

SOLID STATE 4-CHANNEL POWER AMPLIFIER

QM-800A

FVW



OPERATING INSTRUCTIONS

PIONEER[®]

First, let us thank you for the confidence you have shown us in purchasing the Pioneer 4-channel power amplifier, model QM-800A. This amplifier is designed to serve in a 4-channel stereo installation, together with a 4-channel pre-amplifier, four speaker systems and one or several program sources. Engineered for highest sound fidelity, it will open up a whole new world of "environmental sound." Please read the following instructions carefully to assure that all connections are made correctly and that the QM-800A will reveal its true performance quality.

FEATURES

PURE COMPLIMENTARY OCL DESIGN

Matched pairs of specially selected, high power PNP and NPN transistors are used. These top-grade audio transistors possess unexcelled characteristics such as phase accuracy, frequency response, linearity and minimum distortion.

DIRECT COUPLING OF ALL STAGES

Direct coupling of all amplifier stages greatly improves phase characteristics and permits an extremely wide frequency response down to near-DC. A load-regulated power supply unit is employed, and output power is higher than will ever be required.

LEVEL METERS FOR ALL FOUR CHANNELS

To obtain optimum sound balance in a 4-channel system, four separate level meters are provided. Moreover, the meters' sensitivity can be adjusted in three stages (0, -10, -20 and -30 dB) to permit accurate readings at all volume levels.

TWO SPEAKER SYSTEMS CAN BE CONNECTED

The amplifier is equipped with two sets of speaker sockets, providing for 4-channel reproduction in separate rooms.

ADJUSTABLE INPUT SENSITIVITY

As the power amplifier's input sensitivity can be adjusted in 6dB steps (at 0.5, 1, 2 and 5 volts), it is easy to match with any preamplifier.

PERFECT PROTECTION OF OUTPUT STAGE TRANSISTORS AND SPEAKERS

The output transistors are protected from damage (in the case of overload or short-circuits in the speaker leads) by a dual system of relay and DC driftvoltage detector circuits. The latter also guard against possible speaker damage by DC current.

UNIQUE PIONEER EXTERIOR DESIGN

The front panel is attractive as well as logically laid out. With its natural wooden cabinet, the QM-800A matches other Pioneer hi-fi components perfectly.

LINE VOLTAGE AND FUSE

CHANGING LINE VOLTAGE AND FUSE

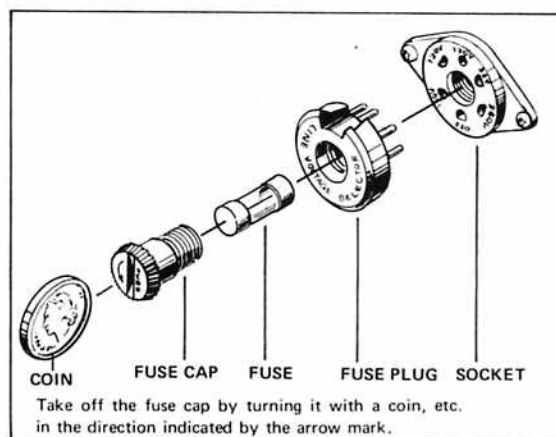
To remove the fuse, turn the fuse cap located on the line voltage selector in the direction of the arrow. Then remove the fuse plug from the unit.

Put the fuse plug back so that the proper line voltage marking can be seen through the cut in the edge of the plug. Whenever the position of the selector is changed, check the rating of the fuse. A 2-ampere is to be used for either 220V or 240V operation and a 4-ampere fuse for 110V, 120V, 130V operation.

If the rating of the fuse is correct, replace cap.

FUSE REPLACEMENT

If the fuse blows, remove the fuse cap and replace the fuse with a new one.



COMPOSITION OF 4-CHANNEL STEREO SYSTEM

To compose a 4-channel stereo system, the QM-800A, a solid state 4-channel power amplifier, can be combined with a 4-channel tape deck, a 4-channel preamplifier, and four speaker systems as shown in Fig. 1.

When the QM-800A is combined with a tape deck, AM/FM stereo tuner, a turntable, four speaker systems, and a 4-channel preamplifier equipped with a matrix-decoder circuit (Pioneer QC-800A, for instance) as shown in Fig. 2, a 2-channel program source can be reproduced in a high degree of matrix performance. If an electronic crossover network (separately available, Pioneer SF-500 or SF-700) is installed as shown in Fig. 3, a 2-channel 2-way multi-amplifier system can be set up.

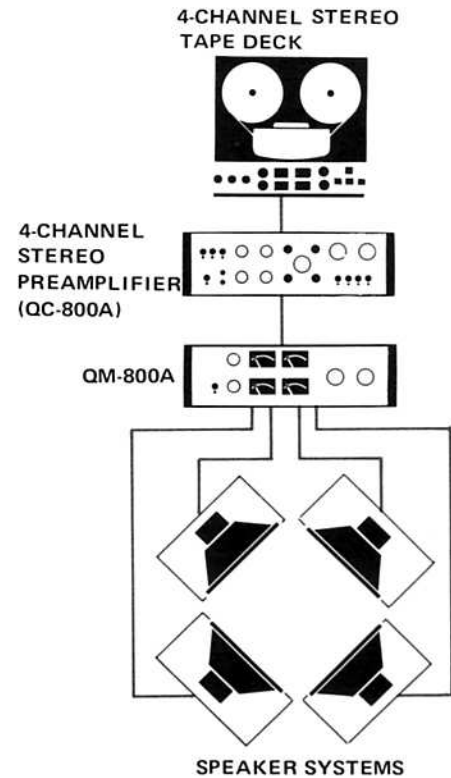


Fig. 1

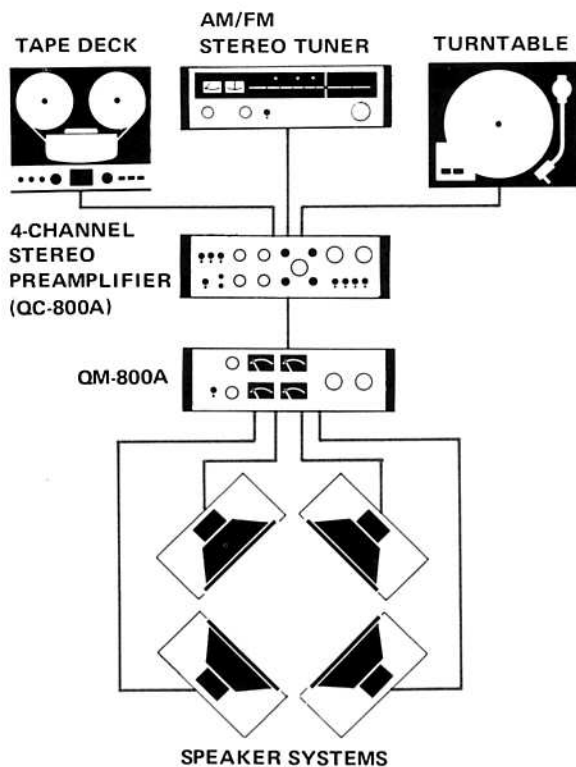


Fig. 2

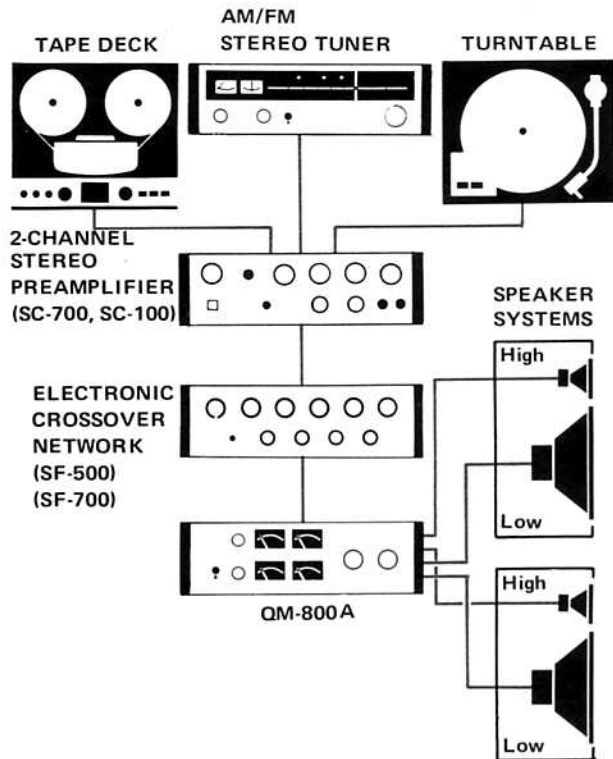


Fig. 3

4-CHANNEL STEREO SYSTEM ARRANGEMENTS

CONNECTION AND POSITION OF SPEAKER SYSTEM

• SPEAKER SYSTEM ARRANGEMENTS

For optimum 4-channel stereo performance, speaker systems can be arranged in the following different three ways:

2-2 system: Two speaker systems are placed in the front and two speaker systems in the rear.

3-1 system: Three speaker systems are placed in the front and one speaker system in the rear.

4-0 system: All four speaker systems are placed in the front.

Descriptions in this brochure are concerned with the 2-2 system, the most popular speaker arrangement.

• POSITIONS

Place four speaker systems as illustrated in Fig. 4.

Front left Channel 1

Front right Channel 3

Rear left Channel 2

Rear right Channel 4

• CONNECTIONS

1. As the QM-800A has provision for connecting two speaker systems (A and B), 4-channel reproduction in separate rooms is possible.

2. As shown in Fig. 5, accessory speaker plugs are used to connect the speaker systems. Be sure to observe marked polarity (+, -). Do not short (+) and (-) connections.

3. Connect one of the speaker systems to the speaker sockets marked A. Make sure that the speaker placed at the front left (CH. 1) is plugged into the FRONT L socket, the speaker placed at the front right (CH. 3) is plugged into the FRONT R socket, that the speaker placed at the rear left (CH. 2) is plugged into the REAR L socket, and that the speaker placed at the rear right (CH. 4) is plugged into the REAR R socket. Note that any other arrangement will not give the 4-channel effect.

4. Connect the other speaker system to the speaker socket marked B, following the procedure outlined above.

PREAMPLIFIER CONNECTION

Plug the outputs of the 4-channel preamplifier (QC-800A, for instance) into the INPUT 1 jacks of the QM-800A:

FRONT LEFT output to CH. 1 (FRONT LEFT) input 1
FRONT RIGHT output to CH. 3 (FRONT RIGHT) input 1

REAR LEFT output to CH. 2 (REAR LEFT) input 1

REAR RIGHT output to CH. 4 (REAR RIGHT) input 1

NOTE: Set the INPUT selector switch on the rear panel to 1.

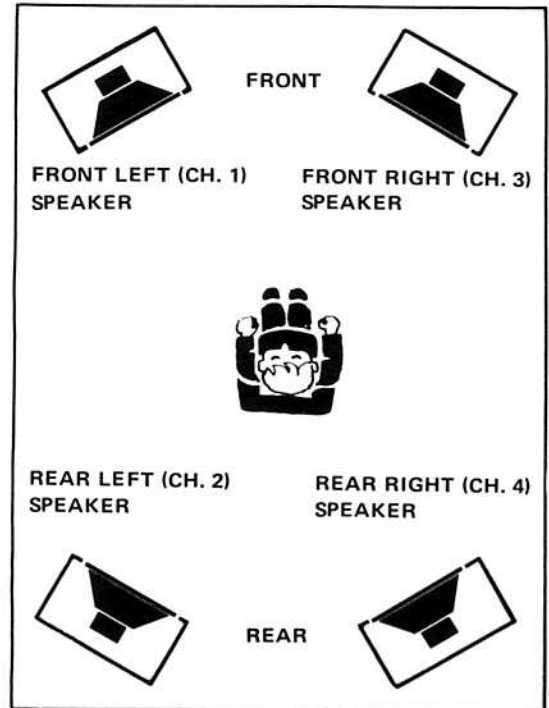


Fig. 4

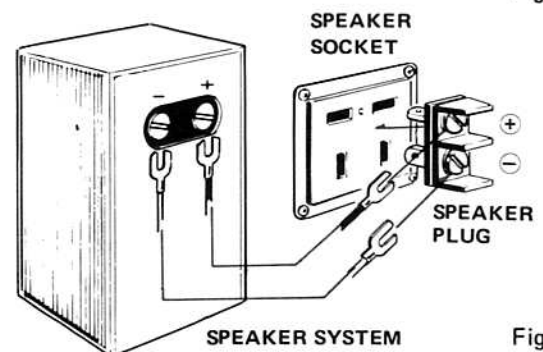
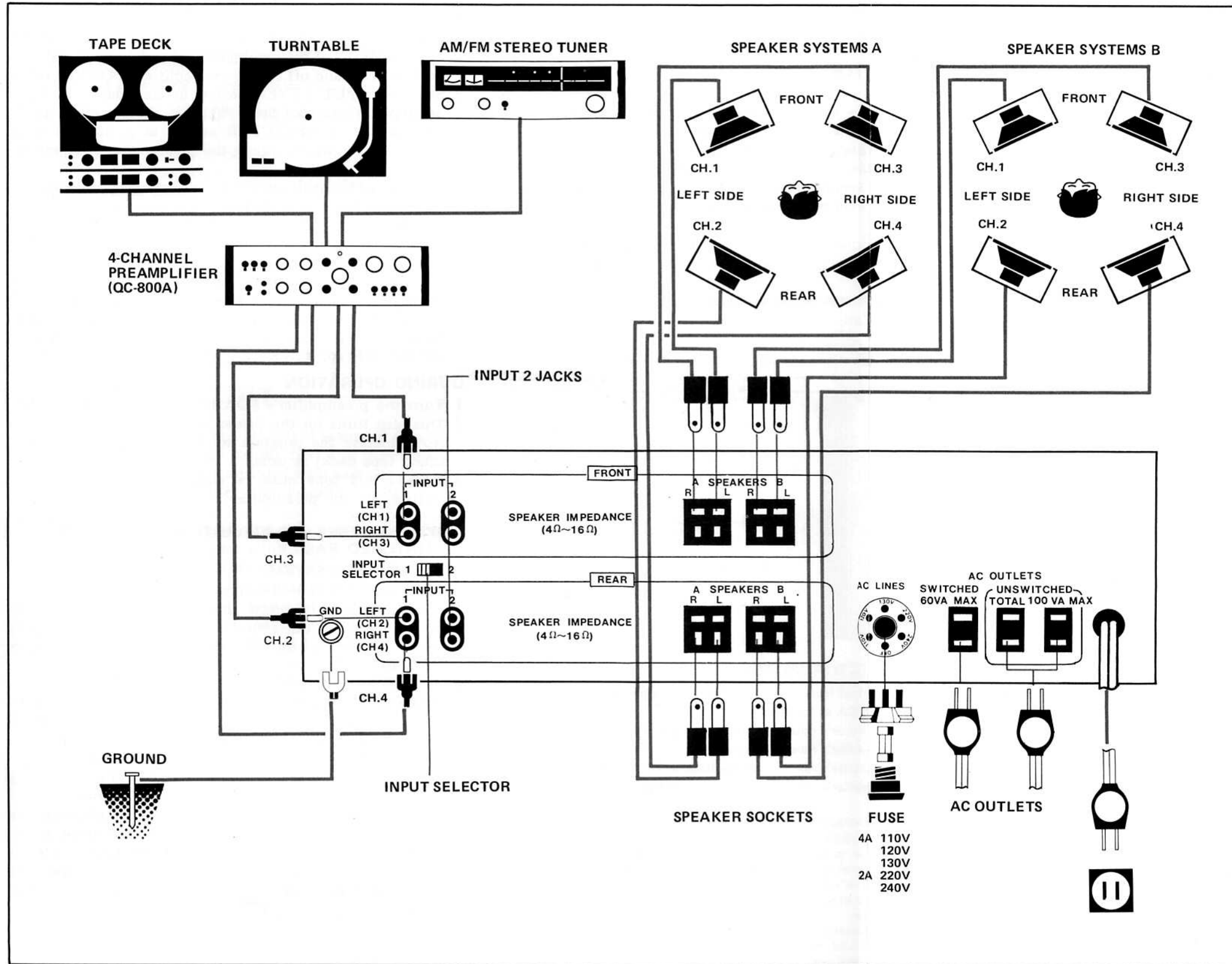


Fig. 5

CONNECTION DIAGRAM



2-CH. 2-WAY MULTI-AMPLIFIER SYSTEM ARRANGEMENTS

CONNECTION AND POSITION OF SPEAKER SYSTEM

- POSITION
The best stereo listening position lies at the vertex of a regular triangle with the two speaker systems placed at both ends of its base, 1 to 2.5 meters apart. Also, both speakers should be placed at the same height. If the speaker systems are placed on different levels, the stereophonic effect will be impaired.
- CONNECTION
1. Plug the low-range speaker for the left channel (L) into FRONT L of the A speaker socket, that for the right channel (R) to FRONT R.
2. Plug the high-range speaker for the left channel (L) into REAR L of the A speaker socket, that for the right channel (R) to REAR R. Refer to the table and connect a capacitor in series between the (+) terminal of the high-range speaker and the (+) speaker terminal. (Repeat this for both sides.) These capacitors serve to protect respective high-range speakers from signals having a frequency lower than that found in the normal frequency range. Use of capacitors is mandatory in the case of horn-type speakers.

Crossover frequency	500Hz	1000Hz	2000Hz	4000Hz
Capacitance	80 μ F	40 μ F	20 μ F	10 μ F

Values of capacitance shown are applicable when speaker voice coil impedance is eight ohms. Double these values for four-ohm voice coils.
Capacitors should be of the non-polarized or metallized paper type.

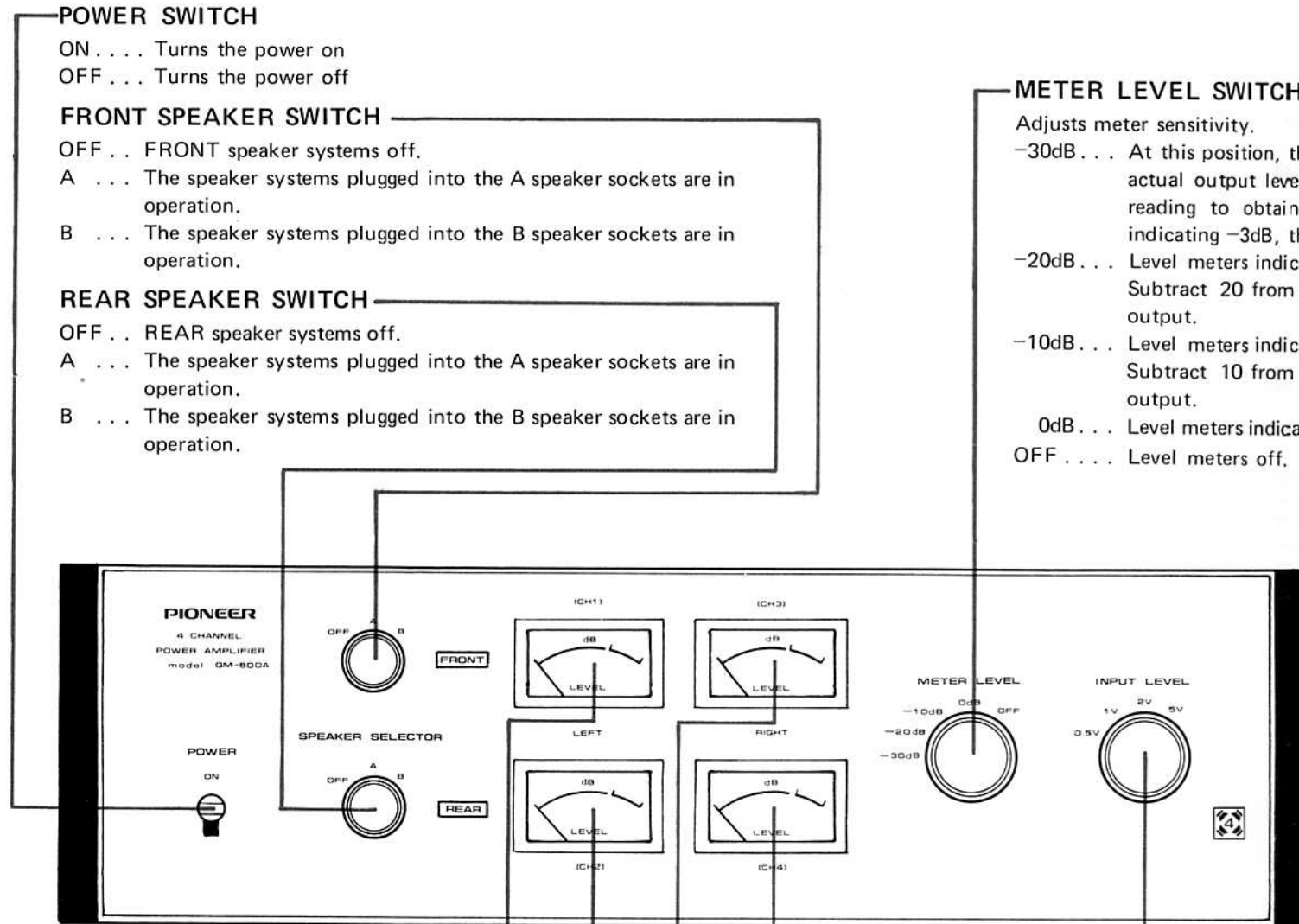
NOTE: Be careful in making the above connections. If the high-range speakers are connected to the low-range amplifier, the speakers may be damaged.

ELECTRONIC CROSSOVER NETWORK CONNECTION

Connect the outputs of the electronic crossover network (Pioneer SF-500 or SF-700, for instance) to the INPUT 2 jacks of the QM-800A:
 Low-range left channel output to CH.1 (FRONT LEFT) input 2
 Low-range right channel output to CH.3 (FRONT RIGHT) input 2
 High-range left channel output to CH.2 (REAR LEFT) input 2
 High-range right channel output to CH.4 (REAR RIGHT) input 2

NOTE: Set the INPUT selector switch to 2.

FRONT PANEL FACILITIES



POWER SWITCH

ON . . . Turns the power on
OFF . . . Turns the power off

FRONT SPEAKER SWITCH

OFF . . . FRONT speaker systems off.
A . . . The speaker systems plugged into the A speaker sockets are in operation.
B . . . The speaker systems plugged into the B speaker sockets are in operation.

REAR SPEAKER SWITCH

OFF . . . REAR speaker systems off.
A . . . The speaker systems plugged into the A speaker sockets are in operation.
B . . . The speaker systems plugged into the B speaker sockets are in operation.

METER LEVEL SWITCH

Adjusts meter sensitivity.
-30dB . . . At this position, the level meters indicate 30dB more than actual output level. Therefore, subtract 30 from the meter reading to obtain actual output. e.g. when the meter is indicating -3dB, the actual output level is -33dB.
-20dB . . . Level meters indicate 20dB more than actual output level. Subtract 20 from the indication reading to obtain actual output.
-10dB . . . Level meters indicate 10dB more than actual output level. Subtract 10 from the indication reading to obtain actual output.
0dB . . . Level meters indicate actual output level.
OFF . . . Level meters off.

FRONT LEFT (CH. 1) LEVEL METER

Indicates output level of the amplifier to the FRONT LEFT (CH. 1) speaker system.

REAR LEFT (CH. 2) LEVEL METER

Indicates output level of the amplifier to the REAR LEFT (CH. 2) speaker system.

FRONT RIGHT (CH. 3) LEVEL METER

Indicates output level of the amplifier to the FRONT RIGHT (CH. 3) speaker system.

REAR RIGHT (CH. 4) LEVEL METER

Indicates output level of the amplifier to the REAR RIGHT (CH. 4) speaker system.

INPUT LEVEL SELECTOR SWITCH

Set this switch to the output level (output voltage) of the preamplifier combined with the QM-800A as follows:

0.5V . . . If the preamplifier's rated output voltage is 0.5V to 1V.
1V If the preamplifier's rated output voltage is 1V to 2V.
2V If the preamplifier's rated output voltage is 2V to 5V.
5V If the preamplifier's rated output voltage is higher than 5V.

NOTES: 1. If the output voltage from the preamplifier exceeds the voltage set by the switch (0.5V, 1V, 2V or 5V), it may cause a distortion in reproduction sound. Adjust the preamplifier's output voltage to a voltage lower than the set voltage (0.5V, 1V, 2V or 5V) by turning down its volume control. The QM-800A provides its full rated output when supplied with the precise specified voltage from the preamplifier.
2. When the preamplifier's rated output voltage is less than 0.5V, set the switch to 0.5V. Note that the QM-800A will not deliver its full output in this case.

CORRECT OPERATION

BEFORE TURNING ON THE POWER

A. QM-800A CONTROLS

1. Plug the QM-800A AC cord into the AC outlet marked "SWITCHED" of the preamplifier. The QM-800A will now be turned on and off by the preamplifier's POWER switch.
2. Set the INPUT LEVEL switch in accordance with the preamplifier's output level. When in doubt, set it at 5V.
3. Set the INPUT SELECTOR switch at position 1 or 2, depending on which inputs the preamplifier is connected to.
4. Set the SPEAKER switches in accordance with the speaker systems to be driven.
5. Set the METER LEVEL switch at position 0dB.
6. Now turn on the QM-800A's power switch.

B. PREAMPLIFIER CONTROLS

1. Turn the preamplifier's volume control down to minimum.
2. Set the preamplifier's tape monitor switch to position OFF (or SOURCE) for all modes of operation except tape playback. For tape playing, set the tape monitor switch at position ON (or TAPE or PLAY).

DURING OPERATION

1. Turn the preamplifier's POWER switch to position ON.
2. This also turns on the power of the QM-800A. Now operate the program source component (turntable, tuner, tape deck) as usual.
3. Volume and tone must be adjusted with the respective controls on the preamplifier.

OUTPUT LEVELS RELATIVE TO ALL CHANNELS CAN BE MATCHED EASILY

- 4-CHANNEL SYSTEM:
By using the four level meters, the output levels of all four channels can be checked simultaneously. As the meters are graduated in dB, sound levels can be matched easily even if speakers of different (but known!) sound pressure levels are used.
- 2-CH. 2-WAY MULTI-AMPLIFIER SYSTEM:
By using the four level meters, levels for high-range output and low-range output can be checked simultaneously. If a horn-type tweeter is used as the high-range speaker, the efficiency difference between tweeter and woofer is usually quite large. If, in this case, the rated sound pressure level (efficiency in dB) for both speakers is known, connect matching of output levels can be made by observing the level meters. For instance, if the rated sound pressure level of the tweeter is 100dB and that of the woofer is 96dB, the difference is 4dB. To balance the levels, the low-range meters must show a 4dB higher reading than the high-range meters.

APPROXIMATE OUTPUT POWER VALUES CAN BE OBTAINED

The level meters are adjusted in such a way that they indicate 0dB at an output of 35W into a load of 8 ohms. Output power can be calculated using the diagram plotted in Fig. 6. If speakers are connected, the output power values obtainable from the diagram are approximate ones because the speaker impedance varies according to frequencies.

HOW TO USE INPUT SWITCH AND SPEAKER SWITCH BEST

The QM-800A is equipped with two sets of input jacks, marked (1) and (2). In the case of a 4-channel system, preamplifier output is applied to set (1). With output of an electronic crossover network connected to set (2) in the case of a multi-amplifier system, the input switch can be set to (2), providing a simple means of changing to the multi-amplifier system. Similarly, there are two sets of speaker sockets (A and B). With the 4-channel speaker system connected to A and the multi-amplifier system connected to B, the speaker switch can be set to (B) for selection of the multi-amplifier system configuration.

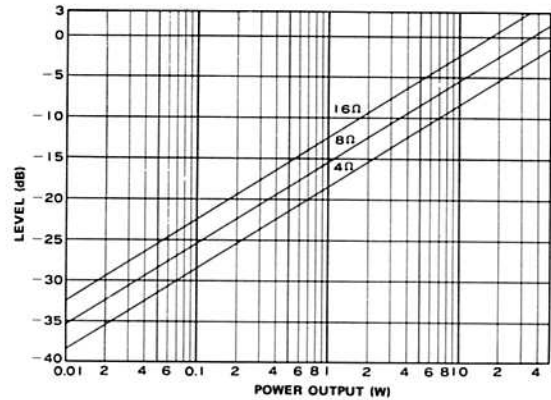


Fig. 6

PROTECTOR CIRCUIT

Even if the power switch of the QM-800A is turned on, the speaker system will not operate for the first 5 to 8 seconds. This is because the QM-800A is provided with a circuit which protects transistor, speakers, etc. from possible damage due mainly to unexpected trouble.

If any of the speaker systems stops operating during performance, or if mechanical noise (click, click, . . .) of the relays is heard continuously, a short-circuit in the speaker leads may be responsible. Turn off the power and check all speaker connections. Since the protector circuit is very sensitive, it may be activated if the power switch of the preamplifier combined with the QM-800A is turned on and off separately. It is therefore advisable to obtain AC power for the QM-800A from a switchable AC outlet of the pre-amplifier, as this guarantees simultaneous on-off switching of both units.

SPECIFICATIONS

SEMICONDUCTORS

Transistors	39
Diodes	36

POWER AMPLIFIER SECTION

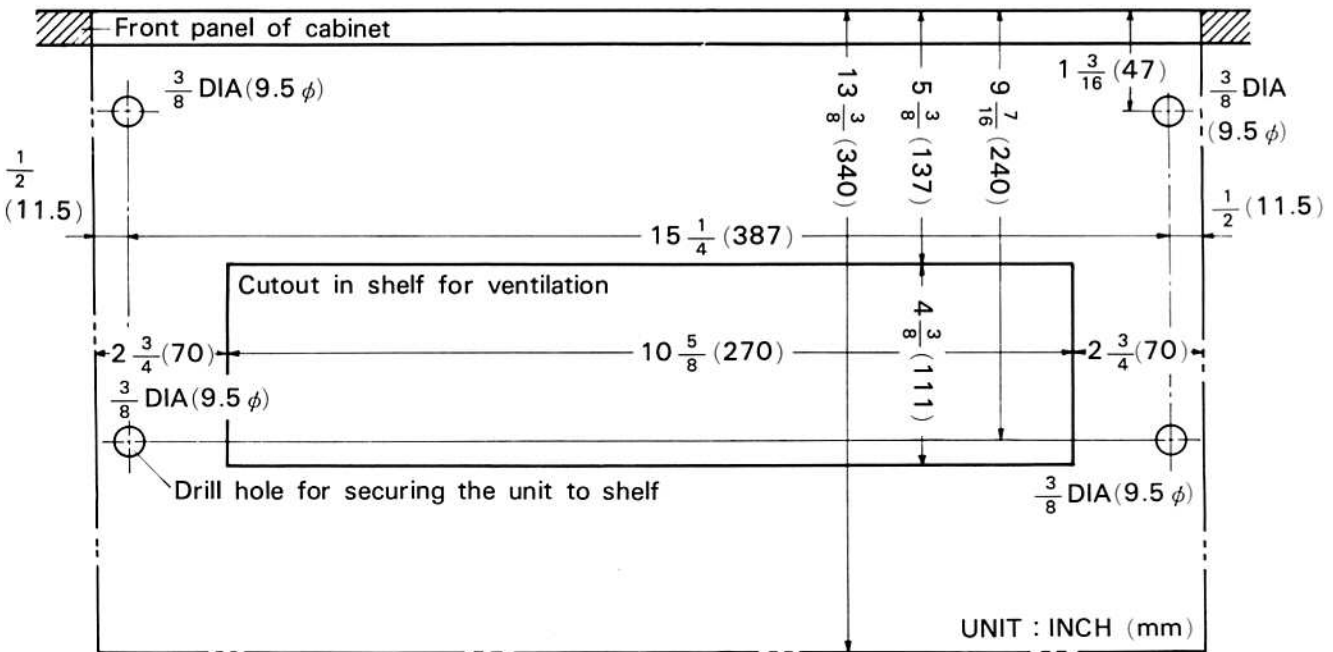
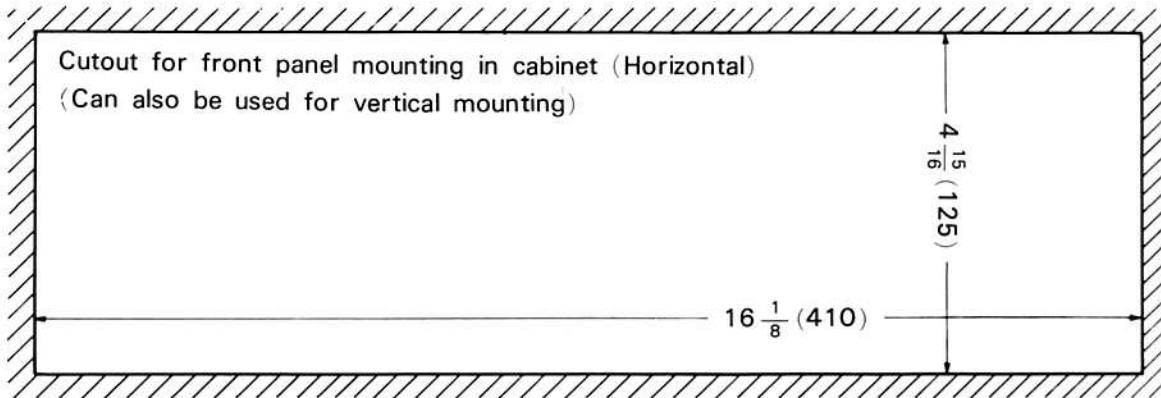
Music Power Output (IHF)	240W (4 Ω) 170W (8 Ω)
Continuous Power Output (1kHz 2 channels driven)	45W + 45W/45W + 45W (4 Ω) 35W + 35W/35W + 35W (8 Ω)
Continuous Power Output (1kHz 4 channels driven)	36W x 4 (4 Ω) 30W x 4 (8 Ω)
Power Output in the range of 20Hz to 20kHz (2 channels driven)	32W + 32W/32W + 32W (8 Ω)
(4 channels driven)	25W x 4 (8 Ω)
Harmonic Distortion (Continuous Power Output)	Less than 0.5% Less than 0.03% (8 Ω , 18W + 18W/18W + 18W Power Output)
Intermodulation Distortion (Continuous Power Output)	Less than 0.5% Less than 0.06% (8 Ω , 18W + 18W/18W + 18W Power Output)
Power Bandwidth (IHF) (2 channels driven)	5Hz to 50kHz (8 Ω , Harmonic
(4 channels driven)	10Hz to 50kHz Distortion less than 0.5%)
Frequency Response	8Hz to 60kHz, $\pm \frac{0}{1}$ dB
Input Sensitivity/Impedance (1kHz Continuous Power Output)	500mV/50k Ω , 1V/80k Ω , 2V/105k Ω , 5V/115k Ω
Speakers Outputs	2 pairs for Front, 2 pairs for Rear (4 Ω to 16 Ω)
Damping Factor	65 (8 Ω , 1kHz)
Hum and Noise (IHF Short circuit, A network)	More than 90 dB
Subfunctions	Input selector 1, 2 (Rear panel) Input sensitivity selector 0.5V, 1V, 2V, 5V Level meter sensitivity selector OFF, 0dB, -10dB, -20dB, -30dB Level meters (4-channel) 0dB = 35W/8 Ω Speaker switches (Front, Rear) OFF, A, B

MISCELLANEOUS

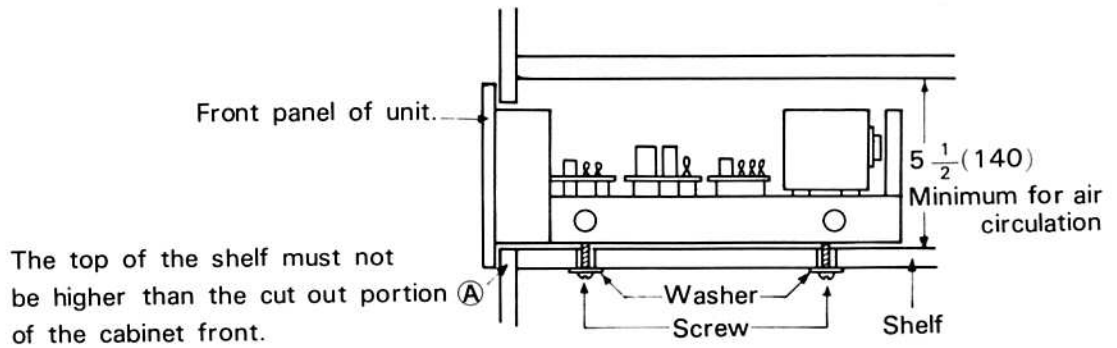
Power Requirements	110V, 120V, 130V, 220V and 240V (switchable) 50-60Hz
Power Consumption	370W (Max.)
AC Outlets	switched 1, unswitched 2
Dimensions (overall)	16-15/16in./430mm (width) 5-7/16in./138mm (height) 13-1/4in./337mm (depth)
Weight: Without package	26 lb/11.5 kg
With package	30 lb/13.5kg
Furnished Parts	Pin plugs 4 Speaker plugs 8 Polishing cloth 1 Connection cords 2 Operating instructions 1

NOTE: Specifications and the design subject to possible modification without notice due to improvements.

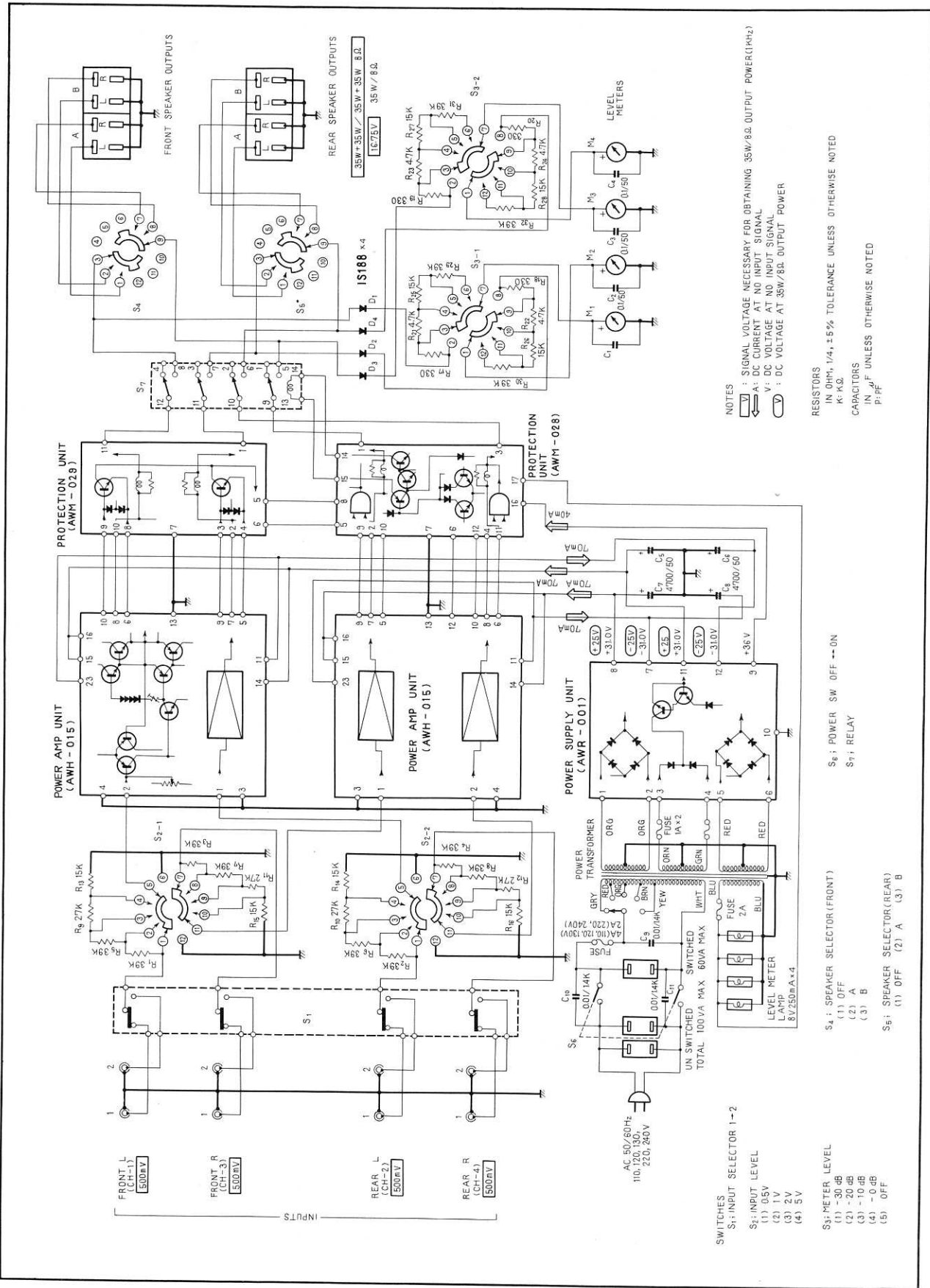
MOUNTING TEMPLATE



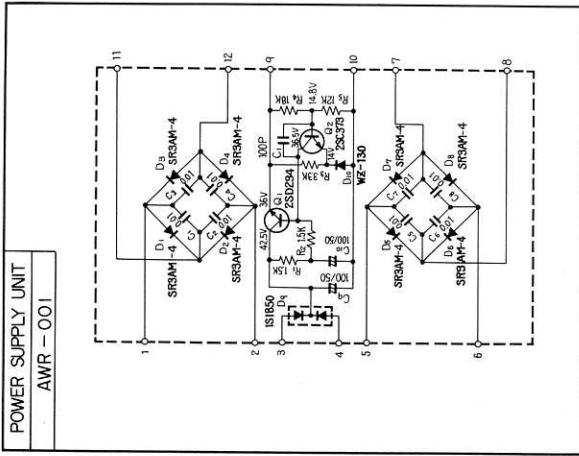
Remove the four feet on the bottom plate of the unit.



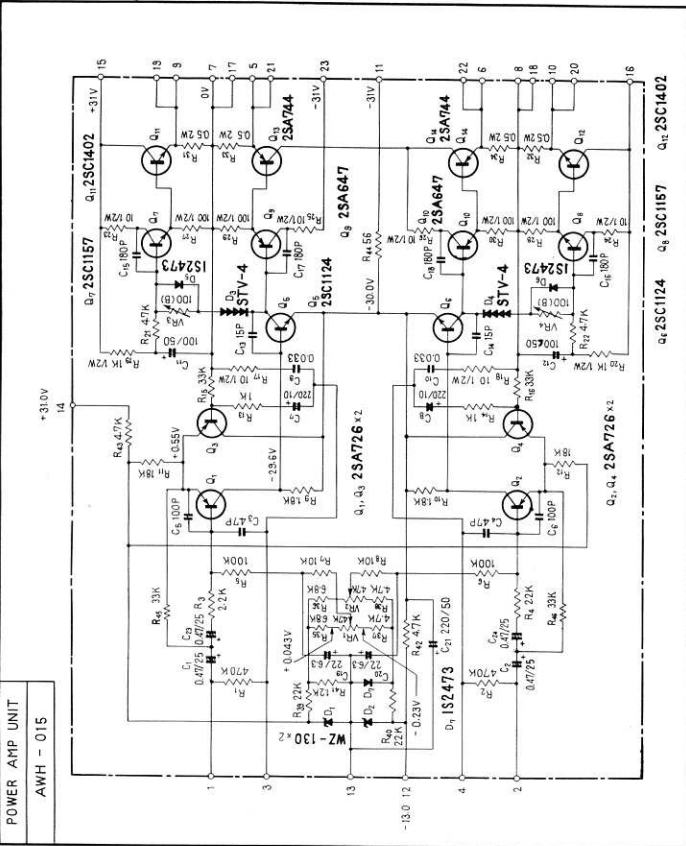
SCHEMATIC DIAGRAMS



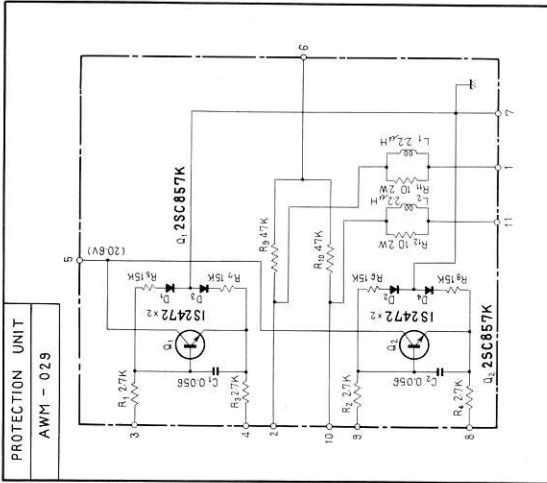
POWER SUPPLY UNIT
AWR - 001



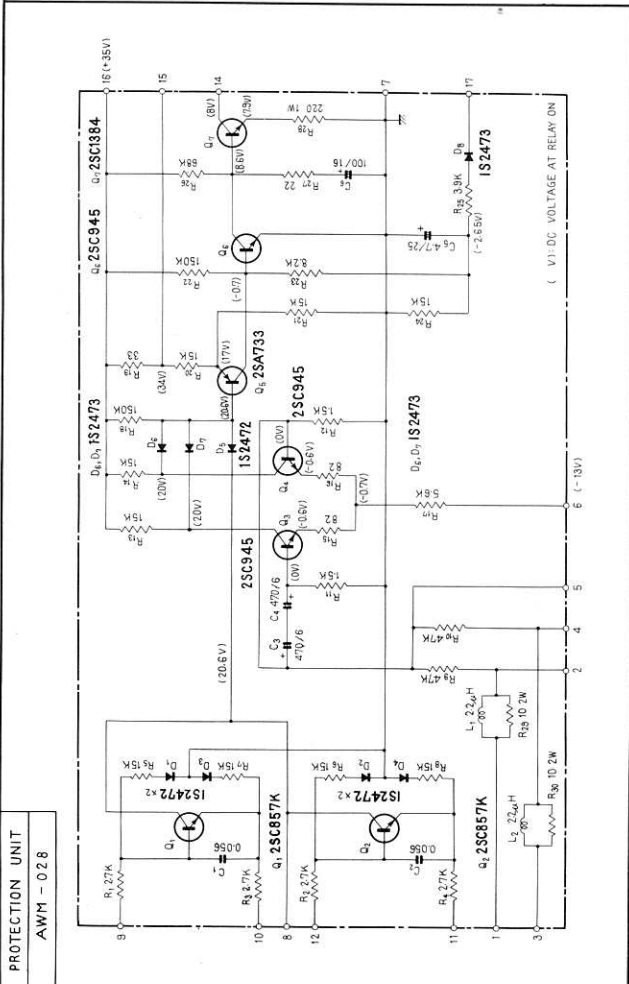
POWER AMP UNIT
AWH - 015



PROTECTION UNIT
AWM - 029



PROTECTION UNIT
AWM - 028



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PRINTED IN JAPAN

<ARB-056-0>

<72D02F01T>