3P	
* CN102	1-580-158-11	PIN, CONNECTOR (PC BOARD) 6P	
* CN104	1-580-154-11	PIN, CONNECTOR (PC BOARD) 2P	
* CN105	1-580-155-11	PIN, CONNECTOR (PC BOARD) 3P	

Ref. No.	Part No.	Description	Remark
< TRIMMER >			
CT1	1-141-461-11	CAP, VAR (TUNING)	
CT2	1-141-461-11	CAP, VAR (TUNING)	
CT3	1-141-461-11	CAP, VAR (TUNING)	
CT4	1-141-461-11	CAP, VAR (TUNING)	
CV1	1-141-461-11	CAP, VAR (TUNING)	
CV2	1-141-461-11	CAP, VAR (TUNING)	
CV3	1-141-461-11	CAP, VAR (TUNING)	
CV4	1-141-461-11	CAP, VAR (TUNING)	
CT5	1-115-501-11	CAP, ADJ	
CT6	1-115-500-11	CAP, ADJ	
< DIODE >			
D3	8-719-987-63	DIODE 1N4148M	
D4	8-719-987-63	DIODE 1N4148M	
D101	8-719-057-90	LED L-974HD (OPR/BATT)	
D102	8-719-109-81	DIODE RD4.7ESB2	
D103	8-719-987-63	DIODE 1N4148M	
D104	8-719-987-63	DIODE 1N4148M	
D105	8-719-987-63	DIODE 1N4148M	
D108	8-719-109-85	DIODE RD5.1ESB2	
< IC >			
IC1	8-759-245-07	IC TA8164P	
IC101	8-759-367-15	IC MM1315SD-2	
< COIL >			
L1	1-422-317-31	COIL, AIR-CORE	
L2	1-411-333-11	COIL (WITH CORE) (EA)	
L2	1-422-230-11	COIL, AIR-CORE (E,SP,UAE)	
L3	1-402-390-11	COIL (ANT)	
L4	1-402-539-11	COIL (ANT)	
L5	1-501-705-11	ANTENNA, FERRITE-ROD (MW)	
L6	1-406-253-11	COIL (OSC)	
L7	1-406-221-11	COIL, SW2 OSC	
L8	1-406-299-11	COIL (OSC)	
L11	1-414-146-31	INDUCTOR	2.2uH
L12	1-410-509-11	INDUCTOR	10uH
< TRANSISTOR >			
Q1	8-729-194-57	TRANSISTOR	2SC945-P
Q2	8-729-194-57	TRANSISTOR	2SC945-P
Q101	8-729-194-57	TRANSISTOR	2SC945-P
Q102	8-729-194-57	TRANSISTOR	2SC945-P
Q103	8-729-194-57	TRANSISTOR	2SC945-P
Q104	8-729-194-57	TRANSISTOR	2SC945-P
Q105	8-729-194-57	TRANSISTOR	2SC945-P
Q106	8-729-901-57	TRANSISTOR	DTC143XS
< RESISTOR >			
R1	1-249-391-11	CARBON	6.8 5% 1/4W
R2	1-249-404-00	CARBON	82 5% 1/4W

**MAIN**

**POWER**

Ref. No.	Part No.	Description	Value	Remark
R3	1-247-855-11	CARBON	10K	5% 1/4W
R4	1-247-871-11	CARBON	47K	5% 1/4W
R5	1-249-411-11	CARBON	330	5% 1/4W
R6	1-247-871-11	CARBON	47K	5% 1/4W
R7	1-249-428-11	CARBON	8.2K	5% 1/4W
R8	1-249-413-11	CARBON	470	5% 1/4W
R9	1-247-863-11	CARBON	22K	5% 1/4W
R10	1-249-401-11	CARBON	47	5% 1/4W
R11	1-247-871-11	CARBON	47K	5% 1/4W
R12	1-247-879-11	CARBON	100K	5% 1/4W
R13	1-249-417-11	CARBON	1K	5% 1/4W
R14	1-249-417-11	CARBON	1K	5% 1/4W
R15	1-249-401-11	CARBON	47	5% 1/4W
R16	1-249-399-11	CARBON	33	5% 1/4W
R17	1-247-862-11	CARBON	20K	5% 1/4W
R18	1-249-399-11	CARBON	33	5% 1/4W
R19	1-247-827-11	CARBON	680	5% 1/4W
R101	1-247-839-11	CARBON	2.2K	5% 1/4W
R102	1-249-417-11	CARBON	1K	5% 1/4W
R103	1-249-497-11	CARBON	7.5K	5% 1/2W
R104	1-247-839-11	CARBON	2.2K	5% 1/4W
R106	1-249-417-11	CARBON	1K	5% 1/4W
R107	1-249-423-11	CARBON	3.3K	5% 1/4W
R108	1-247-807-11	CARBON	100	5% 1/4W
R109	1-249-409-11	CARBON	220	5% 1/4W
R110	1-247-849-11	CARBON	5.6K	5% 1/4W
R112	1-247-825-11	CARBON	560	5% 1/4W
R113	1-249-411-11	CARBON	330	5% 1/4W
R114	1-247-897-11	CARBON	560K	5% 1/4W
R115	1-260-284-11	CARBON	20K	5% 1/2W
R117	1-247-807-11	CARBON	100	5% 1/4W
R118	1-247-887-00	CARBON	220K	5% 1/4W
R119	1-249-417-11	CARBON	1K	5% 1/4W
R120	1-249-409-11	CARBON	220K	5% 1/4W
R121	1-249-420-11	CARBON	1.8K	5% 1/4W
R122	1-249-424-11	CARBON	3.9K	5% 1/4W
R123	1-249-393-11	CARBON	10	5% 1/4W
R124	1-249-393-11	CARBON	10	5% 1/4W
R125	1-247-839-11	CARBON	2.2K	5% 1/4W
R126	1-249-433-11	CARBON	22K	5% 1/4W
R128	1-249-417-11	CARBON	1K	5% 1/4W
R129	1-247-903-00	CARBON	1M	5% 1/4W
R130	1-249-418-11	CARBON	1.2K	5% 1/4W
R131	1-249-420-11	CARBON	1.8K	5% 1/4W
R133	1-247-839-11	CARBON	2.2K	5% 1/4W
R134	1-260-246-11	CARBON	75	5% 1/4W
R135	1-249-425-11	CARBON	4.7K	5% 1/4W
R136	1-249-417-11	CARBON	1K	5% 1/4W
R137	1-247-879-11	CARBON	100K	5% 1/4W
R138	1-249-425-11	CARBON	4.7K	5% 1/4W
R139	1-249-409-11	CARBON	220	5% 1/4W
R142	1-247-871-11	CARBON	47K	5% 1/4W

Ref. No.	Part No.	Description	Value	Remark
R143	1-249-409-11	CARBON	220	5% 1/4W
R144	1-249-417-11	CARBON	1K	5% 1/4W
< VARIABLE RESISTOR >				
RV1	1-223-693-11	RES. VAR. CARBON 100K (FINE TUNING)		
RV101	1-225-164-11	VOLUME (TONE)		
RV102	1-225-163-11	VOLUME (VOLUME)		
< SWITCH >				
S1	1-571-147-11	SWITCH, LEVER SLIDE (BAND)		
S101	1-570-729-11	SWITCH, LEVER SLIDE (FUNCTION)		
S102	1-762-565-11	SWITCH, R/P (REC SWITCH)		
< TRANSFORMER >				
T1	1-406-577-11	TRANSFORMER, IF		
T2	1-406-575-11	TRANSFORMER, IF		
T3	1-406-578-11	COIL, FM DETECTOR		
*****				
*	1-659-203-11	POWER BOARD		*****
	1-533-233-11	HOLDER, FUSE		
< CAPACITOR >				
C901	1-101-005-00	CERAMIC	22000PF	50V
C902	1-101-005-00	CERAMIC	22000PF	50V
C903	1-101-005-00	CERAMIC	22000PF	50V
C904	1-101-005-00	CERAMIC	22000PF	50V
< DIODE >				
D901	8-719-200-02	DIODE IN4002A		
D902	8-719-200-02	DIODE IN4002A		
D903	8-719-200-02	DIODE IN4002A		
D904	8-719-200-02	DIODE IN4002A		
< FUSE >				
△ F901	1-532-290-00	FUSE, TIME-LAG (0.080A 250V)		
< JACK >				
△ J901	1-526-838-11	INLET, AC 2P (~AC IN)		
< SWITCH >				
△ SW901	1-552-921-00	SWITCH, POWER (VOLTAGE SELECTOR)		
< TRANSFORMER >				
△ T901	1-429-346-11	TRANSFORMER, POWER		
*****				

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS *****	
55	1-533-233-31	HOLDER, FUSE	
ANT1	1-501-668-11	ANTENNA, TELESCOPIC	
△ F901	1-532-234-31	FUSE, TIME-LAG (0.080A 250V)	
HE101	1-500-232-11	HEAD, MAGNETIC (ERASE)	
HRP101	1-500-310-11	HEAD, MAGNETIC (RECORD/PLAYBACK)	
L5	1-501-705-11	ANTENNA, FERRITE-ROD (MW)	
M101	X-3372-889-1	MOTOR ASSY (including PULLEY)	
S601	1-692-978-11	SWITCH, LEAF (TAPE SWITCH)	
S602	1-692-978-11	SWITCH, LEAF (CUE/REVIEW)	
SP101	1-505-202-11	SPEAKER (L-CH)	
SP102	1-505-202-11	SPEAKER (R-CH)	
*****			
		ACCESSORIES & PACKING MATERIALS *****	
△	1-551-983-00	CORD, POWER (E23)	
△	1-569-007-11	ADAPTER, CONVERSION 2P (E23)	
△	1-569-008-21	ADAPTER, CONVERSION 2P (EA)	
△	1-769-412-11	CORD, POWER (E15, EA, SP, UAE)	
	3-810-800-11	MANUAL, INSTRUCTION (ENGLISH/FRENCH/SPANISH)	
	3-810-800-31	MANUAL, INSTRUCTION (ARABIC) (EA)	
*	3-934-613-01	CARTON, INDIVIDUAL	
*****			
		***** <b>HARDWARE LIST</b> *****	
#1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3	
#2	7-682-548-09	SCREW +B 3X8	
#3	7-685-649-79	SCREW +BVTP 3X14 TYPE2 IT-3	
#4	7-621-770-87	SCREW +B 2.6X5	
#6	7-685-246-19	SCREW +KTP 3X8 TYPE2 SLIT	
#7	7-682-547-04	SCREW +B 3X6	
#8	7-621-255-45	SCREW +P 2X6	

The components identified by mark △ or dotted line with mark △ are critical for safety.  
Replace only with part number specified.

## Printing Method for Large Sized Documents Such As Circuit Diagrams

Printing the page that exceeds A4-size two pages (or letter size) is possible by specifying the print range. (Acrobat Reader Version 4.0 or later)

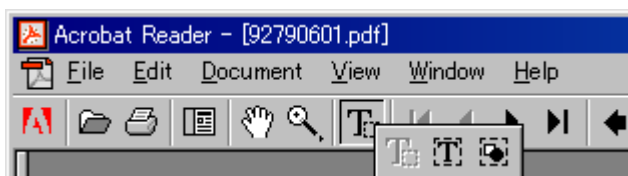
1. The enlarged print is made, if a smaller range than A4 size is specified and the A4 size is selected as a print paper.
2. Almost real sized print is made, if the range is specified, meeting the print paper size.
3. The reduced print is made, if a larger range than the print paper size is specified.

### Printing by Specifying a Range

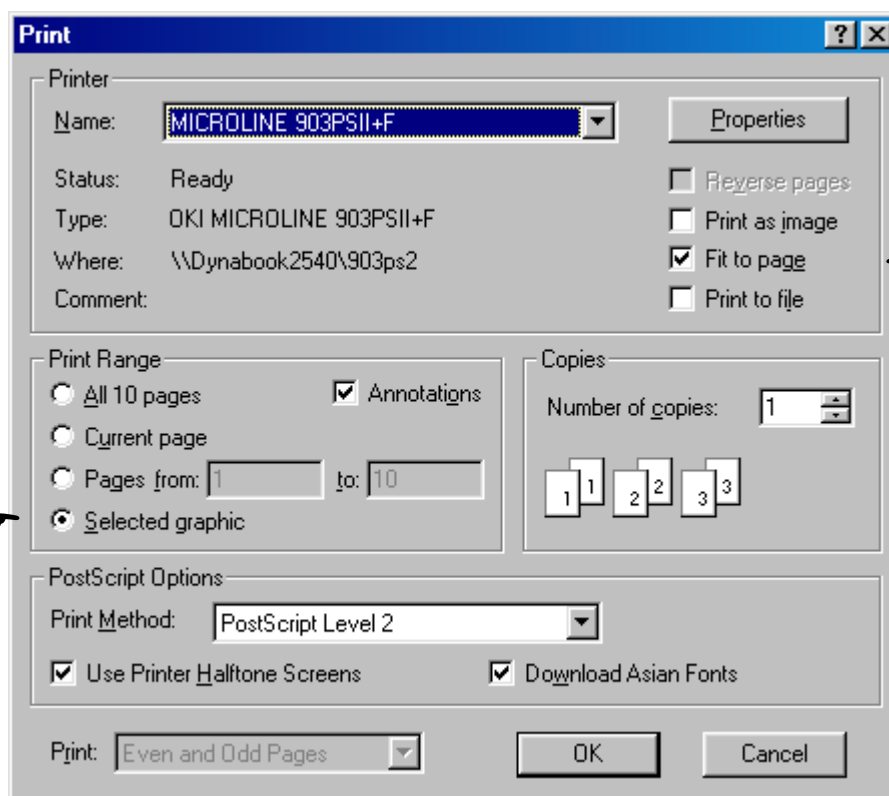
In printing out the drawings such as a schematic diagram and a printed wiring board larger than the printed paper size, they can be printed by specifying the range. (Acrobat Reader Version 4.0 or later)

1. Display the page to be printed.
2. From the File menu, select [Page Setup] and set the paper size.
3. From the Command bar, select [Graphic Select Tool].

(Keep pressing  , select  )



4. Dragging the cursor, enclose the range on the page to be printed.
5. From the File menu, select [Print] and make sure that the [Selected Graphic] is already checked. Also, if [Fit to page] is checked, the selected range is enlarged or reduced (and rotated as necessary) meeting the paper size.



6. To cancel the printed range, click an arbitrary position on the screen.



