

# Amazing Line Source Loudspeaker

Owner's Manual

*Bob Carver*

## Quick Start Guide

No need to read the manual to begin listening immediately, however for more in-depth listening read on.

Use the below settings for the crossover boxes and subwoofer amplifier to get going:

### Crossover Control Settings

Initially set the crossover module voicing controls as follows:

<b>Bass Damping:</b>	2:00 o'clock
<b>Upper Midrange:</b>	Fully counterclockwise (MIN)
<b>High Frequency:</b>	Fully clockwise

### SubRosa Amplifier Control Settings

Initially set the SubRosa Amplifier controls as follows:

<b>Equalizer Authority:</b>	Normal, 100%
<b>Phase:</b>	0°
<b>Crossover Frequency:</b>	100 Hz
<b>Volume:</b>	1:00 o'clock
<b>Power:</b>	On

**Happy listening!**

## INTRODUCTION

Congratulations on your purchase of the finest loudspeaker system available today. Unlike many, more conventional 'forward-firing, cone and dome' designs, my *Amazing Line Source* works and sounds different – I could say that it may be the best loudspeaker in the world. But then, of course, I would say that. After all, I designed it to be the very best loudspeaker system available today.

No matter what design or topology a loudspeaker may employ, as listeners, we want it to sound believably realistic, understanding, of course, that no speaker can reproduce music with 100% faithfulness – only approach it. It is my belief, however, that a *true* line source comes far closer than any other design on the market today. The true test, for you, is to experience the *Amazing Line Source* in your own listening room, experiencing what a high performance line source loudspeaker is capable of.

Enjoy The Music!

A handwritten signature in black ink that reads "Bob Carver". The signature is written in a cursive, flowing style with a long horizontal stroke at the end.

## Contents

INTRODUCTION.....	ii
CONTENTS.....	1
UPON RECEIPT.....	1
Initial Inspection.....	1
Unpacking.....	1
Assembly.....	2
Crossover-Loudspeaker Connections.....	3
Crossover-Amplifier Connections.....	3
SubRosa Connections.....	5
OVERVIEW.....	6
OPERATION.....	6
Sunfire SubRosa Subwoofer and Amplifier.....	6
Amazing Line Source.....	6
Crossover Controls.....	6
SETUP.....	7
SubRosa Room Equalization Procedure.....	7
Preliminary Settings.....	7
Crossover Control Settings.....	7
SubRosa Amplifier Control Settings.....	7
System Final Adjustments.....	7
SubRosa Subwoofer Placement.....	7
Amazing Line Source Placement.....	8
Recommended Source Material.....	8
Adjusting Crossover Controls.....	8
Final Loudspeaker Placement.....	9
Adjusting SubRosa Amplifier Controls.....	9
TECHNICAL DESCRIPTION.....	9
SPIKES FOR MOUNTING FEET.....	11
LARGE INTERCONNECTING WIRE.....	12
ACCENT SPEAKERS.....	12

SPECIFICATIONS ..... 13

SERVICE ..... 14

    Returning Speakers ..... 14

    Required Information ..... 14

CONTACTING BOB CARVER CORP. .... 14

## CONTENTS

The *Amazing Line Source* loudspeaker system is delivered in several cartons. It is suggested that you verify the contents of the cartons as you unpack them.

- *Amazing Line Source* loudspeaker columns, 2 ea.
- *Amazing Line Source* loudspeaker bases, 2 ea.
- *Amazing Line Source* crossover modules, 2 ea.
- Sunfire® SubRosa Flat Panel Subwoofer (SRS-210R SYS), 1 ea.
- Sunfire Subwoofer Amplifier (SRA-2700EQ), 1 ea.
- Crossover interconnect cables, 4 ea. (1 red, 1 black per crossover)
- 5-pin locking crossover-loudspeaker umbilical cable, 2 ea.
- Base mounting screw, ¼-20 x 1.5", 6 ea.
- Phillips head screw driver, 1 ea.
- This manual.

## UPON RECEIPT

### Initial Inspection

The *Amazing Line Source* loudspeaker columns are shipped in two 94" long shipping containers; the bases and crossover modules are shipped separately. The Sunfire SubRosa Flat Panel Subwoofer (SRS-210R SYS), including its matching Amplifier (SRA-2700EQ), are shipped in their own respective containers. Please verify the condition of the boxes and their contents, reporting any damage to the carrier immediately for insurance verification.

### Unpacking

Due to both the loudspeakers' and subwoofer's dimensions and weight, they can be awkward to maneuver and set up. Please note that they are intended to be unpacked and setup by two capable individuals, working together.

Because of the size and orientation of the various components included in the *Amazing Line Source* speaker system, it is recommended that, at a minimum, an area of approximately 10' x 10' (this could be the center of your listening room) be available for assembly and setup. Choose a place with a carpet, rug, or other soft material to avoid damaging your floor or the loudspeakers.

Unpack the SubRosa subwoofer and its accompanying amplifier following the instructions supplied in their user's manual. Unless the desired placement location is available and is not an impediment to the subsequent setup of the loudspeakers, place the subwoofer and its amplifier temporarily out of harm's way.

Place the shipping cartons horizontally on the floor (or other suitable location) with the surface marked "front" on top. Remove the top cover of the 'telescoping' shipping cartons by carefully cutting the

shipping tape and sliding them off. Gently remove the foam inserts from the corrugated outer boxes, retaining the orientation of the inserts (face upward). After removing the foam inserts from the outer boxes, remove the foam top cover, exposing the wrapped speaker.

Being careful not to inadvertently cut the loudspeaker protective cloth sleeve or underlying loudspeaker ribbons, remove the tape from the plastic overwrap, folding it back to reveal the speaker. With an individual at each end of the loudspeaker, gently lift it out of the foam inserts, placing it in a predetermined staging area, using the supplied gloves to avoid fingerprints.

#### *CAUTION*

*The loudspeaker columns may be slippery to handle while enclosed within the protective cloth sleeves. Ensure the speaker is not allowed to slip from the hands of the setup personnel during unpacking, causing possible damage or injury. In addition, the exposed loudspeaker woofer assemblies on either side of the column do not have protective grille covers. Take care to avoid poking your hands/fingers through them during unpacking and handling.*

Be careful not to damage the foam and packing materials. It is important to save all packing materials and boxes, in the event the loudspeakers ever need to be moved or returned for service.

Check the contents of all shipping containers, verifying that the contents match that specified above. In the rare event something is missing or damaged, please contact your dealer or Bob Carver Corporation.

## **Assembly**

After removing and unpacking the components from the shipping containers, some minor assembly is required prior to setup.

#### *NOTE*

*Though the installation of the bases can be accomplished with the main speaker columns resting on the carpeted (or otherwise protected) floor while one of the assistants holds the bottom end off of the floor, it is suggested that, if available, the speaker column is rested across the arms of an appropriate length (6' – 8'), soft (non-marring), upholstered sofa while the bases are attached. Alternatively, the large foam inserts may be used to cradle the speaker horizontally along the floor.*

1. Using the three (3) supplied phillips head screws and screw driver, install the base on each speaker.

#### *CAUTION*

The loudspeaker bases come pre-assembled with felt pad feet attached, allowing the speaker to easily slide along the floor. Care must be taken when moving the speaker.

2. After installing the bases, carefully place the assembled speaker column in the approximate, final location, initially orienting the ribbons on the speaker face toward the desired listening position. Always exercise caution when moving the assembled loudspeaker column, taking care not to drag it across the floor. It is easily pushed along the floor by pushing from the bottom of the column. If your ceiling is only 91 inches high the speakers must be tipped from the

horizontal position to its vertical position by tipping it along the side of the base. If it is tipped along the front or rear of the base, it will strike the ceiling.

*NOTE*

3. The loudspeakers and their respective crossover modules are connected next. For the present, point the face (the ribbon side) of each respective speaker column towards the facing wall. It is not necessary to be overly exact at this time; the speakers will be 'fine-tuned' for listening once all connections are made and setup is complete. More on this later.

### Crossover-Loudspeaker Connections

*CAUTION*

Prior to connecting (or disconnecting) any components of the loudspeaker system, ensure that all audio system active components (preamplifier, amplifier, etc.) are turned off or their output(s) set to minimum to avoid damage.

Following assembly, each crossover module is connected to its matching (left or right) speaker column, using the crossover interconnect cable.

### Crossover-Amplifier Connections

The *Amazing Line Source* employs an easy-to-connect 5 conductor locking connector that "snaps" with the ALS.

*NOTE*

*If the amplifier employs output taps for various speaker impedances, use the eight (8) ohm tap. After becoming familiar with the sound using the eight-ohm tap, try switching to the amplifier's four-ohm tap. The results may vary, depending on the amplifier used. Choose the tap that yields the best and most powerful sound.*

*Single-Wire* connections are used in most applications. In this type of connection, a single pair of speaker cables are connected between the amplifier output of each channel and the crossover **WOOFER AMP** terminals, observing polarity, depicted in Fig. 1.

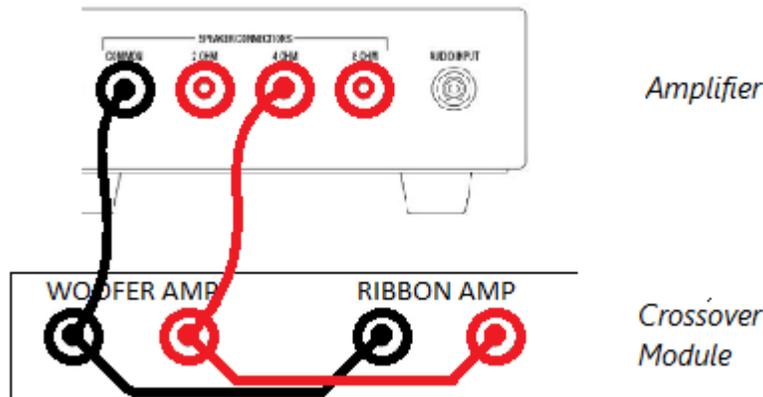
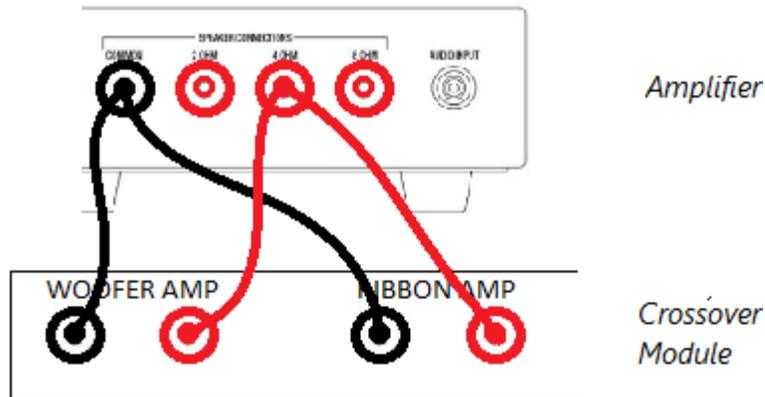


Figure 1 – Single-Wire Amplifier Connections

*Bi-Wire* connections are made by connecting individual speaker cables between the amplifier output and BOTH the **WOOFER AMP** and **RIBBON AMP** crossover terminals. See Fig. 2.



*Figure 2 - Bi-Wire Amplifier Connections*

*Bi-Amplified* connections employ separate amplifiers for the speaker's woofers and tweeters. In this mode, separate amplifiers are connected to the **WOOFER AMP** and **RIBBON AMP** crossover terminals. See Fig. 3.

**NOTE**

*When connecting the speakers in the bi-amplified fashion described (sometimes referred to as horizontal bi-amping), unless the amplifiers used have identical gain, some means of adjusting/matching the gain between the amplifiers is required.*

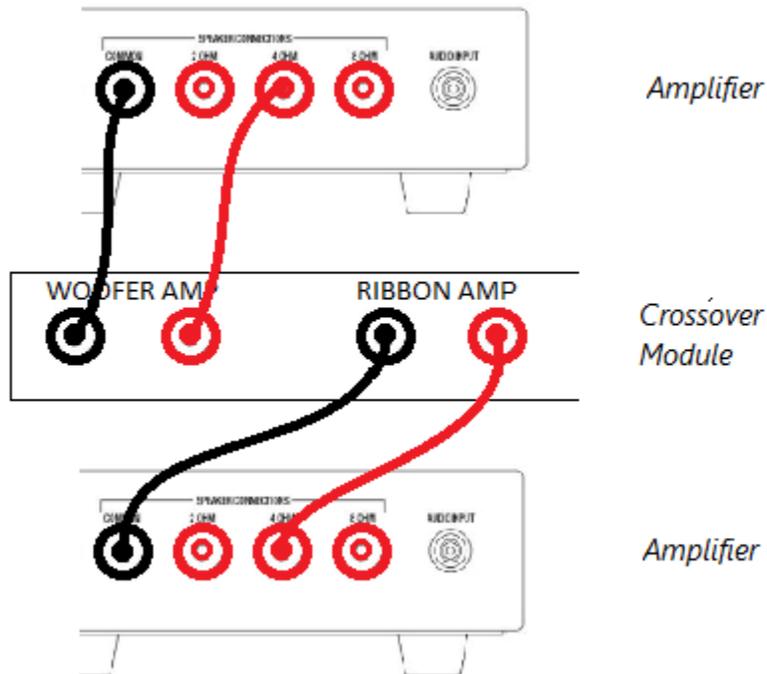


Figure 3 - Bi-Amplified Amplifier Connections

### SubRosa Connections

Ensuring the AC mains power is disconnected and observing all precautions in its User's Manual, connect the preamplifier **Right** and **Left** line outputs (however named) to the SRA-2700EQ Amplifier **INPUTS (LINE-LEVEL) R** and **L** jacks (rear panel), respectively. Connect the SRA-2700EQ Amplifier **OUTPUTS (LINE-LEVEL, HIGH-PASS) R** and **L** jacks to the right and left channel amplifiers' input jacks, respectively. (In the case of a stereo amplifier, connect to the stereo amplifier's **R** and **L** input jacks.)

With high quality speaker wire (not supplied), connect the 2700EQ Amplifier **TO SUBWOOFER (+)** and **(-)** terminals to the SubRosa subwoofer assembly red (+) and black (-) terminals, respectively.

#### NOTE

The balanced inputs on the SRA-2700EQ amplifier are meant for use with a preamplifier or receiver which has Main and LFE outputs. In this configuration the Main output of the preamp will connect directly to the main amplifiers (the amps driving the ALS columns), and the LFE output will connect to the subwoofer amplifier. The high-pass unbalanced outputs on the SRA-2700EQ will not pass signal when using the balanced LFE inputs. If configuring your system in this way, make sure to set the crossover frequency to MAX on the SRA-2700EQ and use your preamp to set the low-pass/crossover frequency to the subwoofer/main amps.

## OVERVIEW

The *Amazing Line Source* is a full-range loudspeaker system, consisting of three major components: Two *Amazing Line Source* loudspeaker columns (and matching crossover modules), and the SubRosa subwoofer and matching amplifier.

The main speaker columns reproduce sound from 80 Hz to beyond audibility; the SubRosa subwoofer reproduces frequencies in the 18 to 115 Hz range. Together, they comprise a full-range loudspeaker system, capable of reproducing sound over the entire audio range and beyond!

## OPERATION

### Sunfire SubRosa Subwoofer and Amplifier

The use and operation of the Sunfire SubRosa subwoofer and accompanying amplifier are described in their own manual, the SubRosa Subwoofer User's Manual, included. Please refer to that manual with questions regarding subwoofer operation.

### Amazing Line Source

The *Amazing Line Source* has no operating controls on the loudspeaker enclosures themselves; all adjustments reside on the respective crossover module. Each crossover module contains controls for the following:

1. **Bass Damping**
2. **Upper Midrange**
3. **High Frequency**

### Crossover Controls

The **Bass Damping** control affects the lower midrange output of the loudspeaker. Adjusting the control to the right increases these frequencies, providing a tighter bass response. Turning the control to the left decreases them, yielding a warmer bass.

The **Upper Midrange** controls the loudspeaker's energy output in the upper midrange frequencies. Rotating the knob to the right yields a more forward sound, particularly when listening to source material consisting of female vocalists. Adjusting it to the left results in a greater depth perception, increasing the layered, front to back depth of the soundstage.

The **High Frequency** control increases the energy output in the very top octave. Turning the control to the right produces maximum high frequency output; to the left, minimum

Together, these adjustments are voicing controls, and are used to control the octave to octave tonal balance of the loudspeaker to suit you and your listening room.

## SETUP

Referring to the SubRosa User's Manual *Subwoofer Installation* section, place the subwoofer in a location near its intended final location.

At this point, it is a good idea to recheck and verify all previously described connections, prior to energizing the system. Once all system connections have been verified (and corrected, if necessary), set the SubRosa Amplifier **Power** to On.

### SubRosa Room Equalization Procedure

Following the procedure(s) described in the subwoofer User's Manual, perform the *Room Equalization Procedure (Automatic or Manual EQ Mode)*, as you prefer.

### Preliminary Settings

#### Crossover Control Settings

*NOTE*

*Unless otherwise specified, all references in this manual relating to adjusting the crossover voicing controls applies identically to both left and right channels.*

Initially set the crossover module voicing controls as follows:

<b>Bass Damping:</b>	10:00 o'clock
<b>Upper Midrange:</b>	8:30 o'clock
<b>High Frequency:</b>	Fully clockwise

#### SubRosa Amplifier Control Settings

Initially set the SubRosa Amplifier controls as follows:

<b>Equalizer Authority:</b>	Normal, 100%
<b>Phase:</b>	0°
<b>Crossover Frequency:</b>	100 Hz
<b>Volume:</b>	1:00 o'clock
<b>Power:</b>	On

### System Final Adjustments

Following completion of the SubRosa subwoofer *Room Equalization Procedure*, or any time it is desired to 'fine-tune' the loudspeaker system, it is highly recommended that the procedure below is performed.

The *Amazing Line Source* is vastly different from conventional cone and dome designs. Though many steps of the setup process are similar to those designs, the acoustics associated with a *true* line source make the following routines specific to this loudspeaker system.

#### SubRosa Subwoofer Placement

The subwoofer was placed in its approximate location during initial connection and setup. After final placement and adjustment of the loudspeakers, it may be desired to try a different location for the

subwoofer in the room. In that event, the subwoofer *Room Equalization Procedure* must be re-executed, for best results. If you intend to play vinyl LPs, try placing the subwoofer on its side instead of its bottom. This arrangement will significantly reduce the possibility of low-frequency feed-back from the subwoofer to the turntable.

### Amazing Line Source Placement

Taking care not to damage the floor covering, initially place the loudspeakers a minimum of 3' from the front wall (behind the speakers) and a minimum of 1.5' from the side walls. Ideally, the side walls should be clear of obstructions and be acoustically 'dead.' Initially adjust the face (ribbons) of the loudspeaker, aiming them towards you the listener, firing slightly outside of your left and right shoulders, respectively.

Although less sensitive to off-axis soundstage degradation, unlike many designs, it is recommended for final optimization that the listening chair be placed in an 'isosceles triangle' configuration, with respect to the speakers (equal distance from the listening position to each loudspeaker), affording the best overall room response upon completion of the process. Moreover, for best results, the listening chair should be placed about 1.5' away from the rear wall.

### Recommended Source Material

It is highly recommended that the listener use material that they are very familiar with, including that from several different artists and genres. Rock music, for example, typically has a higher overall energy level than many other types, containing musical information throughout the audible frequency range. Chamber music, on the other extreme, is generally delicate, intimate, and detailed. Utilizing familiar music will help maximize the sonic benefits of the final placement and adjustment process for the listener.

### Adjusting Crossover Controls

To adjust the **Bass Damping**, starting from the initial setting, adjust the control for the optimum bass response in the listening room, particularly while listening to music containing tympani, kick drum, other low register instruments, and/or notable sonic events in the lower frequency range. Adjust the **Bass Damping** control while balancing the tautness and warmth of the lower frequencies.

Adjust the **Upper Midrange** control using material containing female vocalists, for example, to place the voice at the correct depth in the soundstage. Adjustment of the **Upper Midrange** control will vary the depth of the soundstage as well as slightly varying the overall tonal balance. Set the control for the best balance between placement and depth.

The **High Frequency** control affects the uppermost frequencies, and its adjustment varies the level of music in this frequency range. Adjust the **High Frequency** control for the sound to have a detailed 'sparkle'. Harmonically rich instruments in this range, such as the glockenspiel, violin, or guitar, are excellent source material for this purpose.

## Final Loudspeaker Placement

During adjustment of the crossover controls, it is likely that the loudspeakers' direction or toeing will require adjustment during this process as well. Adjusting the toe-in to place the face of the ribbons pointing inward, toward the listener, may cause the image to boom; pointing the ribbons excessively outward (toe-out), relative to the listening position, may produce a thin image. Alternating between the crossover controls and speaker placement, systematically adjust both until the tonal balance is optimized.

## Adjusting SubRosa Amplifier Controls

Adjust the subwoofer Amplifier by following the procedure described in the Sunfire User's Manual, *Adjusting the controls*. Fine-tune the Amplifier **Volume** control by adjusting it until overall tonal balance is achieved with the rest of the system.

## TECHNICAL DESCRIPTION

What is a line source anyway? As Frank Capra used to say, "What is the deal here?"

How a line source operates has been understood by scientists for a long time, harking back to the days of Bell Telephone Labs. A brilliant researcher who worked there taught the world how they worked; his name was Dr. Harry Olson, a physicist, an experimenter, a theoretician, and he developed the complete theory of the line source. He showed how an infinite line source would behave when generating a sound wave, and how a practical line source could become a close approximation to an ideal (infinitely long) one. So what happened? Why are line sources just now becoming popular with audiophile listeners, Hi-Fi dealers, and the press? Well, the answer is because it has been difficult to understand the detailed operating principle of a line source. Lots of advanced math, complicated room interactions not easily understood, and the extreme difficulty of developing a practical method of actually building one. The scientists at JBL®, Bose® and others have tackled the problem, have written papers that ARE easy to understand, and the world now knows how to do it.

I actually learned my craft from the early work of Dr. Harry Olson, and from my colleague Leslie Williams, a physicist for whom the math was a walk in the park. Here's Leslie:

*What counts in a loudspeaker designed for stereo reproduction is the resulting High-Fidelity, be it 'you-are-there' or 'they-are-here.' High-Fidelity must include accurate frequency and transient response, life-like levels without audible distortion, and realistic portrayal of ambience and imaging. Having personally made many forays to push the state-of-the-art, both by, 1) creating psychoacoustic models that mathematically depict most of Hi-Fi, and 2) designing and building speakers for music playback for friends, I've found that integrating all of the elements from source to brain into a coherent system design is crucial – not just a single component or room or technology. The speaker is the nexus, since it touches more of the system than anything else. Bob's Amazing Line Source gives the best Hi-Fi, not because of any single aspect (e.g., line source, tube amps, or driver technology), but because he has done the best system design. Some of my tech notes from measuring and listening to them for a few days... :*

1. *The midrange double line has a uniform polar pattern over its bandpass*
2. *Neither the midrange nor the tweeter line exhibits any chaotic frequency response due to array factors (for reference, read Don Keele, Jr.'s – former editor of Audio Magazine – work)*
3. *There are no measurable (let alone, audible) specular reflections*
4. *The form factor of the sub acoustically integrates with the room on the floor or wall, in the corner, or under your seat*
5. *In consumer speakers, the tweeter is a noticeable bottleneck – but not with The Amazing Line Source*
6. *ALL speakers should be either far from, or directly on, the wall. The Amazing Line Source works – even with imaging – for both*
7. *The Amazing Line Source is unique in being acoustically transparent to the source with life-like levels and a small horizontal footprint, and*
8. *Seamlessness both vertically and horizontally in a room.*

*No other speaker does both to the necessary extreme in a room. Though...*

*Big professional line arrays may play louder, but they are line arrays, not true line sources. Big difference! ...as a designer, listener to live music, and lover of Hi-Fi: I'm jealous.*

Again, here's Bob, continuing on...

My *Amazing Line Source* Speakers present a huge and majestic soundstage that captures the complete sense of acoustic space that helps make music come to life in our listening rooms.

I hear sound images inside a larger acoustic that seem so real it is downright spooky. The soundstage extends far behind the speakers, wider than the speakers, higher than the speakers, possessing a majesty that I find difficult to believe. But not so difficult I do NOT believe it; every time I listened, I found myself asking over and over... "How do they do that?" surprised as I am by their soundstage realism. Then again, why should I be surprised? I designed them.

A solo female singer will appear center stage, up and back slightly, perfectly focused, singing her heart out as if she were in our room, all the while being inside that larger acoustic. It is very, very spooky. And I promise that Beethoven's Ninth symphony will bring tears to your eyes.

It's been often said, 'You can't change the laws of physics.' But we can come close, and often we can come so close that we cannot tell the difference between advanced physics and magic. Someone important once said that, I don't remember who. Well, my new loudspeaker does seem to defy the laws of physics (It doesn't really of course, but it often seems to). I have pushed the limits as far as I know how; transient speed, transparency, dynamic agility and sheer acoustic output power. There is no other that can match it as a large signal transducer! Certainly not in terms of pushing the limits of science and wave-launch technology. First off, the column of (thirteen) ribbon drivers deliver pristine vocals as well as high-speed musical transients from floor to ceiling, with an attack and authority that is difficult to believe. The side-firing drivers bathe the listening area with room-filling sonics, providing a soundstage whose breadth, depth, and height are even more difficult to believe. The drivers combine to provide

both a sense of majesty and low-level detail retrieval and resolution previously all but unheard of in a typical, high performance loudspeaker. Moreover, the ultra slim, isosceles-like enclosure (a bonus in the world of "monolithic, monster monkey coffins," as Milt McNally used to say!) is utterly free from any box coloration, and is virtually reflection-free in the listening room.

A true line source speaker is simply a speaker so tall and acoustically long that we, the listener, hear a speaker that goes all the way to infinity. Up to infinity and down to infinity, resulting in what a scientist would call a "perfect wave launch."

The wave from such a speaker behaves as if it emanates from a gossamer thin filament running from below the center of the earth to beyond the moon. A pure, beautiful, cylindrical sound wave.

When we listen to such a wave, we find that we can hear musical nuances that we often cannot hear at all using normal speakers.

Think of it this way: Consider a thin pole that is eight feet tall, extending from floor to ceiling. On the pole are mounted 18 lit birthday candles, each a light source. Additionally, imagine the floor and ceiling to be perfectly polished mirrors. When we look down at the bottom of our speaker, we will see lit candles reflected in the mirror continuing all the way down to minus infinity. If we look up towards the top of our speaker, we will see reflections of candles that go up to plus infinity beyond the farthest star in our galaxy. The top and bottom of the room and its physical limitations seem to vanish, leaving only the splendor of the concert hall in the listening room.

All these reflections are real light sources to our eyes, as real as any real candle; we can read a book by their light. The candles in the mirrors make as much light as the actual candles on that pole. Absolutely non-intuitive! Now instead of candles, imagine that we replace them with lots of small loudspeaker drivers. Or better yet, a long ribbon that makes sound. The result is an infinitely long ribbon of sound because the same holds true for speakers, candles and ribbons alike; the virtual drivers in the mirror make just as much sound as the "real" drivers in the room, and behave for sound the same way as the candles behaved for light.

For sound waves, we can remove the polished mirrors and simply use the floor and ceiling to make the line source work perfectly! (Normal floors work for sound the same way polished mirrors work for light.)

### **SPIKES FOR MOUNTING FEET**

Do not use spikes with these speakers. The vertical reaction forces are non-existent because the side firing drivers balance each other completely, resulting in a complete absence of rocking motion. The moment arm coupling associated with the forward firing ribbons is absolutely nil, amounting to a total of about five grams of force at the periphery of the mounting base, or approximately the same order of magnitude as vintage phonograph needles had as their tracking force. Not even remotely significant. A line source requires that the top and bottom solid boundaries, the floor and ceiling, be acoustically coupled to the speaker, but NOT mechanically. Do not use spikes!

## LARGE INTERCONNECTING WIRE

These speakers have been designed to be driven from a quasi-current source, the very kind of signal source that is the hall-mark of a fine vacuum tube amplifier.

The Amazing Line Source is at its best when driven from a source impedance of one ohm or greater; the use of large, ultra-low impedance speaker wire (cable) is not at all necessary, and we recommend small wire, similar to the wire that British audiophiles were so very fond of some years back. A wire gauge of between #20 and #16 will do beautifully, with # 20 or #18 a good choice. Extra heavy wire will do no harm, but the system will sound just as beautiful, perhaps even more beautiful, with the use of the smaller wire size.

## ACCENT SPEAKERS

The Crossover Control Module provides additional output terminals for a set of very small "accent" speakers; these accent speakers are designed to capture additional hidden acoustic space that is contained in your recording. Not that more space is necessarily needed! The Line Source captures so much space contained in the signal, they are hardly needed. Still...

Please get the system working first without any accent speakers. After you are familiar with the way they sound in your room, then and only then, should you try an accent speaker. The accent speakers are set to play at a very low level - a fraction of a watt - and are almost not audible at a conscious level. The extra acoustic space they provide IS audible.

The accent speakers may be almost ANY kind or size. They can be small computer speakers, small bookshelf units, or even large floorstanders. Our sense of sonic quality derives from the Big Line Source up front, and the accent speakers do not impinge on that sense of quality at all. They may be placed anywhere - on the floor, on a shelf, pointing up or down or forward. Even towards the back. Their location should be somewhere to the left and right of the Line Sources along the side walls.

## SPECIFICATIONS

- Frequency Response (excl. subwoofer) 80 Hz to beyond audibility
- Forward firing ribbon drivers: 13
- Spatial ribbon drivers: 1
- Lateral firing, high excursion drivers: 18
- Impedance: 4 ohms (but designed to be connected to the 8 ohm tap on vacuum tube amplifiers)
- Sensitivity: 90 dB @ 2.83 Vrms
- SPL (for two speakers): 120 dB @ 350 watts
- Rated Power: 1,000 watts
- Minimum Power: 15 watts, tube; 30 watts, solid-state
- Footprint: 4 $\frac{5}{8}$ " x 6 $\frac{7}{8}$ " (11.75 cm x 17.5 cm), less base
- Cabinet: Extruded Aluminum
- Height: 89.375", base included
- Weight: 102 lbs. (46.3 kg) ea., incl. base
- Color: Anthracite, BMW Silver Midnight, gloss black
- Country of Origin: United States of America
- Warranty: 10 years

The Amazing Line Source is supplied with one Sunfire SubRosa Flat Panel Subwoofer (SRS-210R SYS) and its matching Amplifier (SRA-2700EQ). Consult the Sunfire User's Manual for specifications and further information on these devices.

Specifications subject to change without notice.

## SERVICE

The *Amazing Line Source* loudspeaker system contains no user serviceable parts. In the unlikely event your loudspeaker system requires service, please contact your dealer. Alternatively, contact Bob Carver Corp. using the information below.

### Returning Speakers

If the loudspeakers need to be returned for repair, it is the shipper's responsibility to package the product in a manner affording adequate protection, i.e., using the *original* shipping containers. Bob Carver Corp. assumes no responsibility for damage incurred during shipment. Furthermore, any damage caused by shipment is expressly not covered by the product warranty.

All returns must be:

- Properly packaged using the original packing materials.
- Adequately insured and consigned.
- Prepaid shipping to our dock or other specified location.

### Required Information

When returning the loudspeaker(s) for service, the following information **must** be included:

- Name.
- Shipping address, including city, state, and ZIP code.
- Telephone number where we can contact you, including area and country codes, as applicable.
- Loudspeaker serial number.
- A detailed problem description.
- Desired method of return shipment.

## CONTACTING BOB CARVER CORP.

For service or technical support, please contact us at the following:

Email: [fmalitz@comcast.net](mailto:fmalitz@comcast.net)

Web: [www.bobcarvercorp.com](http://www.bobcarvercorp.com)

