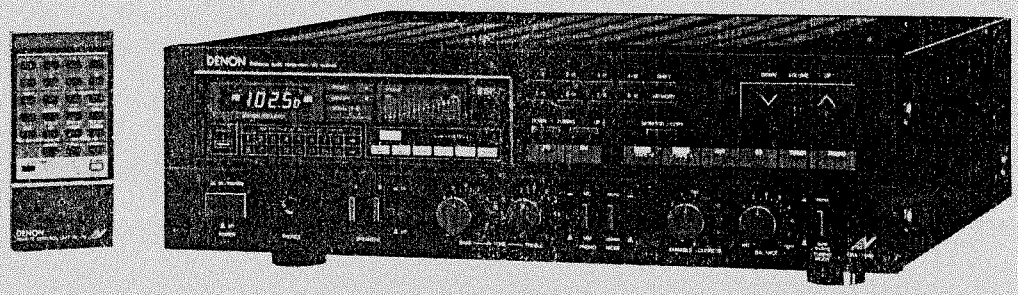
DENON

Hi-Fi AV RECEIVER

FOR EUROPEAN, AUSTRALIA AND OTHER MODELS

SERVICE MANUAL

MODEL DRA-75VR



CONTENTS

NIPPON COLUMBIA CO., LTD.

SPECIFICATIONS

AMPLIFIER SECTION

Rated Output Power (Both Channels driven): 100 W + 100 W (4 ohms 1 kHz T.H.D. 1%) 65 W + 65 W (8 ohms 20 Hz ~ 20 kHz T.H.D. 0.015%) [65 watts per channel minimum RMS, both channels driven at 8 ohms from 20 Hz ~ 20 kHz no more than 0.015% total harmonic distortion]

Power Bandwidth (IHF): 5 Hz ~ 40 kHz (T.H.D. 0.05% both ch. driven at 8 ohms)

Total Harmonic Distortion (20 Hz to 20 kHz): –3 dB power into 8 ohms 0.0095%

Intermodulation Distortion (60 Hz: 7 kHz, 4: 1 SMPTE): Rated power into 8 ohms 0.025%

Output Impedance: 0.1 ohm (at 1 kHz, 8 ohms)

Frequency Response: PHONO RIAA Standard Curve (Recording Output)
MM 20 Hz ~ 20 kHz ± 0.5 dB
MC 50 Hz ~ 20 kHz ± 0.5 dB
VCR/TAPE2, AUX, CD, VIDEO/TAPE1 20 Hz ~ 50 kHz ± 1.5 dB

Input Sensitivity and Impedance:
PHONO
MM 2.5 mV 47 k ohms
MC 0.25 mV 100 ohms
VCR/TAPE2, AUX, CD, VIDEO/TAPE1 150 mV 47 k ohms

Maximum Input Level (at 1 kHz): PHONO MM 150 mV, MC 15 mV

Signal to Noise Ratio (IHF-A):
PHONO
MM 88 dB at 5.0 mV input
MC 68 dB at 0.5 mV input
VCR/TAPE2, AUX, CD, VIDEO/TAPE1 98 dB at 150 mV input

Tone Controls: BASS ±8 dB at 100 Hz, TREBLE ±8 dB at 10 kHz

Loudness, Control Effect: VARIABLE LOUDNESS 10 positions, 50 Hz/10 kHz, +10 dB/+5 dB

TUNER SECTION

[FM]

Receiving Range: 87.5 MHz ~ 108 MHz [87.5 MHz ~ 108 MHz (100 kHz ~ 50 kHz separation)]

Usable Sensitivity: 0.8 μV (9.3 dBf)

S/N 50 dB Quieting Sensitivity (μV at 75 ohms and 0 dB at 10 ~ 15 W):
MONO 1.5 μV (14.7 dBf) [1.8 μV (16.4 dBf)]
STEREO 20 μV (37.3 dBf)

Signal to Noise Ratio (IHF-A): MONO 82 dB, STEREO 80 dB

Total Harmonic Distortion: MONO 0.1% at 1 kHz, STEREO 0.3% at 1 kHz [MONO 0.07% at 1 kHz, STEREO 0.12% at 1 kHz]

Capture Ratio: 1.2 dB

Image Rejection: 75 dB [40 dB]

AM Suppression: 60 dB

Selectivity: 70 dB (±400 kHz) [60 dB (±400 kHz)]

Frequency Response: 20 Hz ~ 15 kHz $^{+0.3}_{-0.5}$ dB

Stereo Separation: 40 dB at 1 kHz [50 dB at 1 kHz]

[AM]

Receiving Range: 522 kHz ~ 1611 kHz [520 kHz ~ 1710 kHz (10 kHz separation) or 522 kHz ~ 1611 kHz (9 kHz separation)]

Usable Sensitivity: 18 μV

Signal to Noise Ratio: 55 dB

VIDEO SECTION

Video Input/Output

Input Terminal VIDEO, IN: 1 Vp-p/75 ohm

Output Terminal OUT, MONITOR: 1 Vp-p/75 ohm

Frequency Response: 5 Hz ~ 6 MHz ± 1.5 dB

GENERAL

Power Supply: AC 220 V or 240 V/50 Hz [AC 110/120/220/240 V, 50/60 Hz Multiple) (120 V Preset)]

Power Consumption: 140 W [113 W]

Power Outlets: [SWITCHED 100 W/ UNSWITCHED 250 W]

Dimensions: 434 mm (17-3/32") W x 137 mm (5-1/16") H x 386 mm (15-13/64") D [434 mm (17-3/32") W x 137 mm (5-1/16") H x 378 mm (14-7/8") D]

Weight: 8.9 kg (19 lbs. 10 oz)

REMOTE CONTROL UNIT RC-75

Remote control system: Infrared pulse system

Power supply: 3 V DC Two SUM-4 (standard size four) dry cell batteries

External dimensions: 60 (2-23/64") W x 150 (5-29/32") H x 17 (43/64") D mm

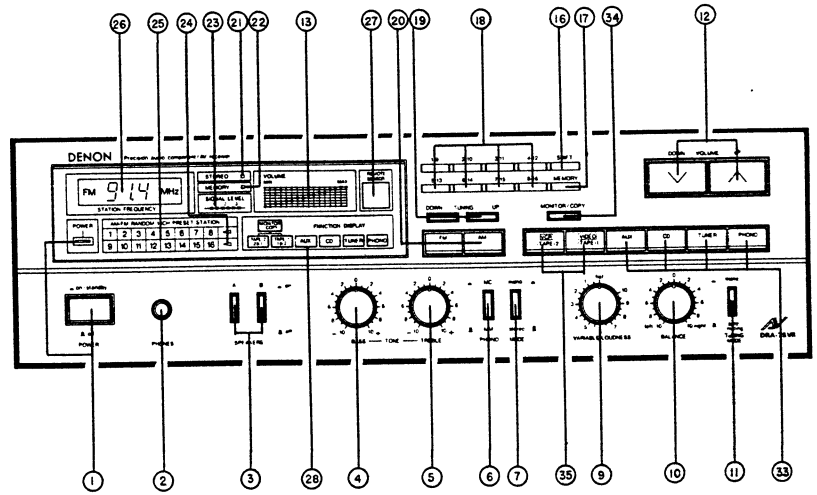
Weight: 87 g (Includes batteries) (about 3 oz)

[ ] is for Asian (EP1) model

Design and specifications are subject to change without prior notice.

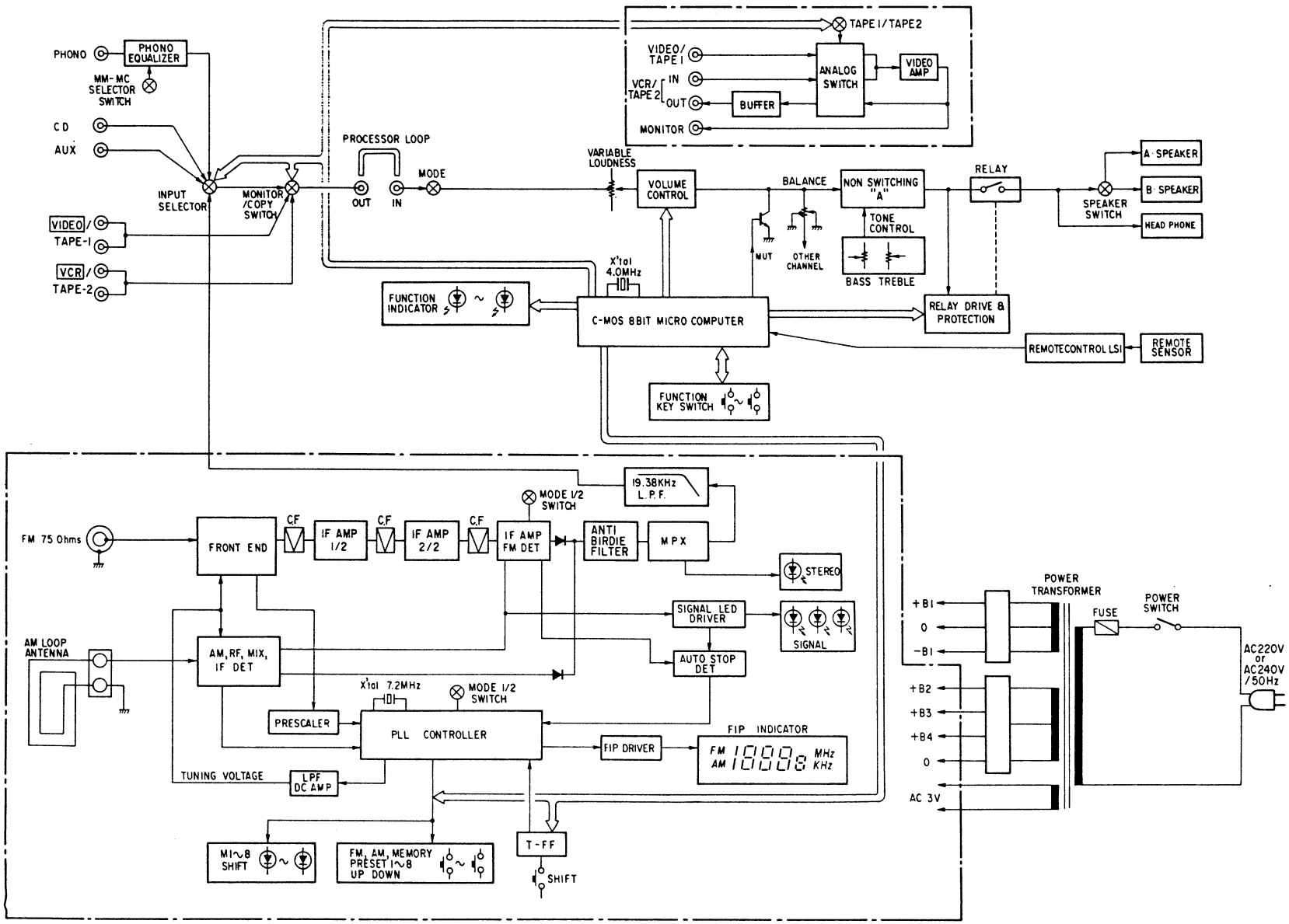
NOTE: *The following codes correspond to the appropriate models.*
EP1 for Asia, EZ for Europe, EA for Australia, New Zealand, EK for U.K., EU for U.S.A. and EC for Canada.
This Service Manual is prepared based on E2 Black Version.

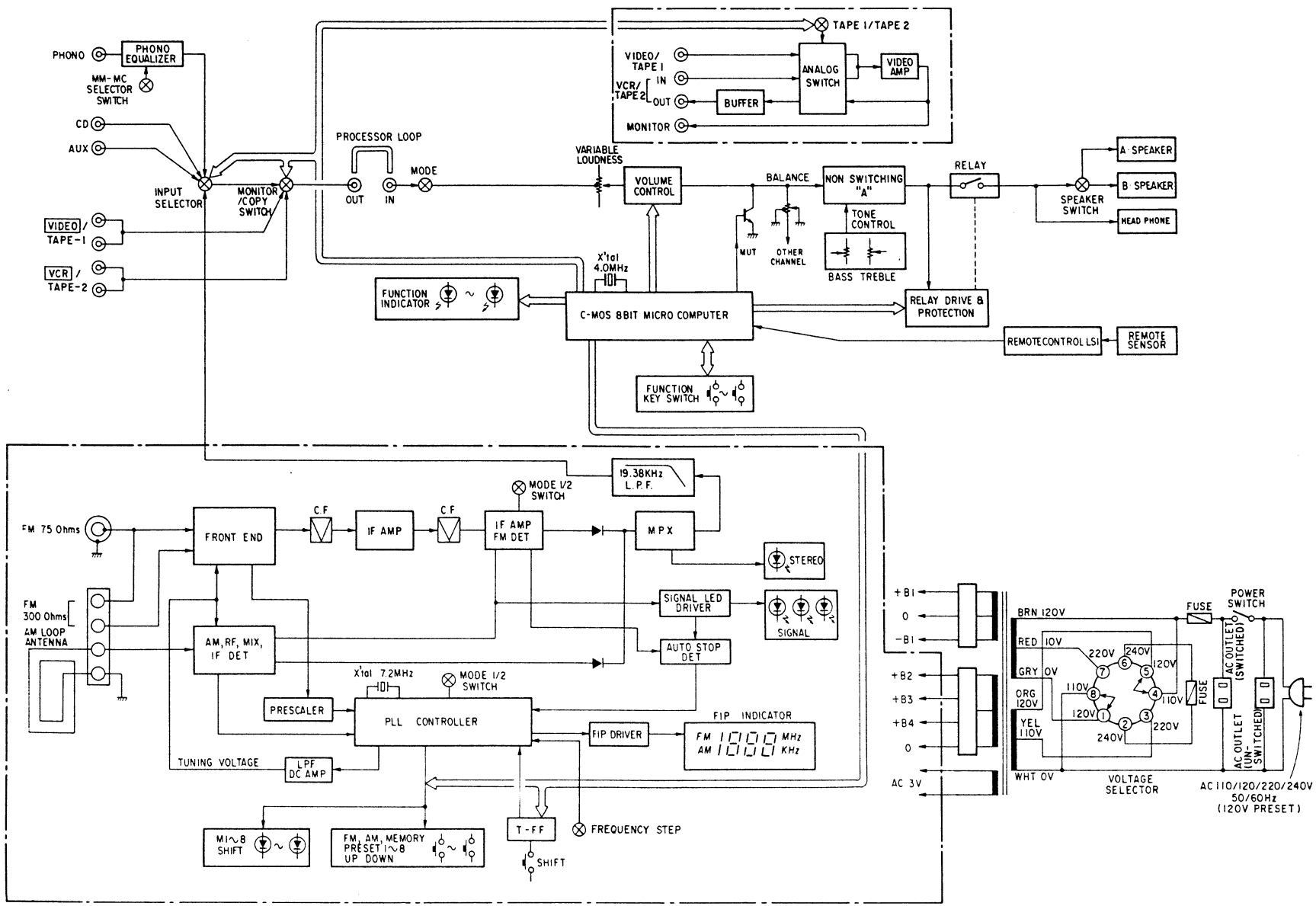
NAMES AND FUNCTIONS OF PARTS



① POWER and LED indicator (Power supply button and LED indicator)
② PHONES (Headphone jack)
③ SPEAKERS (Speaker select switches)
• A, • B
④ BASS (Bass control)
⑤ TREBLE (Treble control)
⑥ PHONO (Cartridge select switch)
• MC, • MM
⑦ MODE (Mode button)
• stereo, • mono
⑧ –
⑨ VARIABLE LOUDNESS (Loudness control)
⑩ BALANCE (Balance control)
⑪ TUNING MODE (FM mode, muting and tuning mode switch)
• auto/muting, • mono
⑫ VOLUME (Volume control)
• UP, • DOWN
⑬ VOLUME INDICATOR
⑭ –
⑮ –
⑯ SHIFT (Shift button)
⑰ MEMORY (Memory button)
⑱ PRESET CHANNEL 1 ~ 16 (Press station buttons)
⑲ TUNING (Tuning buttons)
• UP, • DOWN
⑳ BAND SELECT (Band selector buttons)
• FM, • AM
㉑ STEREO (Stereo indicator)
㉒ MEMORY INDICATOR
㉓ SIGNAL (Signal-strength indicator)
㉔ SHIFT INDICATOR
㉕ PRESET CHANNEL INDICATOR
㉖ FREQUENCY INDICATOR
㉗ REMOTE CONTROL PHOTOSENSITIVE WINDOW
㉘ FUNCTION INDICATOR
㉙ –
㉚ –
㉛ –
㉜ –
㉝ INPUT SELECTOR (Input select buttons)
• PHONO, • TUNER, • CD, • AUX.
㉞ MONITOR/COPY (VCR and tape monitor/copy switch)
㉟ VIDEO/TAPE SELECTOR (Video/tape selector switch)
• VIDEO/TAPE-1, • VCR/TAPE-2

BLOCK DIAGRAM
(for E2 and EA)

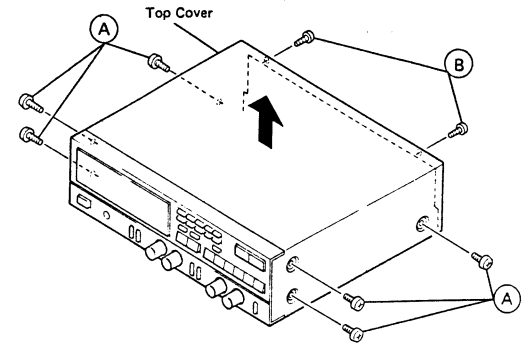



PHONO
PHONO EQUALIZER
MM-MC SELECTOR SWITCH
CD
AUX
INPUT SELECTOR
MONITOR /COPY SWITCH
VIDEO / TAPE-1
VCR / TAPE-2
PROCESSOR LOOP
OUT
IN
MODE
TAPE 1/TAPE 2
VIDEO/ TAPE 1
VCR/ TAPE 2
IN
OUT
BUFFER
ANALOG SWITCH
VIDEO AMP
MONITOR
VARIABLE LOUDNESS
VOLUME CONTROL
BALANCE
NON SWITCHING "A"
TONE CONTROL
BASS TREBLE
MUT
OTHER CHANNEL
RELAY
SPEAKER SWITCH
A SPEAKER
B SPEAKER
HEAD PHONE
X'tal 4.0MHz
FUNCTION INDICATOR
C-MOS 8BIT MICRO COMPUTER
RELAY DRIVE & PROTECTION
REMOTE CONTROL LSI
REMOTE SENSOR
FUNCTION KEY SWITCH
19.38KHz L.P.F.
MODE 1/2 SWITCH
FM 75 Ohms
FRONT END
C.F
IF AMP
C.F
IF AMP FM DET
MPX
STEREO
FM 300 Ohms
AM LOOP ANTENNA
AM, RF, MIX, IF DET
SIGNAL LED DRIVER
SIGNAL
AUTO STOP DET
X'tal 7.2MHz
MODE 1/2 SWITCH
PRESCALER
PLL CONTROLLER
FIP INDICATOR
FIP DRIVER
FM 10.00 MHz
AM 1000 KHz
TUNING VOLTAGE
LPF DC AMP
M1~8 SHIFT
FM, AM, MEMORY PRESET 1~8 UP DOWN
T-FF
SHIFT
FREQUENCY STEP
+B1
0
-B1
+B2
+B3
+B4
0
AC 3V
BRN 120V
RED 10V
GRY 0V
ORG 120V
YEL 110V
WHT 0V
220V
240V
120V
110V
VOLTAGE SELECTOR
FUSE
POWER SWITCH
AC OUTLET (SWITCHED)
AC OUTLET (UNSWITCHED)
AC 110/120/220/240V 50/60Hz (120V PRESET)

REMOVAL OF EACH SECTION

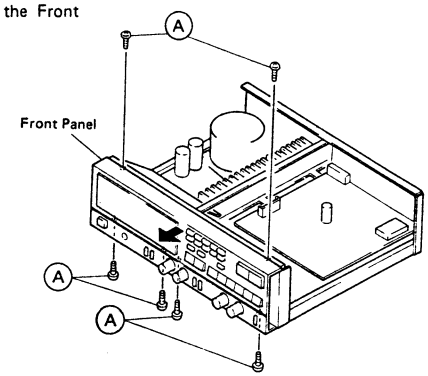
1. Top Cover

Remove 6 screws Ⓐ, 2 screws Ⓑ, and lift the Top Cover upward to detach.



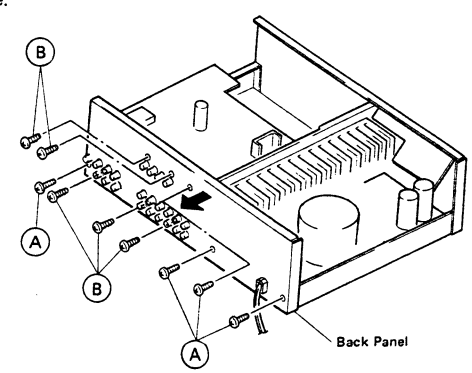
2. Front Panel

Remove 7 screws Ⓐ and draw out the Front Panel frontward to detach.



3. Back Panel

Remove 4 screws Ⓐ, 6 screws Ⓑ, and pull out the Back Panel backward to dismantle.



ANTENNA INSTALLATION (for E2 and EA)

- FM ANTENNA

  T-type indoor antenna (300 ohms) can be used inside wooden houses for local FM stations and strong signals. Orient the T-shaped part for optimum reception and mount the antenna on the wall or ceiling. (FM indoor antennas may not consistently ensure stable reception, due to environment changes. In such cases use an FM indoor antenna temporarily until an outdoor antenna is installed.)

  75 ohms coaxial cable (3C-2V, 5C-2V) is preferable to obtain better performance of the tuner.

  (To use of a 300 ohm FM outdoor antenna, connect to the 300 ohm terminals of the attached FM antenna adapter.)

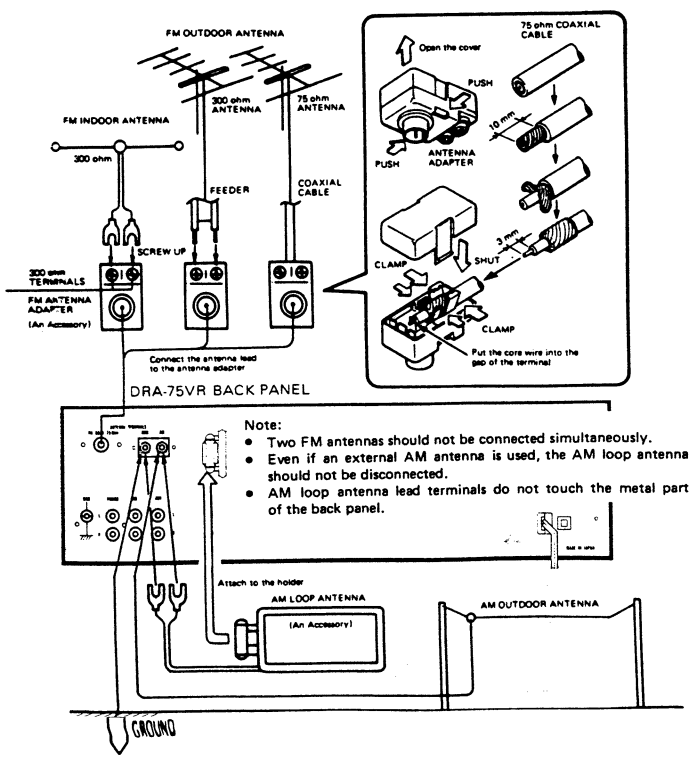
- AM ANTENNA

  Attach the accessory AM loop antenna to the antenna holder on the back panel.
  Connect the leads to AM and GND terminal. Use this terminal also for an outdoor antenna.
  Orient the loop antenna horizontally to obtain optimum reception. Where broadcast stations are distant and only weak signals are received, or where signals are blocked by obstacles, install an AM outdoor antenna.

- GROUNDING

  If there is reception noise, use of grounding wire is recommended.
  Connect a thick insulated wire to the "GND" terminal, and attach the unconnected bare end to a metal water pipe, grounding rod, or grounded copper plate.

  * Never connect the grounding wire to a gas pipe. This could cause fire or explosion.



ANTENNA INSTALLATION (for EP1)

- FM ANTENNA

  The accessory T-type indoor antenna (300 ohm) can be used inside wooden houses for local FM stations and strong signals. Orient the T-shaped part for optimum reception and mount the antenna on the wall or ceiling. FM indoor antennas may not consistently ensure stable reception, due to environment changes. In such cases an FM outdoor antenna is necessary for best reception.
  Either 300 ohm twin lead (cable or 75 ohm coaxial cable may be used for outdoor antenna. But, coaxial cable is preferable when electrical interferences is a problem.

  * Connect either an indoor T-type antenna or an outdoor antenna but not both.

- AM ANTENNA

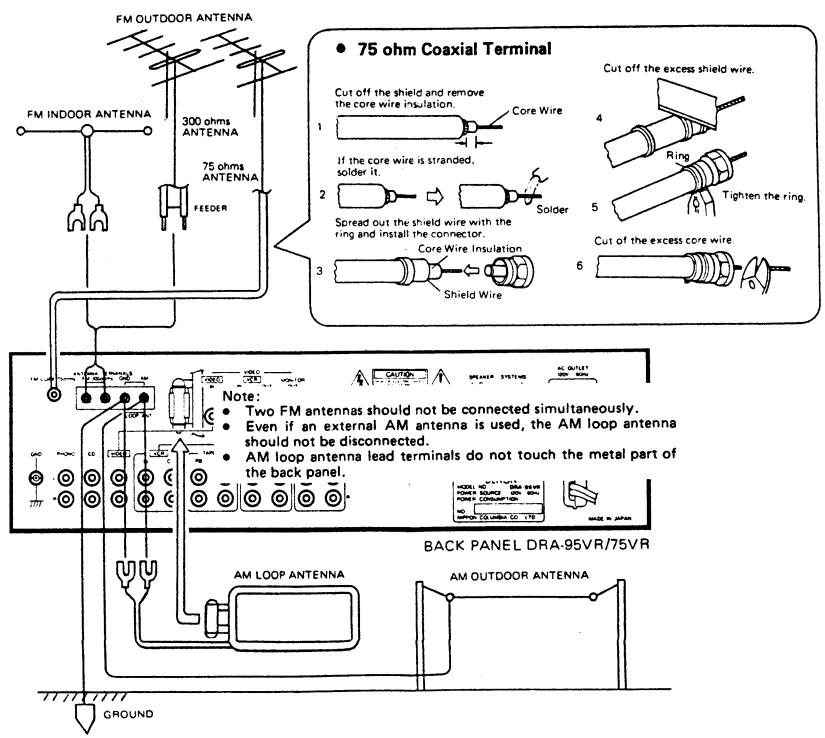
  Attach the accessory AM loop antenna to the antenna holder on the back panel.
  Connect the leads to AM and GND terminal. Use this terminal also for an outdoor antenna.
  Orient the loop antenna horizontally to obtain optimum reception. Where broadcast stations are distant and only weak signals are received, or where signals are blocked by obstacles, install an AM outdoor antenna.

  * Never disconnect the AM loop antenna leads when use an outdoor antenna.

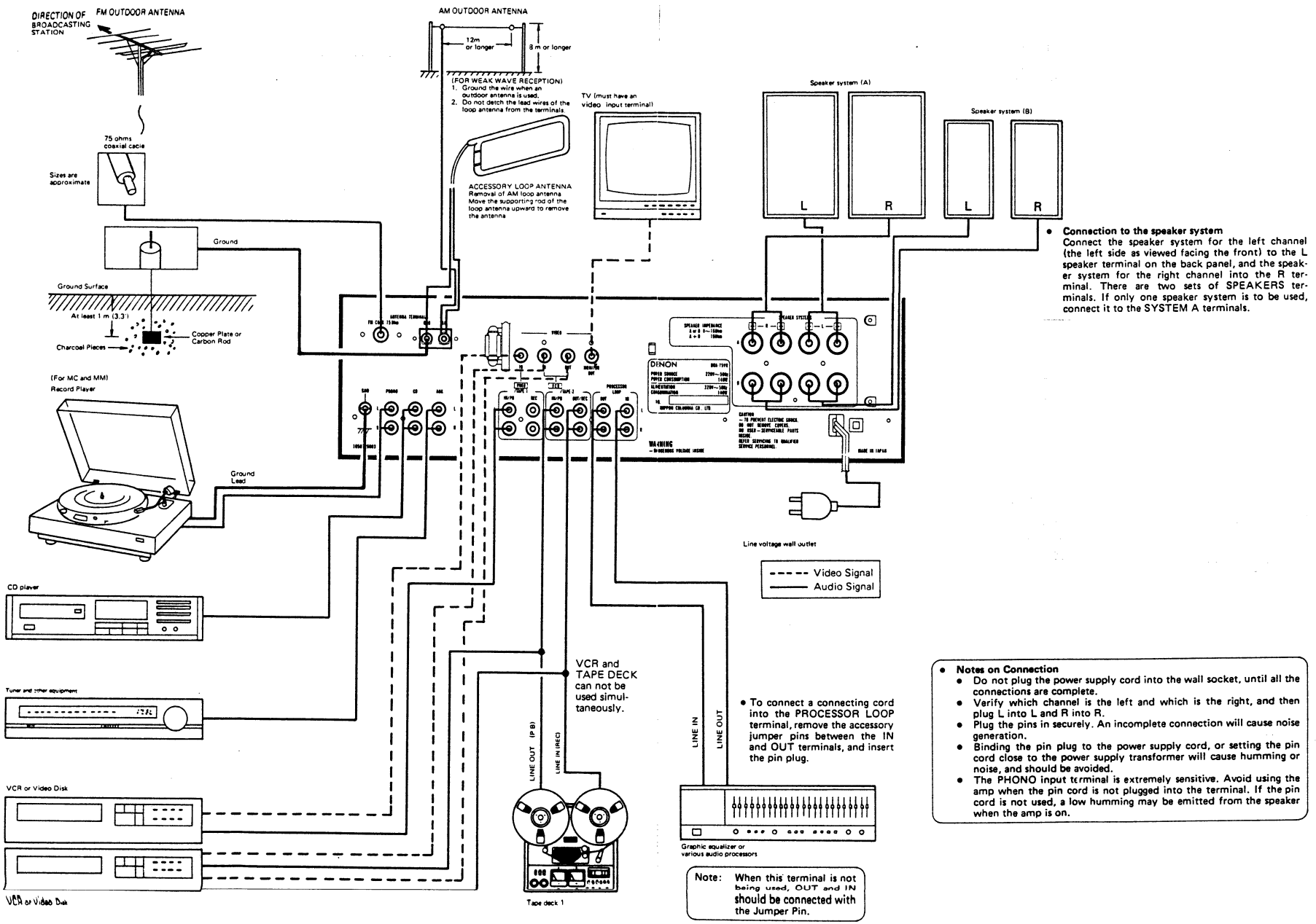
- GROUNDING

  If there is reception noise, use of grounding wire is recommended.
  Connect a thick insulated wire to the "GND" terminal, and attach the unconnected bare end to a metal water pipe, grounding rod, or grounded copper plate.

  * Never connect the grounding wire to a gas pipe. This could cause fire or explosion.



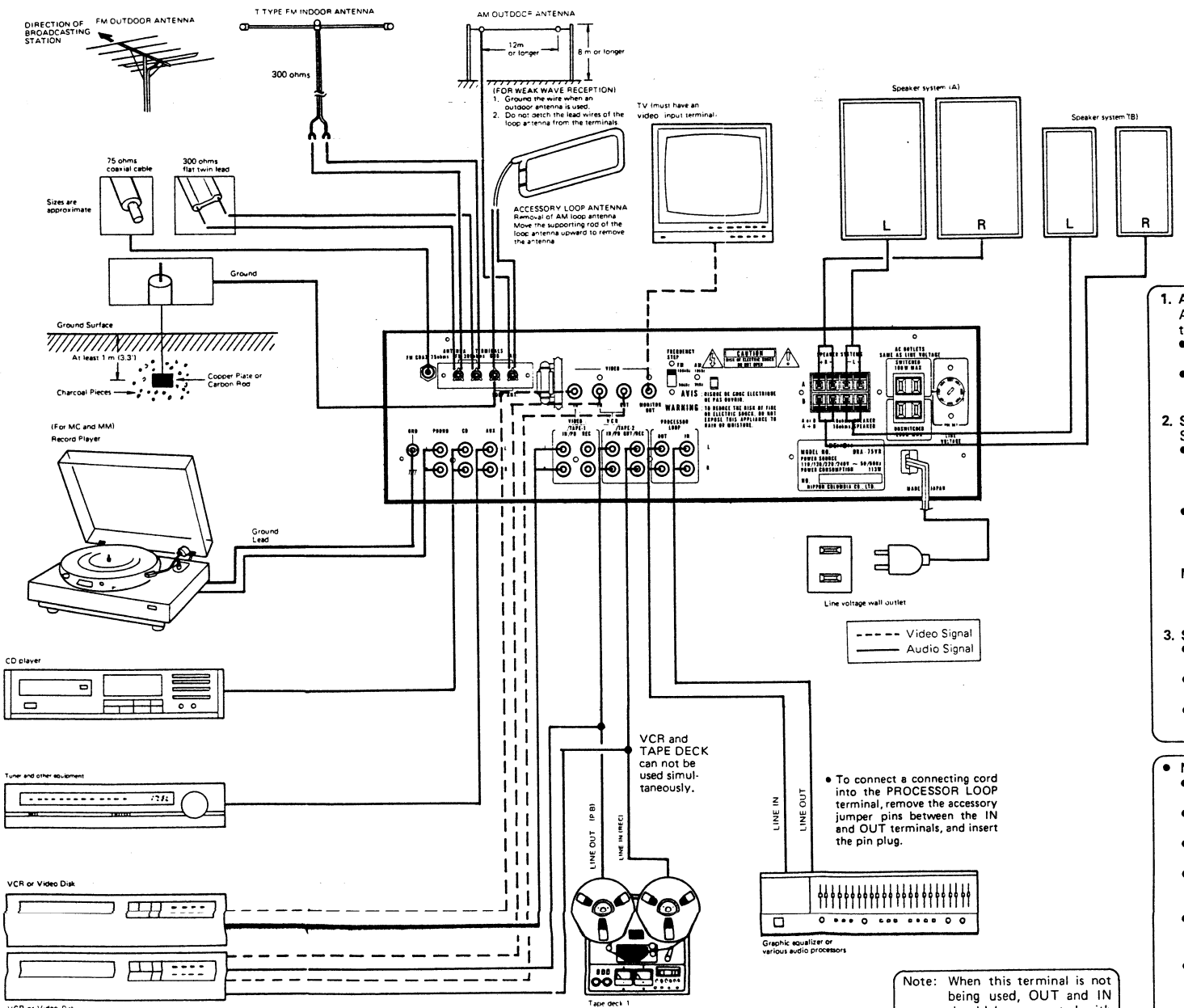
CONNECTIONS (for E2 and EA)



• **Connection to the speaker system**
Connect the speaker system for the left channel (the left side as viewed facing the front) to the L speaker terminal on the back panel, and the speaker system for the right channel into the R terminal. There are two sets of SPEAKERS terminals. If only one speaker system is to be used, connect it to the SYSTEM A terminals.

• **Notes on Connection**
- Do not plug the power supply cord into the wall socket, until all the connections are complete.
- Verify which channel is the left and which is the right, and then plug L into L and R into R.
- Plug the pins in securely. An incomplete connection will cause noise generation.
- Binding the pin plug to the power supply cord, or setting the pin cord close to the power supply transformer will cause humming or noise, and should be avoided.
- The PHONO input terminal is extremely sensitive. Avoid using the amp when the pin cord is not plugged into the terminal. If the pin cord is not used, a low humming may be emitted from the speaker when the amp is on.

CONNECTIONS (for EP1)



Note: When this terminal is not being used, OUT and IN should be connected with the Jumper Pin.

- **Connection to the speaker system**
  Connect the speaker system for the left channel (the left side as viewed facing the front) to the L speaker terminal on the back panel, and the speaker system for the right channel into the R terminal. There are two sets of SPEAKERS terminals. If only one speaker system is to be used, connect it to the SYSTEM A terminals.

1. AC OUTLETS . . . For Asia model

AC outlets are used for connecting amplifier component units, such as tuner, turntable, tape deck, etc.

- **SWITCHED (Capacity: 100 W):**
  This outlet is turned on/off when main power switch is turned on/off.
- **UNSWITCHED (Total capacity: 250 W)**
  These outlets are always ON whether power switch is on or off.

2. SETTING THE FREQUENCY STEP

Set the FREQUENCY STEP switch as described below.

- In the U.S.A. and Canada – set the switch to the upper side.
  With this setting, the frequency varies in 100 kHz steps in the range of 87.5 to 108.0 MHz (FM) and in 10 kHz steps in 520 to 1710 kHz (AM).
- Elsewhere – set the switch to the lower side.
  With this setting, the frequency varies in 50 kHz steps in the range of 87.50 to 108.00 MHz (FM) and in 9 kHz steps (AM) in 522 to 1611 kHz (AM).

Note: Don't change the switch setting with power on.
If the FREQUENCY STEP switch is changed with power on, turn off and on the unit again to reset the circuit.

3. SETTING THE LINE VOLTAGE

- The customer can set the VOLTAGE SELECTOR KNOB on the back panel for appropriate line voltage by using a screwdriver.
- Do not use excessive force in setting the VOLTAGE SELECTOR KNOB – you may damage it.
- If the VOLTAGE SELECTOR KNOB does not turn smoothly, call qualified service personnel.

- **Notes on Connection**
  - Do not plug the power supply cord into the wall socket, until all the connections are complete.
  - Verify which channel is the left and which is the right, and then plug L into L and R into R.
  - Plug the pins in securely. An incomplete connection will cause noise generation.
  - Do not use the AC OUTLETS terminals to provide power for a hair drier or other electrical appliance after the power supply cords of the audio components have been plugged in.
  - Binding the pin plug to the power supply cord, or setting the pin cord close to the power supply transformer will cause humming or noise, and should be avoided.
  - The PHONO input terminal is extremely sensitive. Avoid using the amp when the pin cord is not plugged into the terminal. If the pin cord is not used, a low humming may be emitted from the speaker when the amp is on.

METHOD OF ADJUSTMENTS

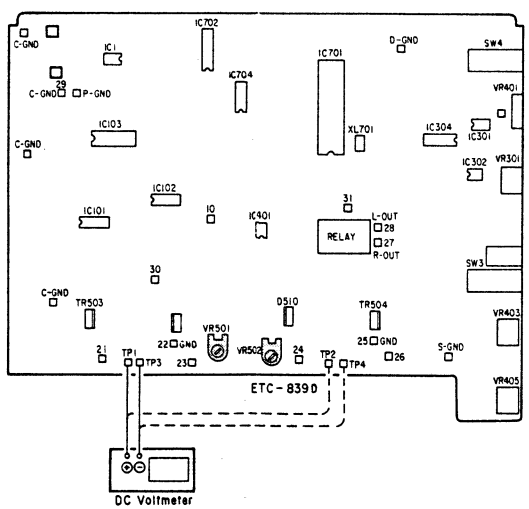
When making adjustments, be sure the power supply is at the rated voltage and the room air is on normal conditions with respect to temperature and humidity.

• *AUDIO SECTION*

1. IDLING CURRENT

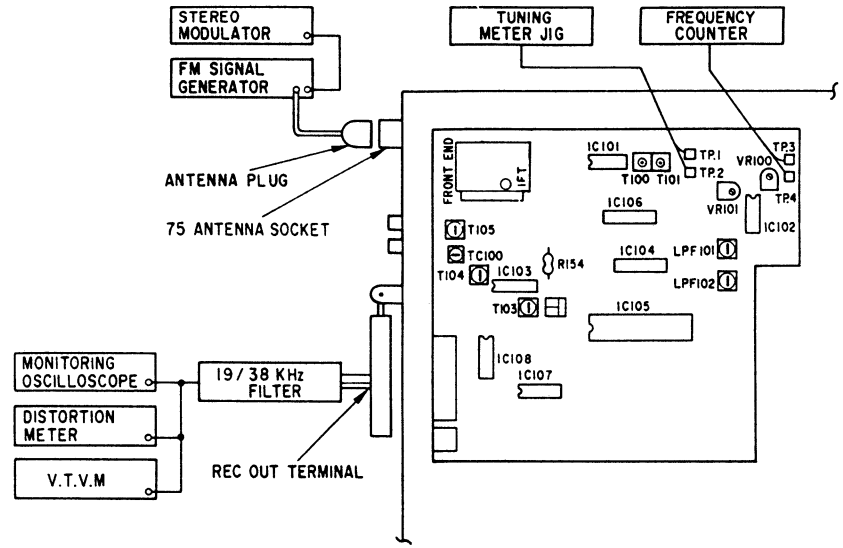
- **Setup**
  1. Lay the unit at an ordinary position away from a direct current from a cooler or fan. Do the adjustment at a temperature between 15°C and 30°C.
  2. Set controls as follows.
     POWER SWITCH → off (■)
     VOLUME CONTROL → fully counterclockwise.
     SPEAKER Terminals → open: do not connect the speakers, dummy load etc.

- **Adjustment**
  1. Remove Top cover. And then connect DC Voltmeter to Test points of ETC0839D or ETC0839 [POWER UNIT].
  2. Connect Power cord to AC outlet, and turn Power Switch "on" (▬). Within 2 seconds turn VR501 (Lch) and VR502 (Rch) clockwise so that the DC voltmeter reads
     10 ± 0.1 mVDC
  3. Then after 2 minutes warmup adjust VR501 and VR502 so that the DC Voltmeter reads
     10 ± 0.5 mV
  4. And after 15 minutes warmup adjust VR501 and VR502 so that the DC Voltmeter reads
     7 ± 3 mV

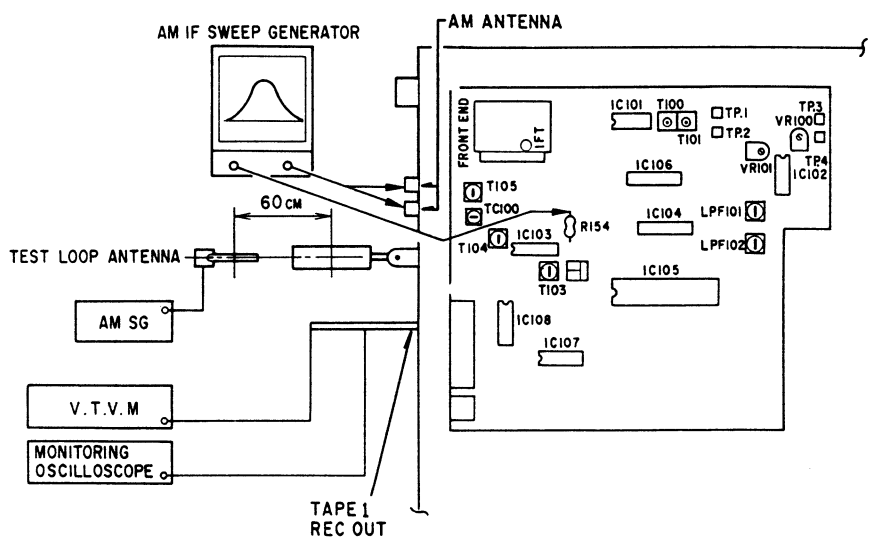


INSTRUMENT HOOK-UP DIAGRAM

FM



AM



• TUNER SECTION

INSTRUMENT CONNECTIONS AND SETTING

• **Preparation**

1. Connection of Measuring Equipment

FM

(1) Connect the output end of the Stereo/Mono FM signal generator to the antenna terminal (75 ohm) of the unit. Set the stereo modulator to the following conditions:
L + R: 67.5 kHz deviation 1 kHz (internal modulation frequency)
Pilot: 7.5 kHz deviation

(2) Connect a filter jig of 19 kHz to the recout terminal L of the unit. Then, connect the output of the filter jig to a distortion meter, the output of which is in turn connected to an oscilloscope for monitoring.

(3) Connect tuning jigs to TP. 1 and 2.

(4) Connect frequency counters to TP.3, TP.4.

AM

(1) The AM signal generator should be set as follows:
Modulation: 30%, modulation frequency: 400 Hz
(Antenna input signal level: about 80 dB/m).

FM/MPX ALIGNMENT

Table 1

Step	Alignment Item	Tuning Frequency Setting	Input					Output		Adjustment		Remarks
			Type	Frequency	Input Level	Modulation	Coupling	Type	Connect to	Points	Adjust to	
1	76 kHz	98 MHz	FM Standard Signal Generator Mono	98 MHz	60 dBμ	1 kHz 75 kHz Dev.	Antenna Terminal	Frequency Counter	(+) T.P.4 (–) T.P.3	VR100	76 kHz ± 50 Hz	Function: FM Tuning mode: Auto (Front Panel)
2	Tuning Center	98 MHz	FM SSG, Mono	98 MHz	60 dBμ	None	Antenna Terminal	Center Meter	T.P. 1, 2	T-100	Center of Tuning Meter	Function: FM Tuning mode: Mono
3	Distortion (Mono)	98 MHz	FM SSG, Mono	98 MHz	60 dBμ	1 kHz 75 kHz Dev.	Antenna Terminal	Distortion Meter	Output Terminal (L)	T-101	Minimum Distortion	Function: FM Tuning mode: Mono
4	Distortion (Stereo)	98 MHz	FM SSG, Stereo (L)	98 MHz	60 dBμ	Main: 1 kHz L-ch 67.5 kHz Dev. Pilot: 7.5 kHz Dev.	Antenna Terminal	Distortion Meter	Output Terminal (L)	IFT on Front End	Minimum Distortion	Function: FM Tuning mode: Auto
5	Noise Center & Distortion	Repeat 2, 3 and 4 to obtain minimum distortion and at the same time center meter should read center condition.										
6	Separation	98 MHz	FM SSG, Stereo (L)	98 MHz	60 dBμ	Main: 1 kHz L-ch 67.5 kHz Dev. Pilot: 7.5 kHz Dev.	Antenna Terminal	Distortion Meter	Output Terminal (L)	VR101	Max. Separation	Function: FM Tuning mode: Auto

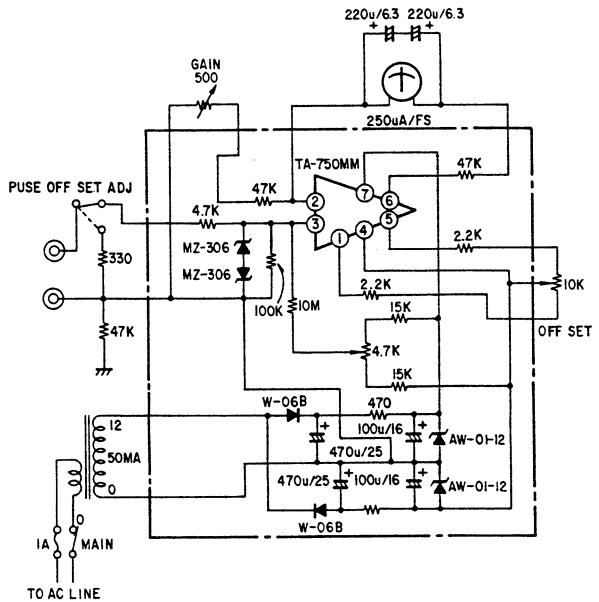
AM ALIGNMENT

( ) is for Asian (EP1) model.

Table 2

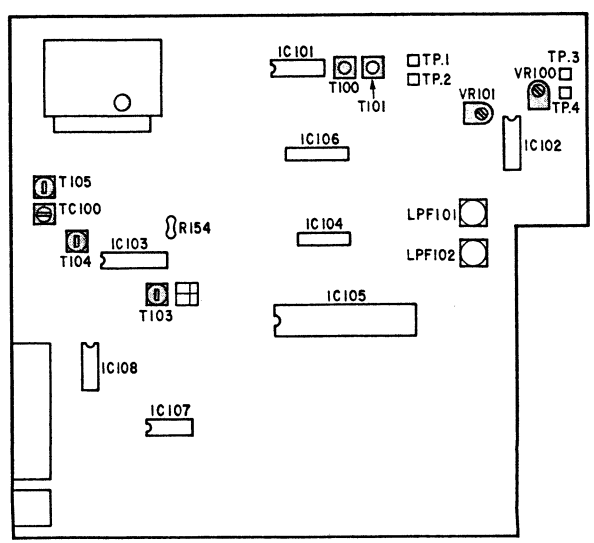
1	IF	–	IF Sweep	–	Input Level is not to saturate A.G.C.	–	Antenna Terminal	Oscilloscope	R154	T-103	Maximum Height and Best Symmetry Curve	Function: AM Center of Wave Form: 450 kHz
2	Tracking Alignment AM	603 kHz (600)	AM SSG	603 kHz (600)	Input Level is not to saturate A.G.C.	400 Hz 30%	Loop Antenna	Audio V.T.V.M.	Output Terminal (L)	T-105	Maximum Output	Function: AM
		1404 kHz (1500)	AM SSG	1404 kHz (1500)	Input Level is not to saturate A.G.C.	400 Hz 30%	Loop Antenna	Audio V.T.V.M.	Output Terminal (L)	TC-100	Maximum Output	Function: AM

Tuning Meter Jig



ROUGH DIAGRAM OF ADJUSTMENT POINT
ETC0841D or ETC0841E Tuner Unit

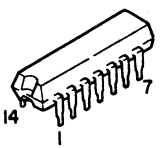
Component Side



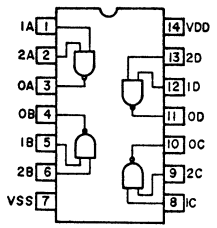
SEMICONDUCTORS

• IC

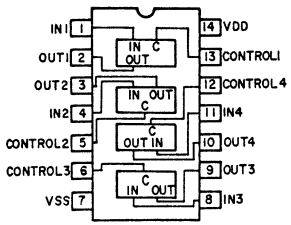
HD14011BP
HD14066BP
HD14082BP
(Hitachi)



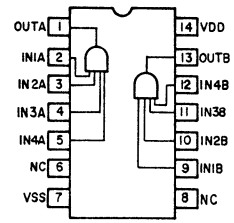
HD14011BP



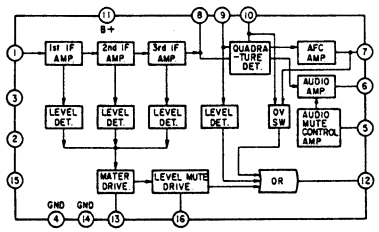
HD14066BP



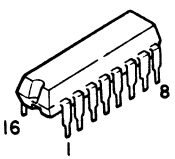
HD14082BP

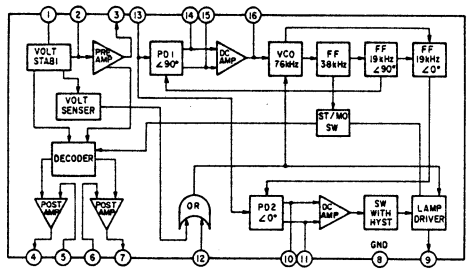


HA11225
(Hitach)

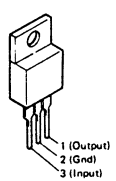


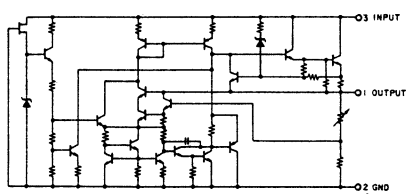
μPC1235C
(NEC)



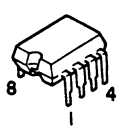


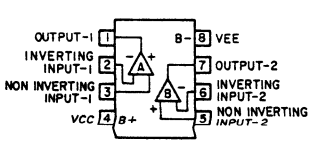
L78M05ML
(JRC)



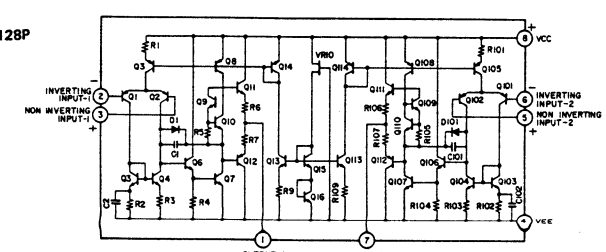


M-5218P (Mitsubishi)

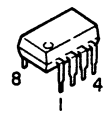




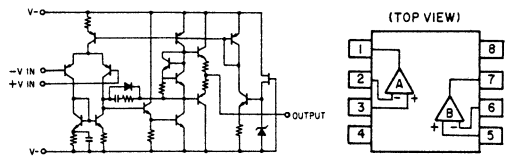
M-5128P



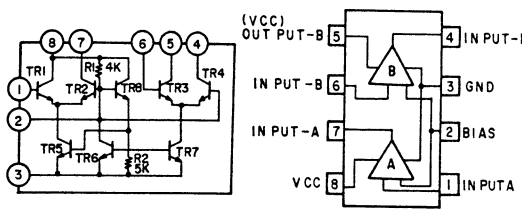
NJM2043DD (JRC)
NJM2068DD (JRC)
LA1222 (Sanyo)



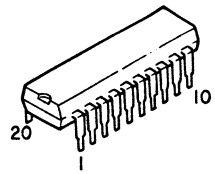
NJM2043DD
NJM2068DD

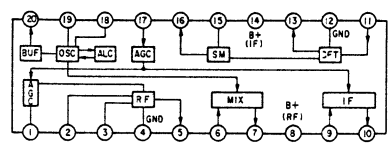


LA1222

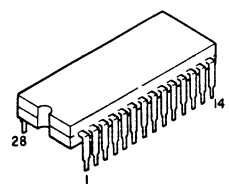


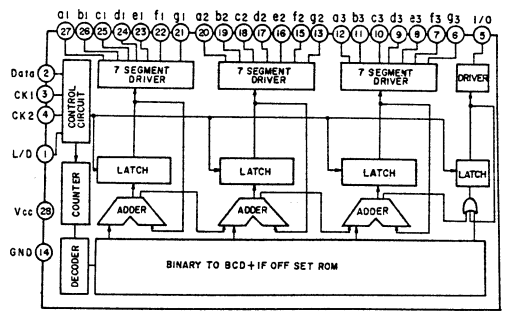
LA1245
(Sanyo)





TD6301AP
(Toshiba)





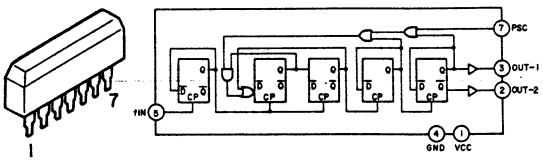
FUNCTIONS OF TERMINALS (TD6301AP)

Pin No.	Name	Function
1	L/D	Output status select input terminal. Input terminal for selecting output status by the indicator (LED, FL, LCD).
2	Data	Receiving frequency data input terminal. Input serially by the system controller LSI.
3, 4	CK1 CK2	Received frequency data input control timing input terminal. Transferred simultaneously with data by the system controller LSI.
5	1/0	Segment drive output terminal. 100 MHz-unit display at FM time. Only 1 pin is used for output because of 1 to 0 in both FM/AM.

Pin No.	Name	Function
6~12	a^3~g^3	7-segment drive output terminal. 10 MHz-unit display at FM time. 100 kHz-unit display at AM time.
13, 15~20	a^2~g^2	7-segment drive output terminal. 1 MHz-unit display at FM time. 10 kHz-unit display at AM time.
21~27	a^1~g^1	7-segment drive output terminal. 100 kHz unit display at FM time. 1 kHz-unit display at AM time.
14, 28	Vcc GND	Supply voltage applying terminal.

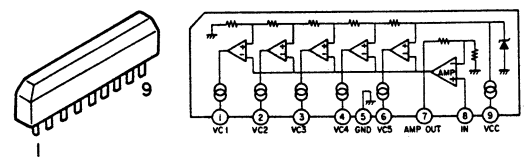
FUNCTIONS OF TERMINALS (TD6104P)

TD6104P
(Toshiba)

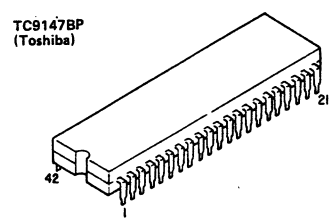


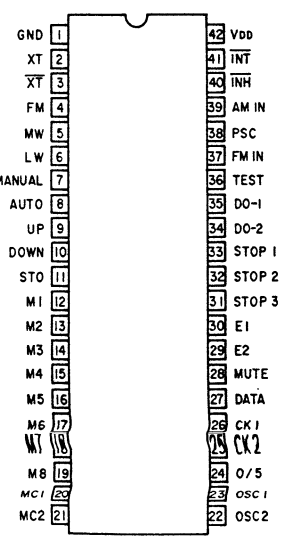
Pin No.	Name	Functions
5	f_{IN}	FM station signal input terminal Frequency range 60 – 140 MHz Input level 75 – 300 mVrms
3	OUT-1	Dividing an input signal into 1/30 or 1/32 through dividing output terminal f_{IN}. Output level 0.5(V)MIN
2	OUT-2	OUT 1 inverted signal output. Because of open emitter system, if it is to be used. External resistor is necessary. Open in general.
7	PSC	Dividing value select control terminal 1/32 when Vpcc ≧ 2(V), 1/30 when Vpcc ≦ 1(V)
6	C	for bias circuit. Connect C = 2200 pF (approx. between the unit and the GND.
1 4	Vcc GND	Power terminal Vcc = 5V Icc = 5 mA (standard), 10 mA (max.)

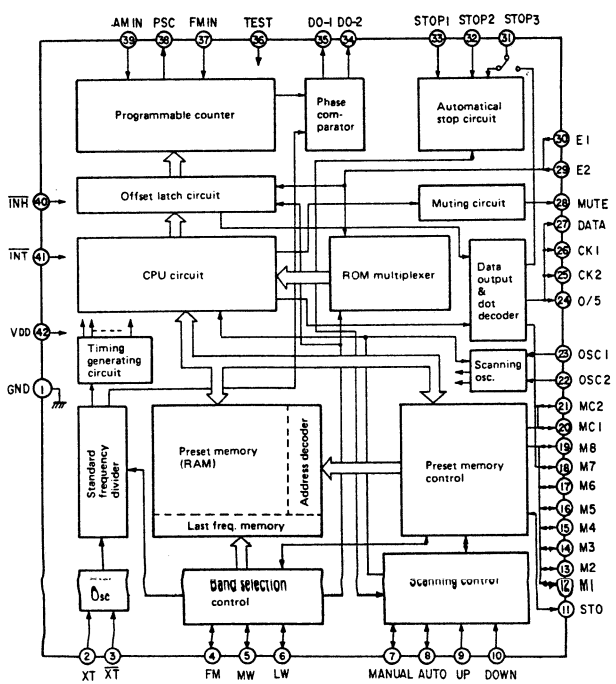
LB1403N
(Sanyo)



TC9147BP
(Toshiba)



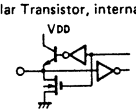




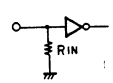
Pin No.	Symbol	Assignment	Function	Remark
2	X_T	X-tal oscillator terminal	Connect reference frequency X-tal 7.2 MHz	Internal feedback resistor
3	$\overline{X_T}$			
4	FM	FM band specific input	Mutual reset type FM/MW/LW band switching	A
5	MW	MW band specific input		
6	LW	LW band specific input		
7	Manual	Manual tuning mode specific input	Mutual reset type switch manual UP/DOWN and auto search mode	A
8	Auto	Auto tuning mode specific input		
9	UP	UP key input	UP/DOWN selection	B
10	DOWN	DOWN key input		
11	STO	Memory store command input	Set to preset memory write	A
12~19	M1~M8	Preset memory channel command input	With MC1, MC2, write/read 16 preset stations	A: TC9147BP/ TC9157AP
20	MC1	Memory control input	Set FM/AM (MW+LW) preset each 8 stations out of 16 stations to fixed ones, or FM + MW + LW 3 band, 16 stations random selection.	C: TC9147BP/ TC9157AP
21	MC2			
22		Clock for AM scanning	Determines AM sensing speed	–
23		Clock for FM scanning	Determines FM scanning speed	–
24	0/5	50 kHz output	50 kHz step for South Africa and Europe area. 50 kHz: H level	D: TC9147BP/ TC9157AP
25	CK2	Rx frequency data Serial output	Output serial data and timing clock for Rx frequency digital display. CK1 output is common with Beep.	D: TC9147BP/ TC9157AP
26	CK1			
27	DATA			
28	MUTE	Mute signal output	Mute: "H" level	D
29	E_2	Area command input	Japan, America, Europe, South Africa, Area command.	E
30	E_3			
31	STOP3	AM, IF signal input	When AM Rx, counts IF 450 kHz and stops auto search	F: TC9147BP/ TC9157AP
32	STOP2	Auto search stop signal input	When "H" is applied to STOP1 input, if "H" is applied to STOP2, stops auto search. Also, ARI is used for Stereo Station identification.	E: TC9147BP/ TC9157AP
33	STOP1	Scanning speed slow input	Reduces auto search scanning speed to 1/2 when "H" level applied.	E: TC9147BP/ TC9157AP
34	DO-2	Phase comparator output	Outputs 2 tristate buffer in parallel from a comparator	G
35	DO-1			
36	TEST	TEST port	"H": test mode	B
37	FM_{IN}	FM programmable counter input	Connects pre-scaler TD6104P output	F
38	PSC	Pre-scaler control output	Controls frequency divider 1/30, 1/32 of pre-scaler TD6104P	D
39	AM_{IN}	AM programmable counter input	Inputs AM local oscillation signal	F
40	INH	Inhibit input	"H" level: normal operation "L" level: inhibit	E
41	INT		"H" level: normal "L" level: initialize	E
42	V_{DD}	Power supply	Apply 5 ± 0.5 V. Backup can be reduced to 2 V	–
1	GND			

I/O equivalent circuit

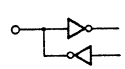
A. Bipolar Transistor, internal LED driver



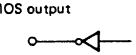
B. Pull down resistor C-MOS input



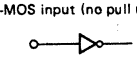
C. C-MOS I/O



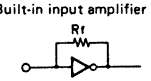
D. C-MOS output



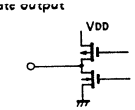
E. C-MOS input (no pull up/down resistor)



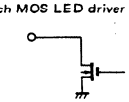
F. Built-in input amplifier



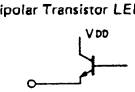
G. Tristate output



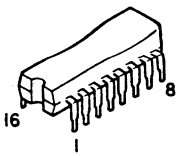
H. Nch MOS LED driver output

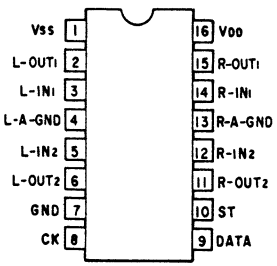


I. Bipolar Transistor LED driver output

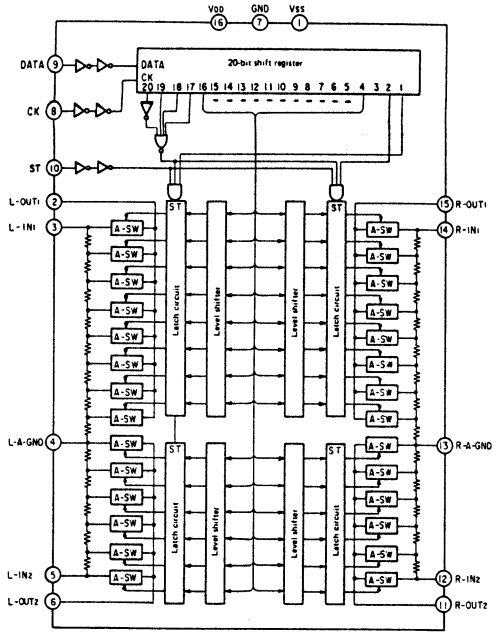


TC9176P
(Toshiba)





TC9176P



Pin No.	Symbol	Function	Remark
2 15	$L\text{-}out_1$ $R\text{-}out_2$	10 dB step attenuator output Attenuates signal applied to IN in 10 dB step: 0 ~ 70 dB in 8 steps	(L/R) 2/15 3/14 4/13 5/12 6/11
3 14	L-in R-in	10 dB attenuator input	
4 13	A-GND	AC ground	
5 12	$L\text{-}in_2$ $L\text{-}in_2$	2 dB attenuator input	
6 11	$L\text{-}out_2$ $R\text{-}out_2$	2 dB attenuator output Attenuates signal applied to IN in 2 dB step: 0 ~ 8 dB in 5 steps	
9	DATA	Attenuation, channel selection data input. Comprises 20 bit, and applied as CK signal.	Input invertor for low threshold value.
8	CK	Clock input Clock input to take in DATA port data	
10	ST	Strobe input Latches DATA, attenuation taken from CK port, channel selection data, by turning ST to "H" level. When "H" is not applied to the port, previous data remain as are.	
16 7 1	V_{DD} GND V_{SS}	(+) B Terminal Ground Terminal (–) B Terminal	

Function

Attenuation Setting

Input optional attenuation data to DATA, CK, ST ports.

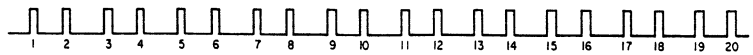
Data comprise 20 bit.

(TC9176P has no loudness control, and 3rd bit is always at "L" level)

TC9176P

Lch	Rch	"0"	0dB	-2dB	-4dB	-6dB	-8dB	0dB	-10dB	-20dB	-30dB	-40dB	-50dB	-60dB	-70dB	"0"	"0"	"0"	"1"
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

CK



e.g. when data (11001000001000000001) entered, it result in –22 dB attenuation.

Data bit 1, 2 : select L^{ch}, R^{ch}

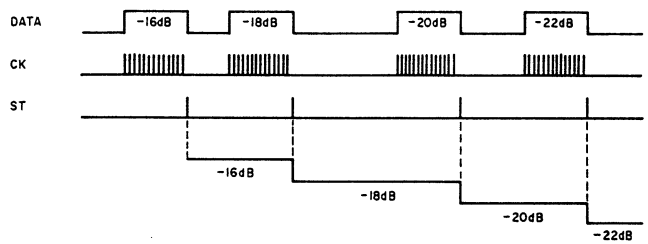
Bit 4 ~ 8 : 2 dB step attenuator setting

Bit 9 ~ 16 : 10 dB step attenuator setting

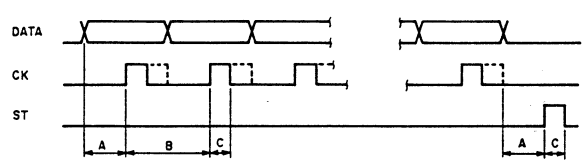
Bit 17 ~ 20 : chip select bit, (0001) is select mode, other than (0001) is inoperative.

Infinite attenuation is obtained at –78 dB. Then one step below the infinite attenuation is –76 dB.

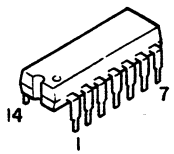
Change to the taken in data synchronize ST signal rise.

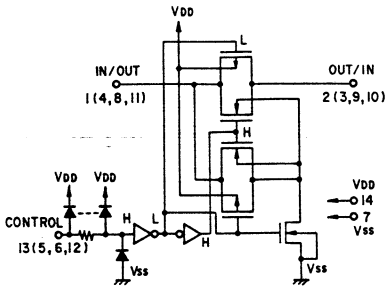


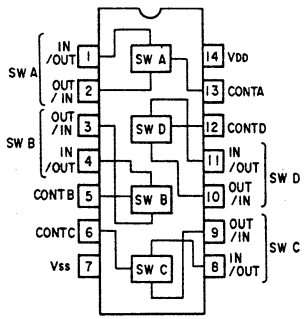
To input DATA, CK, ST, refer to timing chart below.



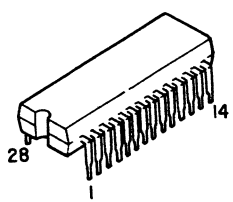
LC4966
(Sanyo)



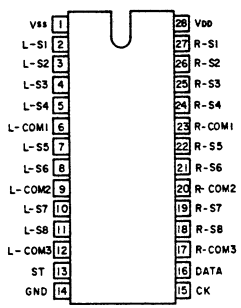




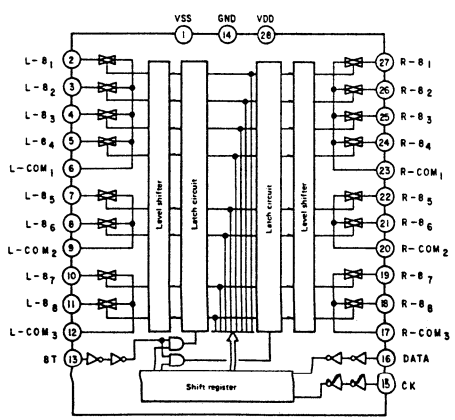
TC9164N
(Toshiba)



TC9164N



TC9164N

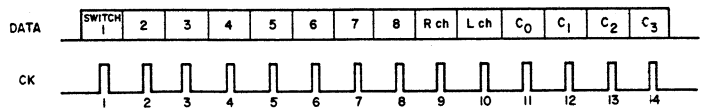


Function

Data input

TC9162/63/64N: input the specific data to DATA, CK, ST ports, and each analog switch can be optionally controlled.

Data comprise 14 bit as per below:



Bit 1 ~ 8 correspond with analog switch 1 ~ 8: set "ON" switch bit to "1" level. (Note)

Bit 9, 10 are for left/right channel selection.

"1" level selects the channel: able to set the level ("1", "1"), ("1", "0") or ("0", "1").

Bit 11 ~ 14 are code bit used for chip selection.

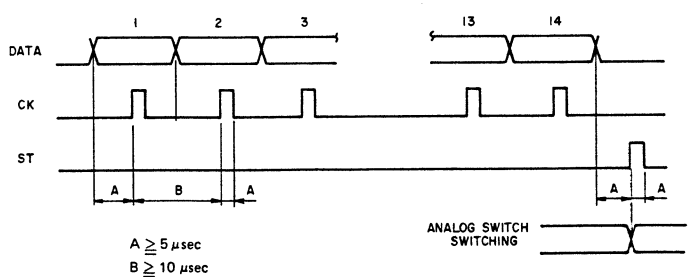
e.g. When employ TC9162N, TC9163N, TC9164N simultaneously, make common connection with DATA, CK, ST ports, and the code bit data selects one of TC9162N, TC9163N, or TC9164.

Each code is set as below.

	C_0	C_1	C_2	C_3
TC9162N	0	0	0	0
TC9163N	1	0	0	0
TC9164N	0	1	0	0

DATA, CK, ST Timing

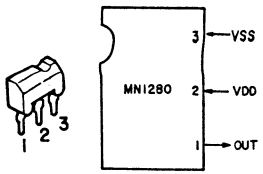
Refer to figure below for DATA, CK, ST timing input.

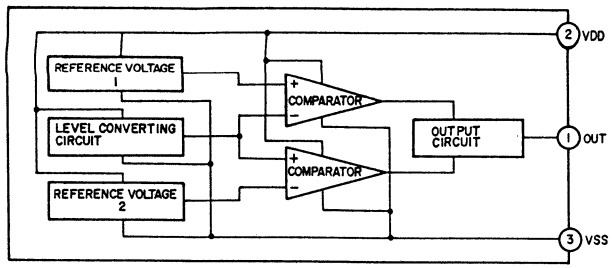


$A \geqq 5\ \mu sec$

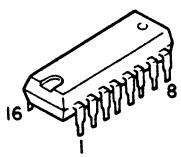
$B \geqq 10\ \mu sec$

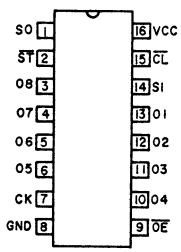
MN1280S
(Matsushita)

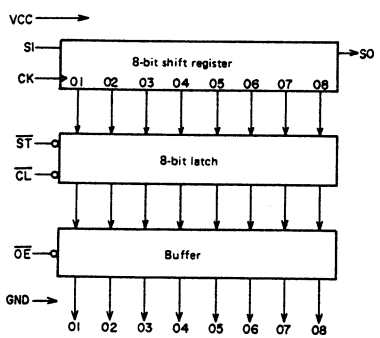




TMS1035NE
(T.I)



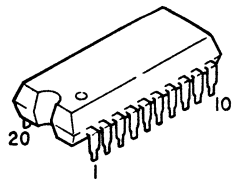


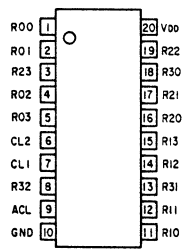


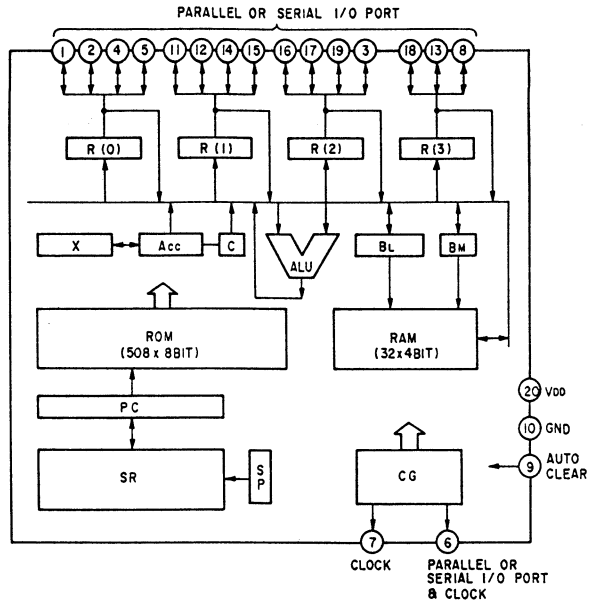
CL	CK	OE	ST	SI	PO		SO
					O1	O_n	
L	X	L	X	X	H	H	X
X	X	H	X	X	Z	Z	X
H	↑	L	L	L	L	Q_{n-1}	Q8
H	↑	L	L	H	H	Q_{n-1}	Q8
H	↑	L	H	X	NC	NC	Q8
H	↑	H	X	X	Z	Z	Q8
H	↓	L	X	X	NC	NC	NC
H	↓	H	X	X	Z	Z	NC
H	L	L	⌐¬	X	Q1	Q_n	Q8

CL = clear
CK = clock
OE = enable output
ST = strobe
SI = serial input
SO = serial output
PO = parallel output (01–08)
X = infinite
NC = no change
Z = high impedance

LU59002
(Sharp)







Symbol description
Acc : Accumulater
BL, BM : RAM address register
CG : Clock generator
SR : Stack register
X : Temporary register

C : Carry F/F
PC : Program counter
ALU : Arithmetic logic unit
SP : Stack pointer
R (0) ~ R (3) : Output latch

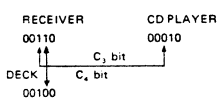
Pin No.	Name	Function
1	SDO	Serial Date Output
2	–	NC
3	CKI	Serial data transfer, clock input
4	RDY	Data output, cut into IC701 port D6 39
5	VDD	5V
6	OSC	455kHz OSC
7	OSC	455kHz OSC
8	–	GND
9	ACL	Input for "HIGH" pulse from IC701 at the time of power ON
10	GND	
11	DIN	Remote control code input from RM77
12	SYSTEM ADDRESS	0V

Pin No.	Name	Function
13	SYSTEM ADDRESS	0V
14	SYSMTE ADDRESS	0V
15	SYSMTE ADDRESS	5V
16	MODE	0V
17	MODE	5V
18	SYSTEM ADDRESS	5V
19		5V
20		5V

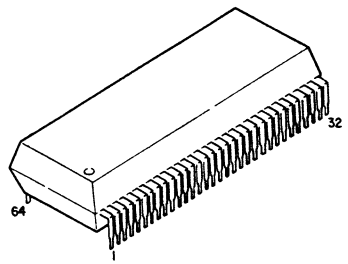
CH	System address C_1 C_2 C_3 C_4 C_5	Data C_6 C_7 C_8 C_9 C_{10} C_{11}	Data extension C_{12} C_{13}	C_{14}	K	DRA-75VR RECEIVER	DRA-75VR CD
1	0 0 1 1 0	1 0 0 0 0 0	1 0	0		–	–
2	0 0 1 1 0	0 1 0 0 0 0	1 0	0		1	1
3	0 0 1 1 0	1 1 0 0 0 0	1 0	0		2	2
4	0 0 1 1 0	0 0 1 0 0 0	1 0	0		3	3
5	0 0 1 1 0	1 0 1 0 0 0	1 0	0		4	4
6	0 0 1 1 0	0 1 1 0 0 0	1 0	0		5	5
7	0 0 1 1 0	1 1 1 0 0 0	1 0	0		6	6
8	0 0 1 1 0	0 0 0 1 0 0	1 0	0		7	7
9	0 0 1 1 0	1 0 0 1 0 0	1 0	0		8	8
10	0 0 1 1 0	0 1 0 1 0 0	1 0	0		SHIFT	9
11	0 0 1 1 0	1 1 0 1 0 0	1 0	0		MUTING	10
12	0 0 1 1 0	0 0 1 1 0 0	1 0	0		VOLUME DOWN	+10
13	0 0 1 1 0	1 0 1 1 0 0	1 0	0		VOLUME UP	PROGRAM
14	0 0 1 1 0	0 1 1 1 0 0	1 0	0		–	–
15	0 0 1 1 0	1 1 1 1 0 0	1 0	0		–	–
16	0 0 1 1 0	0 0 0 0 1 0	1 0	0		POWER ON/OFF	OPEN/CLOSE
17	0 0 1 1 0	1 0 0 0 1 0	1 0	0			–
18	0 0 1 1 0	0 1 0 0 1 0	1 0	0		VCR	CALL
19	0 0 1 1 0	1 1 0 0 1 0	1 0	0		V. SOURCE	MODE
20	0 0 1 1 0	0 0 1 0 1 0	1 0	0		VIDEO	REPEAT
21	0 0 1 1 0	1 0 1 0 1 0	1 0	0			–
22	0 0 1 1 0	0 1 1 0 1 0	1 0	0			–
23	0 0 1 1 0	1 1 1 0 1 0	1 0	0			DIRECT
24	0 0 1 1 0	0 0 0 1 1 0	1 0	0		PHONO	⏭
25	0 0 1 1 0	1 0 0 1 1 0	1 0	0		TUNER	⏮
26	0 0 1 1 0	0 1 0 1 1 0	1 0	0		CD	⏩
27	0 0 1 1 0	1 1 0 1 1 0	1 0	0		AUX	⏪
28	0 0 1 1 0	0 0 1 1 1 0	1 0	0		MONITOR	▶
29	0 0 1 1 0	1 0 1 1 1 0	1 0	0		TAPE 1	⏸
30	0 0 1 1 0	0 1 1 1 1 0	1 0	0		TAPE 2	■
31	0 0 1 1 0	1 1 1 1 1 0	1 0	0			

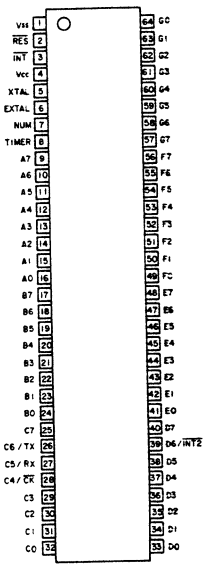
CH	System address C_1 C_2 C_3 C_4 C_5	Data C_6 C_7 C_8 C_9 C_{10} C_{11}	Data extension C_{12} C_{13}	C_{14}	K	DRA-75VR RECEIVER	DRA-75VR CD
32	0 0 1 1 0	0 0 0 0 0 1	1 0	0			
33	0 0 1 1 0	1 0 0 0 0 1	1 0	0			
34	0 0 1 1 0	0 1 0 0 0 1	1 0	0			
35	0 0 1 1 0	1 1 0 0 0 1	1 0	0			
36	0 0 1 1 0	0 0 1 0 0 1	1 0	0			
37	0 0 1 1 0	1 0 1 0 0 1	1 0	0			
38	0 0 1 1 0	0 1 1 0 0 1	1 0	0			
39	0 0 1 1 0	1 1 1 0 0 1	1 0	0			
40	0 0 1 1 0	0 0 0 1 0 1	1 0	0			
41	0 0 1 1 0	1 0 0 1 0 1	1 0	0			
42	0 0 1 1 0	0 1 0 1 0 1	1 0	0			
43	0 0 1 1 0	1 1 0 1 0 1	1 0	0			
44	0 0 1 1 0	0 0 1 1 0 1	1 0	0			
45	0 0 1 1 0	1 0 1 1 0 1	1 0	0			
46	0 0 1 1 0	0 1 1 1 0 1	1 0	0			
47	0 0 1 1 0	1 1 1 1 0 1	1 0	0			
48	0 0 1 1 0	0 0 0 0 1 1	1 0	0			
49	0 0 1 1 0	1 0 0 0 1 1	1 0	0			
50	0 0 1 1 0	0 1 0 0 1 1	1 0	0			
51	0 0 1 1 0	1 1 0 0 1 1	1 0	0			
52	0 0 1 1 0	0 0 1 0 1 1	1 0	0			
53	0 0 1 1 0	1 0 1 0 1 1	1 0	0			
54	0 0 1 1 0	0 1 1 0 1 1	1 0	0			
55	0 0 1 1 0	1 1 1 0 1 1	1 0	0			
56	0 0 1 1 0	0 0 0 1 1 1	1 0	0			

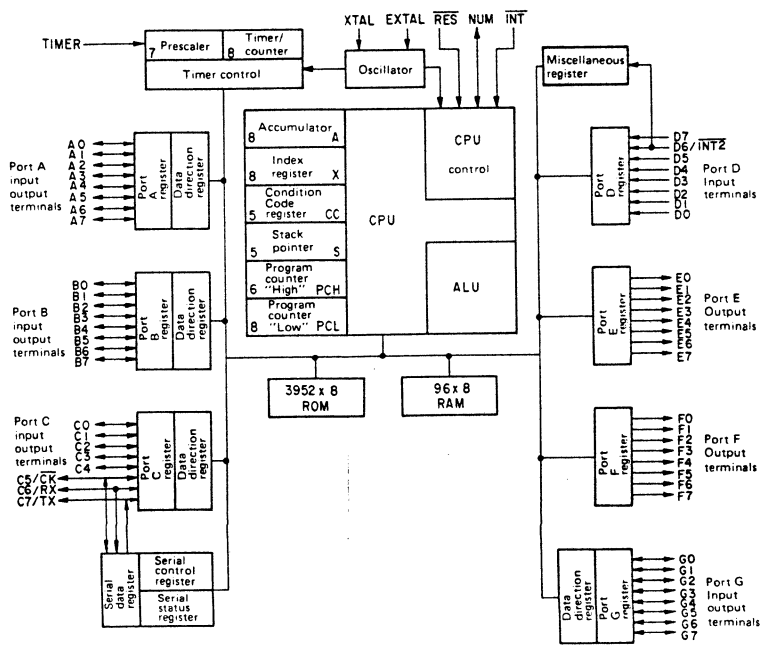
NOTE: Remote Control Commander in DRA-75VR is also feasible to control CD player by switching C_3 bit of system address.



HD6305XOA81P
(Hitach)







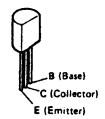
FUNCTIONS OF TERMINALS (HD6305X0A81P)

IC701: Microcomputer for system controlling HD6305X0A81P
1-chip type 8 bit microcomputer

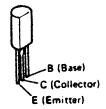
Terminal No.	Description	I/O	Function
1	V_{SS}	–	Connected to 0V of power supply
2	RES	IN	RESET input terminal
3	INT	IN	Interrupt request input terminal
4	STBY	IN	Connected to 5V of power supply
5	XTAL	IN	Input terminal for built-in clock
6	EXTAL	IN	
7	NUM	IN	Connected to 0V of power supply
8	TIMER	IN	
9	A_7	OUT	OUTPUT LATCH "LOW" ACTIVE PHONO
10	A_6	OUT	OUTPUT LATCH "LOW" ACTIVE TUNER
11	A_5	OUT	OUTPUT LATCH "LOW" ACTIVE CD
12	A_4	OUT	OUTPUT LATCH "LOW" ACTIVE MONITOR
13	A_3	OUT	OUTPUT LATCH "LOW" ACTIVE TAPE 1
14	A_2	OUT	OUTPUT LATCH "LOW" ACTIVE TAPE 2
15	A_1	OUT	OUTPUT LATCH "LOW" ACTIVE AUX
16	A_0	OUT	OUTPUT LATCH "LOW" ACTIVE MUTING
17	B_7	OUT	OUTPUT LATCH "LOW" ACTIVE VIDEO
18	B_6	OUT	OUTPUT LATCH "LOW" ACTIVE VCR
19	B_5	–	NC
20	B_4	OUT	OUTPUT LATCH "LOW" ACTIVE VIDEO, SOURCE
21	B_3	–	NC
22	B_2	–	NC
23	B_1	OUT	CLOCK CLOCK OUTPUT port for TMS1035
24	B_0	OUT	STROBE STROBE OUTPUT port for TMS1035
25	TX/C_7	–	NC
26	RX/C_6	–	NC
27	CK/C_5	–	NC
28	C_4	OUT	DATA DATA OUTPUT port for TMS1035
29	C_3	OUT	CL CL OUTPUT port for TMS1035
30	C_2	IN	Connected to 5V of power supply
31	C_1	OUT	"Low" output at power off
32	C_0	OUT	ACL pulse output for LU59002
33	V_{CC}	–	Connected to 5V of power supply
34	D_1	IN	
35	D_2	IN	
36	D_3	IN	Function key ASSIGN input terminal
37	D_4	IN	
38	D_5	IN	SDO input for LU59002
39	D_6/INT	IN	RDY input interrupt for LU59002
40	D_7	IN	Connected to 5V of power supply
41	E_0	OUT	CLOCK output for LU59002
42	E_1	OUT	"HIGH" ACTIVE LATCH at output RELAY ON
43	E_2	OUT	"LOW" ACTIVE LATCH at $-\infty$ MUTING ON
44	E_3	OUT	"LOW" ACTIVE LATCH at –20 dB ON
45	E_4	OUT	TUNER KEY CONTROL pulse output "LOW" ACTIVE
46	E_5	OUT	TUNER SHIFT KEY pulse output "HIGH" ACTIVE
47	E_6	–	NC
48	E_7	–	NC
49	F_0	OUT	TUNER KEY pulse output 8 "HIGH" ACTIVE
50	F_1	OUT	TUNER KEY pulse output 7 "HIGH" ACTIVE
51	F_2	OUT	TUNER KEY pulse output 6 "HIGH" ACTIVE
52	F_3	OUT	TUNER KEY pulse output 5 "HIGH" ACTIVE
53	F_4	OUT	TUNER KEY pulse output 4 "HIGH" ACTIVE
54	F_5	OUT	TUNER KEY pulse output 3 "HIGH" ACTIVE
55	F_6	OUT	TUNER KEY pulse output 2 "HIGH" ACTIVE
56	F_7	OUT	TUNER KEY pulse output 1 "HIGH" ACTIVE
57	G_0	OUT	} FUNCTION KEY STROBE pulse
58	G_1	OUT	
59	G_2	OUT	
60	G_3	OUT	
61	G_4	OUT	STROBE } Output for TC9164, TC9163, TC9176
62	G_5	OUT	CLOCK }
63	G_6	OUT	DATA Serial data output for TC9164, TC9163
64	G_7	OUT	DATA Serial data output for TC9176

• TRANSISTORS (included FET)

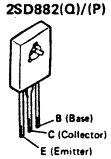
2SC1815L(BL/GR)
2SC1815(BL)
2SC1841(E/F)
2SA1015(GR)
2SA970(BL/GR)
2SA988(E/F)
2SC2240(BL/GR)



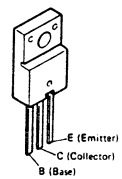
2SC2705(O/Y)
2SA1145(O/Y)
2SC2878(A/B)
2SA1282A(F)



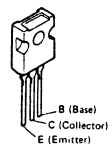
2SD882(Q)/(P)



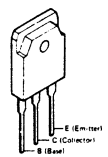
2SC3851(Y)/(G)
2SA1488(Y)/(G)



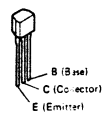
2SA1358(O)/(Y)
2SC3421(O)/(Y)



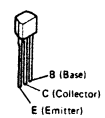
2SA1490(O)/(Y)
2SC3854(O)/(Y)



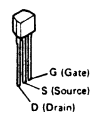
2SC2458(Y/GR)
2SA1048(Y/GR)



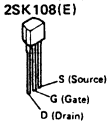
BIAS RESISTOR
built-in
TRANSISTORS
RN1204 (47K-47K)
RN2203 (22K-22K)
RN2204 (47K-47K)



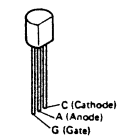
FET
2SK161(Y/GR)



FET
2SK365(BL/GR)
2SK108(E)

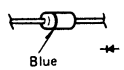


Thyrister
SF0R1A42

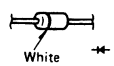


• DIODES

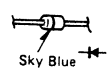
1S2076A



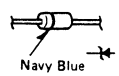
1SS106



1SS270(A)

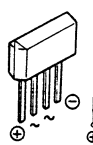


HZ6C-1 HZ4B-3
HZ5C-1 HZ16-2
HZ15-2 HZ36-3

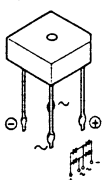


DSA1A2

1D4B41

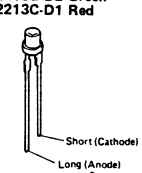


4D4B42
(for EP1)

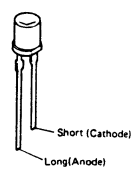


• LED'S

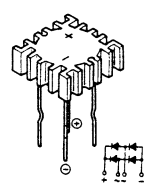
SEL2413E-D2 Green
SEL2213C-D1 Red



SEL1414E-D2 Green
SEL1213C-D Red

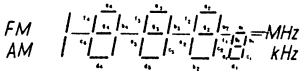


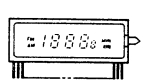
D5FB20
(for E2 and EA)



• FLD

FIP7B8GS
(NEC)



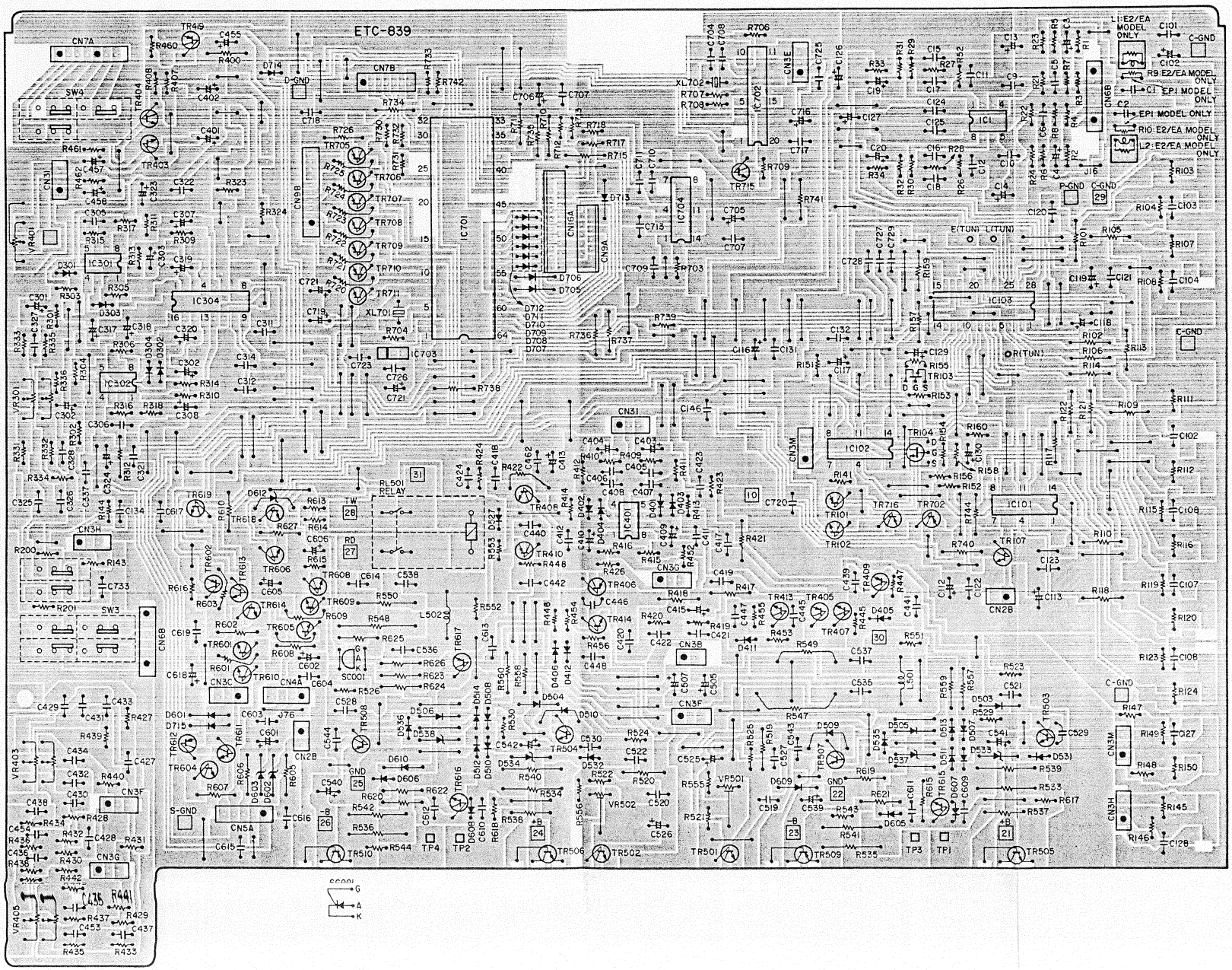


Polarity connection

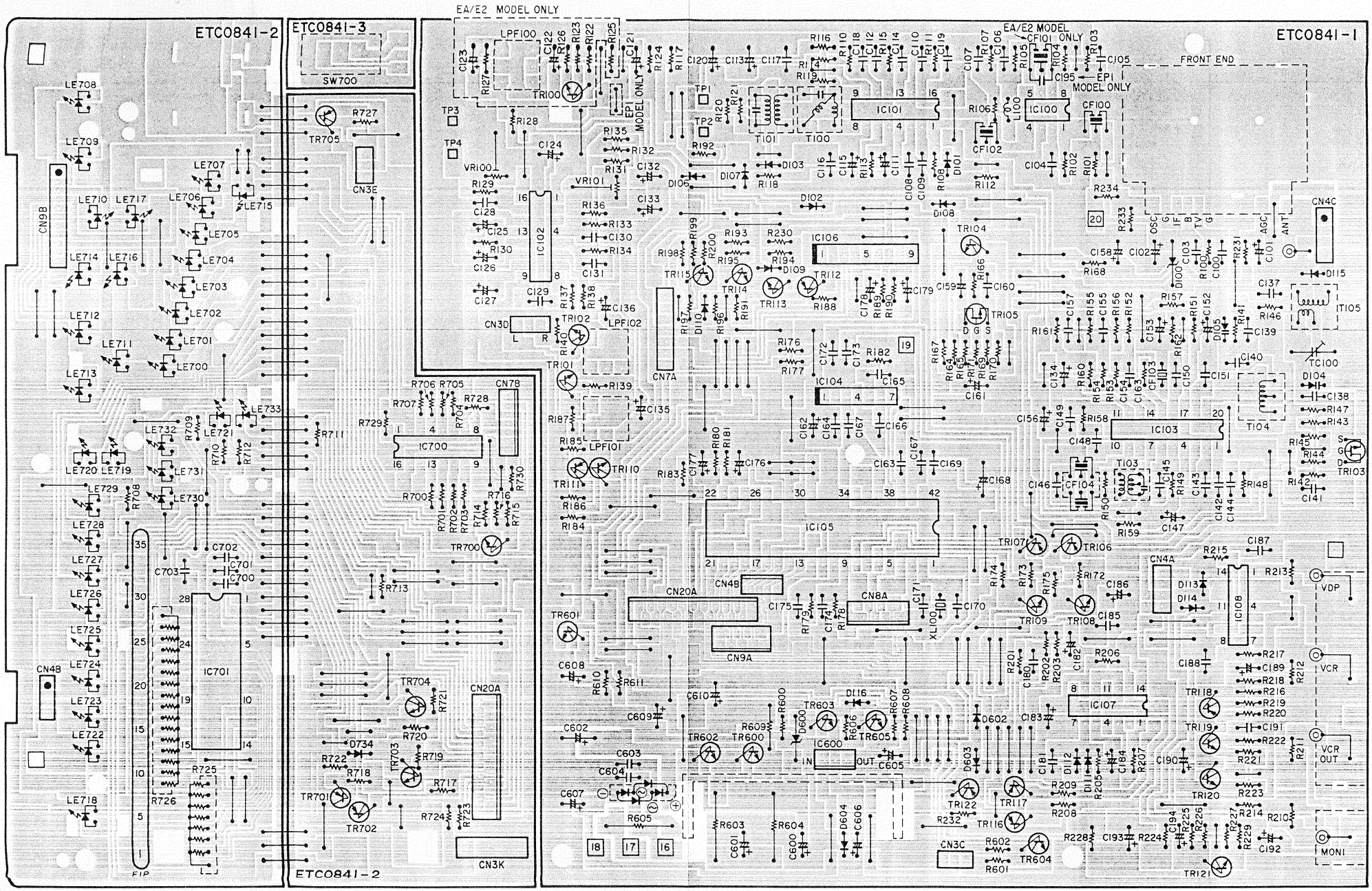
Terminal number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Connected polarity	F	$(b_5\ c_5)$	$P(a_4)$	$P(f_4)$	$P(e_4)$	$P(d_4)$	$P(c_4)$	IC	$P(g_4)$	$P(b_4)$	$P(a_3)$	$P(f_3)$	$P(e_3)$	$P(d_3)$	$P(c_3)$	$P(g_3)$	$P(b_3)$	$P(a_2)$

Terminal number	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Connected polarity	IC	$P(f_2)$	$P(e_2)$	$P(d_2)$	$P(c_2)$	$P(g_2)$	$P(b_2)$	$P(e_1\ b_1)$	$P(g_1)$	P(kHz)	P(MHz)	P(FM DP)	P(AM)	$P(c_1\ f_1\ a_1\ d_1)$	C	G	F

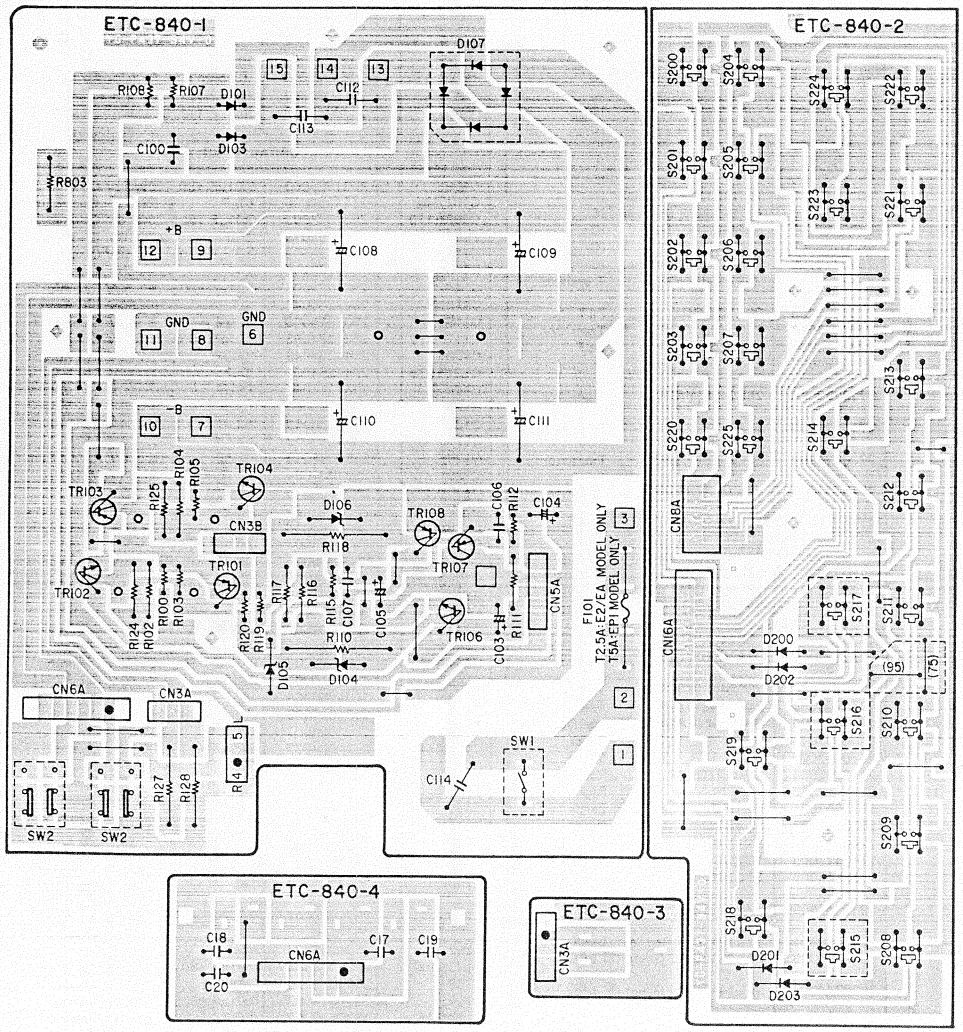
ETC0839D POWER UNIT



ETC0841D TUNER



ETC0840D P. SUPPLY & CONTROL UNIT



ETC0839D POWER UNIT PARTS LIST (for E2, EA)

Ref. No.	*	Part No.	Part Name & Descriptions
SEMICONDUCTORS			
IC001		2650377004	NJM-2068DD (JRC) IC
IC101		2620276005	HD14066BP (Hitachi) IC
IC102		2630359006	LC4966 (Sanyo) IC
IC103	*	2620699006	TC9164N (Toshiba) IC
IC301,302	*	2630377004	NJM2068DD (JRC) IC
IC304		2620625009	TC9176P (Toshiba) IC
IC401	*	2630377004	NJM2068DD (JRC) IC
IC701	*	2620696106	HD6305X0A81P (Hitachi) IC
IC702	*	2620728003	LU59002 (Sharp) IC
IC703		2620678001	MN1280S (Matsushita) IC
IC704		2620575007	HD14082BP (Hitachi) IC
TR101	*	2690030006	RN2204 (47K-47K) Digital Transistor
TR102	*	2690029004	RN1204 (47K-47K) Digital Transistor
TR103, 104		2750041003	2SK108(E) FET
TR403, 404		2730253015	2SC2878(A/B) Transistor
TR405, 406		2710131021	2SA988(E/F) Transistor
TR407, 408		2730235020	2SC1841(E/F) Transistor
TR409, 410		2710131021	2SA988(E/F) Transistor
TR413, 414		2730235020	2SC1841(E/F) Transistor
TR419	*	2690030006	RN2204 (47K-47K) Digital Transistor
TR501, 502		2730198015	2SC1815(BL) Transistor
TR503, 504		2730323000	2SC3421(O/Y) Transistor
TR507, 508		2710195009	2SA1358(O/Y) Transistor
TR601		2730198015	2SC1815(BL) Transistor
TR602	*	2710211006	2SA1282A(F) Transistor
TR604, 605		2730253015	2SC2878(A/B) Transistor
TR606		2730235020	2SC1841(E/F) Transistor
TR608, 609		2730198015	2SC1815(BL) Transistor
TR610, 611	*	2690029004	RN1204 (47K-47K) Digital Transistor
TR612, 613	*	2670030006	RN2204 (47K-47K) Digital Transistor
TR614	*	2690029004	RN1204 (47K-47K) Digital Transistor
TR615, 616		2730281003	2SC2705(O)/(Y) Transistor
TR617		2710168007	2SA1145(O)/(Y) Transistor
TR618		2730198015	2SC1815(BL) Transistor
TR619		2690029004	RN1204 (47K-47K) Digital Transistor
TR701	*	2690029004	RN1204 (47K-47K) Digital Transistor
TR702	*	2690030006	RN2204 (47K-47K) Digital Transistor
TR705 ~711	*	2690028005	RN2203 (22K-22K) Digital Transistor
TR715	*	2690029004	RN1204 (47K-47K) Digital Transistor
TR716	*	2690030006	RN2204 (47K-47K) Digital Transistor
SC001		2790016001	SF0R1A42 Thyristor
D001,002		2760432000	1SS270A Diode
D301~304		2760432000	1SS270A Diode
D401~406	*	2760432000	1SS270A Diode
D411,412	*	2760432000	1SS270A Diode
D503~506		2760049011	1S2076A Diode
D507,508		2760432000	1SS270A Diode
D509,510		2760049011	1S2076A Diode
D511~514		2760432000	1SS270A Diode
D517,518		2760432000	1SS270A Diode
D527		2760432000	1SS270A Diode
D601	*	2760444001	HRP22 Schottky Diode
D602,603		2760173084	HZ6C-1 Zener
D605~608	*	2760432000	1SS270A Diode
D609,610		2760049011	1S2076A Diode
D612		2760236031	HZ5C-1 Zener
D705,706		2760049011	1S2076A Diode
D707~712	*	2760432000	1SS270A Diode
D713		2760049011	1S2076A Diode
D714		2760432000	1SS270A Diode
D715	*	2760049011	1S2076A Diode
RESISTORS (no included Carbon Film ±5%, 1/4W, 1/6W Type)			
±R445,446		2412379026	560 ohm ±5% 1/4W Carbon (NBS)
±R447,448		2412377044	100 ohm ±5% 1/4W Carbon (NBS)
±R453,454		2412379026	560 ohm ±5% 1/4W Carbon (NBS)
±R455,456		2412377044	100 ohm ±5% 1/4W Carbon (NBS)
±R523~526		2412379053	750 ohm ±5% 1/4W Carbon (NBS)
±R529,530		2412378027	220 ohm ±5% 1/4W Carbon (NBS)
±R533~536		2442013080	0.22 ohm ±5% 1W Metal Oxide (NB)
±R539~542		2442013080	0.22 ohm ±5% 1W Metal Oxide (NB)
±R547,548		2440072023	6.8 ohm ±5% 2W Metal Oxide (NBF)
±R549,550		2440015022	6.8 ohm ±5% 1W Metal Oxide (NBF)
±R551,552		2412375004	10 ohm ±5% 1/4W Carbon (NBS)
±R553		2412377060	120 ohm ±5% 1/4W Carbon (NBS)
±R617,618		2412380057	2 kohm ±5% 1/4W Carbon (NBS)
±R626		2440048028	3.9 kohm ±5% 1W Metal Oxide (NBF)
±R629,630		2412370041	2 kohm ±5% 1/4W Carbon (NBF)
VR301		2110466008	Variable Resistor 100 kohm Loudness
VR401		2110467007	Variable Resistor 250 kohm Balance
VR403		2110465009	Variable Resistor 50 kohm Treble
VR405		2110465012	Variable Resistor 250 kohm Bass
VR501, 502		2116000002	Semi Fixed Resistor 5 kohm
CAPACITORS			
C001,002		2533627000	100pF ±5% 50V Ceramic
C003,004		2544254006	10μF ±20% 16V Electrolytic
C005,006		2533623004	68pF ±5% 50V Ceramic
C009,010		2533635005	220pF ±5% 50V Ceramic
C011,012		2561034050	0.068μF ±5% 50V Metalized
C013,014		2544250068	1000μF ±20% 6.3V Electrolytic
C015,016		2551121054	0.018μF ±5% 50V Plastic Film
C017,018		2533643000	470pF ±5% 50V Ceramic
C019,020		2544254006	10μF ±20% 16V Electrolytic
C035,036		2533627000	100pF ±5% 50V Ceramic
C101		2531025002	0.022μF +80,−20% 50V Ceramic
C102		2544260045	1μF ±20% 50V Electrolytic
C103~108		2531025002	0.022μF +80,−20% 50V Ceramic
C112,113		2544260045	1μF ±20% 50V Electrolytic
C116		2544260045	1μF ±20% 50V Electrolytic
C117~119		2544260045	1μF ±20% 50V Electrolytic
C120~125		2531025002	0.022μF +80,−20% 50V Ceramic
C126,127		2544260045	1μF ±20% 50V Electrolytic
C127,128		2531025002	0.022μF +80,−20% 50V Ceramic
C129,130		2544260045	1μF ±20% 50V Electrolytic
C131,132		2531025002	0.022μF +80,−20% 50V Ceramic
C133,134		2533631009	150pF ±5% 50V Ceramic
C301~304		2544260045	1μF ±20% 50V Electrolytic
C305,306		2533627000	100pF ±5% 50V Ceramic
C307,308		2544254006	10μF ±20% 16V Electrolytic
C317~320		2544260045	1μF ±20% 50V Electrolytic
C321,322		2531025002	0.022μF +80,−20% 50V Ceramic
C323,324		2544260045	1μF ±20% 50V Electrolytic
C325,326		2551121054	0.018μF ±5% 50V Plastic Film
C327,328		2531055030	390pF ±10% 50V Ceramic

Ref. No.	*	Part No.	Part Name & Descriptions
C401~404		2544260045	1μF ±20% 50V Electrolytic
C405~408		2533627000	100pF ±5% 50V Ceramic
C409,410		2544254006	10μF ±20% 16V Electrolytic
C411,412		2533599002	6pF ±0.5pF 50V Ceramic
C413		2544260045	1μF ±20% 50V Electrolytic
C415		2544260045	1μF ±20% 50V Electrolytic
C417~420		2551120000	0.001μF ±5% 50V Plastic Film
C421~424		2533639001	330pF ±5% 50V Ceramic
C427,428		2551121009	0.0068μF ±5% 50V Plastic Film
C429,430		2533633007	180pF ±5% 50V Ceramic
C431,432		2551120013	0.0012μF ±5% 50V Plastic Film
C433,434		2561034047	0.056μF ±5% 50V Metalized
C435,436		2561034089	0.12μF ±5% 50V Metalized
C439,440		2534494009	100pF ±5% 500V Ceramic
C441,442		2551121067	0.022μF ±5% 50V Plastic Film
C445,446		2534494009	100pF ±5% 500V Ceramic
C447,448		2551121067	0.022μF ±5% 50V Plastic Film
C453,454		2551121041	0.015μF ±5% 50V Plastic Film
C455		2544260045	1μF ±20% 50V Electrolytci
C457		2544260045	1μF ±20% 50V Electrolytic
C458		2544260045	1μF ±20% 50V Electrolytic
C461,462		2531025002	0.022μF +80,−20% 50V Ceramic
C475,476		2533635005	220pF ±5% 50V Ceramic
C505		2543046008	1μF ±20% 100V Electrolytic (B.P)
C507		2543046008	1μF ±20% 100V Electrolytic (B.P)
C519,520		2531024003	0.01μF +80,−20% 50V Ceramic
C521,522		2551120000	0.001μF ±5% 50V Plastic Film
C525,526		2544260045	1μF ±20% 50V Electrolytic
C527,528		2551120000	0.001μF ±5% 50V Plastic Film
C529,530		2534498005	150pF ±5% 500V Ceramic
C535,536		2561034076	0.1μF ±5% 50V Metalized
C537,538		2561034047	0.056μF ±5% 50V Metalized
C539~542	*	2543046008	1μF ±20% 100V Electrolytic (B.P)
C543,544		2534498005	150pF ±5% 500V Ceramic
C601,602		2544254006	10μF ±20% 16V Electrolytic
C603,604		2531024003	0.01μF +80,−20% 50V Ceramic
C605		2544250045	1μF ±20% 50V Electrolytic
C606		2544250042	330μF ±20% 6.3V Electrolytic
C609,610		2551120084	0.0047μF ±5% 50V Plastic Film
C613		2531025002	0.022μF +80,−20% 50V Ceramic
C614		2531024003	0.01μF +80,−20% 50V Ceramic
C615~617		2531025002	0.022μF +80,−20% 50V Ceramic
C618		2544260045	1μF ±20% 50V Electrolytic
C619		2531025002	0.022μF +80,−20% 50V Ceramic
C701		2544254006	10μF ±20% 16V Electrolytic
C704		2533635005	220pF ±5% 50V Ceramic
C705,706		2544260045	1μF ±20% 50V Electrolytic
C707		2531024003	0.01μF +80,−20% 50V Ceramic
C708		2533635005	220pF ±5% 50V Ceramic
C709~711		2531055056	220pF ±10% 50V Ceramic
C713		2531055056	220pF ±10% 50V Ceramic
C716		2544252037	100μF ±20% 10V Electrolytic
C717,718		2531024003	0.01μF +80,−20% 50V Ceramic
C719		2544260045	1μF ±20% 50V Electrolytic
C720		2531024003	0.01μF +80,−20% 50V Ceramic
C721		2544260044	1μF ±20% 50V Electrolytic
C723		2531024003	0.01μF +80,−20% 50V Ceramic
C725		2531025002	0.022μF +80,−20% 50V Ceramic
C726		2531024003	0.01μF +80,−20% 50V Ceramic
C777		2531024003	0.01μF +80,−20% 50V Ceramic
E.U.P.			
L001,002		2359003002	FTZ Choke Coil
L501,502		*2359001004*	*Inductor*

Ref. No.	*	Part No.	Part Name & Descriptions
XL701		3990034002	OSC Element (CST4.00MG)
XL702		2610037005	OSC Element (CS8455E)
SW003	*	2124607002	2P Push SW. (Phono. Mode)
SW004		2124462001	1P Push SW. (Tuner. Mode)
RL501		2140037009	Relay
OTHER PARTS			**Q'ty**
	*	2221317208	(P.W. Board) 1
		2090008146	Jumper Wire P=5mm 12
		2090008120	Jumper Wire P=10mm 98
		EP-5667H1	Terminal Pin 18
		2050152003	6P Connector Base 3
		2050298043	9P FFC Con. Base (S) 1
		2050298019	16P FFC Con. Base (S) 1
		2050185038	3P Wire Holder 14
		2050185041	4P Wire Holder 1
		2050185054	5P Wire Holder 1
		2050185067	6P Wire Holder 2
		2050185070	7P Wire Holder 1
		2050185025	2P Wire Holder 3
		2050271094	9P PH Connector Base 1
	*	2042171018	7P Connector Cord 1
	*	2042170006	7P EH Connector Cord 1
	*	2038166008	5P EH Connector Cord 1
	*	2036156023	4P EH Connector Cord 1
	*	2034340006	3P EH Connector Cord 1
	*	2034353006	3P EH Connector Cord Ass'y 1
	*	2034304013	3P EH Connector Cord 1
	*	2034338005	3P EH Connector Cord 1
	*	2090121023	T.S.W. Ass'y 1
	*	2090121036	T.S.W. Ass'y 1
	*	2090121049	T.S.W. Ass'y 1
	*	2090172001	T.S.W. Ass'y 1
	*	2090121065	T.S.W. Ass'y 1
	*	2090146008	2C Shield Wire 1
	*	2090146011	2C Shield Wire 1
	*	2090151006	2C Ribbon Cable 1
	*	2090153004	Vinyl Wire 1
	*	2090153020	Vinyl Wire 1
	*	2090153033	Vinyl Wire 1
	*	2090164035	T.S.W. Contact Ass'y 1
	*	2090164048	T.S.W. Contact Ass'y 1

ETC0841D TUNER UNIT PARTS LIST (for E2, EA)

Ref. No.	*	Part No.	Part Name & Descriptions
SEMICONDUCTORS			
IC100	*	2630414006	LA1222 (Sanyo) IC
IC101		2630083000	HA11225 (Hitachi) IC
IC102		2630384000	μPC1235C (NEC) IC
IC103		2630145003	LA1245 (Sanyo) IC
IC104		2630232000	TD6104P (Toshiba) IC
IC105		2620452104	TC9147BP (Toshiba) IC
IC106		2630371000	LB1403N (Sanyo) IC
IC107		2620300007	HD14011BP (Hitachi) IC
IC108		2620276005	HD140668P (Hitachi) IC
IC600	*	2630459003	L78M05ML (JRC) IC
IC700	*	2620700005	TMS1035NE (T.I) IC
IC701		2620453006	TD6301AP (Toshiba) IC
TR100 ~102		2730222004	2SC2458(Y/GR) Transistor
TR103		2750051006	2SK161(GR) FET
TR104		2730222004	2SC2458(Y/GR) Transistor
TR105		2750053004	2SK365(BL/GR) FET
TR106, 107		2710194000	2SA1048(Y/GR) Transistor
TR108 ~110		2730222004	2SC2458(Y/GR) Transistor
TR111, 112		2710194000	2SA1048(Y/GR) Transistor
TR113 ~115		2730222004	2SC2458(Y/GR) Transistor
TR116 ~118		2710194000	2SA1048(Y/GR) Transistor
TR119 ~121		2730222004	2SC2458(Y/GR) Transistor
TR122		2710194000	2SA1048(Y/GR) Transistor
TR600		2730338008	2SC3851(Y)/(G) Transistor
TR601		2740078031	2SD882(Q/P) Transistor
TR602 ~605		2730222004	2SC2458(Y/GR) Transistor
TR700		2730222004	2SC2458(Y/GR) Transistor
TR701, 702		2710194000	2SA1048(Y/GR) Transistor
TR703		2730222004	2SC2458(Y/GR) Transistor
TR704		2710194000	2SA1048(Y/GR) Transistor
TR705	*	2690030006	RN2204 (47K-47K) Digital Transistor
D100		2760185014	HZ4B-3 Zener
D101~103	*	2760417009	1SS270 Diode
D104,105		2760302004	SVC321D2-5P Varactor
D106~116	*	2760417009	1SS270 Diode
D600		2760253001	HZ15-2 Zener
D601		2760422007	1D4B41 Diode
D602~604		2760417009	1SS270 Diode
D734		2760417009	1SS270 Diode
LE700 ~707	*	3939345008	SEL2413E-D2 Green (3) LED
LE708 ~714	*	3939344009	SEL1413E-D2 Green (5) LED
LE718	*	3939342001	SEL1213C-D Red (5) LED
LE719 ~721	*	3939345008	SEL2413E-D2 Green (3) LED
LE722 ~729		3939344009	SEL1413E-D2 Green (5) LED
LE730 ~732		3939345008	SEL2413E-D2 Green (3) LED
LE733		3939343000	SEL2213C-D1 Red (3) LED
RESISTORS (not included Carbon Film ±5%, 1/6W, 1/4W Type)			
ΔR603		2440037026	470 ohm ±5% 1W Metal Oxide (NB)
ΔR604		2440033020	220 ohm ±5% 1W Metal Oxide (NB)
ΔR605		2440005029	1 ohm ±5% 1W Metal Oxide (NB)

Ref. No.	*	Part No.	Part Name & Descriptions
ΔR609		2412313082	4.7 ohm ±5% 1/4W Carbon (NB)
R725	*	2462029009	10 kohm x 8 Resistor Array
R726	*	2462029012	10 kohm x 16 Resistor Array
VR100		2116000002	Semi Fixed Resistor 5 kohm
VR101		2116000028	Semi Fixed Resistor 100 kohm
CAPACITORS			
C100		2531024003	0.01μF +80,−20% 50V Ceramic
C101,102		2544254006	10μF ±20% 16V Electrolytic
C103~110		2531024003	0.01μF +80,−20% 50V Ceramic
C111		2544254019	22μF ±20% 16V Electrolytic
C112		2531024003	0.01μF +80,−20% 50V Ceramic
C113		2544260032	0.47μF ±20% 50V Electrolytic
C114		2531024003	0.01μF +80,−20% 50V Ceramic
C115		2544260045	1μF ±20% 50V Electroltyic
C116		2533629008	120pF ±5% 50V Ceramic
C117~119		2531024003	0.01μF +80,−20% 50V Ceramic
C120		2544254048	100μF ±20% 16V Electrolytic
C121~123		2544254006	10μF ±20% 16V Electrolytic
C124		2544254051	220μF ±20% 16V Electrolytic
C125		2544260061	3.3μF ±20% 50V Electrolytic
C126		2544260058	2.2μF ±20% 50V Electrolytic
C127		2544260032	0.47μF ±20% 50V Electrolytic
C128		2556091008	470pF ±5% 50V Plastic Film
C129		2561034034	0.047μF ±5% 50V Metalized
C130,131		2539030015	1500pF ±10% 25V Ceramic
C132,133		2544214006	10μF ±10% 16V Electrolytic
C135,136		2544260058	2.2μF ±20% 50V Electrolytic
C137		2531024003	0.01μF +80,−20% 50V Ceramic
C138		2533635005	220pF ±5% 50V Ceramic
C139		2533609002	18pF ±5% 50V Ceramic
C140		2554201049	390pF ±5% 50V Plastic Film
C141		2531024003	0.01μF +80,−20% 50V Ceramic
C142		2531004007	1000pF ±10% 50V Ceramic
C143		2531025002	0.022μF +80,−20% 50V Ceramic
C144,145		2531024003	0.01μF +80,−20% 50V Ceramic
C146		2533619005	47pF ±5% 50V Ceramic
C147		2544254006	10μF ±20% 16V Electrolytic
C148		2531024003	0.01μF +80,−20% 50V Ceramic
C149		2531004007	1000pF ±10% 50V Ceramic
C150,151		2531024003	0.01μF +80,−20% 50V Ceramic
C152		2544260061	3.3μF ±20% 50V Electrolytic
C153		2544258002	4.7μF ±20% 35V Electrolytic
C154,155		2531024003	0.01μF +80,−20% 50V Ceramic
C156		2544254035	47μF ±20% 16V Electrolytic
C157		2531025002	0.022μF +80,−20% 50V Ceramic
C158		2544228061	1μF ±20% 50V Electrolytic (Low leak)
C159		2544214020	1μF ±20% 50V Electrolytic (B.P)
C160		2531025002	0.022μF +80,−20% 50V Ceramic
C161		2544254048	100μF ±20% 16V Electrolytic
C162		2544252024	47μF ±20% 10V Electrolytic
C163~167		2531024003	0.01μF +80,−20% 50V Ceramic
C168		2590004006	22000μF 5.5V for Backup
C169	*	2531024003	0.01μF +80,−20% 50V Ceramic
C170,171		2533599002	6pF ±0.5pF 50V Ceramic
C172~175		2531024003	0.01μF +80,−20% 50V Ceramic
C176,177		2544260058	2.2μF ±20% 50V Electrolytic
C178,179		2544260032	0.47μF ±20% 50V Electrolytic
C180,181		2531024003	0.01μF +80,−20% 50V Ceramic
C182		2544260032	0.47μF ±20% 50V Electrolytic
C183,184		2544258002	4.7μF ±20% 35V Electrolytic
C185		2531024003	0.01μF +80,−20% 50V Ceramic
C186		2544252024	47μF ±20% 10V Electrolytic
C187,188		2531024003	0.01μF +80,−20% 50V Ceramic
C189		2544254035	47μF ±20% 16V Electrolytic
C190		2544254077	470μF ±20% 16V Electrolytic
C191		2531024003	0.01μF +80,−20% 50V Ceramic

Ref. No.	*	Part No.	Part Name & Descriptions
C192		2544254077	470μF ±20% 16V Electrolytic
C193		2544254080	1000μF ±20% 16V Electrolytic
C194		2544254035	47μF ±20% 16V Electrolytic
C195		2531024003	0.01μF +80,–20% 50V Ceramic
C197		2531024003	0.01μF +80,–20% 50V Ceramic
C600		2544254006	10μF ±20% 16V Electrolytic
C601		2544256046	100μF ±20% 25V Electrolytic
C602		2544258099	1000μF ±20% 35V Electrolytic
C603,604		2531024003	0.01μF +80,–20% 50V Ceramic
C605,606		2544254006	10μF ±20% 16V Electrolytic
C607		2544254093	2200μF ±20% 16V Electrolytic
C608		2544254048	100μF ±20% 16V Electrolytic
C609		2544254006	10μF ±20% 16V Electrolytic
C610		2544254077	470μF ±20% 16V Electrolytic
C611		2544250013	47μF ±20% 6.3V Electrolytic
C700~702		2531006005	2200pF ±10% 50V Ceramic
C703		2531024003	0.01μF +80,–20% 50V Ceramic
C704,705		2533639001	330pF ±5% 50V Ceramic
C706		2531025002	0.022μF +80,–20% 50V Ceramic
TC100		2130022008	Trimmer Condencer
COIL, TRANS			
L100		2350026020	Inductor 10μH
T100		2312901002	FM IF Det (A) (50kHz)
T101		2312902001	FM IF Det (B) (50kHz)
T103		2313026009	AM IFT
T104		2311118003	MW OSC. Coil
T105		2311113008	MW Ant. Coil
LP101, 102		2320085004	Low Pass Filter
LPF100		2320096006	Anti Birdie Filter
CF100 ~102	*	2610023006	FM C. Filter (SFE10.7MHZ A)
CF103		2610031001	AM C. Filter (BFU450C4)
CF104		2610065006	AM C. Filter (SFZ450F3L)
E.U.P.			**Q'ty**
		2160039003	Front End 1
	*	3934022009	FIP7B8GS FLD 1
X100		3990040009	X-tal (7.2MHz) 1
		4990049009	RM-577 (Remote Control) 1
		2048178002	1P Pin Jack 1
F001		2061015029	Fuse (1AT) 1
		2020022008	Fuse Holder 2
OTHER PARTS			**Q'ty**
	*	2221313202	(P.W. Board) 1
		2090008146	Jumper Wire P=5mm 34
		2090008120	Jumper Wire P=10mm 152
		EP-5667H1	Terminal Pin 10
		4178028101	Heat Sink 1
		4713304015	Bind Screw 3x8 2
		2030262007	Ant. Pin Cord Ass'y 1
		2050240009	3P Connector Base 1
		2050185041	4P Wire Holder 1
	*	1460822209	LED Holder (A) 1
	*	1460821200	LED Holder (B) 1
	*	4610294008	Rubber Sheet 1
		2050233074	7P EH Connector Base 1
		2050233045	4P EH Connector Base 1
		2050233032	3P EH Connector Base 3
		2050271049	4P PH Connector Base 1
		2050271078	7P PH Connector Base 1
		2050241037	3P Connector Pin Ass'y 1

Ref. No.	*	Part No.	Part Name & Descriptions	Q'ty
	*	2050298051	20P FF Con. Base (S)	2
	*	2050298048	9P FFC Con. Base (S)	1
		2050298035	8P FFC Con. Base (S)	1
	*	2042172004	9P Connector Cord	1
	*	2036172007	4P Connector Cord	1
	*	4150309013	P.V.C. Tube	4
	*	2090154003	Vinyl Wire	1
	*	2090154016	Vinyl Wire	2
	*	2090168015	Shield Wire Ass'y	1
	*	5130637034	Fuse Label	1

ETC0840D P. SUPPLY & CONTROL UNIT PARTS LIST (for E2, EA)

Ref. No.	*	Part No.	Part Name & Descriptions
SEMICONDUCTORS			
TR101	*	2710206008	2SA1488(Y)/(G) Transistor
TR102		2730187039	2SC2240(BL/GR) Transistor
TR103		2710094032	2SA970(BL/GR) Transistor
TR104	*	2730338008	2SC3851(Y)/(G) Transistor
TR106	*	2730338008	2SC3851(Y)/(G) Transistor
TR107		2710102021	2SA1015(GR) Transistor
TR108	*	2710206008	2SA1488(Y)/(G) Transistor
D101	*	2760427015	DSA1A2 (Type-3) Diode
D103	*	2760427015	DSA1A2 (Type-3) Diode
D104		2760221020	HZ36-3 Zener
D105		2760256008	HZ16-2 Zener
D106		2760221020	HZ36-3 Zener
D107		2760356005	D5FB20 Diode
D200~203		2760370007	1SS106TD Diode
RESISTORS (not included Carbon Film ±5%, 1/4W, 1/4W Type)			
ΔR110		2440093028	390 ohm ±5% 2W Metal Oxide (NBF)
ΔR118		2440093028	390 ohm ±5% 2W Metal Oxide (NBF)
ΔR119,120		2412387047	4.7 ohm ±5% 1/4W Carbon (NBS)
ΔR127,128		2440033020	220 ohm ±5% 1W Metal Oxide (NBF)
CAPACITORS			
C100		2544263042	1μF ±20% 100V Electrolytic
C103,104		2544260045	1μF ±20% 50V Electrolytic
C105		2544261015	47μF ±20% 50V Electrolytic
C106		2533619005	47pF ±5% 50V Ceramic
C107		2531055014	560pF ±10% 50V Ceramic
C108		2544216002	9200μF ±20% 63V Electrolytic
C110		2544216002	9200μF ±20% 63V Electrolytic
C112,113		2531053003	0.01μF +100,–0% 500V Ceramic
ΔC114		2538014003	0.01μF ±20% 400V Ceramic(AC)
C119		2544260045	1μF ±20% 50V Electrolytic
C120		2544089022	100μF ±20% 50V Electrolytic
ΔC199		2568024018	0.1μF ±20% 250V Metalized(AC)
E.U.P.			**Q'ty**
S200~214		2124388004	Tact Switch 15
S218~225		2124388004	Tact Switch 8
ΔSW001		2124574009	Power Switch 1
SW002	*	2124604005	2P Push Switch 1
		2048167000	Headphone Jack 1
Δ		2020022008	Fuse Holder 2
ΔF101		2061015032	Fuse (2.5A) 1
OTHER PARTS			**Q'ty**
	*	2221315200	(P.W. Board) 1
		2090008146	Jumper Wire P=5mm 6
		2090008120	Jumper Wire P=10mm 27
		EP-5667H1	Terminal Pin 15
	*	2050269006	8P FFC Con. Base (R) 1
		2050269064	16P FFC Con. Base (R) 1
		2050233032	3P EH Connector Base 2
		2050233058	5P EH Connector Base 1
		2050185025	2P Wire Holder 1
		2050185038	3P Wire Holder 1
		2050185041	4P Wire Holder 1
	*	2034304026	3P EH Connector Cord 1
	*	2090170016	4C Ribbon Cable 1
	*	2090169001	Vinyl Wire Ass'y 1
	*	5130637021	Fuse Label 1
		4150299000	Condenser Cover 1

ETC0839 POWER UNIT PARTS LIST (for EP1)

Ref. No.	*	Part No.	Part Name & Descriptions
SEMICONDUCTORS			
IC001		2650037007	NJM-2043DD (JRC) IC
IC101		2620276005	HD14066BP (Hitachi) IC
IC102		2630359006	LC4966 (Sanyo) IC
IC103	*	2620699006	TC9164N (Toshiba) IC
IC301,302	*	2630377004	NJM2068DD (JRC) IC
IC304		2620625009	TC9176P (Toshiba) IC
IC401	*	2630377004	NJM2068DD (JRC) IC
IC701	*	2620696106	HD6305X0A81P (Hitachi) IC
IC702	*	2620728003	LU59002 (Sharp) IC
IC703		2620678001	MN1280S (Matsushita) IC
IC704		2620575007	HD14082BP (Hitachi) IC
TR101	*	2690030006	RN2204 (47K-47K) Digital Transistor
TR102	*	2690029004	RN1204 (47K-47K) Digital Transistor
TR103, 104		2750041003	2SK108(E) FET
TR403, 404		2730253015	2SC2878(A/B) Transistor
TR405, 406		2710131021	2SA988(E/F) Transistor
TR407, 408		2730235020	2SC1841(E/F) Transistor
TR409, 410		2710131021	2SA988(E/F) Transistor
TR413, 414		2730235020	2SC1841(E/F) Transistor
TR419	*	2690030006	RN2204 (47K-47K) Digital Transistor
TR501, 502		2730198015	2SC1815(BL) Transistor
TR503, 504		2730323000	2SC3421(O/Y) Transistor
TR507, 508		2710195009	2SA1358(O/Y) Transistor
TR601		2730198015	2SC1815(BL) Transistor
TR602	*	2710211006	2SA1282A(F) Transistor
TR604, 605		2730253015	2SC2878(A/B) Transistor
TR606		2730235020	2SC1841(E/F) Transistor
TR608, 609		2730198015	2SC1815(BL) Transistor
TR610, 611	*	2690029004	RN1204 (47K-47K) Digital Transistor
TR612, 613	*	2670030006	RN2204 (47K-47K) Digital Transistor
TR614	*	2690029004	RN1204 (47K-47K) Digital Transistor
TR615, 616		2730281003	2SC2705(O)/(Y) Transistor
TR617		2710168007	2SA1145(O)/(Y) Transistor
TR618		2730198015	2SC1815(BL) Transistor
TR619		2690029004	RN1204 (47K-47K) Digital Transistor
TR701	*	2690029004	RN1204 (47K-47K) Digital Transistor
TR702	*	2690030006	RN2204 (47K-47K) Digital Transistor
TR705 ~711	*	2690028005	RN2203 (22K-22K) Digital Transistor
TR715	*	2690029004	RN1204 (47K-47K) Digital Transistor
TR716	*	2690030006	RN2204 (47K-47K) Digital Transistor
SC001		2790016001	SF0R1A42 Thyristor
D001,002		2760432000	1SS270A Diode
D301~304		2760432000	1SS270A Diode
D401~406	*	2760432000	1SS270A Diode
D411,412	*	2760432000	1SS270A Diode
D503~506		2760049011	1S2076A Diode
D507,508		2760432000	1SS270A Diode
D509,510		2760049011	1S2076A Diode
D511~514		2760432000	1SS270A Diode
D517,518		2760432000	1SS270A Diode
D527		2760432000	1SS270A Diode
D601	*	2760444001	HRP22 Schottky Diode
D602,603		2760173084	HZ6C-1 Zener
D605~608	*	2760432000	1SS270A Diode

Ref. No.	•	Part No.	Part Name & Descriptions
D609,610		2760049011	1S2076A Diode
D612		2760236031	HZ5C-1 Zener
D705,706		2760049011	1S2076A Diode
D707~712	•	2760432000	1SS270A Diode
D713		2760049011	1S2076A Diode
D714		2760432000	1SS270A Diode
D715	•	2760049011	1S2076A Diode
RESISTORS (no included Carbon Film ±5%, 1/4W, 1/6W Type)			
ΔR445,446		2412379026	560 ohm ±5% 1/4W Carbon (NBS)
ΔR447,448		2412377044	100 ohm ±5% 1/4W Carbon (NBS)
ΔR453,454		2412379026	560 ohm ±5% 1/4W Carbon (NBS)
ΔR455,456		2412377044	100 ohm ±5% 1/4W Carbon (NBS)
ΔR523~526		2412379053	750 ohm ±5% 1/4W Carbon (NBS)
ΔR529,530		2412378027	220 ohm ±5% 1/4W Carbon (NBS)
ΔR533~536		2442013080	0.22 ohm ±5% 1W Metal Oxide (NB)
ΔR539~542		2442013080	0.22 ohm ±5% 1W Metal Oxide (NB)
ΔR547,548		2440072023	6.8 ohm ±5% 2W Metal Oxide (NBF)
ΔR549,550		2440015022	6.8 ohm ±5% 1W Metal Oxide (NBF)
ΔR551,552		2412375004	10 ohm ±5% 1/4W Carbon (NBS)
ΔR553		2412377060	120 ohm ±5% 1/4W Carbon (NBS)
ΔR617,618		2412380057	2 kohm ±5% 1/4W Carbon (NBS)
ΔR626		2440048028	3.9 kohm ±5% 1W Metal Oxide (NBF)
ΔR629,630		2412370041	2 kohm ±5% Carbon (NBF)
VR301		2110466008	Variable Resistor 100 kohm Loudness
VR401		2110467007	Variable Resistor 250 kohm Balance
VR403		2110465009	Variable Resistor 50 kohm Treble
VR405		2110465012	Variable Resistor 250 kohm Bass
VR501, 502		2116000002	Semi Fixed Resistor 5 kohm
CAPACITORS			
C003,004		2544254006	10μF ±20% 16V Electrolytic
C005,006		2533627000	100pF ±5% 50V Ceramic
C011,012		2561034050	0.068μF ±5% 50V Metalized
C013,014		2544250068	1000μF ±20% 6.3V Electrolytic
C015,016		2551121054	0.018μF ±5% 50V Plastic Film
C017,018		2533643000	470pF ±5% 50V Ceramic
C019,020		2544254006	10μF ±20% 16V Electrolytic
C101		2531025002	0.022μF +80,−20% 50V Ceramic
C102		2544260045	1μF ±20% 50V Electrolytic
C103~108		2531025002	0.022μF +80,−20% 50V Ceramic
C112,113		2544260045	1μF ±20% 50V Electrolytic
C116		2544260045	1μF ±20% 50V Electrolytic
C117~119		2544260045	1μF ±20% 50V Electrolytic
C120~125		2531025002	0.022μF +80,−20% 50V Ceramic
C126,127		2544260045	1μF ±20% 50V Electrolytic
C127,128		2531025002	0.022μF +80,−20% 50V Ceramic
C129,130		2544260045	1μF ±20% 50V Electrolytic
C131,132		2531025002	0.022μF +80,−20% 50V Ceramic
C133,134		2533631009	150pF ±5% 50V Ceramic
C301~304		2544260045	1μF ±20% 50V Electrolytic
C305,306		2533627000	100pF ±5% 50V Ceramic
C307,308		2544254006	10μF ±20% 16V Electrolytic
C317~320		2544260045	1μF ±20% 50V Electrolytic
C321,322		2531025002	0.022μF +80,−20% 50V Ceramic
C323,324		2544260045	1μF ±20% 50V Electrolytic
C325,326		2551121054	0.018μF ±5% 50V Plastic Film
C327,328		2531055030	390pF ±10% 50V Ceramic
C401~404		2544260045	1μF ±20% 50V Electrolytic
C405~408		2533627000	100pF ±5% 50V Ceramic
C409,410		2544254006	10μF ±20% 16V Electrolytic
C411,412		2533699002	6μF ±0.5pF 50V Ceramic

Ref. No.	•	Part No.	Part Name & Descriptions
C413		2544260045	1μF ±20% 50V Electrolytic
C415		2544260045	1μF ±20% 50V Electrolytic
C417~420		2551120000	0.001μF ±5% 50V Plastic Film
C421~424		2533639001	330pF ±5% 50V Ceramic
C427,428		2551121009	0.0068μF ±5% 50V Plastic Film
C429,430		2533633007	180pF ±5% 50V Ceramic
C431,432		2551120013	0.0012μF ±5% 50V Plastic Film
C433,434		2561034047	0.056μF ±5% 50V Metalized
C435,436		2561034089	0.12μF ±5% 50V Metalized
C439,440		2534494009	100pF ±5% 500V Ceramic
C441,442		2551121067	0.022μF ±5% 50V Plastic Film
C445,446		2534494009	100pF ±5% 500V Ceramic
C447,448		2551121067	0.022μF ±5% 50V Plastic Film
C453,454		2551121041	0.015μF ±5% 50V Plastic Film
C455		2544260045	1μF ±20% 50V Electrolytic
C457		2544260045	1μF ±20% 50V Electrolytic
C458		2544260045	1μF ±20% 50V Electrolytic
C461,462		2531025002	0.022μF +80,−20% 50V Ceramic
C505		2543046008	1μF ±20% 100V Electrolytic (B.P)
C507		2543046008	1μF ±20% 100V Electrolytic (B.P)
C519,520		2531024003	0.01μF +80,−20% 50V Ceramic
C521,522		2533639001	330pF ±5% 50V Ceramic
C525,526		2544260045	1μF ±20% 50V Electrolytic
C527,528		2533639001	330pF ±5% 50V Ceramic
C529,530		2534498005	150pF ±5% 500V Ceramic
C535,536		2561034076	0.1μF ±5% 50V Metalized
C537,538		2551121067	0.022μF ±5% 50V Plastic Film
C539~542	•	2543046008	1μF ±20% 100V Electrolytic (B.P)
C543,544		2534498005	150pF ±5% 500V Ceramic
C601,602		2544254006	10μF ±20% 16V Electrolytic
C603,604		2531024003	0.01μF +80,−20% 50V Ceramic
C605		2544250045	1μF ±20% 50V Electrolytic
C606		2544250042	330μF ±20% 6.3V Electrolytic
C609,610		2551120084	0.0047μF ±5% 50V Plastic Film
C613		2531025002	0.022μF +80,−20% 50V Ceramic
C614		2531024003	0.01μF +80,−20% 50V Ceramic
C615~617		2531025002	0.022μF +80,−20% 50V Ceramic
C618		2544260045	1μF ±20% 50V Electrolytic
C619		2531025002	0.022μF +80,−20% 50V Ceramic
C701		2544254006	10μF ±20% 16V Electrolytic
C704		2533635005	220pF ±5% 50V Ceramic
C705,706		2544260045	1μF ±20% 50V Electrolytic
C707		2531024003	0.01μF +80,−20% 50V Ceramic
C708		2533635005	220pF ±5% 50V Ceramic
C709~711		2531055056	220pF ±10% 50V Ceramic
C713		2531055056	220pF ±10% 50V Ceramic
C716		2544252037	100μF ±20% 10V Electrolytic
C717,718		2531024003	0.01μF +80,−20% 50V Ceramic
C719		2544260045	1μF ±20% 50V Electrolytic
C720		2531024003	0.01μF +80,−20% 50V Ceramic
C721		2544260044	1μF ±20% 50V Electrolytic
C723		2531024003	0.01μF +80,−20% 50V Ceramic
C725		2531025002	0.022μF +80,−20% 50V Ceramic
C726		2531024003	0.01μF +80,−20% 50V Ceramic
C777		2531024003	0.01μF +80,−20% 50V Ceramic
E.U.P.			
L501,502		2359001004	Inductor
XL701		3990034002	OSC Element (CST4.00MG)
XL702		2610037005	OSC Element (CSB455E)
SW003	•	2124607002	2P Push SW. (Phono. Mode)
SW004		2124462001	1P Push SW. (Tuner. Mode)
RL501		2140037009	Relay

Ref. No.	•	Part No.	Part Name & Descriptions	Q'ty
OTHER PARTS				
	•	2221317208	(P.W. Board)	1
		2090008146	Jumper Wire P=5mm	12
		2090008120	Jumper Wire P=10mm	98
		EP-5667H1	Terminal Pin	18
		2050152003	6P Connector Base	3
		2050298048	9P FFC Con. Base (S)	1
		2050298019	16P FFC Con. Base (S)	1
		2050185038	3P Wire Holder	14
		2050185041	4P Wire Holder	1
		2050185054	5P Wire Holder	1
		2050185067	6P Wire Holder	2
		2050185070	7P Wire Holder	1
		2050185025	2P Wire Holder	3
		2050271094	9P PH Connector Base	1
	•	2042171018	7P Connector Cord	1
	•	2042170006	7P EH Connector Cord	1
	•	2038166008	5P EH Connector Cord	1
	•	2036156023	4P EH Connector Cord	1
	•	2034340006	3P EH Connector Cord	1
	•	2034353006	3P EH Connector Cord Ass'y	1
	•	2034304013	3P EH Connector Cord	1
	•	2034338005	3P EH Connector Cord	1
	•	2090121023	T.S.W. Ass'y	1
	•	2090121036	T.S.W. Ass'y	1
	•	2090121049	T.S.W. Ass'y	1
	•	2090172001	T.S.W. Ass'y	1
	•	2090121065	T.S.W. Ass'y	1
	•	2090146008	2C Shield Wire	1
	•	2090146011	2C Shield Wire	1
	•	2090151006	2C Ribbon Cable	1
	•	2090153004	Vinyl Wire	1
	•	2090153020	Vinyl Wire	1
	•	2090153033	Vinyl Wire	1
	•	2090164035	T.S.W. Contact Ass'y	1
	•	2090164048	T.S.W. Contact Ass'y	1

ETC0841E TUNER UNIT PARTS LIST (for EP1)

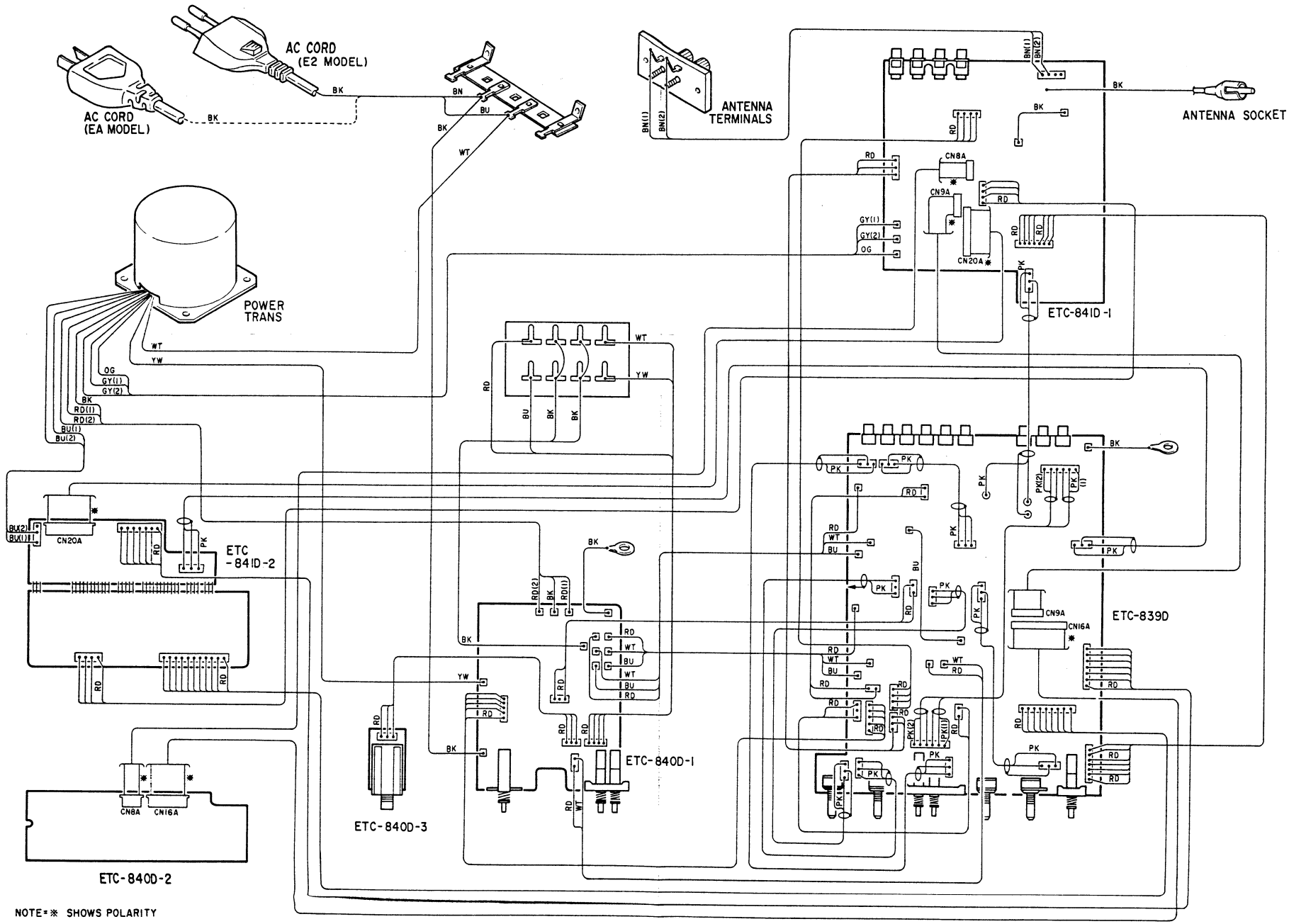
Ref. No.	•	Part No.	Part Name & Descriptions
SEMICONDUCTORS			
IC100	•	2630414006	LA1222 (Sanyo) IC
IC101		2630083000	HA11225 (Hitachi) IC
IC102		2630384000	μPC1235C (NEC) IC
IC103		2630145003	LA1245 (Sanyo) IC
IC104		2630232000	TD6104P (Toshiba) IC
IC105		2620452104	TC9147BP (Toshiba) IC
IC106		2630371000	LB1403N (Sanyo) IC
IC107		2620300007	HD14011BP (Hitachi) IC
IC108		2620276005	HD140668P (Hitachi) IC
IC600	•	2630459003	L78M05ML (JRC) IC
IC700	•	2620700005	TMS1035NE (T.I) IC
IC701		2620453006	TD6301AP (Toshiba) IC
TR101, 102		2730222004	2SC2458(Y/GR) Transistor
TR103		2750051006	2SK161(GR) FET
TR104		2730222004	2SC2458(Y/GR) Transistor
TR105		2750053004	2SK365(BL/GR) FET
TR106, 107		2710194000	2SA1048(Y/GR) Transistor
TR108 ~110		2730222004	2SC2458(Y/GR) Transistor
TR111, 112		2710194000	2SA1048(Y/GR) Transistor
TR113 ~115		2730222004	2SC2458(Y/GR) Transistor
TR116 ~118		2710194000	2SA1048(Y/GR) Transistor
TR119 ~121		2730222004	2SC2458(Y/GR) Transistor
TR122		2710194000	2SA1048(Y/GR) Transistor
TR600		2730338008	2SC3851(Y)/(G) Transistor
TR601		2740078031	2SD882(Q/P) Transistor
TR602 ~605		2730222004	2SC2458(Y/GR) Transistor
TR700		2730222004	2SC2458(Y/GR) Transistor
TR701, 702		2710194000	2SA1048(Y/GR) Transistor
TR705	•	2690030006	RN2204 (47K-47K) Digital Transistor
D100		2760185014	HZ4B-3 Zener
D101~103	•	2760417009	1SS270 Diode
D104,105		2760302004	SVC321D2-SP Varactor
D106~116	•	2760417009	1SS270 Diode
D600		2760253001	HZ15-2 Zener
D601		2760422007	1D4841 Diode
D602~604		2760417009	1SS270 Diode
LE700 ~707	•	3939345008	SEL2413E-D2 Green (3) LED
LE708 ~714	•	3939344009	SEL1413E-D2 Green (5) LED
LE718	•	3939342001	SEL1213C-D Red (5) LED
LE719, ~721	•	3939345008	SEL2413E-D2 Green (3) LED
LE722 ~729		3939344009	SEL1413E-D2 Green (5) LED
LE730 ~732		3939345008	SEL2413E-D2 Green (3) LED
LE733		3939343000	SEL2213C-D1 Red (3) LED
RESISTORS (not included Carbon Film ±5%, 1/6W, 1/4W Type)			
ΔR603		2440037026	470 ohm ±5% 1W Metal Oxide (NB)
ΔR604		2440033020	220 ohm ±5% 1W Metal Oxide (NB)
ΔR605		2440005029	1 ohm ±5% 1W Metal Oxide (NB)
ΔR609		2412313082	4.7 ohm ±5% 1/4W Carbon (NB)
R725	•	2462029009	10 kohm x 8 Resistor Array
R726	•	2462029012	10 kohm x 16 Resistor Array

Ref. No.	*	Part No.	Part Name & Descriptions	Q'ty
VR100		2116000002	Semi Fixed Resistor 5 kohm	
VR101		2116000028	Semi Fixed Resistor 100 kohm	
CAPACITORS				
C100		2531024003	0.01μF +80,−20% 50V Ceramic	
C102		2544254006	10μF ±20% 16V Electrolytic	
C103~109		2531024003	0.01μF +80,−20% 50V Ceramic	
C111		2544254019	22μF ±20% 16V Electrolytic	
C112		2531024003	0.01μF +80,−20% 50V Ceramic	
C113		2544260032	0.47μF ±20% 50V Electrolytic	
C114		2531024003	0.01μF +80,−20% 50V Ceramic	
C115		2544260045	1μF ±20% 50V Electroltyic	
C116		2533629008	120pF ±5% 50V Ceramic	
C117~119		2531024003	0.01μF +80,−20% 50V Ceramic	
C120		2544254048	100μF ±20% 16V Electrolytic	
C121		2544254006	10μF ±20% 16V Electrolytic	
C124		2544254051	220μF ±20% 16V Electrolytic	
C125		2544260061	3.3μF ±20% 50V Electrolytic	
C126		2544260058	2.2μF ±20% 50V Electrolytic	
C127		2544260032	0.47μF ±20% 50V Electrolytic	
C128		2556091008	470pF ±5% 50V Plastic Film	
C129		2561034034	0.047μF ±5% 50V Metalized	
C130,131		2539030028	2200pF ±10% 25V Ceramic	
C132,133		2544214006	10μF ±10% 16V Electrolytic	
C135,136		2544260058	2.2μF ±20% 50V Electrolytic	
C137		2531024003	0.01μF +80,−20% 50V Ceramic	
C138		2533635005	220pF ±5% 50V Ceramic	
C139		2533609002	18pF ±5% 50V Ceramic	
C140		2554201049	390pF ±5% 50V Plastic Film	
C141		2531024003	0.01μF +80,−20% 50V Ceramic	
C142		2531004007	1000pF ±10% 50V Ceramic	
C143		2531025002	0.022μF +80,−20% 50V Ceramic	
C144,145		2531024003	0.01μF +80,−20% 50V Ceramic	
C146		2533619005	47pF ±5% 50V Ceramic	
C147		2544254006	10μF ±20% 16V Electrolytic	
C148		2531024003	0.01μF +80,−20% 50V Ceramic	
C149		2531004007	1000pF ±10% 50V Ceramic	
C150,151		2531024003	0.01μF +80,−20% 50V Ceramic	
C152		2544260061	3.3μF ±20% 50V Electrolytic	
C153		2544258002	4.7μF ±20% 35V Electrolytic	
C154,155		2531024003	0.01μF +80,−20% 50V Ceramic	
C156		2544254035	47μF ±20% 16V Electrolytic	
C157		2531025002	0.022μF +80,−20% 50V Ceramic	
C158		2544228061	1μF ±20% 50V Electrolytic (Low leak)	
C159		2544214020	1μF ±20% 50V Electrolytic (B.P)	
C160		2531025002	0.022μF +80,−20% 50V Ceramic	
C161		2544254048	100μF ±20% 16V Electrolytic	
C162		2544252024	47μF ±20% 10V Electrolytic	
C163~167		2531024003	0.01μF +80,−20% 50V Ceramic	
C168		2590004006	22000μF 5.5V for Backup	
C169	*	2531024003	0.01μF +80,−20% 50V Ceramic	
C170,171		2533599002	6pF ±0.5pF 50V Ceramic	
C172~175		2531024003	0.01μF +80,−20% 50V Ceramic	
C176,177		2544260058	2.2μF ±20% 50V Electrolytic	
C178,179		2544260032	0.47μF ±20% 50V Electrolytic	
C180,181		2531024003	0.01μF +80,−20% 50V Ceramic	
C182		2544260032	0.47μF ±20% 50V Electrolytic	
C183,184		2544258002	4.7μF ±20% 35V Electrolytic	
C185		2531024003	0.01μF +80,−20% 50V Ceramic	
C186		2544252024	47μF ±20% 10V Electrolytic	
C187,188		2531024003	0.01μF +80,−20% 50V Ceramic	
C189		2544254035	47μF ±20% 16V Electrolytic	
C190		2544254077	470μF ±20% 16V Electrolytic	
C191		2531024003	0.01μF +80,−20% 50V Ceramic	
C192		2544254077	470μF ±20% 16V Electrolytic	
C193		2544254080	1000μF ±20% 16V Electrolytic	
C194		2544254035	47μF ±20% 16V Electrolytic	
C195		2531024003	0.01μF +80,−20% 50V Ceramic	
C197		2531024003	0.01μF +80,−20% 50V Ceramic	
C600		2544254006	10μF ±20% 16V Electrolytic	
C601		2544256046	100μF ±20% 25V Electrolytic	
C602		2544258099	1000μF ±20% 35V Electrolytic	
C603,604		2531024003	0.01μF +80,−20% 50V Ceramic	
C605,606		2544254006	10μF ±20% 16V Electrolytic	
C607		2544254093	2200μF ±20% 16V Electrolytic	
C608		2544254048	100μF ±20% 16V Electrolytic	
C609		2544254006	10μF ±20% 16V Electrolytic	
C610		2544254077	470μF ±20% 16V Electrolytic	
C611		2544250013	47μF ±20% 6.3V Electrolytic	
C700~702		2531006005	2200pF ±10% 50V Ceramic	
C703		2531024003	0.01μF +80,−20% 50V Ceramic	
C704,705		2533639001	330pF ±5% 50V Ceramic	
C706		2531025002	0.022μF +80,−20% 50V Ceramic	
TC100		2130022008	Trimmer Condencer	
COIL, TRANS				
L100		2350026020	Inductor 10μH	
T100		2312901002	FM IF Det (A) (50kHz)	
T101		2312902001	FM IF Det (B) (50kHz)	
T103		2313026009	AM IFT	
T104		2314901000	MW OSC. Coil	
T105		2311113008	MW Ant. Coil	
LP101, 102		2320085004	Low Pass Filter	
CF100	*	2610078006	FM C. Filter (SFE10.7MM)	
CF102	*	2610078006	FM C. Filter (SFE10.7MM)	
CF103		2610031001	AM C. Filter (BFU450C4)	
CF104		2610065006	AM C. Filter (SFZ450F3L)	
E.U.P.				**Q'ty**
		2160041004	Front End	1
	*	3934022009	FIP7B8GS FLD	1
X100		3990040009	X-tal (7.2MHz)	1
		4990049009	RM-577 (Remote Control)	1
		2048178002	1P Pin Jack	1
		2020022008	Fuse Holder	2
		2124293005	Slide Switch	1
OTHER PARTS				**Q'ty**
	*	(2221313202)	P.W. Board	1
		2090008146	Jumper Wire P=5mm	34
		2090008120	Jumper Wire P=10mm	152
		EP-5667H1	Terminal Pin	10
		4178028101	Heat Sink	1
		4713304015	Bind Screw 3x8	2
		2030262007	Ant. Pin Cord Ass'y	1
		2050240009	3P Connector Base	1
		2050185041	4P Wire Holder	1
	*	1460822209	LED Holder (A)	1
	*	1460821200	LED Holder (B)	1
	*	4610294008	Rubber Sheet	1
		2050233074	7P EH Connector Base	1
		2050233045	4P EH Connector Base	1
		2050233032	3P EH Connector Base	3
		2050271049	4P PH Connector Base	1
		2050271078	7P PH Connector Base	1
		2050241037	3P Connector Pin Ass'y	1
	*	2050298051	20P FF Con. Base (S)	2
	*	2050298048	9P FFC Con. Base (S)	1
		2050298035	8P FFC Con. Base (S)	1
	*	2042172004	9P Connector Cord	1
	*	2036172007	4P Connector Cord	1
	*	4150309013	P.V.C. Tube	4
	*	2090154003	Vinyl Wire	1
	*	2090154016	Vinyl Wire	4
	*	2090168015	Shield Wire Ass'y	1

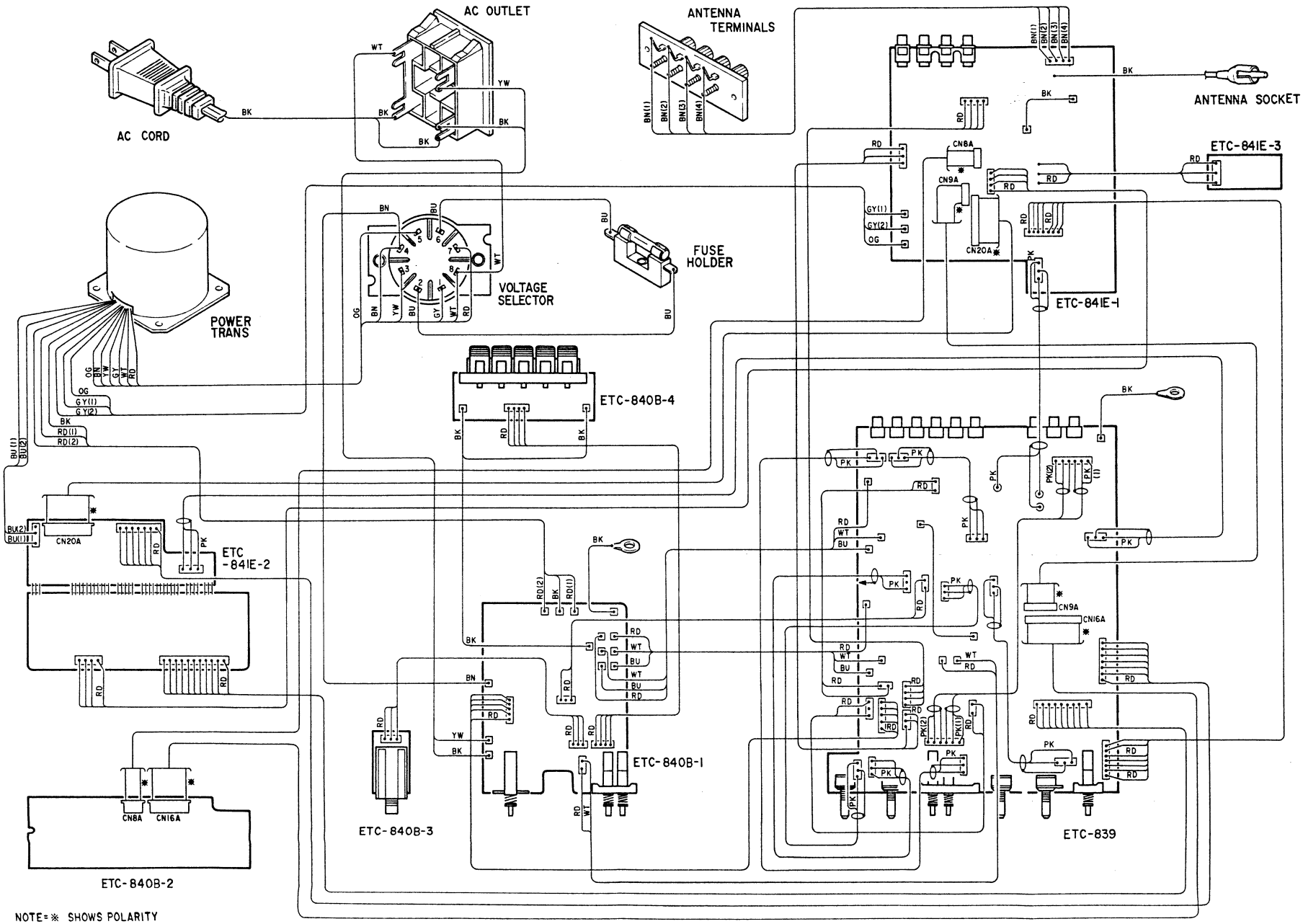
ETC0840B P. SUPPLY & CONTROL UNIT PARTS LIST (for EP1)

Ref. No.	*	Part No.	Part Name & Descriptions	Q'ty
SEMICONDUCTORS				
TR101	*	2710206008	2SA1488(Y)/(G) Transistor	
TR102		2730187039	2SC2240(BL/GR) Transistor	
TR103		2710094032	2SA970(BL/GR) Transistor	
TR104	*	2730338008	2SC3851(Y)/(G) Transistor	
TR106	*	2730338008	2SC3851(Y)/(G) Transistor	
TR107		2710102021	2SA1015(GR) Transistor	
TR108	*	2710206008	2SA1488(Y)/(G) Transistor	
D101	*	2760427015	DSA1A2 (Type-3) Diode	
D103	*	2760427015	DSA1A2 (Type-3) Diode	
D104		2760221020	HZ36-3 Zener	
D105		2760256008	HZ16-2 Zener	
D106		2760221020	HZ36-3 Zener	
D107		2760424005	4D4B42(LC1) Diode	
D200~203		2760370007	1SS106TD Diode	
RESISTORS (not included Carbon Film ±5%, 1/4W, 1/4W Type)				
⚠R110		2440093028	390 ohm ±5% 2W Metal Oxide (NBF)	
⚠R118		2440093028	390 ohm ±5% 2W Metal Oxide (NBF)	
⚠R119,120		2412387047	4.7 ohm ±5% 1/4W Carbon (NBS)	
R121		2420073000	2.2 Mohm ±10% 1/2W Carbon Composite	
⚠R127,128		2440033020	220 ohm ±5% 1W Metal Oxide (NBF)	
CAPACITORS				
C100		2544263042	1μF ±20% 100V Electrolytic	
C103,104		2544260045	1μF ±20% 50V Electrolytic	
C105		2544261015	47μF ±20% 50V Electrolytic	
C106		2533619005	47pF ±5% 50V Ceramic	
C107		2531055014	560pF ±10% 50V Ceramic	
C109		2544216002	9200μF ±20% 63V Electrolytic	
C111		2544216002	9200μF ±20% 63V Electrolytic	
C112,113		2531053003	0.01μF +100,−0% 500V Ceramic	
⚠C114		2538014003	0.01μF ±20% 400V Ceramic(AC)	
C119		2544260045	1μF ±20% 50V Electrolytic	
C120		2544089022	100μF ±20% 50V Electrolytic	
C801		2531024503	0.01μF +80,−20% 50V Ceramic	
E.U.P.				**Q'ty**
S200~214		2124388004	Tact Switch	15
S218~225		2124388004	Tact Switch	8
⚠SW001		2124574009	Power Switch	1
SW002	*	2124604005	2P Push Switch	1
		2048167000	Headphone Jack	1
		2050254008	Terminal Board (8P) For SP.	1
⚠		2020022008	Fuse Holder	2
⚠F101		2061046001	Fuse (3A) UL (20mm)	1
OTHER PARTS				**Q'ty**
	*	(2221315200)	P.W. Board	1
		2090008146	Jumper Wire P=5mm	6
		2090008120	Jumper Wire P=10mm	28
		EP-5667H1	Terminal Pin	17
	*	2050269006	8P FFC Con. Base (R)	1
		2050269064	16P FFC Con. Base (R)	1
		2050233032	3P EH Connector Base	2
		2050233058	5P EH Connector Base	1
		2050185025	2P Wire Holder	1
		2050185038	3P Wire Holder	1
		2050185041	4P Wire Holder	2
	*	2034304026	3P EH Connector Cord	1
	*	2090170003	4C Ribbon Cable	1
	*	2090169001	Vinyl Wire Ass'y	1

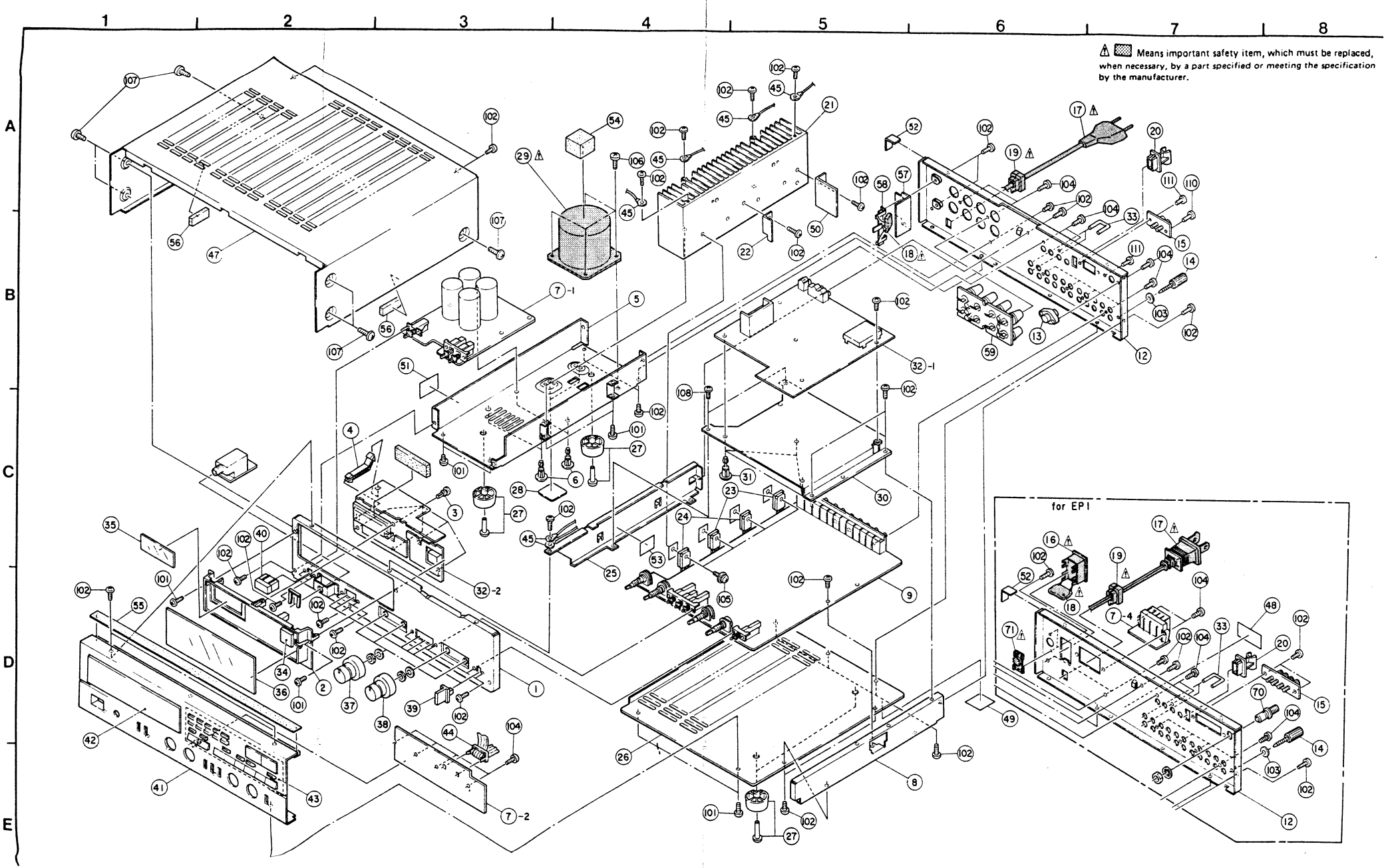
WIRING DIAGRAM (for E2, EA)



WIRING DIAGRAM (for EP1)



EXPLODED VIEW OF CHASSIS AND CABINET



EXPLODED VIEW OF PARTS LIST

Ref. No.	*	Part No.	Part Name & Descriptions	Q'ty
1	*	4110568108	FRONT CHASSIS ASS'Y	1
2	*	1460820308	LED FRAME	1
3		4770096007	PUSH RIVET	5
4		4150313009	P.C.B. SUPPORT	1
5	*	4110569301	TRANS CHASSIS	1
6	*	4121979029	P.C.B. HOLDER	4
7	*	ETC0840D	P. SUPPLY & CONTROL UNIT	1s
8		4119020508	SIDE CHASSIS	1
9	*	ETC0839D	POWER UNIT	1s
10	*	–	–	1
11		–	–	1s
12	*	1050726003	BACK PANEL	1
13		2050215005	ANTENNA TERMINAL	1
14		2050071016	TERMINAL ASS'Y	1
15		2050165003	2P TERMINAL	1
⚠16		–	–	–
⚠17		2062002031	AC CORD	1
⚠18	*	2538014003	CAPACITOR 0.01μF/400V (AC)	1
⚠19		4450056008	CORD BUSH	1
20		1460494006	ANTENNA HOLDER	1
21		4170272104	POWER RADIATOR	1
22		4129044008	BRACKET	1
23	*	2730336000	TRANSISTOR 2SC3854(O)/(Y) TR505,506	2
24	*	2710204000	TRANSISTOR 2SA1490(O)/(Y) TR507,508	2
25	*	4122022205	RADIATOR BRACKET	1
26		1059044207	BOTTOM COVER	1
27		1040128006	FOOT	4
28	*	4140411005	SAFETY PLATE	2
⚠29	*	2335591004	POWER TRANS	1
30	*	4122021002	SHIELD PLATE	1
31	*	4121979032	P.C.B. HOLDER	3
32	*	ETC0841D	TUNER UNIT	1s
33		2050073001	SHORT PIN	2
34		1438044103	WINDOW (C)	1
35	*	1430470005	FILTER	1
36	*	1410294201	DISPLAY SHEET	1
37	*	1120487201	KNOB ASS'Y	3
38	*	1120487214	KNOB ASS'Y	1
39		1139071006	PUSH KNOB (T)	5
40		1139070104	PUSH KNOB (P)	1
41	*	1441479406	FRONT PANEL ASS'Y	1
42	*	1430466006	WINDOW	1
43	*	1130811126	PUSH KNOB ASS'Y	1
44	*	4150342106	WIRE HOLDER	1
45		4450048003	CORD HOLDER (ℓ: 76mm)	7
*46		4450033005	WIRE CLAMP BAND	30
47		1029013404	TOP COVER	1
*48		2030289006	1P CONTACT ASS'Y	1
*49		2030289019	1P CONTACT ASS'Y	1
50		4122062003	SHIELD BRACKET	1
*51	*	2090153075	VINYL WIRE	2
52		4410733002	CORNER BRACKET	1
*53		2090153062	VINYL WIRE	1
54		4610294024	RUBBER SHEET	1
55		1229006017	SPACER	1
56		4619001001	RUBBER SHEET	2
57		4150374006	LNSULATING SHEET	1
58		2050089011	7P W TERMINAL	1
59		2050186008	8P SP TERMINAL	1
*60		2551120084	CAPACITORS 0.0047μF/50V (C-151 ~ 154)	4
61		2090116038	16P FFC	1
62		*2090145012*	*8P FHCU*	1
63		2090143001	20P FHCU	1
64		2090144000	9P FHCU	1
*65		2531024003	CERAMIC CAPACITOR 0.01μF/50V (C-612)	1
*66	*	2090153088	VINYL WIRE	2
			SCREWS	
101		4737002021	TAPPING SCREW (S) 3x8 BLACK	9
102		4737002034	TAPPING SCREW (S) 3x6 BLACK	42
103		4770018001	WASHER (P-87)	1
104		4737500044	TAPPING SCREW (P) 3x8 BLACK	10
105		4700012022	PAN SCREW WITH W.SW 3x12	4
106		4737004016	TAPPING SCREW (S) 4x6	4
107		4737007000	TAPPING SCREW (S) 4x8 BLACK	6
108		4730354019	TAPPING SCREW 3x8	2
109		2050003107	3T LUG	1
110		4770064107	FIXING SCREW	2
111		4770276005	EARTH SCREW	2
			PACKING & ACCESSORIES (not including EXPLODED VIEW)	
201		5049102003	STYLEN PAPER	1
202		5059102006	POLYCOVER	1
203	*	5030552109	CUSHION	2
204	*	4990051000	REMOTE CONTROL (RC-75)	1
205	*	5011117039	CARTON CASE	1
206		5050061007	ENVELOPE	1
207	*	5111504005	INST. MANUAL	1
208		2311060009	LOOP ANTENNA	1
209		3950005107	FM ANT. ASS'Y	1
210		8139111014	COLOR LABEL (BLACK)	2
211		5101167008	CONTROL CARD	1
212		5290040008	FM ANT. ADAPTOR	1

NOTE:
1. See addendum list next page for the parts with asterisk (*) on the Ref. No. and the other parts not included in the list.
2. * Mark not included EXPLODED VIEW.
3. *The list is prepared based on E2 for Black Version.*
4. * indicates the parts newly used in this unit.

E2 Gold Version PARTS LIST
(Same as E2 BLACK VERSION (Left P/List) except the followings.)

Ref. No.	Part No.	Part Name & Descriptions	Q'ty
37	1120487227	KNOB ASS'Y	3
38	1120487230	KNOB ASS'Y	1
39	1139071019	PUSH KNOB (T)	5
40	1139070117	PUSH KNOB (P)	1
41	1441479435	FRONT PANEL ASS'Y	1
43	1130811139	PUSH KNOB ASS'Y	1
47	1029013420	TOP COVER	1
107	4737014006	TAPPING SCREW (S) 4x8	6
205	5011117042	CARTON CASE	1
210	5139111001	COLOR LABEL (GOLD)	2

ADDENDUM LIST

Ref. No.	Part Name & Descriptions	Part No.			
		EA for Australia	EP1 for Asia		
7	P. SUPPLY & CONT. UNIT	ETC0840D	ETC0840B		
9	POWER UNIT	ETC0839D	ETC0839		
12	BACK PANEL	1050726016	1050676056		
13	ANTENNA TERMINAL	2050215005	–		
15	(n)P TERMINAL	2050165003(2P)	2050050008(4P)		
⚠ 16	**AC OUTLET**	–	**2033924009**		
⚠ 17	**AC CORD**	**2062025005**	**2006031026**		
⚠ 29	**POWER TRANS**	**2335592003**	**2335597008**		
32	TUNER UNIT	ETC0841D	ETC0841E		
*51	VINYL WIRE	2090153017	2090153017		
54	RUBBER SHEET	4610294024	4619001027		
58	7P W TERMINAL	2050089008	–		
59	8P SP TERMINAL	2050186008	–		
*60	CAPACITOR 0.0047μF/50V (C151 ~ 154)	–	–		
*66	VINYL WIRE	–	–		
*70	F-RCA CONNECTOR	–	2050313004		
⚠ *71	**VOLTAGE SEL. SW**	–	**2120186006**		
⚠ *72	**FUSE HOLDER**	–	**2020013101**		
*73	FUSE LABEL	5130637034	5131083072		
*74	PRESET LABEL	–	5150290008		
*75	DANGEROUS MARK	–	5138266009		
*76	NOTICE SHEET	5130212006	–		
102	TAPPING SCREW (S) 3x6 BLACK	4737002034(42)	4737002034(44)		
205	CARTON CASE	5011117039	5011117000		
207	INST. MANUAL	5111504005	5111443108		
210	COLOR LABEL (BLACK)	5139111014	–		
211	CONTROL CARD	5131167008	–		
212	FM ANT. ADAPTOR	5290040008	–		
215	R.C.C. LABEL	–	5131198006		
216	INSTRUCTION SHEET	–	5111511001		

SCHEMATIC DIAGRAM (for E2, EA)
TUNER SECTION

2 3 4 5 6 7

ETC-841D-1

FRONTEND

ANT +B 8.0V (10V) IF OUT 0V GND GND 0V F OUT VT AGC 0V

IC100 LA1222

IC101 HA11225

IC102 μPC

IC103 LA1245

IC104 TD6104P

IC105 TC9147BP

IC106 LB1403N

IC108 HD14066

T100 T101 T103 T104 T105

TR100 TR103 2SK161(GR) TR104 TR105 TR106 TR107 TR108 TR109 TR110 TR111 TR112 TR113 TR114 TR115 TR116 TR117 TR118 TR119 TR120 TR121

D100 HZ4B-3 D101 D102 D103 D104 SVC321SP-D2 D105 SVC321SP-D2 D106 D107 D108 D109 D110 D111 D112 D113 D114 D115

LPF100 CF100 CF101 CF102 CF103 CF104

L100 10μH

VR100 5k

X100

VCR OUT MONI VDP VCR

ETC-841D-3

RM577

D700 D701 D702 D703 D704 D705 D706 D707 D708 D709 D710 D711 D712 D713 D714 D715 D716 D717 D718 POWER D719 SHIFT1 D720 SHIFT2 D721 D722 D723 D724 D725 D726 D727 D728 D729 D730 SIGNAL D731 D732 D733 STEREO D734 IS2076

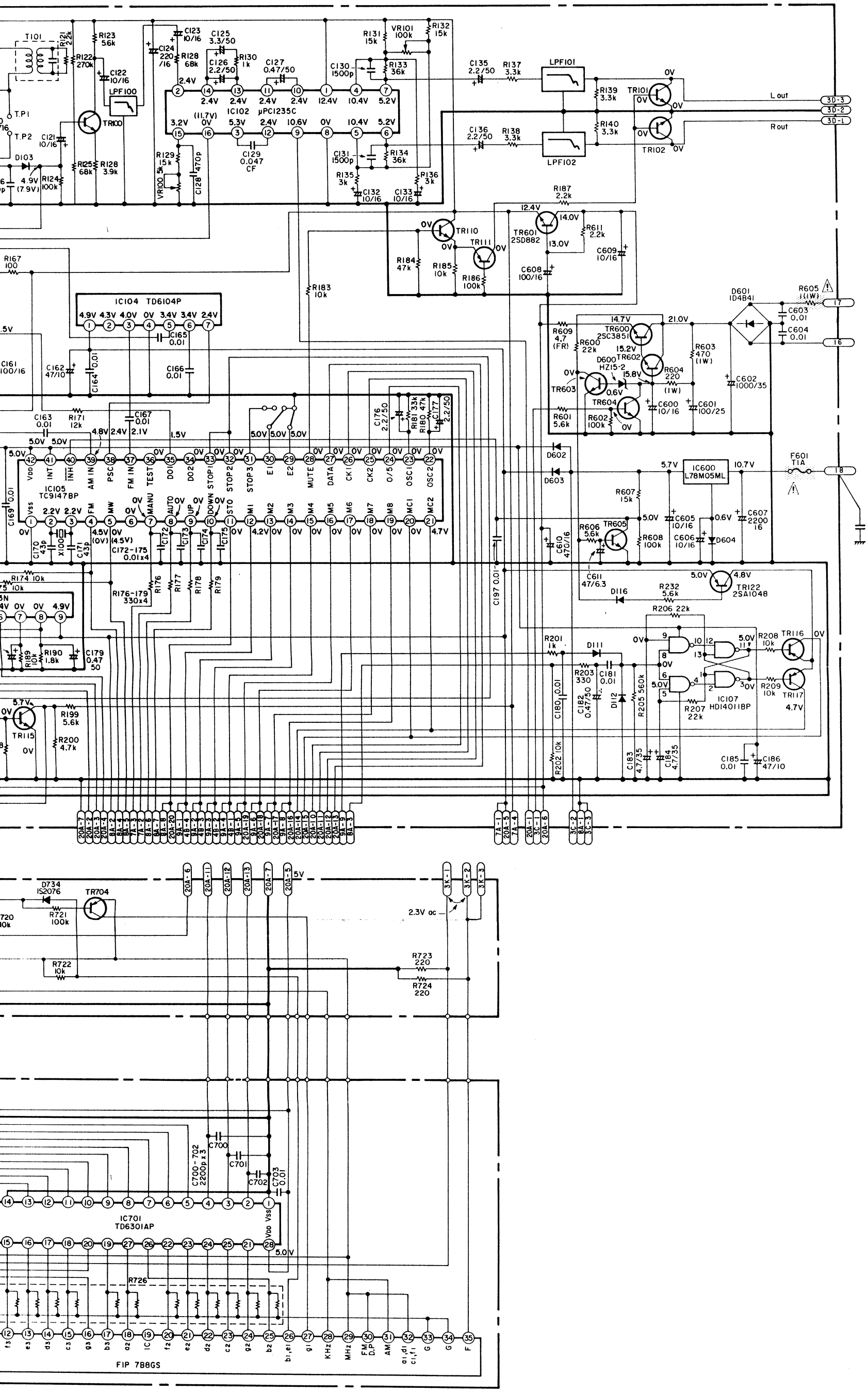
IC700 TMS1035

IC701 TD6301AP

FIP 7B8GS

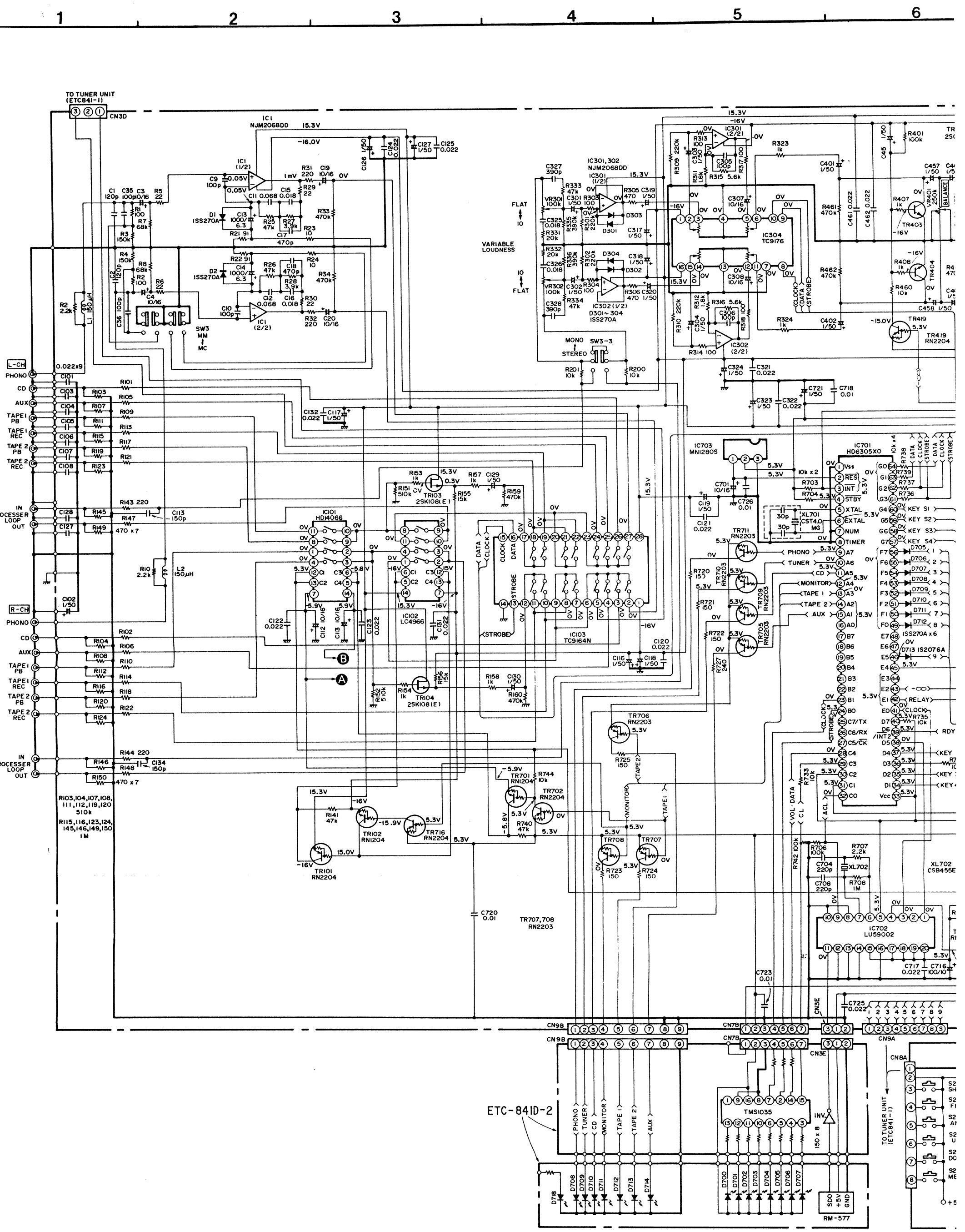
ETC-841D-2

⚠ ▩ Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification by the manufacturer.



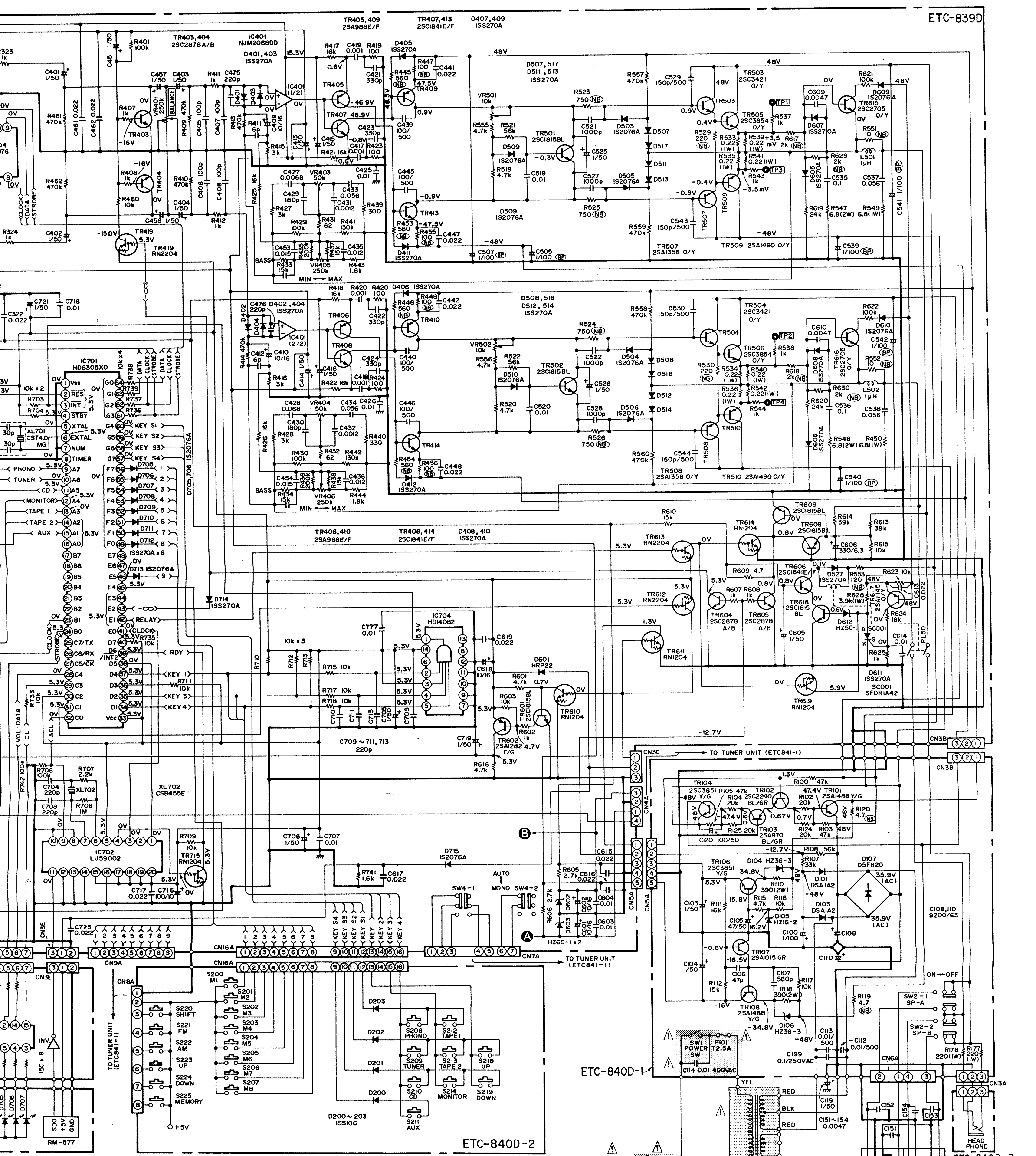
NOTES:
ALL RESISTANCE VALUES IN OHM, K = 1,000 OHM, M = 1,000,000 OHM.
ALL CAPACITANCE VALUES IN MICROFARAD, P = MICRO-MICRO FARAD.
EVERY VOLTAGES AND CURRENTS IS MEASURED AT NO SIGNAL INPUT CONDITION.
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

SCHEMATIC DIAGRAM (for E2, EA)
AMP. RECT. SECTION



6 7 8 9 10 11

⚠ ▩ Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification by the manufacturer.



NOTES:
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SCHEMATIC DIAGRAM (for EP1)
TUNER SECTION

2 3 4 5 6 7

ETC-841E-1

FRONT END

ANT ANT GND FOUT VT +B IF OUT GND

IC100 LA1222

IC101 HA11225

T100 T101

IC103 LA1245

IC104 TD6104P

IC105 TC9147BP

IC106 LB1403N

IC108 HD14066

TRI04 TRI05 TRI06 TRI07 TRI08 TRI09 TRI10 TRI11 TRI12 TRI13 TRI14 TRI15 TRI16 TRI17 TRI18 TRI19 TRI20 TRI21 TR103 TR700 TR701 TR702 TR703 TR704 TR705

D100 HZ4B-3 D101 D102 D103 D104 SVC321SP-D2 D105 SVC321SP-D2 D106 D107 D108 D109 D110 D113 D114 D115

ETC-841E-3

IC700 TMS1035

D700 D701 D702 D703 D704 D705 D706 D707 D711 D712 D713 D714 D715 D716 D717 D718 POWER D719 SHIFT1 D720 SHIFT2 D721 STO D722 D723 D724 D725 D726 D727 D728 D729 D730 SIGNAL D731 D732 D733 STEREO D734 IS2076

RM577

IC701 TD6301AP

FIP 7B8GS

ETC-841E-2

6 7 8 9 10 11

⚠ ▩ Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification by the manufacturer.

A B C D E F G H

IC104 TD6104P

IC105 TC9147BP

IC106 LB1403N

IC107 HD14011BP

IC700 L78M05

IC701 TD6301AP

FIP 788GS

NOTES:
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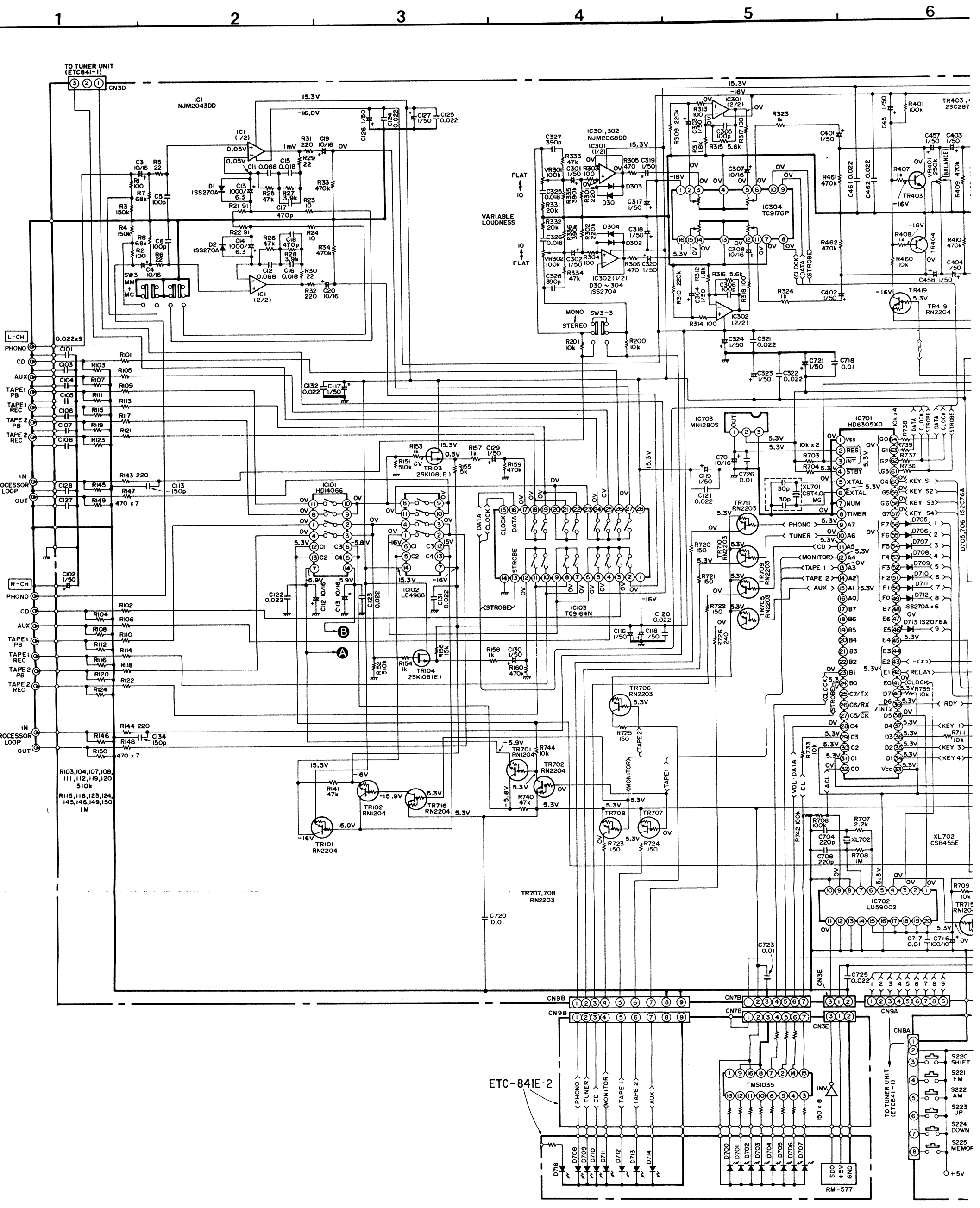
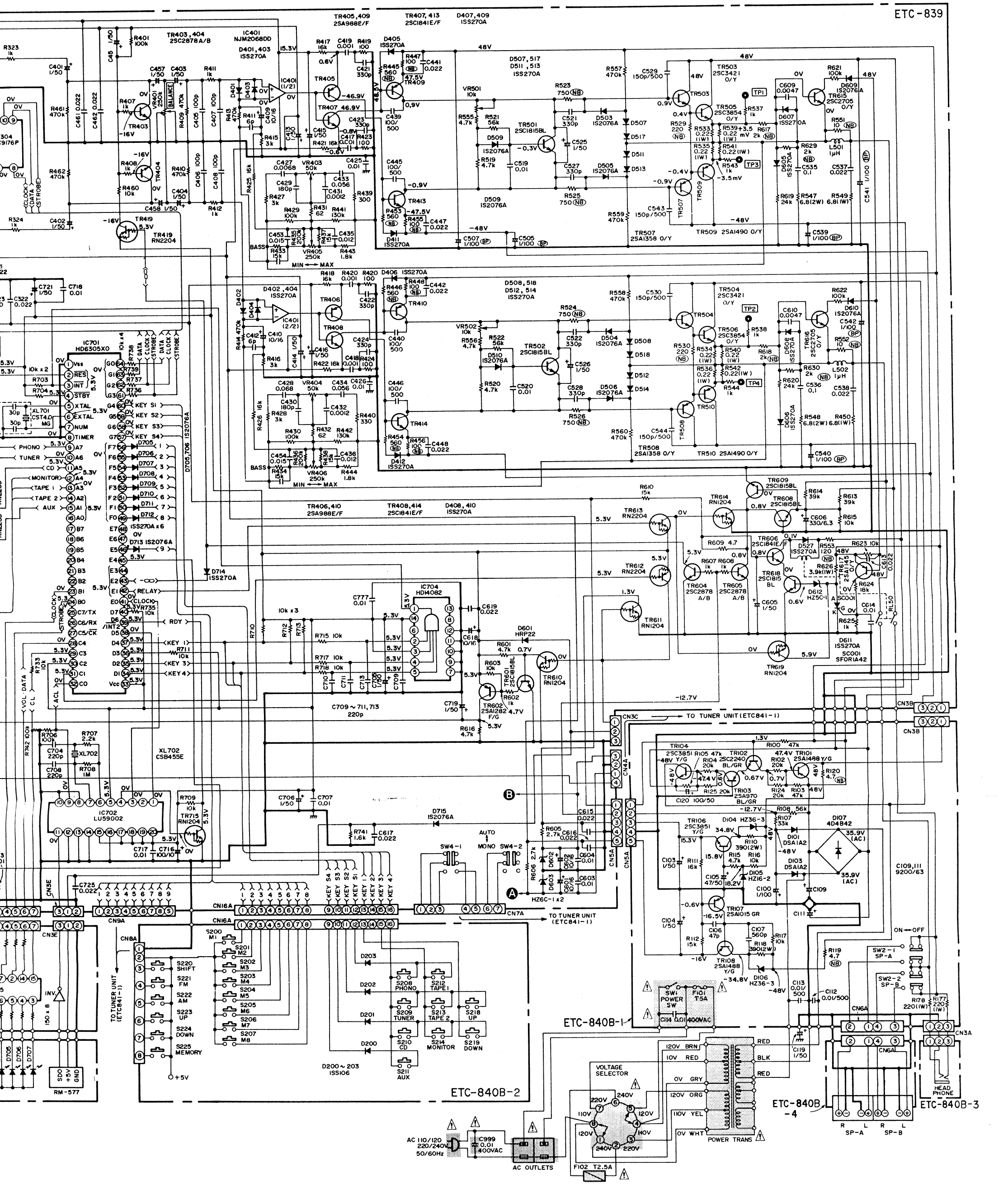
SCHEMATIC DIAGRAM (for EP1)
AMP. RECT. SECTION



6 7 8 9 10

⚠ ▩ Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification by the manufacturer.

ETC-839



NOTES:
ALL RESISTANCE VALUES IN OHM, K = 1,000 OHM, M = 1,000,000 OHM.
ALL CAPACITANCE VALUES IN MICROFARAD, P = MICRO-MICRO FARAD.
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