SPL 118S Subwoofer Owner's Manual

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ELECTRONICS

P/N 041011

INTRODUCTION

The Fender Electronics SPL Tour Series 118S professional loudspeaker is a top-of-the-line subwoofer, perfect for even the most demanding concert sound applications. With its scientifically derived trapezoidal shape and equipped with fly-points for use with the Fender/Sunn RigSafe™ rigging and flying hardware, the speaker is adaptable to almost any situation as a single unit or as part of an array.

Featuring a continuous power handling of over 400 Watts, a versatile input/output panel and fly points, the 118S subwoofer is designed to complement the performance of the full range cabinets of the SPL Tour Series (referred to as a mid/high pack when used with a subwoofer), dramatically extending the low frequency range and output of a Tour Series System.

Features

The cabinet is a 13-ply, Baltic Birch Plywood enclosure with internal wood bracing to eliminate any side wall movement and steel reinforcement plates on all critical points of the cabinet. The steel plates double as attachment points for RigSafe™ flying hardware accessories. The cabinet is a vented baffle design for maximum output and is provided with two large diameter ports to prevent compression at high SPL due to large exit velocities. After moisture sealing, the cabinet is primed, finish sanded, and then painted in the strongest textured black finish available.

The driver is a custom designed, 18" woofer using a 4" voice coil wrapped around a polyimide Kapton former with a vented pole piece for optimum heat transfer. It is mounted on a precision cast, alloy frame to support the weight of the powerful 120 oz. magnet structure.

Careful thought has also been given to the input panel. The panel is made of a tough ABS plastic with internal ribbing to prevent both damage to the outside of the panel and induced sympathetic vibrations caused by the intense sound pressure inside the cabinet. The panel houses special 1/4" high current Phone Jack connectors and Neutrik 4-pole Speakon connectors wired in parallel to provide for a variety of interconnection schemes for flexibility in the field.

Connection Convention

The two 1/4" Phone Jacks and the two 4-Pole Speakon Connectors are wired in full parallel so that any one of the connectors may be used as an input and any other may be used as an output to another subwoofer. This allows "daisy chaining" of multiple subwoofers, obviating the need for several long, cumbersome runs of speaker cable.

The following polarity convention should be used when making connections to the 118S:

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

Using the 118S in a system

The purpose of the 118S subwoofer is to augment the low frequency performance of the main P.A. speakers using bi-amplification. The 118S is designed to reproduce very high levels of the low bass frequencies, thus relieving the smaller main speakers from having to supply this energy. In order to send certain frequencies to one type of speaker and other frequencies to another type, a line-level electronic crossover,

such as the Fender PCN-2 or PCN-4, is required. Two different configurations are shown in figures 1 and 2 demonstrating how easy it is to add one or two subwoofers to a system. Figures 3 and 5 show more extensive configurations for those requiring more power.

Setup Procedure

Placement of any speaker can affect the sound dramatically. There are three primary considerations when placing subwoofers, the first of which is time alignment. The mid/high packs should be as close as possible to the subwoofer so that the sound from the subwoofer reaches the audience at about the same time as that from the mid/high packs. Otherwise, a slight smearing of the lower bass frequencies may occur. While ideal placement for this consideration would involve stacking the mid/high pack on top of the subwoofer, this effect is quite subtle and an obvious effect may not be heard until the separation between the two cabinets is large enough to cause an audible time delay.

The second consideration is obtaining as much bass as possible from the subwoofer. A subwoofer hanging in free air (such as when you are "flying" a sound system) is referred to as operating in "full space" since the subwoofer is free to radiate in all directions (omnidirectionally). A speaker down on the middle of the floor or up in the air with its back against the wall is referred to as operating in "half space". The 118S was designed assuming that it would be used in a "half space" configuration. Full space operation will result in a decrease of about three dB of output compared to half space and you may need to compensate by turning up the power amplifier. Placing a speaker near a large, flat wall and on the floor (quarter space) will boost the bass performance by about three dB compared to half space. Putting a speaker in a corner on the floor (eighth space) will boost the output about six dB compared to half space. The more surfaces you can place the subwoofer against, the fewer subwoofers you will need to achieve a certain SPL.

The third consideration is to what degree the speakers should be "heard and not seen", especially for permanent installations. If it is desirable to have the speakers hanging from the ceiling (flying), then the 118S can be flown along with, and integrate seamlessly with, the mid/high pack Tour Series cabinets arranged in any array of up to three rows (tiers), loose or tight-pack, with or without downward angling (splaying). See figure 4. The Fender RigSafe™ system has been designed into the SPL 118S to safely accommodate such practices. This system is compatible with both the JBL S.A.F.E™ and the ATM Flyware™ rigging systems. In spite of this, flying loudspeakers above crowds is a dangerous business, and should only be undertaken by experienced and well insured riggers. For more information on safe rigging practices, please refer to the "Flying with Fender RigSafe™" brochure.

A compromise among these three factors will yield the best solution for your particular situation. After the speaker system has been placed, the crossover point needs to be set for maximum benefit. While the 18" driver in the 118S is fully capable of accurately reproducing frequencies above 350 Hz, setting the crossover point this high makes time alignment and spatial alignment very difficult, and the large 18" woofer will start to "beam". Beaming occurs when lower frequencies are emitted in an approximately omnidirectional pattern while higher frequencies are emitted more on axis. For the 118S this occurs above crossover points of 350 Hz. If the crossover

point is set too high and the subwoofer is placed far from the mid/high packs, bass frequencies will sound like they are being produced in two different locations. Most listeners cannot locate the origin of frequencies below about 150 Hz. Setting the crossover point too low (below 80 Hz) will not take full advantage of the subwoofer as it puts too high of a demand on the mid/high packs. For these reasons, we recommend a crossover point ranging between 80 Hertz and 200 Hertz, depending on the placement of the speakers.

A good starting point is around 120 Hz. The output level of the subwoofer(s) should be matched by ear to the output level of the mid/high pack cabinets by adjusting the level control at the crossover (if it has one) or at the power amplifiers. Normally, the output of the mid/high pack cabinets is subjectively higher than that of the subwoofers, so a balance can be achieved by turning down the mid/high frequency signal at or before the power amplifiers.

Specifications:

Part Number:	071-1310-000		
Frequency Response –			
	Axial +/- 3dB:	42 Hz to 400 Hz	
	LF Limit +/- 3dB:	42 Hz	
	LF Limit +/- 10dB:	32 Hz	
Axial Sensitivity –			
	SPL 1W @ 1M:	98 dB	
	1/2 Space Efficiency:	2.25%	
Maximum dB SPL Output Long Term:		124 dB	
Power Handling –			
	EIA RS 426-B Noise:	400 Watts, for 8 hrs.	
	Nominal Impedance:	8 Ohms	
Dimensions and Weights –			
	Height:	28.5 in.	(72.39 cm)
	Width:	24.875 in.	(63.18 cm)
	Depth:	24.125 in.	(61.28 cm)
	Weight:	87 Lbs.	(39.5 kg)

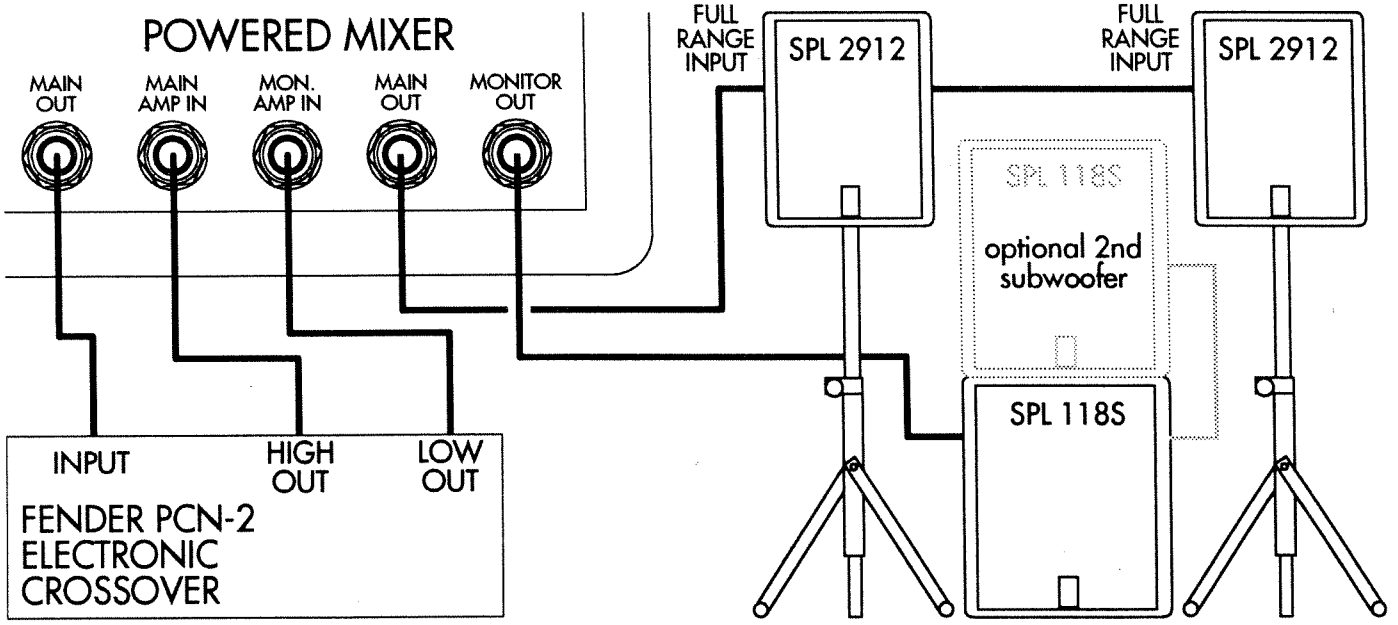

Figure 1.

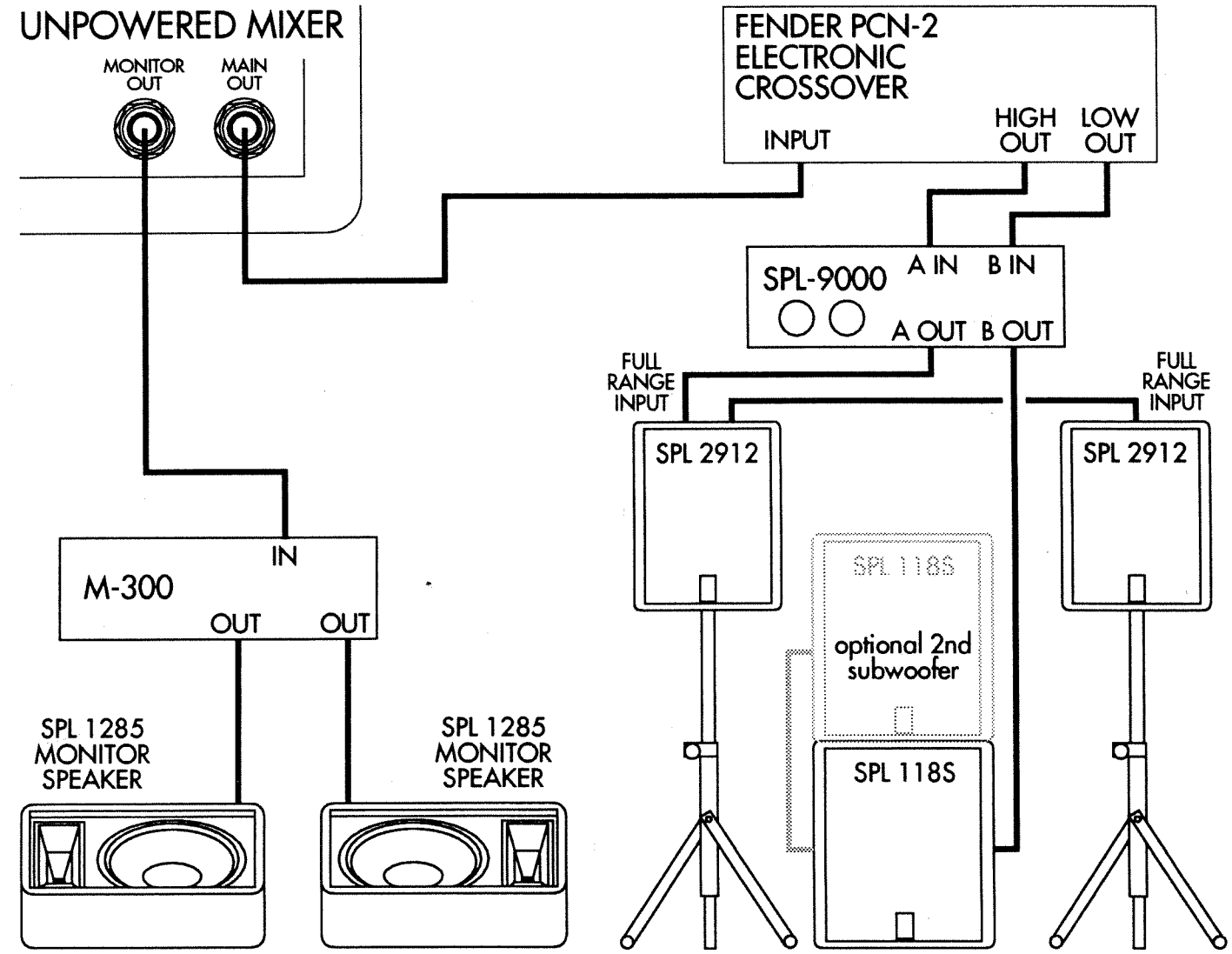

Figure 2.

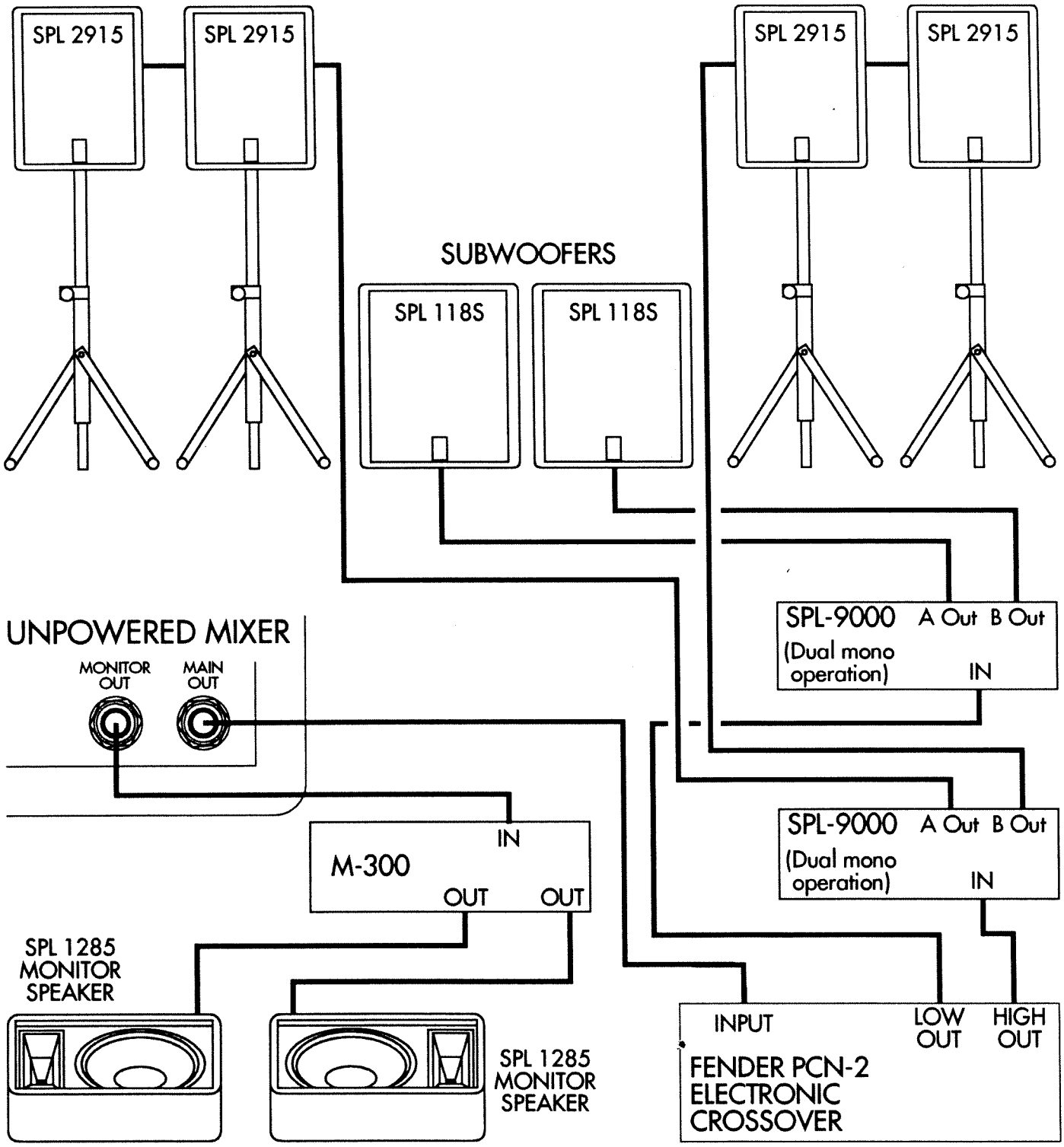
SPL 2915
SPL 2915
SPL 2915
SPL 2915
SUBWOOFERS
SPL 118S
SPL 118S
SPL-9000 A Out B Out
(Dual mono operation) IN
UNPOWERED MIXER
MONITOR OUT
MAIN OUT
SPL-9000 A Out B Out
(Dual mono operation) IN
IN
M-300
OUT OUT
SPL 1285 MONITOR SPEAKER
SPL 1285 MONITOR SPEAKER
INPUT
LOW OUT
HIGH OUT
FENDER PCN-2 ELECTRONIC CROSSOVER

Figure 3.

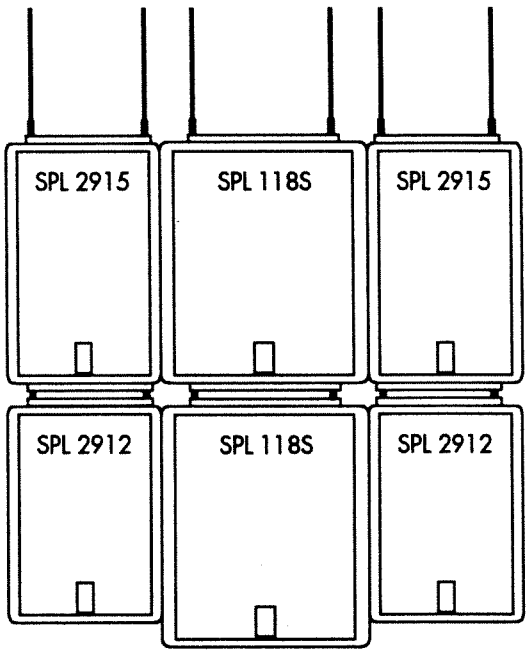

Figure 4. Flying speakers with the Fender RIGSAFE™ system

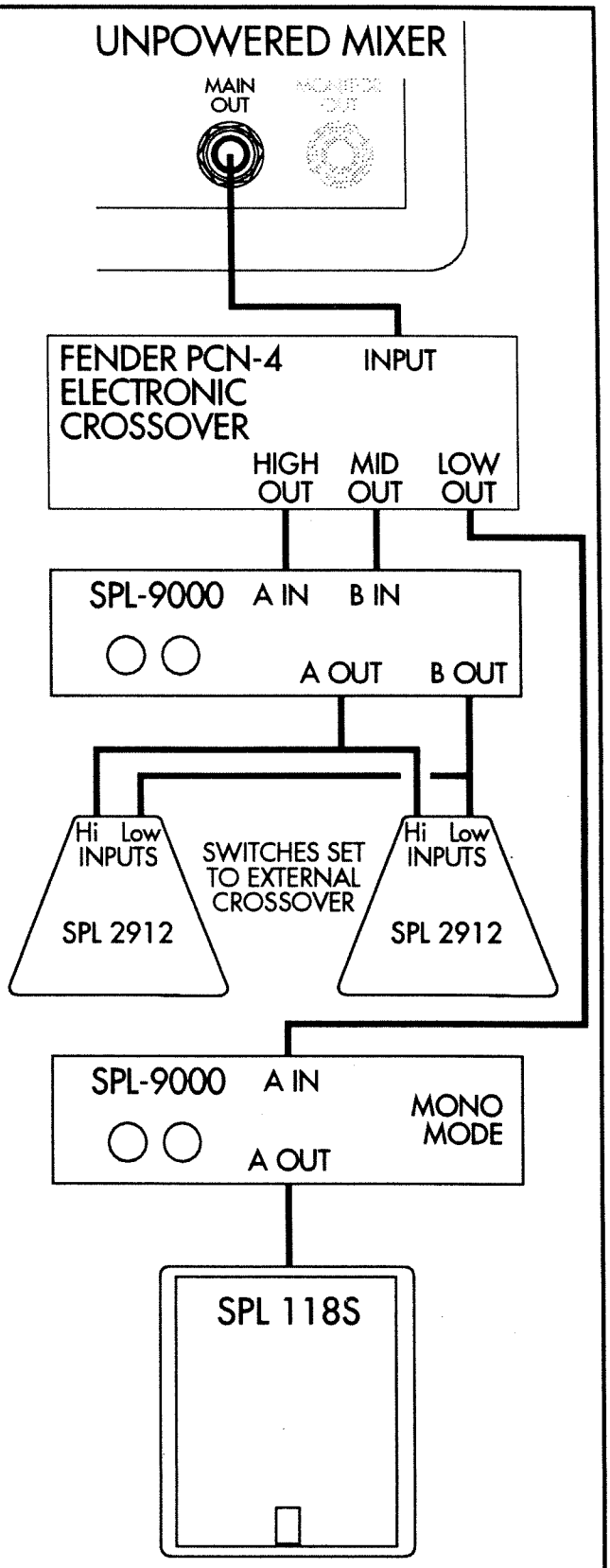

Figure 5. Example of operating speakers in BI-AMP mode with a subwoofer (tri-amping).

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