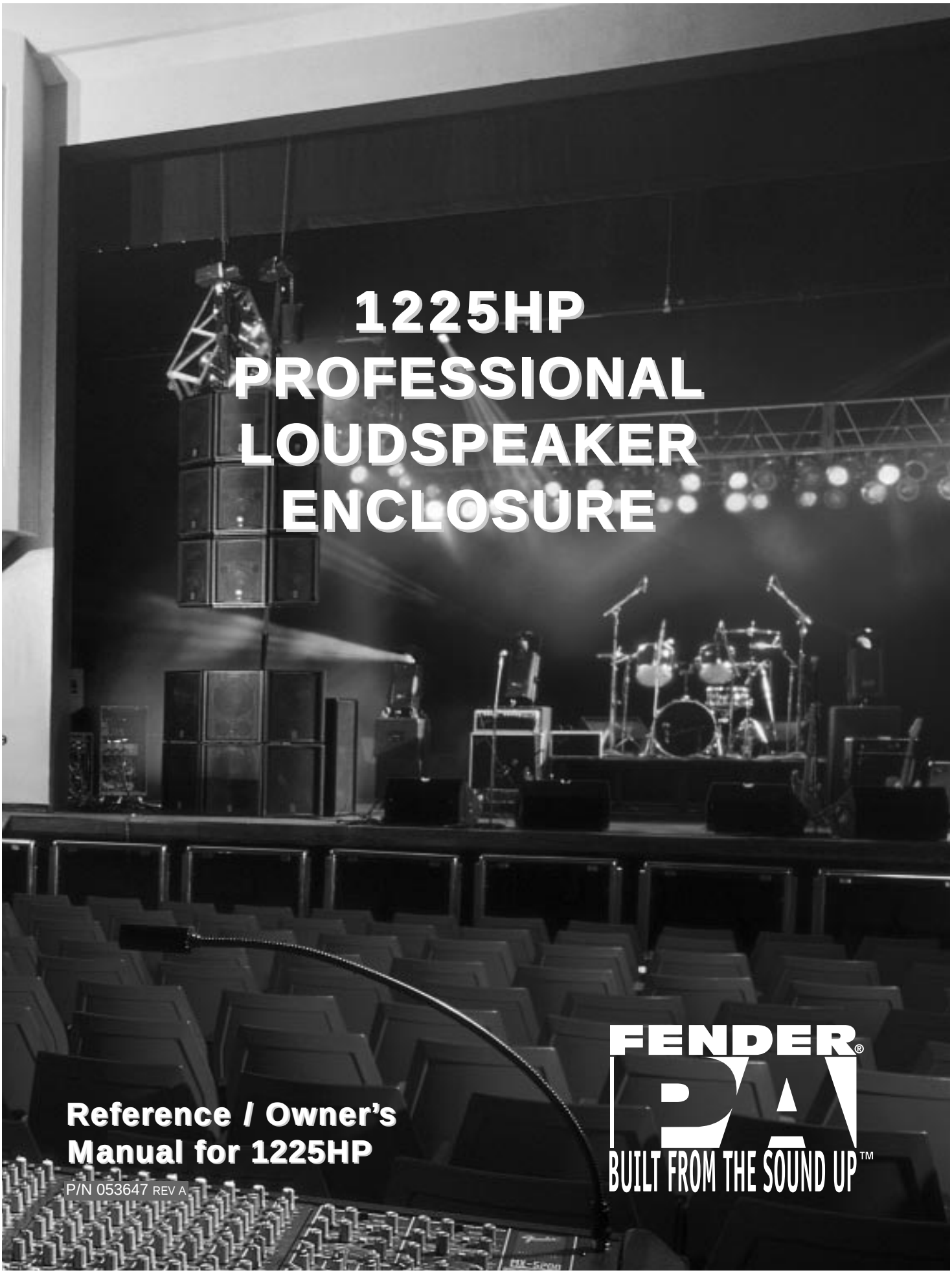


1225HP PROFESSIONAL LOUDSPEAKER ENCLOSURE

Reference / Owner's Manual for 1225HP

P/N 053647 REV A

FENDER® P.A.

BUILT FROM THE SOUND UP™

Fender Musical Instruments
7975 North Hayden Road, Scottsdale, Arizona 85258 U.S.A.

A Message from the Chairman

At Fender, we know the importance of sound reinforcement. From the simple box-top powered mixer to today's touring concert systems, the need to communicate to make the connection between the performer and the audience is foremost in our mind.

Perhaps no other piece of gear can make or break your message or your band's sound than your sound reinforcement gear. Your sound system is far more than just a combination of dials, wires and speakers. It is an integral part of the audio chain and should be treated with special care and attention to detail.

Fender knows what building quality musical instruments and sound reinforcement equipment is all about. In fact, many of the world's best sounding electric musical instruments and sound reinforcement equipment proudly wear the Fender name.

Whether you need a small powered mixer for your Saturday afternoon "jam" or a professional full-size concert system, Fender has the sound reinforcement gear to meet your needs. Likewise, your decision to purchase quality Fender Professional Audio Equipment is one you will appreciate with each performance for years to come.

Wishing you years of enjoyment and a heartfelt *thank you*,

Bill Schultz

Bill Schultz
Chairman of the Board
Fender Musical Instruments Corporation

1225HP PROFESSIONAL LOUDSPEAKER SYSTEM

INTRODUCTION

3/4” Birch Plywood Construction with Sturdy DADO Joints

High Current 1/4” Phone Jacks and Neutrik Speakon™ Connectors

B&C 1” (2.55 cm) Exit Compression Driver

Active/PassiveCrossoverOperation

Metal Corners and Rubber Feet

Tough Indoor / Outdoor Synthetic Carpet Covering

Thank you for purchasing a 1225HP Loudspeaker System from Fender® Pro Audio. We are sure you will find it both a unique and effective sound reinforcement product, providing years of trouble-free service day in and day out.

The 1225HP Loudspeaker System is a professional, full-range, two-way, loudspeaker designed for the most demanding permanent or portable sound reinforcement requirements. Moreover, these speakers are ideal for use as a two-way system or as the mid / high pack in a three-way set-up incorporating a Fender subwoofer loudspeaker system.

With a wide response, low distortion and controlled directivity, 1225HP Loudspeaker Systems are designed to form the basis of everything from a small public address system to the nightly rigors of a “working band’s” sound system. After moisture sealing, the 1225HP Loudspeaker cabinets are covered in tough black indoor/outdoor synthetic carpet covering. The1225HP Loudspeaker cabinet also features metal corners and rubber feet for a longer life and lasting looks.

Only the finest components are used to provide maximum efficiency and response. In order to more fully understand the operational characteristics of your 1225HP Loudspeaker enclosure, please read through this operational user’s guide.

CAUTION: Almost all speakers produce strong magnetic fields which may interfere with the normal operation of nearby electronic devices, including televisions and computer video monitors. To reduce or eliminate interference, increase the distance between this product and other nearby electronic devices.

SPEAKER WIRING AND CONNECTIONS

Parallel or *series* are the two basic ways which multiple speakers can be connected to a single power amplifier. When speakers are connected in parallel, their combined impedance decreases. For speakers wired in series the opposite is true, their combined impedance increases. Thus, when speakers are wired in series, higher impedance speakers in the series draw more power from the amplifier than do speakers in the series with lower impedances. When speakers are wired in parallel, the opposite is true. Higher impedance speakers will draw less power from the amplifier than lower impedance speakers will draw.

At Fender®, we recommend connecting multiple speakers in parallel for several reasons. First, if one speaker fails, the others will continue to operate. Second, because in a series connection one speaker affects the output of the other speakers, unpredictable frequency response is a concern. Third, most speaker cabinets are already wired for parallel connections making parallel connections the most common wiring method.

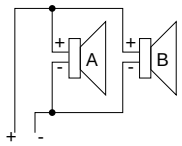
Below are two charts demonstrating how to calculate both parallel and series impedance.

PARALLEL IMPEDANCE

$$Z_p = \frac{1}{\frac{1}{Z_1} + \frac{1}{Z_2} \cdots \frac{1}{Z_n}}$$

Cabinet B Impedance	8Ω*	16Ω
16Ω*	5.3*	8
8Ω	4	5.3

Cabinet A Impedance



*Example- Cabinet A is 8 ohms. Cabinet B is 16 ohms . The total impedance when connected in parallel is:

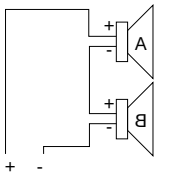
$$Z_p = \frac{1}{\frac{1}{8} + \frac{1}{16}} = 5.3 \text{ ohms.}$$

SERIES IMPEDANCE

$$Z_s = Z_1 + Z_2 \cdots Z_n$$

Cabinet B Impedance	2Ω	4Ω*	8Ω	16Ω
16Ω*	18	20*	24	32
8Ω	10	12	16	24
4Ω	6	8	12	20
2Ω	4	6	10	18

Cabinet A Impedance



*Example- Cabinet A is 4 ohms. Cabinet B is 16 ohms. The total impedance when connected in series is 4 + 16 = 20 ohms.

Keep in mind, power and audio signal cables are the most common sources of sound system failure. Well made and carefully maintained cables are essential to the reliability of the entire sound system. If long speaker cables are required, it is important to ensure the cable's gauge is sufficient to transfer all of the available amplifier power to the speakers rather than absorbing the power itself. As a rule of thumb, larger wires are better since they supply more power to the speakers (larger wire has smaller gauge numbers).

Below are two charts listing speaker wire gauges and recommendations for best results.

SPEAKER WIRE GAUGE

SPEAKER WIRE LENGTH	4Ω	*8Ω	16Ω
100'-UP (30.5 m-UP)	10	12	14
50'-100' (15.25-30.5 m)	12	14	16
*25'-50' (7.60-15.25 m)	14	*16	18
10'-25' (3.05-7.60 m)	16	18	18
0'-10' (0.00-3.05 m)	18	18	18

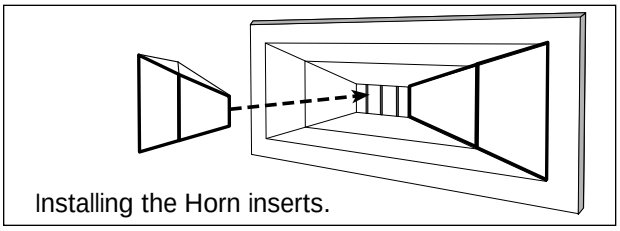
SPEAKER IMPEDANCE [z]

*Example - If the speaker wire length required is between 25-50 feet (7.60-15.25 meters) and the speaker impedance is 8Ω, the minimum recommended speaker wire gauge is 16.

AWG	Cross-Section [mm²]	Resistance in Ω per foot (30.5 cm) @ 77º F (25º C)
18	0.83	.00651
16	1.32	.00409
14	2.10	.00258
12	3.32	.00162
10	5.27	.00102
8	8.38	.00064

HORN INSERTS

To change the dispersion pattern from 90º to 60º, first remove the Phillips Head screws from the grille and lift the grille away from the cleat. If your insert has a plug on it, you may wish to remove it for easier installation. To do so, carefully cut it off using a razor blade. To attach the horn inserts, first place the wider end of the insert under the front lip of the horn. Next, guide the smaller end of the insert under the ribs near the throat of the horn. The insert is secured in place by the 3 ridges.



Installing the Horn inserts.

To reinstall the grille, simply place the grille back upon the cabinet's cleat and secure it using the previously removed screws. With the inserts installed, the horizontal coverage angle is now reduced to 60º.

The high frequency driver for all enclosures is a compression driver using high technology polymer materials to handle large amounts of power. This compression driver is mated to an innovative Controlled Dispersion™ horn that allows a single horn to be used for a number of applications. The quick placement or removal of the horn inserts can change the horizontal coverage pattern from 60º to 90º. When both inserts are installed, a 60º coverage pattern is achieved. This is useful in multi-cabinet tight pack arrays where a narrower consistent coverage pattern is required. With the horn inserts removed, a 90º coverage pattern is attained offering a wider horizontal dispersion pattern.

1225HP SPEAKER CONNECTIONS

In normal operation (using the passive internal crossover), the 1/4" jacks and the Speakon™ Connectors are wired in parallel allowing any one of the connectors to be used as an input and any other as an output. This allows "daisy chaining" of multiple loudspeakers, eliminating the need for several long, cumbersome runs of speaker cable. During normal mode, the connections are as follows:

Polarity	Phone Jack	Speakon™
Positive (+)	Tip	1+ and/or 2+
Negative (-)	Sleeve	1- and/or 2-

When the switch on the back of the speaker is in the bi-amp mode, the internal crossover and high frequency attenuator are disabled. Thus, an external crossover must be used with the speaker and two channels of power amplification will be required: one for the low frequencies and another for the high frequencies. In bi-amp mode, the connections are as follows:

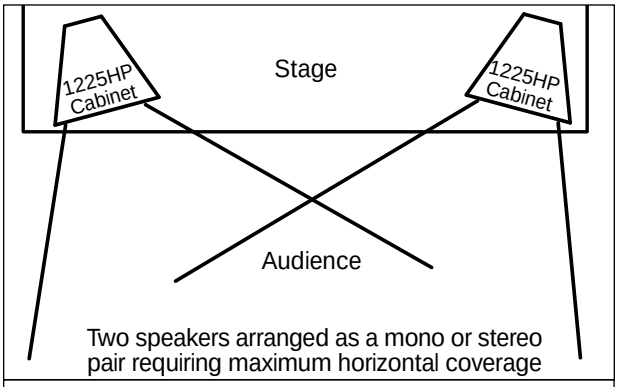
		Phone Jacks		
Frequency	Polarity	Left	Right	Speakon
Lows	Positive (+)	N/A	Tip	1+
Lows	Negative (-)	N/A	Sleeve	1-
Highs	Positive (+)	Tip	N/A	2+
Highs	Negative (-)	Sleeve	N/A	2-

IMPORTANT: If the crossover switch is set to external, DO NOT plug a full range signal into the High Frequency input. Doing so will destroy the compression driver.

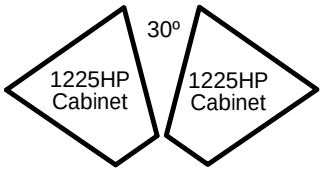
SETUP SUGGESTIONS

The placement of any speaker can dramatically affect its sound. Thus, there are several considerations to review when placing loudspeakers.

First, the range of the horizontal coverage should be determined. The speaker may be used as a single unit, as part of a pair, or as part of a group of widely spaced enclosures, in any case, maximum horizontal coverage will be desired. Examples of these types of setups are shown.



Two speakers arranged as a mono or stereo pair requiring maximum horizontal coverage



Two speakers in a "loose pack" array requiring maximum horizontal coverage

NOTE: When setting up your 1225HP enclosures, be sure to place the cabinets in such a way as to minimize overlapping radiating patterns.

SETUP SUGGESTIONS, CON'T.

A second consideration is for feedback and bass performance. If the speaker is placed near a large, flat wall, the bass output will increase by approximately 3 dB. Placing the speaker near a wall can cause feedback. If this occurs, the speaker must be moved.

A third consideration is to what degree the speaker should be "heard and not seen", especially in permanent installations. Remember, where the speaker cabinets are placed will affect both their tone and radiating patterns.

BI-AMP OPERATION

For versatility and increased headroom, some users may choose to use an active electronic crossover / processor, such as the Fender PCN-2 or PCN-4, with the system. The electronic crossover takes the place of the internal crossover of the speaker system. The "Normal / Bi-Amp" switch on the back of the cabinet must be set to the "Bi-Amp" position. Always check to ensure the internal/external crossover switch which selects passive or biamp operation is in the correct position prior to use. Failure to do so may damage the speakers. A typical set-up of a bi-amp configuration is shown at right.

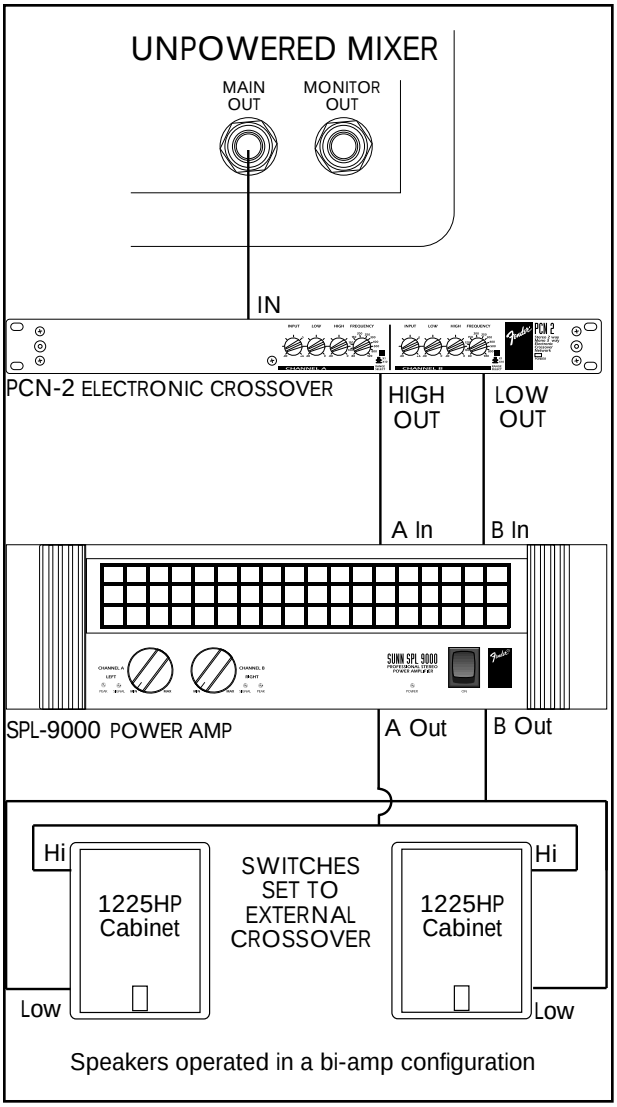
For those situations requiring a subwoofer, HP loudspeakers can still be used if a three-way electronic crossover is used. An example of this configuration is shown on the next page (7).

It is strongly recommended that a fourth-order "Linkwitz-Riley" or a digital FIR fourth-order active crossover be used. The crossover frequency for the 1225 HP should be set at approximately 2200 Hz. Since the output sensitivity of the compression driver is higher than that of the woofer, the high frequency output of the system must be decreased at either the crossover (if such a control is provided) or at the power amplifier(s) that are used for the high frequencies.

CAUTION: Be sure to connect the high frequencies and low frequencies to their correct inputs indicated on the back of the speaker cabinets.

FOR MORE STUDY...

...order your copy of "Making the Connection - The Fender Pro Audio Primer". Making the Connection is available at your nearest authorized Fender dealer or it may be ordered directly from Fender using the form included with your new speakers.

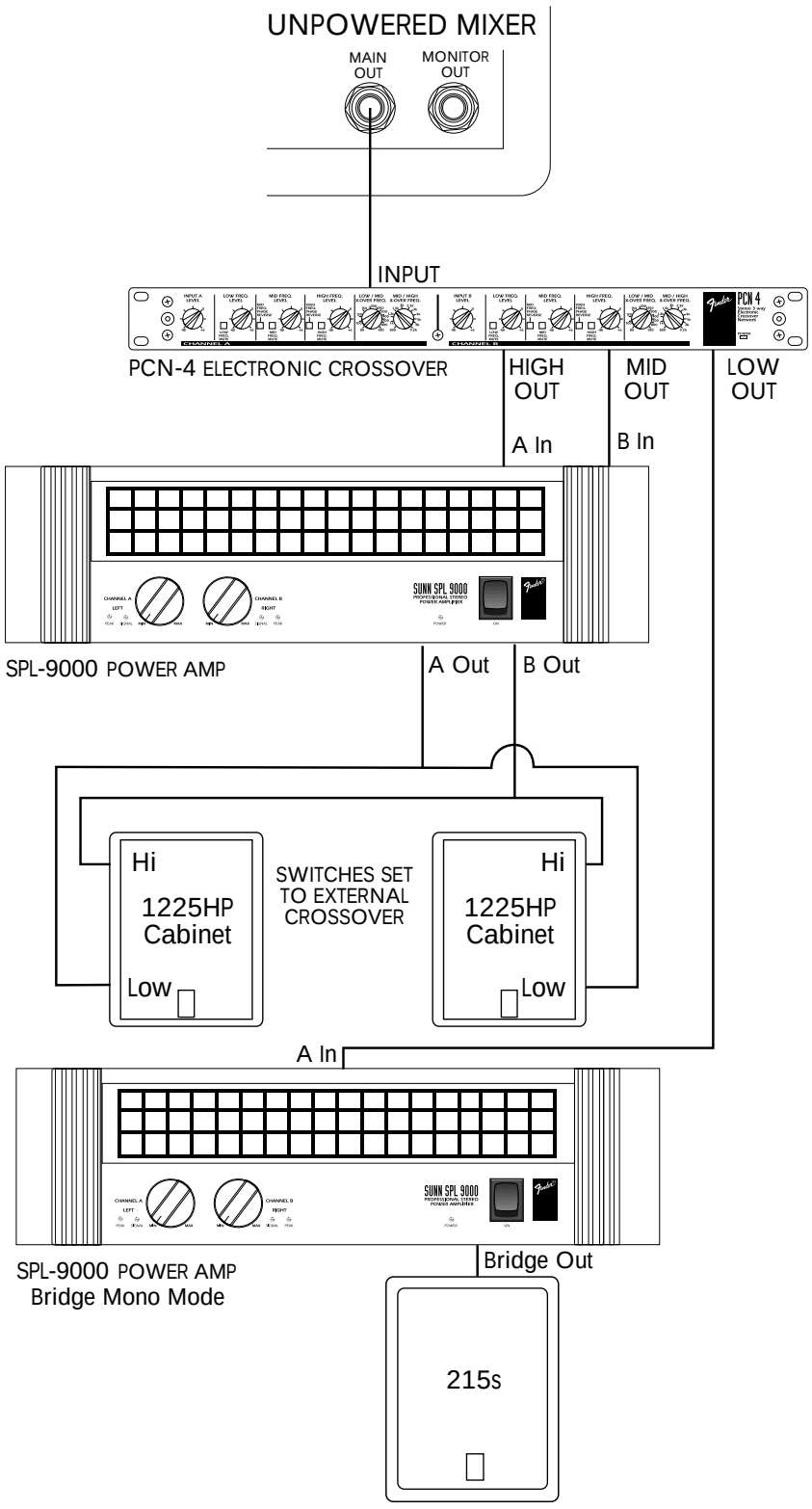


Speakers operated in a bi-amp configuration

CARPET COVERING CARE

1225HP cabinets are covered in a tough, black indoor/outdoor synthetic carpet for long life and lasting good looks. To clean the carpet covering, use a sponge and a light soapy water solution to wipe away any smudges or dirt. For stubborn stains, a slightly more concentrated soapy solution or carpet shampoo with a brush may be used. Avoid spilling liquids on the input panel, grille and speakers.

USING AN 3-WAY ELECTRONIC CROSSOVER WITH A 1225HP ENCLOSURE



Speakers operated in a bi-amp configuration with a subwoofer (tri-amping)

SPECIFICATIONS

MODEL		1225 HP
PART NUMBER		071-1225-300
CABINET		3/4" (1.9 cm) Birch Plywood
CONNECTIONS		(2) 1/4" Phone Jacks (2) Speakon™ Jacks
DRIVER	Low:	15" (38 cm) cast frame woofer 3" (7.6 cm) voice coil 80 oz. (2.3 kg) magnet 8Ω
	High:	1" (2.5 cm) Exit Throat Polymer Diaphragm 2" (5 cm) voice coil 16Ω
FREQUENCY RESPONSE	On Axis +/- 3 dB:	60 Hz to 15kHz
ON AXIS SENSITIVITY	SPL @ 1W/1m:	98 dB
COVERAGE PATTERN	Vertical Horizonal	90º @ 5 kHz 40º @ 5 kHz
POWER RATING		400W program 200W EIA
NOMINAL IMPEDANCE		8Ω
CROSSOVER FREQUENCY		2200 Hz
DIMENSIONS	Height Width Depth	28.6" (72.6 cm) 19.8" (50.3 cm) 19.2" (48.8 cm)
WEIGHT		84 lbs. (38 kg)

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