Welcome to the next step in guitar amplification—the SX Series by Carvin. Five different models, each designed to give you optimum performance and flexibility in whatever application you have. The SX Series stands as the first and only solid state amplifier family to truly capture the essential tone and character of tube distortion, thanks to the real innovation in solid state technology—the acclaimed Tube Simulator Circuit designed by Carvin.

"I was immediately impressed with the clean sound of this amp, ranking it with the best I’ve heard... The Distortion? It’s very, very good—and this is coming from a dedicated tube amp man... this is a remarkable amp! I can’t think of a single thing that could be done to improve its performance... a best buy."
David Hicks, Guitar Player Magazine

"Carvin should be very happy with the SX Series of amplifiers... This distortion circuit is going to turn some heads in the guitar community... the sounds created by this tube simulator circuit are some of the warmest, richest and longest sustaining... I would suggest finding one... and plugging in..."
H.G. La Torre, Music & Sound Output

CARVIN

THE SX SERIES
The Breakthrough in Guitar Amplification

OWNER’S MANUAL
THE SX SERIES

The SX-60, SX-100 and SX-200 are our immensely popular combo amps, featuring 60, 100 and 150 watts of clean MOSFET power, respectively. The SX-400 head packs a massive 400 watts of power, making it ideal for multi-cabinet applications. The rackmount SX15 preamp is superior in a sophisticated modular rackmount system, and all models feature the incredibly tube-like distortion and great tonal flexibility that only the SX Series can achieve.

■ Getting Started Quickly

If you are like most players you probably want to plug in your new amp and get started playing it right away. Great! You can read the rest of the manual later to learn the finer points of operating your amp.

In order to get started you will need your SX series amp, a 120/240 volt AC power outlet, your instrument, and a standard guitar cord. Set the 120/240 transformer switch (near power cord) to proper voltage. Plug the amp into the power outlet and then plug your guitar into the amp's "A/B" input before turning the amp on. Make sure the volume is all the way down, and then turn on the amp. Now, carefully raise volume A to a comfortable level and start exploring the sounds of your new Carvin amp. We suggest that you start with all controls at their "normal" settings and then adjust the amp from that point.

■ Front Panel Controls (left to right)

1. "A/B" Input Jack
   This is the input you will use most often. It normally feeds the "A" channel but with the (optional) footswitch this input switches between channels "A" and "B". You can tell which channel is active by the "A/B" LED next to each channel's volume control. Both channels of the amp are have been equalized for the same "bright" response that most players prefer.

2. "B" Input Jack
   The "B" input always feeds the "B" channel regardless of which channel the "A/B" input is feeding. This "B" input allows the two channels to be used with stereo wired guitars (or other instruments) and also allows two players to use the amp at once.

3. "A/B" LED
   Located to the left of the volume control, this LED illuminates to indicate which channel the "A/B" input is currently feeding. The (optional) footswitch allows the "A/B" input to switch between channels without the footswitch the "A/B" input always feeds the "A" channel.

4. Volume Control
   This is the first control in each channel's control group and sets the overall volume of that channel. The channel's "A" volume only affects the volume when the "A/B" input is used and the "B" channel is selected as indicated by the LED at the left of the control. This allows you to set the two channels for different volume levels. The "B" channel volume control always offsets the volume of any instrument plugged into the "B" input jack regardless of which channel the "A/B" input is feeding.

5. Volume Control
   The volume controls affect the volume at the speaker outputs, the phone output, the preamp output, and the effects loop.

6. Overdrive Switch (CH A only)
   Overdrive switch CH A only when the overdrive switch is depressed. Use this to adjust the sustain time of your output drive effects. Higher settings provide longer sustain times but also bring up the noise from your instrument. So, as a straight rule, set the overall level only as high as necessary for the sustain time you need. At the highest overall levels, especially with the cut off switch depressed, the overdrive effect makes it possible to obtain infinite sustain. Experiment.

7. Low Cut Switch (CH A only)
   This switch introduces a sharp low cut filter (-18 dB per octave below 500 Hz) into the signal path of the "A" channel. Use it when you want a bright or non-ringing tone. This filter is only available in the clean mode and in the overdrive mode. Note that when the low cut filter is used in the overdrive mode it also increases the maximum overdrive level by 15 dB. The low cut filter not only provides a variation on the overdrive sound but also adds higher drive levels with reduced noise.

8. Bass EQ Control
   The Bass control (along with the Presence control) provides for powerful and graceful shaping of the tone of our instrument. Because of the Carvin's exclusive "Mid Cut" circuit, low end boost on the Bass range of your guitar, and a clean low range boost instead of the muddy mid bass sound that most other amps produce. Setting the Bass control to 0 results in uncolored (flat) bass response.

9. Mid EQ Control
   The Mid control provides a generous amount of boost and cut to bands in the critical mid range. Like the other EQ controls, this is an active equalizer control circuit. Setting the control to 0 results in uncolored (flat) response.

10. Treble EQ Control
    Use the treble control to shape your upper mid-range sound. The action of the Treble EQ has been carefully designed to complement the response of the electric guitar. Note that the SX-100 amp family has been designed to have a "bright" response with all EQ controls set at 0. As with all tone controls, setting the Treble control to 0 gives a neutral (flat) frequency response.

11. Reverb Level Control
    This control sets the reverb return level from the built-in threestage Reverb system. A silent footswitch is used to turn the reverb on and off and allow footswitch control. The reverb controls have been carefully balanced to provide bright sparkling reverberation especially suited to the electric guitar.

12. Phones Jack
    A front panel headphone jack has been provided to allow the convenience of practicing in private. To silence the amp's internal speaker just pull the rear panel speaker plug out of the speaker jack.

CAUTION! Headphones can provide very high sound levels. Exposure to high sound levels for prolonged periods can cause temporary or even permanent hearing damage if you notice ringing in your ears after a practice session then you should reduce your practice volume to avoid damaging your hearing.

13. Power On/Off Switch
    This switch controls the power to the amp. Because the MOSFET power amplifier has no turn-on delay a standby switch is not required. Simply turn the amp off when your band goes on break and the amp will be ready to play instantly when you return.

"Normalize" the amp by setting the controls as follows:

| Volume A: | As Desired |
| Overdrive Switch: | OFF |
| Overdrive Level: | 5 |
| Low Cut Switch: | OFF |
| Bass, Mid, Treble, and Presence: | 0 (Both channels) |
| Volume B: | As Desired |
| Reverb: | 0 |

Now you are ready to start experimenting with the spectrum of sounds that your SX amp was designed to give you. The tone controls on this amp...
have a very wide range of action so don’t be surprised if you get extreme sounds at the extreme settings. If this happens then try easing the EQ controls back to a more neutral setting. Remember “0” is the “normal” or “neutral” setting for all of the EQ controls. You may find your favorite tone settings are close to the neutral settings.

You can switch the “A” channel into overdrive simply by depressing the overdrive switch next to the overdrive level control. The overdrive sound can be further modified by depressing the “Low Cut” switch. Listen to the sound of this switch in the clean mode also.

Without the FS-36 footswitch (optional), you will have to plug your instrument into the “B” input jack in order to use the “B” channel.

With the footswitch, you simply leave your instrument plugged into the “A/B” input and use the footswitch to switch between channels.

**Channel A: The Lead Channel**

The “A” channel is loaded with features for playing leads. First there are the basic controls for volume and the four bands of equalization. Depressing the overdrive switch sets up the “A” channel for distortion and illuminates an LED to indicate that the STX tube simulator is now in the signal path. Raise the overdrive control to set the overdrive sustain time you want, from a briefly crushed rhythm to a sizzling lead line with infinite sustain. The low cut switch provides a uniquely bright sound totally devoid of bottom and simultaneously expands the overdrive range by 10 dB to allow even longer sustain times without excess hum.

**Channel B: The Rhythm Channel**

For clean rhythm chording, switch to the rhythm channel. The separate volume and four band equalizer settings that you dial up here will be ready and waiting when you break away from your leads.

**Active Tone Controls**

The active tone controls used in these amps are the same circuits used in Carvin’s legendary X-Amps. The action of these controls have been very carefully honed to allow players to choose tonal colors from a very broad spectrum. These controls provide real action in the ranges where you need it. Over 30 dB of control range is available on the Bass and Treble controls, and the Mid control is unusually potent. Add to this the high end power of the Presence control and the SX Series amps scream!

**An Introduction to the SX-Series Family of Guitar Amps**

**Dual Channel/Remote Switching**

Because these are dual channel amps they allow you to switch between channels while performing on stage (by using the footswitch). An LED next to each volume control gives a positive indication of which channel is in use. Channel switching has become an important requirement for today’s guitar players; the SX amplifier family has been developed to meet that requirement with style and performance.

**Instrument Inputs (A/B and B)**

Each input feeds a separate low noise preamp followed by highly refined guitar processing circuits. The “A/B” input normally feeds the “A” channel but with the optional FS-36 footswitch this input can be switched between channels “A” and “B”. The “B” input is always assigned to the “B” channel and can be used as the second input from a stereo guitar or can be used by another player. In either case the volume and tone settings of the two channels are totally independent of one another. Both channels will accept signals from either high or low impedance pickups.

**Rear Panel Connections**

1. **Power Cord and Line Fuse**
   - The SX Series amp employs a heavy duty grounded line cord and should only be plugged into a grounded “3 prong” outlet. When a grounded outlet is not available, a “3 prong” to “2 prong” adapter may be used to plug the amp into a “2 prong” outlet provided the wire “ground” (or ground tab) is connected to a suitable ground. For your safety no attempt should ever be made to defeat the ground pin on the AC line cord.
   - For continued fire safety and product protection the AC line fuse should only be replaced with a fuse of the same rating (15 amps fast blowing).

2. **Pre Amp Output Jack**
   - This output is taken from the preamp before the MOSFET power amp. You will find this output useful for feeding the preamp signal to recording consoles, PA mixers, or outboard power amps. The maximum signal level at the preamp output is ~10 Vrms.

3. **Effects Loop Send and Return Jacks**
   - These jacks let you use outboard effects (such as pedal effects or rack mounted effects) in the effects loop of your amp. The FS-36 footswitch is required in order to switch to the effects loop. To use the loop you simply patch the signal from the amp’s SEND jack to the INPUT of your effect, then patch the signal from the OUTPUT of your effect back to the amp’s RETURN jack.

4. **Footswitch Connector**
   - This male XLR connector is for use with Carvin’s model FS-36 footswitch. The footswitch functions are as follows:
     
     **CHANNEL**: The switch causes the instrument plugged into the “A/B” input to switch between channel ‘A’ and ‘B’. The ‘A/B’ LED’s on the front panel of the amp indicate the selected channel. The LED on the footswitch illuminates when channel “B” is selected.
     
     **EFFECTS 1**: This switch controls the effects loop. The LED on the footswitch illuminates when the effects loop is selected. If no effect is patched into the loop, the amp provides a 6 dB volume drop when the loop is selected. This attenuation can be useful for low practice volumes or can be used on stage to provide a footswitched volume boost.
     
     **EFFECTS 2**: This switch turns the return on and off using a silent FET switch. The corresponding LED on the footswitch illuminates when return is on.

5. **Speaker Output Jacks**
   - Connect the speaker(s) here.
   - Two speaker jacks are provided to allow you to connect a second speaker in addition to the speaker built into your amp. The SX Series should not be loaded below a net 4 ohm load. This allows the connection of up to two 8 ohm, four 16 ohm, or one 4 ohm speaker. Other speaker combinations are fine as long as the combined impedance does not fall below 4 ohms.
Special Features of the SX Series Amps

1. The SX Tube Simulator

The tube simulator circuit created by Carvin’s chief engineer is unlike any previous circuit used for guitar distortion. This is the first non-tube circuit which can duplicate the richly modulated overdrive sound of a high quality tube preamp.

Ever since guitar overdrive sounds first became popular in the 1960s there has been much speculation about why “tube” distortion sounded better than “transistor” distortion. One popular myth holds that “tubes produce even harmonics and transistors produce odd harmonics”. At best, this is a primitive view of the actual physics of the distortion process. Our own research has shown that the most important distinction between tube and solid state distortion circuits is the way they behave in the time domain with a dynamic input signal. The usual test on the bench using a sine wave (static test) does not begin to crack the mystery of tube overdrive. Based on extensive research our chief engineer was able to synthesize a new compound circuit which closely models the behavior of a tube preamp and can pass critical listening comparisons with the best tube circuits.

2. Buffered Effects Loop

Effects send and return jacks located on the rear panel allow the use of outboard effects units under footswitch control. You will find the effects loop useful with both pedal type effects and rack mounting effects. The effects insertion point is after the channel switching stage so the active channel always drives the effects loop. Note also that the signal level at the effects loop varies with the volume control setting. The maximum signal level at the effects send is ~10 dB.

The SX Series amps have been designed so that when you are not using the effects loop for outboard effects you can use it as a volume attenuator. Turning on the effects loop with the footswitch results in a volume drop of 8 dB. This volume change can be used on stage to provide a fixed volume change when needed.

3. The Low Cut Filter

Although filter effects are often heard on guitars in popular recordings they are rarely provided on guitar amps. The recordings are made using either the filter set on the recording console or by using an outboard filter set. If you have ever tried duplicating these effects with a conventional guitar amp you know how elusive they can be. Now these popular effects are available in the SX-100 series of guitar amps.

The best way to learn the sound of the low cut filter is to set up both channels of the amp the same (“normal” for example) except switch on channel A’s low cut filter. Then switch between channels as you play and notice the effect. If both channels are set the same the only difference you hear will be the filter. Notice how the low cut filter totally chops off the bottom (bass) range while leaving the mid and treble unchanged. It provides a bright treby sound while preserving the balance between the mid and treble ranges. This effect cannot be achieved with conventional tone controls (even with the powerful EQ controls on the SX Series amps). Once you learn the sound of the low cut filter you will begin to notice it on popular recordings.

If the sound of your group (or your recordings) has a tendency to be “muddy” (too much energy in the mid-bass range), then you can probably improve things by selectively using the low cut filter on the guitar to prevent it from contributing to the mid-bass buildup problem. This will also tend to “unmask” other instruments competing for identity in the same frequency range (bass guitar, keyboards, etc.).

For overdrive players the low cut filter has a special benefit. Because overdrive compresses the dynamic range of the signal from your guitar it reduces your signal to noise ratio. Even the quietest humbucking pickups can end up with audible hum when used with a high overdrive level. The low cut filter improves this situation by filtering out the hum from your guitar before the signal gets to the overdrive stage. The result is greatly reduced low frequency noise (hum). This allows you to use even higher overdrive levels without noise becoming a problem. For this reason, the SX Series amps were designed to provide an extra 10 dB of overdrive whenever the low cut filter is switched on.

Using the SX Series Amps

Some Control Setting Suggestions

We have tabulated some settings below which might be useful when first working with your amp.

<table>
<thead>
<tr>
<th>Type of Sound</th>
<th>Amp Settings</th>
<th>Guitar Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Channel</td>
<td>Overdrive</td>
</tr>
<tr>
<td>Clean Rhythm Sound</td>
<td>A or B</td>
<td>OFF</td>
</tr>
<tr>
<td>Funky Rhythm</td>
<td>A or B</td>
<td>OFF</td>
</tr>
<tr>
<td>Slight O/D Lead</td>
<td>A</td>
<td>1-3</td>
</tr>
<tr>
<td>“Marshall” Lead</td>
<td>A</td>
<td>5-10</td>
</tr>
<tr>
<td>“Santana” Lead</td>
<td>A</td>
<td>5-10</td>
</tr>
</tbody>
</table>

Note: Tone control settings are defined as follows: “3” = one “tic” mark from “0”; “6” = two “tic” marks from “0”.

As a variation on the “Funky Lead” sound try running two pickups out of phase to further cut the low end.
**Hook-up**

- **SX-60, 100 and 200 Combo Amps**
  - Hook-up is as simple as plugging the power cord into the wall, and plugging your shielded guitar cable into the "A/B" input jack. If you intend to run stereo guitar, or run more than one instrument through the amp, simply use the "B" input jack as well.

- **SX-400 Head**
  - The SX-400 head should always be connected to speaker cabinets using a NON-SHIELDED cord. Use of a shielded cord from the head to the speakers can result in serious damage to the amp. The SX-400 permits loading down to 4 ohms, allowing the use of up to 8 ohm cabinets to be run simultaneously. Plugging into the front panel is the same as the combo amps.

- **SX-15 Preamp**
  - The SX-15 preamp is a low level output, and requires a power amp to generate speaker power.

**Inspection Upon Arrival and Shipping Information**

1. **Truck Freight Shipments**
   - *INSPECT YOUR AMPLIFIER AND THE SHIPPING CARTON FOR ANY DAMAGE that may have occurred in shipping. If damage is found, notify the shipping company and Carvin immediately and obtain a Damage Inspection Report from the shipping company. Be sure to save all packing materials for proof of damage. Send a copy of the damage inspection report to Carvin and return the goods to Carvin. This will allow you to process any damage claim with the shipping company, and provide you with the fastest return of new goods. All goods must first be returned to Carvin prior to exchanging or shipping a new item to you. This is both for your protection and our protection.
   - *NOTE: If you have a "Damage Claim" you will have to deal directly with the shipping company. Upon receiving your settlement you will then have to reorder a replacement.

2. **UPS Shipments**
   - Damage is found, and the unit was shipped UPS, first make note of the damage to the unit and SAVE ALL PACKING MATERIALS. Then, call Carvin and notify UPS of the damage. Have an UPS inspector inspect the damage report number. Then have your unit picked up and returned to Carvin. Carvin will handle the damage claim with UPS, and upon receipt of your damaged unit, a new amplifier will be shipped to you immediately.
   - *NOTE: Have UPS issue the damage report because if you file a claim with UPS, you will have to wait until you receive your settlement before reordering from Carvin. This could delay your receipt of a properly operating amplifier 2 to 3 weeks. If you are in doubt call Carvin. We will be happy to assist you.

   - *SAVE THE CARTON and all packing materials. In the event you have to re-pack your amplifier “ALWAYS” use the original carton and packing materials. This will provide the best possible protection for your unit during shipment. Both Carvin and the shipping company will not accept liability for damage caused by improper packing.

   - *SAVE YOUR INVOICE. It will be required for warranty servicing of your unit in the event such service is necessary. Always check the unit against the invoice received. If you find some items missing it may be that they were simply split up during shipment. Please allow several days for the rest of your order to arrive before inquiring. If you determine (after allowing an appropriate amount of time) that you have not received all your items, please call Carvin in order that we may take the necessary steps to assure that you receive all the items in your order.

**Warranty and Servicing Information**

1. **Servicing in Your Area**
   - You may select your own service center or have your own qualified technician work on the unit at your own expense. This will not void the warranty for future repairs unless damage was done because of improper servicing or component replacement. If damage was done, a normal fee for parts and labor will be charged.

   - Under the ONE YEAR WARRANTY, Carvin will ship parts pre-paid to you or your technician providing that the collective parts are first returned for our inspection.

   - If you do not have a qualified service person, we ask that you do not involve yourself in servicing the unit. By sending the unit to us, you may save time, money, and frustration. Also, you will know that your unit was serviced according to factory specifications.

   - If it is necessary to have your unit serviced locally, we strongly recommend that you have your technician call us before servicing your unit. We find that those who do this are able to make necessary repairs faster, and for less money. We are giving this information because we have had it in the past and we want them to work properly for many years.

   - REMINDER: Carvin does not pay for servicing or parts other than our own — no exceptions. If you elect to have your own servicing done, these costs must be paid by you.

   - **CAUTION:** To prevent electric shock do not remove the safety ground on the power cord. Do not remove cover. No user-serviceable parts inside.

   - **WARNING:** To prevent fire or shock hazard do not expose to rain, moisture, explosive atmosphere or install in improper face.

2. **Factory Servicing**
   - We highly recommend utilizing our factory servicing staff to bring your unit up to factory specifications. Regardless of your warranty status, please follow these guidelines when returning units for service:
     1. Enclose a full description of the malfunction. Please use the “Service Authorization Form” included with this manual.
     2. Send a copy of the original invoice to verify your warranty.
     3. Return the product in its original carton with the original packing material. CARVIN OR THE SHIPPING COMPANY WILL NOT ASSUME LIABILITY FOR IMPROPERLY PACKED UNITS.

**Technical Specifications**

<table>
<thead>
<tr>
<th>MOSFET Power Amplifier</th>
<th>Continuous Output Power:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60 Watts @ 4 ohms (SX-60)</td>
</tr>
<tr>
<td></td>
<td>100 Watts @ 4 ohms (SX-100)</td>
</tr>
<tr>
<td></td>
<td>150 Watts @ 4 ohms (SX-200)</td>
</tr>
<tr>
<td></td>
<td>400 Watts @ 2 ohms (SX-400)</td>
</tr>
<tr>
<td>Distortion</td>
<td>less than 1% (20 to 20kHz)</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>20 to 20kHz (+3dB)</td>
</tr>
<tr>
<td>Minimum Load Impedance</td>
<td>4 ohms (except SX-400)</td>
</tr>
</tbody>
</table>

**Input Characteristics**

<table>
<thead>
<tr>
<th>Input Impedance</th>
<th>1M ohm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Sensitivity</td>
<td>30 mV (for full output)</td>
</tr>
<tr>
<td>Maximum Input Level</td>
<td>2.5 Vrms (+10dB)</td>
</tr>
</tbody>
</table>

**Four Band Equalizer**

<table>
<thead>
<tr>
<th>Bass</th>
<th>Mid</th>
<th>Treble</th>
<th>Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>±15 dB @ 60 Hz</td>
<td>±10 dB @ 600 Hz</td>
<td>±6 dB @ 6 kHz</td>
<td>±15 dB @ 12 kHz</td>
</tr>
</tbody>
</table>

**Preamplifier Frequency Response**

- The Pre Amp has a custom tuned response which includes Carvin’s exclusive "Mudcutter" circuit, a "bright" response equalizer, and a unique circuit which modifies the output-to-speaker interface response of a tube power amp.

**Effects Loop**

<table>
<thead>
<tr>
<th>Maximum Output Level</th>
<th>-10 dBv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Send Impedance</td>
<td>500 ohms</td>
</tr>
<tr>
<td>Return Impedance</td>
<td>47 ohms</td>
</tr>
<tr>
<td>Power Requirement</td>
<td>120-240 VAC, 50 or 60 Hz, 250 Watts Maximum</td>
</tr>
<tr>
<td>Warranty</td>
<td>One year parts and labor</td>
</tr>
</tbody>
</table>

**Dimensions & Weight**

| SX-60 and SX-100 | 22"W x 11"D x 20"H, 42 lbs |
| SX-200 | 22"W x 11"D x 20"H, 53 lbs |
| SX-400 | 22"W x 11"D x 14"H, 47 lbs |
| SX-15 | 19"W x 10"D x 14"H, 8 lbs |

Made in USA

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