OPERATING MANUAL

P O W E R

AMPLIFIER

MA-330/430/630/930

interM

1

Unpacking and Installation

Although it is neither complicated to install nor difficult to operate your power Amplifier, a few minutes of your time is required to read this manual for a properly wired installation and becoming familiar with its many features and how to use them. Please take a great care in unpacking your set and do not discard the carton and other packing materials. They may be needed when moving your set and are required if it ever becomes necessary to return your set for service. Never place the unit near radiators, in front of heating vents, to direct sun light, in excessive humid or dusty location to avoid early damage and for your years of quality use. Connect your complementary components as illustrated in the following page.

Features

- SUBSTANTIAL PROTECTION CIRCUITARY
  To insure stability and reliability against over current and overheating extra protection circuitary is provided. In addition, turn on delay and DC detection circuitary is provided to protect the loud-speaker.

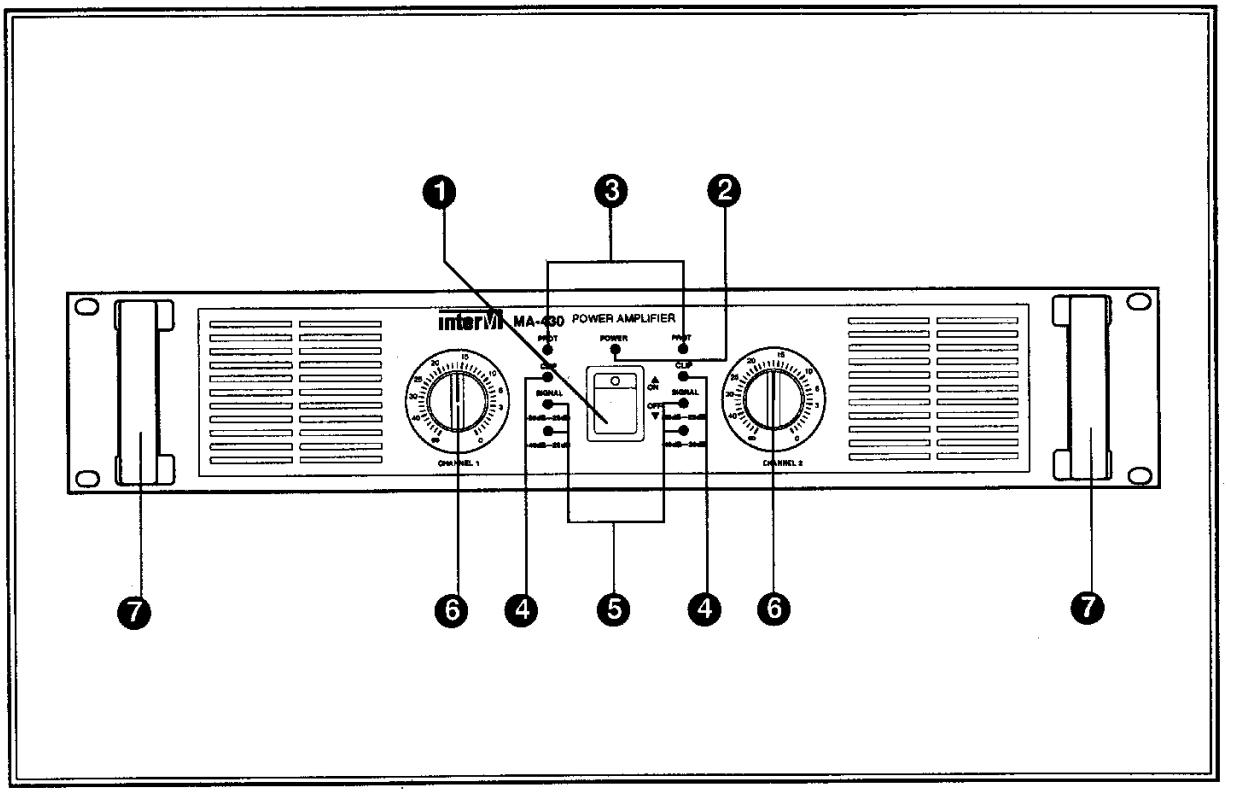
- BRIDGED MONO FUNCTION
  These stereo amplifiers can be used for monoral powerful sound by selecting the mode switch.

- VARIOUS DISPLAY
  To confirm the operating status, LED displays of protection, clip, and signals are provided on front panel.

- COMPACT SIZE
  For valuable saving in rack space and slim exterior view, these amplifier is designed within compact size.

- SOFT-START SYSTEM
  To prevent over current when turn on the amplifier, soft-start circuit is provided on primary power lines.

Front Panel Controls



1. POWER SWITCH
   The power switch is used to turn on and off the AC main power.

2. POWER INDICATING LED
   Power indicating LED is driven by the low-voltage, and the LED illuminates when the amplifier is powered ON.

3. PROTECTION INDICATORS
   PROTECTING INDICATING LEDs indicate the condition of the protection circuit. When the protection LEDs are "OFF" the amplifiers is operating normally and when the protection LEDs are "ON" the amplifiers outputs are cut off.

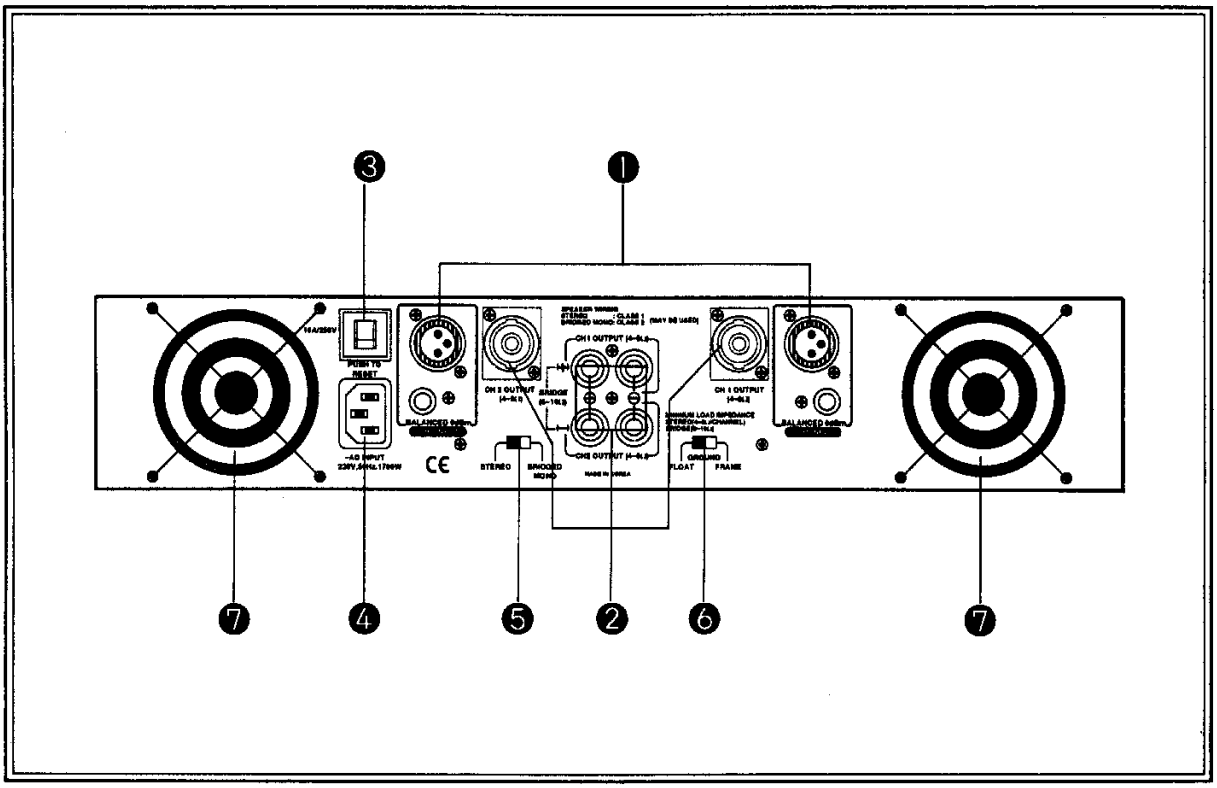
4. CLIP INDICATORS
   CLIP indicator on each channel illuminates when distortion reaches or exceeds approximately 0.5%, indicating that the amplifier is being driven by excessively high inputs or the condition of protection.

5. OUTPUT LEVEL INDICATORS
   Output level indicating LEDs indicate the output level of this amplifiers. These LEDs illuminate when the outputs are -40dB and -20dB of rated power.

6. LEVEL CONTROLS
   Separate level controls are provided for channel one and channel two input, clockwise rotation of the controls increase level.

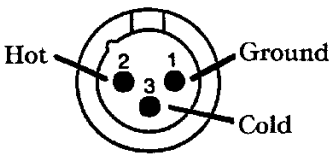
7. HANDLES
   You can handle this amplifier easily by using these handles.

3
Rear Panel Controls

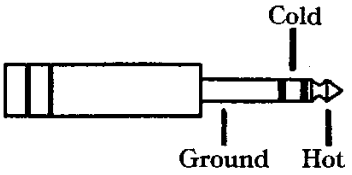


1. INPUT TERMINALS (CHANNEL 1, 2)
   Input connectors are provided both balanced XLR, and phone jacks.
   Channel 1 input terminal is used in Bridge mode.

   • XLR-TYPE CONNECTOR
   They are wired pin 1-ground, pin 2-hot (+), and pin 3 cold (-).

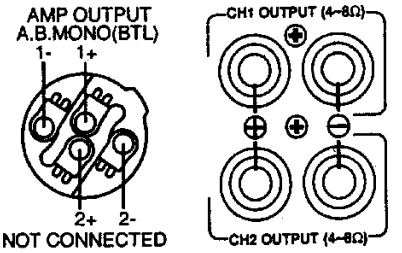


   • PHONE JACK
   They are wired tip-hot (+), ring-cold (-), and sleeve-ground.

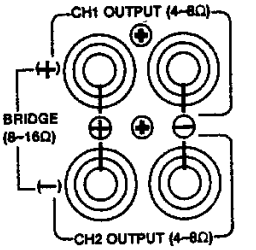


2. OUTPUT TERMINALS
Output terminals are dual five-way binding posts and speaker connectors. Do not parallel the two outputs of each channel by connecting them (together, or parallel them) with any other amplifier output.
* When speakers are connected through speaker, please make sure correct connection of each pin, and refer speaker pin number.

• STEREO MODE



• BRIDGE MODE



The minimum impedance for the connected speaker system is specified in "Speaker Impedance" on page 5.

3. CIRCUIT BREAKER
When the circuit breaker is cut, push to reset again. In case of occuring trouble to the set by means of overload or error, circuit breaker will protect the set from trouble by breaking AC power source.

4. AC POWER CORD
Plug this AC input cord into AC outlet.

5. MODE SELECTOR
Bridged mono operation is easily accessed by the slide switch. The input is applied channel one only the corresponding front panel control is used to set the level, please refer bridged mono operation.

6. EARTH LINK SWITCH
This slide switch provides for separation of frame and output ground to prevent from hum loops.

7. FANS
The fans should be kept free of all obstructions and be accessible to cool fresh air when possible. It is important that the fans be used in a dust free environment.

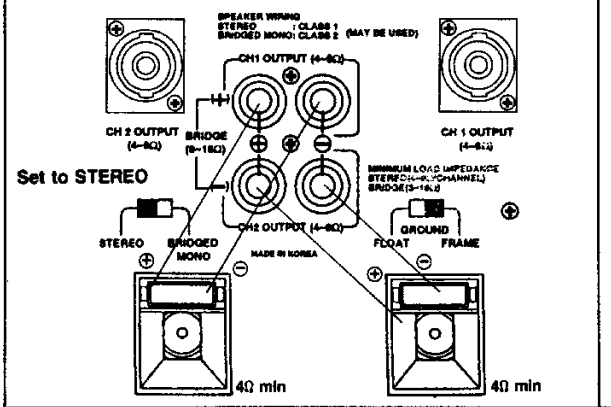
Stereo Mode and Bridge Mode

- STEREO MODE
  In this mode, channels A and B operate independently (typical stereo amplifier). Channel A input signal feeds channel A power amp, and channel B input signal feeds channel B power amp. In this mode, the minimum speaker impedance per channel is 4Ω.
- BRIDGE MODE
  In this mode, channels A and B are bridged together and work as one mono amplifier. In this mode, the minimum speaker impedance is 8Ω.

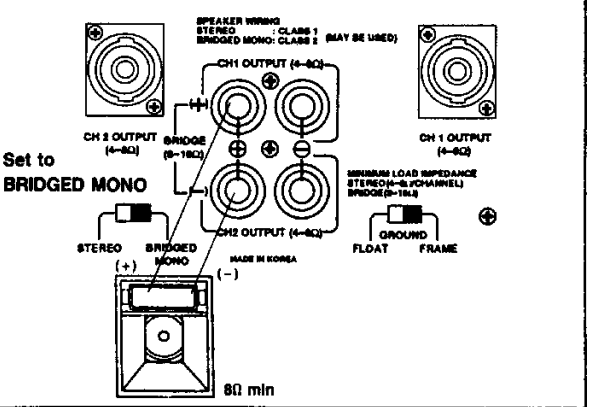
Speaker Impedance

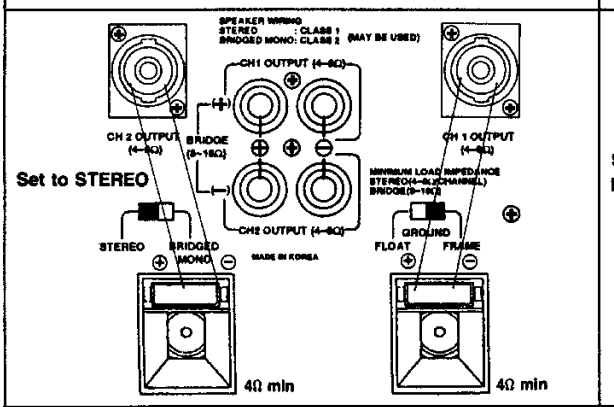
MA-330/MA-430/MA-630/MA-930 series amplifier has two operating modes: Stereo and Bridge, and allows you to connect multiple speaker systems in parallel. Therefore, the minimum speaker impedance various depending on the combination of these speakers. Be sure that the speaker impedance falls below the specified impedance.
The figures below show the examples of connection in Stereo mode and Bridge mode, and speaker systems connected in parallel in Stereo mode, and the respective minimum impedance.

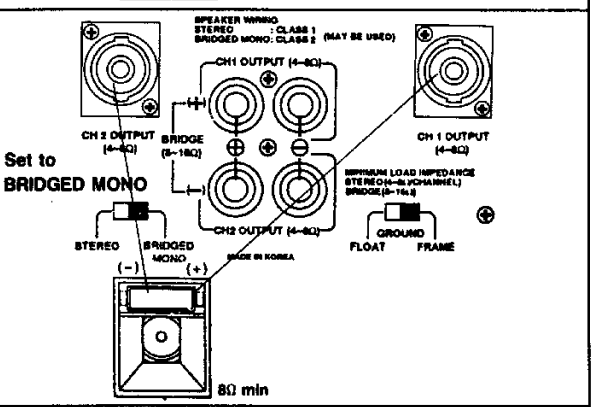
STEREO MODE CONNECTIONS

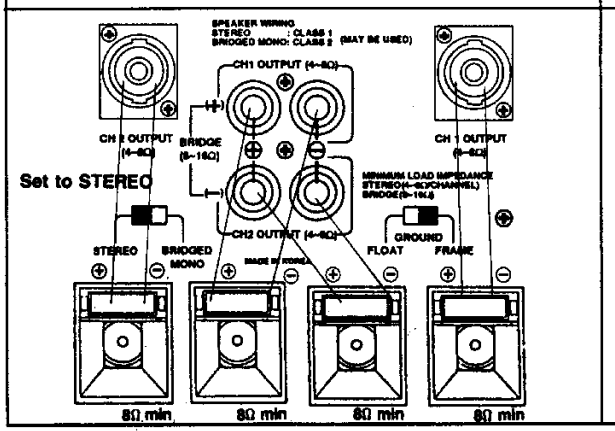


BRIDGE MODE CONNECTIONS





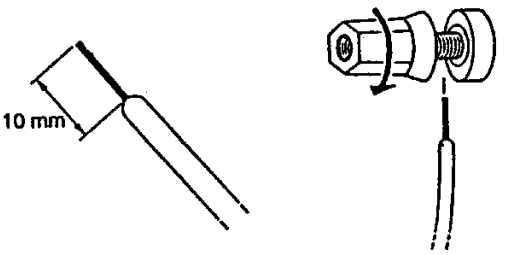




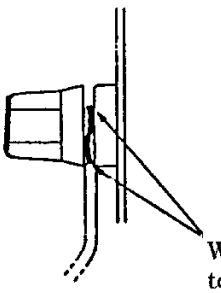
Caution for Speaker Connection

1. Turn off the POWER switch.

2. After removing approx. 10 mm of insulation from the ends of the speaker cables, pass the bare ends of the speaker wires through the holes in the corresponding speaker terminals and tighten the terminals to securely clamp the wires.
   Refer to page 4 for speaker porality.

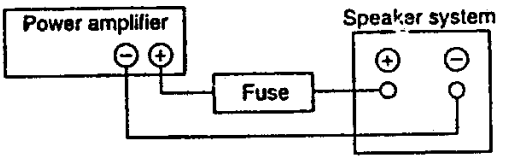


At this time make sure that the bare ends of the speaker cables do not extend from the terminals in such a way that they touch the chassis.



Wire should not
touch the chassis

- SPEAKER FUSE
  The output capacity of your amplifier is very high: 450W + 450W (4Ω) in stereo and 900W (8Ω) in monaural on the MA-930: 300W + 300W (4Ω) in stereo and 600W (8Ω) in monaural on the MA-630: 200W + 200W (4Ω) in stereo and 400W (8Ω) in monaural on the MA-430: 100W + 100W (4Ω) in stereo and 200W (8Ω) in monaural on the MA330. Be sure to use a speaker system that has sufficient input capacity.
  If the input capacity of your speaker system is lower than the rated output of the power amplifier, you can protect your speakers by connecting a fuse serially between the speaker and amplifier as shown below.



Use the following formula to determine the fuse capacity according to the speaker's input capacity.

$$Po = I^2R \rightarrow I = \sqrt{\frac{Po}{R}}$$

PO [W] : Speaker's continuous input capacity (noise or RMS)
R [Ω] : Speaker's nominal impedance
I [A] : Required fuse capacity

ex.) Speaker's continuous input capacity: 100W
Speaker's impedance: 8Ω

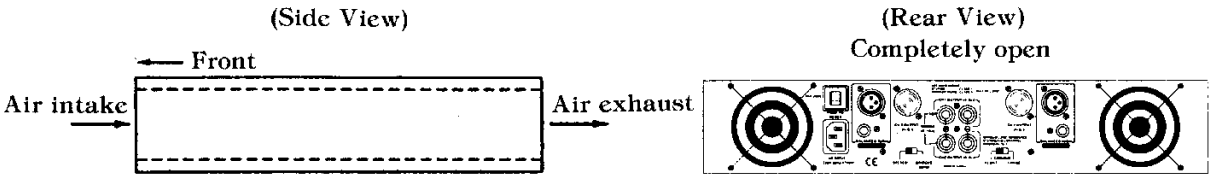
$$I = \sqrt{\frac{100}{8}} = 3.5$$

In this example, the required fuse capacity is calculated as 3.5 [A].

- SPEAKER CABLE
If you use a long speaker cable, use as thick a cable as possible to prevent deterioration of the damping factor or power loss inside the cable. Even the thickest cable can be used for the speaker terminal of this unit.

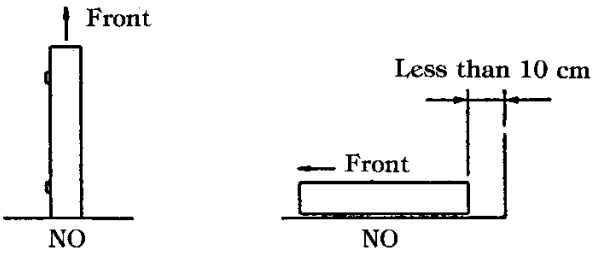
Portable Rack Mounting

The amplifier intakes cool air through the front panel and exhausts warm air out the rear panel. When mounting amplifiers in a portable rack, make sure the rear panel is completely open for ventilation.



Positioning the Housed Amplifier

Place the case so that the ventilation airflow paths are not blocked.



Troubleshooting

The following table lists the main causes of abnormal operation and the corrective measures required, as well as the protective circuit operation in each case.

Indicator	Probable Cause	Remedy	Protection Circuit
CLIP indicator lights.	There is a short at a speaker terminal, amplifier terminal, or wire.	Locate and correct the cause of the short.	The PC limiter circuit operates to protect the power transistors.
	The amplifier load is excessive.	Use a speaker system with an impedance of at least 4Ω (stereo) or 8Ω (bridge).	Same as above.
PROTECTION indicator lights.	The heat sink temperature has exceeded 100°C.	Check the amplifier ventilation conditions and take appropriate measures to improve airflow around the amplifier.	The thermal protection circuit operates to protect the power transistors.
	A DC voltage of +/-2V or greater was generated in the power amplifier's output circuit.	Consult your dealer or nearest Yamaha service center.	The relay operates to protect the speaker system.

Specifications

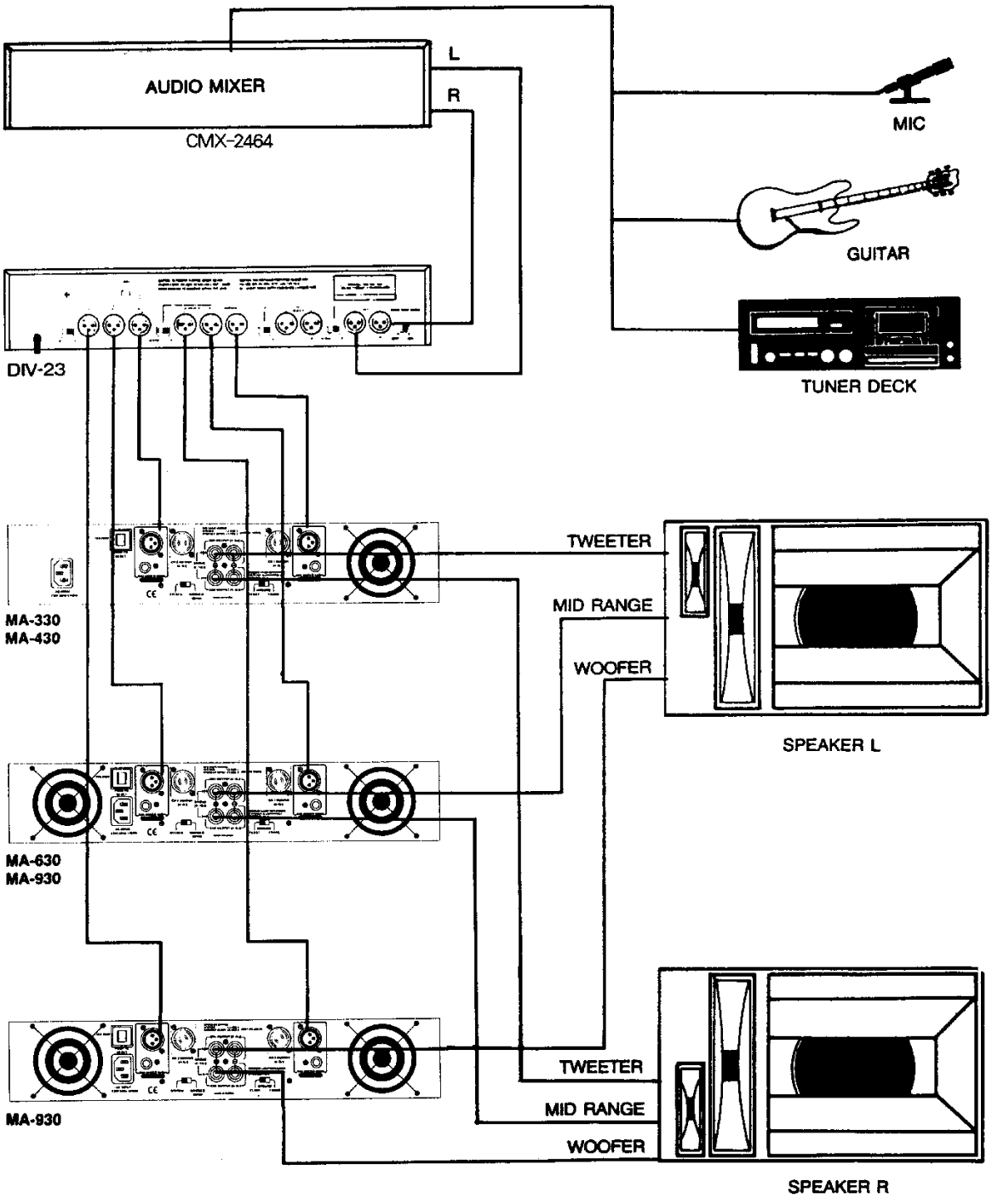
	MA-330	MA-430	MA-630	MA-930
Power Output Level f = 20Hz ~ 20KHz, THD + N ≤ 0.05% Stereo RL = 8Ω RL = 4Ω Bridge RL = 8Ω f = 1KHz, THD + N ≤ 0.05% (Typical) Stereo RL = 8Ω RL = 4Ω Bridge RL = 8Ω One Channel Driven f = 1KHz THD + N ≤ 0.05% RL = 4Ω	 75W + 75W 100W + 100W 200W 90W + 90W 130W + 130W 270W 93W	 125W + 125W 200W + 200W 400W 130W + 130W 220W + 220W 430W 125W	 200W + 200W 300W + 300W 600W 220W + 220W 340W + 340W 670W 250W	 300W + 300W 450W + 450W 900W 330W + 330W 520W + 520W 1000W 375W
Frequency Response RL = 8Ω, P. = 1W	0dB + 0.5, −1.5dB: f = 10Hz ~ 75KHz			
Power Bandwidth Half Power, THD + N ≤ 0.1% Stereo RL = 8Ω	10Hz ~ 70KHz			
Total Harmonic Distortion (THD + N) f = 20Hz ~ 20KHz, Half Power Stereo RL = 8Ω RL = 4Ω Bridge RL = 8Ω	 ≤ 0.03% ≤ 0.05% ≤ 0.05%			
Channel Separation Half Power RL = 8Ω, f = 1KHz, ATT. max. Input 600Ω shunt	≥ 85dB			
Residual Noise (DIN Audio Filter)	≤ −75dB: ATT min			
Signal-to-Noise Ratio DIN Audio, Input 600Ω Shunt	≥ 100dB			
Damping Factor RL = 8Ω, f = 1KHz		≥ 150		
Slew Rate 8Ω Full Swing Stereo Bridge	± 40V/μs			
Sensitivity (ATT max.) Rated Power into 4Ω 1KHz	0dBm			
Voltage Gain (ATT max.) 4Ω 1KHz	28dB	31dB	33dB	35dB
Input Impedance (ATT max.)	≥ 20KΩ (Balance/Unbalance)			
Indicators	Power (Stand-By) (Red) Protection (Mute) × 2 (Red) Clip × 2 (Red) Signal × 4 (Green)			
Protection	Power SW ON/OFF muting Heatsink Temp ≥ 100°C (212°F)			
PC Limiter	RL < 2Ω			
Fan Circuit	−50°C (122°F) — 60°C (140°F) — Low-Speed — Variable — Hi-Speed			
Controls	(Front) Power SW: Push up On/Push down Off Attenuator (Rear) Mode SW: Stereo/Bridge = BTL Ground SW: Frame/Float			
Power Requirement	UL & Canadian Models: 120V, 60Hz General Model: 230V, 50Hz British Model: 240V, 50Hz			
Power Consumption	550W	750W	1150W	1700W
Weight	11kg	12kg	15kg	17kg
Dimensions	482(W) × 88(H) × 369(D) mm			
Connectors	Input XLR-3-31 type × 2 1/4" Phone (balanced) × 2 Output 5-Way binding posts × 2 Speakon Terminal × 2			
Damping Factor RL = 8Ω f = 1KHz	≥ 100			

0dB = 0.775 Vrms, Half Power = 1/2 Power Output Level (Rated Power)

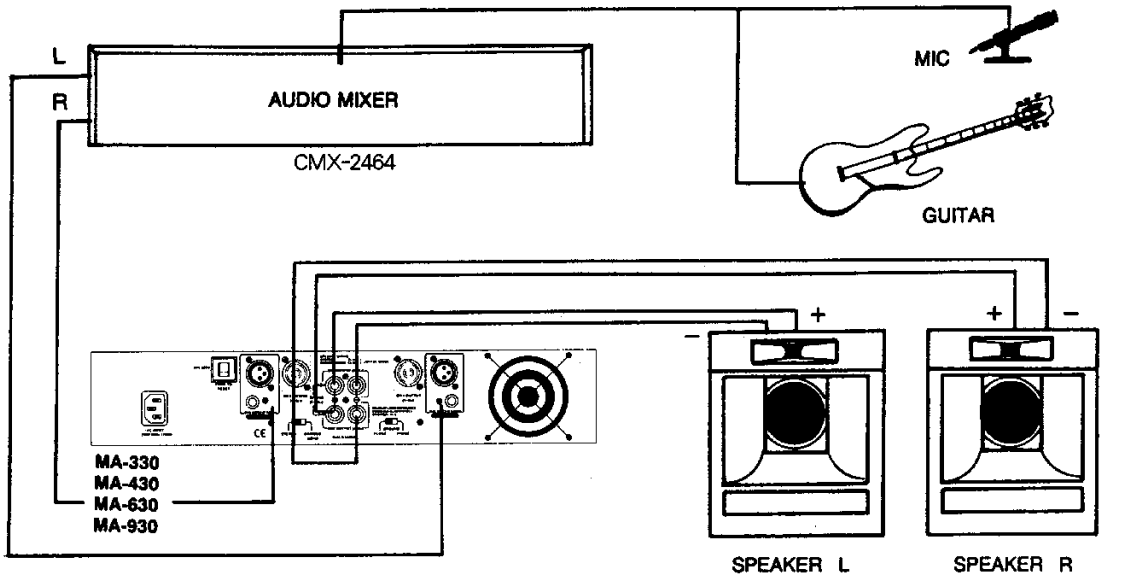
* Using reactive 2Ω speakers at high power levels may cause overheating, excessive power consumption, and shutdowns. Please note that below 2Ω the PC limiter will work. Before using 2Ω speakers in a real application, test the system completely.

Connections

■MULTI AMP SYSTEM

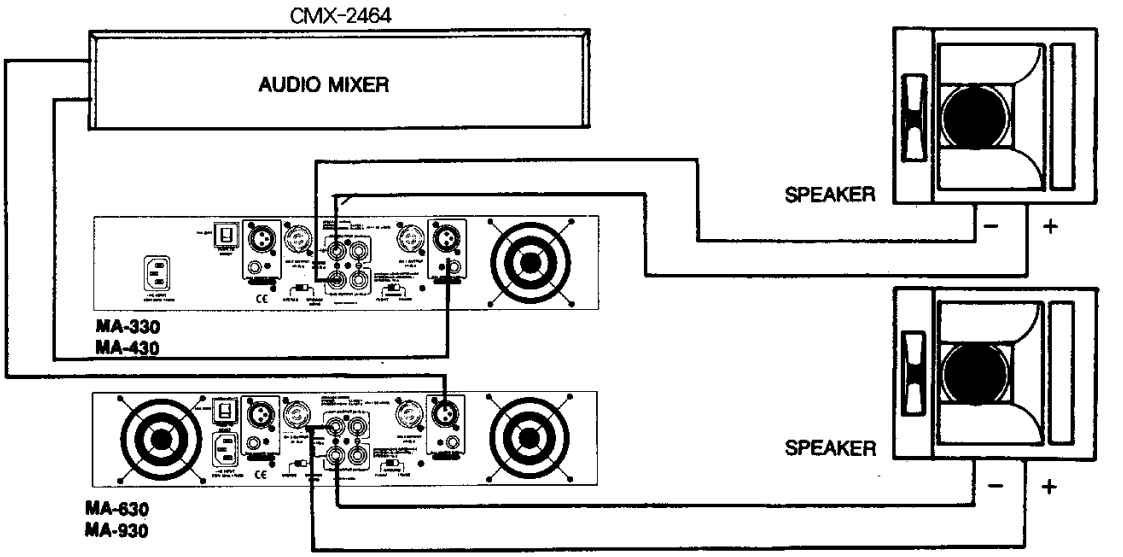


■SINGLE AMP SYSTEM

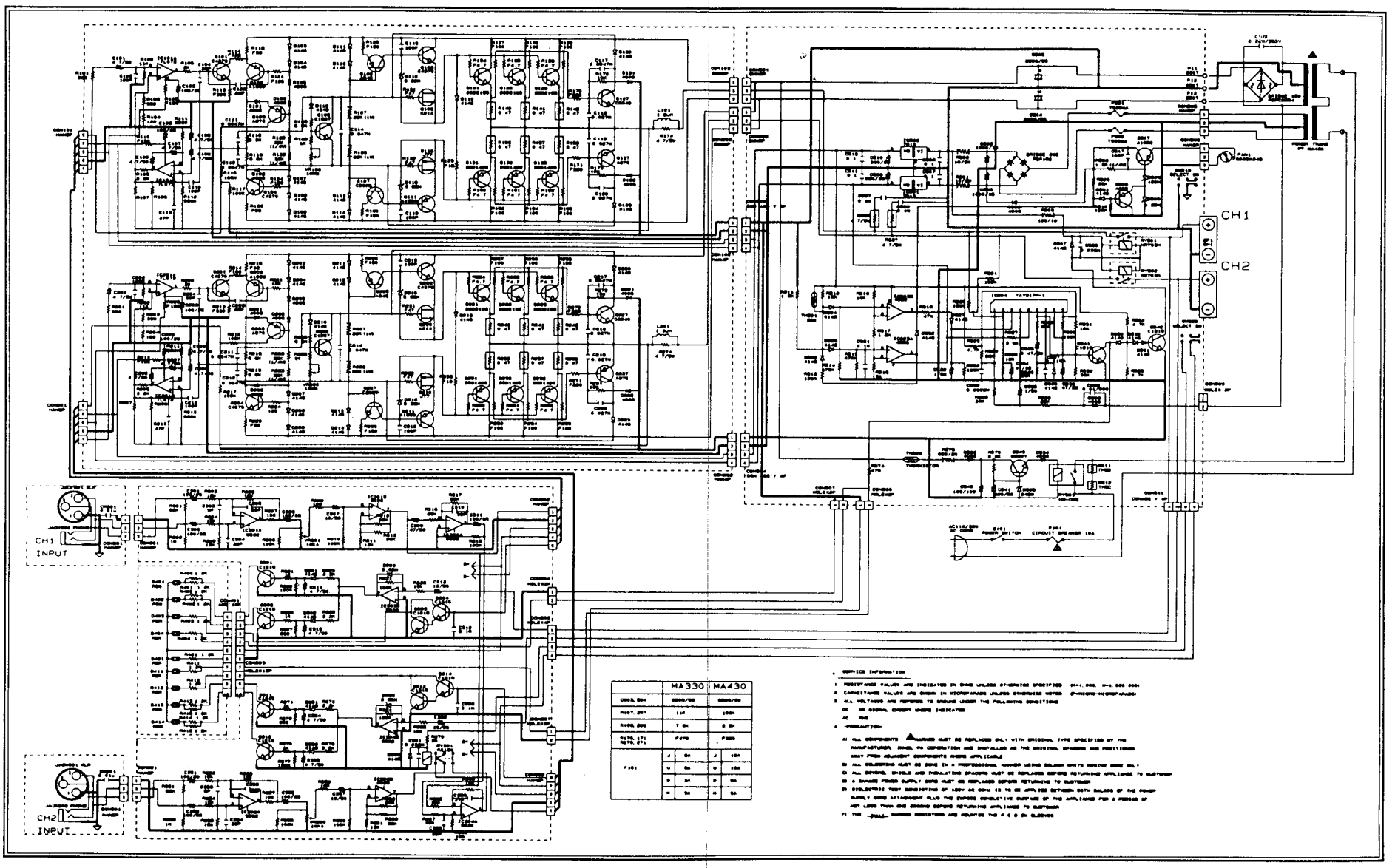


■Bridged Mono Operation

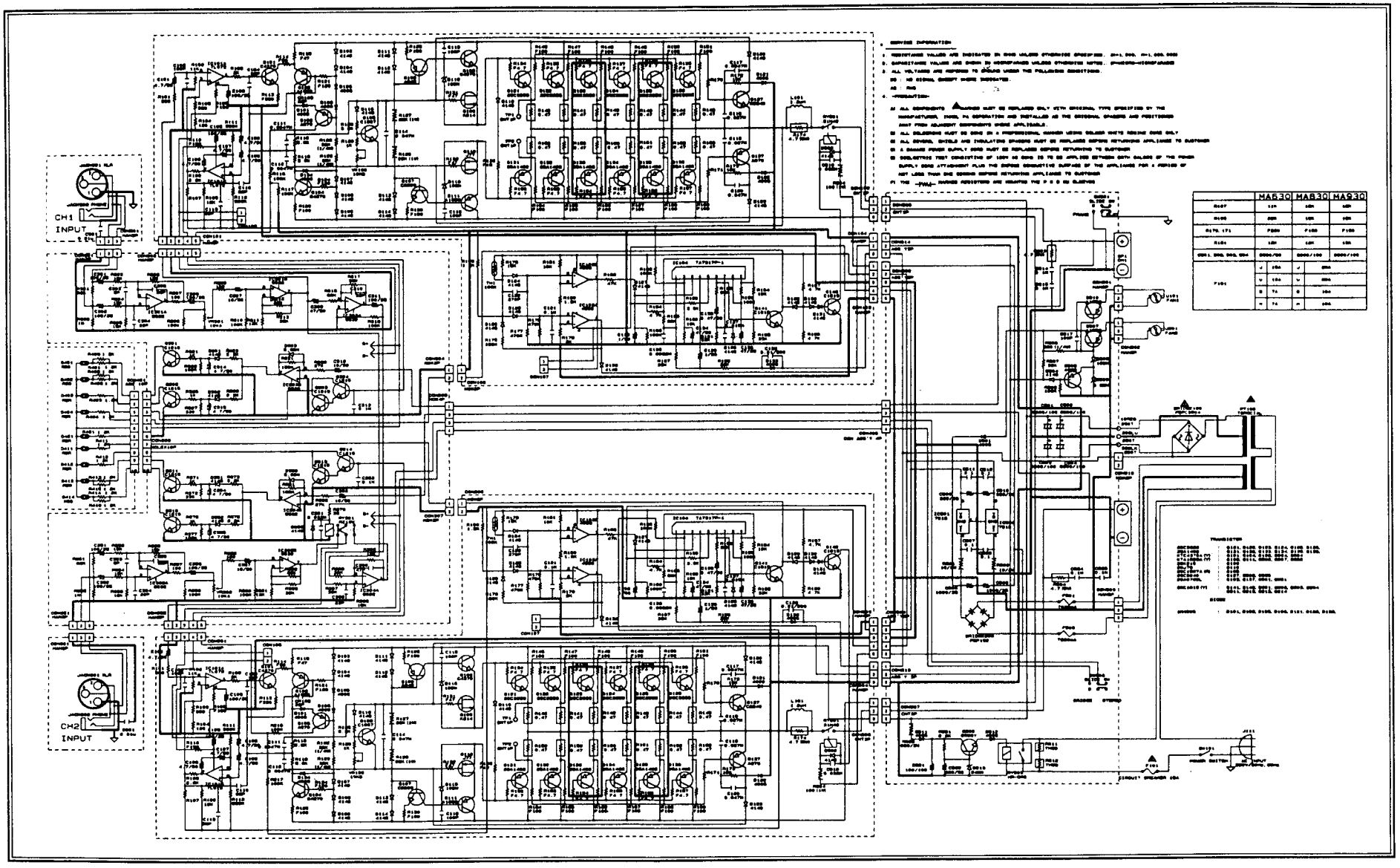
1. Set mode selector to bridged mono.
2. Connect a mono input signal to channel one input jack.
3. Connect the speaker load to the two red terminals of each channel, please confirm the (+) terminal of speaker to channel one and the (-) terminal to channel two.
4. Do not use the black terminals of each channel.
5. Please notice to connect the speaker impedance 8ohm or above.



Schematic Diagram (MA-330/430)



Schematic Diagram (MA-630/930)



interM

MADE IN KOREA
NO : 9007971312