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CARVER

AL-III
Dipole Loudspeaker System
Owner's Manual

CARVER

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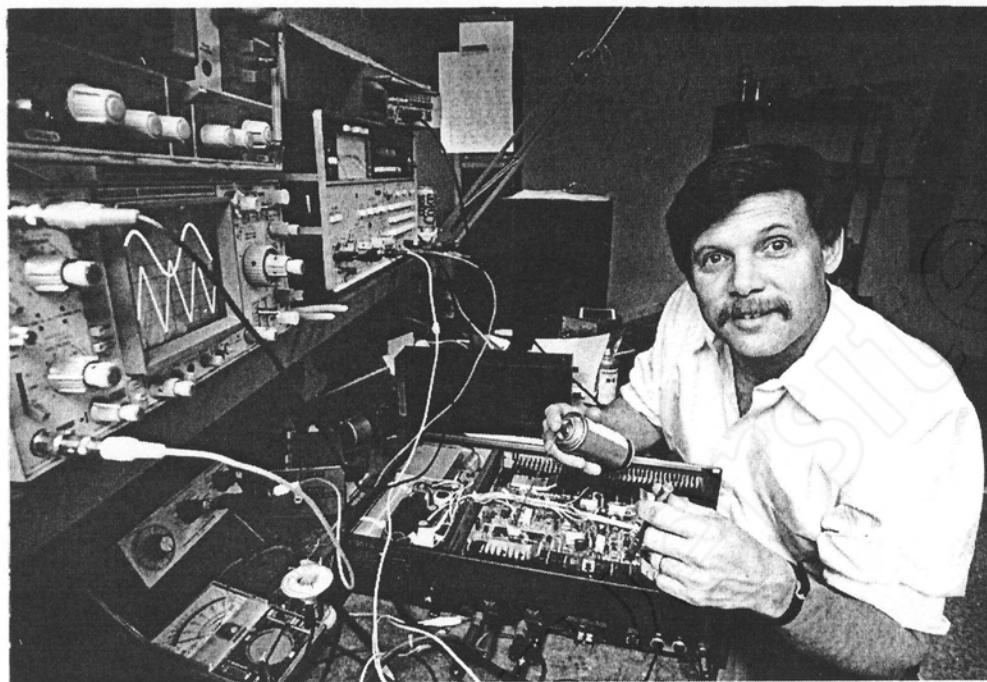
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A Message from Bob Carver

AL-III

Dear CARVER Customer,

Thank you for choosing my speakers. We realize that there are an abundance of speaker designs from which to choose, and the differences between the various models are not always apparent at first glance.



You are about to experience stunning realism with instant dynamic response, excellent power handling and vivid stereo imaging—all in a design that is free of cabinet resonance induced colorations. Your AL-III Dipole Loudspeaker can deliver a sound that transcends ANY conventional multi-transducer design.

Carver's AL-III Dipole Loudspeakers use a full-range ribbon driver. These ribbon transducers are an elegant solution to the problem of multiple driver arrays and complicated crossovers. Instead of two or more midrange and treble transducers, a single ribbon handles the entire sound spectrum above 150 Hz without frequency anomalies

and phase problems that result from multi-driver arrays with complex crossovers.

Complementing the full-range ribbon design is a "classic" vented woofer tuned to 24 Hz, and designed to fire downward in a circular pattern at the base of the ribbon. Taken

together, this set-up provides clean, distortion-free response to the bottom octave below 30 Hz.

The AL-III loudspeakers deliver a wide sound field and overall musicality that must be heard to be believed. Your AL-III Loudspeakers are capable of creating a stereo image matched by few speakers. You will hear each instrument etched in the sound field with space, depth and ambience.

Set-up of your AL-III Dipole Loudspeakers is simple, but somewhat more critical than with most conventional loudspeakers.

Following the tips in this Owner's Manual will help you get the most out of your new Carver speaker system.

I am proud to present to you the best in craftsmanship and design, as exemplified by your new Carver Loudspeakers.

Sincerely,

Bob Carver

Unpacking

Note: Unpack the speakers close to the spot where you intend to locate the speakers. This will save you time.

1. Inspect the outside of the cartons for damage. If you do encounter what may be signs of damage, contact your Carver dealer before proceeding further.

2. These cartons are specially designed to simplify unpacking. Just stand the speaker boxes straight up, observing the "top" and "bottom" labels. Since each speaker weighs approximately 80 pounds, we suggest you have another person assist you when removing and setting up the AL-III in your listening room.

3. Remove the top cap of the carton. Then you can literally unfold the carton from around the speakers. You may then lift the AL-III at the bottom of the woofer box, from the bottom of the carton, and place them as near your listening area as possible. Please do not attempt to lift the loudspeakers while holding the ribbon panels.

4. At this time, check for any visible sign of damage. If you do encounter what appears to be signs of damage, contact your Carver dealer before proceeding further.

5. Inventory the contents of the boxes. Your system comes packed in two cartons. The front "wings" and woofer box are fully assembled and ready to use.

5. Make a note of the serial numbers which are located on the rear of your AL-III Loudspeaker panels.

Record these numbers in the space provided for convenient reference. You will need these numbers in the event you require service or for insurance purposes.

Model: **AL-III Loudspeaker System**

Serial number _____

Purchased at _____

Date _____

Make sure to save your sales receipt. It is extremely important in establishing the

duration of your Limited Warranty and for insurance purposes.

Finally, take a moment to fill out and return the Warranty Card that came with your loudspeaker system and return it to Carver.

Specifications & Features

Frequency Response: 24 Hz to 20 kHz*

Impedance: Nominal 4 ohms

Sensitivity: 86 dB

Crossover: Ribbon operates from 150 Hz to 20 kHz; woofer reproduces all frequencies below 150 Hz.

Ribbon Driver: 48-inch dipole ribbon.

Woofer: 10-inch Quasi-butterworth 3rd-order aligned woofer system, which fires downward in a circular pattern.

Recommended Power: Up to 575 watts per channel; 65 watts minimum, 8 ohm rated.

Front Wings: Solid oak.

Woofer Box: Hexagonal, with durable black coating. The box is vented.

Shipping Weight: 80 lbs. each

Dimensions: 14.5" (37 cm) W x 16.5" (42 cm) D x 72.5" (185 cm) H

Features

- Two-way dipole loudspeaker system.
- All frequencies above 150 Hz handled by our unique line-source 48-inch dipole ribbon, which provides precise imaging not possible with speakers using multiple drivers.
- Low frequencies handled by a long throw woofer system tuned to 24 Hz.
- Frequency response from 24 Hz to 20 kHz.*
- Provides three level controls to precisely tailor the AL-III loudspeakers to your listening environment.
- Includes separate binding posts for woofer and ribbon driver, to allow for bi-wiring and bi-amplification.

*Includes typical room gain. Anechoic response is 34 Hz to 20 KHz.

Installation

Because of the unique design of your new Carver speakers, it is important that you carefully follow all of the steps in this and the sections that follow. Here is an overview of the sequence necessary to begin enjoying your new loudspeakers.

Remove the protective plastic which encases each panel. **NOTE: DISPOSE OF THIS PLASTIC IMMEDIATELY.** It is not a toy and can cause suffocation if left where infants, toddlers and children can reach it.

Connecting the AL-III Loudspeaker

If you have not done so yet, quickly scan the section on speaker placement in this manual, beginning on page 7, to insure that your amplifier-to-speaker cables will be long enough.

Speaker connections

WIRE. Use thick wire for speaker connections. Your Carver dealer can recommend a brand of high quality speaker cable. Please take care in choosing a cable of the proper gauge. This will depend on the distance from the amplifier/receiver to your speakers. Use the following chart as a guide:

WIRE LENGTH GAUGE OF SPEAKER CABLE

Up to 25 ft	18 gauge
25 to 50 ft	16 gauge

50 to 80 ft	14 gauge
80 to 100 ft	12 gauge
Up to 170 ft	10 gauge

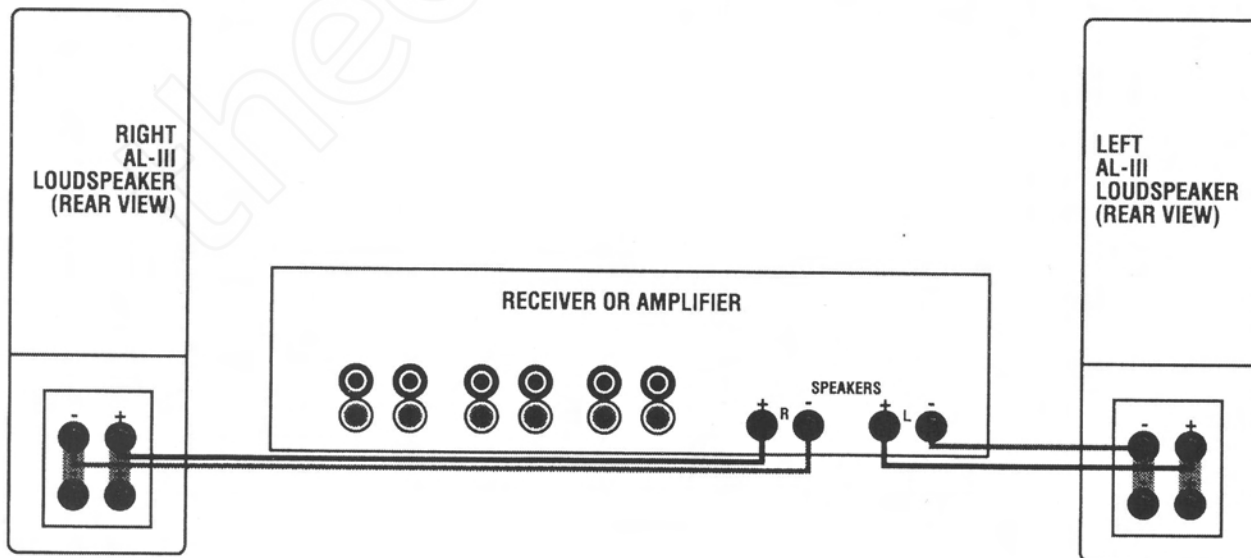
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POLARITY. Loudspeakers must be connected with consistent polarity for correct phasing between them. Incorrect phasing will do no physical harm, but bass response will be diminished. The key is to make sure that both speakers connected to the speaker terminals are hooked up the same way:

"-" at the amplifier/receiver speaker outputs to "-" on the speaker back, and "+" at the amplifier/receiver speaker outputs to "+" on the speaker back.

If you're using special speaker interconnects, "+" and "-" will be labeled. If you're using plain appliance-type cable, the two conductors will be identified in one of several ways. They may be different colors (silver vs. gold). One may have fine grooves on its outside. Or one may have a piece of yarn included in one of the conductors (visible after you strip off the insulation). It doesn't matter which one you decide to call "+" or "-", just do the same for both speakers.

Hook-up. There are two ways to connect your amplifier/receiver to the binding post speaker terminals on the AL-III. These binding posts will accept standard single or double banana plugs. These plugs can be attached to the end of the speaker cable, and plugged directly into the AL-III's binding post sockets. This makes connecting and disconnecting speakers simple and quick.



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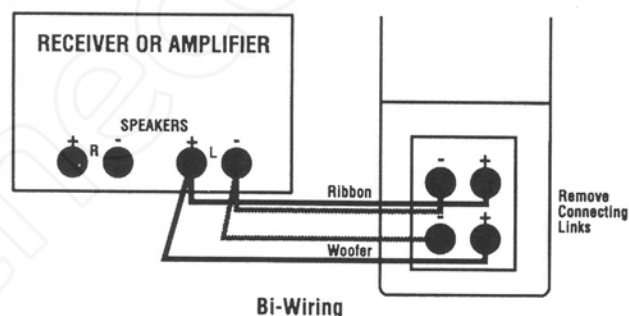
However, if you expect to hook-up your loudspeakers once and keep them connected that way, you may also attach the speaker cable in the following way:

1. Strip $\frac{1}{2}$ " of insulation off each wire and make sure to carefully twist all the fine strands together. If even one is loose and can touch the opposite terminal, a short circuit may result.
2. Unscrew the binding post and insert the wire so that all the strands will fit under the cap of the binding post.
3. Tighten the cap securely. Check to make sure that all strands of wire are inside the connection.
4. After you've hooked up the speakers, double-check your connections.

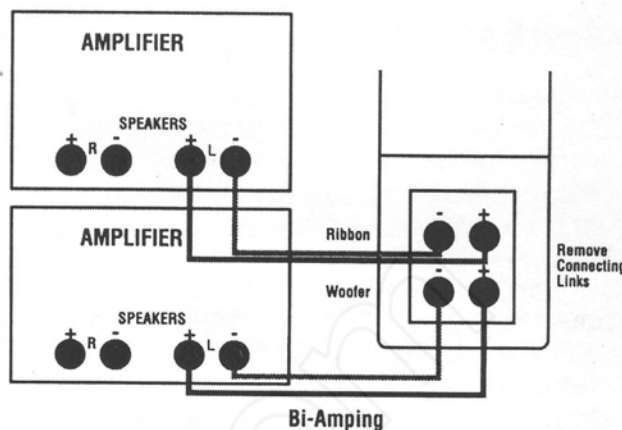
Bi-Wiring and Bi-Amplification

The normal mode of operation for the AL-III provides for a single amplifier channel driving both the ribbon (high frequencies) and the woofer (low frequencies). Be sure that the connecting links are properly installed between the two red binding posts and the two black binding posts for normal use. After installing cables to the AL-III, be sure that the links are secure before tightening the binding posts.

By removing these links, you can bi-amplify or bi-wire the AL-III. Some feel these techniques may improve the efficiency of the amplifier or provide for better overall sound.



Bi-wiring involves connecting one cable to the ribbon and one cable to the woofer. Both leads (from the same channel) are attached to the same power amplifier output terminal. See figure above for an example of how bi-wiring may be used.



Bi-amplification requires separate power amplifiers (or amplifier channels) for the ribbon and for the woofer (see figure on previous page). In the purest sense, this is not true bi-amplification, as the power amplifiers are still reproducing the full audio spectrum. The power bandwidth is limited by AL-III's built-in crossover, which directs frequencies above 150 Hz to the ribbon; below 150 Hz to the woofer.

Please note: Bi-amplification should be done with amplifiers of the same power output. If the power output of one amplifier (or monaural pair) is different from the other, the more powerful amplifier should be connected to the ribbon. At least one amplifier (or monaural pair) should have a level control to provide for proper balancing between the woofer and the ribbon.

Breaking in the AL-III Loudspeaker

The AL-III loudspeakers should provide excellent performance right out of the box. But the sound will improve significantly over time.

During the first few hours, it is not only possible to play your AL-III Loudspeakers at relatively high volumes, but is actually recommended. If possible, use musical selections with strong repetitive bass and wide dynamic range. Remember, the sooner your AL-III Loudspeakers get their brief "exercise" period, the sooner you will realize their full sonic potential.

Bob Carver's recommendation for placement of the AL-III speakers

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Environment

The placement of the AL-III speakers is critically important to the final sound quality, sound stage and sound field that you will experience as a listener. The location of the loudspeakers in your listening room should be such that the listening room can be divided into two basic acoustic areas.

The idea here is to have a dead-end/live-end environment for the loudspeakers. The loudspeaker should be located at the dead-end of the room, and you—the listener—should be located at the live-end of the room. At the dead-end, there should be a large space around the loudspeakers in which the sound stage can develop. For example, if the loudspeakers were outdoors there would be lots of space around them, and that qualifies as a dead-end or a dead environment. It could also have absorptive material placed to the sides of and behind the loudspeakers. For instance, if you have a wall that is lined with bookcases filled with books (and there aren't any doors on the bookcases), the loudspeaker should be placed in front of the bookcases because they make wonderful sound absorbing items.

Again, a dead-end, in concept, can be formed two ways: 1) by having lots of space around the loudspeakers and 2) with lots of sound absorbing material in the immediate vicinity of the loudspeaker (to the sides and back of the loudspeakers).

Keep in mind that the best sound quality, staging, imaging and soundscape, and the most realistic musical presentation, will be achieved when the loudspeakers are located at a dead end or in a dead area. Think about that as you are setting them up. A good sound absorbing material is carpeting; shag carpet is better, but regular carpeting, on the wall behind and to the sides of the speaker, works very well. Tube traps can also be used. Ordinary furniture also absorbs sound. In principle, the "deader" the end of the room where the loudspeakers are located, the better the sound.

If at all possible, the best sound will be obtained when the loudspeakers are placed three to five feet away from the back wall and at least two to three feet from the side walls. But this is not absolutely necessary. The loudspeakers will sound just fine even if they're pushed all the way against the rear wall, so that the back of the ribbon is only a foot or so away from the wall.

If the loudspeakers are placed against the wall, an improvement can be obtained by making the ribbon "think" it's operating into a dead space by putting some sound absorbing material on the back of the ribbon. Felt that is one half to one inch thick and two to three inches wide attached to the rear of the ribbon with double sided tape is a good choice. This will make the ribbon "think" that it's radiating into a dead space to the rear.

Let's turn our attention to the other end of the room; that is, where you—the listener—are located. That end of the room should have a slightly live sound, a more reverberant sound—with a little bit of an echo, perhaps. As practical matter in a living room, you don't need to give any special attention to providing a sound absorbing environment; that is, don't place tube traps, carpet or sound absorbing panels on that side of the room.

Angular position of the loudspeakers

You—the listener—and the loudspeakers should be situated on a triangle that ranges from equilateral to an approximately 30/60 triangle. In the case of the equilateral triangle, the distance between you and one speaker and its neighbor is the same. In the 30/60 triangle, the loudspeakers are somewhat closer together than you are from either one of them. In both cases, the best high-frequency performance will be obtained by angling the loudspeakers slightly inward so that the flat surface of the ribbon is directly facing you.

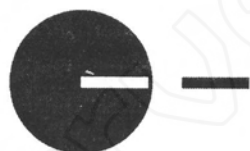
After you have decided how far apart to place the loudspeakers and where the best listening position is located, it is recommended that you align the speakers with a non-stretchable tape measure.

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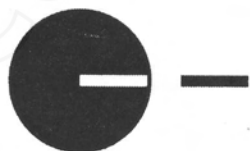
With the help of a friend, measure the distance from the loudspeaker to the listener by holding the tape at the breastbone of the listener, extending the tape to each corner of the loudspeaker, and moving the speaker to adjust the distance. Do this until the distance between the listener and each corresponding corner of each speaker is within a centimeter of each other. That will give the best possible imaging. Under these circumstances, all of the spatial information that is encoded in the source material will be preserved.

Operation

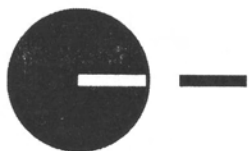
The AL-III features three controls located on the lower rear apron of the loudspeaker (see figure below). The bottom control adjusts the "Q" of the woofer, affecting frequencies below 150 Hz. The middle control adjusts the relative level of the upper mid-range frequencies from 2,000 Hz to 6,000 Hz, and the top control trims the relative amount of high frequency energy (above 8,000 Hz) radiated by the ribbon. The



High Frequency Level



Upper Mid-Range Level



Woofer Level

AL-III Controls
(Factory level settings may vary)

woofer control may be set for a warm, rolling bass or a very tight, dry bass depending upon your preference.

Approximate settings for each of these level controls have been set at the factory; check the markings on the back panel. While these settings have been shown to provide good performance in a variety of settings, you will probably want to tailor these adjustments over time to provide the best sonic qualities in your listening room.

Each control will adjust the level of the loudspeaker in their frequency spectrum over a range of approximately 5dB. But even a slight movement of the controls may provide an audible difference.

It is suggested that you use the factory presets as a starting point. At the beginning, it is a good idea to adjust just one control at a time, and listen to your favorite program material in your usual listening area. When you've settled on settings that are satisfactory to you, then move on to the next adjustment.

When all of the adjustments are individually set, you might want to fine tune a bit more, adjusting each control in turn, so that the overall quality of sound is to your liking.

Technical Information

Ribbon loudspeaker theory and operation

Question: Ribbon drivers have always been considered inefficient, requiring huge power amplifiers to achieve even moderate sound levels. How does the AL-III Loudspeaker get around that problem?

CARVER builds high fidelity power amplifiers which can deliver over 44 peak amperes, so we have a good head start. Beyond that, inspecting the defining equation for a ribbon:

$$\text{Force} = qv \times B = il \times B$$

where:

qv = charge velocity

i = current

l = length of ribbon

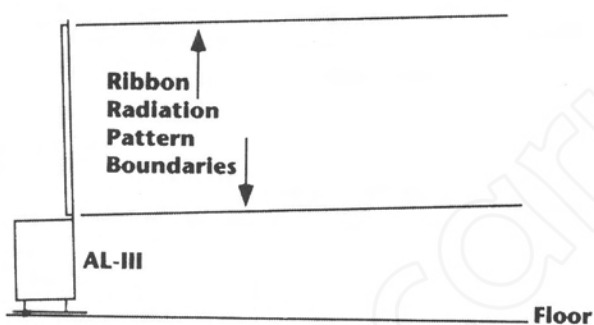
B = magnetic field strength

shows that for a given charge velocity (qv) or current (i) and length (l), the force (and hence the efficiency) can be made as large as we please by making B correspondingly large as necessary. This means using large magnets which create a great deal of magnetic force. No magic. It just seems like it because we have made the highest gauss force field of any commercial ribbon driver in the world.

It is the undistorted momentary peak levels possible with such a ribbon configuration that help give music the lifelike quality we all search for.

Question: What are the advantages of a ribbon loudspeaker over a conventional multiple-driver design.

All frequencies from 150 Hz on up are produced by the line-source ribbon. This ribbon assembly provides imaging impossible with speakers that use multiple drivers. Also, as you can see in the following diagram, the ribbon is placed above the floor, on top of the woofer box, and radiates in an essentially straight pattern, preventing floor-bounce, which can adversely affect sound quality.



Troubleshooting Guide

Before returning your AL-III to the dealer or Service Center for repair, review this section. In a vast majority of situations, the problem can be traced to one of the following:

1. Controls or connections are incorrect.
2. Speaker fuse blown.

Sound cuts off when VOLUME control is turned up.

1. Check speaker wires for a short (bare wire from one connector touching another).
2. Check speakers for damage that may have caused an internal short.

No sound at all.

First turn off your stereo system. Check preamplifier-to-power amplifier cable connections.

1. Check the input source to make sure it is working correctly. If the source unit has a headphone jack, you might use a set of headphones to check the operation of the source component.
2. Make sure that all preamplifier controls, especially the TAPE MONITOR button, are correctly set. (A TAPE MONITOR button accidentally pushed in is a frequent cause of total silence.)
3. Turn the amplifier/receiver off. Check both speaker wire connections to make sure all connections are secure at the amplifier and the loudspeakers.
4. Verify that speaker fuses are not blown.

No sound in ONE channel or ONE channel has distorted sound.

1. Check preamplifier/receiver's BALANCE control and make sure that it is in the center position.
2. Turn the amplifier/receiver off. Then check speaker wire connections by momentarily switching LEFT and RIGHT speaker cables at the amplifier's speaker output terminals. After turning the unit back on, see if the same loudspeaker is dead or distorted. If it is, the fault lies with the speaker cable or the loudspeaker. Verify that speaker fuses are not blown.
3. If, after following step 2, the dead channel DOES switch sides, the problem may be in the amplifier/receiver or preamplifier, signal source, or connecting cables. You can check for a possible cable problem by substituting a good set of cables.

AL-III

Care of Your AL-III Loudspeakers

Your speakers are finished with a natural oil and may be treated like any fine furniture. We suggest occasional cleaning/polishing with a fine furniture oil or cleaner such as Pledge™. Also see the note below about getting wax or cleaner on the grill cloths.

NOTE: Avoid getting wax on the grill since it may stain the grill. If wax does accidentally get on the grill, most of it may be removed after 24 hours by brushing or vacuuming.

Protecting Your Loudspeakers

Your AL-III Loudspeakers are protected with a 4-amp slo-blo fuse for the ribbons and a 4-amp slo-blo fuse for the woofer. This allows the full peak dynamic range to be expressed, yet provides the needed safety valve at loftier power levels. The high thermal mass of the slo-blo type fuse prevents non-linear resistance changes with musical dynamics, thus completely preventing the fuse from introducing fuse-link-related distortion.

If the fuses should ever blow, replace them with the same size, type and rating only.

Service Assistance

We suggest that you read the LIMITED WARRANTY completely to fully understand what your service coverage constitutes and its duration. Please promptly complete and return the WARRANTY REGISTRATION CARD. Also be sure to save the sales receipt in a safe place. It will be necessary for warranty service.

If your AL-III should require service, we suggest you first contact the Authorized Carver Dealer from whom you purchased it. Should the Dealer be unable to take care of your needs, you may contact the CARVER Service Department by writing CARVER CORPORATION, Service Department, P.O. Box 1237, Lynnwood, WA 98046. Be sure to include a daytime phone number so we may contact you. We will then direct you to the nearest in our national network of Authorized Warranty Service Centers, or give you detailed instructions on how to return the product to us for prompt action.

We wish you many hours of musical enjoyment. If you should have questions or comments, please write to us at the address above.

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AL-III

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Carver constantly strives to incorporate new methods, materials, and technologies in order to further improve the quality of our products. Thus all specifications are subject to change without notice.

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