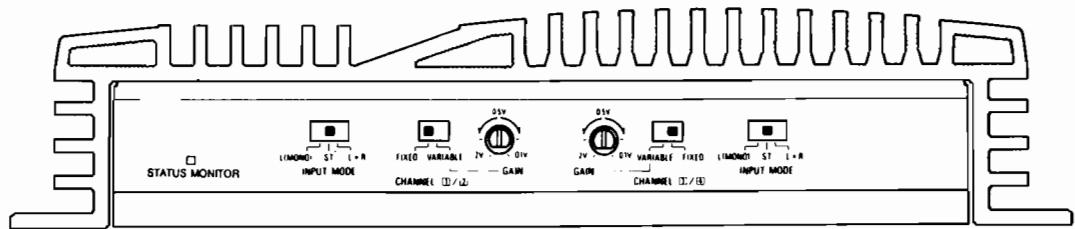


# ALPINE SERVICE MANUAL

4 / 3 / 2 Channel Power Amplifier



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## Specifications

### <4ohms 4-channel stereo mode>

Power Output (20Hz - 20kHz, 0.08%T.H.D)	20W / ch
S/N Ratio (Ref. 25W/4 ohm)	100dB
Input Sensitivity (25W Power Output)	Fixed : 0.5V±2dB (RCA Input) 2V±2dB (SP Input)
	Variable : 2V±2dB (RCA Input) 8V±2dB (SP Input)
Input Impedance .....	RCA Input : 10kohm±2kohm SP Input : 15kohm±2ohm
Frequency Response (at 1kHz)	20Hz - 40kHz
Zero Signal Current Drain .....	1.5A
Current Drain (10%T.H.D)	23A
Channel Separation (at 1kHz)	55dB

### <2ohms 4-channel stereo mode>

Power Output (0.8%T.H.D)	20Hz : 25W / ch, 1kHz : 30W / ch, 20kHz : 30W / ch
Current Drain (10%T.H.D)	30A

### <4ohms BTL mono mode>

Power Output (20Hz - 20kHz, 0.8%T.H.D)	60W / ch
--	----------

### <General>

Fuse Requirement .....	25A (Battery)
Power Source .....	14.4V DC
Semiconductors .....	11 IC's, 44 Transistors, 23 Diodes, 6 Zener Diodes
Dimensions (W×H×D)	240×51×250mm
Weight .....	2.74kg

NOTE : Due to continuing product improvement, specifications and design are Subject to change without notice.

# Features

- **4/3/2-Channel Operation:**

The 3550 can be used in 3 ways as:

- a. 4-channel full-range amplifier, producing 25W per channel into 4 ohms, or 35W per channel into 2 ohms. The amplifier can be used in a 4-speaker full range system or in a bi-amped, dual subwoofer and dual satellite combination.
- b. 3-channel amplifier, producing 25W (4 ohms) or 35W (2 ohms) into channels 1 & 2, and 70W (4 ohms) into the third channel. This combination is perfect for a single subwoofer, dual midrange satellite (right and left) system.
- c. 2-channel amplifier, producing 70W per channel into 4 ohms. The amplifier can be used as full range, low-pass (sub-woofer amp), or high-pass (midrange/tweeter satellite amp).

- **Status Monitor:**

This indicator illuminates in green when the 3550 is on and operational. This light will turn red if any protection circuitry is activated.

- **Duo- $\beta$  Feedback Circuitry:**

Duo-Beta is a patented and technologically advanced form of feedback (error correction) circuitry. All amplifiers require some form of negative feedback is used to minimize distortion and stabilize the amplifier. Too much feedback, however, increases the transient intermodulation distortion (T.I.M.), decreases the amplifier slew factor, and reduces its musicality. The Duo-Beta circuitry supplies low negative feedback throughout the audio frequency and very high negative feed-back at DC. This stabilizes the amplifier, removes DC offset, and offers excellent total harmonic distortion (T.H.D.) characteristics. It also provides low T.I.M., with excellent slew factor, stability, and musicality.

- **No Current Limiting:**

Current limiting circuitries used in conventional amplifiers may cause premature clipping and inferior transient response. Absence of current limiters in the audio section ensures low T.I.M., excellent transient response, and superb sonic quality.

- **S.T.A.R. Circuitry:**

Alpine proprietary Signal Transit for Accurate Response circuit topology improves sonic properties by reducing interaction between different sections of the circuitry.

- **Speaker Level Input Capability:**

This power amplifier features balanced, low impedance speaker inputs. This input can be connected to high or standard power head units such as Alpine, other aftermarket brands, to factory-installed OEM units that do not have a preamp output. The head unit's internal fader and balance controls will continue to function properly as this speaker input circuitry emulates a speaker instead of an open load.

- **Input Mode Selector:**

This switch allows the user to specify the input signal entering the amplifier:

- a. **Stereo Mode:**

Allows the right and left channel signals to reach their designated amplifier channels. This mode provides a stereo output or a center channel common information output (when used in the bridged configuration).

- b. **L (MONO) Mode:**

Disables the right channel input connector and routes the signal through the left channel input to all sections of the amplifier. This mode can be used when a single (mono) signal is amplified (either in stereo or bridged operation).

- c. **L+R Mode:**

Sums the right and left channel input signals and routes the result to all sections of the amplifier. It can be used in stereo or bridged operation to provide a summed (mono) output.

- **DC-to-DC Switching Mode Power Supply:**

Provides excellent power output throughout the audio bandwidth (20 Hz to 20 kHz). Its soft clipping characteristics ensure superb transient response and musicality.

- **Fully Complementary, Discrete Output Circuitry:**

For excellent reliability, superb sonic performance and high current capability for accurate transient response.

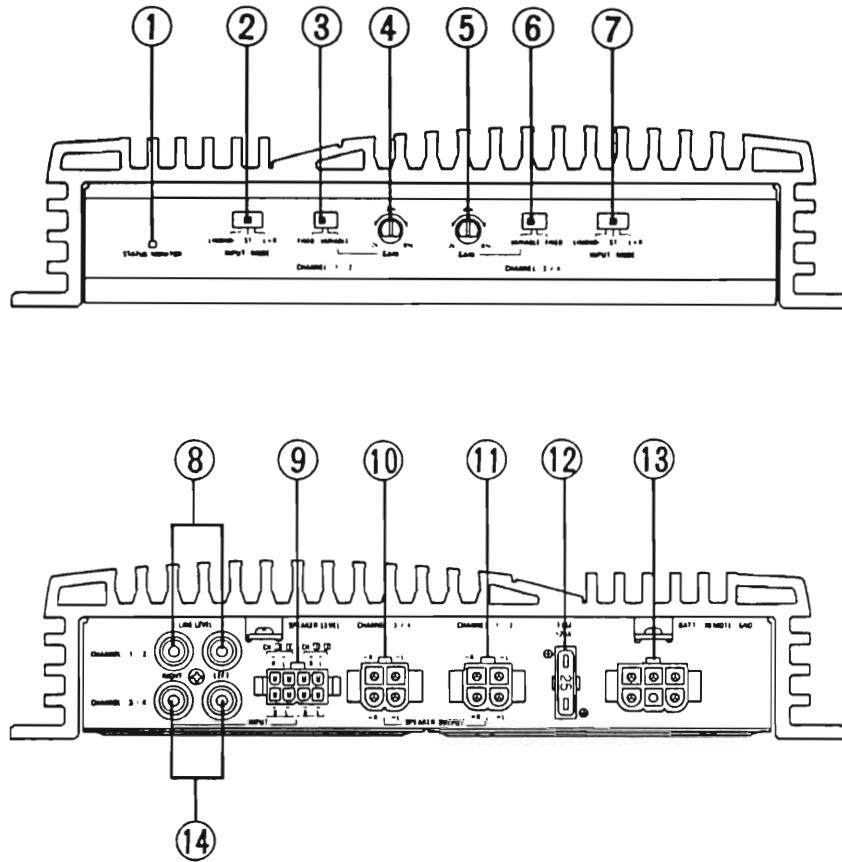
- **Independent Front and Rear, Continuously Adjustable Input Sensitivity Controls.**

- **High Performance, Low Noise, Audiophile Quality Active and Passive Components.**

- **Capacitive/Inductive Power Supply Input and Output Filtering:**

For low radio frequency interference (RFI) and immunity to system noises (such as alternator whine).

# Switches And Terminals



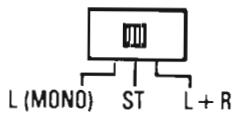
- ① Status Monitor
- ② Input Mode Selector Switch (Channels 1/2)
- ③ Input Gain Selector Switch (Channels 1/2)
- ④ Input Gain Adjustment Control (Channels 1/2)
- ⑤ Input Gain Adjustment Control (Channels 3/4)
- ⑥ Input Gain Selector Switch (Channels 3/4)
- ⑦ Input Mode Selector Switch (Channels 3/4)
- ⑧ Input RCA Jacks (Channels 1/2)
- ⑨ Speaker Input Connector
- ⑩ Speaker Output Connector (Channels 3/4)
- ⑪ Speaker Output Connector (Channels 1/2)
- ⑫ Fuse Block
- ⑬ Power Connector
- ⑭ Input RCA Jacks (Channels 3/4)

# Switch Settings

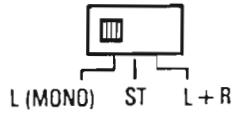
## Input Mode Selector Switches ② and ⑦ :

Each switch should be set according to the way each pair of the amplifier's channels are being used. For each switch:

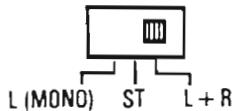
- a) Set to the "ST" position (center) when used as a 2-channel stereo system.



- b) Set to the "L (MONO)" position when used for one channel of a stereo or bridged system. When set to this position, the signal (left or right channel input) that is fed into the left input connector on the amplifier will go to both output channels controlled by that switch.

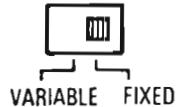


- c) Set to the "L+R" position when the amplifier is used for the subwoofer system which uses the right channel and left channel signals summed.



## Input Gain Selector Switches ③ and ⑥ :

- a) Set to the "FIXED" position when connecting the 3550 to other Alpine products. This position sets the input sensitivity to 500 mV which corresponds to the pre-amp output of Alpine products.



- b) Set to the "VARIABLE" position when connecting the 3550 to a non-Alpine product with an output voltage other than 500 mV. This position should also be used when adjustment of input sensitivity is required to obtain certain imaging requirements or to compensate for different speaker efficiencies.



## Input Gain Controls ④ and ⑤ :

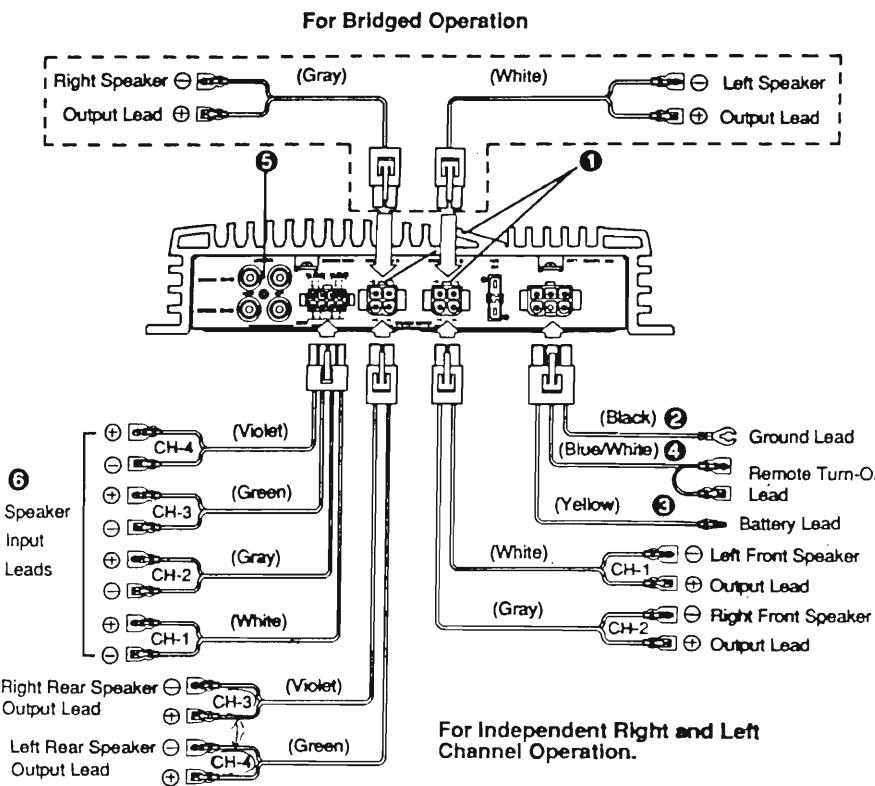
After setting the Input Gain Select Switches ③ and ⑥ to the "VARIABLE" position, set your head unit's volume control 1/4 of a turn down from the maximum output level, rotate the Input Gain Adjustments Controls ④ and ⑤ with a #0 screwdriver and adjust the input gain to the point where there is maximum volume with no distortion.

## Status Monitor ① :

This indicator lights green when the power is on. The 3550 has built-in protection circuitry. If, for some reason, this protection circuit is activated, the indicator turns red. If this happens, turn the system off, find the cause of the problem and remedy the situation. This includes checking all your connections and wiring. If the indicator remains red when the system is turned on, consult your authorized Alpine dealer.

**NOTE:** The indicator will illuminate in red for a few seconds when the power is turned on as the protection circuit will be activated. This is normal.

# Connections



Always disconnect the negative (-) terminal of the vehicle's battery before beginning installation of electronic components.

## ① Speaker Output Connectors

The 3550 has two sets of speaker output connectors. One set for 4-channel operation (using independent left and right speakers on each set) and another set for bridged operation. For 3-channel operation, you would use one of each type.

**NOTE:** Do not use the speaker (-) terminal commonly for the right and left speaker or connect it to the vehicle's ground.

## ② Ground Lead (Black)

Connect this lead securely to a clean, bare metal spot on the vehicle's chassis. Verify this point to be a true ground by checking for continuity between that point and the negative (-) terminal of the vehicle's battery.

## ③ Battery Lead (Yellow)

Connect this lead directly to the positive (+) terminal of the vehicle's battery.

*Do not connect this lead to the vehicle's electrical system.*

## ④ Remote Turn-On Lead (Blue/White)

Connect this lead to the remote turn on lead of your head unit.

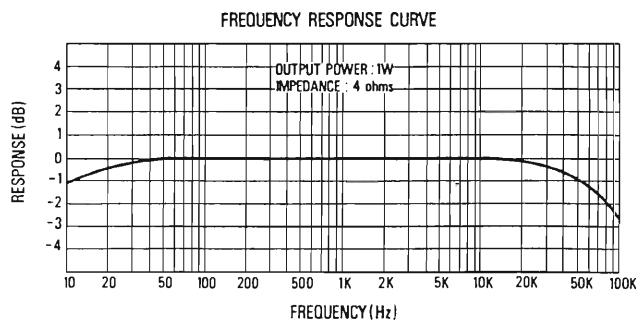
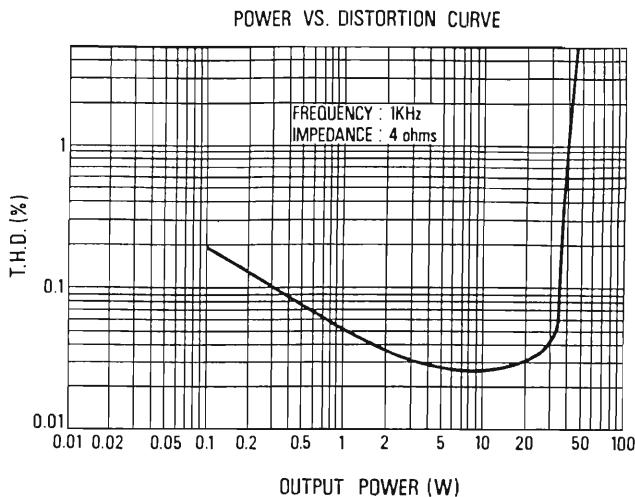
## ⑤ Input RCA Jacks

Connect these jacks to the line out leads on your head unit using optional RCA extension patch cords. Be sure to observe correct channel connections; Left to Left, Right to Right, Front to Front, and Rear to Rear.

## ⑥ Speaker Input Leads

These leads are input leads for use with head units not equipped with preamp outputs. When not using the RCA Line Input connectors, you should connect these wires to the speaker output leads of your head unit. The 3550 accepts input from high power or standard power head units.

# Characteristic Curves



## Precautions

1. Improper wiring connections could cause damage to your vehicle's electrical system and/or the 3550 amplifier. Carefully follow the wiring instructions in this manual.
2. Connecting the battery lead (yellow) to the positive (+) terminal of the battery should be your last connection after all other connections have been made.
3. Due to the high power output of the 3550, it is important that all connections are clean and well secured, to prevent damage to the amplifier and/or vehicle.
4. Be sure that the 3550 is mounted in a way that will allow for free air circulation and heat dissipation.
5. When changing fuses, be sure to replace the old fuse with one of the same amperage. Use of improper fuses can lead to serious damage to components.

# Disassembly Instructions

## 1. Removal of Main P.C.Board

- (1) After removal of Bottom Cover, remove 32 screws marked "O" as shown in Figure 1. Then, the Main P.C.Board will be removed from Heat Sink together with Front, Rear Chassis and Power, LED P.C.Board.
- (2) Remove a hook(A), pull out LED P.C.Board in the arrow direction as shown in Figure 2. The Front Chassis can be removed.
- (3) Remove the solder(a) as shown in Figure 3. The LED P.C.Board can be removed.
- (4) After removal of Fuse, remove five screws marked "△" and ten hooks(B) as shown in Figures 3 and 4. The Rear Chassis can be removed.

- (5) After removal of Rear Chassis, remove the solder(b) as shown in Figure 3. The Power P.C.Board Can be removed.
- (6) After the above procedures are completed, Main P.C.Board can be removed.

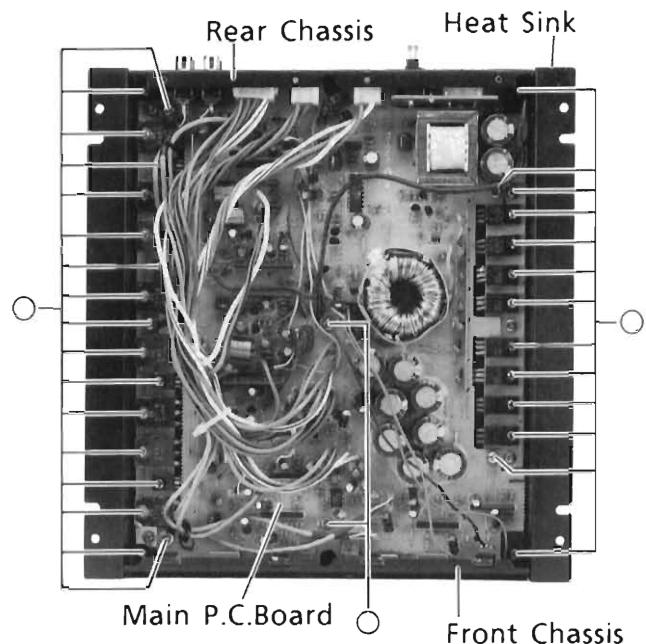
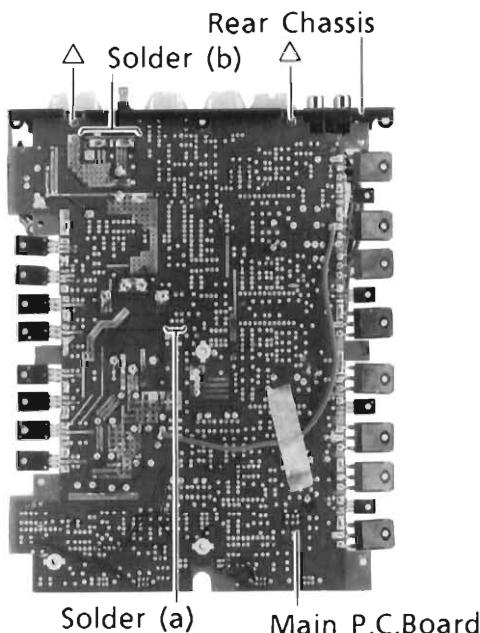


Figure 1

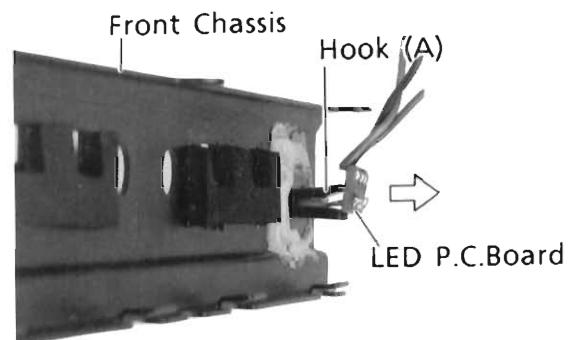


Figure 2

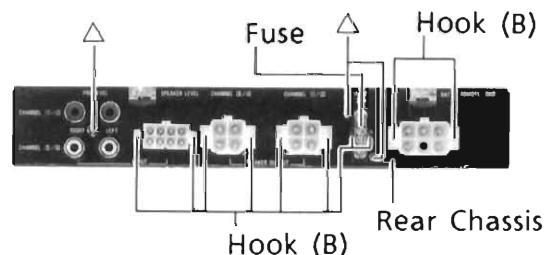
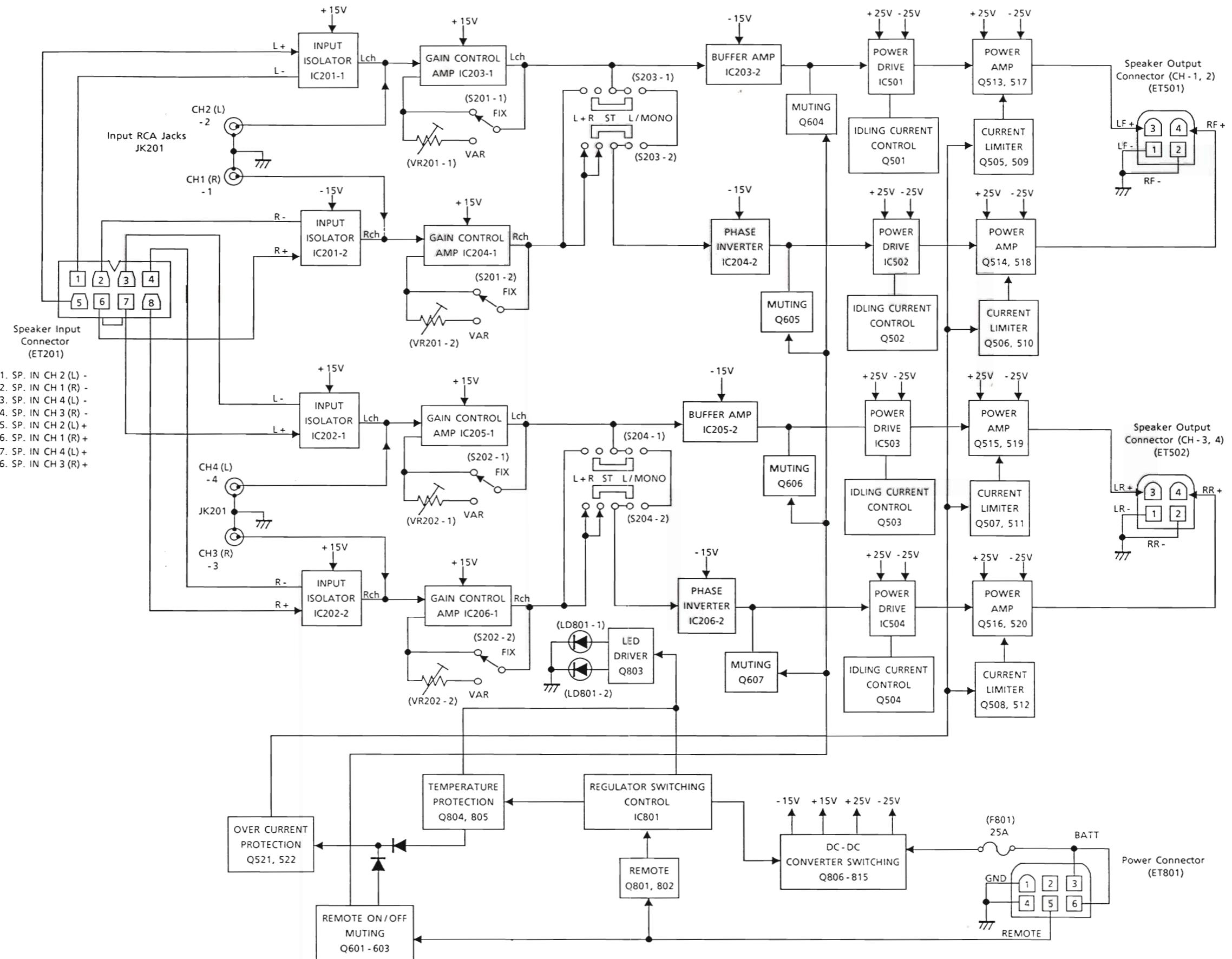


Figure 3

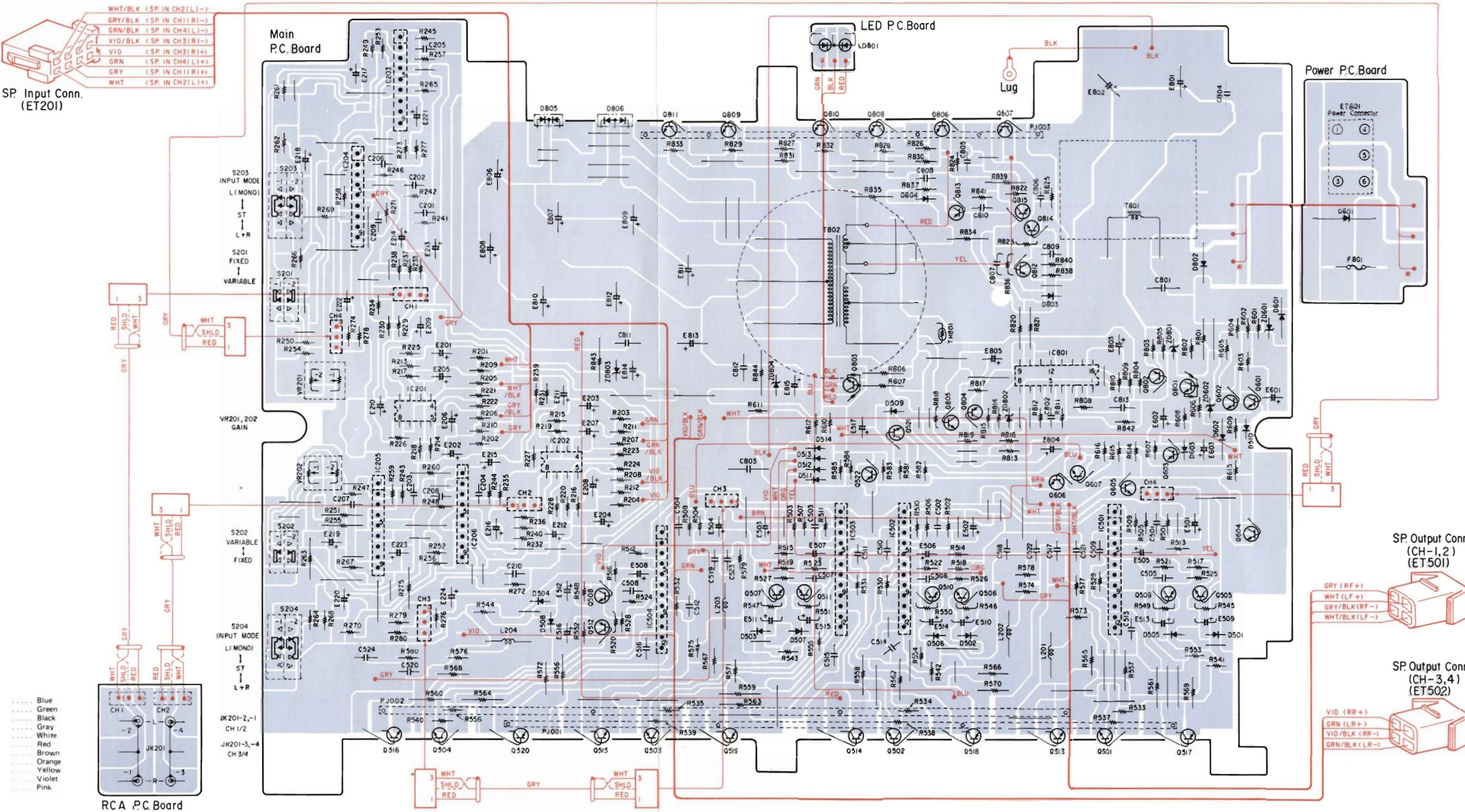
Figure 4

# Block Diagram



# Parts Layout on P.C. Boards and Wiring Diagram

1



5

A

B - 11 -

C

D

E

F - 12 -

G

H

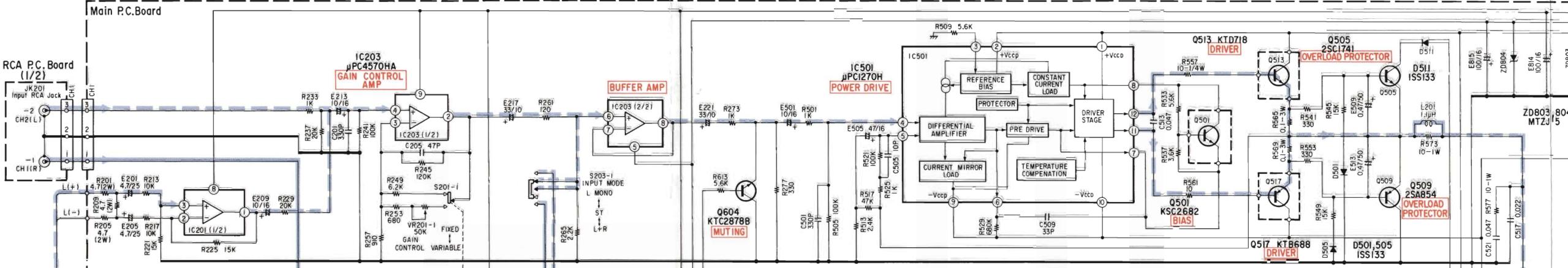
# Schematic Diagram

(Refer to reverse side for IC's and Transistors voltage values.)

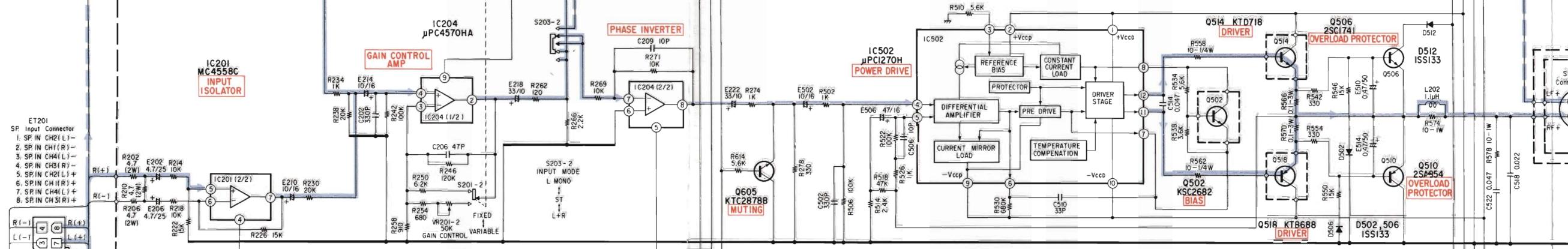
1

IC	IC201 IC202	IC203 IC204 IC205 IC206	IC501 IC502 IC503 IC504	Q501 Q502 Q503 Q504	Q513 Q514 Q515 Q516	Q517 Q518 Q519 Q520	Q505 Q506 Q507 Q508	Q509 Q510 Q511 Q512	
Transistor (Q)									

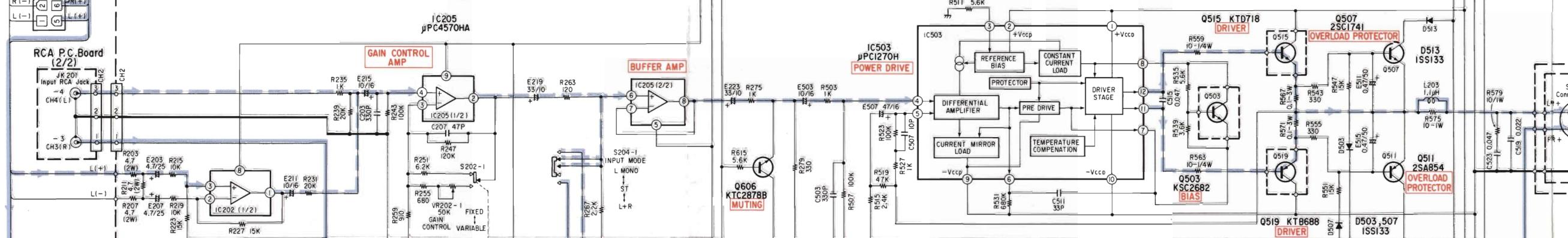
2



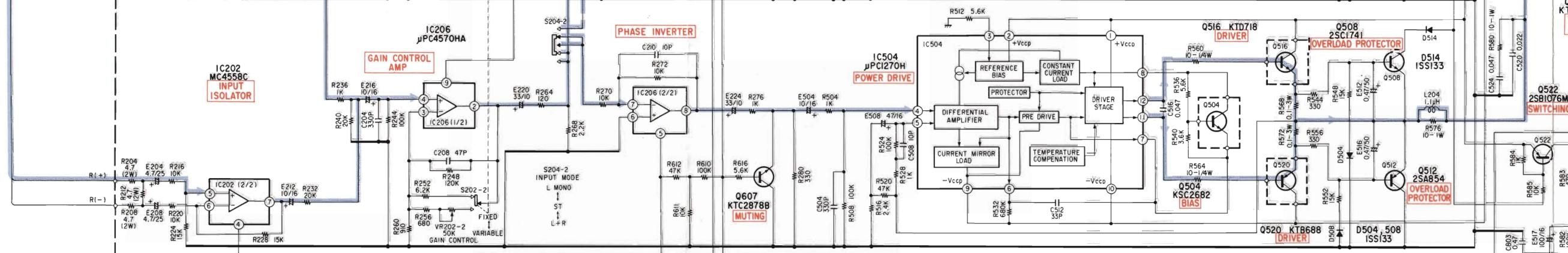
3



4



5



A

- 13 -

B

C

D

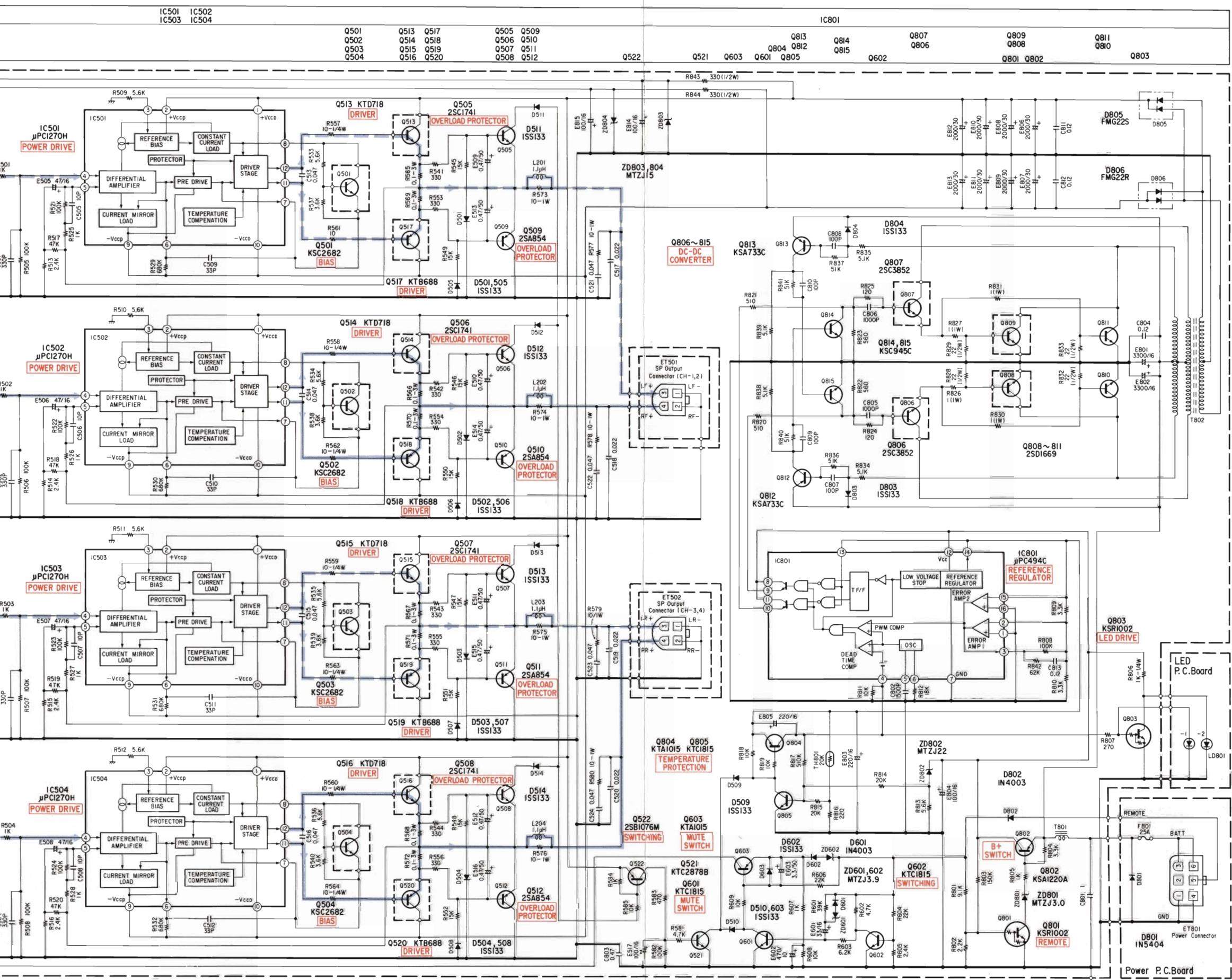
- 14 -

F

G

## NOTE:

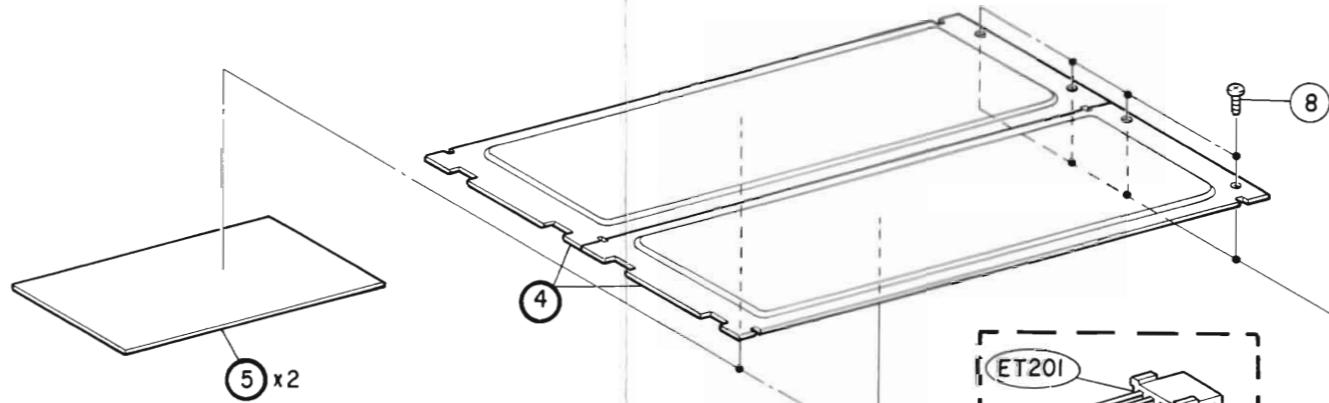
1. All resistance values are in ohms. K= 1,000 M= 1,000,000  
 2. All capacitance values are in microfarads. P= 1/1,000,000



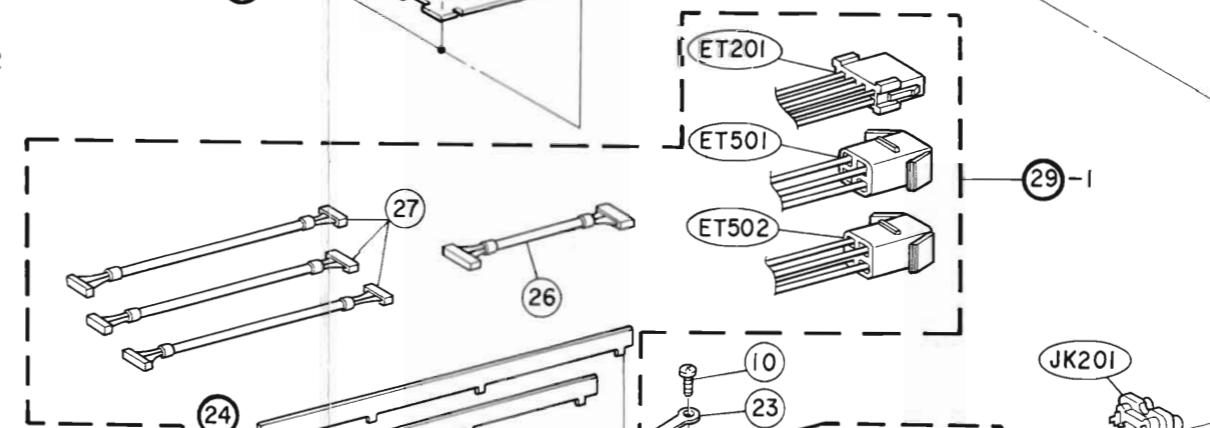


# Exploded View (Cabinet)

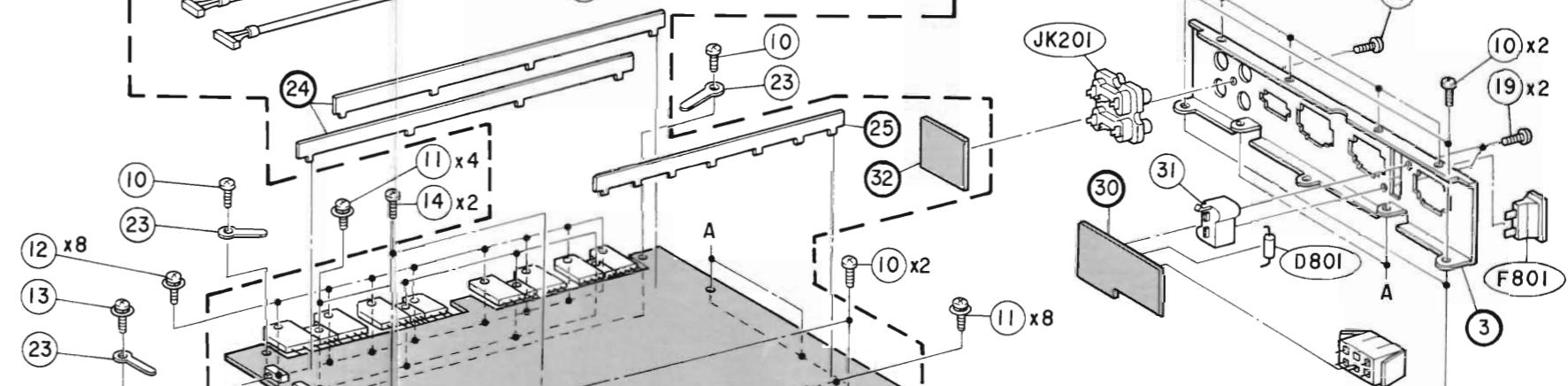
1



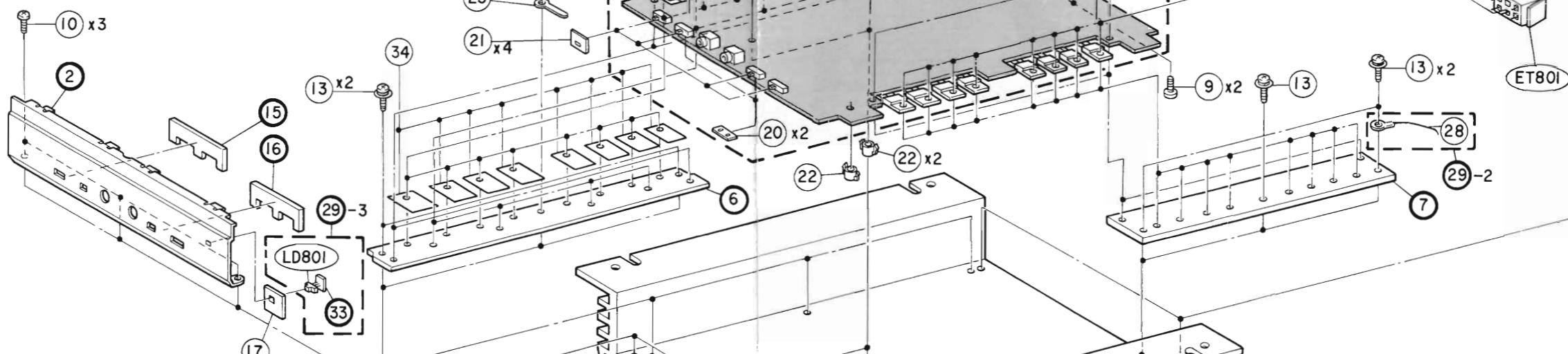
2



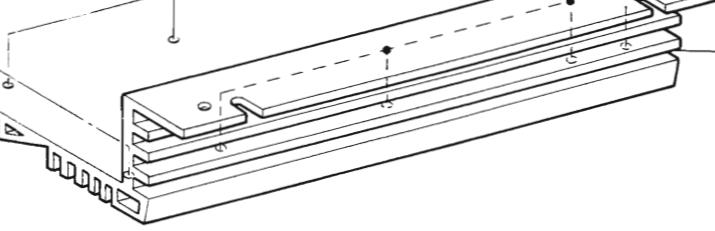
3



4



5



A

B - 17 -

C

D

E

F - 18 -

G

H

## Cabinet Assembly Parts List

Symbol No.	Index	Part No.	Description		
8	1-F	03E06792S01	Screw, MCH-TPT (M2.6x5)		
9	4-F	03E06247S01	Screw, MCH-TPT (M2.6x5)		
10	4-A	03E08338S01	Screw, Tapping TPT (M3x6)		
11	3-D	03E08338S02	Screw, Tapping TPT (M3x9)		
12	3-C	03E08338S03	Screw, Tapping TPT (M3x10)		
13	4-B	03E08338S04	Screw, Tapping TPT (M3x11)		
14	3-D	03E08339S01	Screw, Tapping TPT (M3x12)		
17	5-B	07E08343S01	LED, Holder		
18	3-G	03E08340S01	Screw, Tapping TPT (M3x8)		
19	3-G	03E08338S05	Screw, Tapping TPT (M2x6)		
20	4-D	14E08435S01	Insulator, SW		
21	4-C	15E08442S01	Plate, SW		
22	4-D	07E08443S01	P.C.B., Support		
23	3-C	29E08444S01	Lug, Pin		
26	2-E	01E08439S01	Assy., Shield Conn. (3P)		
27	2-D	01E08440S01	Assy., Shield Conn. (3P)		
28	4-G	01E08441S01	Lug, Wire (BLK)		
31	3-F	09T70751F01	Auto, Fuse Holder		
34	4-C	14E08436S01	Insulator Mica		

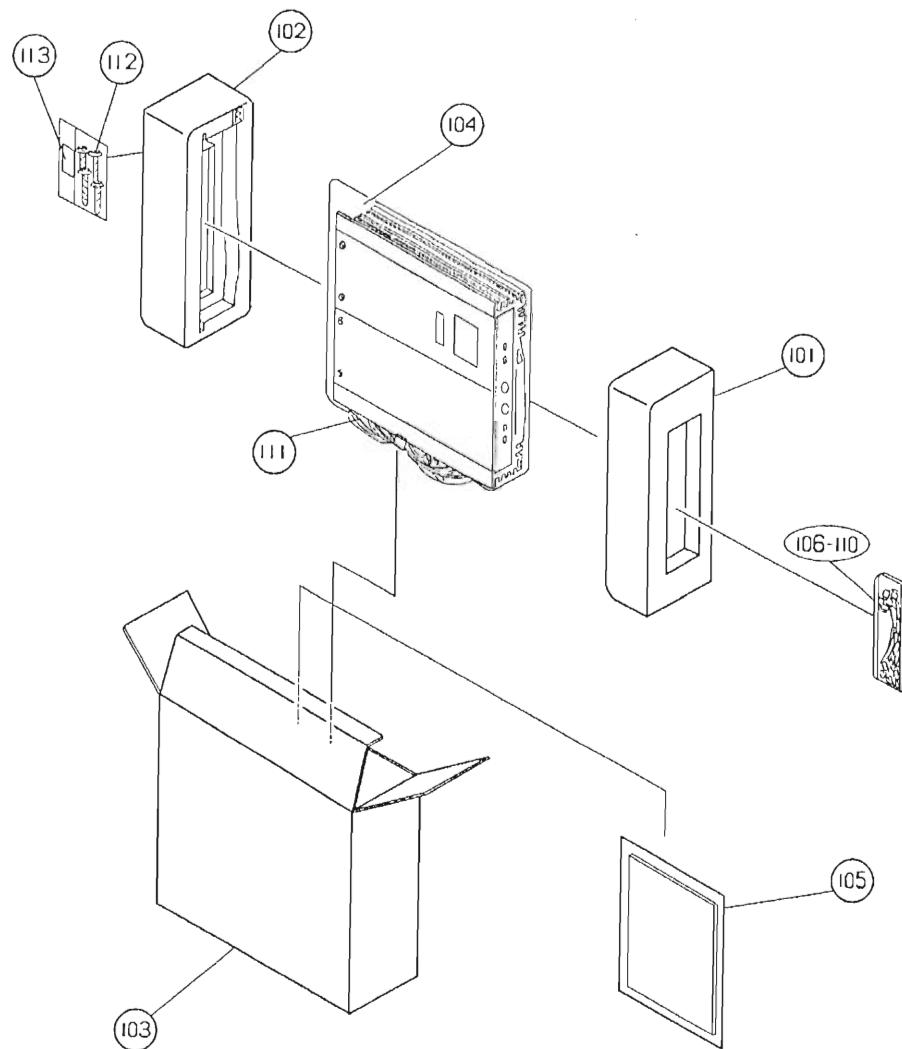
NOTE: The parts without part numbers are not supplied.







## Packing Method View



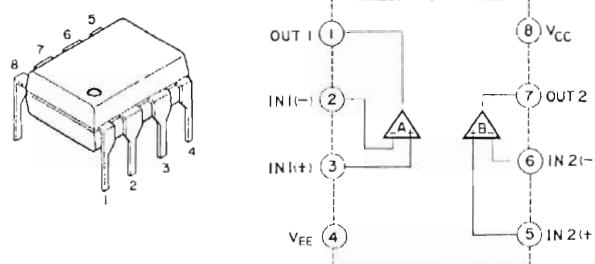
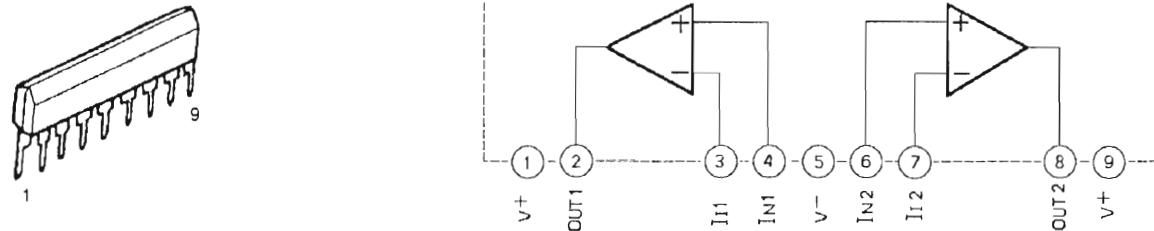
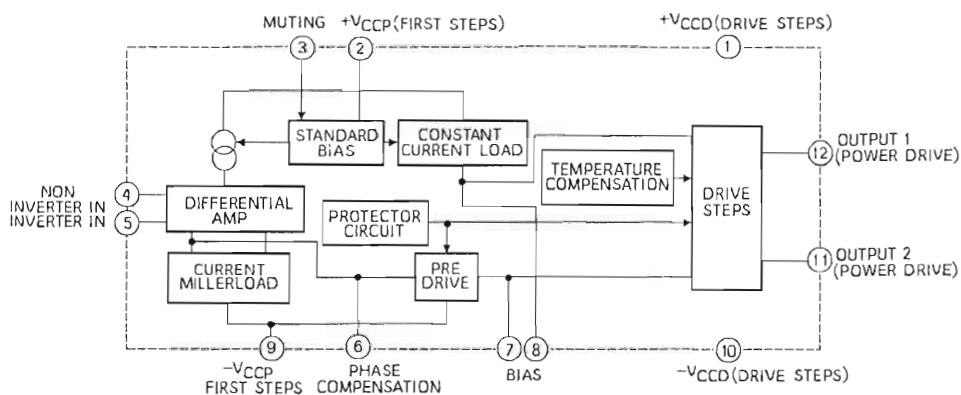
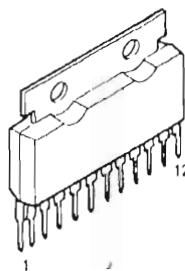
## Packing Assembly Parts List

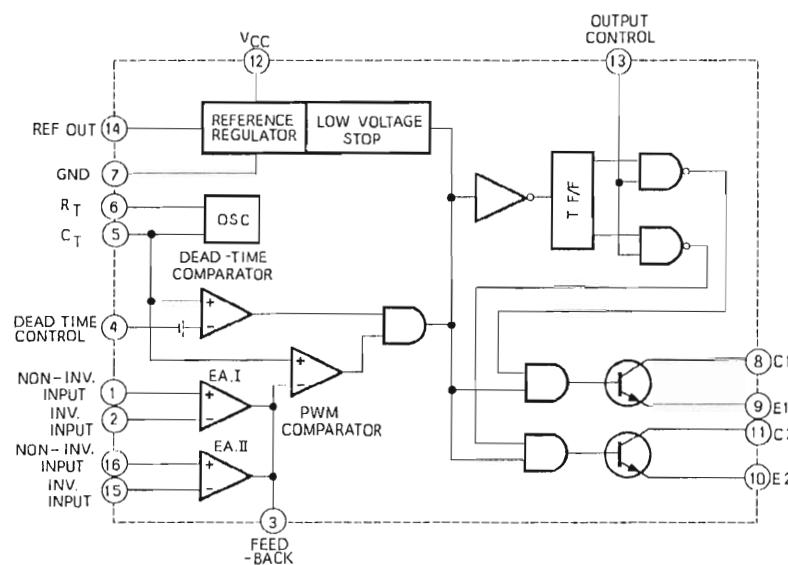
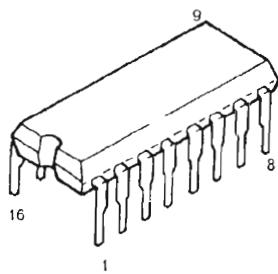
Symbol No.	Part No.	Description		
101	56E08309S01	Tray, Packing (L)		
102	56E08309S02	Tray, Packing (R)		
103	56E08310S01	Carton, Packing (IND)		
104	56E08311S01	Sack, Polyethylene (SET)		
105	68P21870W13	Owner's., Manual		
106	01E08313S01	Assy., Kit S.T, Output Wire (Front)		
107	01E08314S01	Assy., Kit B.T.L Output Wire (Left)		
108	01E08315S01	Assy., Kit S.T, Output Wire (Rear)		

Symbol No.	Part No.	Description		
109	01E08316S01	Assy., Kit B.T.L Output Wire (Right)		
110	01E08318S01	Assy., Kit SP-Input Wire		
111	01E08317S01	Assy., Kit Power Wire		
112	03E06399S01	Screw, Tapping-1 BLK (M4x14)		
113	65S58596F07	Fuse, 25A		

# Semi-Conductors Lead Identifications

MC4558C : IC201, 202

 $\mu$ PC4570HA : IC203~206 $\mu$ PC1270H : IC501~504

$\mu$ PC494C : IC801

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