ORDER NO. HAD85052554C0
A2

Service Manual

Stereo Graphic Equalizer

(with spectrum analyzer)

Equalizer

SH-8066

Color

(K) · · · · Black Type

Color	Area
(K)	[M] . . . . . U.S.A.
(K)	[MC] . . . . Canada
(K)	[E] . . . . . Continental Europe
(K)	[EH] . . . . Holland
(K)	[EB] . . . . Belgium
(K)	[EF] . . . . France
(K)	[EK] . . . . United Kingdom
(K)	[EGA] . . . F.R. Germany
(K)	[Ei] . . . . . Italy
(K)	[XL] . . . . Australia
(K)	[XA] . . . . Asia, Latin America, Middle Near East, Africa & Oceania
(K)	[PA] . . . . Far East PX
(K)	[PE] . . . . European Military

SPECIFICATIONS

Frequency response
(center position) : 10 Hz~50 kHz, −1 dB
Maximum output voltage
: 8 V (1 kHz, THD 0.03%)
Rated output voltage : 1 V
Rated input voltage : 1 V
Rated total harmonic distortion
: 0.003% (20 Hz~20 kHz) 1V output
Input sensitivity : 150 mV
Signal-to-noise ratio : IHF '78
above 113 dB/2V (IHF' A)
107 dB/1V (IHF' A)
: DIN 45 500
107 dB/2V
101 dB/1V
Channel balance DIN 45 500
250Hz ~ 6300Hz : ±0.5dB
Channel separation DIN 45 500
1kHz : 70dB
Maximum input voltage
: 8 V (1 kHz)
Input impedance : 22 kΩ
Gain : 0±1 dB

Band level controls : +12 dB~−12 dB (2 dB step)
Center frequency : 25 Hz, 40 Hz, 63 Hz, 100 Hz, 160 Hz, 250 Hz, 500 Hz, 1 kHz, 2kHz, 4 kHz, 8 kHz, 16 kHz
Compatible microphone sensitivity
: above −74 dBV/μbar (1 kHz)

GENERAL

Power supply : AC 60Hz, 120V
(For U.S.A. and Canada)
AC 50Hz/60Hz,
110V/127V/220V/240V
(For other areas)
Power consumption : 17W (For U.S.A. and Canada)
(With power switch OFF : 3 W)
: 15W (For other areas)
(With power switch OFF : 3W)
Dimensions
(H×W×D) : 119×430×272 mm
(4 11/16" × 16 15/16" × 10 23/32")
Weight : 3.8 kg (8.4 lb)

Specifications are subject to change without notice for further improvement.

Technics

Matsushita Engineering and Service Company
50 Meadowland Parkway,
Secaucus, New Jersey 07094

Panasonic Hawaii, Inc.
91-238 Kauhi St., Ewa Beach
P.O. Box. 774
Honolulu, Hawaii 96808-0774

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

Panasonic Sales Company, Division of Matsushita Electric of Puerto Rico, Inc.
Ave. 65 De Infanteria, KM 9.7
Victoria, Industrial Park
Carolina, Puerto Rico 00630

Matsushita Electric of Canada Limited
5770 Ambler Drive, Mississauga,
Ontario, L4W 2T3

Panasonic Tokyo Office
Matsushita Electric Trading Co., Ltd.
1-2, 1-chome, Shiba-koen, Minato-ku,
Tokyo 105 Japan

■ MICROPHONE FOR FIELD MEASUREMENT

SH-8066 for [M], [MC], [PA] and [PE] areas includes a microphone for field measurement. (Specification of the microphone is described under.)
As SH-8066 for other areas does not include the microphone, use a sold separately microphone for field measurement.
Recommeded microphone : RP-3800E (sold separately)

● Specifications of the microphone included in SH-8066 for [M], [MC] [PA] and [PE] areas:

●Type:	Electret condenser type
●Frequency response:	16 Hz~20,000 Hz 20 Hz~16,000 Hz $^{+3}_{-2}$ dB
●Directivity:	Omni-directional
●Sensitivity:	−72 dB (0 dB=1 V/μ bar, 1,000 Hz)
●Output impedance:	600Ω (1,000 Hz, unbalanced)
●Maximum input sound pressure:	More than 110 dB SPL (0 dB=2×10^{-4} μbar, 1,000 Hz)
●Equivalent noise:	Less than 34 dB SPL
●Power supply:	1.5 V (Battery UM-3 or R6×1)
●Battery life:	Approx. 2,000 hours (continuous)
●Weight:	Approx. 125 g (without battery)
●Output cord:	4 m of single-core shielded 4 mm O.D. wire with phone-type plug
●Stand screw:	PF ½"

■ CONTENTS

■ SAFETY PRECAUTION

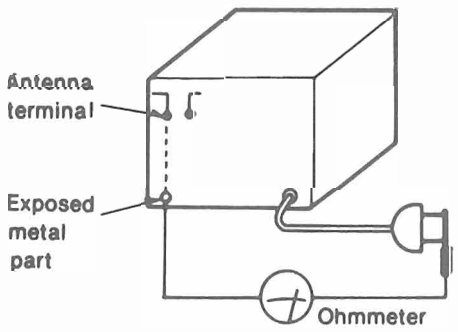
(This "safety precaution" is applied only in U.S.A.)

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

● INSULATION RESISTANCE TEST

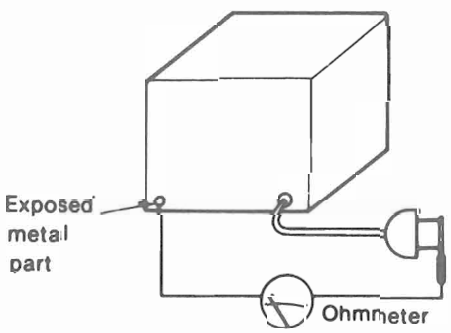
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance = 3MΩ—5.2MΩ

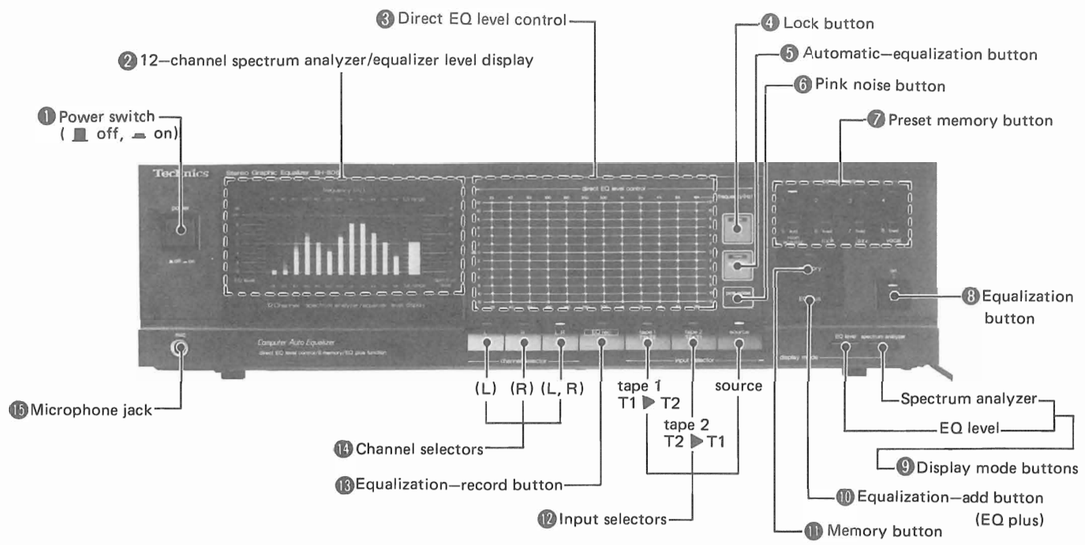


(Fig. B)

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

■ LOCATION OF CONTROLS



❶ Power "stand by ⏻ • on" switch

This switch turns on and off the secondary circuit power only.

Note:

- With the power switch in the OFF position, there is still a slight power consumption (about 3 watts). This is in order to assure the retention of the "most recent" memory and the preset-memory functions.

❷ 12-channel spectrum analyzer/equalization level display

This display shows the spectrum or equalization level. For the spectrum, a bar-type of display is used; for the equalization level, a dot-type of display is used.

❸ Direct-equalization-level controls

These controls are used for adjustment of the equalization level.
The adjustment can be made (in 2-dB steps) to ±12 dB.

Note:

Do not use a sharp edged surface to trace the curve.

❹ Lock button

This button is used to lock the direct-equalization level-control function. When this button is pressed, the indicator will illuminate; when it is pressed once again, the lock is released.

❺ Automatic-equalization button

Press this button for automatic correction of the sound-field. When this button is pressed, the indicator will illuminate; when the function is completed, illumination will stop. If a microphone is not connected, this button will not function.

❻ Pink-noise button

This button can be used to switch ON and OFF the "pink" noise used when measuring the sound-field frequency response or correcting the sound-field. If a microphone is not connected, this button will not function.

❼ Preset-memory buttons

These buttons are used to preset the equalization curves into the memory. After curves have been preset into the memory, it is then possible to quickly and easily select the desired curve by simply pressing the corresponding button.
There are eight memory areas: three are for fixed-equalization-level memory, and five are for use by the user.

❽ Equalization button

This button is used to switch the equalization correction function ON and OFF.
When this button is pressed, the indicator will illuminate; when it is pressed once again, the function is switched OFF, and the equalization function is not applied.

❾ Display mode buttons

These buttons are used to select either the display of the spectrum or of the equalization level.

EQ level: When this button is pressed, the equalization level is shown on the display.

spectrum analyzer: When this button is pressed, the spectrum is shown on the display.

❿ Equalization-add button (EQ plus)

Press this button to combine two or more equalization curves.

⓫ Memory button

To enter an equalization curve into the memory, first press this button, and then, while the indicator is flashing (about 4 seconds), press one of the preset-memory buttons to complete the memorization of the equalization curve.

⓬ Input selectors

These buttons are used to select the desired sound source. When pressed, the corresponding indicator illuminates.

source: To listen to a phone disc or radio broadcast.
tape 1: To listen to tape deck 1 connected to this unit, or for tape editing from tape deck 1 to tape deck 2.
tape 2: To listen to tape deck 2 connected to this unit, or for tape editing from tape deck 2 to tape deck 1.

⓭ Equalization-record button (EQ rec)

Press this button to record the sound corrected by the equalizer.
When the button is pressed, the indicator will illuminate; when it is pressed once again, the function is switched OFF, and equalization-corrected sound cannot be recorded.

⓮ Channel selectors

These buttons are used to select the channel for display and equalization correction.

L: When this button is pressed, only the left channel is selected for equalization correction or spectrum display.
R: When this button is pressed, only the right channel is selected for equalization correction or spectrum display.
L,R: When this button is pressed, both the left and right channels are selected for simultaneous equalization correction (left channel bright, right channel dim) or spectrum display. For spectrum display, note that the value is that of the left and right channels combined.

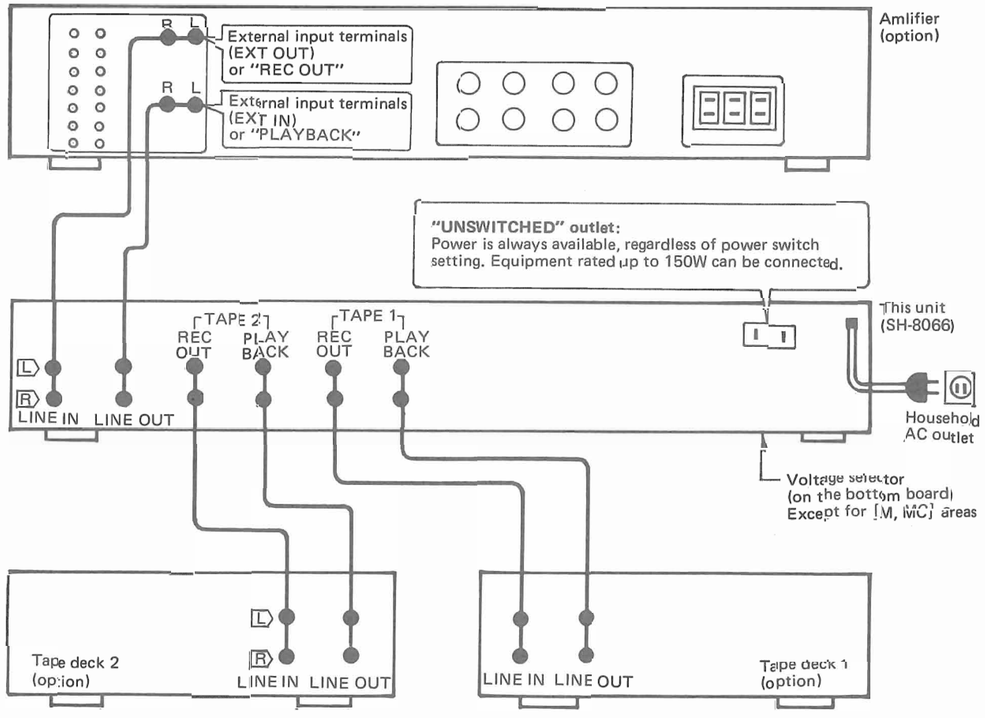
⓯ Microphone jack

This terminal is for connection of the microphone to be used for measurement. Connect the microphone to this jack for automatic sound-field correction and measurement of sound-field frequency characteristics.

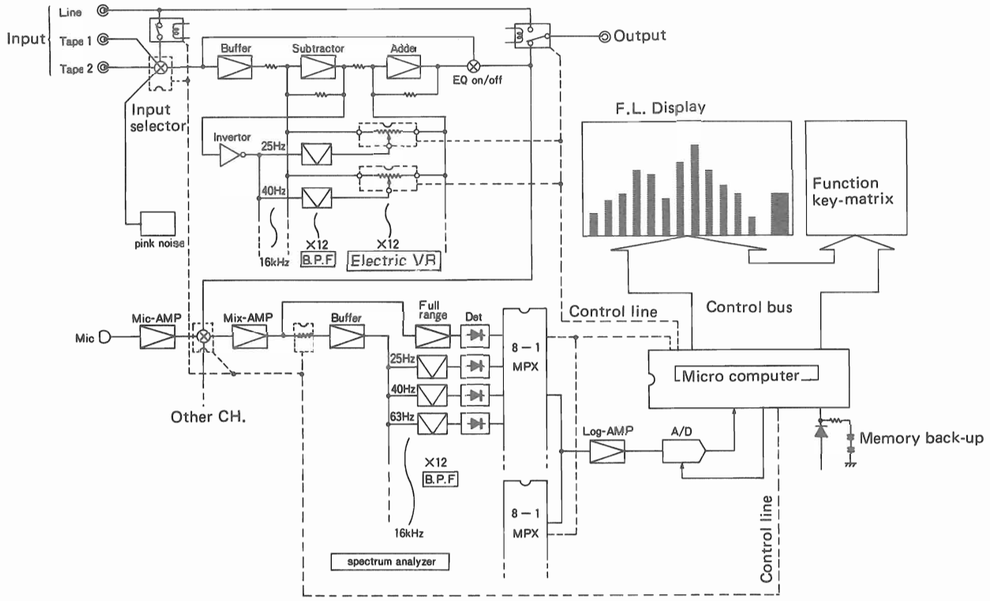
(Note)

This microphone jack cannot be used for mixing.

■ REAR PANEL AND CONNECTION



BLOCK DIAGRAM OF FUNCTION



• "MOST RECENT" MEMORY

The last position of the EQ level controls (whether in memory or done manually) will be automatically entered into the memory when the power is switched off. When the power is switched on, these positions will be recalled. This will not interfere any preset memory locations.

• PINK NOISE

- Pink noise is used for measurement and correction of the sound field frequency response because it is mostly within the audible range, its energy distribution is uniform, and it has a wide frequency band.

• MEMORY RETRIEVAL-OUT

Press the preset-memory button for the equalization curve you want to retrieve from the memory.

(The indicator for that button will illuminate, and the display will instantly change to the retrieved equalization curve. When a retrieval is made from the memory, if the equalization button is OFF, the indicator for the preset-memory button will illuminate, and the equalization curve will appear on the display, but the equalization effect will not be applied.)

• MEMORY BACK-UP

The equalization levels and equalization curves entered into the preset memories before the power is switched OFF will be held in the memory, by the gold capacitor, for about one week, even if the power cord plug is disconnected.
Note that there is no erasure (loss) of equalization curves in the fixed equalization-level memories.

- Because pink noise has large instantaneous level fluctuations, the display may fluctuate.

• TO CANCEL A MEMORY RETRIEVAL-OUT

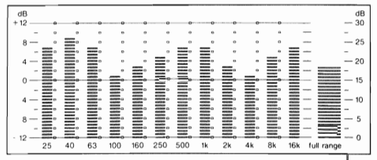
Press either a direct-equalization control or a preset-memory button.

(The indicator for the preset-memory button used to make the retrieval will stop illumination.)

DISPLAY

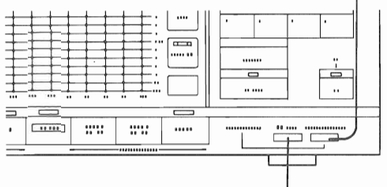
The display can be used to display the spectrum or the equalization level.

■ For spectrum display (L), (R) or (L.R)

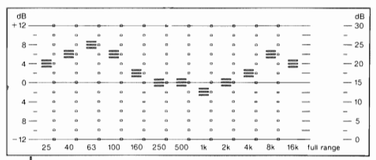


※ The "full range" area on the right side displays the combined level of all of the frequency bands.

※ If there is no input signal to this unit. The 1st row (0 dB) of all frequency bands is displayed.

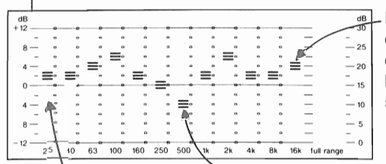


■ For equalization-level display (L) or (R)



EQ level

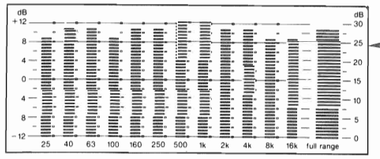
■ For equalization-level display (L.R)



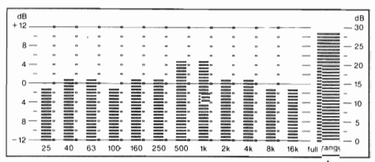
• AUTOMATIC LEVEL FUNCTION

This unit incorporates a function for automatic adjustment of over-indication or under-indication of the spectrum (caused by high or low input signal levels), so that the displayed spectrum is always at the central part of the display for easy visibility.

■ When input level is high

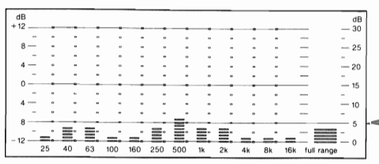


When the average value of the spectrum exceeds this level, the overall spectrum is suppressed by 10 dB.

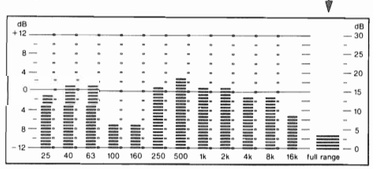


※ The actual input level is shown by the "full range" display at the far right.

■ When input level is low

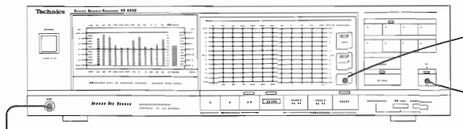


When the average value of the spectrum is less than this level, the overall spectrum is raised by 10 dB.



■ OPERATION

• MEASUREMENT OF SOUND-FIELD FREQUENCY RESPONSE



2. Pink noise to "on"
(The stroke of this button has been increased in order to prevent mis-operation, so they must be pressed firmly.)

3. EQ to "off"

4. Adjust the volume control (of the amplifier) so that the "full range" spectrum is illuminated more than center position (15 dB).
(The spectrum shown on the display is the sound-field frequency response.)

1. Connect the microphone (included).

Microphone
Position the microphone at the place and height at which you usually listen to your audio equipment.

Do not exceed watt of output power.
The speakers (tweeters) may be damaged.

※When the measurement is finished, press the pink-noise button (to "off") or press one of the input selectors.

• BEFORE MEMORIZATION OF EQUALIZATION CURVES

This unit has eight memory areas; five of these are available to the user, and can be changed; the other three are preset (fixed) music curves and cannot be changed.

★ **Memory areas for the user**
- As many as five pairs (left/right channels) of equalization curves can be entered into memory areas 1 through 5.
- When an automatic sound-field correction is made, the equalization curve is automatically entered in memory area 5.

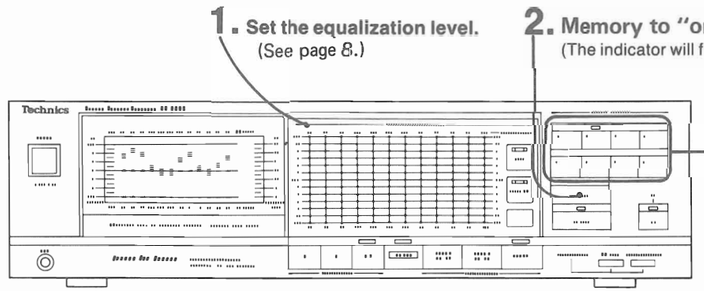
★ **Fixed-equalization-level memory areas**
Equalization curves which are appropriate to the following three types of music have already been preset to memory areas 6 through 8, thus making it possible to enjoy music listening at a touch of a button. (Other equalization curves cannot be entered into these memory areas.)

Memory area 6 (rock):
The level for 63 Hz and 100 Hz is increased in order to emphasize the power of the bass fiddle and bass drum; in addition, the level for the range from 4 kHz through 16 kHz has been increased in order to obtain a characteristic in which there is a tauter high range and low-range build-up.

Memory area 7 (jazz):
The level for 63 Hz and 100 Hz is increased, and moreover the level for 4 kHz and 8 kHz is moderately increased, in order to provide a modulated, soft sound.

Memory area 8 (vocal):
The 2-kHz range is increased by 4 dB and the 4-kHz range is increased by 2 dB; in addition, the 500-Hz range is reduced by −4 dB, thus providing a clear characteristic with excellent vocal emphasis.

• MEMORIZATION OF EQUALIZATION CURVES



1. Set the equalization level.
(See page 8.)

2. Memory to "on"
(The indicator will flash for about 4 seconds.)

3. Press one of the preset-memory buttons (1 to 5) while the indicator is flashing (in step 2).

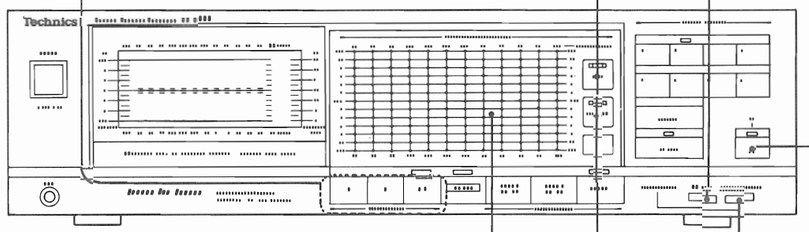
※ If two or more entries are made into one memory area, only the last one will be memorized.
※ The memory-add "EQ plus" button will not function, even if it is pressed, while the indicator of the memory button is flashing.

• MANUAL CONTROL OF THE EQUALIZATION LEVEL

1. Select the channel(s) to be adjusted.
- L: To adjust the left channel
- R: To adjust the right channel
- L.R: To adjust the left and right channels

2. Lock to "off"
(The stroke of this button has been increased in order to prevent mis-operation, so they must be pressed firmly.)

3. "EQ level"



4. EQ to "on"

Press the "spectrum analyzer" button to aurally adjust while watching the spectrum display.

5. For adjustment of the equalization level.
Adjustment to ±12 dB (in 2-dB steps) is possible by pressing the point of intersection of the level and the frequency where adjustment is desired or by tracing with a finger.
(If a finger is used, move it slowly, allow for proper operation.)

• Convenient Functions

• (Lock button)

"on" Equalization curves can be protected.
(When this button is pressed to ("on"), the direct-equalization-level controls will not function, thus protecting an equalization curve(s) which has been set. The pressed position will be illuminated on the display, and the desired frequency and level value can be easily found.)

"off" Frequencies can be easily detected and changed.
(When the lock button is pressed to "off" while the direct-equalization-level control is being pressed, the level of a frequency can be easily changed.)

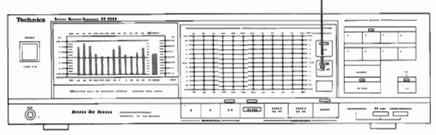
Note:
If the direct equalization level controls are used while the equalization button is set to "off", the equalization level before the "off" setting will be retained, so the controls have no effect at that time.

• AUTOMATIC SOUND-FIELD CORRECTION

1. Follow steps 1 to 4 of "MEASUREMENT OF SOUND-FIELD FREQUENCY RESPONSE".

2. Auto EQ to "on"

(The stroke of this button has been increased in order to prevent mis-operation, so they must be pressed firmly.)



When the automatic-equalization button is switched ON:
- The indicator of the automatic-equalization button will illuminate, and automatic sound-field correction will begin, first of the left channel and then of the right channel. The signal is sampled and corrected a maximum of 16 times for each (left and right) channel; the corrections will be completed in a total of about 50 seconds.
- Even if the equalization button is switched OFF, it will be switched ON automatically.
- None of the buttons, except the power switch and the automatic-equalization button will function during automatic sound-field correction.

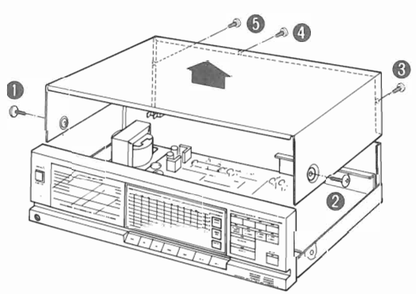
3. After the automatic sound-field correction is completed the equalization level (after the correction) is automatically memorized to preset-memory button 5. The equalization button is then switched ON and the "spectrum analyzer" display-mode button is switched ON. Other buttons return to the condition before the automatic sound-field correction was made, and the indicator of the automatic-equalization button stops illuminating.

※The frequency range of the automatic sound-field correction is from 40 Hz to 16 kHz. (25 Hz is set to the 0-dB position.)
※To discontinue the automatic sound-field correction before it has finished, press the automatic-equalization button (to "off").

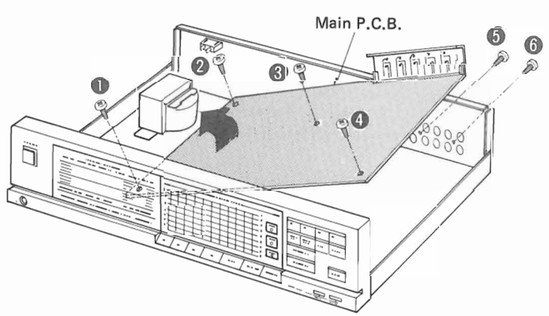
(If, at that time, a memory call-out is made, the equalization curve may become flat. If this happens, press one of the other preset-memory buttons, and then once again press the preset-memory button pressed first.)

■ DISASSEMBLY INSTRUCTIONS

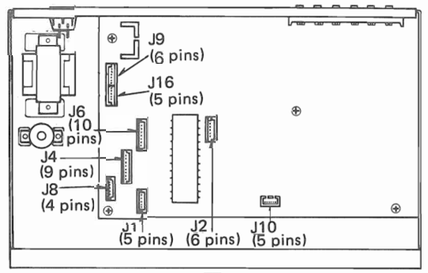
Ref. No. 1	How to remove the cabinet
Procedure 1	1. Remove the 5 screws. (❶ ~ ❺)



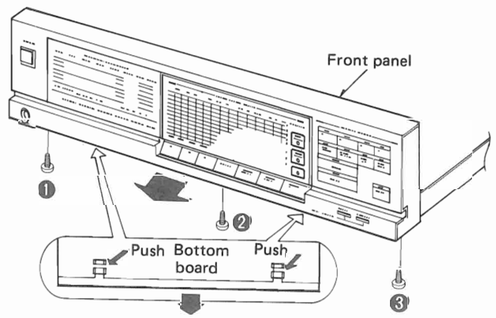
Ref. No. 2	How to remove the "main" P.C.B.
Procedure 1 →2	1. Remove the 4 screws (❶ ~ ❹) and 2 screws (❺ , ❻) raise the main P.C.B. as shown by curved arrow.



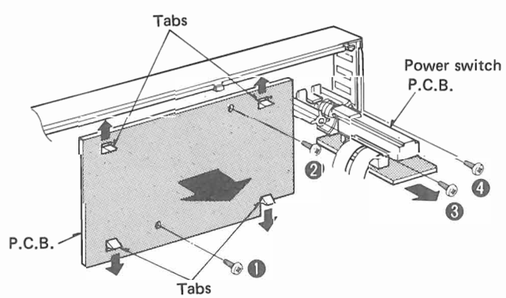
Ref. No. 3	How to remove the front panel
Procedure 1 →3	1. Pull off lead wire at 8 connectors (J1, 2, 4, 6, 8, 9, 10 & 16).



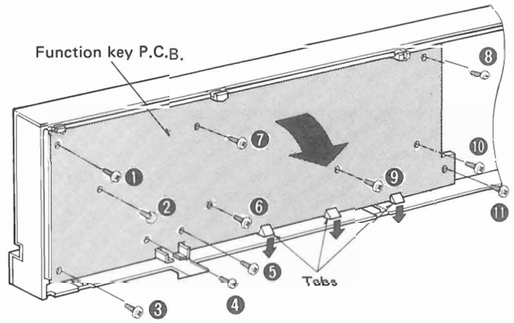
2. Remove the 3 screws. (❶ ~ ❸)
3. Push the 2 tabs.
4. Remove the front panel from chassis.

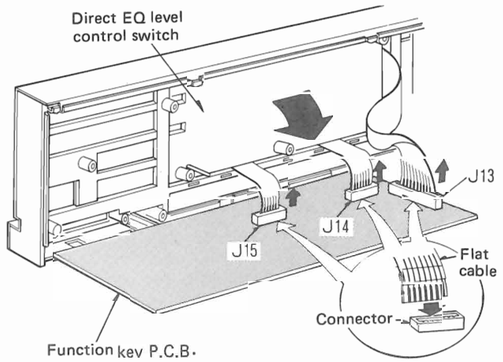


Ref. No. 4	How to remove the "FL" P.C.B. and power switch P.C.B.
Procedure 1 →3 →4	1. Remove the 2 screws. (❶ , ❷) 2. Push the 4 tabs. 3. Remove the FL P.C.B. 4. Remove the 2 screws. (❸ , ❹) 5. Remove the power switch P.C.B.

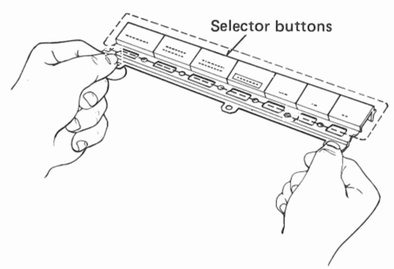


Ref. No. 5	How to remove the "function key" P.C.B.
Procedure 1 →3 →5	1. Remove the 11 screws. (❶ ~ ⓫) 2. Push the 3 tabs. 3. Remove the P.C.B.





Note: When fixing function key board, take care of the direction of the three transparent flat cables (J13, 14 & 15) and not to bend cable sharply.

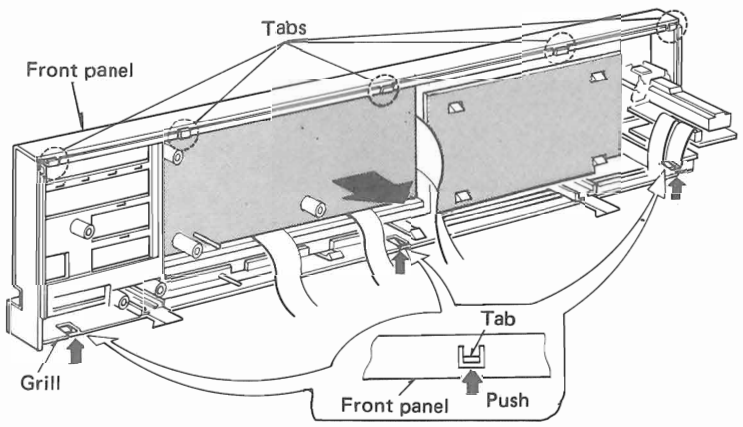


When taking selector buttons out of function key board, holding the portion in the broken line enclosure is feared to break selector buttons.

Ref. No. 6	How to remove the grill

Procedure 1 →3 →6

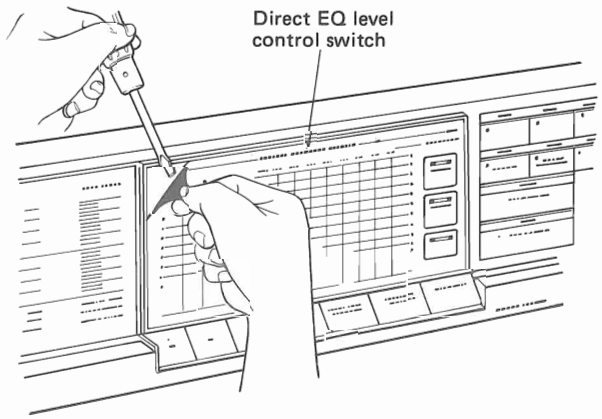
1. Separate front panel from grill by pushing 5 tabs at the upper part and 3 tabs at the lower part of the front panel.
(Exploded view showns the state after separation.)



Ref. No. 7	Exchange of direct EQ level and control switch

When exchanging switch only from the reason of injury or dirt on its surface, peel it off by raising it at the four corners with a screw-driver as shown in the righ figure.
Switch peeled off shall not be used again.

* The switch is supplied sticked on the "grill" of repair parts.



*** NOTICE: IC & LSI are weak to static charge !!**

In repair work, delicate care prevents secondary fault.

- Stick aluminium foil on the surface of resin-made container for parts.
- Ground soldering iron.
- Use conductive mat to work on.
- Don't hold legs of IC & LSI with fingers directly.
- Start repair work after discharging memory holding gold capacitors C17 and C18 (2.3V, 3.3F)

TECHNICAL INFORMATION

Band level control volume and band pass filter of the device are electronically controlled with IC's.
Their fundamental performances:

• Band Pass Filter

There are many types of band pass filter (BPF) of graphic equalizer. Introduced here are a circuit using semi-conductive inductor.

• BPF using semi-conductive inductor

BPF requires L, and a large core is required if coil is used, and the performance is relatively low. So, the semi-conductive inductor circuit is designed so that the characteristics equivalent to coil can be obtained.

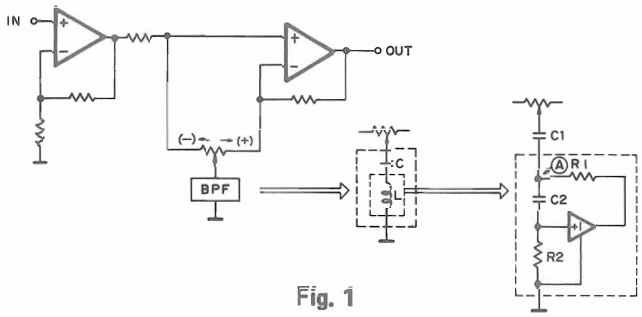


Fig. 1

— Inductor changes in impedance in proportion to the frequency —

1. As the input frequency from **C1** increases, the impedance of **C2** decreases and the input level to the amplifier becomes higher.
2. Output level of amplifier becomes higher.
3. Voltage of point Ⓐ via feed-back impedance **R1** increases.
4. That is, the impedance ground to point Ⓐ increases in proportion to frequency (showing the same characteristic as **L**).
5. The circuit has **C1** and **L** forming a series resonant circuit, and the frequency characteristic obtained has center frequency (fo).

— Calculation of center frequency —

$$(L = R1 \cdot R2 \cdot C2)\ (C = C1)$$

$$fo\ (Hz) = \frac{1}{2\pi\sqrt{LC}} = \frac{1}{2\pi\sqrt{R1\ (\Omega) \cdot R2\ (\Omega) \cdot C2\ (F) \cdot C1\ (F)}}$$

• Band level control circuit

(for varying the center frequency by ± 12dB)

The euqalizer circuit of this unit is shown in Fig. 2.
When the control volume (VR) is turned in the direction of → (+), NF level lowers with the connection shown in Fig. 3. causing the gain of operation amplifier to increase, then the "peak" apperas. Contrarily, when VR is turned in the direction of ← (–), the input impedance of operation amplifier becomes lowered with the connection shown in Fig. 4. Then the frequency level is "dip".

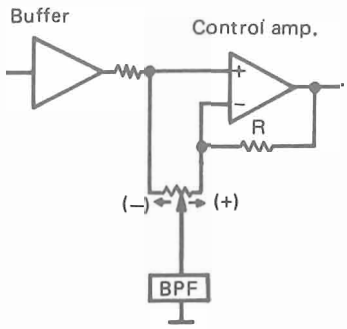


Fig. 2

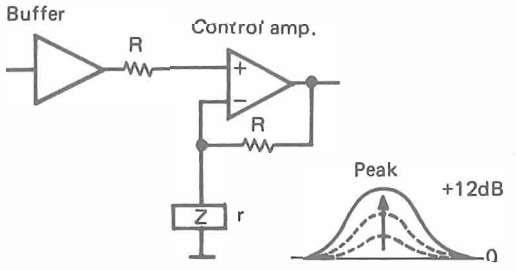


Fig. 3

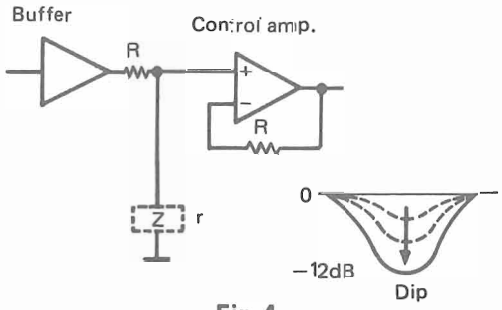


Fig. 4

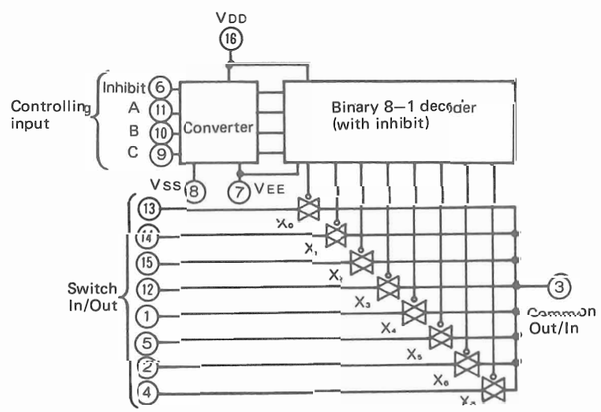
■ FUNCTION OF IC'S

• Micro-computer (IC60) HD614042SB22

Pin No.	Notation	Object of Function	
		Input	Output
1	D_{11}	–12dB line & AEQ key input to key scan	–12dB segment output to FL meter
2	D_{12}	–10dB line & LOCK key input to key scan	–10dB segment output to FL meter
3	D_{13}	–8dB line & Pink noise on/off key input to key scan	–8dB segment output to FL meter
4	D_{14}	–6dB line & Lch, Rch key input to key scan	–6dB segment output to FL meter and lock of LED & lighting of AEQ, LED (cathode side) output
5	D_{15}	–4dB line & L, Rch, EQ rec key input to key scan	–4dB segment output to FL meter and memory 4, 8 of LED and lighting of LED (cathode side) output
6	R_{00}	—	Grid output of 25Hz to FL meter & line output for 25Hz of key scan
7	R_{01}	—	Grid output of 40Hz to FL meter & line output for 40Hz of key scan
8	R_{02}	—	Grid output of 63Hz to FL meter & line output for 63Hz of key scan
9	R_{03}	—	Grid output of 100Hz to FL meter & line output for 100Hz of key scan
10	R_{10}	Key scan –2dB line & TAPE 1, 2 key input	–2dB segment output to FL meter and lighting LED (cathode side) of memory 3, 7 output
11	R_{11}	Key scan 0dB line Source, EQ Level key input	0dB segment output to FL meter and lighting LED (cathode side) of memory 2, 6 output
12	R_{12}	Key scan +2dB line & Spectrum Analyzer, EQ plus key input	+2dB segment output to FL meter and lighting LED (cathode side) of memory 1, 5 output
13	R_{13}	Key scan +4dB line & EQ on/off, memory key input	+4dB segment output to FL meter and lighting LED (cathode side) of memory & EQ on/off output
14	R_{20}	Key scan +6dB line & memory 4, 5 key input	+6dB segment output to FL meter and lighting LED (cathode side) of EQ plus, Source output
15	R_{21}	Key scan +8dB line & memory 3, 8 key input	+8dB segment output to FL meter and lighting LED (cathode side) of TAPE 1, 2 output
16	R_{22}	Key scan +10dB line & memory 2, 7 key input	+10dB segment output to FL meter and lighting LED (cathode side) of EQ rec, L.R output
17	R_{23}	Key scan +12dB line & memory 1, 6 key input	+12dB segment output to FL meter and lighting LED (cathode side) of Rch, Lch output
18	R_{0}	Check terminal for microphone insert H ..... on L ..... off	—
19	R_{1}/Vdisp	Output power source terminal (–32V) of high voltage withstanding terminals (D4~D15, R_{00}–R_{13}, R_{20}–R_{23})	—
20	R_{30}	—	Output for lighting LED (cathode side) for Lch/L. R/TAPE 1/Source/EQ on-off/memory 5, 6, 7, 8/Auto EQ
21	R_{31}	—	Output for lighting LED (cathode side) for Rch/EQ rec/TAPE 2/EQ plus/Memory/memory 1, 2, 3, 4/Lock
22	R_{32}/INT0	Input terminal for external interruption to MCU H ..... active mode L ..... stop mode	—
23	R_{33}/INT1	—	—
24	R_{50}	—	Grid output for 16kHz of FL meter, & line output for 16kHz of key scan
25	R_{51}	—	All grid output for FL meter
26	R_{52}	—	Key output for key scan memory 1, 2, 3, 4/EQ on-off/Spectrum Analyzer/source/TAPE 1/L. R/Lch/Pink Noise/Lock/Auto
27	R_{53}	—	Key output for key scan memory 5, 6, 7, 8/Memory /EQ/ plus/EQ level/TAPE 2/EQ rec/Rch
28	R_{60}	—	FL desponse (response) control
29	R_{61}	—	For muting music sound H ..... on L ..... off
30	R_{62}	—	Output for driving RLY2
31	R_{63}	—	Output for driving RLY1
32	V_{CC}	5V source	—
33	R_{40}/SCK	—	Output for controlling Strobe of IC44 (TC9163N)
34	R_{41}/SI	—	Output for controlling Strobe of IC45 (TC9163N)

Pin No.	Notation	Object of Function	
		Input	Output
35	R_{42}/SO	—	Output for controlling Strobe of Rch electronic volume/IC4, 6, 8, 10, 12, 14 (TC9170P)
36	R_{43}	—	Output for controlling Strobe of Lch electronic volume/IC5, 7, 9, 11, 13, 15 (TC9170P)
37	R_{70}	—	Data A output of IC55, 56 (HD14051)
38	R_{71}	—	Data B output of IC55, 56 (HD14051)
39	R_{72}	—	Data C output of IC55, 56 (HD14051)
40	R_{73}	—	—
41	R_{80}	—	A/D conversion data bit 0 output
42	R_{81}	—	A/D conversion data bit 1 output
43	R_{82}	—	A/D conversion data bit 2 output
44	R_{83}	—	A/D conversion data bit 3 output
45	R_{90}	—	—
46	R_{91}	—	—
47	R_{92}	—	—
48	R_{93}	—	—
49	RESET	Terminal for resetting MCU	—
50	TEST	—	—
51	OSC1	Input terminal for internal oscillator	—
52	OSC2	Input terminal for internal oscillator	—
53	GND	—	Ground
54	D_0	—	Inhibit output of IC55, 56 (HD14051)
55	D_1	Input terminal of A/D	—
56	D_2	CLK controlling input for IC55, 56 (TC9163N), IC4~15 (TC9170)	—
57	D_3	DATA controlling input for IC55, 56 (TC9163), IC4~15 (TC9170)	—
58	D_4	—	Grid output for 160Hz of FL meter & line output for 160Hz of key scan
59	D_5	—	Grid output for 250Hz of FL meter & line output for 250Hz of key scan
60	D_6	—	Grid output for 500Hz of FL meter & line output for 500Hz of key scan
61	D_7	—	Grid output for 1kHz of FL meter & line output for 1kHz of key scan
62	D_8	—	Grid output for 2kHz of FL meter & line output for 2kHz of key scan
63	D_9	—	Grid output for 4kHz of FL meter & line output for 4kHz of key scan
64	D_{10}	—	Grid output for 8kHz of FL meter & line output for 8kHz of key scan

• 13 channel multi-plexer (IC55, IC56) HD14051BP



Truth value table

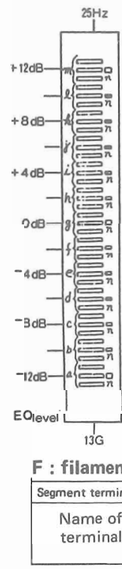
Controlling input				ON
Inhibit	C	B	A	Switch
0	0	0	0	X_0
0	0	0	1	X_1
0	0	1	0	X_2
0	0	1	1	X_3
0	1	0	0	X_4
0	1	0	1	X_5
0	1	1	0	X_6
0	1	1	1	X_7
1	×	×	×	Output open

Note) X : either one of 1 or 0

• Band level co

Pin No.
2
15
3
14
4
13
10
9
11
5
6
7

• Grid and Seg



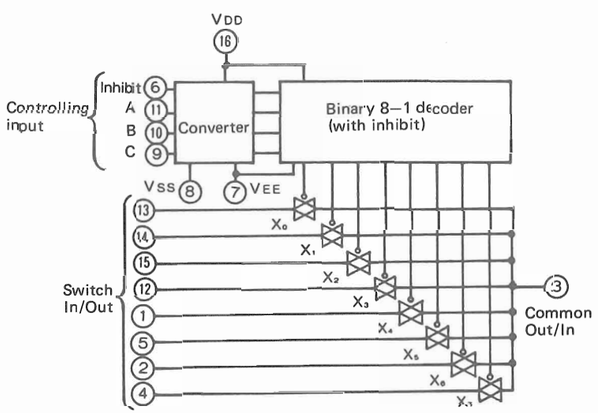
F : filamen

Segment termi
Name of terminal

ut
FL meter
FL meter
FL meter
FL meter and lock of ED (cathode side)
FL meter and memory f LED (cathode side)
L meter & line output
L meter & line output
L meter & line output
FL meter & line output
FL meter and lighting mory 3, 7 output
meter and lighting mory 2, 6 output
L meter and lighting mory 1, 5 output
L meter and lighting nory & EQ on/off
L meter and lighting plus, Source output
L meter and lighting PE 1, 2 output
FL meter and lighting rec, L.R output
FL meter and lighting , Lch output
-
-
athode side) for Lch/ n-off/memory 5, 6, 7,
athode side) for Rch/EQ ory/memory 1, 2, 3, 4/
-
-
FL meter, & line output
er
emory 1, 2, 3, 4/EQ on- irce/TAPE 1/L. R/Lch/
emory 5, 6, 7, 8/Memory 2/EQ rec/Rch
ntrol
off
be of IC44 (TC9163N)
be of IC45 (TC9163N)

Pin No.	Natation	Object of Function	
		Input	Output
35	R_{42}/SO	—	Output for controlling Strobe of Rch electronic volume/IC4, 6, 8, 10, 12, 14 (TC9170P)
36	R_{43}	—	Output for controlling Strobe of Lch electronic volume/IC5, 7, 9, 11, 13, 15 (TC9170P)
37	R_{70}	—	Data A output of IC55, 56 (HD14051)
38	R_{71}	—	Data B output of IC55, 56 (HD14051)
39	R_{72}	—	Data C output of IC55, 56 (HD14051)
40	R_{73}	—	—
41	R_{80}	—	A/D conversion data bit 0 output
42	R_{81}	—	A/D conversion data bit 1 output
43	R_{82}	—	A/D conversion data bit 2 output
44	R_{83}	—	A/D conversion data bit 3 output
45	R_{90}	—	—
46	R_{91}	—	—
47	R_{92}	—	—
48	R_{93}	—	—
49	RESET	Terminal for resetting MCU	—
50	TEST	—	—
51	OSC1	Input terminal for internal oscillator	—
52	OSC2	Input terminal for internal oscillator	—
53	GND	—	Ground
54	D_0	—	Inhibit output of IC55, 56 (HD14051)
55	D_1	Input terminal of A/D	—
56	D_2	CLK controlling input for IC55, 56 (TC9163N), IC4~15 (TC9170)	—
57	D_3	DATA controlling input for IC55, 56 (TC9163), IC4~15 (TC9170)	—
58	D_4	—	Grid output for 160Hz of FL meter & line output for 160Hz of key scan
59	D_5	—	Grid output for 250Hz of FL meter & line output for 250Hz of key scan
60	D_6	—	Grid output for 500Hz of FL meter & line output for 500Hz of key scan
61	D_7	—	Grid output for 1kHz of FL meter & line output for 1kHz of key scan
62	D_8	—	Grid output for 2kHz of FL meter & line output for 2kHz of key scan
63	D_9	—	Grid output for 4kHz of FL meter & line output for 4kHz of key scan
64	D_{10}	—	Grid output for 8kHz of FL meter & line output for 8kHz of key scan

• 13 channel multi-plexer (IC55, IC56) HD14051BP

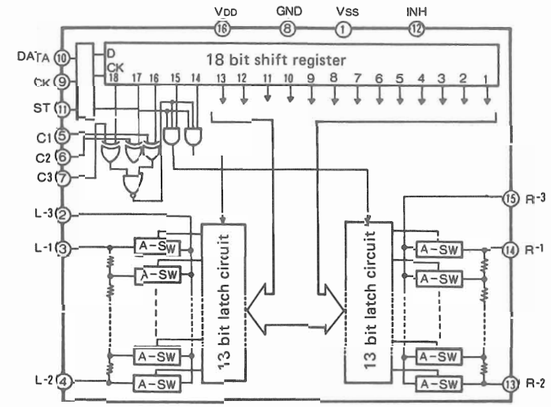


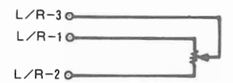
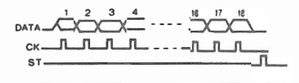
Truth value table

Controlling input				ON
Inhibit	C	B	A	Switch
0	0	0	0	X_0
0	0	0	1	X_1
0	0	1	0	X_2
0	0	1	1	X_3
0	1	0	0	X_4
0	1	0	1	X_5
0	1	1	0	X_6
0	1	1	1	X_7
1	×	×	×	Output open

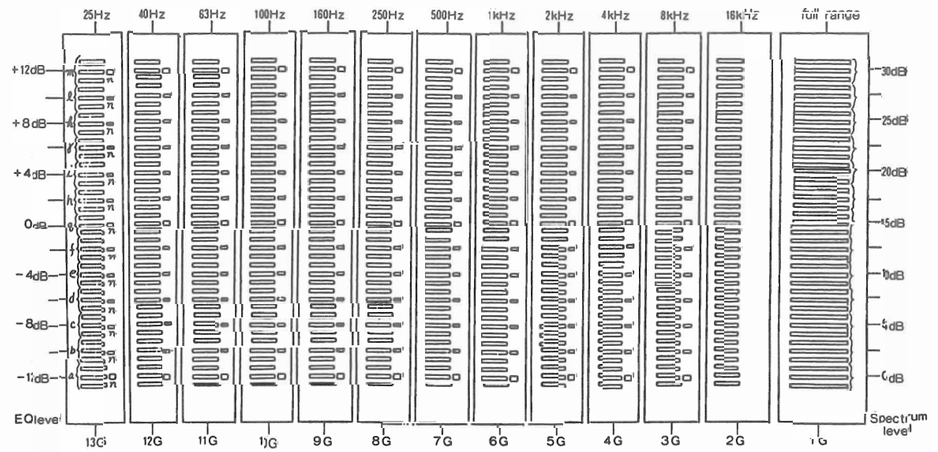
Note) X : either one of 1 or 0

• Band level control (IC4 ~ IC15) TC9170P



Pin No.	Notation	Description of Function
2	L – 3	 Input terminal for control resistance. L & R: symmetric
15	R – 3	
3	L – 1	
14	R – 1	
4	L – 2	
13	R – 2	
10	DATA	Data input terminal for tone control and channel selection. Composed in 18 bits and input with CK signal.
9	CK	Clock input terminal. Clock input for taking date at DATA terminal.
11	ST	 Strobe input terminal. Signal to select attenuation channel taken via DATA & CK terminals are latched by putting this terminal at "H" level. When this terminal is not at "H" level, data remain as before.
5	C1	Code bit input terminal. Functions only when the terminal's state ("H" or "L") coincides with tone controlling 16 to 18 bit data (C1 = 16 bits, C2 = 17, C3 = 18) received.
6	C2	
7	C3	

• Grid and Segment of FL display tabe

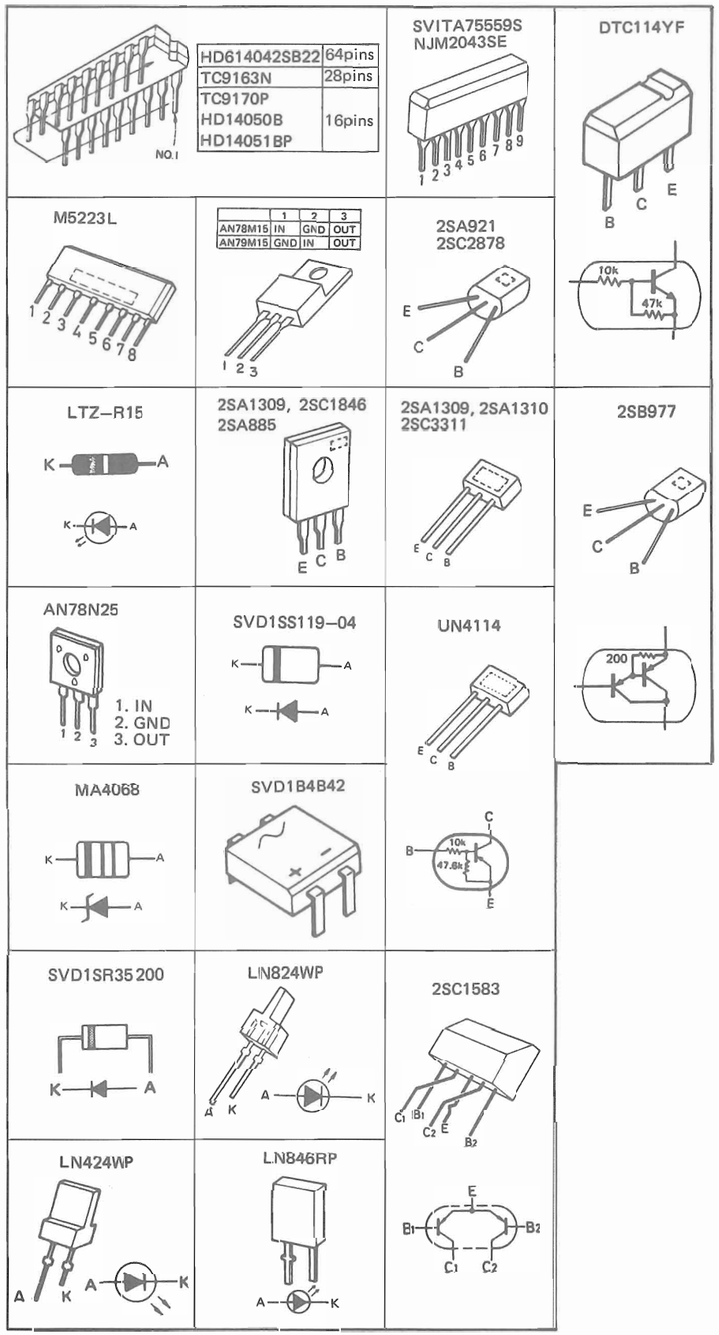


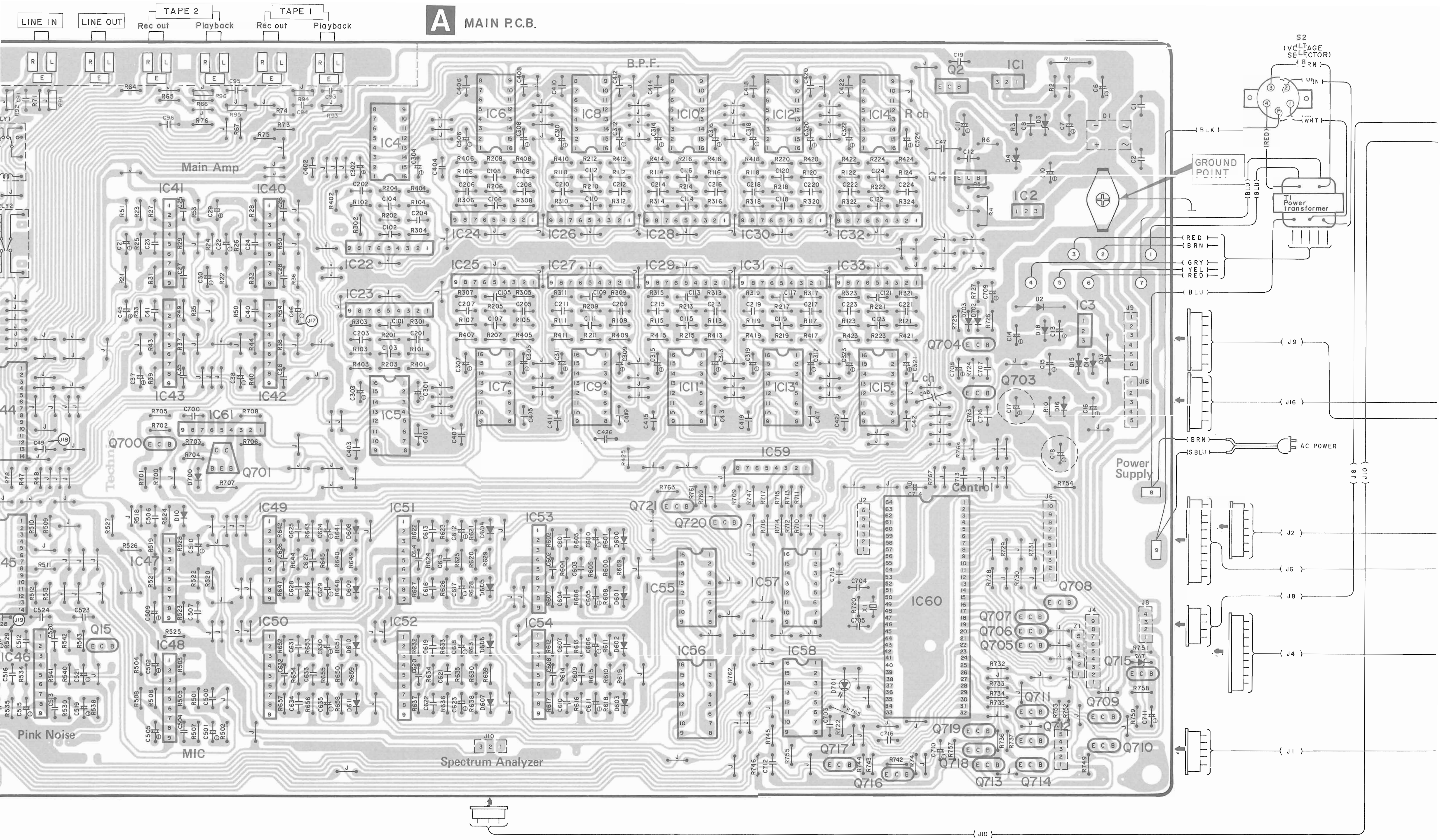
F : filament 1G ~ 13G : grids a ~ n : segments NP : vacant terminals

Segment terminal No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Name of terminal	F	F	NP	NP	13 G	a	12 G	b	c	11 G	d	10 G	e	9 G	Gd	Gd	8 G	NP	7 G	NP	6 G	f	g	5 G	h	4 G	i	3 G	j	k	2 G	ℓ	m	1 G	n	NP	NP	F	F

■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

• Terminal guide of IC's, transistors and diodes




LINE IN
LINE OUT
TAPE 2
Rec out
Playback
TAPE 1
Rec out
Playback
A MAIN P.C.B.
B.P.F.
Main Amp
R ch
L ch
GROUND POINT
T1 Power transformer
S2 (VOLTAGE SELECTOR)
AC POWER
Power Supply
Control
Pink Noise
MIC
Spectrum Analyzer

C
FL P.C.B.

E
MIC P.C.B.

MIC

D
POWER SWITCH P.C.B.

POWER

B FANCTION KEY P.C.B.

DIRECT EQ LEVEL CONTROL

LOCK
AUTO EQ
PINK NOISE

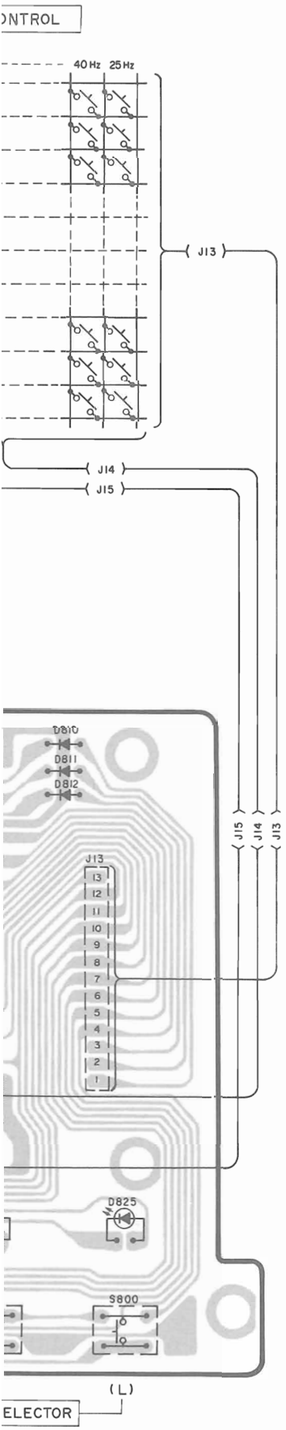
(Spectrum analyzer) (EQ level)
DISPLAY MODE

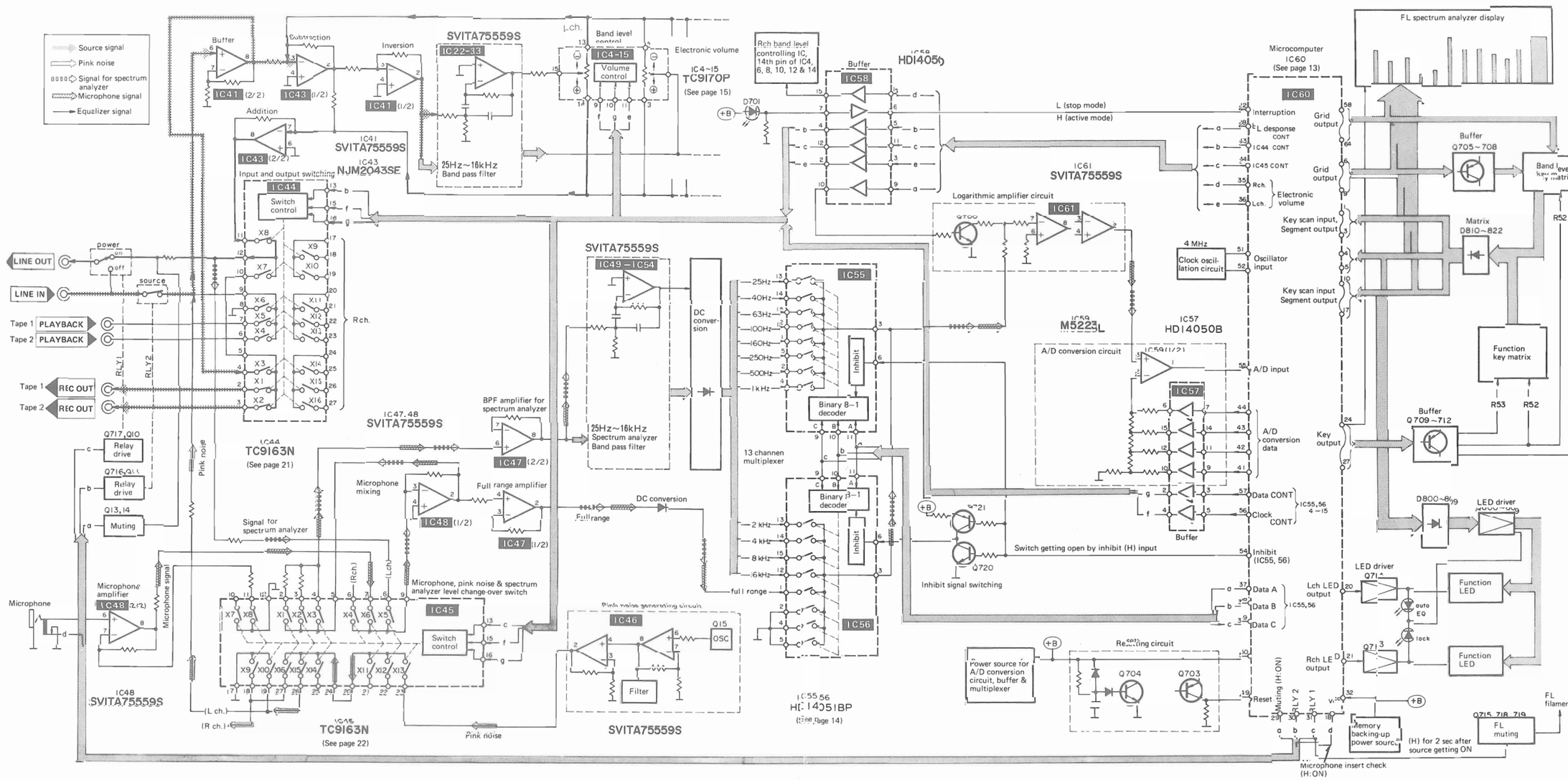
(source) (tape 2 T2►T1) (tape 1 T1►T2)
INPUT SELECTOR

EQ REC

(L.R) (R) (L)
CHANNEL SELECTOR

■ BLOCK DIAGRAM





• Function of IC44 (TC9163N)

Input selector switch position	IC's switch No.	X1	X2	X3	X4	X5	X6	X7	X8	RLY 2	RLY 1
Source	EQ switch off	on	on	on	—	—	—	on	—	on	on
	EQ rec switch off	on	on	on	—	—	—	—	on	on	on
	EQ switch on	on	on	—	—	—	—	on	on	on	on
	EQ rec switch on	on	on	on	—	—	—	—	on	on	on
	Pink noise switch off	on	on	on	—	—	—	—	on	on	on
	Pink noise switch on	—	—	—	—	—	—	—	on	—	—
tape 1	EQ switch off	—	on	on	—	on	—	on	—	—	on
	EQ rec switch off	—	on	on	—	on	—	—	on	—	on
	EQ switch on	—	on	—	—	on	—	on	on	—	on
	EQ rec switch on	—	on	—	—	on	—	—	on	—	on
tape 2	EQ switch off	on	—	on	on	—	—	on	—	—	on
	EQ rec switch off	on	—	on	on	—	—	—	on	—	on
	EQ switch on	on	—	—	on	—	—	on	on	—	on
	EQ rec switch on	on	—	—	on	—	—	—	on	—	on

• Function of IC45 (TC9163N)

X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16
—	—	—	—	—	—	—	—	on	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	on	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	on	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	on	—	—	—	—	—	—	—
Depending on input level															

(——) indicators are "OFF" state.

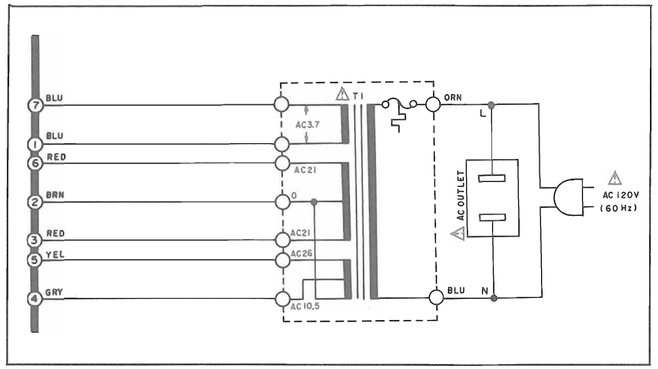
SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

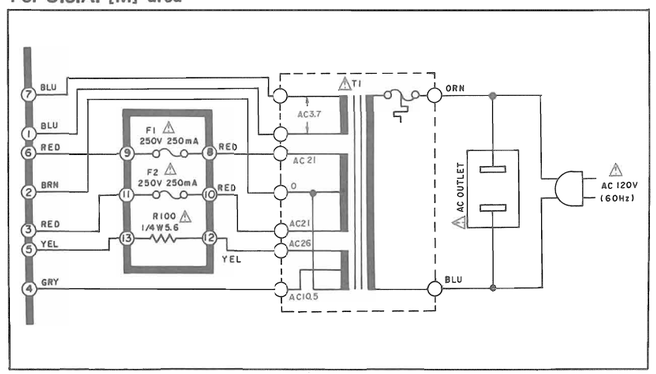
- Power source circuit shown at the bottom of 29 page is for [E, EH, EB, EF, EK, EGA, Ei, XL, XA, PA and PE] areas, different from those for [MC] (Canada) and [M] (U.S.A.) is some portions.
- Resistors and capacitors with red reference numbers in schematic diagram and printed circuit board are parts used in [E, EH, EB, EF, EK, EGA, Ei, XL, XA, PA and PE] areas.
  For [M] and [MC] areas, those parts are not used or short circuited.

- **Power source**

For Canada [MC] area



For U.S.A. [M] area

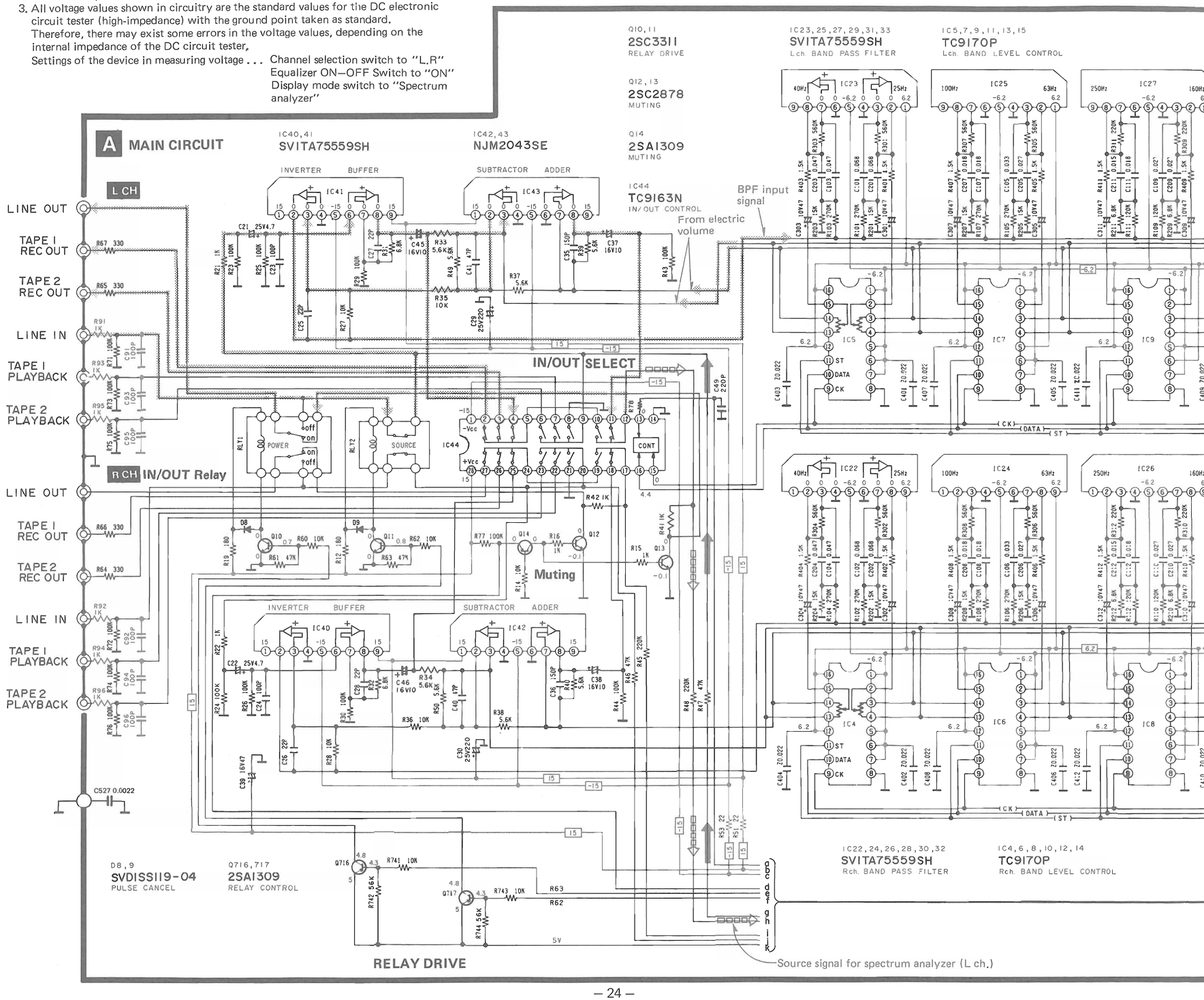


Note 1:

1. **RLY 1:** Relay that switches circuit responding to ON and OFF of power source. Position shown in the diagram corresponds to "SOURCE ON." In "SOURCE OFF," input terminal and output is connected directly.
2. **RLY 2:** Relay that gets ON when input changing switch is at "source." The position illustrated in the diagram is ON.
3. All voltage values shown in circuitry are the standard values for the DC electronic circuit tester (high-impedance) with the ground point taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester,
   Settings of the device in measuring voltage . . . Channel selection switch to "L.R"
   Equalizer ON–OFF Switch to "ON"
   Display mode switch to "Spectrum analyzer"

4. Signal line
   Source signal — Pink-noise signal — Microphone signal
   Spectrum analyzer signal
   Positive and Negative voltage supply line

5. Important safety notice:
   Components identified by ⚠ ma
   safety. When replacing any of th
   specified parts.

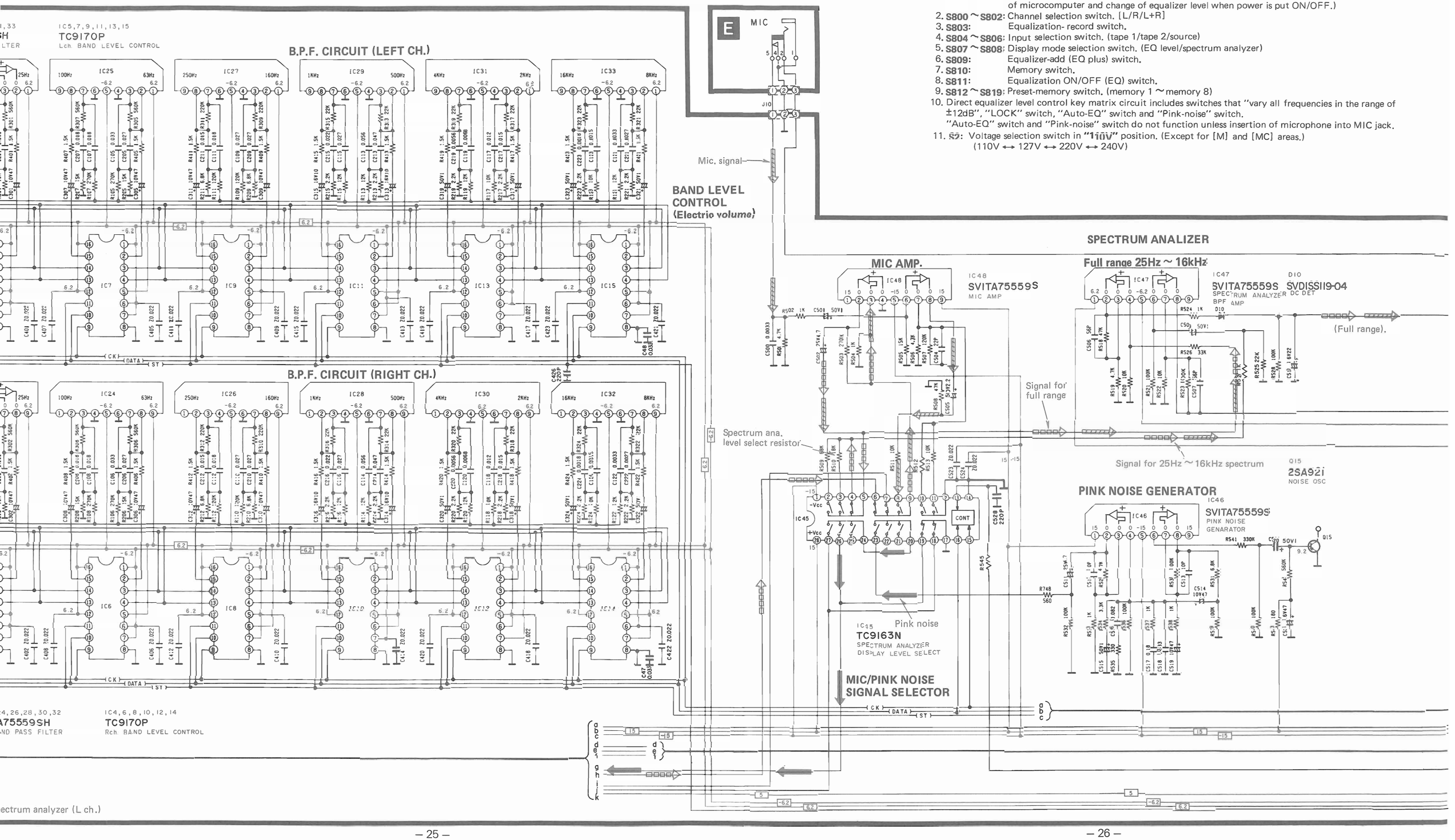


icrophone signal

5. Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

Notes 2 :

1. **S1-1 ~ S1-6 :** Power switch in **"on"** position.
(S1–6 is muting switch that prevent flickering of FL and/or LED as a result of malfunction of microcomputer and change of equalizer level when power is put ON/OFF.)
2. **S800 ~ S802:** Channel selection switch. [L/R/L+R]
3. **S803:** Equalization- record switch.
4. **S804 ~ S806:** Input selection switch. (tape 1/tape 2/source)
5. **S807 ~ S808:** Display mode selection switch. (EQ level/spectrum analyzer)
6. **S809:** Equalizer-add (EQ plus) switch.
7. **S810:** Memory switch.
8. **S811:** Equalization ON/OFF (EQ) switch.
9. **S812 ~ S819:** Preset-memory switch. (memory 1 ~ memory 8)
10. Direct equalizer level control key matrix circuit includes switches that "vary all frequencies in the range of ±12dB", "LOCK" switch, "Auto-EQ" switch and "Pink-noise" switch.
"Auto-EQ" switch and "Pink-noise" switch do not function unless insertion of microphone into MIC jack.
11. S9: Voltage selection switch in **"110V"** position. (Except for [M] and [MC] areas.)
(110V ↔ 127V ↔ 220V ↔ 240V)



IC4,26,28,30,32
A75559SH
AND PASS FILTER

ectrum analyzer (L ch.)

B.P.F. FOR SPECTRUM ANALIZER

LOG. AMP.

A/D CONV.

MICRO COMPUTER

D600~611
SVDISS119-04
DC DET

D700
SVDISS119-04

IC49~54
SVITA75559S
SPECTRUM ANALYZER
BAND PASS FILTER

Q700
2SC3311
LOG AMP

Q701
2SC1583
LOG AMP

IC61 SVITA75559S LOG AMP

IC59 M5223L A/D CONV

IC60 HD614042SB22 MPU

Q703
2SA1309
RESET

Q704
2SC3311
RESET

Q705~712
2SA1310
BUFFER

Q713,714
2SB977
LED DRIVE

Q715
2SA1310
FL BIAS SUPPLY

Q718,719
UN4114
FL SWITCHING

IC55,56
HD14051BP
13CH, MPX

13CH MPX

IC57,58
HD14050B
BUFF

BUFFER

Q721
2SA1309
SWITCH

Q720
2SC3311
SWITCH

D701
LTZ-R15

IC2
AN78M15
+15V REGULATOR

IC1
AN79M15
−15V REGULATOR

IC3
AN78N05
+5V REGULATOR

D1
SVDIB4B42
RECT

D3,4
MA4068
6.8V ZENER

Q4
2SC1846
+ REGULATOR

Q2
2SA885
− REGULATOR

D2
SVDISR35200

D18
SVDISS119-04

D13
SVDISR35200

D15,16
SVDISS119-04

POWER SUPPLY

GROUND POINT

MICRO COMPUTER

IC60 HD614042SB22 MPU

Q703 2SA1309 RESET

Q704 2SC3311 RESET

D702,703 SVDISS119-04

RESET

Q705~712 2SA1310 BUFFER

Q713,714 2SB977 LED DRIVE

Q715 2SA1310 FL BIAS SUPPLY

BUFFER

BUFFER

D17 MA4068 6.8V ZENER

LED DRIVER

Q718,719 UN4114 FL SWITCHING

D701 LTZ-R15

IC2 AN78MI5 ⊕15V REGULATOR

IC1 AN79MI5 ⊖15V REGULATOR

IC3 AN78N05 ⊕5V REGULATOR

POWER SUPPLY

D1 SVDIB4B42 RECT

D2 SVDISR35200

D18 SVDISS119-04

D13 SVDISR35200

D14 SVDISS119-04

D15,16 SVDISS119-04

GROUND POINT

POWER SWITCH D

S1-1 S1-2 S1-5 S1-3 S1-4 S1-6 MUTING

T1

AC 110V/127V/220V/240V (50/60 Hz)

S2 (VOLTAGE SELECTOR)

J1 J2 J4 J6 J8 J9 J16

LED DRIVE

Q800~809 DTC114Y LED DRIVE

D800~809 SVDISS119-04

D823,824 LN846RP LED

D810~822 SVDISS119-04

D825~827,829~831 LN424WP FUNCTION LED

D828,832~842 LN824WP FUNCTION LED

FUNCTION KEY CIRCUIT B

Function indicators (LED)

auto EQ D824

lock D823

memory4 memory8 memory3 memory7 memory2 memory6 memory1 memory5 memory EQ on/off EQ plus source tape1 tape2 EQ rec L.R R L

FUNCTION KEY MATRIX

memory1 memory5 memory2 memory6 memory3 memory7 memory4 memory8 memory EQ on/off EQ plus spectrum analyzer EQ level source tape1 tape2 EQ rec L.R R L

J13 J14 J15

29 30 31 32 33 34 35 36 37 38

A B C D E F

FUNCTION KEY CIRCUIT B

D825~827, 829~831
LN424WP
FUNCTION LED

D828, 832~842
LN824WP
FUNCTION LED

LED DRIVE

Q800~809
DTC114Y
LED DRIVE

auto EQ D824
lock D823

D800~809
SVDISS119-04

D823, 824
LN846RP
LED

Function indicators (LED)

memory4	D838	memory8 D842
memory3	D837	memory7 D841
memory2	D836	memory6 D840
memory1	D835	memory5 D839
memory	D833	EQ on/off D834
EQ plus	D832	source D831
tape1	D829	tape2 D830
EQ rec	D828	L.R D827
R	D826	L D825

FUNCTION KEY MATRIX

D810~822
SVDISS119-04

KR23	S812 memory1	S816	memory5
KR22	S813 memory2	S817	memory6
KR21	S814 memory3	S818	memory7
KR20	S815 memory4	S819	memory8
KR13	S810 memory	S811	EQ on/off
KR12	S809 EQ plus	S808	spectrum analyzer
KR11	S807 EQ level	S806	source
KR10	S804 tape1	S805	tape2
KD15	S803 EQ rec	S802	L.R
KD14	S801 R	S800	L

FL CIRCUIT C

FL (SPECTRUM ANALYZER / FREQUENCY BAND LEVEL DISPLAY)

F1, F2: Filament
1G ~ 13G: Grid
a ~ n: Segment

R811A 10K

EQ LEVEL CONTROL KEY-MATRIX

	25Hz	40Hz	63Hz	100Hz	160Hz	250Hz	500Hz	1KHz	2KHz	4KHz	8KHz	16KHz
KR23												
KR22	+12											
KR21	+10											
KR20	+ 8											
KR13	+ 6											
KR12	+ 4											
KR11	+ 2											
KR10	0dB											
KD15	- 2											
KD14	- 4											
KD13	- 6											
KD12	- 8											
KD11	-10											
	-12											

R00 R01 R02 R03 D10 D9 D8 D7 D6 D5 D4 R10 R52

lock
auto EQ
pink noise on/off

POWER SWITCH D

S1-4 on
S1-6 MUTING
C902 0.022

0V/127V/220V/240V
50/60 Hz)

SH-8066 SH-8066

RESISTORS & CAPACITORS

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. The "Ⓢ" mark is service standard parts and may differ from production parts.
4. The unit of resistance is Ω(ohm), K = 1000Ω, M = 1000kΩ.
5. The unit of capacitance is μF (microfarad). P = 10^{-6} μF

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

Resistor Type	Wattage	Tolerance
ERD : Carbon	10 : 1/8W 2F : 1/4W S2 : 1/4W	J : ±5%

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Volgage	Value	Tolerance	Peculiarity

Capacitor Type	Voltage	Tolerance
ECEA : Electrolytic	0J : 6.3V	K : ±10%
ECCD : Ceramic	1A : 10V	Z : +80%, −20%
ECKD : Ceramic	1C : 16V	M : ±20%
ECF : Semi-conductor	1E : 25V	
ECQV : Polyester	D : 25V	
ECQM : Polyester	1H : 50V	
EECW : Liquid electrolyte dubble layer	1V : 35V	
	2R3 : 2.3V	

● CAPACITORS

Ref. No.		Part No.	Value
C1, 2	Ⓢ	ECKD1H223ZF	0.022
C6		ECEA1VU471	470
C7		ECEA1CU470	47
C8	Ⓢ	ECKD1H223ZF	0.022
C10		ECEA1VU471	470
C11		ECEA1CU470	47
C12, 13	Ⓢ	ECKD1H223ZF	0.022
C14		ECEA1CU471	470
C15		ECEA1AU470	47
C16		ECEA1HU221	220
C17, 18		EECW2R3A3R3E	3.3F
C19	Ⓢ	ECKD1H223ZF	0.022
C21, 22		ECEA1EU4R7	4.7
C23, 24	Ⓢ	ECKD1H101KB	100P
C25, 26	Ⓢ	ECCD1H220K	22P
C27, 28	Ⓢ	ECCD1H220K	22P
C29, 30		ECEA1EU221	220
C35, 36	Ⓢ	ECKD1H151KB	150P
C37, 38		ECEA1CU100	10
C39		ECEA1CU470	47
C40, 41		ECCD1H470K	47P
C45, 46		ECEA1CU100	10
C47, 48	Ⓢ	ECKD1H333ZF	0.033
C49	Ⓢ	ECKD1H221KB	220P
C91, 92		ECKD1H101KB	100P
C93, 94		ECKD1H101KB	100P
C95, 96		ECKD1H101KB	100P
C101, 102		ECQV05683JZ	0.068
C103, 104		ECQV05473JZ	0.047
C105, 106	Ⓢ	ECQM1H333JZ	0.033
C107, 108		ECQM1H183JZ	0.018
C109, 110	Ⓢ	ECQM1H273JZ	0.027
C111, 112	Ⓢ	ECQM1H183JZ	0.018
C113, 114	Ⓢ	ECQM1H563JZ	0.056
C115, 116	Ⓢ	ECQM1H273JZ	0.027
C117, 118	Ⓢ	ECQM1H123JZ	0.012
C119, 120	Ⓢ	ECQM1H682JZ	0.0068
C121, 122	Ⓢ	ECQM1H332JZ	0.0033
C123, 124	Ⓢ	ECQM1H152JZ	0.0015
C201, 202		ECFTD683KXL	0.068
C203, 204		ECFTD473KXL	0.047
C205, 206		ECFTD273KXL	0.027
C207, 208		ECFTD183KXL	0.018
C209, 210		ECFTD273KXL	0.027
C211, 212		ECFTD153KXL	0.015
C213, 214		ECFTD473KXL	0.047
C215, 216		ECFTD223KXL	0.022
C217, 218		ECFTD153KXL	0.015
C219, 220		ECFTD562KXL	0.0056
C221, 222		ECFTD272KXL	0.0027
C223, 224		ECFTD182KXL	0.0018
C301, 302		ECEA1AU470	47
C303, 304		ECEA1AU470	47
C305, 306		ECEA1AU470	47
C307, 308		ECEA1AU470	47
C309, 310		ECEA1AU470	47
C311, 312		ECEA1AU470	47
C313, 314		ECEA1CU100	10
C315, 316		ECEA1CU100	10
C317, 318		ECEA1HU010	1
C319, 320		ECEA1HU010	1
C321, 322		ECEA1HU010	1
C323, 324		ECEA1HU010	1
C401, 402	Ⓢ	ECKD1H223ZF	0.022
C403, 404	Ⓢ	ECKD1H223ZF	0.022
C405, 406	Ⓢ	ECKD1H223ZF	0.022
C407, 408	Ⓢ	ECKD1H223ZF	0.022
C409, 410	Ⓢ	ECKD1H223ZF	0.022
C411, 412	Ⓢ	ECKD1H223ZF	0.022
C413, 414	Ⓢ	ECKD1H223ZF	0.022
C415	Ⓢ	ECKD1H223ZF	0.022

Ref. No.		Part No.	Value
C417, 418	Ⓢ	ECKD1H223ZF	0.022
C419, 420	Ⓢ	ECKD1H223ZF	0.022
C421, 422	Ⓢ	ECKD1H223ZF	0.022
C423	Ⓢ	ECKD1H223ZF	0.022
C426	Ⓢ	ECKD1H221KB	220P
C500	Ⓢ	ECQM1H332JZ	0.0033
C501		ECEA1HU010	1
C502		ECEA1EU4R7	4.7
C504	Ⓢ	ECCD1H220K	22P
C505		ECEA1HU2R2	2.2
C506, 507	Ⓢ	ECCD1H560K	56P
C509		ECEA1HU010	1
C510		ECEA1CU220	22
C511		ECEA1EU4R7	4.7
C512, 513	Ⓢ	ECCD1H100K	10P
C514		ECEA1AU470	47
C515		ECEA1HU010	1
C516	Ⓢ	ECQM1H823JZ	0.082
C517		ECQM1H184JZ	0.18
C518	Ⓢ	ECQM1H333JZ	0.033
C519		ECEA1AU470	47
C520		ECEA1HU010	1
C521		ECEA1CU470	47
C523, 524	Ⓢ	ECKD1H223ZF	0.022
C527	Ⓢ	ECKD1H223ZF	0.022
C528	Ⓢ	ECKD1H221KB	220P
C600		ECEA1EU4R7	4.7
C601, 602		ECQM1H124JZ	0.12
C603, 604		ECQM1H184JZ	0.18
C605, 606		ECEA1EU4R7	4.7
C607, 608		ECQM1H274JZ	0.27
C609		ECQM1H823JZ	0.082
C610		ECQM1H683JZ	0.068
C611, 612		ECEA1EU4R7	4.7
C613, 614		ECFTD153KXL	0.015
C615, 616		ECFTD682KXL	0.0068
C617, 618		ECEA1EU4R7	4.7
C619	Ⓢ	ECKD1H821KB	820P
C620		ECFTD102KXL	0.001
C621	Ⓢ	ECQM1H222JZ	0.0022
C622		ECFTD182KXL	0.0018
C623, 624		ECEA1EU4R7	4.7
C625, 626		ECFTD273KXL	0.027
C627, 628		ECFTD473KXL	0.047
C629, 630		ECEA1EU4R7	4.7
C631, 632		ECFTD392KXL	0.0039
C633, 634		ECKD1H471KB	470P
C635		ECEA1EU4R7	4.7
C700	Ⓢ	ECKD1H101KB	100P
C703		ECFTD102KXL	0.001
C704, 705	Ⓢ	ECCD1H330K	33P
C706		ECFTD102KXL	0.001
C707	Ⓢ	ECKD1H223ZF	0.022
C708		ECEA1EU4R7	4.7
C709		ECEA1AU470	47
C710		ECEA0JU471	470
C711		ECEA1HU010	1
C712	Ⓢ	ECKD1H223ZF	0.022
C713		ECKD1H102ZF	0.001
C714		ECEA0JU470	47
C715	Ⓢ	ECKD1H223ZF	0.022
C716		ECKD1H333ZF	0.033
C720	Ⓢ	ECKD1H223ZF	0.022
C900, 901	⚠ Ⓢ	ECKD1H223ZF	0.022
C902, 903	⚠ Ⓢ	ECKD1H223ZF	0.022
C904	⚠ Ⓢ	ECKD1H223ZF	0.022

● RESISTORS

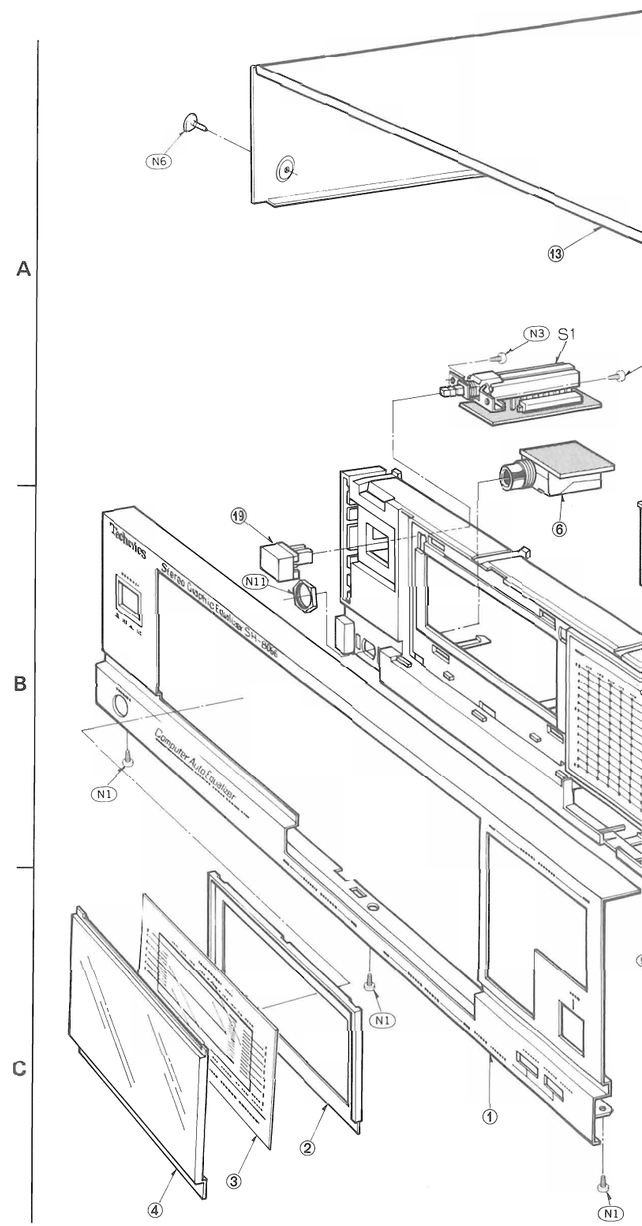
Ref. No.		Part No.	Value
R1	⚠	ERD2FCG220	22
R2		ERDS2TJ270	27
R3		ERD10TJ222	2.2K
R4	⚠	ERD2FCG220	22
R5		ERDS2TJ270	27
R6		ERD10TJ222	2.2K
R10		ERD10TJ561	560
R12		ERD10TJ181	180
R14		ERD10TJ103	10K
R15, 16		ERD10TJ102	1K
R19		ERD10TJ181	180
R21, 22		ERD10TJ102	1K
R23, 24		ERD10TJ104	100K
R25, 26		ERD10TJ104	100K
R27, 28		ERD10TJ103	10K
R29, 30		ERD10TJ104	100K
R31, 32		ERD10TJ682	6.8K
R33, 34		ERD10TJ562	5.6K
R35, 36		ERD10TJ103	10K
R37, 38		ERD10TJ562	5.6K
R39, 40		ERD10TJ562	5.6K
R41, 42		ERD10TJ102	1K
R43, 44		ERD10TJ104	100K
R45		ERD10TJ224	220K
R46, 47		ERD10TJ473	47K
R48		ERD10TJ224	220K
R49, 50		ERD10TJ562	5.6K
R51, 53	⚠	ERD2FCG220	22
R60		ERD10TJ103	10K
R61		ERD10TJ473	47K
R62		ERD10TJ103	10K
R63		ERD10TJ473	47K
R64, 65		ERD10TJ331	330
R66, 67		ERD10TJ331	330
R71, 72		ERD10TJ104	100K
R73, 74		ERD10TJ104	100K
R75, 76		ERD10TJ104	100K
R77		ERD10TJ104	100K
R78		ERD10TJ103	10K
R91, 92		ERD10TJ102	1K
R93, 94		ERD10TJ102	1K
R100	⚠	ERD2FCG5R6	5.6
R101, 102		ERD10TJ274	270K
R103, 104		ERD10TJ274	270K
R105, 106		ERD10TJ274	270K
R107, 108		ERD10TJ274	270K
R109, 110		ERD10TJ124	120K
R111, 112		ERD10TJ124	120K
R113, 114		ERD10TJ123	12K
R115, 116		ERD10TJ123	12K
R117, 118		ERD10TJ103	10K
R119, 120		ERD10TJ123	12K
R121, 122		ERD10TJ123	12K
R123, 124		ERD10TJ103	10K
R201, 202		ERD10TJ153	15K
R203, 204		ERD10TJ153	15K
R205, 206		ERD10TJ153	15K
R207, 208		ERD10TJ153	15K
R209, 210		ERD10TJ682	6.8K
R211, 212		ERD10TJ682	6.8K
R213, 214		ERD10TJ222	2.2K
R215, 216		ERD10TJ222	2.2K
R217, 218		ERD10TJ222	2.2K
R219, 220		ERD10TJ222	2.2K
R221, 222		ERD10TJ222	2.2K
R223, 224		ERD10TJ222	2.2K
R301, 302		ERD10TJ564	560K
R303, 304		ERD10TJ564	560K
R305, 306		ERD10TJ564	560K
R307, 308		ERD10TJ564	560K

Ref. No.	Part No.	Value
R309, 310	ERD10TJ224	220K
R311, 312	ERD10TJ224	220K
R313, 314	ERD10TJ223	22K
R315, 316	ERD10TJ223	22K
R317, 318	ERD10TJ223	22K
R319, 320	ERD10TJ223	22K
R321, 322	ERD10TJ223	22K
R323, 324	ERD10TJ223	22K
R401, 402	ERD10TJ152	1.5K
R403, 404	ERD10TJ152	1.5K
R405, 406	ERD10TJ152	1.5K
R407, 408	ERD10TJ152	1.5K
R409, 410	ERD10TJ152	1.5K
R411, 412	ERD10TJ152	1.5K
R413, 414	ERD10TJ152	1.5K
R415, 416	ERD10TJ152	1.5K
R417, 418	ERD10TJ152	1.5K
R419, 420	ERD10TJ152	1.5K
R421, 422	ERD10TJ152	1.5K
R423, 424	ERD10TJ152	1.5K
R425	ERD10TJ103	10K
R501	ERD10TJ472	4.7K
R502	ERD10TJ102	1K
R503	ERD10TJ274	270K
R504	ERD10TJ102	1K
R505	ERD10TJ153	15K
R506	ERD10TJ472	4.7K
R507	ERD10TJ124	120K
R508	ERD10TJ473	47K
R509	ERD10TJ683	68K
R510	ERD10TJ183	18K
R511	ERD10TJ103	10K
R513	ERD10TJ103	10K
R518	ERD10TJ473	47K
R519	ERD10TJ472	4.7K
R520	ERD10TJ103	10K
R521	ERD10TJ104	100K
R522	ERD10TJ103	10K
R523	ERD10TJ104	100K
R524	ERD10TJ102	1K
R525	ERD10TJ223	22K
R526	ERD10TJ333	33K
R527	ERD10TJ102	1K
R528	ERD10TJ104	100K
R529	ERD10TJ473	47K
R530	ERD10TJ104	100K
R531	ERD10TJ682	6.8K
R532	ERD10TJ104	100K
R533	ERD10TJ102	1K
R534	ERD10TJ332	3.3K
R535	ERD10TJ331	330
R536	ERD10TJ104	100K
R537, 538	ERD10TJ102	1K
R539, 540	ERD10TJ104	100K
R541	ERD10TJ334	330K
R542	ERD10TJ564	560K
R543	ERD10TJ181	180
R545	ERD10TJ103	10K
R600	ERD10TJ184	180K
R601	ERD10TJ182	1.8K
R602	ERD10TJ224	220K
R603	ERD10TJ333	33K
R604, 605	ERD10TJ222	2.2K
R606	ERD10TJ393	39K
R607	ERD10TJ274	270K
R608	ERD10TJ182	1.8K
R609	ERD10TJ224	220K
R610	ERD10TJ274	270K
R611	ERD10TJ182	1.8K
R612	ERD10TJ274	270K
R613	ERD10TJ333	33K
R614, 615	ERD10TJ222	2.2K

Ref. No.	Part No.	Value
R616	ERD10TJ393	39K
R617	ERD10TJ274	270K
R618	ERD10TJ272	2.7K
R619, 620	ERD10TJ104	100K
R621	ERD10TJ272	2.7K
R622	ERD10TJ224	220K
R623	ERD10TJ333	33K
R624, 625	ERD10TJ222	2.2K
R626	ERD10TJ393	39K
R627	ERD10TJ274	270K
R628	ERD10TJ272	2.7K
R629, 630	ERD10TJ104	100K
R631	ERD10TJ681	680
R632	ERD10TJ224	220K
R633	ERD10TJ333	33K
R634, 635	ERD10TJ222	2.2K
R636	ERD10TJ393	39K
R637	ERD10TJ224	220K
R638	ERD10TJ821	820
R639, 640	ERD10TJ104	100K
R641	ERD10TJ272	2.7K
R642	ERD10TJ274	270K
R643	ERD10TJ393	39K
R644, 645	ERD10TJ222	2.2K
R646	ERD10TJ333	33K
R647	ERD10TJ224	220K
R648	ERD10TJ272	2.7K
R649, 650	ERD10TJ104	100K
R651	ERD10TJ152	1.5K
R652	ERD10TJ224	220K
R653	ERD10TJ333	33K
R654, 655	ERD10TJ222	2.2K
R656	ERD10TJ223	22K
R657	ERD10TJ224	220K
R658	ERD10TJ821	820
R659	ERD10TJ104	100K
R700	ERD10TJ103	10K
R701	ERD10TJ563	56K
R702	ERD10TJ472	4.7K
R703	ERD10TJ274	270K
R704	ERD10TJ102	1K
R705	ERD10TJ154	150K
R706	ERD10TJ393	39K
R707	ERD10TJ122	1.2K
R708	ERD10TJ224	220K
R709	ERD10TJ103	10K
R710	ERD10TJ223	22K
R711	ERD10TJ123	12K
R712	ERD10TJ223	22K
R713	ERD10TJ123	12K
R714	ERD10TJ223	22K
R715	ERD10TJ123	12K
R716, 717	ERDS2TJ223	22K
R720	ERD10TJ684	680K
R722	ERD10TJ562	5.6K
R723	ERD10TJ103	10K
R724, 725	ERD10TJ332	3.3K
R726	ERD10TJ473	47K
R727	ERD10TJ683	68K
R728, 729	ERD10TJ103	10K
R730, 731	ERD10TJ103	10K
R732, 733	ERD10TJ103	10K
R734, 735	ERD10TJ103	10K
R736, 737	ERD10TJ562	5.6K
R741	ERD10TJ103	10K
R742	ERD10TJ563	56K
R743	ERD10TJ103	10K
R744	ERD10TJ563	56K
R745, 746	ERD10TJ222	2.2K
R747	ERD10TJ224	220K
R748	ERD10TJ561	560
R749	ERD10TJ104	100K

Ref. No.	Part No.	Value
R751, 752	ERD10TJ104	100K
R753, 754	ERD10TJ104	100K
R755	ERD10TJ104	100K
R757	ERD10TJ104	100K
R758, 759	ERD10TJ103	10K
R760, 761	ERD10TJ562	5.6K
R762	ERD10TJ103	10K
R763	ERD10TJ471	470
R764	ERD10TJ103	10K
R765	ERD25FJ103	10K
R767	ERD10TJ104	100K
R800, 801	ERD10TJ100	10
R802	ERD10TJ470	47
R803	ERD10TJ100	10
R804	ERD10TJ470	47
R805	ERD10TJ390	39
R806, 807	ERD10TJ470	47
R808, 809	ERD10TJ470	47
R810A	ERD10TJ100	10
R811A	ERD10TJ103	10K

EXPLODED VIEWS

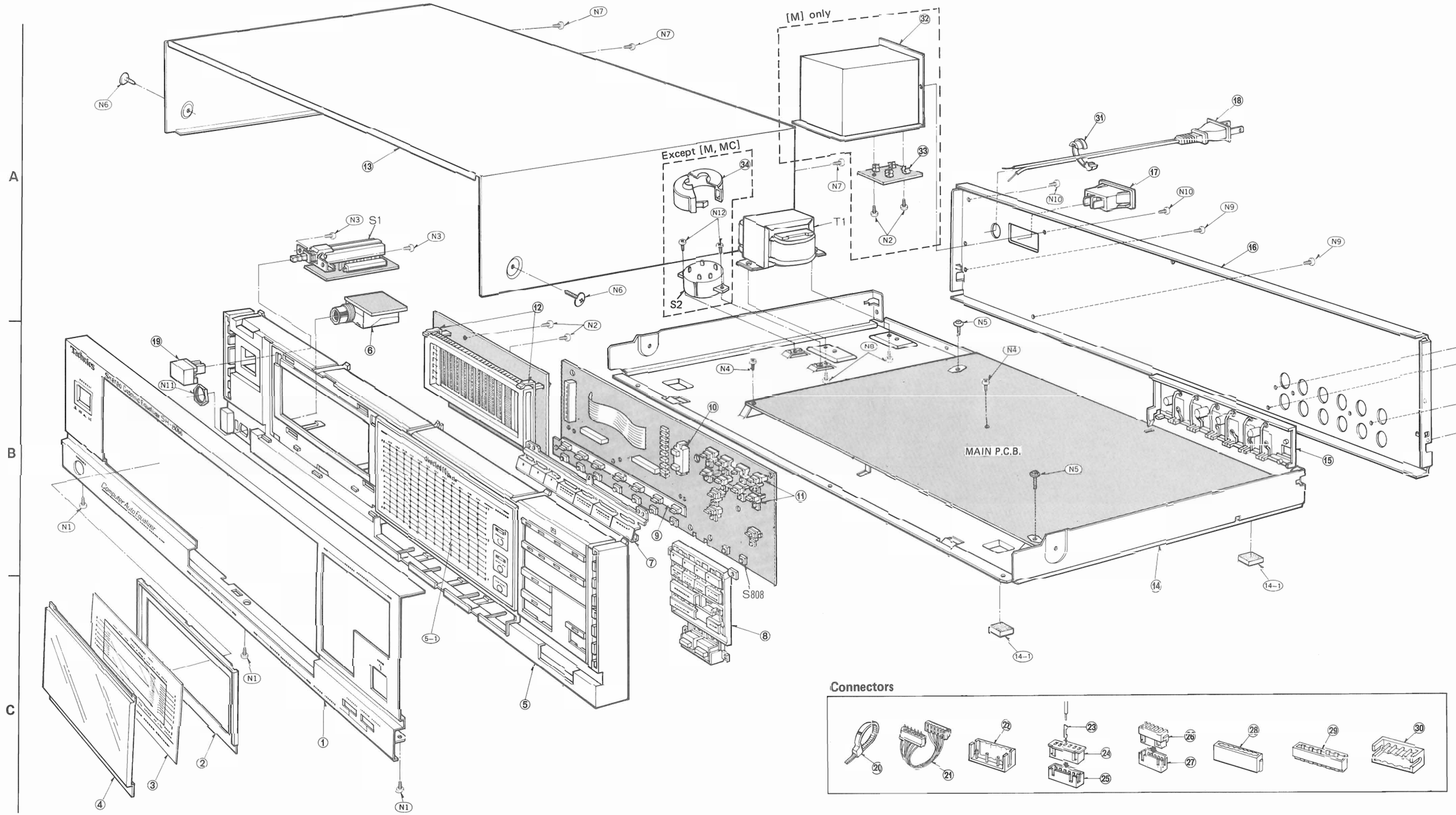


A												⑬
B					⑲							⑥
C		④		③		②				①		5

EXPLODED VIEWS

erance
10% 0%, –20% 20%

.	Part No.	Value
	ERD10TJ104	100K
	ERD10TJ104	100K
	ERD10TJ104	100K
	ERD10TJ104	100K
	ERD10TJ103	10K
	ERD10TJ562	5.6K
	ERD10TJ103	10K
	ERD10TJ471	470
	ERD10TJ103	10K
	ERD25FJ103	10K
	ERD10TJ104	100K
	ERD10TJ100	10
	ERD10TJ470	47
	ERD10TJ100	10
	ERD10TJ470	47
	ERD10TJ390	39
	ERD10TJ470	47
	ERD10TJ470	47
	ERD10TJ100	10
	ERD10TJ103	10K



A	⑬ ⑫ ㉞ ㉜ ㉝ ㉛ ⑰ ⑱ ⑱ ⑯
B	⑲ ⑥ ⑦ ⑨ ⑪ 14–1 ⑮
C	④ ③ ② ① 5–1 ⑤ ⑧ ⑳ ㉑ ㉒ 14–1 ㉓ ㉔ ㉕ ⑭ ㉖ ㉗ ㉘ ㉙ ㉚

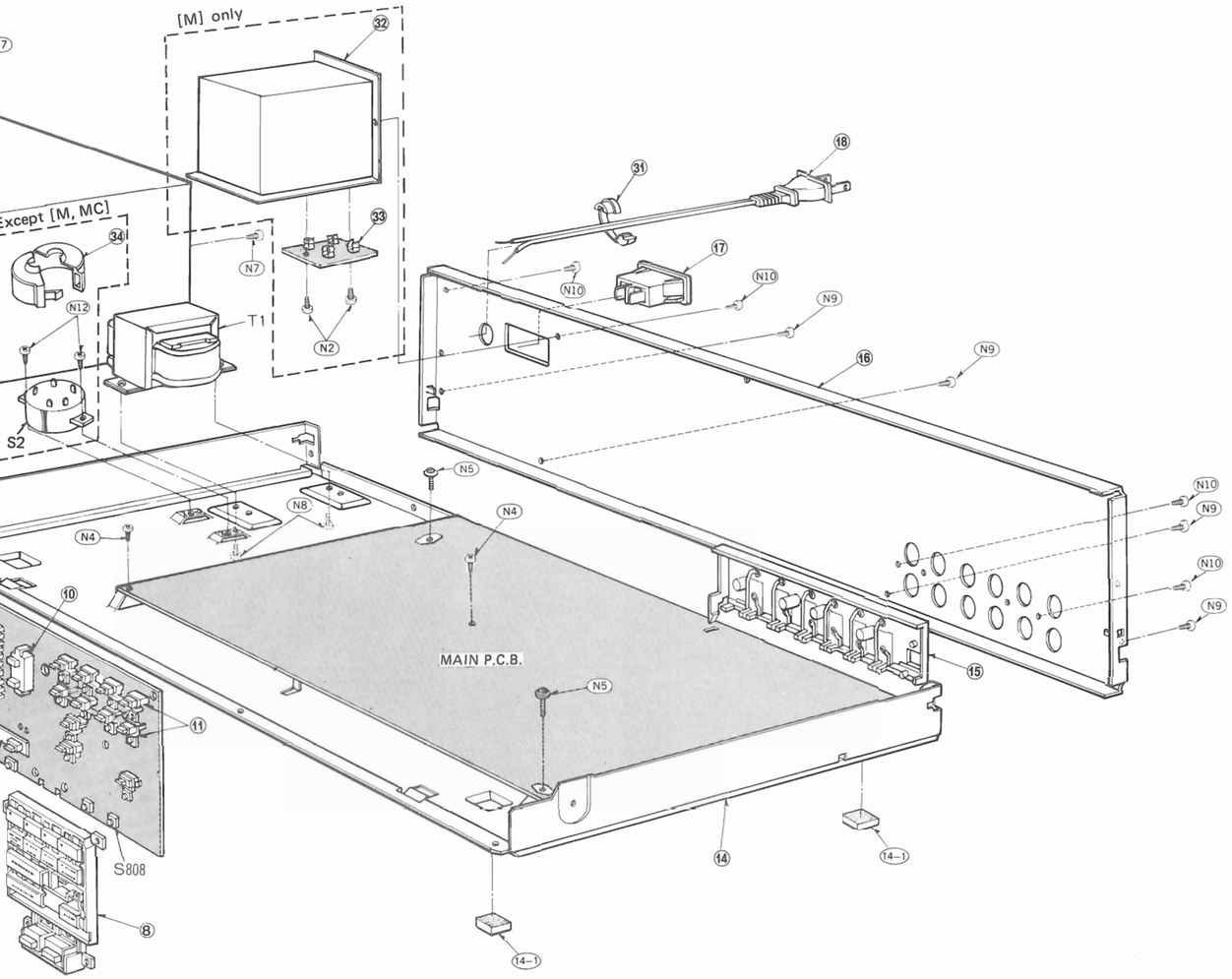
■ F

No

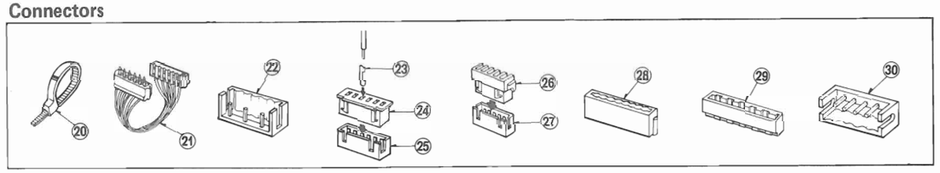
1.
2.

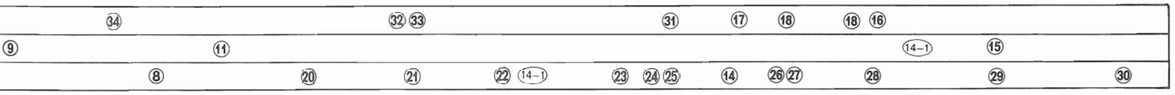
3.
4.
5.

Ref.
INTEGRA
IC1 IC2 IC3 IC4～15 IC22～33, 46～54, IC42, 43 IC44, 45 IC55, 56 IC57, 58 IC59 IC60
TRANSIS
Q2 Q4 Q10, 11, 70 720 Q12, 13 Q14, 703, 7 721 Q15 Q701 Q705～712 Q713, 714 Q718, 719 Q800～809
DIODES
D1 D2, 13 D3, 4, 17 D8～10, 14 18, 600～ 700, 702, 800～822 D701 D823, 824 D825～827 829～831 D828, 832-
TRANSF
T1 [M] T1 [MC] T1 [other]
CRYSTA
X1
FLUORE
FL
RELAYS
RLY1 RLY2
COMPON
Z1
SWITCHI
S1 S800～819 S2 Except [M,
FUSES
F1, 2 [M] o



Connectors





REPLACEMENT PARTS LIST

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
4. The " Ⓢ " mark is service standard parts and may differ from production parts.
5. The parenthesized numbers in the column of description stand for the quantity per set.

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC1	AN79M15	IC
IC2	AN78M15	IC
IC3	AN78N05	IC
IC4～15	TC9170P	IC
IC22～33, 40, 41, 46～54, 61	SVITA75559S	IC
IC42, 43	SVINJM2043SE	IC
IC44, 45	TC9163N	IC
IC55, 56	HD14051BP	IC
IC57, 58	HD14050B	IC
IC59	M5223L	IC
IC60	HD614042SB22	IC
TRANSISTORS		
Q2	2SA885Q	Transistor
Q4	2SC1846－Q	Transistor
Q10, 11, 700, 704, 720	2SC3311－Q	Transistor
Q12, 13	2SC2878A－T	Transistor
Q14, 703, 716, 717, 721	2SA1309Q	Transistor
Q15	2SA921－T	Transistor
Q701	2SC1583－G	Transistor
Q705～712, 715	2SA1310－T	Transistor
Q713, 714	2SB977－Q	Transistor
Q718, 719	UN4114	Transistor
Q800～809	DTC114Y	Transistor
DIODES		
D1	SVD1B4B42	Diode
D2, 13 ⚠	SVD1SR35200	Diode
D3, 4, 17	MA4068	Diode
D8～10, 14～16, 18, 600～611, 700, 702, 703, 800～822	SVD1SS119－04	Diode
D701	LT7－R15	Diode
D823, 824	LN846RP	LED
D825～827, 829～831	LN424WP	LED
D828, 832～842	LN824WP	LED
TRANSFORMER		
T1 [M] ⚠	SLTK5V5－W	Power Source
T1 [MC] ⚠	SLTK5V7－W	Power Source
T1 [other] ⚠	SLTK5V6－W	Power Source
CRYSTAL		
X1	SVFCSA400MG	Crystal OSC
FLUORESCENT DISPLAY TUBE		
FL	SADBG284ZK	Spectrum Analyzer
RELAYS		
RLY1	SFDYG5A237P	Relay
RLY2	SSY125	Relay
COMPONENT COMBINATION		
Z1	RGSD4X104K	Component Combination
SWITCHES		
S1 ⚠	SSHK53	Power
S800～819	SSG13	Pre-Set
S2 ⚠ Except [M, MC]	ESE37108	Voltage Selector
FUSES		
F1, 2 [M] only ⚠	XBA2F02NU100	250V, 250mA

Ref. No.	Part No.	Description
CABINET and CHASSIS PARTS		
1	SGWKH8066－KM	Front Ass'y (1)
2	SGXK101	Ornament (1)
3	SDUK13	Ornament (1)
4	SGUK13	Transparent Plate (1)
5	SGXH8066－KN	Grille Ass'y (1)
[5-1	[SSEK15	[Switch (1)
6	SJJK22	Mic Jack (1)
7	SBCH8066－KN	Button Ass'y (1)
8	SBCK48－1	Button (1)
9	SUDK14	LED Holder (1)
10	SUDK15	LED Holder (1)
11	SUDK13	LED Holder (1)
12	SHRK928	FL Holder (2)
13	SKCK150K99	Cabinet (1)
14 [M, MC]	SKUKH8066－KM	Chassis Ass'y (1)
14 [other]	SKUKH8066－KE	Chassis Ass'y (1)
[14-1	[SKL293	[Foot (4)
15	SJF3059－2N	Terminal Board (1)
16 [M]	SGPK310－4A	Rear Panel (1)
16 [MC]	SGPK310－1A	Rear Panel (1)
16 [E]	SGPK310－2A	Rear Panel (1)
16 [EK]	SGPK310－2B	Rear Panel (1)
16 [XL]	SGPK310－2C	Rear Panel (1)
16 [XA, PA, PE]	SGPK310－3A	Rear Panel (1)
16 [other]	SGPK310－2D	Rear Panel (1)
17 ⚠ [M, XA, PA, PE]	SJS9221－1	AC Outlet (1)
17 [MC] ⚠	SJS9223	AC Outlet (1)
18 [M] ⚠	RJA9Y	AC Cord (1)
18 [MC] ⚠	SJA169	AC Cord (1)
18 [EK] ⚠	SFDAB31G01	AC Cord (1)
18 [XL] ⚠	SJAG23	AC Cord (1)
18 ⚠ [PA, PE]	RJA52YA	AC Cord (1)
18 ⚠ [other]	SFDAB31E01	AC Cord (1)
19	SBC666	Button (1)
20	SHR301	Read Clamper (2)
21	SWKKH8066N1	Connection Cord (J8) (1)
	SWKKH8066N2	Connection Cord (J1) (1)
	SWKKH8066N3	Connection Cord (J3) (1)
	SWKKH8066N4	Connection Cord (J2) (1)
	SWKKH8066N5	Connection Cord (J5) (1)
	SWKKH8066N6	Connection Cord (J4) (1)
	SWKKH8066N7	Connection Cord (J7) (1)
	SWKKH8066N8	Connection Cord (J6) (1)
22	SJTK30401DR	Post (J8) (1)
	SJTK30501DR	Post (J1) (1)
	SJTK30601DR	Post (J2) (1)
	SJTK30901DR	Post (J4) (1)
	SJTK31001DR	Post (J6) (1)
23	SJT783	Terminal (1)
24	SJS5331	Connector (J10) (1)
25	SJT3319	Post (J10) (1)
26	SWKH8066－KN1	Connector (J16) (1)
	SWKH8066－KN2	Connector (J9) (1)
27	SJT3511	Post (J16) (1)
	SJT3611	Post (J9) (1)
28	SJS50571DS	Post (J16) (1)
	SJS50671DS	Post (J9) (1)
	SJS50371DS	Post (J10) (1)
29	SJSK90602HB	Post (J14) (1)
	SJSK90702HB	Post (J15) (1)
	SJSK91302HB	Post (J13) (1)
30	SJTK30602DR	Post (J3) (1)
	SJTK30902DR	Post (J5) (1)
	SJTK31002DR	Post (J7) (1)

Ref. No.	Part No.	Description
CABINET and CHASSIS PARTS		
31 [M, MC]	RHR111	Bushing (1)
31 [EK]	SHR129	Bushing (1)
31 [other]	SHR127	Bushing (1)
32 [M] only	SUVK14	Cover (1)
33 [M] only	SJT345	Fuse Crip (4)
34 Except [M, MC]	SUV473	Voltage Selector Cover (1)
SCREWS and NUT		
N1 Ⓢ	XTB3＋8BFZ	Tapping, ⊕3×8 (3)
N2	XTB3＋10BFYR	Tapping, ⊕3×10 (2)
N3 Ⓢ	XTB3＋8BFN	Tapping, ⊕3×8 (2)
N4	XTW3＋8HFYR	Tapping, ⊕3×8 (2)
N5	XTBS3＋8BFYR1	Tapping, ⊕3×8 (2)
N6	SNE2095－5	Cabinet (2)
N7 Ⓢ	XTB3＋8BFZ	Tapping, ⊕3×8 (3)
N8	XYA4＋FF10FZ	Tapping, ⊕4×10 (2)
N9 Ⓢ	XTB3＋8BFZ	Tapping, ⊕3×8 (4)
N10 Ⓢ	XTB3＋10BFZ	Tapping, ⊕3×10 (4)
N11 Ⓢ	XNS12	Nut, Φ12 (1)
N12 Except [M, MC]	XTB3＋8B	Tapping, ⊕3×8 (2)
PACKING PARTS		
P1 [M]	SPGK197	Carton Box (1)
P1 [MC]	SPGK198	Carton Box (1)
P1 [PA, PE]	SPGK197	Carton Box (1)
P1 [EF]	SPGK200	Carton Box (1)
P1 [EK]	SPGK201	Carton Box (1)
P1 [XL]	SPGK202	Carton Box (1)
P1 [other]	SPGK199	Carton Box (1)
P2 [XL]	SPSK81－1	Pad, Left Side (1)
P2 [other]	SPSK81	Pad, Left Side (1)
P3 [XL]	SPSK82－1	Pad, Right Side (1)
P3 [other]	SPSK82	Pad, Right Side (1)
P4 [XL]	SPSK85－1	Pad, Center (1)
P4 [other]	SPSK85	Pad, Center (1)
P5 [M]	SQFK10110	Instruction Book (1)
P5 [MC]	SQFK10111	Instruction Book (1)
P5 [PA, PE]	SQFK10114	Instruction Book (1)
P5 [EGA]	SQFK10113	Instruction Book (1)
P5 [other]	SQFK10112	Instruction Book (1)
P6 [M, MC, PA, PE]	SPSK87	Mic Carton Box (Bottom) (1)
P7 [M, MC, PA, PE]	SPSK88	Mic Carton Box (Upper) (1)
P8	SPP649	Polyethylene Sheet (1)
ACCESSORIES		
A1	SJPK2201	Connection Cord (Pin, 0.8m) (2)
A2 [M, MC, PA, PE]	YPMSE050AA	Head Case (1)
A3 [M, MC, PA, PE]	YPMMCA54AA4	Grip (1)
A4 [M, MC, PA, PE]	YPMKM302AA4	Holder (1)
A5 [M, MC, PA, PE]	YPMKM238AB3	Stand (1)
A6 [PA, PE]	SJP9215	Plug, AC Adaptor (1)
A6 [XA]	SJP5213-1	Plug, AC Adaptor (1)

Printed in Japan
850512000 ⓚ KK/IM

ADDITION

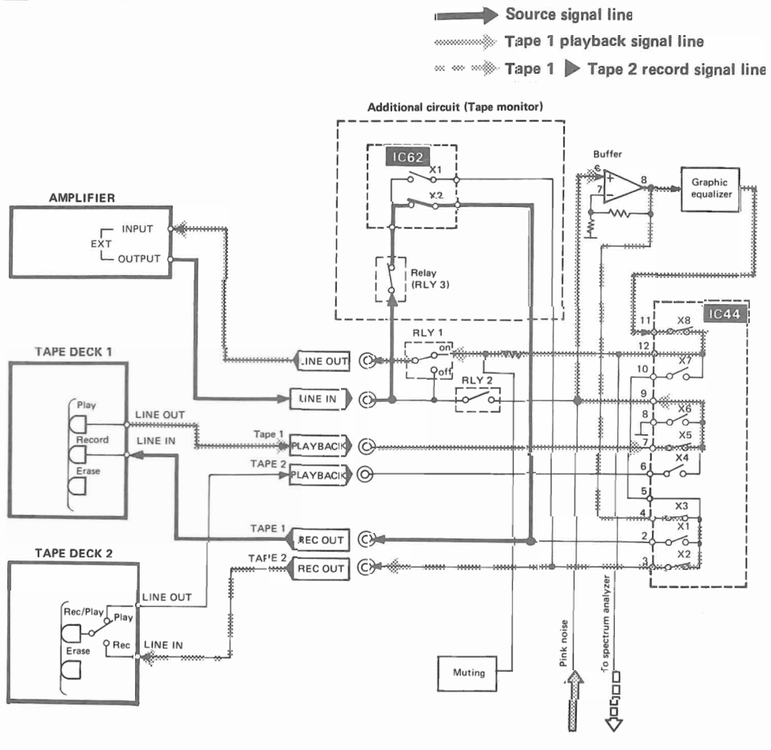
Though tape monitor circuit is provided in Model No. SH-8066 no description for the circuit is included in the Service Manual.

The description:

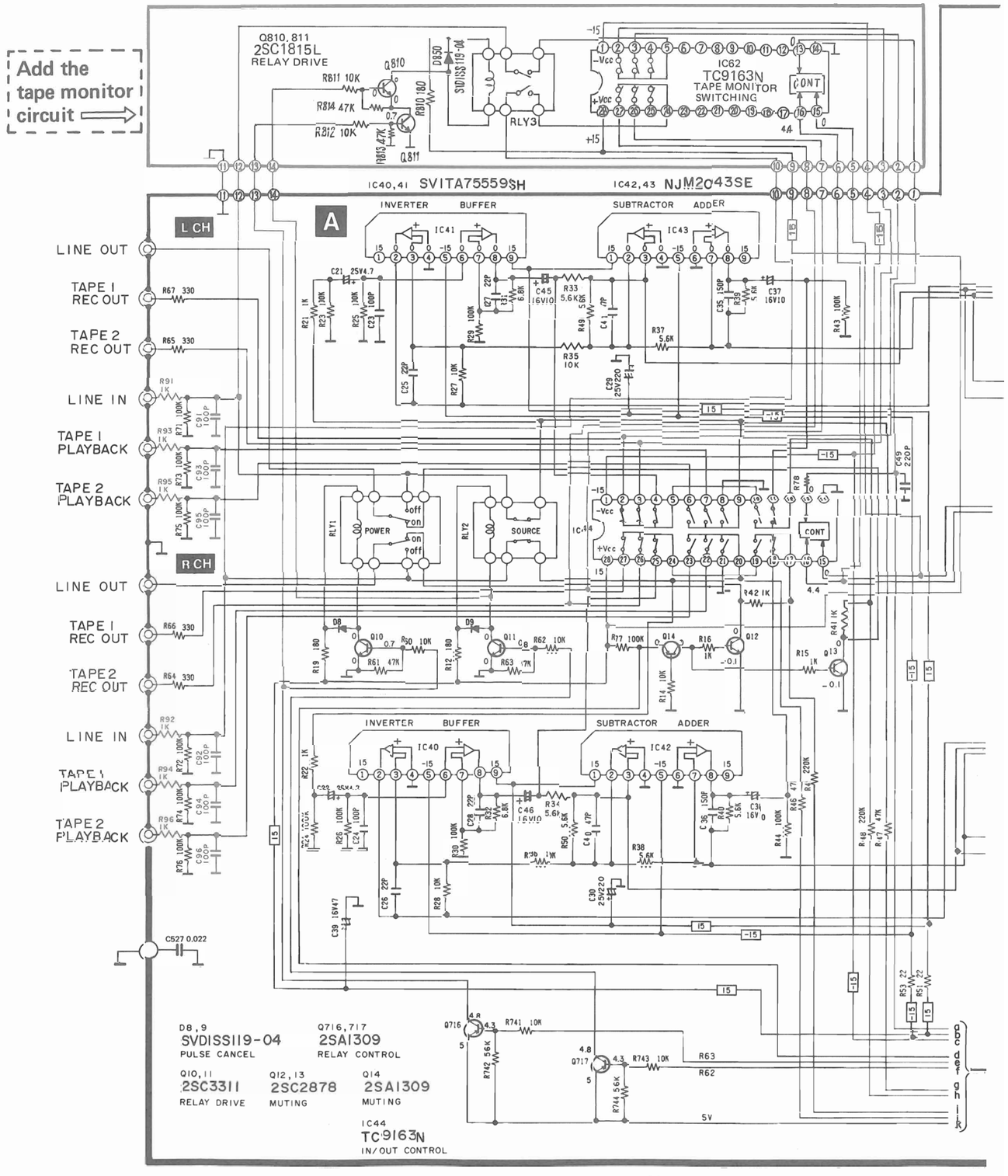
- **Function**
  When "tape 1" or "tape 2" in input selector is pushed, source signal from LINE IN terminal is output to REC OUT terminal in "tape 1" or "tape 2" directly not passing through circuit of graphic equalizer.

- **Block Diagram**
  1. The diagram shows a case that a 3 head tape deck is connected to "tape 1" and a 2 head deck to "tape 2."
  2. Switches (X1 & X2) of IC62 function samely as switches of IC44.
  3. RLY 2(a relay that gets ON only when input selector is at "source") and RLY 3 work inversely one the other, the latter being a relay that gets ON only when input selector is at "tape 1" or "tape 2."
  4. Switches of IC62 and IC44 in the diagram are in the conditions:
     Input selector . . . . . tape 1
     EQ switch . . . . . ON
     EQ rec switch . . . . . OFF

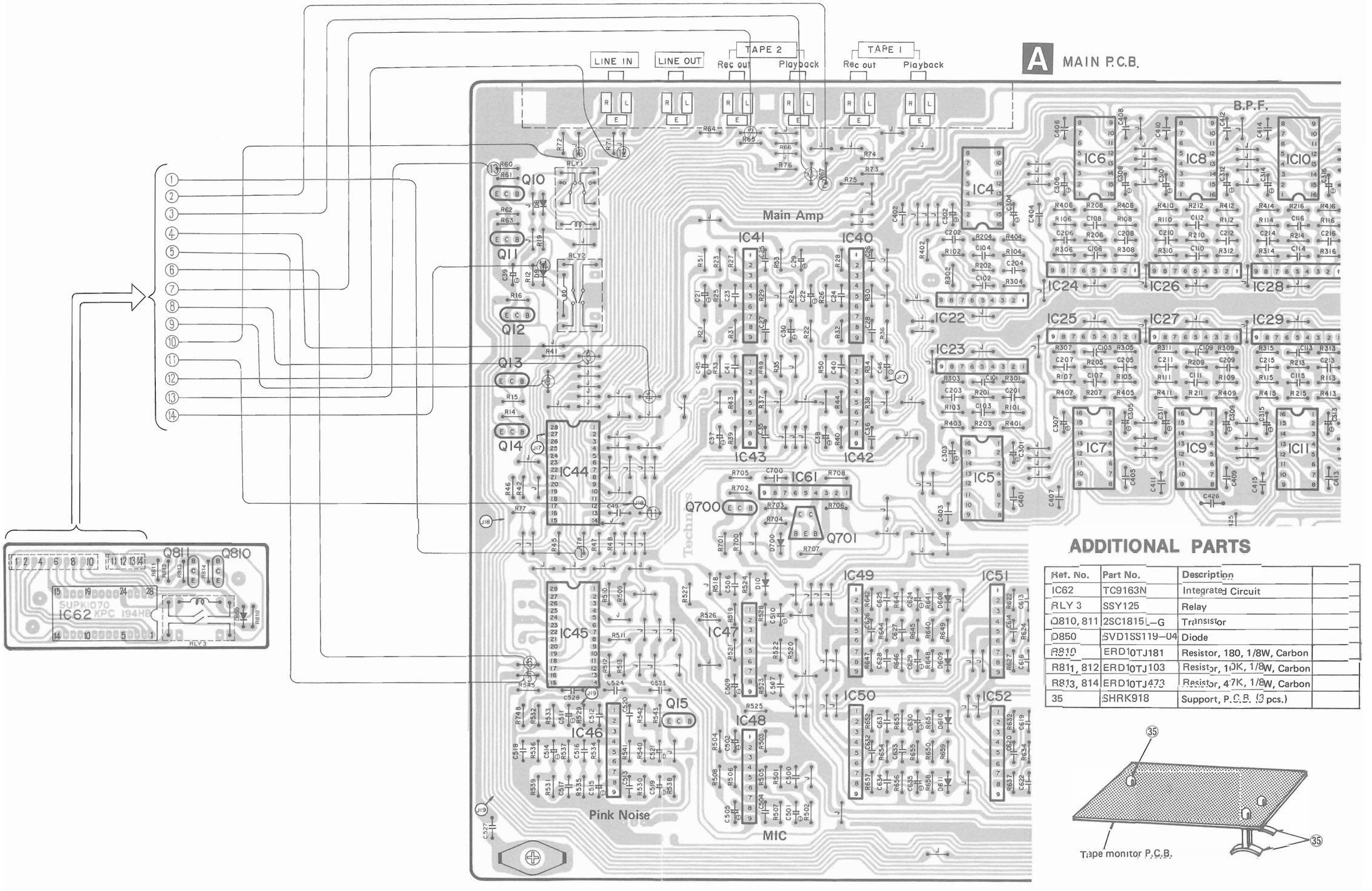
BLOCK DIAGRAM



SCHEMATIC DIAGRAM



■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM



ADDITIONAL PARTS

Ref. No.	Part No.	Description	
IC62	TC9163N	Integrated Circuit	
RLY 3	SSY125	Relay	
Q810, 811	2SC1815L–G	Transistor	
D850	SVD1SS119–04	Diode	
R810	ERD10TJ181	Resistor, 180, 1/8W, Carbon	
R811, 812	ERD10TJ103	Resistor, 10K, 1/8W, Carbon	
R813, 814	ERD10TJ473	Resistor, 47K, 1/8W, Carbon	
35	SHRK918	Support, P.C.B. (3 pcs.)	

Printed in Japan
850512000 ⓀKK