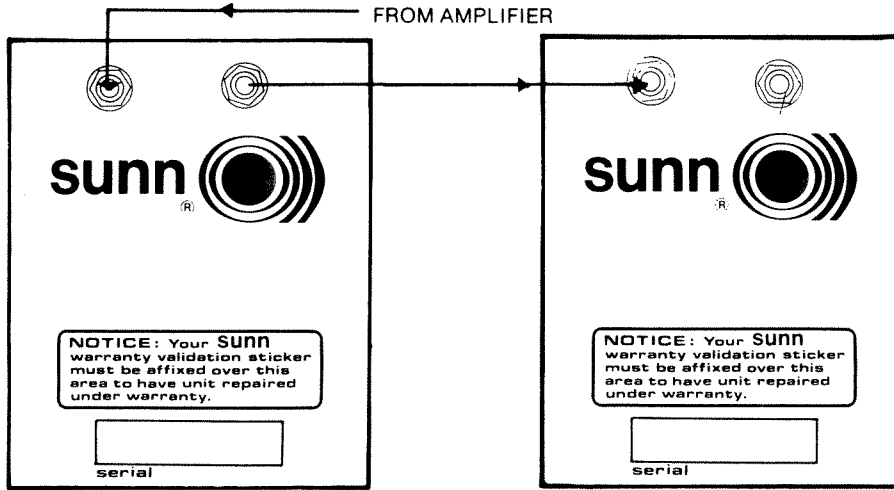
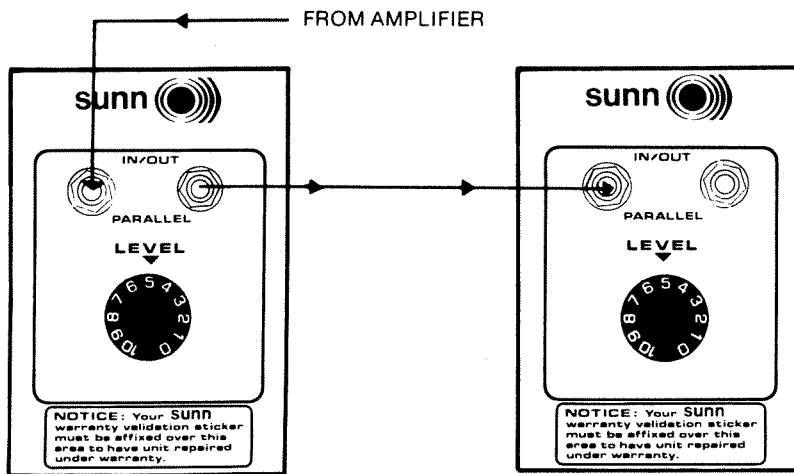
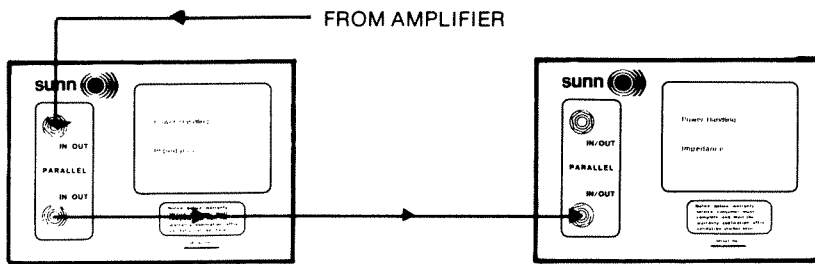


Parallel Patching

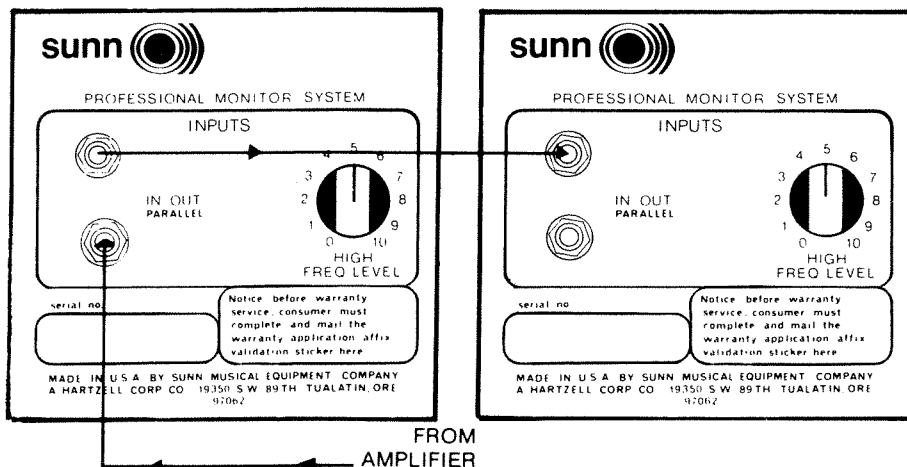


For Sunn enclosures that are provided with parallel input jacks, use either jack for the input, use the other jack to connect another enclosure in parallel. See the chart in the Series and Parallel section of this manual to determine the resulting impedance.



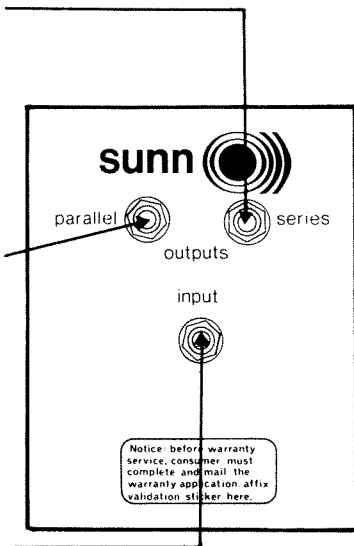
MONITORS. To connect monitors in parallel, use the same patching scheme described above. The level control will adjust the output volume of the cabinet, and will not affect other monitors connected to it.

For monitors with a high frequency level control, only the level of the high frequency driver is affected by this adjustment.



Series and Parallel Patching

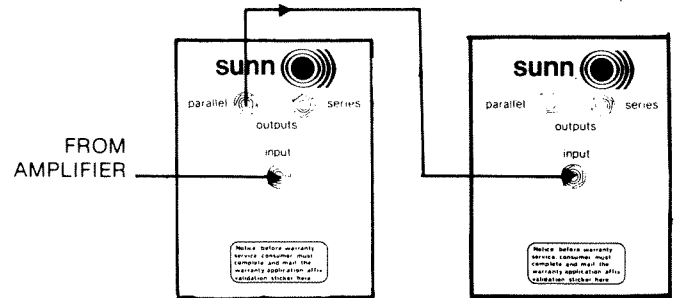
SERIES OUTPUT: To hook another cabinet in series with this cabinet, patch the series output jack to the input of the other cabinet.



PARALLEL OUTPUT: To hook another cabinet in parallel with this cabinet, patch the parallel output jack to the input of the other cabinet.

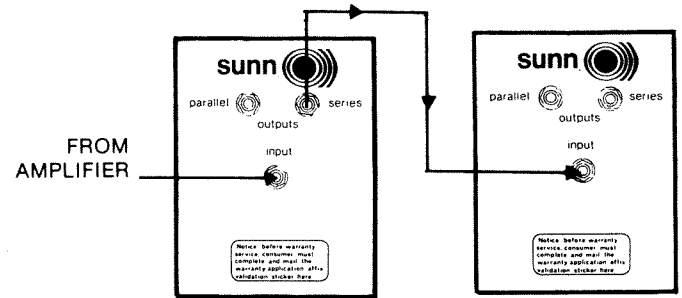
INPUT: Input jack for signal going to the cabinet. The input signal comes from an amplifier or from another speaker cabinet.

PARALLEL PATCHING



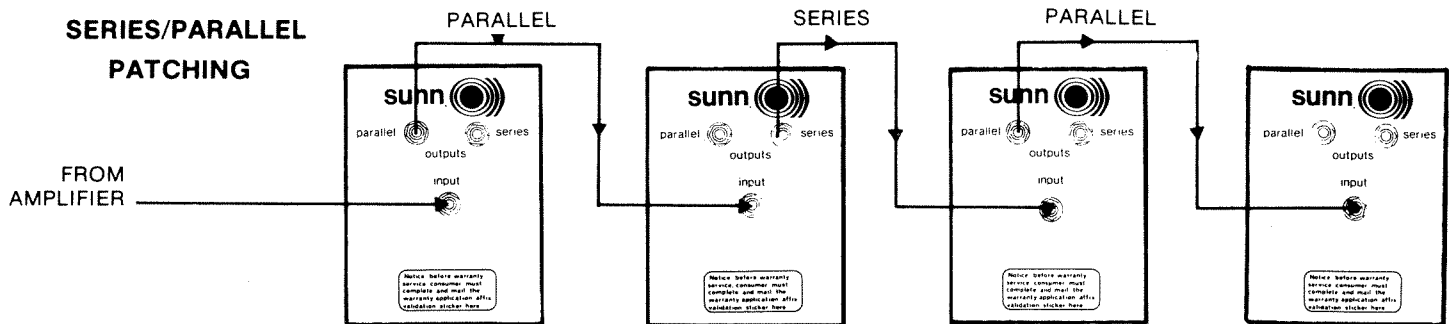
NOTE: If each cabinet is 8 ohms, two 8 ohm enclosures in parallel is 4 ohms.

SERIES PATCHING



NOTE: If each cabinet is 8 ohms, two 8 ohm enclosures in series is 16 ohms.

SERIES/PARALLEL PATCHING



NOTE: If each cabinet is 8 ohms, 4 enclosures in series/parallel is 8 ohms.

IMPEDANCE: The impedance of a speaker system is the rating that determines how much power it will draw from a given amplifier. A 4 ohm enclosure has half as much impedance as an 8 ohm enclosure. This means that it will draw approximately **twice** as much power from the amplifier.

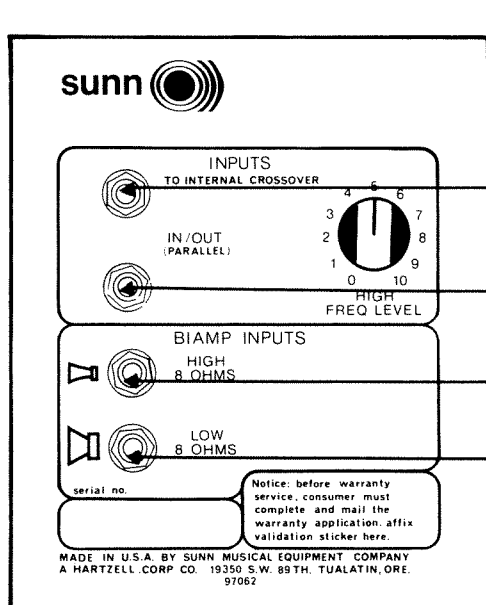
For any given amplifier, there is a minimum impedance through which it will safely deliver its rated power. Using too low of an impedance will draw too much power from the amplifier and will cause the amp to overheat. Using an impedance higher than what is rated is generally safe, but the amp will not deliver its full rated power. An amplifier should **never** be connected to an impedance lower than what it is rated for. **Know** what load the amplifier is rated to drive. This rating is often printed on the back of the amp.

SERIES AND PARALLEL: These are two ways of hooking impedances together. When hooked in series, the individual impedances add up to give the total impedance. When identical impedances are hooked in parallel, the individual cabinet impedance divided by the number of cabinets yields the total impedance. Remember, cabinets in series raise the total impedance, cabinets in parallel lower the impedance. Many of our enclosures have series and parallel output jacks, allowing better impedance matching. All other jacks are parallel unless marked.

IMPEDANCES CONNECTED IN PARALLEL AND SERIES

CABINET A	CABINET B	PARALLEL TOTAL SYSTEM IMPEDANCE	SERIES TOTAL SYSTEM IMPEDANCE
16 ohms	16 ohms	8 ohms	32 ohms
8 ohms	8 ohms	4 ohms	16 ohms
4 ohms	4 ohms	2 ohms	8 ohms

Bi-ampable Patching



PASSIVE INPUTS

These jacks are used when a full range signal is sent to the enclosure. The internal crossover then splits the signal to high and low frequency signals. The knob adjusts the level of the high frequency section.

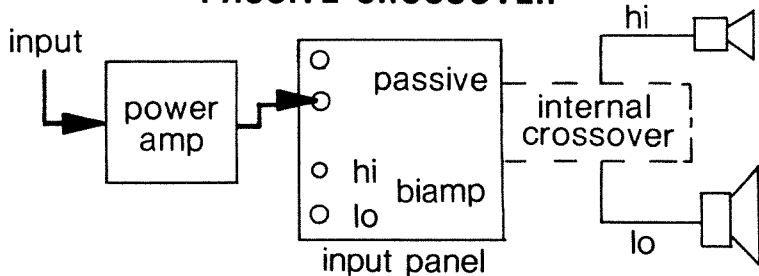
HIGH FREQUENCY INPUTS

Use these jacks for patching a high frequency signal to the high frequency section. **NEVER** plug a full range signal into this jack. **ALWAYS** use an external crossover set at the recommended crossover frequency or higher.

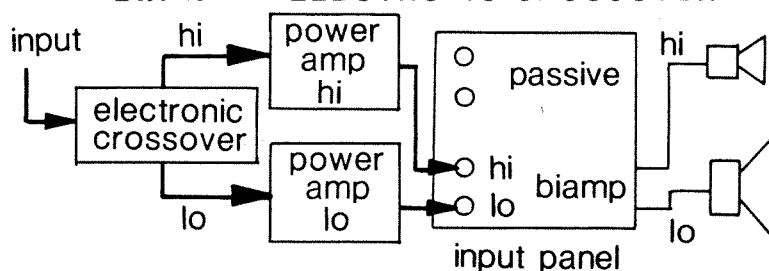
LOW FREQUENCY INPUTS

Use these jacks for patching a low frequency signal to the enclosure. This jack connects the signal directly to the low frequency section and by-passes the internal crossover.

PASSIVE CROSSOVER



BIAMP - ELECTRONIC CROSSOVER



Bi-amping has several advantages over a passive crossover system. First, Bi-amping uses separate amplifiers for each "way" of the system (low-high, low-mid-high etc). If the low frequency amplifier should clip, the high frequency sections are not subject to the harmful effects of the distortion created. Second, a passive crossover must function at high power levels, where heat and power loss can affect the sound. When Bi-amped, the electronic crossover deals only with low level signals, and can function ideally regardless of the speakers or levels. Third, the power amplifiers can be matched properly to each speaker in the system, where passive crossovers must use power-consuming resistors to match levels between components.

Sunn's Bi-ampable enclosures come with input panels capable of being used with the internal passive crossover, or with an external crossover. When using the biamp jacks, an external crossover **must be used**, or failure of the high frequency section will occur. Make sure correct crossover frequencies are used.

EXTERNAL CROSSOVER REQUIRED

CAUTION: External Crossover Required
MINIMUM ALLOWED CROSSOVER FREQ.
 1000hz , 12dB/Oct.

For high frequency enclosures that have no internal crossover a **CAUTION** similar to the one shown will appear on the input panel, giving recommended crossover frequencies. **NEVER** plug a full range signal into this enclosure as damage not covered under warranty **WILL** occur.

OPERATING NOTES

1. Never make any connections while the amplifier is turned up. Either turn the level all the way down, or turn the power off before doing any system patching. Failure to do this can result in damage to amplifier or speakers.
2. Do not plug two amplifiers into the same enclosure unless you are using the jacks labeled BIAMP. Check patching guides for proper use.
3. Do not overload (clip) any amplifier except on brief musical peaks. This is the #1 cause of loudspeaker failure. Tweeters and compression drivers are especially prone to failure from amplifier clipping. A typical amplifier will produce over twice its rated power when clipping, and the clipped waveform contains distortion products that greatly increase the chance of speaker damage.
4. Do not use crossover frequencies below those that are recommended. Crossover points higher than those recommended will prolong speaker life and improve power handling.
5. Power Handling. Sunn generally specifies two types of power handling, RMS and Program. The RMS rating indicates the long term **average** power that the speaker can safely handle without risking overheating or burning. The Program rating indicates the amount of power that can safely be handled on peaks without risking torn cones, bent voice coils or other mechanical failures. Where only one rating is given, it can be assumed to be RMS unless otherwise marked.
6. Speaker Cable. Sunn recommends that 18 gauge wire be used for lengths up to 25 feet, 16 gauge up to 50 feet and 14 or 12 gauge for lengths exceeding 50 feet. Do not use shielded cable as speaker cable. It is not designed for high power use and may fail.
7. Use subsonic filtering whenever possible. Especially in live sound reinforcement, there are high level signals (stage rumble, dropped microphones, footstomping) that are below the musical or audible spectrum. This subsonic energy robs amplifier power, easily causes clipping and can cause loudspeaker failure. Your system will last longer and sound better if you use subsonic filtering.