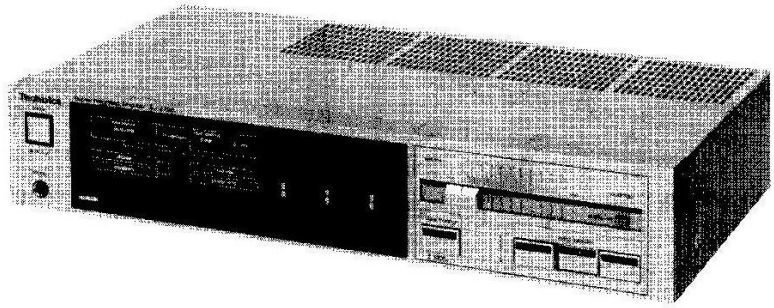
ORDER NO. HAD840628200C8

Service Manual

Stereo Integrated Amplifier

Amplifier

SU-Z200



Color

(S) · · · · Silver Type
(K) · · · · Black Type

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

SPECIFICATIONS
(DIN 45 500)

■ AMPLIFIER SECTION

1 kHz continuous power output	
both channels driven	2 × 35W (8Ω)
40 Hz~20 kHz continuous power output	
both channels driven	2 × 30W (8Ω)
Total harmonic distortion	
rated power at 40 Hz~20 kHz	0.05% (8Ω)
half power at 1 kHz	0.01% (8Ω)
half power at 40 Hz~20 kHz	0.03% (8Ω)
−26 dB power at 1 kHz	0.02% (8Ω)
50 mW power at 1 kHz	0.02% (8Ω)
Intermodulation distortion	
rated power at 250 Hz: 8 kHz=4:1, 8Ω	0.05%
rated power at 60 Hz: 7 kHz=4:1, SMPTE, 8Ω	0.05%
Power bandwidth	
both channels driven, −3 dB	10 Hz~25 kHz (8Ω, 0.05%)
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/EXT	150 mV/22kΩ
PHONO maximum input voltage (1 kHz, RMS)	150 mV
S/N	
rated power (8Ω)	
PHONO	72 dB (IHF, A: 72 dB)
TUNER, CD/VIDEO/AUX, TAPE/EXT	86 dB (IHF, A: 95 dB)
−26 dB power (8Ω)	
PHONO	62 dB
TUNER, CD/VIDEO/AUX, TAPE/EXT	63 dB
50 mW power (8Ω)	
PHONO	61 dB
TUNER, CD/VIDEO/AUX, TAPE/EXT	61 dB
Frequency response	
PHONO	RIAA standard curve ±0.8 dB (30 Hz~15 kHz)
TUNER, CD/VIDEO/AUX, TAPE/EXT	10 Hz~70 kHz (−3 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
Channel balance, CD/VIDEO/AUX 250 Hz~6,300 Hz	±1 dB
Channel separation, CD/VIDEO/AUX 1 kHz	55 dB
Headphones output level and impedance	390 mV/330Ω
Load impedance	4Ω~16Ω

■ GENERAL

Power consumption	165W
Power supply	
For Australia and United Kingdom	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	4.4 kg (9.7 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.

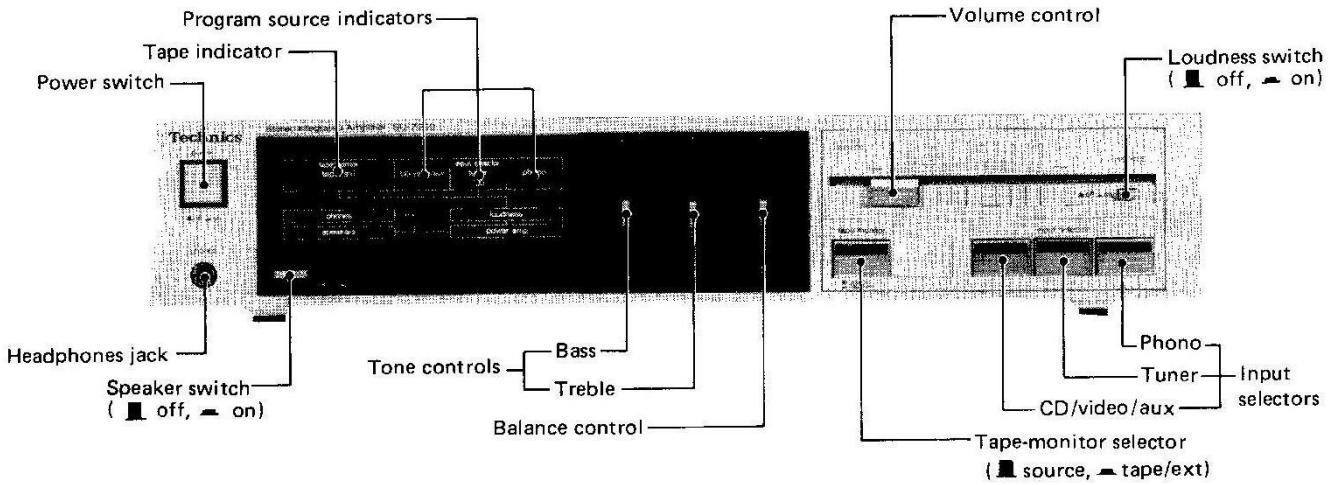
Technics

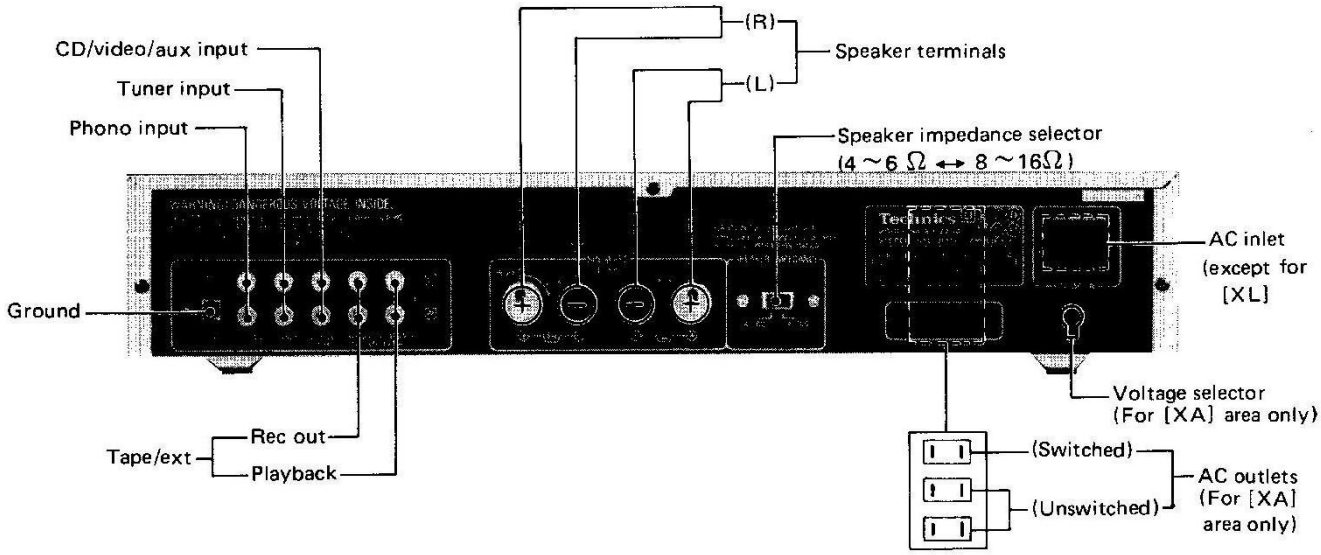
Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

SU-Z200

■ CONTENTS

■ LOCATION OF CONTROLS





- 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 replacement parts list.

* [XA] area is provided with voltage selector and AC outlets.
* 240V (50/60Hz) for Australia and United Kingdom.
* 220V (50/60Hz) for Continental Europe.
* 110V/120V/220V/240V (50/60Hz) for other [XA] area.
* 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 outlined below:

1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again.

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, 4700μF) 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.

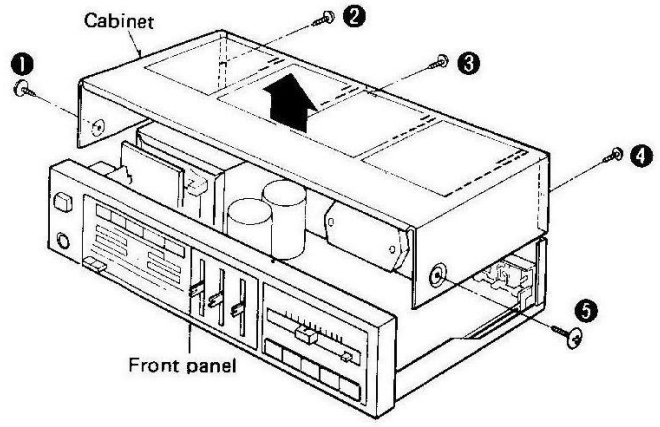
Power supply voltage		AC110V	AC120V	AC220V	AC240V
Consumed current	50Hz	145 ~ 290mA	130 ~ 265mA	70 ~150mA	70 ~ 130mA
	60Hz	145 ~ 290mA	130 ~ 265mA	70 ~150mA	70 ~ 130mA

■ DISASSEMBLY INSTRUCTIONS

Ref. No. 1 — **How to remove the cabinet**

Procedure 1

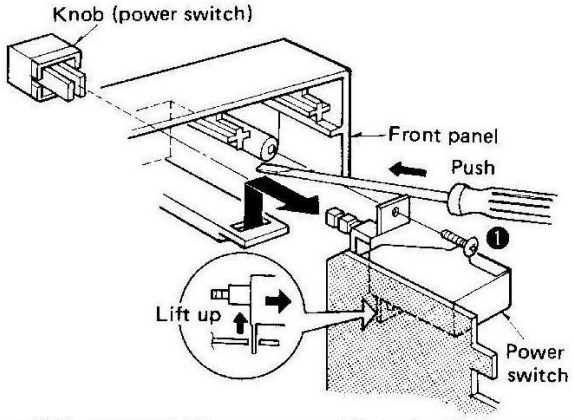
- Remove the 5 screws.



Ref. No. 2 — **How to remove the power switch**

Procedure 1 → 2

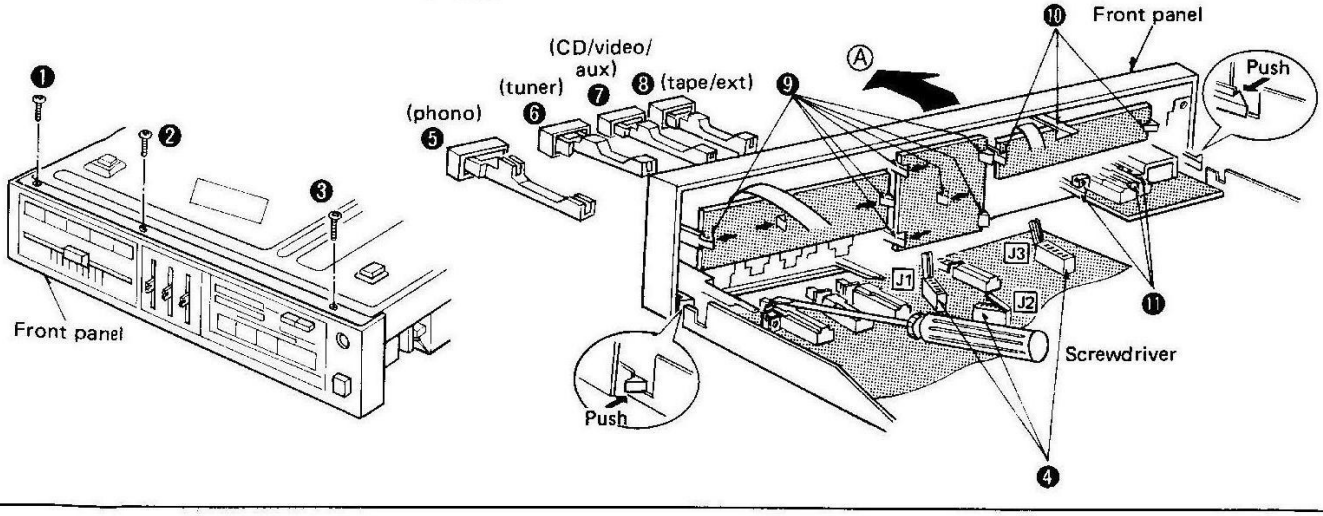
- Remove the 1 screw.
- Remove the power switch knob with a screwdriver.



Ref. No. 3 — **How to remove the front panel**

Procedure 1 → 3

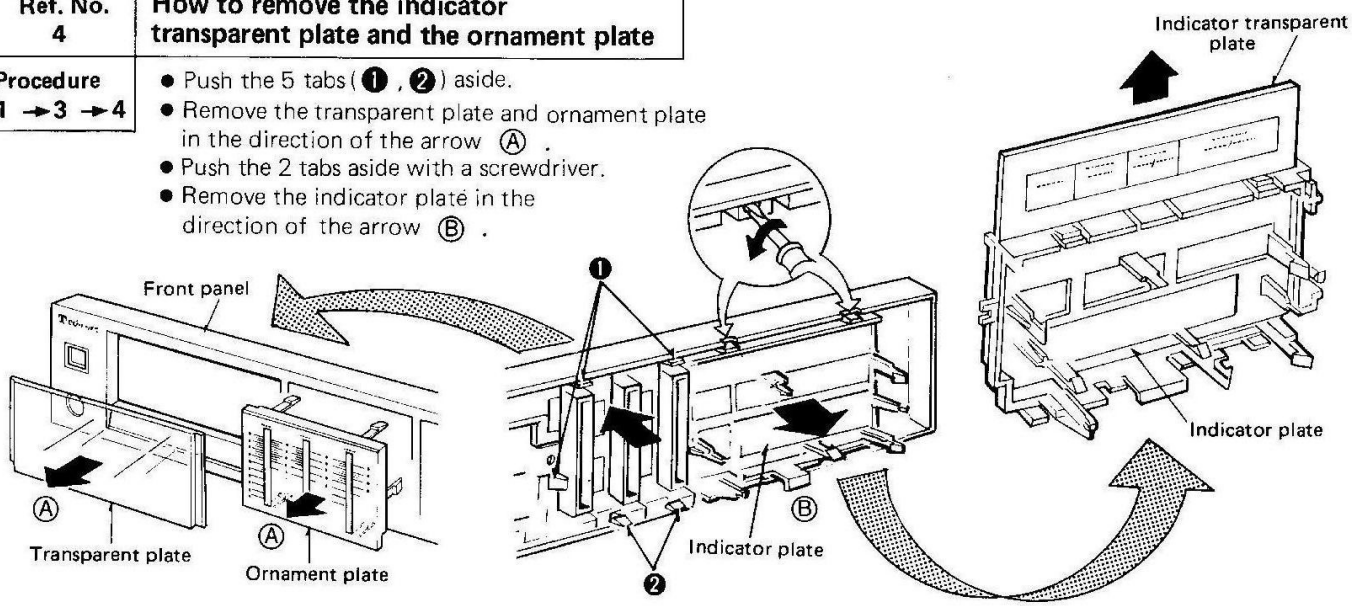
- Remove the 3 screws.
- Pull out the 3 connectors (J1, J2, J3)
- Push out the 4 knobs with a screwdriver.
- Push the 16 tabs aside. (❾ ~ ⓫)
- Remove the front panel in the direction of the arrow Ⓐ .



Ref. No. 4	How to remove the indicator transparent plate and the ornament plate

Procedure 1 →3 →4

- Push the 5 tabs (❶, ❷) aside.
- Remove the transparent plate and ornament plate in the direction of the arrow Ⓐ.
- Push the 2 tabs aside with a screwdriver.
- Remove the indicator plate in the direction of the arrow Ⓑ.

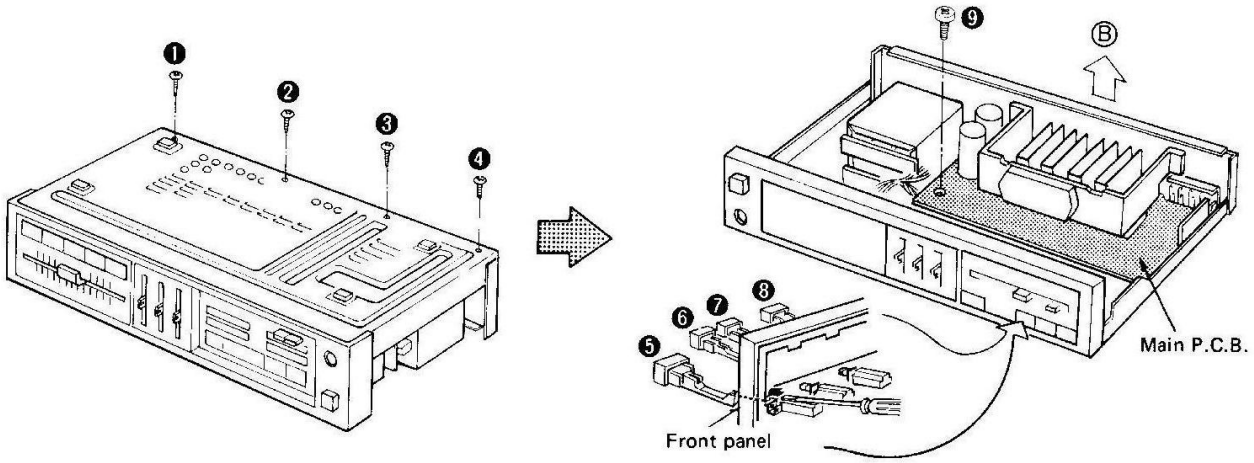


Ref. No. 5	How to remove the power IC

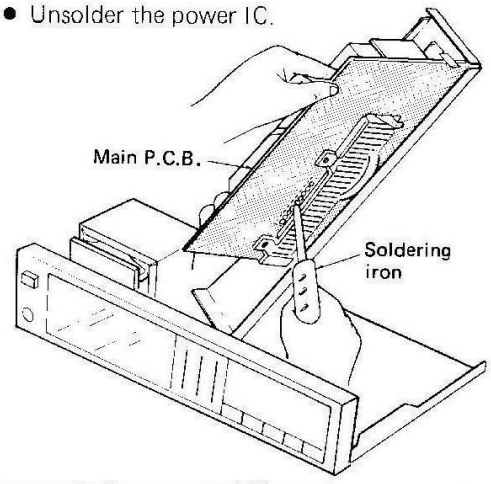
Procedure 1 →5

- Remove the 4 screws. (❶, ~❹).

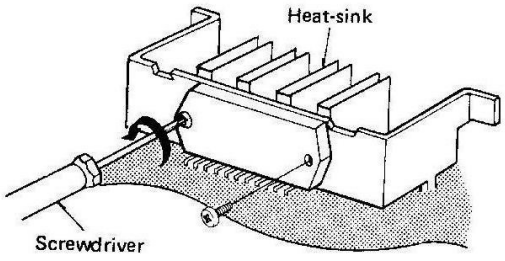
1. Push out the 4 knobs with a screwdriver. (❺ ~ ❽)
2. Remove the 1 screw. (❾)
3. Shift the main P.C.B. toward the front panel in the direction of arrow Ⓑ to lift it upward and out.



- Unsolder the power IC.

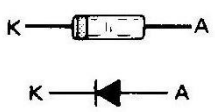
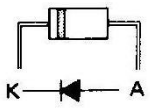
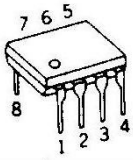
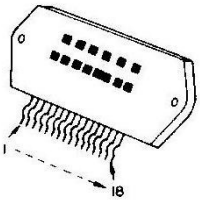
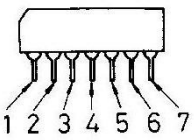
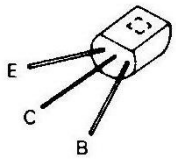
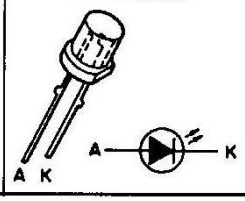
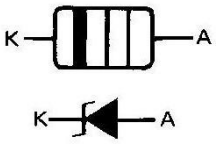


- Remove the 2 screws.



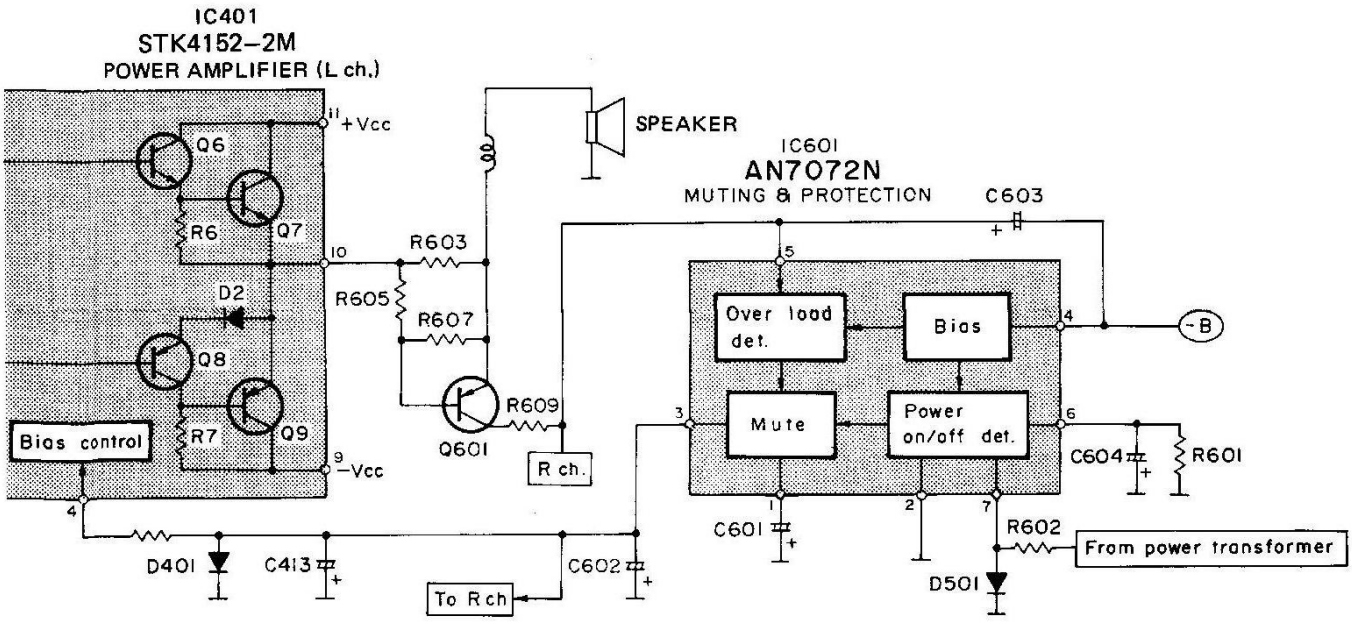
When mounting the power IC, apply heat sink compound to the rear of the power IC.

■ TERMINAL GUIDE OF TRANSISTORS, DIODES AND IC'S

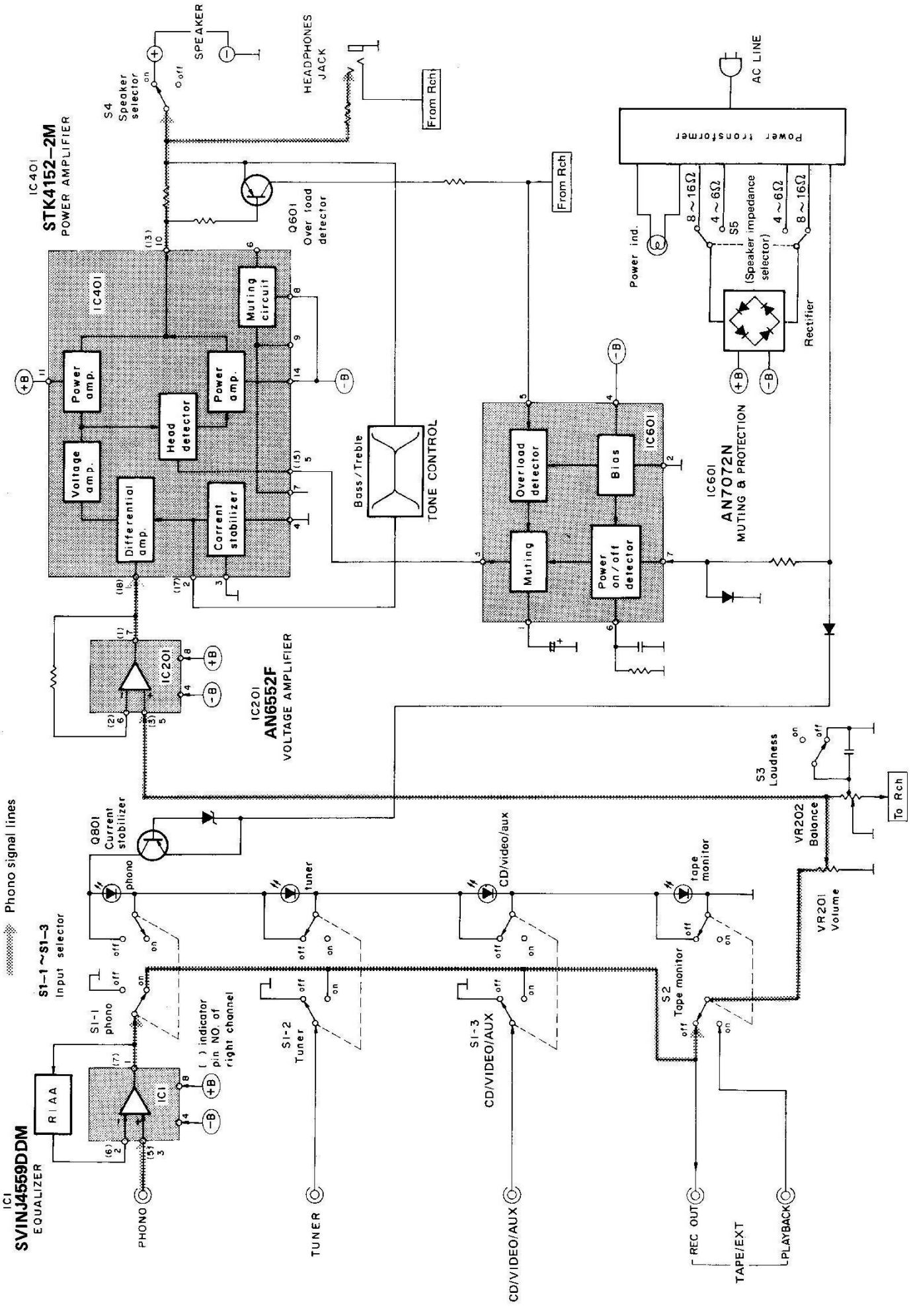
MA165 	SVDS2V20 SVDSR1K2 	SVINJM2043SE SVINJ4559DDM AN6552 	STK4152-2M 	AN7072N 
2SA684, 2SA992 	LN240CP, LN440CPMS 	MA4150, MA4091 MA2150 		

■ OPERATIONAL DESCRIPTION OF IC601 FOR MUTING

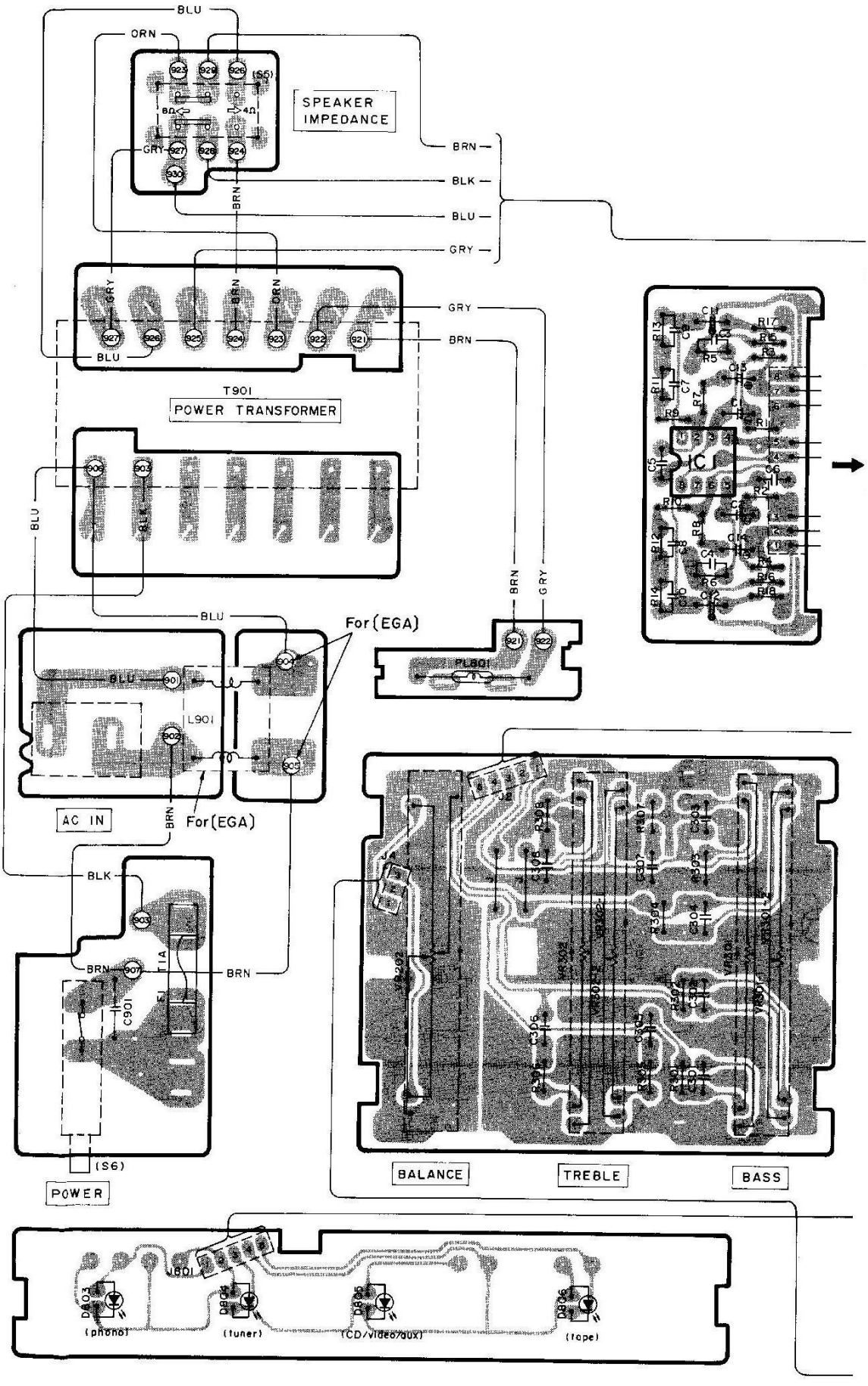
1. Muting operation with power ON.
   With power turned ON, AC voltage is applied to terminal ⑦ of IC601. Then capacitor C601 connected to terminal ① is charged, and the voltage of terminal ① gradually rises. When the voltage reaches about −4V (about 5 sec. after power ON), the muting circuit turns off, and then −33V is generated at terminal ③. The voltage of terminal ③ is supplied to the power amplifier of IC401, thus operating power IC.
2. Muting operation with power OFF.
   With power turned OFF, capacitor C601 connected to terminal ① is discharged, causing the voltage of C601 to drop, and then the muting circuit in IC turns ON. With the muting circuit turned ON, the voltage of terminal ③ becomes 0V, and then power supply to the power amplifier of IC401 is discontinued.
3. Muting operation with power amplifier over-loaded.
   With speaker terminals short-circuted, a large quantity of current flows into R603 (R604), causing the voltage rise. The voltage causes Q601 (Q602) to turn ON, and then overload detecting signal is applied to terminal ⑤. When the potential difference between terminals ④ and ⑤ reaches about 0.7V, capacitor C601 is discharged the same as for muting operation with power OFF. As a result, the muting circuit turns ON and the voltage of terminal ③ becomes 0V.

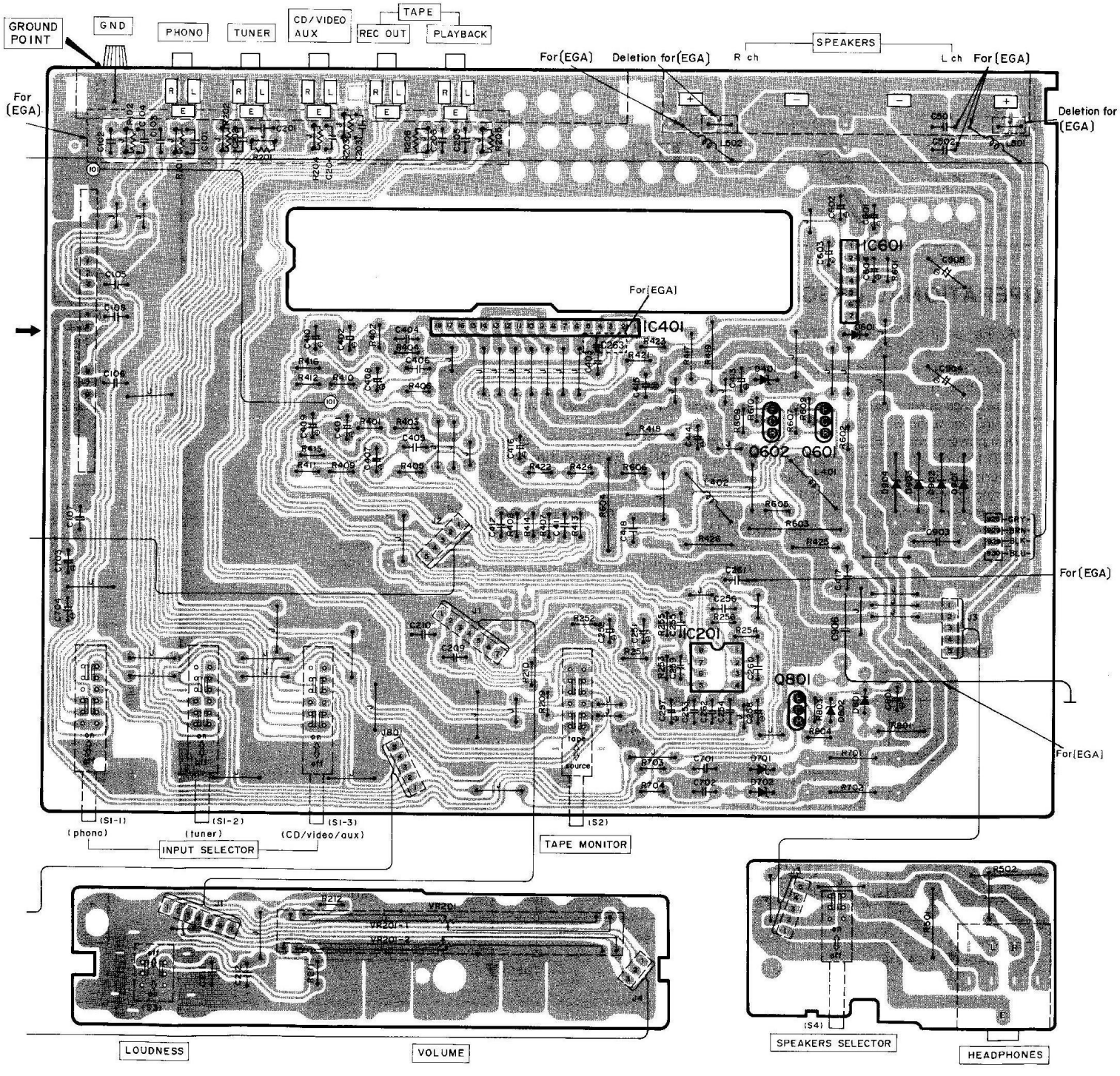


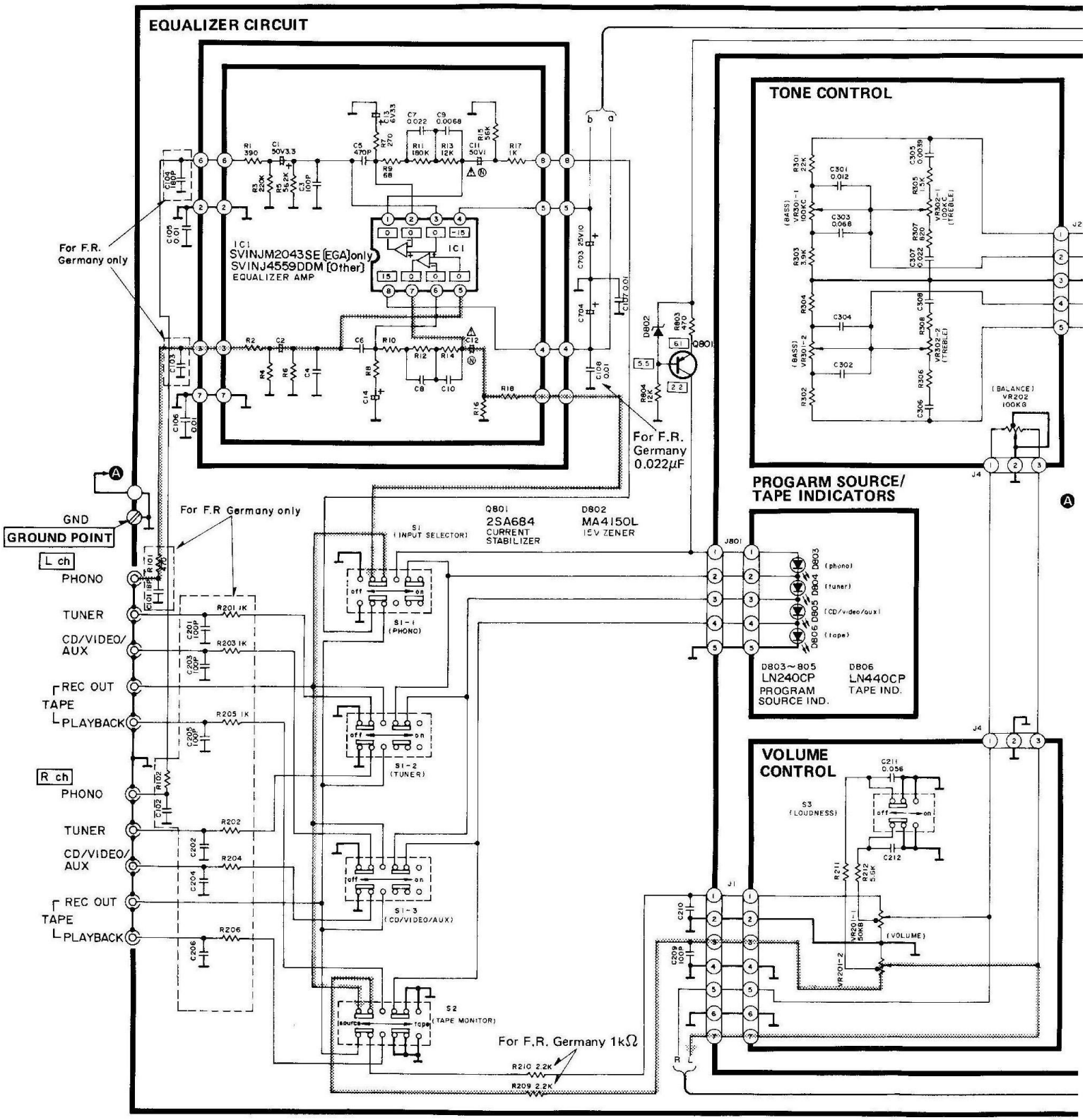
■ BLOCK DIAGRAM

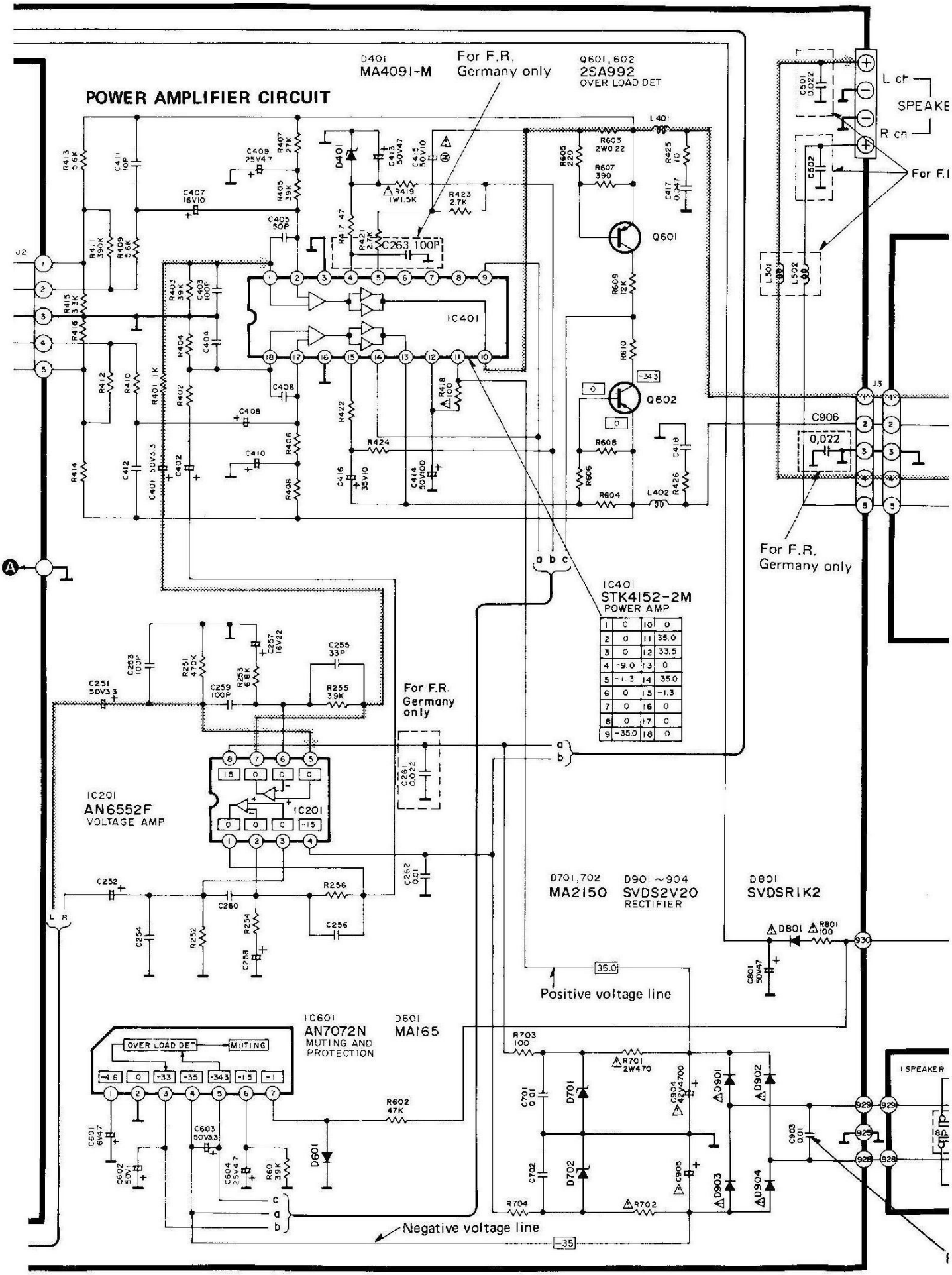


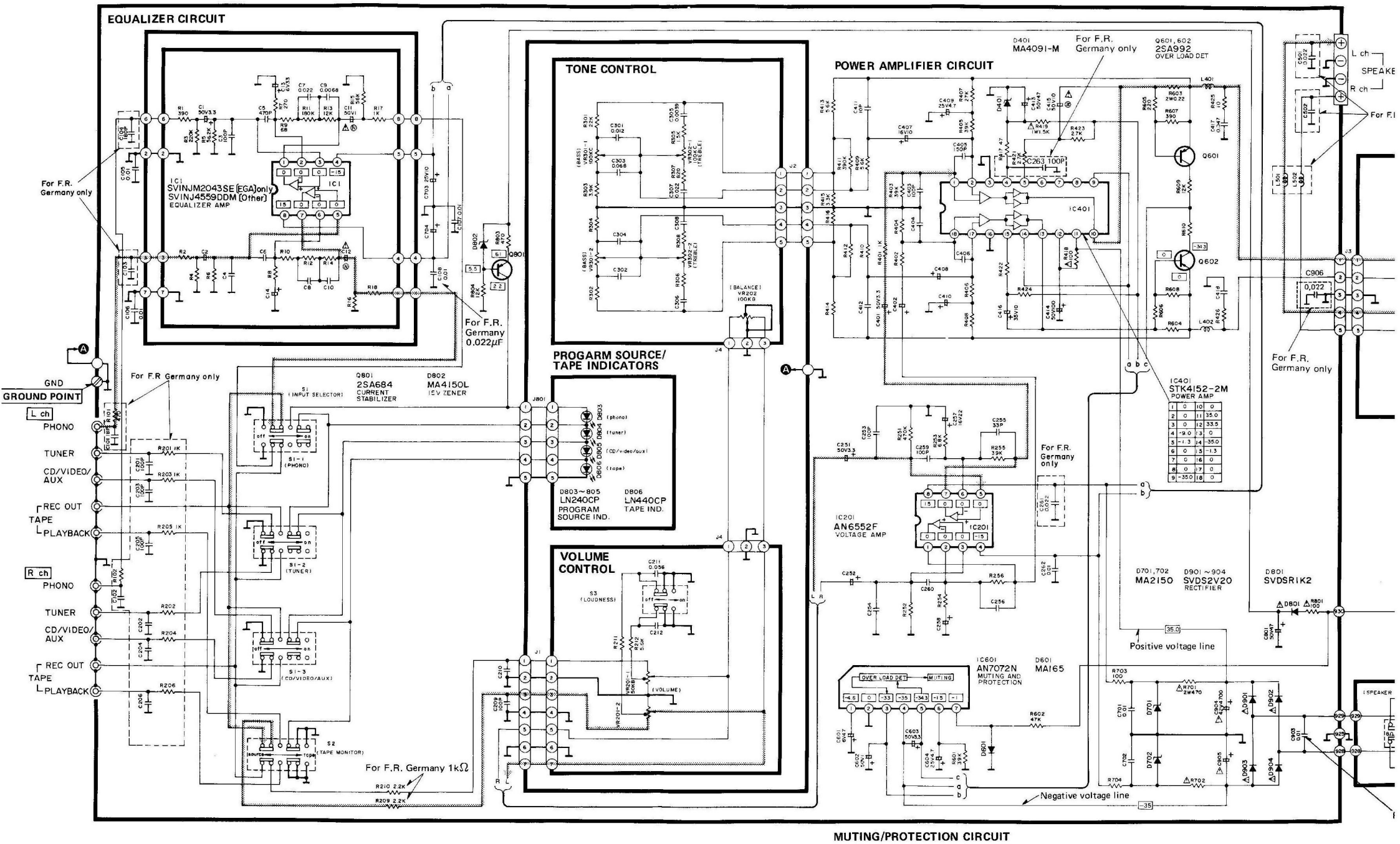
■ PRINTED CIRCUIT BOARDS




GROUND POINT
GND
PHONO
TUNER
CD/VIDEO AUX
TAPE
REC OUT
PLAYBACK
SPEAKERS
R ch
L ch
For (EGA)
Deletion for (EGA)
For [EGA]
IC401
IC60
IC201
Q602
Q601
Q801
(S1-1) (phono)
(S1-2) (tuner)
(S1-3) (CD/video/aux)
INPUT SELECTOR
(S2)
TAPE MONITOR
LOUDNESS
VOLUME
(S4)
SPEAKERS SELECTOR
HEADPHONES


EQUALIZER CIRCUIT
TONE CONTROL
PROGARM SOURCE/
TAPE INDICATORS
VOLUME
CONTROL
IC1
SVINJM2043SE (EGA) only
SVINJ4559DDM (Other)
EQUALIZER AMP
For F.R. Germany only
For F.R Germany only
For F.R. Germany 0.022μF
For F.R. Germany 1kΩ
Q801
2SA684
CURRENT
STABILIZER
D802
MA4150L
15V ZENER
D803~805
LN240CP
PROGRAM
SOURCE IND.
D806
LN440CP
TAPE IND.
S1
(INPUT SELECTOR)
S1-1
(PHONO)
S1-2
(TUNER)
S1-3
(CD/VIDEO/AUX)
S2
(TAPE MONITOR)
S3
(LOUDNESS)
(VOLUME)
(BALANCE)
VR202
100KG
GND
GROUND POINT
L ch
PHONO
TUNER
CD/VIDEO/
AUX
REC OUT
TAPE
PLAYBACK
R ch
PHONO
TUNER
CD/VIDEO/
AUX
REC OUT
TAPE
PLAYBACK
(phono)
(tuner)
(CD/video/aux)
(tape)


POWER AMPLIFIER CIRCUIT
D401
MA4091-M
For F.R.
Germany only
Q601, 602
2SA992
OVER LOAD DET
L ch
SPEAKE
R ch
For F.R.
Germany only
IC401
STK4152-2M
POWER AMP
IC201
AN6552F
VOLTAGE AMP
For F.R.
Germany
only
D701, 702
MA2150
D901 ~904
SVDS2V20
RECTIFIER
D801
SVDSR1K2
Positive voltage line
IC601
AN7072N
MUTING AND
PROTECTION
D601
MA165
OVER LOAD DET
MUTING
Negative voltage line
MUTING/PROTECTION CIRCUIT


EQUALIZER CIRCUIT
IC1
SVINJM2043SE (EGA) only
SVINJ4559DDM (Other)
EQUALIZER AMP
For F.R. Germany only
For F.R. Germany 0.022μF
TONE CONTROL
PROGARM SOURCE/ TAPE INDICATORS
VOLUME CONTROL
POWER AMPLIFIER CIRCUIT
D401 MA4091-M
For F.R. Germany only
Q601,602 2SA992 OVER LOAD DET
IC401 STK4152-2M POWER AMP
IC201 AN6552F VOLTAGE AMP
IC601 AN7072N MUTING AND PROTECTION
D601 MA165
D701,702 MA2150
D901~904 SVDS2V20 RECTIFIER
D801 SVDSR1K2
Positive voltage line
Negative voltage line
GND
GROUND POINT
L ch
PHONO
TUNER
CD/VIDEO/ AUX
REC OUT
TAPE PLAYBACK
R ch
PHONO
TUNER
CD/VIDEO/ AUX
REC OUT
TAPE PLAYBACK
S1 (INPUT SELECTOR)
S1-1 (PHONO)
S1-2 (TUNER)
S1-3 (CD/VIDEO/AUX)
S2 (TAPE MONITOR)
Q801 2SA684 CURRENT STABILIZER
D802 MA4150L 15V ZENER
D803~805 LN240CP PROGRAM SOURCE IND.
D806 LN440CP TAPE IND.
(phono)
(tuner)
(CD/video/aux)
(tape)
(BALANCE) VR202 100KB
(VOLUME)
For F.R. Germany 1kΩ
L ch
R ch
SPEAKER
MUTING/PROTECTION CIRCUIT