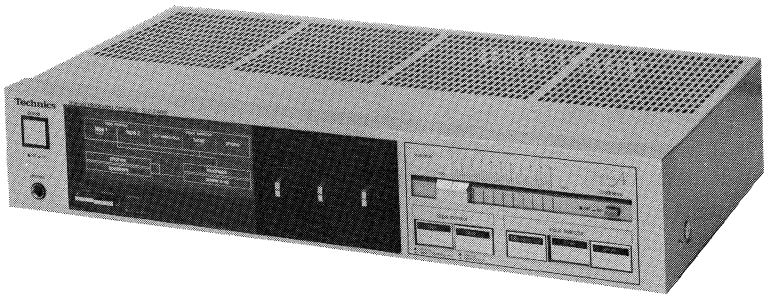
ORDER NO. HAD84062812C8

Service Manual

Amplifier

Stereo Integrated Amplifier

SU-Z400



Color

(K) . . . . Black Type
(S) . . . . Silver Type

Color	Areas
(K)(S)	[E] . . . . . Switzerland and Scandinavia.
(K)(S)	[EF] . . . . France
(K)(S)	[Ei] . . . . . Italy
(K)(S)	[EK] . . . . United Kingdom
(K)(S)	[EH] . . . . Holland
(K)(S)	[EGA] . . . F.R. Germany
(K)(S)	[EB] . . . . Belgium
(K)(S)	[XL] . . . . . Australia
(K)(S)	[XA] . . . . Asia, Latin America, Africa, Middle Near East and Oceania
(K)	[PC] . . . . European Audio Club

SPECIFICATIONS

(DIN 45 500)

■ AMPLIFIER SECTION

1 kHz continuous power output
both channels driven 2 × 60W (8Ω)
40 Hz~20 kHz continuous power output
both channels driven 2 × 50W (8Ω)
Total harmonic distortion
rated power at 40 Hz~20 kHz 0.02% (8Ω)
half power at 1 kHz 0.003% (8Ω)
half power at 40 Hz~20 kHz 0.01% (8Ω)
−26 dB power at 1 kHz 0.007% (8Ω)
50 mW power at 1 kHz 0.007% (8Ω)
Intermodulation distortion
rated power at 250 Hz: 8 kHz=4:1, 8Ω 0.02%
rated power at 60 Hz: 7 kHz=4:1, SMPTE, 8Ω 0.02%
Power bandwidth
both channels driven, −3 dB 10 Hz~25 kHz (8Ω, 0.02%)
Residual hum and noise 0.8 mV
Damping factor 40 (8Ω)
Input sensitivity and impedance
PHONO 2.5 mV/47kΩ
TUNER, CD/VIDEO/AUX, TAPE 1, 2/EXT 150 mV/22kΩ
PHONO maximum input voltage (1 kHz, RMS) 150 mV
Channel balance, CD/VIDEO/AUX 250 Hz~6,300 Hz ±1 dB
Channel separation, CD/VIDEO/AUX 1 kHz 50 dB
Headphones output level and impedance 490 mV/330Ω
Load impedance
MAIN or REMOTE 4Ω~16Ω
MAIN and REMOTE 8Ω~16Ω
Frequency response
PHONO RIAA standard curve ±0.8 dB (30 Hz~15 kHz)
TUNER, CD/VIDEO/AUX, TAPE 1, 2/EXT 10 Hz~80 kHz (−3 dB)
S/N
rated power (8Ω)
PHONO 75 dB (IHF, A: 81 dB)
TUNER, CD/VIDEO/AUX, TAPE 1, 2/EXT 86 dB (IHF, A: 97 dB)
−26 dB power (8Ω)
PHONO 65 dB
TUNER, CD/VIDEO/AUX, TAPE 1, 2/EXT 65 dB
50 mW power (8Ω)
PHONO 63 dB
TUNER, CD/VIDEO/AUX, TAPE 1, 2/EXT 64 dB
Tone controls
BASS 50 Hz, +10 dB~ − 10 dB
TREBLE 20 kHz, +10 dB~ −10 dB
Loudness control (volume at −30 dB) 50 Hz, +9 dB
Output voltage and impedance
REC OUT 150 mV

■ GENERAL

Power consumption 290W
Power supply
For United Kingdom and Australia AC 50 Hz/60 Hz, 240V
For continental Europe AC 50 Hz/60 Hz, 220V
For others AC 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (W×H×D) 430 × 86 × 240 mm (16-15/16" × 3-3/8" × 9-7/16")
Weight 5.1 kg (11.3 lb.)

Note:
Total harmonic distortion is measured by the digital spectrum analyzer (H.P. 3045 system).

(Specifications are subject to change without notice for further improvement.)

Technics

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

■ CONTENTS

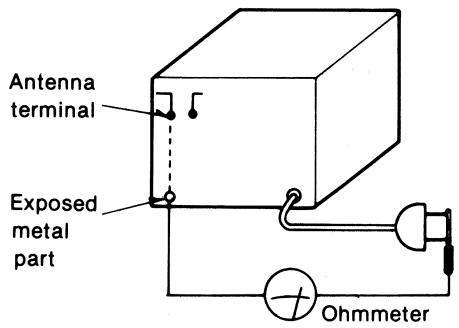
■ SAFETY PRECAUTION

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

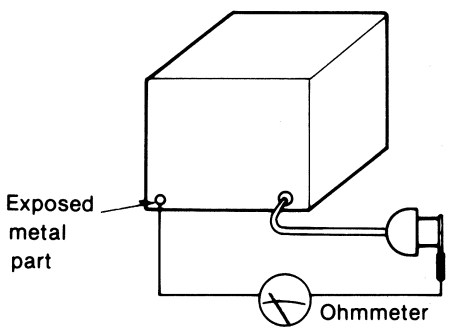
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with 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

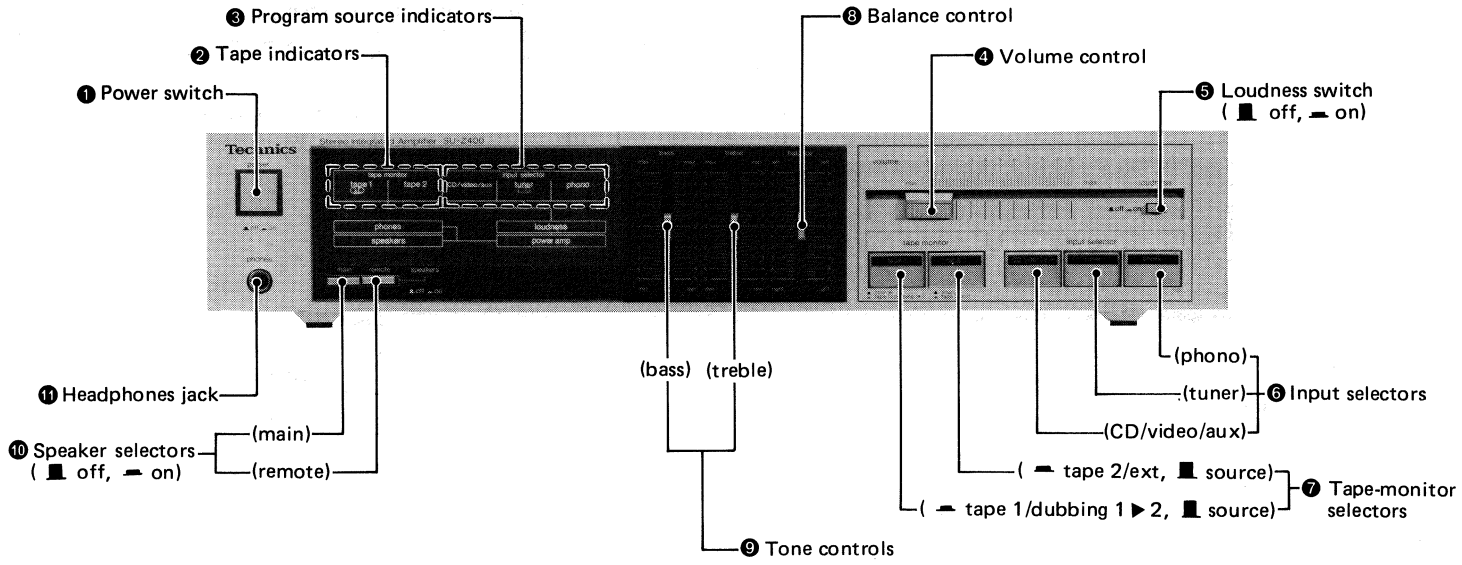


(Fig. B)

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 switch (power)

Be sure to reduce the volume level to the minimum ("0") position before turning on the power.

❷ Tape indicators

Illuminates when the tape monitor selectors ⑦ marked "tape 1" or "tape 2" is pressed.

❸ Program source indicators

Illuminates when the corresponding input selector ⑥ is pressed.

❹ Volume control (volume)

This control is used to adjust the volume level.
Be absolutely sure to set this control to low position ("0→1") when turning the power on. After the power switch is turned on, please wait several seconds before increasing the volume level.

❺ Loudness switch (loudness)

Set to the "on" position when listening to music at low volume. Auditory perception of sound in the low frequency range falls off at low volume, but when the switch is in this position, this deficiency is compensated for, so that the full impact of the musical performance can be enjoyed.

❻ Input selectors (input selector)

These selectors are used to select the sound source to be heard, such as a disc, radio broadcast, etc. The corresponding indicator illuminates during operation to indicate the selected sound source.

CD/video/aux:
Press this button to listen to equipment connected to the auxiliary input terminals ("CD/VIDEO/AUX").

tuner:
Press this button to listen to radio broadcasts.

phono:
Press this button to listen to phono discs.

❼ Tape-monitor selectors (tape monitor)

source(▂—▙):
Set both selectors to this position in order to listen to phono discs, radio broadcasts, or equipment connected to the auxiliary input terminals ("CD/VIDEO/AUX"), and to record to tape deck 1 and/or 2.

tape 1/dubbing 1▶2 (▙→▂):
Set to this position to play back or monitor the sound from tape deck 1 or to record from tape deck 1 to tape deck 2. In this case be sure to set the right selector to the outward position.
The "tape 1" indicator will illuminate in this position.

tape 2/ext (▙→▂):
Set to this position to play back or monitor the sound from tape deck 2, or to use a microphone-mixing amplifier connected to the "TAPE 2/EXT" terminals. The "tape 2/ext" indicator will illuminate in this position.

Note:
If both tape-monitor selectors are depressed at the same time, only the sound from tape deck 2 will be heard.

❽ Balance control (balance)

While listening to an AM broadcast or a monaural FM broadcast, balance the sound so that it seems to be heard from the center, between the speakers.

❾ Tone controls (bass/treble)

The bass control is for the low-frequency sound range, and the treble control is for the high-frequency sound range.

❿ Speaker selectors (speakers)

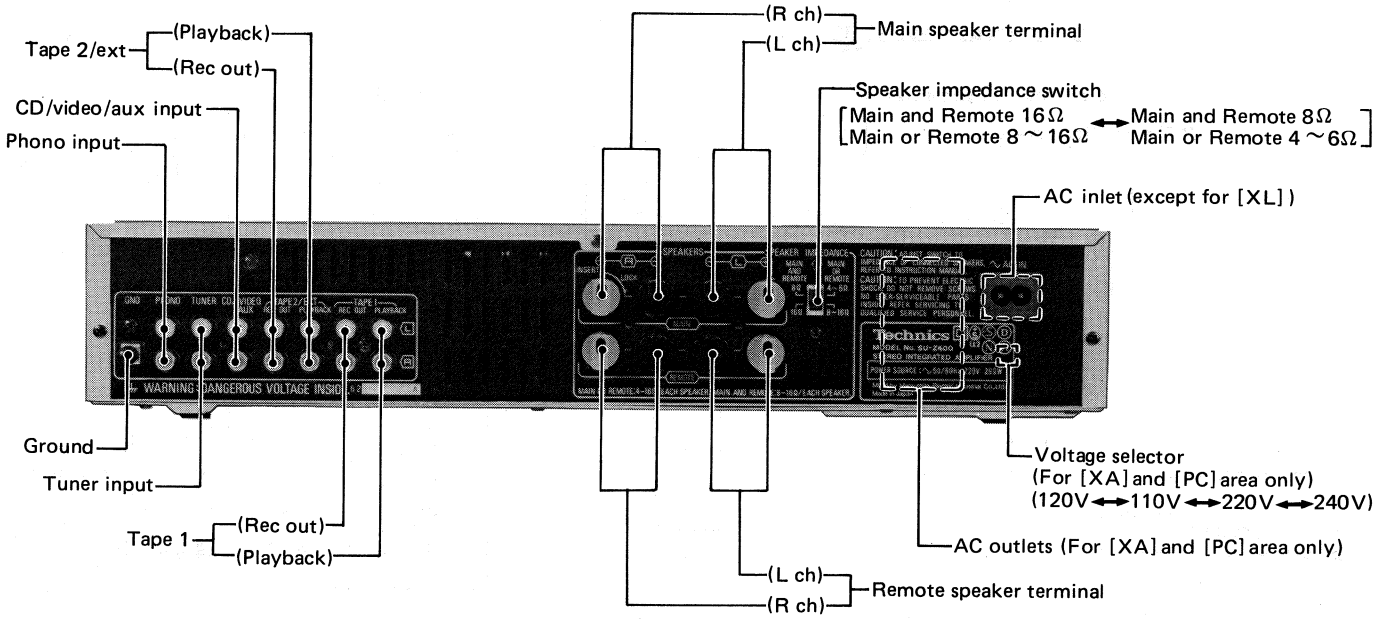
main (▙—▂):
Sound can be heard from the speakers connected to the "MAIN" terminals.

remote (▙—▂):
Sound can be heard from the speakers connected to the "REMOTE" terminals.

Note:
Before use, set the speaker impedance selector (on the rear panel) to the correct impedance corresponding to that of the speaker systems being used.

⓫ Headphones jack (phones)

Be sure to set the volume level to the minimum ("0") position before connecting the headphones.



- The power supply for this unit varies depending upon the areas. Also, the parts used for power supply are different. So, refer to the circuit diagram and the replacement parts list.

* 220V (50/60Hz) for continental Europe. (Except for United Kingdom)
* 240V (50/60Hz) for Australia and United Kingdom.
* 110V/120V/220V/240V (50/60Hz) for other areas. (For other areas [XA and PC] are provided with voltage selector and AC outlets)
* Phono input capacitance is about 150pF.

■ PROTECTION CIRCUITRY

The protection circuitry may have operated if either of the following conditions is noticed:
- No sound is heard when the power is turned on.
- Sound stops during a performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted", or if speaker systems with an impedance less than the indicated rated impedance of this unit are used.

If this occurs, follow the procedure outlines below:
1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again after one minute.

Note
When the protection circuitry functions, the unit will not operate unless the power is first turned off and then on again.

■ BEFORE REPAIR AND ADJUSTMENT

1. Turn off the power, Discharge both power supply capacitors (C904, C905, 6800μF) through a 10 ohm, 5W resistor to ground. Do not short between C904 and C905. It may damage the capacitors.
2. After completion of repair, slowly apply the primary voltage by using a variac to avoid over current. Current consumption at 60Hz/50Hz in no signal mode should by shown below with respect to supply voltage 110V/120V/ 220V/ 240V.

Power supply voltage		AC110V	AC120V	AC220V	AC240V
Consumed current	50Hz	290 ~580mA	265 ~530mA	145 ~285mA	115 ~ 225mA [EK, XL] 135 ~ 265mA [other]
	60Hz	232 ~464mA	212 ~424mA	116 ~228mA	105 ~ 205mA [EK, XL] 108 ~ 212mA [other]

■ SELECTING THE CORRECT SPEAKER IMPEDANCE

1. When one pair of speaker systems is being used, connected to the MAIN or REMOTE terminals, set the speaker impedance selector to the range, "4~6Ω" or "8~16Ω", which matches the impedance of the speaker systems being used.
2. When two pairs of speaker systems are being used, connected to the MAIN and REMOTE terminals:
   1) If the impedance of both systems is 16 ohms, set the speaker impedance selector to "16Ω".
   2) If the impedance of both systems is 8 ohms, or one is 8 ohms and the other is 16 ohms, set the speaker impedance selector to "8Ω".

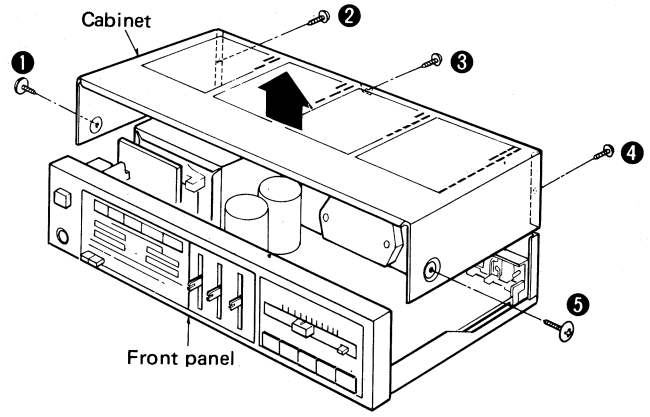
Note that, if 2 pairs of speaker systems are used at the same time, determine the composite impedance as described below.

$$R = \frac{R_1 \times R_2}{R_1 + R_2}$$

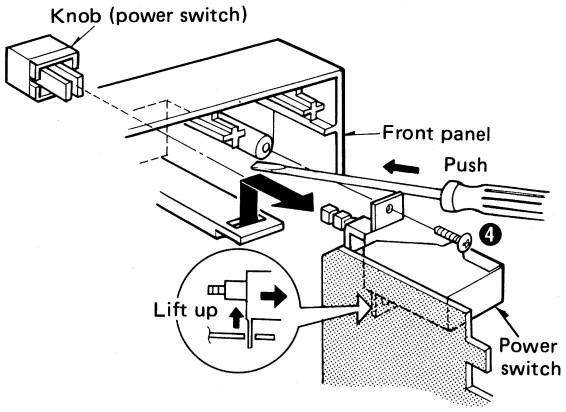
Where:
R = total impedance
R_1 = impedance of speaker systems connected to "MAIN" terminals
R_2 = impedance of speaker systems connected to "REMOTE" terminals

■ DISASSEMBLY INSTRUCTIONS

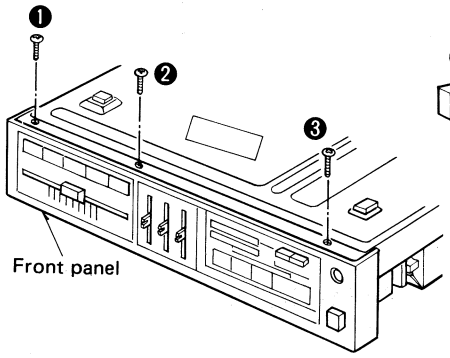
Ref. No. 1	How to remove the cabinet
Procedure 1	● Remove the 5 setscrews.

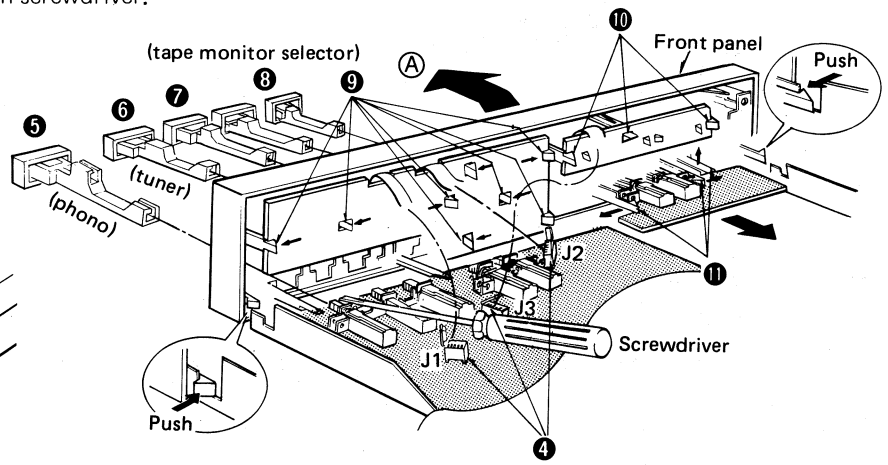


Ref. No. 2	How to remove the power switch
Procedure 1 → 2	● Remove the 1 setscrew. ● Remove the power switch knob with a screwdriver.

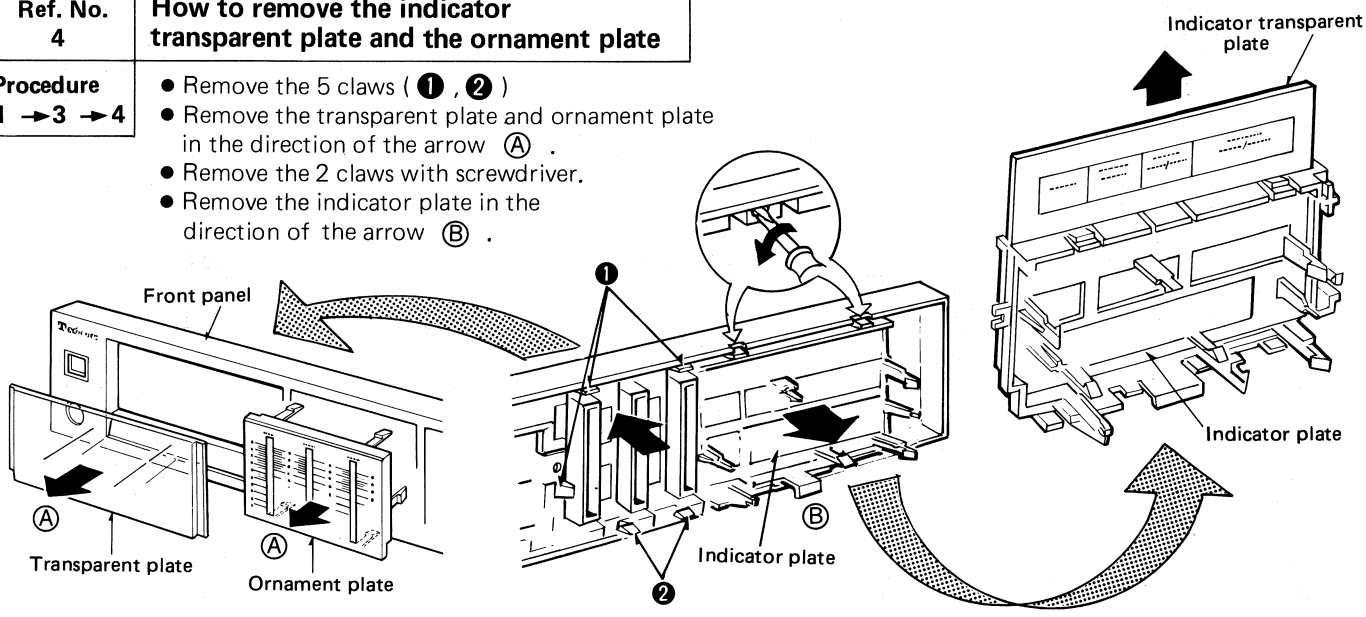


Ref. No. 3	How to remove the front panel
Procedure 1 → 3	● Remove the 3 setscrews. ● Pull out the 3 connectors. (J1, J2, J3) ● Push out the 5 knobs with screwdriver. ● Remove the 16 claws. (❾ ~ ⓫) ● Remove the front panel in the direction of the arrow Ⓐ .





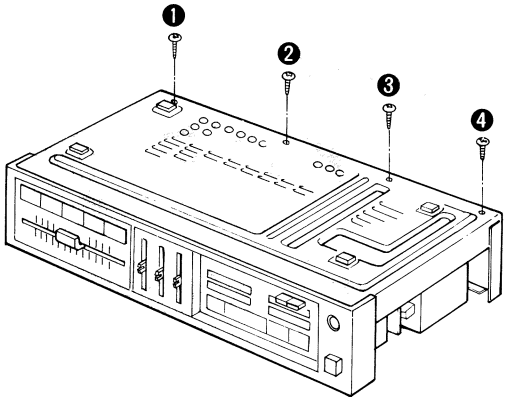
Ref. No. 4	How to remove the indicator transparent plate and the ornament plate
Procedure 1 → 3 → 4	● Remove the 5 claws (❶ , ❷) ● Remove the transparent plate and ornament plate in the direction of the arrow Ⓐ . ● Remove the 2 claws with screwdriver. ● Remove the indicator plate in the direction of the arrow Ⓑ .

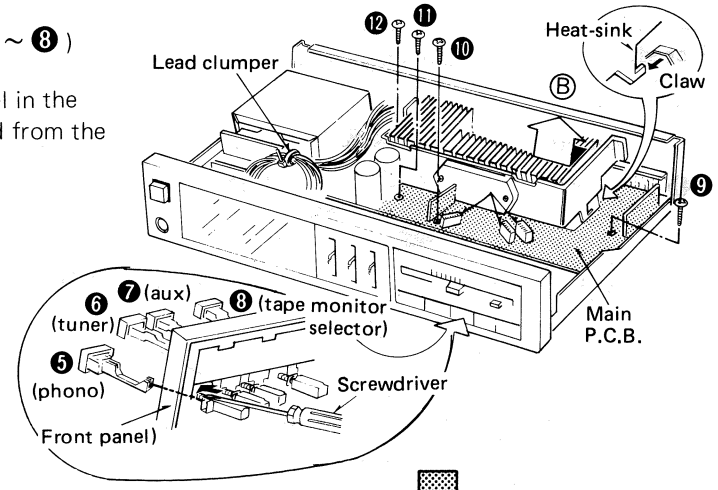


Ref. No. 5	How to remove the power IC

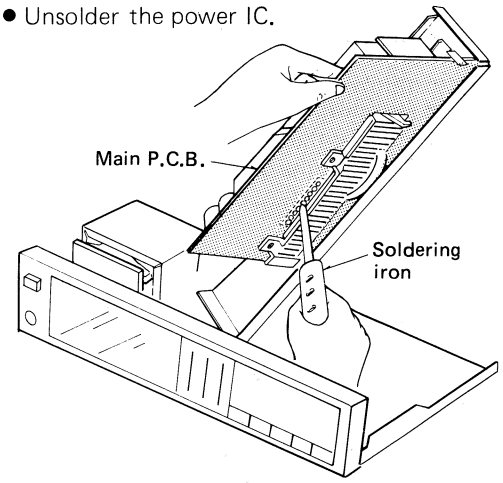
Procedure 1 → 5

- Remove the 4 setsctrews. (❶ ~ ❹)
- Push out the 5 knobs with screwdriver. (❺ ~ ❽)
- Remove the 4 setscrews. (❾ ~ ⓬)
- Shift the main P.C.B. toward the front panel in the direction of arrow Ⓑ to remove it upward from the chassis.

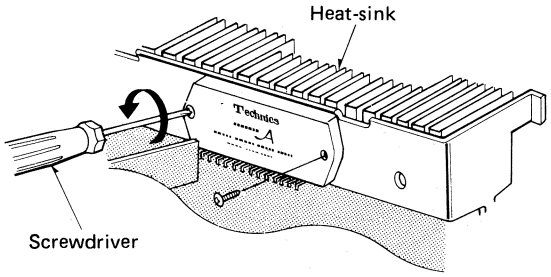




- Unsolder the power IC.

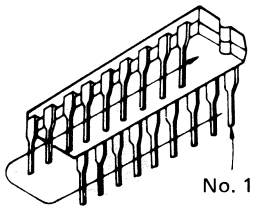


- Remove the 2 setscrews.



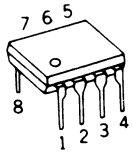
When mounting the power IC, apply silicon compound (SZZ0L15) to the rear side of power IC.

■ TERMINAL GUIDE OF TRANSISTORS, DIODES AND IC'S

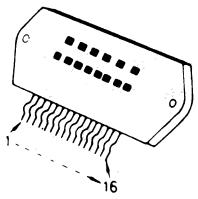


AN7062	18Pin

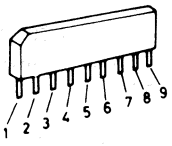
SVINJM2043DD
SVINJM4560DX



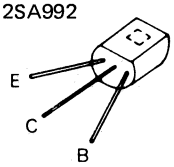
STK2058–4



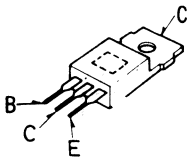
SVITA7317P



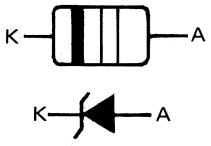
2SB1123, 2SC1815
2SC1845, 2SA1015
2SA992



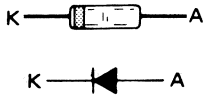
2SB941



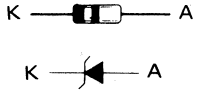
MA4110, MA4150



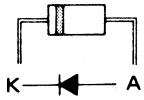
MA165, MA167
MA162



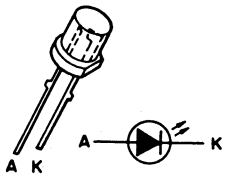
MA2150



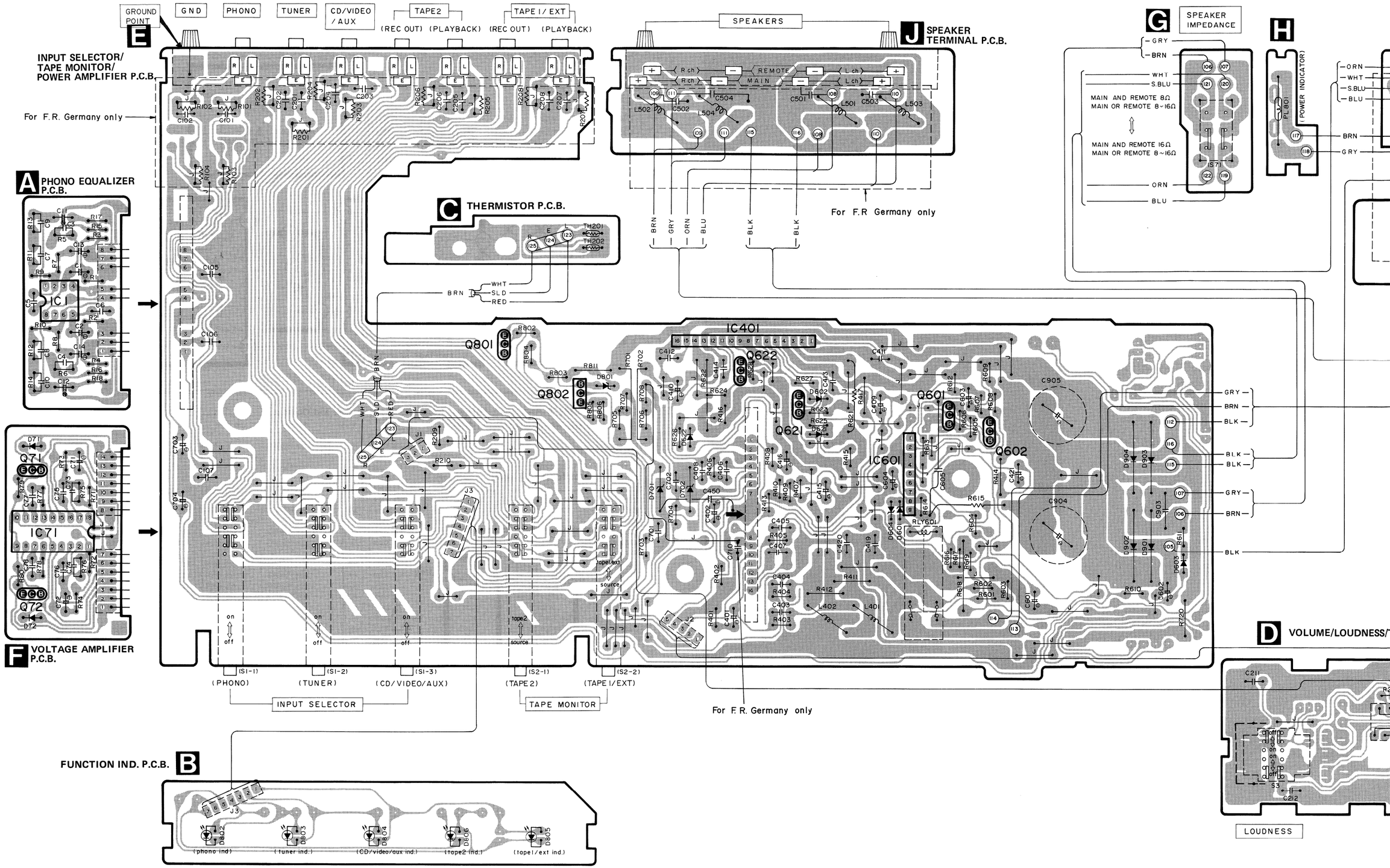
SVDS3V40

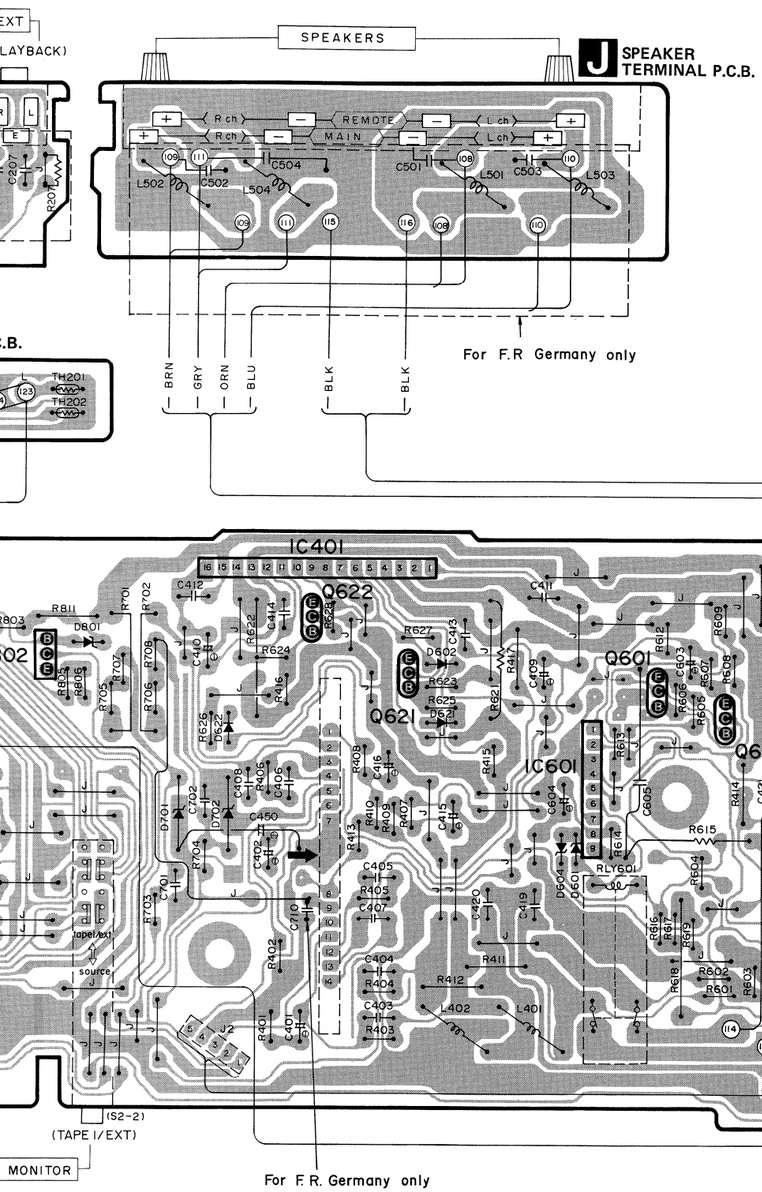


LN240CP,
LN440CPMS



■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM




EXT
LAYBACK)
C807
R207
C.B.
TH201
TH202
SPEAKERS
J SPEAKER TERMINAL P.C.B.
R ch
L ch
REMOTE
MAIN
C501
C502
C503
C504
L501
L502
L503
L504
BRN
GRY
ORN
BLU
BLK
BLK
For F.R Germany only
G SPEAKER IMPEDANCE
GRY
BRN
WHT
S.BLU
MAIN AND REMOTE 8Ω
MAIN OR REMOTE 8~16Ω
MAIN AND REMOTE 16Ω
MAIN OR REMOTE 8~16Ω
ORN
BLU
H
PL801
(POWER INDICATOR)
T901
POWER TRANSFORMER
ORN
WHT
S.BLU
BLU
BRN
GRY
BLK
RED
RED
L AC LINE INLET P.C.B.
AC IN
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BLU
POWER SWITCH P.C.B.
I SPEAKER SELECTOR P.C.B.
BLU
GRY
BRN
ORN
GRY
BRN
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R502
R501
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off
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(S5-1)
(REMOTE)
(MAIN)
SPEAKERS
PHONES
K
BRN
BLU
F1 T 1.25A
C901
(S4)
POWER
IC401
Q622
Q621
Q601
Q602
IC601
C905
C904
RLY601
GRY
BRN
BLK
BLK
BLK
GRY
BRN
BLK
tape1/ext
source
(S2-2)
(TAPE 1/EXT)
MONITOR
For F.R. Germany only
D VOLUME/LOUDNESS/TONE CONTROL P.C.B.
BALANCE
TREBLE
BASS
IC201
VR201
VR201-1
VR201-2
VR202
VR301
VR301-1
VR301-2
VR302
VR302-1
VR302-2
S3
LOUDNESS
VOLUME

■ DESCRIPTION OF MUTING/RELAY DRIVE IC (SVITA7317P)

TECHNICAL GUIDE

Protection circuit (IC601 SVITA7317P)

IC601 serves as both protection and muting circuits.

- Protection of power amplifier transistor against overload.
- DC protection of speakers from being damaged when the set is defective.
- Muting operation until circuit operation is stabilized after power switch turned ON.
- Muting operation to eliminate noise with power switch turned OFF.

1. Protection of power amplifier against overload

(1) If excessive power is penetrated with a load less than the rating connected to speaker terminals or the speaker terminals are short-circuited, a voltage a large current flow then Q621 turns on causeing the base voltage increasing of Q621.

(2) Q621 ON causes the hold circuit of Q602 and Q601 to turn ON, then the voltage at pin (2) of IC601 decreases. The voltage at pin (2) is usually 0V.)

(3) As the voltage at pin (2) of IC601 decreases, the voltage at pin (6) rises as well, and the output relay turns OFF.

NOTE: When the hold circuit is ON, the relay will not be reset even if the normal condition of the circuit is restored. In that case, turn off the power supply and turn it on again.

2. DC protection

(1) If DC is generated at the speaker terminal due to defective circuit, then DC will be applied to IC601 pin (2).

(2) The DC detection circuit of IC601 functions and the voltage at pin (6) rises, then the output relay turns OFF.

3. Muting circuit with power ON

(1) With power turns ON, positive (+) voltage supply to C604 through R615 and R614.

(2) When the voltage across C604 (i.e. voltage at IC601 pin (8)) gradually rises up to about 1.3 V, the voltage at pin (6) drops and then the output relay turns ON.

NOTE: The time required for voltage rise at pin (8) depends upon the time constant of R614 and C604.

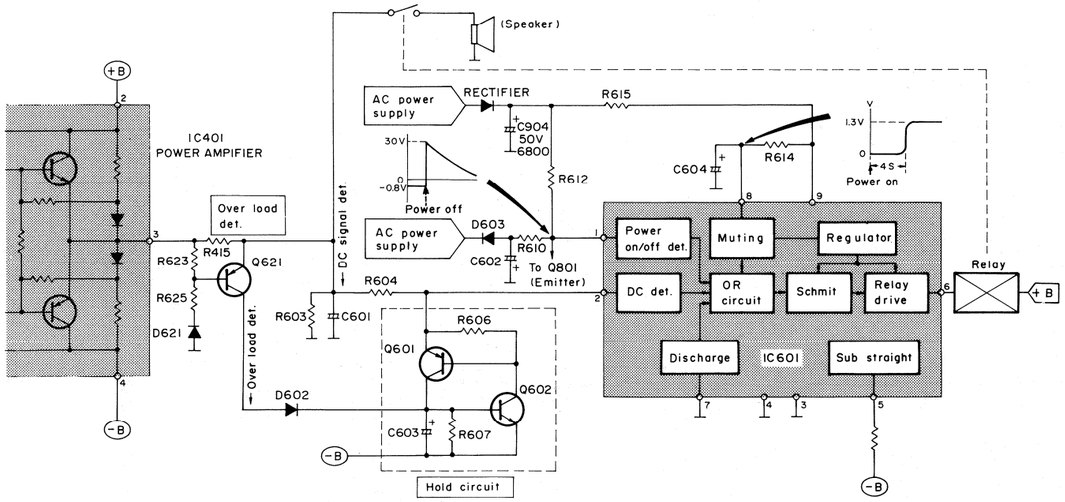
4. Muting circuit with power OFF

(1) Voltages from power supply circuit (C904, R612) of large time constant and from power supply circuit (C602, R610) of small time constant are applied to pin (1) of IC601, which is usually about –0.5V.

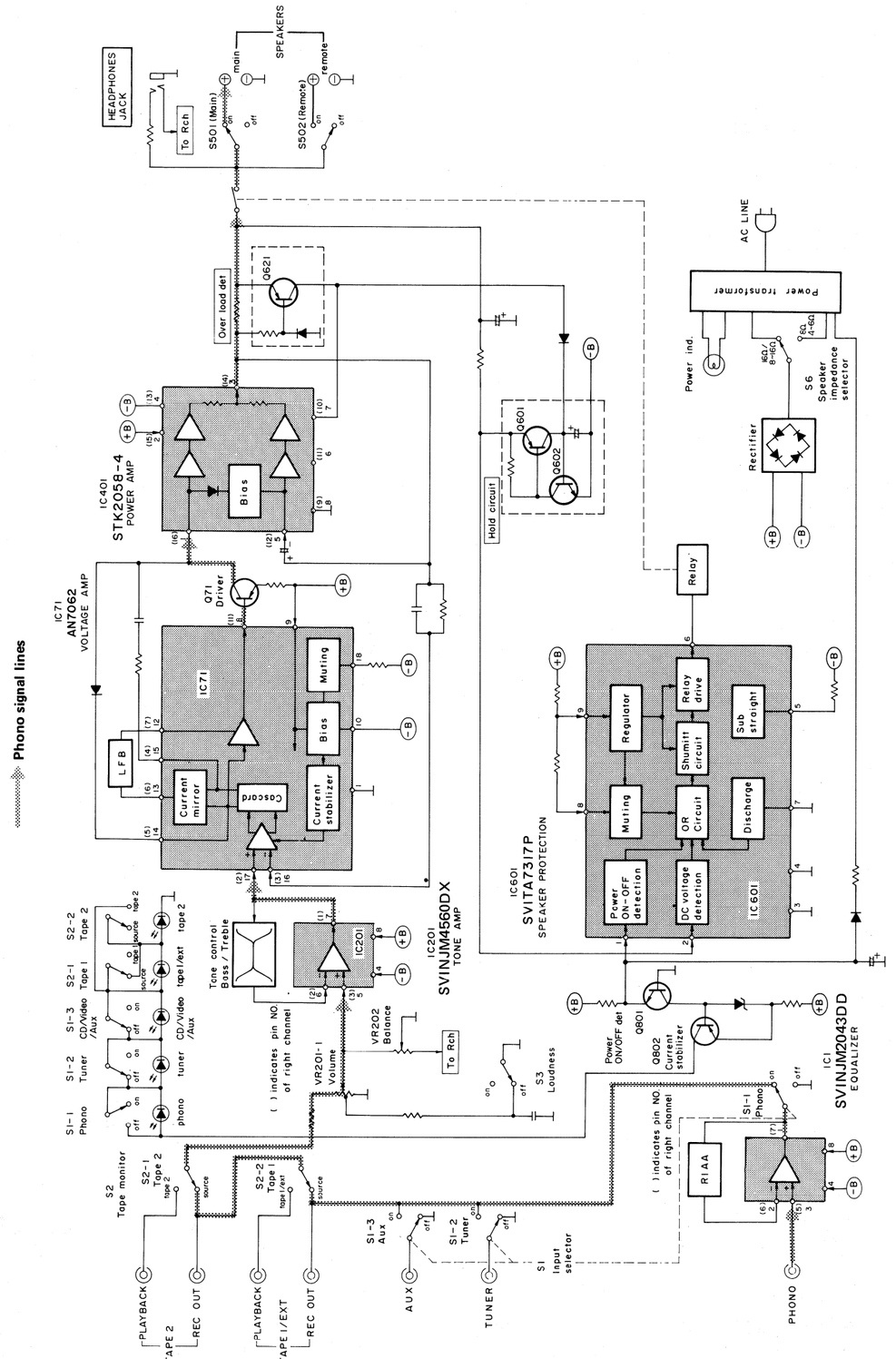
(2) When power turns OFF, the negative (–) voltage of small time constant lowers, but the positive (+) voltage of large time constant will not immediately drop. Accordingly, the voltage at IC601 pin (1) rises.

(3) As the voltage at pin (1) rises, the voltage at pin (6) rises as well, causing the output relay to turn OFF.

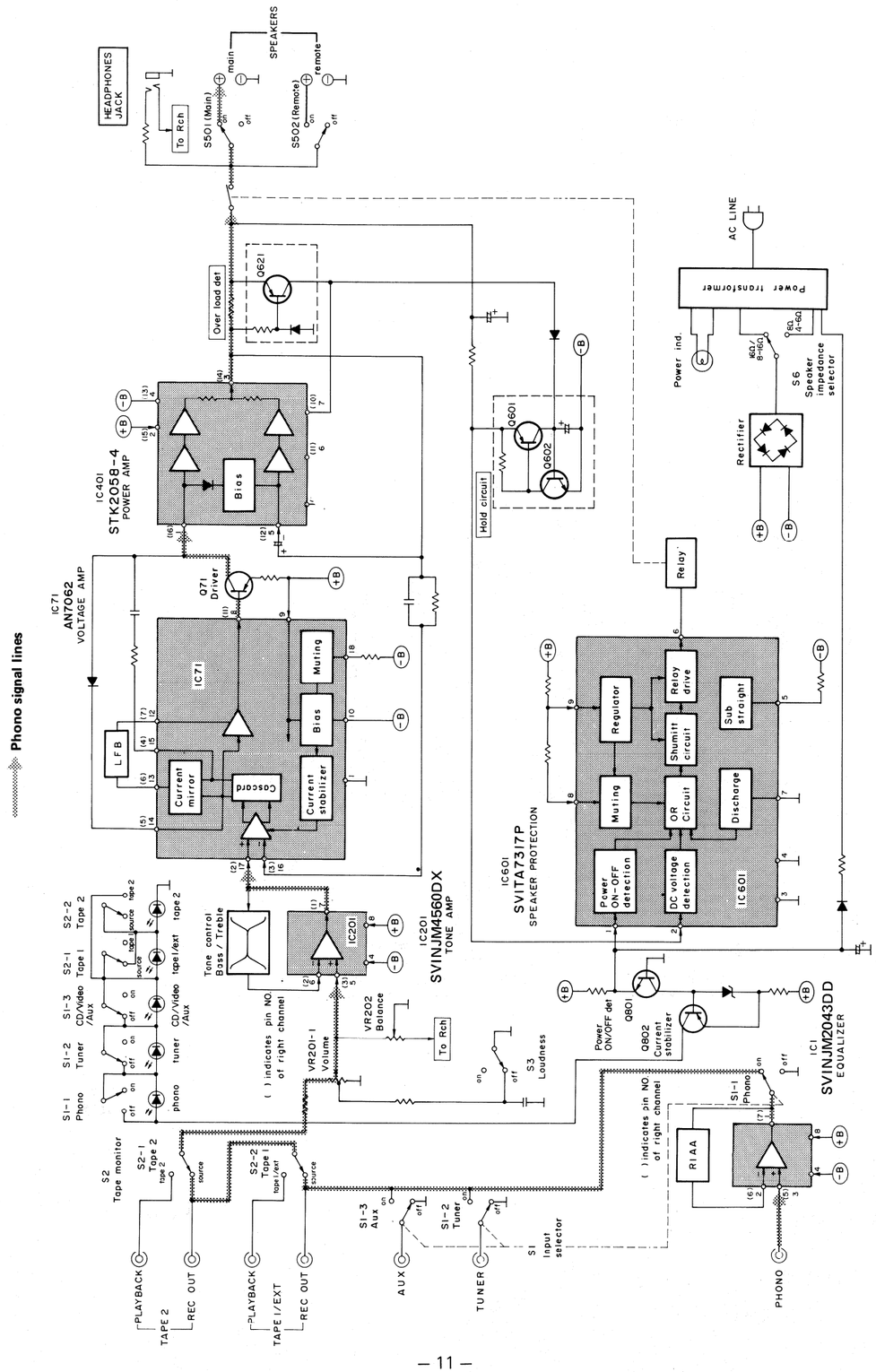
*Relay is immediately turned OFF with power OFF, therefore there is no circuit noise trouble due to voltage drop.



■ BLOCK DIAGRAM

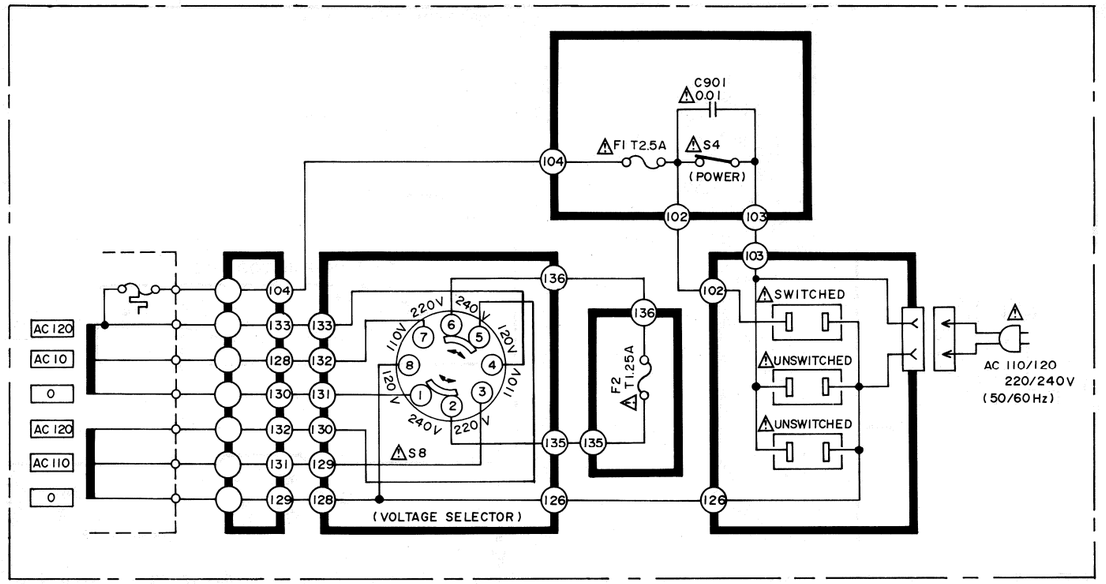


■ BLOCK DIAGRAM



■ CHANGE IN POWER SUPPLY

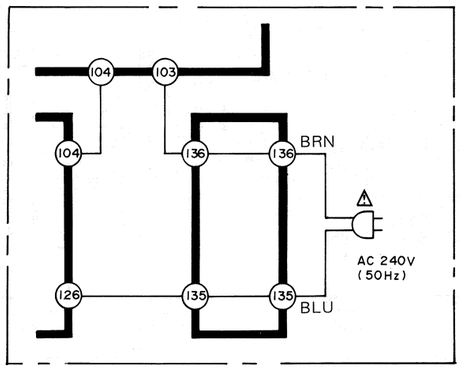
Product for [XA], [PC] areas only



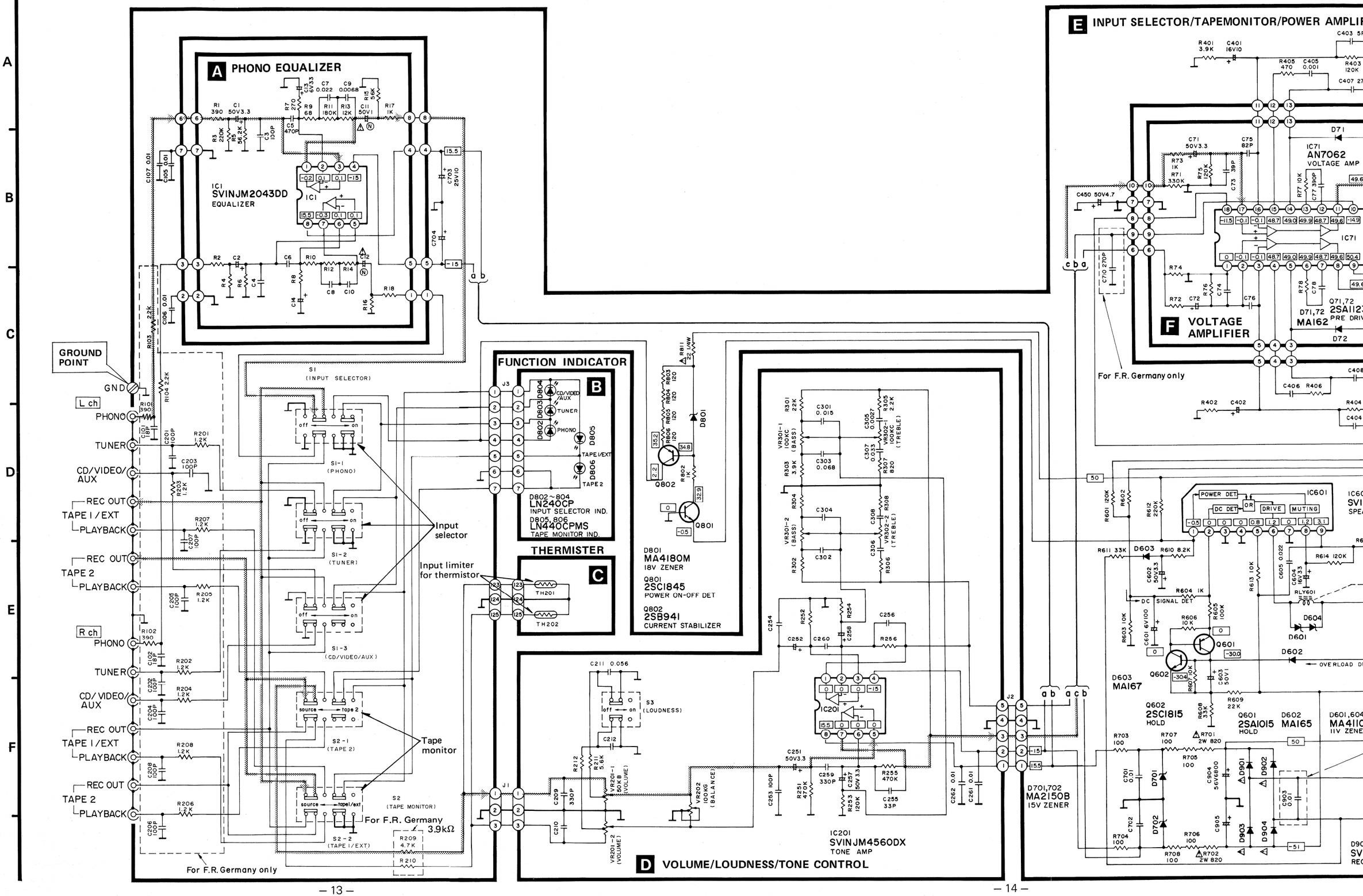
* [XA] is available in Asia, Latin America, Africa, Middle Near East and Oceania.

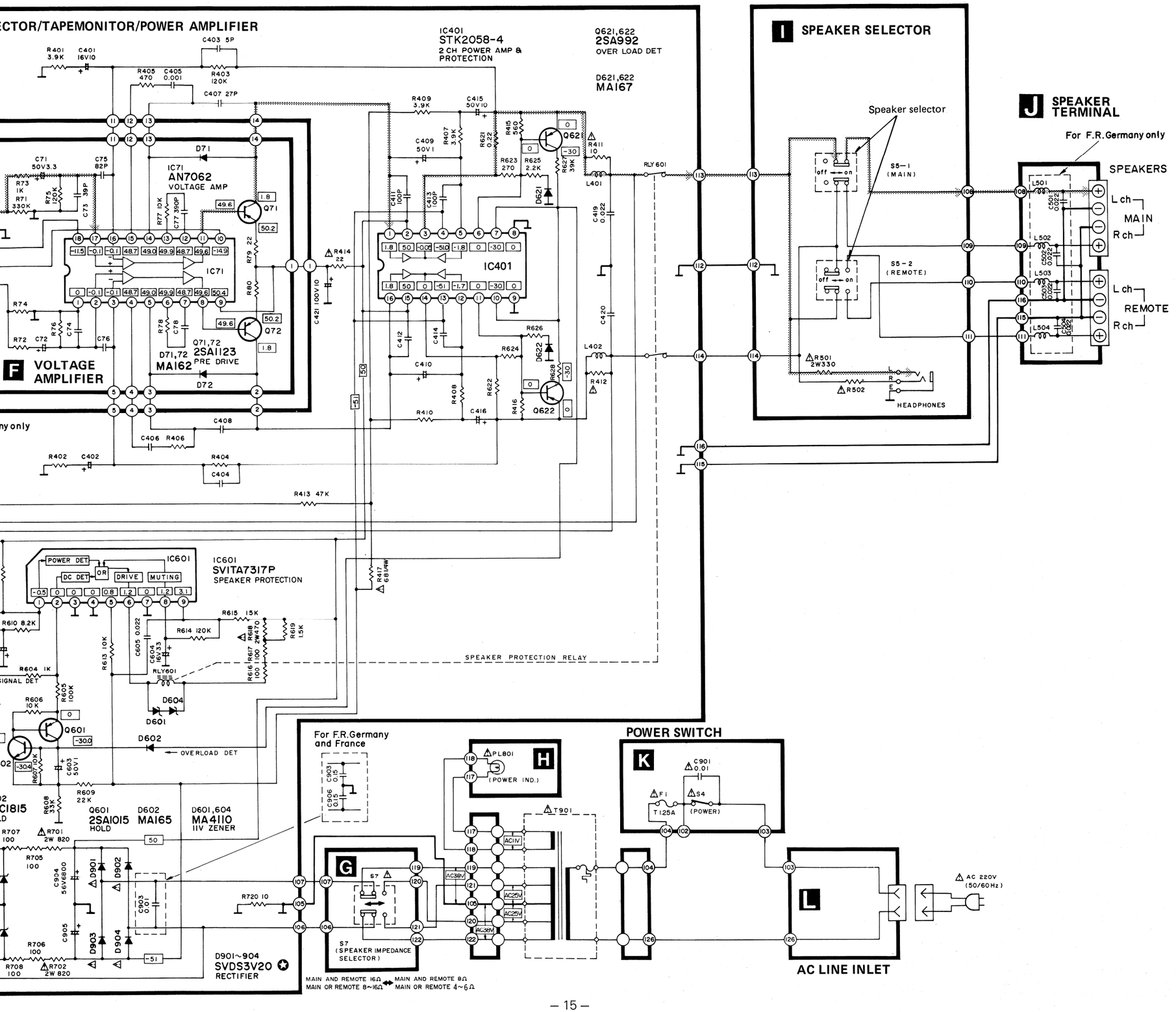
* [PC] is available in European Audio Club.

Product for [XL] only



* [XL] is available in Australia.


A PHONO EQUALIZER
IC1 SVINJM2043DD EQUALIZER
B FUNCTION INDICATOR
D802~804 LN240CP INPUT SELECTOR IND.
D805,806 LN440CPMS TAPE MONITOR IND.
THERMISTER
C
TH201
TH202
D801 MA4180M 18V ZENER
Q801 2SC1845 POWER ON-OFF DET
Q802 2SB941 CURRENT STABILIZER
E INPUT SELECTOR/TAPEMONITOR/POWER AMPLIF
F VOLTAGE AMPLIFIER
IC71 AN7062 VOLTAGE AMP
D71,72 2SA1123 PRE DRIV
D71,72 MA162
For F.R. Germany only
GROUND POINT
GND
L ch
PHONO
TUNER
CD/VIDEO/ AUX
REC OUT
TAPE I/EXT PLAYBACK
REC OUT
TAPE 2 PLAYBACK
R ch
PHONO
TUNER
CD/VIDEO/ AUX
REC OUT
TAPE I/EXT PLAYBACK
REC OUT
TAPE 2 PLAYBACK
S1 (INPUT SELECTOR)
S1-1 (PHONO)
S1-2 (TUNER)
S1-3 (CD/VIDEO/AUX)
S2-1 (TAPE 2)
S2-2 (TAPE I/EXT)
S2 (TAPE MONITOR)
S3 (LOUDNESS)
Input selector
Input limiter for thermistor
Tape monitor
For F.R. Germany 3.9kΩ
For F.R. Germany only
D VOLUME/LOUDNESS/TONE CONTROL
IC201 SVINJM4560DX TONE AMP
D701,702 MA2150B 15V ZENER
IC601 SVI SPEA
D603 MA167
Q602 2SC1815 HOLD
Q601 2SA1015 HOLD
D602 MA165
D601,604 MA411C 11V ZENE
OVERLOAD DI



■ SCHEMATIC DIAGRAM

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

*** The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. with ✪ mark, the production part No. are different from the replacement part No. Therefore, when placing an order for replacement part please use the part No. in the replacement part list.**

Note:

1. **S1-1 ~ S1-3** : Input selector switch in **"phono"** position.
   S1-1: phono S1-2: tuner S1-3: CD/video/aux
2. **S2-1 ~ S2-2** : Tape moniter switch in **"source"** position.
   S2-1: tape 2 (source ↔ tape 2)
   S2-2: tape 1 /ext (source ↔ tape 1/ext)
3. **S3** : Loudness switch in **"off"** position.
   (off ↔ on)
4. **S4** : Power switch in **"on"** position.
5. **S5-1 ~ S5-2** : Speaker selector switch in **"main"** position.
   S5-1: main (off ↔ on)
   S5-2: remote (off ↔ on)
6. **S7** : Speaker impedance selector switch in **"16Ω /8 ~ 16Ω"** position.
   [Main and Remote 16Ω / Main or Remote 8 ~ 16Ω ↔ Main and Remote 8Ω / Main or Remote 4 ~ 6Ω]
7. **S8 [XA, PC] only:** Voltage selector switch in **"240V"** position.
   120V ⟷ 110V ⟷ 220V ⟷ 240V
8. This is the basic circuit diagram (For continental Europe) of this unit.
   Note that part of the circuit is subject to change depending on the areas.
9. 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.
10. ▭ Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
11. ⟿ Phono signal (Lch)
12. ——— Positive (+B) voltage lines or Negative (—B) voltage lines.

■ RESISTORS & CAPACITORS

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. 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
ERG	2	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value

Resistor Type	Wattage	Tolerance
ERD : Carbon	10 : 1/8W	J : ± 5%
ERG : Metal Oxide	S2 : 1/4W	G : ± 2%
ERO : Metal Film	25 : 1/4W	
ERX : Metal Film	2 : 2W	

ERD10TLJ□□□ → Chip type carbon.
ERO10MKG□□□ → Chip type metal film.

Numbering System of Capacitor

Example

ECKD	1H	103	Z	F
Type	Voltage	Value	Tolerance	Peculiarity

ECEA	50	M	R47	R
Type	Voltage	Peculiarity use	Value	Special use

Capacitor Type	Voltage		Tolerance
	ECEA Type	Others	
ECEA : Electrolytic	0J : 6.3V	1H : 50V DC	C : ± 0.25pF
ECEA...N : Non Polar Electrolytic	1C : 16V	KC : 400V AC	K : ± 10%
ECCD : Ceramic	1E : 25V	56 : 56V DC	Z : + 80%, −20%
ECKD : Ceramic	1H : 50V		P : +100%, −0%
ECQM : Polyester	2A : 100V		
ECQE : Polyester			

● RESISTORS

Ref. No.	Part No.	Value
R1,2	ERD10TLJ391U	390
R3,4	ERD10TLJ224U	220K
R5,6	ER010MKG5622	56.2K
R7,8	ERD10TLJ271U	270
R9,10	ERD10TLJ680U	68
R11,12	ERD10TLJ184U	180K
R13,14	ERD10TLJ123U	12K
R15,16	ERD10TLJ563U	56K
R17,18	ERD10TLJ102U	1K
R71,72	ERD10TLJ334U	330K
R73,74	ERD10TLJ102U	1K
R75,76	ERD10TLJ124U	120K
R77,78	ERD10TLJ103U	10K
R79,80	ERD10TLJ220U	22
R101,102 (EGA)only	ERDS2TJ391	390
R103,104 (EGA)only	ERDS2TJ222	2.2K
R201,202 (EGA)only	ERDS2TJ122	1.2K
R203,204 (EGA)only	ERDS2TJ122	1.2K
R205,206 (EGA)only	ERDS2TJ122	1.2K
R207,208 (EGA)only	ERDS2TJ122	1.2K
R209,210 (EGA)only	ERDS2TJ392	3.9K
R209,210	ERDS2TJ472	4.7K
R211,212	ERDS2TJ562	5.6K
R251,252	ERDS2TJ474	470K
R253,254	ERDS2TJ124	120K
R255,256	ERDS2TJ474	470K
R301,302	ERDS2TJ223	22K
R303,304	ERDS2TJ392	3.9K
R305,306	ERDS2TJ222	2.2K
R307,308	ERDS2TJ821	820
R401,402	ERDS2TJ392	3.9K
R403,404	ERDS2TJ124	120K
R405,406	ERDS2TJ821	820
R407,408	ERDS2TJ392	3.9K
R409,410	ERDS2TJ392	3.9K
R411,412 Ⓢ⚠	ERD25FJ100	10
R413	ERDS2TJ473	47K
R414 Ⓢ⚠	ERD25FJ220	22
R415,416	ERDS2TJ561	560
R417 Ⓢ⚠	ERD25FJ680	68
R501,502 ⚠	ERG2ANJ331	330
R601	ERDS2TJ124	120K
R602	ERDS2TJ104	100K
R603	ERDS2TJ103	10K
R604	ERDS2TJ102	1K
R605	ERDS2TJ104	100K
R606,607	ERDS2TJ103	10K
R608	ERDS2TJ333	33K
R609	ERDS2TJ223	22K
R610	ERDS2TJ822	8.2K
R611	ERDS2TJ333	33K
R612	ERDS2TJ224	220K
R613	ERDS2TJ103	10K
R614	ERDS2TJ124	120K
R615	ERDS2TJ153	15K
R616,617	ERDS2TJ101	100
R618 ⚠	ERG2ANJ471	470
R619	ERDS2TJ152	1.5K
R621,622	ERX2ANJR22	0.22
R623,624	ERDS2TJ271	270
R625,626	ERDS2TJ222	2.2K
R627,628	ERDS2TJ393	39K
R701,702 ⚠	ERG2ANJ821	820
R703,704	ERDS2TJ101	100
R705,706	ERDS2TJ101	100
R707,708	ERDS2TJ101	100
R720 Ⓢ	ERD25FJ100	10
R802	ERDS2TJ103	10K
R803,804	ERDS2TJ121	120
R805,806	ERDS2TJ121	120
R811 Ⓢ⚠	ERD25FJ220	22

● CAPACITORS

Ref. No.	Part No.	Value
C1,2	ECEA1HU3R3	3.3
C3,4 Ⓢ	ECCD1H101K	100P
C5,6 Ⓢ	ECKD1H471KB	470P
C7,8	ECQM1H223JZ	0.022
C9,10	ECQM1H682JZ	0.0068
C11,12 ⚠	ECEA1HN010S	1
C13,14	ECEA0JU330	33
C71,72	ECEA1HU3R3	3.3
C73,74 Ⓢ	ECCD1H390K	39P
C75,76 Ⓢ	ECCD1H820K	82P
C77,78 Ⓢ	ECKD1H391KB	390P
C101,102 (EGA)only Ⓢ	ECCD1H180KC	18P
C105,106 Ⓢ	ECKD1H103ZF	0.01
C107 Ⓢ	ECKD1H103ZF	0.01
C201,202 (EGA)only Ⓢ	ECCD1H101K	100P
C203,204 (EGA)only Ⓢ	ECCD1H101K	100P
C205,206 (EGA)only Ⓢ	ECCD1H101K	100P
C207,208 (EGA)only Ⓢ	ECCD1H101K	100P
C209,210 Ⓢ	ECKD1H331KB	330P
C211,212	ECQM1H563KV	0.056
C251,252	ECEA1HU3R3	3.3
C253,254 Ⓢ	ECCD1H101K	100P
C255,256 Ⓢ	ECCD1H330K	33P
C257,258	ECEA1HU3R3	3.3
C259,260 Ⓢ	ECKD1H331KB	330P
C261,262 Ⓢ	ECKD1H103ZF	0.01
C301,302	ECQM1H153KV	0.015
C303,304	ECQM1H683KV	0.068
C305,306	ECQM1H272JZ	0.0027
C307,308	ECQM1H333KV	0.033
C401,402	ECEA1CU100	10
C403,404 Ⓢ	ECCD1H050CC	5P
C405,406 Ⓢ	ECKD1H102KB	0.001
C407,408 Ⓢ	ECCD1H270K	27P
C409,410	ECEA1HU010	1
C411,412 Ⓢ	ECCD1H101K	100P
C413,414 Ⓢ	ECCD1H10K	100P
C415,416	ECEA1HU100	10
C419,420	ECQM1H223JV	0.022
C421	ECEA2AU100	10
C450 Ⓢ	ECEA50Z4R7	4.7
C501,502 (EGA)only Ⓢ	ECKD1H223ZF	0.022
C503,504 (EGA)only Ⓢ	ECKD1H223ZF	0.022
C601	ECEA0JU101	100
C602	ECEA1H3R3	3.3
C603	ECEA1HU010	1
C604	ECEA1CU330	33
C605 Ⓢ	ECKD1H223ZF	0.022
C701,702 Ⓢ	ECKD1H103ZF	0.01
C703,704	ECEA1EU100	10
C710 [EGA]only Ⓢ	ECKD1H271KB	270P
C901 ⚠	ECKDKC103PF2	0.01
C903 [EGA,EF]only	ECQM1H154KV	0.15
C903 [Other]	ECKD2H103ZF	0.01
C904,905	ECETS56V682U	6800

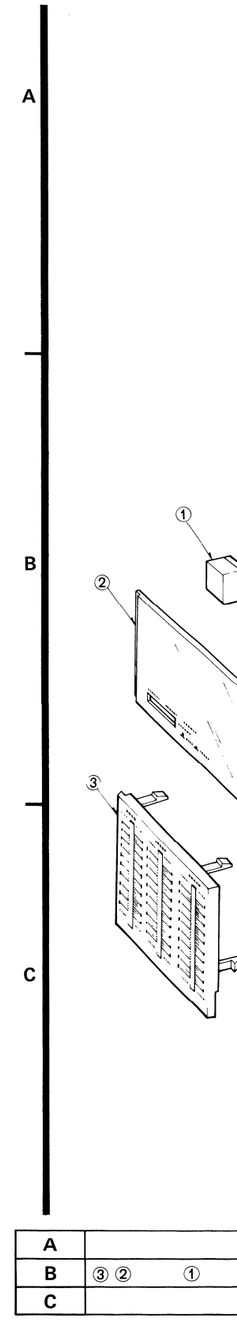
■ REPLACEMENT PARTS LIST

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. The Ⓢ mark is service standard parts and may differ from production parts.
4. The parenthesized numbers in the column of description stand for the quantity per set.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
6. ○—marked parts are used for silver type only. Ⓚ—marked parts are used for black type only.
7. Part other than ○ and Ⓚ—marked are used for both black and silver types.

Ref. No.	Part No.	Part Name & Description
INTEGRATED CIRCUITS		
IC1	SVINJM2043DD	Equalizer
IC71	AN7062	Voltage Amp.
IC201	SVINJM4560DX	Tone Amp.
IC401	STK2058−4	Power Amp.
IC601	SVITA7317P	Speaker Protection
TRANSISTORS		
Q71,72	2SA1123−R	Pre Drive
Q601	2SA1015−Y	Hold
Q602	2SC1815−Y	Hold
Q621,622	2SA992	Over Load Det.
Q801	2SC1845−E	Power ON−OFF Det.
Q802	2SB941−P	Current Stabilizer
DIODES		
D71,72 Ⓢ	MA162A	Switching
D601,604	MA4110	11V, Zener
D602	MA165	Switching
D603,621,622	MA167	Switching
D701,702	MA2150B	15V, Zener
D801	MA4150L	15V, Zener
D802,803,804	LN240CP	L.E.D. Input Selector Ind.
D805,806	LN440CPMS	L.E.D.
D901∼904 Ⓢ⚠	SVDS3V40	Rectifier
COILS		
L401,402	SLQY07G−30	Choke
L501∼504(EGA) only	SLQY07G−30	Choke
TRANSFORMERS		
T901(EK,XL) ⚠	SLT5M408	Power Source
T901(XA,PC) ⚠	SLT5M409	Power Source
T901 ⚠ Other areas	SLT5M407	Power Source
VARIABLE RESISTORS		
VR201	EWAQA8X05B54	Volume, 50kΩ(B)
VR202	EWAPF7X15G15	Balance, 100kΩ(G)
VR301,302	EWAPA9X15C15	Tone Control, 100 kΩ(C)
THERMISTER		
TH201,202	RRT104	
LAMP		
PL801 ⚠	XAMS6Q8C	Power Ind
RELAY		
RLY601	SSY126	Speaker Protection
FUSES		
F1(XA,PC)only ⚠	XBA2C25TRO	250V, T2.5A
F1 ⚠ Other areas	XBA2C12TRO	250V, T1.25A
F2(XA,PC)only ⚠	XBA2C12TRO	250V, T1.25A
SWITCHES		
S1	SSH3074	Input Selector
S2	SSH2084	Tape Monitor
S3	SSH1139	Loudness
S4 ⚠	SSH1071	Power Source
S5	SSH2065	Speaker Selector
S7 ⚠	SSS154	Impedance Selector
S8(XA,PC)only ⚠	ESE37219	Voltage Selector

Ref. No.	Part No.	Part Name & Description
CABINET and CHASSIS PARTS		
1	SBC666	Button, Power Switch (1)
2 ○	SGU419	Transparent Cover (Silver Type) (1)
2 Ⓚ	SGU419−2	Transparent Cover (Black Type) (1)
3 ○	SGX7693	Ornament (1) (Silver Type)
3 Ⓚ	SGX7693−1	Ornament (1) (Black Type)
4	SXB2	Knob, Tone, Balance (3)
5	SHR5276	Spacer (1)
6	SBC662D	Button(Tapel) (1)
7	SBC662E	Button(Tape2) (1)
8	SBC662F	Button(Aux) (1)
9	SBC662G	Button(Tuner) (1)
10	SBC662H	Button(Phono) (1)
11 ○	SGW8251SA	Front Panel (1) (Silver Type)
11 Ⓚ	SGW8251BA	Front Panel (1) (Black Type)
12	SUB199	Connection Rod (5)
13	SUS766	Spring (1)
14	SBC571−4T	Button, Loudness (1)
15	SGXUZ400−SE	Case (1)
16	SBDUZ600−KM	Knob, Volume (1)
17 ○	SGXUZ600−SE1	Ornament, Volume (Silver Type) (1)
17 Ⓚ	SGXUZ600−KM1	Ornament, Volume (Black Type) (1)
18	SGU420−1	Transparent Cover (1)
19	SMP378	Case, L.E.D. (1)
20	SMZ317−1	Reflector Plate (1)
21	SBC315−4T	Button Speaker Selector (2)
22	SJT347	Holder, Fuse (2)
23	SJJ63B	Jack, Headphone(1)
24(XA,PC)only	SKUUZ400−SX	Bottom Board (1)
24 Other areas	SKUUZ400−SE	Bottom Board (1)
24−1	SKL293	Foot (4)
25	SJF3059N	Terminal Board (1)
26	SJF4815−2	Terminal Board Speaker (1)
27(XA,PC)only	SMN1923	Bracket, P.C.B. (1)
28(XA,PC)only	SJT347	Holder, Fuse (2)
29(XA,PC)only ⚠	SJS9328B	Socket, AC Outlet (1)
30(XL)except ⚠	SJS9231B	Socket, AC Inlet (1)
31(EK)only ○	SKCUZ400−SK	Cabinet (1) (Silver Type)
31 ○ Other areas	SKC1550S1	Cabinet (1) (Silver Type)
31(EK)only Ⓚ	SKCUZ400−KK	Cabinet (1) (Black Type)
31 Ⓚ Other areas	SKC1550BB1	Cabinet (1) (Black Type)
32(XL)except	SJS9231A	Cover, AC Inlet Socket (1)
33(XA,PC)only	SJS9328A	Cover, AC Outlet (1)
34(XL)only	SMX857	Insulation Plate (1)
34 Other areas	SMX844−1	Insulation Plate (1)
35(E)	SGP6260A	Rear Panel (1)
35(EGA)	SGP6260B	Rear Panel (1)
35(EK)	SGP6260C	Rear Panel (1)
35(XL)	SGP6260−3A	Rear Panel (1)
35(XA,PC)	SGP6260−1A	Rear Panel (1)
35 Other areas	SGPUZ400−SF	Rear Panel (1)
36(XL)only	SHR127	Bushing, AC Cord (1)
37(XL)only ⚠	SJAG23	AC Cord (1)
38	SJS5327	Socket(3pin) (1)
38	SJS5519	Socket(5pin) (1)
39	SHR301	Clamper (2)
SCREWS		
N1	XTB3+8GFZ	Tapping, ⊕3×8 (3)
N2	XTB3+8G	Tapping, ⊕3×8 (3)
N3	XTB4+10F	Tapping, ⊕4×10(4)
N4 ○	SNE2095−4	(Silver Type) (2)
N4 Ⓚ	SNE2095−5	(Black Type) (2)
N5	XTBS3+8BFZ1	Tapping with Detent, ⊕3×8 (8)
N6	XTW3+8H	Tapping, ⊕3×8 (3)
N7	XTW3+8L	Tapping, ⊕3×8 (4)
N8	XTBS3+8BFYR1	Tapping with Detent, ⊕3×8 (4)
N9(XA,PC,XL) only	XTW3+8H	Tapping, ⊕3×8 (1)
N10(XA,PC, XL)only	XTBS3+8BFZ1	Tapping with Detent, ⊕3×8 (1)
N11 Ⓢ	XSN3+6BVS	⊕3×6 (2)
N12(XA,PC) Ⓢ only	XSN3+6BVS	⊕3×6 (2)
N20 Ⓢ	XTB3+16BFN	Tapping, ⊕ 3×16 (2)
WASHERS		
N20 Ⓢ	XWA3BFZ	Spring, ϕ3 (2)
N21(XA,PC) Ⓢ only	XWA3BFZ	Spring, ϕ3 (2)
ACCESSORIES		
A1(XA,PC) ⚠	SJA168	AC Cord (1)
A1(EK) ⚠	SFDAC05G02	AC Cord (1)
A1(E,EGA,EF, EH,EB,EI) ⚠	SJA171	AC Cord (1)
A2(XA,PC)only ⚠	SJP9215	Plug (1)
A3(EK)	SQF12158	Instruction Book (1)
A3(EGA)	SQF12159	Instruction Book (1)
A3(EF)	SQF12160	Instruction Book (1)
A3(EI)	SQF12161	Instruction Book (1)
A3(XA,PC)	SQF12162	Instruction Book (1)
A3(E,EH,EB, XL)	SQF12157	Instruction Book (1)
PACKING PARTS		
P1	SPP735	Polyethylene Bag (1)
P2	SPS4089−1	Pad, Left Side (1)
P3	SPS4091−1	Pad, Right Side (1)
P4	SPS4488	Pad, Upper (1)
P5(EF)only	SPG4961	Carton Box (1)
P5(EK)only ○	SPG4960	Carton Box(Silver Type) (1)

Ref. No.	Part No.
P5(EK)only Ⓚ	SPG4963
P5 Other areas ○	SPG4959
P5 Ⓚ Other areas	SPG4962
P6(EF)only Ⓚ	SGK1413



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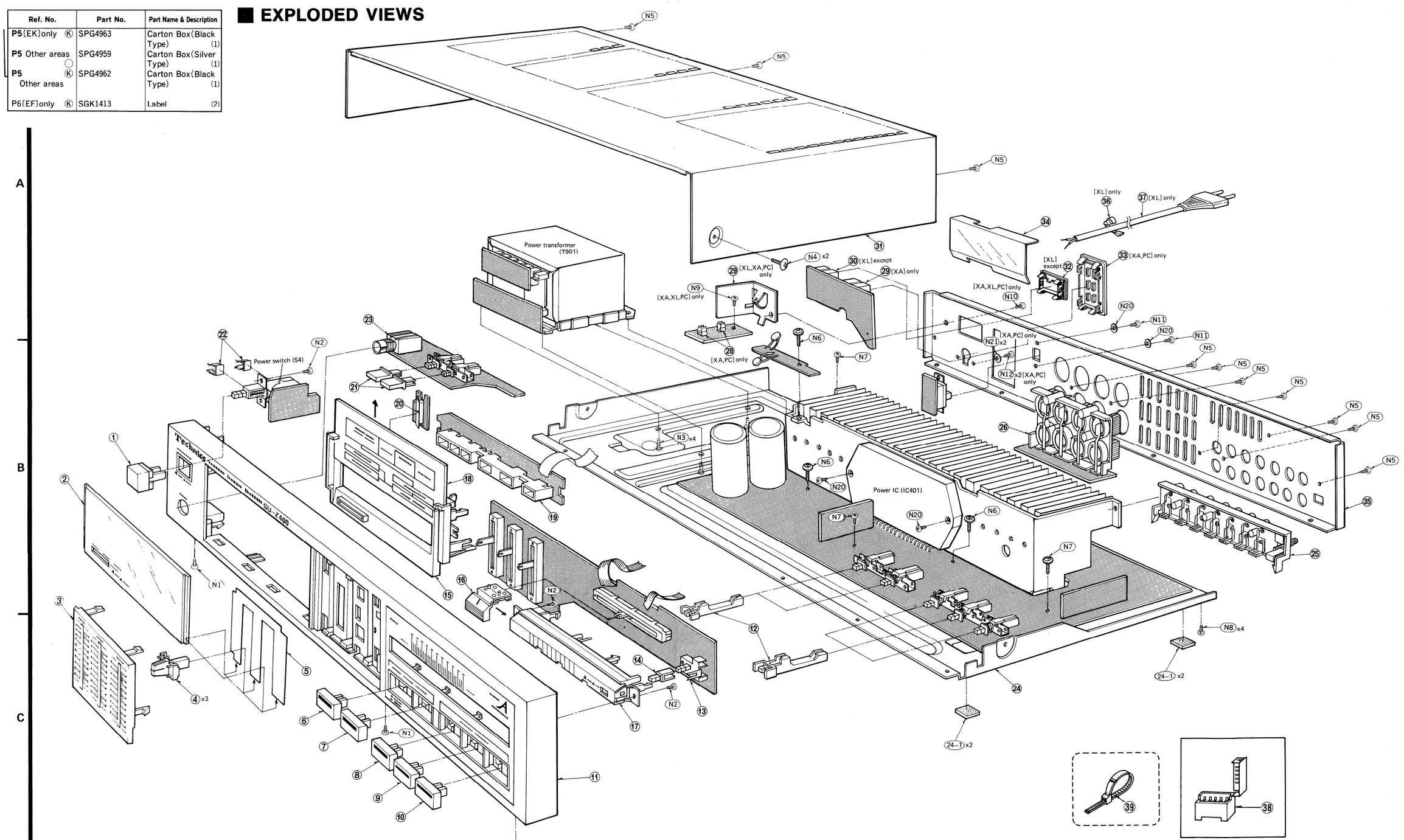
Ref. No.	Part No.	Part Name & Description
P5〔EK〕only Ⓚ	SPG4963	Carton Box(Black Type) (1)
P5 Other areas ○	SPG4959	Carton Box(Silver Type) (1)
P5 Other areas Ⓚ	SPG4962	Carton Box(Black Type) (1)
P6〔EF〕only Ⓚ	SGK1413	Label (2)

EXPLODED VIEWS



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